DRIVE PRODUCTS BROCHURE

ABB Low Voltage AC Drives and Automation

Boost the productivity of your processes, improve energy efficiency and cut maintenance costs.

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Introducing the most extensive drives portfolio in the world

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

Several ABB drives feature calculators that provide energy consumption data. This information can be used to further analyze and tune a process for even greater energy savings.

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

ABB micro drives
ABB micro drives are suitable for many low power applications such as pumps, fans and conveyors. The focus in our design has been the easy integration into machines, which provides flexible mounting alternatives and straightforward commissioning.

ABB general purpose drives
ABB general purpose drives are ideal in those situations where there is a need for simplicity to install, commission and use. They are designed to control a wide range of standard drives applications, including pump, fan and constant torque use, such as conveyors.

ABB machinery drives
ABB machinery drives can be configured to meet the precise needs of industries and order-based configuration is an integral part of the offering. Covering a wide power and voltage range with standard and optional features, the drives are readily programmable, making their adaptation to different applications easy.

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

ABB industrial drives
The ABB industrial drive portfolio is designed for heavy industrial applications such as those found in pulp and paper, metals, mining, cement, power, chemical, oil and gas, water and wastewater and food and beverage. Drives adapted and approved for use in the marine environment are also included within this portfolio.

Industry specific drives
Our industry specific ABB drives provide our customers with dedicated drive solutions for AC motor control used in industries such as HVAC and water and wastewater. Working closely with these industries, we have developed targeted functionality to help you improve your overall operating performance while also helping to reduce energy use. Built-in application macros in the drives help you easily set up and tailor processes.

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

To find more information please visit:
abb.com/drives
new.abb.com/low-voltage/products/

Choose the right drive for your application

Choosing the right drive for your application

Step	Process	Action
1	**Identify the application** Identify the type of application and the likely demands of the drive.	Continue to step 2.
2	**Understand the load.** System inertia, required acceleration and deceleration rates, minimum and maximum speeds, overload requirements, etc. This information can often be determined by the performance of the existing motor.	Continue to step 3.
3	**Gather the motor nameplate data.** Power, Voltage, Current, Frequency(Hz), RPM, Insulation Class, etc.	Continue to step 4.
4	**Choose a drive** Match the data gathered in Steps 1 to 3 against the table of drive features. Select a drive that meets the motor requirements and has all the software features needed for the application.	Continue to step 5.
5	**Is the drive offered in the correct hp/amp rating?** The drive you choose must be able to supply the necessary current to the motor to produce the torque required. This includes normal and overload conditions. See selection table on page 17.	If yes, continue to step 6. If no, go to step 4.
6	**Is the drive offered in the correct enclosure and environmental ratings?** The drive you choose must be available in an enclosure style that will withstand the application's environment. It also must produce the required current at the application's altitude and ambient temperature. See selection table on page 17.	If yes, continue to step 7. If no, go to step 4.
7	**Does this drive have the features needed to meet the application's demands?** The drive you choose must have a feature set that matches the application. It also must have sufficient hardware (inputs and outputs, feedback, communications, etc.) to perform the application.See selection table on page 17.	If yes, continue to step 8. If no, go to step 4.
8	**Does this drive have the features needed to meet the application's demands?** The drive you choose must have a feature set that matches the application. It also must have sufficient hardware (inputs and outputs, feedback, communications, etc.) to perform the application. See selection table on page 17.	If yes, continue to step 9. If no, go to step 4.
9	**Congratulations!** The ABB AC drive you have chosen has the features and performance needed for a successful application.	

LOW VOLTAGE AC DRIVES

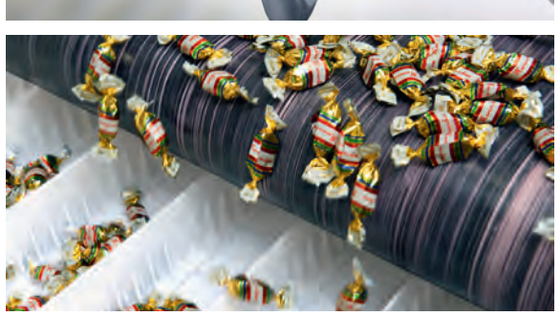
ABB micro drives
ACS150, 0.37 to 4 kW/0.5 to 5 hp

The ACS150 drives are designed to be incorporated into a wide variety of machines such as mixers, conveyors, fans or pumps or anywhere where a fixed speed motor needs to run at variable speed.

Quick set-up and superior performance
In the simplest, choose a drive according to the motor size and connect it. The next thing you'll notice is a flawlessly operating system. If some fine-tuning is needed, the drive offers an extensive range of parameters that help obtaining the best performance out of the application.

Built-in features in a compact package
The ACS150 drives have an integrated user panel and potentiometer, and a variety of features such as macros, which are pre-defined I/O configurations like 3-wire, PID-control and motor potentiometer macro. These features enable even more convenient configuration and save time when setting up your system.

Guaranteed easiness for volume configuration
FlashDrop, an optional drive configuration tool designed for volume configuration, can be used to quickly and easily configure unpowered drives. FlashDrop stores up to 20 different drive parameter sets and can copy parameters from one drive to another, or between a PC and a drive.



Technical data

Mains connection	
Voltage and power range	1-phase, 200 to 240 V ±10% 0.37 to 2.2 kW (0.5 to 3 hp)
	3-phase, 200 to 240 V ±10% 0.37 to 2.2 kW (0.5 to 3 hp)
	3-phase, 380 to 480 V ±10% 0.37 to 4 kW (0.5 to 5 hp)
Motor connection	
Voltage	3-phase, from 0 to U_{supply}
Frequency	0 to 500 Hz
Overload capacity (at a max. ambient temperature of 40 °C)	At heavy duty use 1.5 x I2N for 1 minute every 10 minutes At start 1.8 x I_{2N} for 2 s
Switching frequency	
Default	4 kHz
Selectable	4 to 16 kHz with 4 kHz steps with derating Parameter-enabled noise cancellation function
Acceleration time	0.1 to 1800 s
Deceleration time	0.1 to 1800 s
Braking	Built-in brake chopper as standard
Auxiliary voltage	24 V DC ±10%, max. 200 mA
Motor control method	Scalar U/f
Control connections	
Auxiliary voltage input	24 V DC +/-10% max. 200 mA
One analog input	
Voltage signal, unipolar	0 (2) to 10 V, R_{in} > 312 kΩ
Current signal	0 (4) to 20 mA, R_{in} = 100 Ω
Potentiometer reference value	10 V +/- 1%, max. 10 mA, R < 10 kΩ
Resolution	0.1%
Accuracy	+/- 1%
Five digital inputs	
Input type	PNP and NPN (sinking or sourcing)
Input impedance	2.4 kΩ
Response time	<8 ms
DI5 can be used either as a frequency input or a digital input	Pulse train 0 to 16 kHz
One relay output	NO + NC Type
Max. switching voltage	250 V AC / 30 V DC
Max. switching current	5 A / 230 V; 0.5 A / 30 V DC
Max. continuous current	2 A RMS
Product compliance	
UL, cUL, CE, C-Tick and GOST R approvals, RoHS compliant	
Environmental limits	
Degree of protection	IP20 / Optional NEMA 1 enclosure
Ambient temperature	-10 to 40 °C (14 to 104 °F), no frost allowed, 50 °C (122 °F) with 10% derating
Relative humidity	Lower than 95% (without condensation)

Highlights

- Worldwide availability through logistical distributors
- User-friendly LCD user panel and integrated potentiometer
- Flexible mounting alternatives
- PID control
- EMC C3 filter
- Built-in brake chopper
- FlashDrop tool for fast drive commissioning

Options

- FlashDrop tool
- Input/output chokes
- EMC C2 filters
- NEMA 1 enclosure kit

Learn more from ACS150 website

For more information please contact your local ABB representative or visit:

abb.com/drives
abb.com/drivespartners

LOW VOLTAGE AC DRIVES

ABB machinery drives
ACS180, 0.25 to 22 kW

The ACS180 is an all-compatible ABB machinery drive ideal for compact machines.

This cost-effective and compact drive is optimized for machine builders requiring ease of use and reliable machine performance.

Reliable operation even in harsh conditions
ACS180 drives have improved reliability in harsh conditions. Coated circuit boards and minimized airflow through the electronics combined with advanced ground fault protection guarantee reliable operation and maximized uptime. The drives are designed for 50 °C ambient temperature without derating (in heavy-duty use) and up to 60 °C with derating.

Optimal drive for applications
The ACS180 drive offers excellent performance and quality at its price level with all essential machinery application features embedded. Meanwhile, the built-in EMC filter and STO bring savings in cabinet size and costs, because an external EMC filter or contactor is unnecessary. Heavy-duty use and light-duty use are rated in one drive. This will help users choose the optimal drive for each application.

Ease of use
Installation and commissioning are quick and easy thanks to the ACS180's intuitive graphical user interface, simple parameter structure and spring control terminals. A compact drive size and the possibility of side-by-side installation help reduce the cabinet size.

Scalability
ACS180 drives support sensorless vector control with induction and permanent magnet motors. Customized functions with adaptive and sequence programming are possible. The ACS180 drive is part of the ABB all-compatible drives portfolio, all with the same user interface and PC tools.

Technical data

Mains connection	
Voltage and power range	1-phase, 200 to 240 V, +10%/-15%, 0.25 to 2.2 kW 3-phase, 380 to 480 V, +10%/-15%, 0.37 to 4 kW
Dimension (H x W x D, mm)	R0: 174 x 70 x 143 R1: 190 x 70 x 143
Overload capacity	180% I_{Hd}, 2 seconds, at start-up In heavy-duty use 150% I_{Hd}, 1 minute per 10 minutes In light-duty use 110% I_{Ld}, 1 minute per 10 minutes
Frequency	50/60 Hz ±5%
Degree of protection	IP20 (UL open type)
Ambient conditions	-10 to +50 °C at heavy duty -10 to +40 °C at light duty with derating up to 60 °C (except R0, which has max. temperature of 50 °C)
Altitude	0 to 1,000 m without derating 1,000 to 2,000 m with derating of 1%/100 m
Approvals	CE, RoHS, UL, cUL, TÜV NORD
Safety	Safe torque off (STO) acc. to EN/IEC 61800-5-2, IEC 61508 ed2: SIL 3, IEC 61511: SIL 3, IEC 62061: SIL CL 3, EN ISO 13849-1: PL e
EMC	EMC category C2, C3 or C4 according to different voltage range and type
Product type	ACS180-04S-xxxx-1: 1-phase 200 to 240 V, C2 EMC, STO built-in ACS180-04S-xxxx-4: 3-phase 380 to 480 V, C3 EMC, STO built-in ACS180-04N: No built-in EMC filter, C4 EMC, no STO
Control and connectivity	
Motor control mode	Sensorless vector control Scalar control
I/O interface	4 x DI: PNP or NPN connection, DI3 and DI4 can be frequency input 2 x AI: SW configures mA or V mode, AI1 can be DI5 1 x AO: SW configures mA or V mode 1 x DO: 24 V, 60 mA 1 x RO: 230 V, 2 A 1 x RJ45: Connects to control panel or PC tool
User interface	Integrated icon-based control panel
Drive programming	Adaptive and sequence programming
Communication	EIA-485 Modbus RTU protocol built-in
PC tool	Drive Composer Entry, available for free from ABB website Drive Composer Pro
Mobile APP	Drivetune for commissioning via Bluetooth Drivebase for ensured reliability and reduced downtime on production sites
Control panel options	ACS-AP-S assistant control panel ACS-BP-S basic control panel ACS-AP-W assistant control panel with Bluetooth interface

Reliability. Cost-effective. Ease of use.

Reliability and consistent quality
- Coated circuit boards as standard
- Minimized air flow through the electronics
- Earth fault protection
- Design for up to 50 °C without derating
- All drives are tested at maximum temperatures with full nominal loads

Ease of use
- Compact design
- Built-in graphical user interface
- Intuitive user menu
- Spring control terminal
- Part of ABB all-compatible drives portfolio

Scalability
- Sensorless vector control
- Supports permanent magnet synchronous motor
- Built-in EMC filter
- Built-in STO
- Built-in Modbus RTU
- Adaptive and sequence programming

Typical industry segments
- Food and beverage
- Material handling
- Textile
- Logistics
- Printing and packaging
- Plastics
- Commercial appliance

For more information please contact your local ABB representative or visit:

abb.com/drives
abb.com/drivespartners

Learn more from the AC180 website.

LOW VOLTAGE AC DRIVES

ABB machinery drives

ACS355, 0.37 to 22 kW

ACS355 drives are designed to maximize your machine's availability with drives that are easy to install and setup.

Quick and easy commissioning
Predefined I/O configurations for application macros and built-in assistants speed up commissioning of the drive, allowing you to concentrate on your business.

Supported motor types
Same drive can be used for sensorless induction and permanent magnet motor control without a feedback device.

Compact and uniform design
Compact size, the broadest power range in its class from 0.37 to 22 kW and side-by-side mounting ensure optimized cabinet installation in a wide range of machinery applications, resulting in space and cost savings.

Communication with major automation networks
Optional fieldbus adapters enable connectivity with major industrial automation networks.

Safety
Integrated safe torque off (STO) function up to SIL 3 is a cost-effective and certified solution for safe machine maintenance by fulfilling IEC 61508, EN 62061 and EN ISO 13849-1 standards. The safety function can also be used to implement Emergency Stop without contactors.

Technical data

Mains connection	
Voltage and power range	1-phase, 200 to 240 V ± 10% 0.37 to 2.2 kW (0.5 to 3 hp) 3-phase, 200 to 240 V ± 10% 0.37 to 11 kW (0.5 to 15 hp) 3-phase, 380 to 480 V ± 10% 0.37 to 22 kW (0.5 to 30 hp)
Frequency	48 to 63 Hz
Common DC connection	
Voltage and power range	230 V drives, 325 V ±15% 400/480 V drives, 540 ± 15% (common DC manual) $P_{max} = P_n$ of the drive
Motor connection	
Voltage	3-phase, from 0 to U_{SUPPLY}
Frequency	0 to 599 Hz
Continuous loading capability (constant torque at a max. ambient temperature of 40 °C)	Rated output current I_{2N}
Overload capacity (at a max. ambient temperature of 40 °C)	1.5 x I_{2N} for 1 minute every 10 minutes At start 1.8 x I_{2N} for 2 s
Switching frequency Selectable	Default 4 kHz 4 to 16 kHz with 4 kHz steps
Acceleration time	0.1 to 1800 s
Deceleration time	0.1 to 1800 s
Braking	Built-in brake chopper as standard
Speed control	
Static accuracy	20% of motor nominal slip
Dynamic accuracy	< 1% s with 100% torque step
Torque control	
Torque step rise time	< 10 ms with nominal torque
Non-linearity	± 5% with nominal torque
Environmental limits	
Ambient temperature	-10 to 40 °C (14 to 104 °F), no frost allowed 50 °C (122 °F) with 10% derating
Altitude	Rated current available at 0 to 1000 m. In altitudes from 1000 to 2000 m (3300 to 13,200 ft) above sea level, the derating is 1% for every 100 m (330 ft). If the installation site is higher than 2000 m (6600 ft) above sea level, please contact your local ABB distributor or office for further information.
Relative humidity	Lower than 95% (without condensation)
Degree of protection	IP20/optional NEMA 1/UL type 1 enclosure IP66/IP67/UL Type 4X as an option up to 7.5 kW, IP69K available for IP66/IP67 variant with compatible cable glands
Enclosure colour	NCS 1502-Y, RAL 9002, PMS 420 C
Contamination levels	IEC721-3-3 No conductive dust allowed
Transportation	Class 1C2 (chemical gases) Class 1S2 (solid particles)
Storage	Class 2C2 (chemical gases) Class 2S2 (solid particles)
Operation	Class 3C2 (chemical gases) Class 3S2 (solid particles)

Product compliance	
Low Voltage Directive 2006/95/EC Machinery Directive 2006/42/EC EMC Directive 2004/108/EC Quality assurance system ISO 9001 Environmental system ISO 14001 UL, cUL, CE, C-Tick and GOST R approvals RoHS compliant	
Programmable control connections	
Two analog inputs	
Voltage signal	
Unipolar	0 (2) to 10 V, R_{in} > 312 kΩ
Bipolar	-10 to 10 V, R_{in} > 312 kΩ
Current signal	
Unipolar	0 (4) to 20 mA, R_{in} = 100 Ω
Bipolar	-20 to 20 mA, R_{in} = 100 Ω
Potentiometer reference value	10 V ± 1% max. 10 mA, R < 10 kΩ
Resolution	0.1%
Accuracy	± 2%
One analog output	0 (4) to 20 mA, load < 500 Ω
Auxiliary voltage	24 V DC ± 10%, max. 200 mA
Five digital inputs	12 to 24 V, PNP and NPN, programmable DI5 0 to 16 kHz pulse train
Input impedance	2.4 kΩ
One relay output	
Type	NO + NC
Maximum switching voltage	250 V AC/30 V DC
Maximum switching current	0.5 A/30 V DC; 5 A/230 V AC
Maximum continuous current	2 A rms
One digital output	
Type	Transistor output
Maximum switching voltage	30 V DC
Maximum switching current	100 mA/30 V DC, short circuit protected
Frequency	10 Hz to 16 kHz
Resolution	1 Hz
Accuracy	0.2%
Serial and Ethernet communication	
Fieldbuses Refresh rate	Plug-in type < 10 ms (between drive and fieldbus module)
DeviceNet™	5-pin screw type connector, up to 500 kbit/s baud rate
PROFIBUS DP	9-pin D-connector, up to 12 Mbit/s baud rate
POWERLINK	2 pcs RJ-45 connector, 100 Mbit/s baud rate
ControlNet™	2 pcs 8P8C modular jacks
CANopen®	9-pin D-connector, up to 1 Mbit/s
Modbus RTU	4-pin screw type connector, up to 115 kbit/s baud rate
EtherNet/IP™, Modbus TCP, PROFINET IO	1 RJ45 connector (FENA-01 and -11) or 2 RJ45 connectors (FENA-21). 10/100Mbit/s baud rate
LonWorks®	3-pin screw type connector, up to 78 kbit/s baud rate
EtherCAT®	2 pcs RJ-45 connectors, 100 Mbit/s baud rate
Chokes	
AC input chokes	External option. For reducing THD in partial loads and to comply with EN/IEC 61000-3-12.
AC output chokes	External option. To achieve 2x longer motor cables

For more information please contact your local ABB representative or visit:

abb.com/drives

abb.com/drivespartners

Learn more from ACS355 Website

LOW VOLTAGE AC DRIVES

ABB machinery drives
ACS380, 0.25 to 22 kW

The ACS380 machinery drives are part of ABB's all-compatible drives portfolio. The drives give you consistent performance throughout their whole life cycle. They also offer a wider range of standard and optional features for optimal machine building.

Reliable performance for your application
The ACS380 machinery drive is ideal for machine building thanks to its excellent motor control, long-lasting design and connectivity with all major industrial automation networks. Examples of typical ACS380 applications are mixers, conveyors, extruders, cranes and textile machinery.

Ease of integration
The ACS380 drive has many advanced features built-in as standard. A selection of variants and options allow the drive to be optimized for various fieldbus communication, I/O and EMC requirements. With the integrated functional safety features, the ACS380 drive can be part of the machine's safety system. The drive is easy to adapt for various machines thanks to its good programmability.

Designed to last 10 years or more
Design features including coated circuit boards, minimized airflow through the electronics, and up to 50 °C operating temperature without derating make the ACS380 a safe choice for customers expecting high reliability. This is further enhanced by a full load test that is carried out on every single drive during production.

Technical data

Mains connection	
Voltage and power range	1-phase, 200 to 240 V, +10%/-15% 0.25 to 2.2 kW (1/3 to 3 HP) 3-phase, 380 to 480 V, +10%/-15% 0.25 to 22 kW (1/2 to 30 HP) Built-in brake chopper and common DC connection with internal charging circuit
Frequency	50/60 Hz ±5%
Degree of protection	IP20 as standard (Optional UL type 1 kit)
Operating temperature	-10 to +50 °C (14 to 122 °F) without derating, up to +60 °C (140 °F) with derating (except R0)
Altitude	All variants 0 to 2000 m, derating above 1000 m (3300 ft) 3-phase, 380 to 480 V drives 0 to 4000 m (see manual for usage resctriction at 4000 m), derating above 1000 m (3300 ft)
Compliance	CE, RoHS, UL, cUL, EAC, KC, RCM, TÜV certification (safety functions)
Safety	Safe torque off (STO) acc. to EN/IEC 61800-5-2: IEC 61508 ed2: SIL 3, IEC 61511: SIL 3, IEC 62061: SIL CL 3, EN ISO 13849-1: PL e
EMC	EMC category C1 with an external filter, and EMC categories C2 and C3 with an internal filter, according to EMC Directive 2014/30/EU, EN 61800-3:2004 + A1 2012
User interface	Integrated, icon-based control panel
Drive programming	Adaptive programming
Connectivity variants	
Standard variant connections	Four digital inputs, two digital input/outputs, two analog inputs one analog output, one relay outputs, STO (SIL 3), tool connection (RJ-45), Modbus RTU
Configured variant connections	Two digital inputs, one relay output, STO (SIL 3), tool connection (RJ-45), one selected fieldbus
Control options	
Fieldbus options	FDNA-01 DeviceNet™ FPBA-01 PROFIBUS DP FCAN-01 CANopen® FECA-01 EtherCAT® FEPL-02 Ethernet POWERLINK FEIP-21 Ethernet/IP™ FMBT-21 Modbus/TCP FPNO-21 PROFINET IO BCAN-11 CANopen®
Safety functions module	FSPS-21 PROFIsafe with PROFINET IO
I/O option modules	BTAC-02 Encoder interface with External +24 V DC support BREL-01 External relay option (four relay outputs) BAPO-01 External +24 V DC support BIO-01 I/O Extension module (front option, can be used together with fieldbus) BMIO-01 I/O & Modbus extension (front option)
PC tools and accessories	BCBL-01 USB to RJ-45 data cable Drive composer entry, free download from ABB website Drive composer pro
Control panel options	ACS-AP-S assistant control panel ACS-AP-I assistant control panel ACS-AP-W assistant control panel with Bluetooth interface ACS-BP-S basic control panel

Key features

Excellent motor control
- Support for asynchronous, permanent magnet and synchronous reluctance motors
- Excellent speed and torque control
- Support for encoder feedback (option)

Ease of integration
- Connectivity with all major industrial automation networks
- Safe torque off (STO) is built-in as a standard, and can be controlled via PROFIsafe with an optional module
- Adaptive programming for customizing the drive for a wide range of applications
- Part of ABB all-compatible drives portfolio, all with a similar user interface and PC tools

Designed to last 10 years or more
- Coated circuit boards as standard
- Minimized airflow through the electronics
- Design for up to 50 °C without derating
- All drives tested during production at maximum temperatures with full nominal loads

For more information please contact your local ABB representative or visit:

new.abb.com/drives
new.abb.com/drives/drivespartners

Learn more from the ACS380 website.

LOW VOLTAGE AC DRIVES

ABB machinery drives

ACS880-M04, 0.37 to 45 kW

The ACS880-M04 machinery drive is part of ABB's all compatible drives portfolio. This flexible and high performance drive is designed for machine builders requiring adaptable performance for their machine.

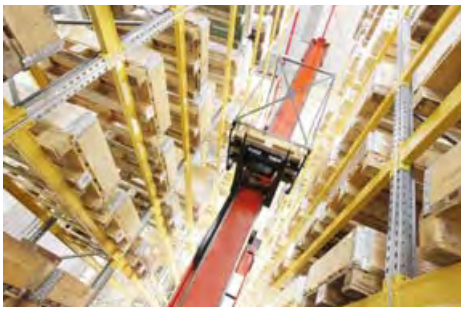
Adaptable performance
ABB's ACS880 machinery drive is designed for machine builders focusing on converting machinery and material handling.

ACS880 machinery drives can control almost any kind of motor in a closed or open loop for torque, speed or position control. Control references can be set via analog and digital inputs or via synchronous real time Ethernet.

General motion control features can be adjusted on a small scale with the embedded adaptive programming. More advanced programming can be done with optional IEC 61131-3 programming.

The standard safe torque off (STO) feature can be utilized with option modules (FSO-12/21) for more advanced functional safety features, including also PROFIsafe.

Easy commissioning and diagnostics
The drive composer PC tool offers an easy way to commission the drive and includes configuration, tuning and monitoring capabilities. Optional intuitive assistant control panels offer service and maintenance people easy access to drive status and settings.



Technical data

Mains connection	
Voltage and power range	3-phase, 200 to 240 V, +/-10%, 0.37 to 22 kW (0.5 to 30 HP) 3-phase, 380 to 500 V, +10%/-15%, 1.1 to 45 kW (1.5 to 60 HP) Built-in braking chopper and common DC connection with internal charging circuit
Frequency	50/60 Hz ±5%
Degree of protection	IP20 as standard (UL open type)
Ambient conditions	-10 to +40 ºC (14 to 104 ºF), up to +55 ºC (131 ºF) with derating 0 to 4000 m, (0 to 13000 ft), derating above 1000 m (3300 ft)
Complaince	CE, RoHS, UL, cUL (pending)
Safety	Safe Torque Off (STO)acc. to EN /IEC61800-5-2: IEC61508 ed2: SIL3, IEC-61511: SIL3, IEC-62061 : SIL CL 3, EN ISO 13849-1:PL e
Optional safety features	Safe stop 1 (SS1), safely-limited speed (SLS), safe stop emergency (SSE), safe brake control (SBC), safe maximum speed (SMS), prevention of unexpected startup (POUS), safe direction (SD) and safe speed monitor (SSM) acc. To EN/IEC 61800-5-2: SIL 3, IEC 61508 ed2: SIL 3, IEC 61511: SIL 3, IEC 62061: SIL CL 3, EN ISO 13849-1: PL e
Optional safety fieldbus	PROFIsafe over PROFINET, certified
EMC Optional	EMC category C2 or EMC category C3, according to EMC Directive 2014/30/EU, EN 61800-3:2004 + A1 2012
Drive programming	Adaptive programming, optional IEC 61131-3 application programming
Control connections	Six digital inputs including thermistor input, 2 digital inputs/outputs, one digital input interlock, two analog inputs, two analog outputs, three relay outputs, Modbus RTU (or drive-to-drive link), STO (SIL 3), External 24V DC support, memory unit connection
Control options	
Fieldbus option	PROFIBUS DP, CANopen®, EtherCAT®, PROFINET IO, Ethernet/IP™, Modbus TCP, DeviceNET™, ControlNet, EtherNet POWERLINK Safety functions module
I/O extension modules	Digital extension FIO-01: Four digital inputs/outputs, two relay outputs Analog extension FIO-11: Three analog inputs, one analog output, two digital inputs/outputs
Feedback modules	HTL pulse encoder, TTL pulse encoder, absolute encoder, resolver
PC tools and accessories	BCBL-01 USB to RJ-45 data cable Drive composer tool entry, available for free via ABB website Drive composer tool pro Automation builder and Drive Manager for single point of commissioning through PROFIBUS and PROFINET networks
Control panel options	ACS-BP-S basic control panel ACS-AP-I assistant control panel ACS-AP-W assistant control panel with Bluetooth interface

Learn it once, use it everywhere

If an application requires more than a machinery drive, the common drives architecture enables scalability to other all-compatible drives in the ABB portfolio, such as the ACS380 machinery drives and ACS880 industrial drives. The drives share the same user interfaces and options, enabling operators to apply the same knowledge gained with the ACS880 machinery drives.

Learn more from the ACS880-M04 website.

For more information please contact your local ABB representative or visit:

new.abb.com/drives

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ABB General Purpose Drives


ABB
Remote
16.8 Hz
Output frequency
Hz
16.78
Motor current
A
5.56
DC voltage
V
550.27
Options
Menu
?
Stop
Loc/Rem
Start
ABB

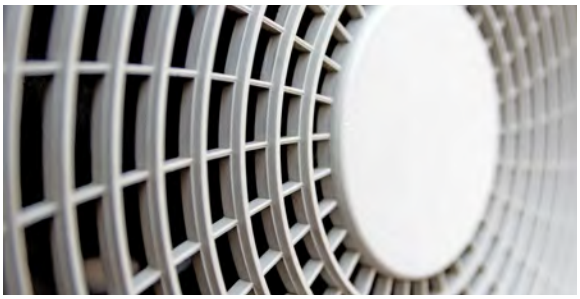
LOW VOLTAGE AC DRIVES

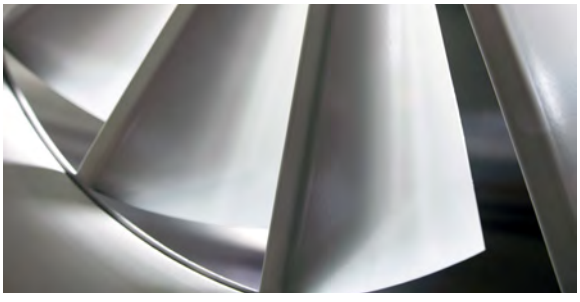
ABB general purpose drives
ACS310, 0.37 to 22 kW/0.5 to 30 Hp

ABB general purpose drives, ACS310, are dedicated to HVAC industry and other variable torque applications such as booster pumps, level control systems, centrifugal fans, and irrigation systems.

Built-in pump and fan features for easier commissioning and operation
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) that varies the drive's performance in response to changes in pressure, flow or other external data. The drives also have pre-programmed application macros and protection functions such as pump cleaning for preventive maintenance. These features together with an intuitive user interface and several assistant screens speed up the installation, parameter setting and commissioning of the drive.

Maximal energy savings throughout your processes
The ACS310 drives provide built-in energy efficiency features. Energy savings can be easily monitored using the built-in energy calculators that display energy savings in kilowatt hours and saved carbon dioxide emissions. The savings can also be displayed in local currencies. In addition, the ACS310 drives feature an energy optimizer and load analyzer functions. The energy optimizer helps improve system's energy efficiency while operating at partial load. The load analyzer provides statistical information on the dimensioning of the drive and motor and further analyzes the process energy efficiency and operation.





Technical data

Mains connection	
Voltage and power connection	1-phase, 200 to 240 V ± 10% 0.37 to 2.2 kW (0.5 to 3 hp)
	3-phase, 200 to 240 V ± 10% 0.37 to 11 kW (0.5 to 15 hp)
	3-phase, 380 to 480 V ± 10% 0.37 to 22 kW (0.5 to 30 hp)
Frequency	48 to 63 Hz
Motor connection	
Motor types	Asynchoronous induction motors
Voltage	3-phase, from 0 to U_{supply}
Frequency	0 to 500 Hz
Overload capacity (at a max. ambient temperature of 40 °C)	I_{LD} stands for a continuous output current at max 50 °C ambient temperature, 10% overloadability for one minute every ten minutes. I_{2N} indicates the maximum continuous output current at 40 °C ambient temperature, no overloadability, derating up to 50 °C 1% for every additional 1 °C.
Switching frequency	4, 8, 12 and 16 kHz (derated)
Type of control	Scalar U/f
	Linear, squared and user definable U/f profiles
	Energy optimizer
Serial communication	
Fieldbus	Embedded fieldbus (Modbus) connection through either RS-232 or EIA-485
	Modbus TCP with SREA-01 option module
Environmental limits	
Degree of protection	IP20 / Optional NEMA 1 enclosure
Ambient temperature	-10 to +40 °C (14 to 104 °F) without derating, +40 to 50 °C (104 to 122 °F) with derating, no frost allowed
Product compliance	
Markings	CE and C-Tick approvals UL, cUL and GOST R RoHS compliant
Directives	Low Voltage Directive 2006/95/EC Machinery Directive 2006/42/EC EMC Directive 2004/108/EC
Harmonics	For reducing THD in partial loads and to comply with EN/IEC 61000-3-12 with external AC input chokes
EMC	Class C3 (2nd environment unrestricted distribution) built-in as standard. Class C2 and C1 with external optional EMC filters.

Highlights

- Pump and fan features such as pump and fan control (PFC and SPFC)
- Pump cleaning and pipe fill functions
- Energy efficiency calculators
- Energy optimizer
- Load analyzer for optimized dimensioning of the drive, motor and process
- Embedded Modbus EIA-485 fieldbus interface
- FlashDrop tool for fast parameter setting
- Unified height and depth
- Full output current at 40 °C ambient
- Short parameter menu view
- Time schedule function

Learn more from ACS310 website

For more information please contact your local ABB representative or visit:

abb.com/drives
abb.com/drivespartners

LOW VOLTAGE AC DRIVES

ABB general purpose drives

ACS560, 0.75 to 160 kW

ACS560 general purpose drives are best fit for all variable and constant torque applications such as industrial pumps, fans, compressors, conveyors, mixers and extruders. It ensures high performance, reliable operation and ease of use resulting in delightful experience for users.

- **High reliability**
  Coated printed circuit boards, optimized air flow design for increased ambient temperature support, built-in protection functions and ABB's long-term reliability tests guarantee consistent operation and longer life.

- **One product, many applications**
  ACS560 is available up to 160 kW, with specifications and features needed for variable torque and constant torque applications, helping customers to select one product family for entire general purpose application needs.

- **Easier than ever before**
  ACS560 drive has built-in essential features that reduces commissioning and setup time. Hindi language and smart menu features in assistant control panels, wireless communication with bluetooth control panel provides superior user experience. Auto configuration of fieldbus and input output modules helps in quick configuration. Application control macros reduces logic development and commissioning efforts.

- **Integrated essentials**
  Built-in brake chopper, safe torque off function, alpha numeric control panel display, default input outputs, integrated conduit plates, EMC filter, Modbus RTU features make it an all integrated solution.

Technical data

Mains Connection	
Voltage and power range	3-phase, U_N 380 to 480 V, +10%/-15% from 0.75 up to 160 kW
Frequency	50/60 Hz ±5%
Power factor	cosϕ = 0.98
Efficiency (at nominal power)	98%
Motor Connection	
Voltage	0 to U_N, 3-phase
Frequency	0 to 500 Hz
Motor control	Scalar and vector control
Speed control	Static accuracy: 20% of motor nominal slip Dynamic accuracy: 1% seconds with 100% torque step
Product compliance	
CE	
Low Voltage Directive 2006/95/EC, EN 61800-5-1: 2007	
Machinery Directive 2006/42/EC, EN 61800-5-2: 2007	
EMC Directive 2004/108/EC, EN 61800-3: 2004 + A1: 2012	
Quality assurance system ISO 9001 and Environmental system ISO 14001	
Waste electrical and electronic equipment directive (WEEE) 2002/96/EC	
RoHS directive 2011/65/EU	
EAC	
EMC according to EN 61800-3: 2004 + A1: 2012	
ACS560 with built-in C3 category filter as standard	
Environmental limits	
Ambient temperature	
Transport	-40 to +70 °C
Storage	-40 to +70 °C
Operation area	-15 to +40 °C no frost allowed R0 to R2 frames: No deration needed up to 50 °C, deration needed above +50 °C to +55 °C R3 to R8 frames: +40 to +55 °C deration needed Refer HW manual for more information
Coating	Coated circuit boards
Cooling method	
Air-cooled	Dry clean air
Altitude	
0 to 1,000 m	Without deration
1,000 to 4,000 m	With deration of 1%/100 m
Relative humidity	5 to 95%, no condensation allowed
Degree of protection	IP20
Functional safety	Safe torque off (STO according EN 61800-5-2) IEC 61508 ed2: SIL 3, IEC 61511: SIL 3, IEC 62061: SIL CL 3, EN ISO 13849-1: PL e
Contamination levels	No conductive dust allowed
Storage	IEC 60721-3-1, Class 1C2 (chemical gases), Class 1S2 (solid particles)*
Operation	IEC 60721-3-3, Class 3C2 (chemical gases), Class 3S2 (solid particles)*
Transportation	IEC 60721-3-2, Class 2C2 (chemical gases), Class 2S2 (solid particles)*

* C = chemically active substances S = mechanically active substances

- **Engineered in India for India**
  Specially engineered application macros for plastic extrusion, pharma segments, textiles and always demanding PFC, SPFC, PID control macros. Cleverly designed input filter, output filter and brake resistors.
- **Operate in Hindi language**
  Control panel information display and user documentation in Hindi, first-of-its-kind feature in India for Drives.
- **Energy saving**
  The built-in energy optimizer and energy efficiency information help to save energy and monitor consumption in the processes and reduce CO2 emissions.
- **Plastic extrusion application macro with screw rpm indication and supervision**
  Plastic extrusion macro has pre-configured parameters, which enables quick commissioning
- **Pharma application macro with integrated brake chopper and brake resistor package**
  Pharma application macro has pre-configured parameters to commission pharma reactor equipment by changing only one parameter
- **Cooling fan control mode**
- **Fieldbus auto configuration and Fieldbus macro**
- **User load curve with multi point load limits**
- **Motor pot up and down time & inching**

For more information please contact your local ABB representative or visit:

abb.com/drives
abb.com/drivespartners

Learn more from ACS560 website

LOW VOLTAGE AC DRIVES

ABB general purpose drives
ACS580, 0.75 to 500 kW

Designed to simplify drive selection, set up, operation and maintenance, the ACS580 general purpose drives conquer more applications in more industries without the head scratching complexities.

- **One product, many applications**
  The drive includes all the essential components for typical light industry applications. The ACS580 is ready to control compressors, conveyors, mixers, chippers, extruders, as well as many other variable and costant torque applications.

- **Reliability and constant high quality**
  ACS580 drives are designed for customers who value high quality and robustness in their applications. Coated control boards, high enclosure classes, and motor temperature monitoring along with supervision and other protection functions ensure your processes will run smoothly – even in harsh conditions. In addition, all the drives are tested during production at maximum temperature and with nominal loads. We make sure the drives perform as they should so you do not need to worry about it.

- **Easier than ever before**
  ACS580 drives have all the essential features built-in, reducing commissioning and setup time. The assistant control panel with a broad set of languages is standard for ACS580 drives. It can be also upgrade to an optional Bluetooth® control panel for wireless commissioning and monitoring. Primary settings and control macros ensure quick setup and the help button on the control panel offers instant advice in unclear situations.

- **Instant availability**
  ACS580 products are available from central stocks around the world for immediate delivery up to 500 kW. The product is also widely available from ABB distributors globally.

Technical data

Voltage and power range	3-phase, 380 to 480 V, +10%/-15% **ACS580-01**: from 0.75 to 250 kW **ACS580-04**: from 250 to 500 kW **ACS580-07**: from 75 to 500 kW
Frequency	50/60 Hz ±5%
Mains choke	As standard, built-in second generation swinging choke
Degree of protection	**ACS580-01**: IP21 as standard, IP55 as option **ACS580-04**: IP00 as standard, IP20 as option **ACS580-07**: IP21 as standard, IP42 and IP54 as option
Ambient conditions	**ACS580-01**: -15 to +50 °C • No frost allowed • From +40 to +50 °C with derating 1% per 1 °C **ACS580-04**: -15 to +55 °C • No frost allowed • From +40 to +55 °C with derating 1% per 1 °C **ACS580-07**: 0 to +50 °C • No frost allowed • From +40 °C to +50 °C with derating 1% per 1°C
Compliance	**ACS580-01**: • CE, TÜV Nord (safety functions), UL, EAC, RCM, UL, cUL **ACS580-04**: • CE, TÜV Nord (safety functions), EAC **ACS580-07**: • CE, cUL, EAC, RCM
Safety functions	Safe torque off (STO) according to EN/IEC 61800-5-2, SIL 3, PL e (TÜV Nord certified)
EMC	According to EMC Directive 2014/30/EU, EN 61800-3:2004 + A1 2012. **ACS580-01**: Class C2 as standard **ACS580-04**: Class C3 as standard **ACS580-07**: Class C2 or C3 as standard (depends on the frame size)
Harmonic mitigation	According to EN 61000-3-12: 2011
Control connections	Two analog inputs, two analog outputs, six digital inputs, three relay outputs, EIA-485 Modbus RTU, safe torque off (STO), USB via control panel
Control and communication options	
Fieldbus adapters	PROFIBUS DP, CANopen®, DeviceNet™, EtherNet/IP™, Modbus TCP, PROFINET IO, EtherCAT®, POWERLINK, ControlNet
Optional I/O extension modules	**CMOD-01**: External +24 V AC/DC • Two relay outputs • One digital output **CMOD-02**: External +24 V AC/DC and isolated PTC input **CHDI-01**: 115/230 V AC digital input • Six digital inputs • Two relays **CPTC-02**: ATEX-certified PTC interface and external +24 V **CBAI-01**: Bipolar I/O extension • Two bipolar analog inputs and two unipolar outputs
PC tools	Drive composer tool entry, available for free via ABB website Drive composer tool pro
Control panel options	ACS-AP-I, assistant control panel ACS-AP-W, control panel with Bluetooth interface ACS-BP-S, basic control panel

Simple. Connected. All-compatible.

Essential features inside
- Integrated safe torque off (STO)
- Removable Modbus RTU terminal
- Two option slots, one for a fieldbus adapter and one for an I/O extension
- External +24 V AC/DC
- USB interface for PC tool connection
- Optimized DC choke
- Integrated EMC filter

Get started, without the hassle
- Optional Bluetooth assistant control panel for controlling the drive up to 75 meters and out of the arc flash boundary
- Connection to all major industrial automation systems via plug-in fieldbus and Ethernet adapters
- USB port for transferring information between PC and drive
- Optional remote monitoring module for configuring the drive parameters, and monitoring various data such as load levels, runtime, energy consumption, I/O data, and bearing temperatures of the motor
- Free DriveComposer software to program and monitor drive performance

Learn it once, use it everywhere
- Common drives architecture enables a smooth transition to other all-compatible drives in the ABB portfolio, such as the ACS480 or ACS880
- The drives share the same user interfaces and options, enabling users to use the knowledge gained with the ACS580 drives

There is more to this drive

A wide power range includes drives for wallmounting, drive modules, and cabinet-built drives.

Adaptive programming for customizing the drive for the application, without any previous programming knowledge.

Motor control capabilities include asynchronous motors, permanent magnet motors and synchronous reluctance motors.

For more information please contact your local ABB representative or visit:

abb.com/ACS580
abb.com/drives
abb.com/drivespartners

Learn more from ACS580 website

LOW VOLTAGE AC DRIVES

ABB Packaged Drives

ACS580 /ACH580 /ACQ580, 0.75 to 160 kW

Package drives (PDR) are designed to simplify drive selection, set up, operation and maintenance, all PDR drives brings you ease of use, scalability, quality and IP21/IP55 protection to address variety of environments.

Packaged drives (PDR)

Packaged drive includes a ACx580* drive with input disconnect switch and fast acting fuses which are IEC60947-3 / IEC60269 complied. It is available from 0.75 to 160kW, 380-480V range. PDR provides a door-mounted input disconnect switch (pad lockable in the OFF position), electronic motor overload protection, a door-mounted control panel with graphical display for local control, provisions for external control connections, and serial communications capability.

One product, many applications

PDR drive includes all the essential components for HVAC, water, conveyors, mixers, chippers, extruders, as well as many other variable and constant torque applications.

Smaller footprint

The footprint of the PDR is significantly smaller when compared to similar horsepower ratings with cabinet assembly.

Reliability and constant high quality

ACx580 drives are designed for customers who value high quality and robustness in their applications. Coated control boards, high enclosure classes, and motor temperature monitoring along with supervision and other protection functions ensure your processes will run smoothly even in harsh conditions. In addition, all the drives are tested during production at maximum temperature and with nominal loads. We make sure the drives perform as they should so you do not need to worry about it.

* x: **S** for Standard drive / **H** for HVAC and **Q** for Water segment specific drive variants.

Technical data

Voltage and power range	3-phase, 380 to 480 V, +10%/-15% ACS580-PDR : from 0.75 to 160 kW ACH580-PDR : from 0.75 to 160 kW ACQ580-PDR : from 0.75 to 160 kW
Frequency	50/60 Hz ±5%
Mains choke	As Standard, built-in choke
Degree of protection	ACS580-PDR: IP21 or IP55 ACH580-PDR: IP21 or IP55 ACQ580-PDR: IP21 or IP55
Ambient conditions	-15 to +50 °C • No frost allowed • From +40 to +50 °C with derating 1% per 1 °C
Compliance*	CE Low Voltage Directive 2014/34/EU, EN 61800-5-1: 2007 Machinery Directive 2006/42/EC, EN 61800-5-2: 2007 EMC Directive 2014/30/EU, EN 61800-3: 2004 + A1: 2012 RoHS directive 2011/65/EU Quality assurance system ISO 9001 and Environmental system ISO 14001 Waste electrical and electronic equipment directive (WEEE) 2002/96/EC UL, EAC, RCM, UL, cUL TÜV Nord (safety functions)
Safety functions	Safe torque off (STO) according to EN/IEC 61800-5-2, SIL 3, PL e (TÜV Nord certified)
EMC	According to EMC Directive 2014/30/EU, EN 61800-3:2004 + A1 2012. ACS580-PDR: Class C2 as standard ACH580-PDR: Class C2 as standard ACQ580-PDR: Class C2 as standard
Harmonic mitigation	According to EN 61000-3-12: 2011
Control connections	Two analog inputs, two analog outputs, six digital inputs, three relay outputs, safe torque off (STO), USB via control panel
Control and communication options	
Fieldbus adapters	PROFIBUS DP, CANopen®, DeviceNet™, EtherNet/IP™, Modbus TCP, PROFINET IO, EtherCAT®, POWERLINK, ControlNet
Optional I/O extension modules	CMOD-01: External +24 V AC/DC • Two relay outputs • One digital output CMOD-02: External +24 V AC/DC and isolated PTC input CHDI-01: 115/230 V AC digital input • Six digital inputs • Two relays CPTC-02: ATEX-certified PTC interface and external +24 V CBAI-01: Bipolar I/O extension • Two bipolar analog inputs and two unipolar outputs
PC tools	Drive composer tool entry, available for free via ABB website Drive composer tool pro
Control panel options	ACS-AP-I, assistant control panel ACS-AP-W, control panel with Bluetooth interface ACS-BP-S, basic control panel

* Only Varilable Frequency Drive Module

Easier than ever before

ACx580 drives have all the essential features built-in, reducing commissioning and setup time. The assistant control panel with a broad set of languages is standard for ACx580 drives. It can be also upgrade to an optional Bluetooth® control panel for wireless commissioning and monitoring. Primary settings and control macros ensure quick setup and the help button on the control panel offers instant advice in unclear situations.

ACS580-PDR Essential features inside

- Integrated safe torque off (STO)
- Removable Modbus RTU terminal
- Two option slots, one for a fieldbus adapter and one for I/O extension
- External +24 V AC/DC
- USB interface for PC tool connection
- Optimized DC choke
- Integrated EMC filter

ACH580-PDR Essential features inside

- 5 PIDs to control HVAC processes
- Control panel with graphical display
- Advanced motor control for asynchronous, permanent magnet and synchronous reluctance motors
- BACnet MS/TP, Modbus RTU and N2 as standard
- Multi fan/-pump/-compressor control for up to 8 units
- Safe torque off (STO) SIL 3/PL e
- Fireman's override
- Intelligent Pump Control

ACQ580-PDR Essential features inside

- Intelligent multi-pump control
- Sensorless flow calculation
- Level control
- Soft pipe fill
- Quick ramps
- Pump cleaning
- Dry pump protection

For more information please contact your local ABB representative or visit:

abb.com/drives

abb.com/drivespartners

Learn more from ACS580 website

ABB Industry Specific Drives


BARCLAYS
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LINGSGATE MARKET

LOW VOLTAGE AC DRIVES

ABB drives for HVAC

ACH531, 0.75 to 75 kW

ACH531 is an industry specific drive for HVAC. The installation and commissioning are very simple and convenient. With the safe and reliable performance, complete configurations as well as the powerful quality assurance, technical support and services provided by ABB, it is a reliable choice for your equipment such as various fans, pumps and compressors.

Powerful industry specific software for HVAC
Product features, such as coated boards, earth fault protection, undervoltage or overcurrent control, ensure process reliability. Every drive is factor tested, verifying its performance and all protective functions.Designed based on the HVAC applications, the product has richer functions and more detailed control schemes for single pump and multiple pumps of water supply and circulating, so as to ensure convenient commissioning and reliable use. It has a variety of specific macros and rich PID controls, which can easily realize multi-pump control and automatic switching.

Safe and Reliable
Featuring enhanced coated circuit board, minimized airflow through control board area, grounding fault protection and 50 °C designed ambient temperature, etc., ACH531 has become a reliable choice for customers. The features are guaranteed by the full load test of each drive during the production. Built-in STO (Safe Torque Off) function ensures the mechanical safety.

Effortless installation, commissioning and operation
While built-in features significantly reduce installation time, the intuitive control panel with an HVAC-specific menu and help assistants make startup, commissioning and operation easy. An optional Bluetooth® capability enables drive commissioning and monitoring from a distance.

Technical data

Power Connection	
Voltage and power range	3-phase, U_N 380 to 480 V, +10/-15%, 0.75 kW to 75 kW
Frequency	50/60 Hz ±5%
Power factor	cosϕ = 0.98
Motor Control	
Motor Frequency	0-500 Hz
Motor Control	Scalar control, Vector Control
Environmental Limits	
Ambient conditions	Transport : -40 to +70 °C Storage : -40 to +70 °C Operational : -15 to +40°C without derating +40°C to +50°C with derating , no frosting is allowed
Degree of protection	IP20
Altitude	0 - 1000 m : Without derating 1000 - 4000 m : Derating 1%/ 100 m
Compliance	CE Low voltage standard 2006/95/EC, EN 61800-5-1: 2007 Machinery Standard 2006/42/EC, EN 61800-5-2: 2007 EMC standard 2004/108/EC, EN 61800-3: 2004 + A1: 2012 RoHS standard 2011/65/EU Quality Assurance System ISO 9001 Environmental System ISO 14001 Waste Electrical and Electronic Equipment (WEEE) 2002/96/EC EAC
Functional safety	Safe torque off (STO, meet EN 61800-5-2) IEC 61508 ed2: SIL 3, IEC 61511: SIL 3, IEC 62061: SIL CL 3, EN ISO 13849-1: PL e
EMC	EMC according to EN 61800-3: 2004 + A1: 2012
Humidity	5 to 95%, no condensation allowed
Control and communication options	
Control connections	6 Digital Input, 3 Relay output, 2 Analog Inputs, 2 Analog Outputs 1 ModbusRTU, BACnet MSTP, IPC, N2, GP1. 1 STO
Fieldbus adapters	PROFIBUS DP, PROFINET, Etherner/IP, Modbus TCP, EtherCAT, ControlNet, DeviceNet, CANopen
Control panel options	ACH-AP-H, assistant control panel as standard ACH-AP-W, Bluetooth assistant control panel DPMP-01, panel flush mounting kit DPMP-02, panel surface mounting kit RDUM-01, Control panel connector conversion tool DPMP-EXT2, Cabinet door installation kit (including a DPMP-02 and a RDUM-01)

Simplify operations while ensuring efficiency

Essential features inside
- ICON Based operator panel
- ACH-AP-H Hand off control panel (optional)
- Pump-control macros
- Override function
- Energy Efficiency calculation
- PID Macros
- PID Sleep function
- Multi Pump Control
- Flux Optimization
- Motor Potentiometer

Get started easily
- Quick access to terminals for drive cabling and wiring
- Side-by-side mounting for wall-installed units
- Integrated PID controls, relays, timers, and supervision functions eliminate the need for external PLCs
- Intuitive user interface making drive start-up, operation and diagnostics effortless
- Ready-made HVAC assistants for pumps, fans, or compressors for shorter commissioning time
- Support for the most common communication protocols
- Free Drive composer software for drive commissioning and monitoring

Learn it once, use it everywhere
- Adaptive programing
- ACH531 drives in the standard configuration share same I/O terminals, fieldbus options, control logic and user interface
- The common drives' architecture lets apply the knowledge gained with one ABB drive to others, enabling a smooth transition between drives from ABB.

For more information please contact your local ABB representative or visit:

new.abb.com/drives

new.abb.com/drives/drivespartners

Learn more from ACH531 website

LOW VOLTAGE AC DRIVES

ABB drives for HVAC

ACH580, 0.75 to 500 kW

ACH580 drives set new standards in both simplicity and reliability, ensuring smooth, energy-efficient operation of your HVAC systems in normal and mission-critical situations.

- **Complete HVAC functionality in a scalable package**
  ACH580 drives offer a complete HVAC functionality for controlling fans, pumps and compressors as well as complex equipment like air-handling units and chillers. All this comes with a great scalability in terms of power range, ingress protection, construction and harmonics performance.

- **Effortless installation, commissioning and operation**
  While built-in features significantly reduce installation time, the intuitive control panel with an HVAC-specific menu and help assistants make startup, commissioning and operation easy. An optional Bluetooth® capability enables drive commissioning and monitoring from a distance.

- **Reliability and quality**
  Product features, such as coated boards, earth fault protection, undervoltage or overcurrent control, ensure process reliability. Every drive is factory tested, verifying its performance and all protective functions.

- **Instant availability**
  ACH580-01 wall-mounted drives are widely available from ABB-authorized partners and distributors, and ABB's central and regional stocks for immediate delivery.

Technical data

Voltage and power range	3-phase, U_N 380 to 480 V, +10/-15% ACH580-01: from 0.75 to 250 kW ACH580-04: from 250 to 500 kW ACH580-31: from 4 to 110 kW ACH580-34: from 132 to 355 kW 3-phase, U_N 208 to 240 V, +10/-15% ACH580-01: from 0.75 to 75 kW 1-phase, U_N 208 to 240 V, +10/-15% ACH580-01: from 0.37 to 37 kW
Frequency	48 Hz to 63 Hz
Power factor	ACH580-01, ACH580-04 and ACH580-07: 0.98 ACH580-31 and ACH580-34: 1.0
Degree of protection	ACH580-01, ACH580-31: IP21 (UL Type 1) or IP55 (UL Type 12) ACH580-04, ACH580-34: IP00, IP20
Ambient conditions	ACH580-01, ACH580-31 and ACH580-34: -15 to +50 °C ACH580-04: -15 to +55 °C
Compliance	CE EAC UL, cUL Low Voltage Directive 2014/34/EU, EN 61800-5-1: 2007 Machinery Directive 2006/42/EC, EN 61800-5-2: 2016 EMC Directive 2014/30/EU, EN 61800-3: 2004 + A1: 2012 RoHS directive 2011/65/EU TÜV certification for functional safety
Functional safety	STO according to EN 61800-5-2: 2016, IEC 61508 Parts 1-2: 2010, ISO 13849-1: 2015, ISO 13849-2: 2012, IEC 62061: 2015 SIL 3/PL e
EMC	EMC according to EN 61800-3: 2004 + A1: 2012 Class C2 as standard for ACH580-01, ACH580-31 Class C1 with built-in filter as option for ACH580-01 up to 55 kW
Harmonics	Compliance with IEC 61000-3-12: 2011 For ACH580-31 and ACH580-34, harmonics are below the limits set by IEEE519-2014 and G5/4 *)
Control connections	Standard I/O configuration: 2 analog inputs, 2 analog outputs, 6 digital inputs (DI5 digital or frequency input), 3 relay outputs, EIA-485 (BACnet MS/TP, Modbus RTU, N2), 1 voltage output 24 V DC, 1 reference voltage 10 V DC, Safe torque off (SIL 3/PL e), 1 external voltage input 24 V AC/DC to power up the control unit (in ACH580-01 75 to 250 kW and all ACH580-31) I/O extension module CMOD-01: 1 external 24 V DC/AC, 1 digital output, 2 relay outputs I/O extension module CMOD-02: 1 external 24 V DC/AC, 1 isolated PTC interface with capability to trigger STO I/O extension module CHDI-01: 6 115/230V AC digital inputs, 2 relay outputs
Control and communication options	
Fieldbus adapters	BACnet/IP, Modbus/TCP, PROFIBUS DP, PROFINET, DeviceNet, EtherNet/IP, EtherNet POWERLINK as internal options Ethernet adapter for remote monitoring as external option
PC tools	Drive composer entry available for free via ABB website Drive composer pro
Control panel options	ACH-AP-H, assistant control panel as standard ACH-AP-W, Bluetooth assistant control panel CDPI-01, panel bus adapter for remote panel mounting and to chain the control panel to several drives DPMP-01, panel flush mounting kit DPMP-02/03, panel surface mounting kit DPMP-04/05, panel surface mounting kit for outdoor environment

*) IEEE519 and G5/4 specify harmonic limits for the entire system and not the drive itself. Check that the full system is compliant, including other loads.

Scalability. Broad functionality. Easiness.

Essential features inside

- 5 PIDs to control HVAC processes
- Control panel with graphical display
- Advanced motor control for asynchronous, permanent magnet and synchronous reluctance motors
- BACnet MS/TP, Modbus RTU and N2 as standard
- Multi fan/-pump/-compressor control for up to 8 units
- Safe torque off (STO) SIL 3/PL e
- Fireman's override

Get started easily

- Quick access to terminals for drive cabling and wiring
- Side-by-side mounting for wall-installed units
- Integrated PID controls, relays, timers, and supervision functions eliminate the need for external PLCs
- Intuitive user interface making drive start-up, operation and diagnostics effortless
- Ready-made HVAC assistants for pumps, fans, or compressors for shorter commissioning time
- Support for the most common communication protocols
- Free Drive composer software for drive commissioning and monitoring
- Adaptive programming for customizing the drive without any previous programming knowledge

Learn it once, use it everywhere

- ACH580 drives in the standard configuration share same I/O terminals, fieldbus options, control logic and user interface
- The common drives' architecture lets apply the knowledge gained with one ABB drive to others, enabling a smooth transition between drives from ABB all-compatible portfolio

Benefits of ACH580-31/34 ultra-low harmonic drives

Poor power factor and harmonics in electrical systems can negatively affect connected equipment and cause energy losses and electrical system failures.

All-in-one concept
ABB's HVAC ultra-low harmonic (ULH) drives have a built-in active front end reducing THDi to a level below 3%, so there is no need for external filters, which increase installation complexity and space.

Secured operation of a power network
ACH580 ULH drives minimize harmonics and keep the power factor equal to 1.0 so that sensitive equipment stays running.

Saving capital and operating costs
ACH580 ULH greatly reduces the cost of a project eliminating the need for oversized transformers, generators, cables and other equipment. Power factor unity helps to avoid penalties for reactive power from utilities.

For more information please contact your local ABB representative or visit:

new.abb.com/drives
new.abb.com/drives/drivespartners

Learn more from ACH580 website

LOW VOLTAGE AC DRIVES

Drives for water and wastewater
ACQ580, 0.75 to 500 kW

The ACQ580 drive for water is part of ABB's all-compatible drives portfolio. This robust, compact and energy efficient drive is designed for securing the flow of water and wastewater in your pumping system.

- **Lowers your energy bill**
  The drive ensures low energy consumption and optimal motor control when pumping water. It has the built-in energy optimizer control mode to ensure maximum torque per ampere, reducing energy drawn from the supply. The built-in energy calculators help the user monitor and fine-tune processes to ensure optimal energy use. The drive also offers different levels of harmonic mitigation, to keep the power network in a water utility clean and stable.

- **Speaks your pump's language**
  The drive offers built-in water application functionalities for optimal operation of the pumps. These include intelligent multi-pump control, sensorless flow calculation, soft pipe fill, pump protection and cleaning functions. Usability is enhanced with the intuitive Hand-Off-Auto control panel including optional Bluetooth functionality for wireless access to the drive.

- **A robust and reliable performer**
  With coated boards and enclosure class up to IP55, the drive requires less space as there is no need to install it into cabinets. The drive also shares the same user interfaces and options, found in other ABB all-compatible drives.

Technical data

Power range	**ACQ580-01**	0.75 to 250 kW (frame sizes R1 to R9)
	ACQ580-04	250 to 500 kW (frame sizes R10 to R11)
	ACQ580-31	4 to 110 kW (frame sizes R3, R6 and R8)
	ACQ580-34	132 to 355 kW (frame size R11)
Voltage range		3-phase, U_N = 200 to 240 V, +10%/-15% 3-phase, U_N = 380 to 480 V, +10%/-15%
Frequency		50/60 Hz ±5%
Degree of protection	**ACQ580-01/-31**	IP21 as standard and IP55 as an option
	ACQ580-04/-34	IP00 as standard and IP20 as an option
Ambient conditions	**ACQ580-01/-31**	-15°C to 50°C. No frost allowed. From +40 °C to +50 °C with derating 1% per 1 °C.
	ACQ580-04/-34	-15 °C to 55 °C. No frost allowed. From +40 °C to +55 °C with derating 1% per 1 °C.
Safety functions (TÜV Nord certified)		Safe torque off (STO) according to EN/IEC 61800-5-2, SIL 3, PL e
EMC		According to EMC directive 2014/30/EU, EN 61800-3:2004 + A1 2012
	ACQ580-01/-31	Class C2 as standard
	ACQ580-04/-34	Class C3 as standard
Harmonic mitigation		Built-in swinging choke as standard in ACQ580-01 meets the requirements of IEC 61000-3-12: 2011. ACQ580-31 and ACQ580-34 in addition meets the requirements of IEEE519 and G5/4.
Control connections		2 analog inputs, 2 analog outputs, 6 digital inputs including thermistor input, 3 relay outputs, EIA-485 Modbus RTU, safe torque off (STO), external 24 V DC supply input, USB via control panel
Optional I/O extension modules		**CMOD-01:** External 24 V DC/AC and digital I/O extension (2 x relay output and 1 x digital output) **CMOD-02:** External 24 V and isolated PTC interface **CHDI-01:** 6 115/230V AC digital inputs and 2 relay outputs
PC tools		Drive composer tool entry, available for free via ABB website Drive composer tool pro
Control panel options		Hand-Off-Auto control panel (ACH-AP-H) as standard delivery. Hand-Off-Auto control panel with bluetooth (ACH-AP-W) Assistant control panel (ACS-AP-I).

- **Suitable for water industry applications like:** pumps, fans, blowers and mixers
- **For various installation needs:**
  - Wall-mounted drives ACQ580-01/-31
  - Drive modules ACQ580-04/-34
  - Cabinet-built drives ACQ580-07
- **For harsh environments** up to IP55
- **Connects virtually to any kind of motor** From induction and permanent magnet motors to synchronous reluctance motors
- **Offers built-in pump functionalities**
  - Intelligent multi-pump control
  - Sensorless flow calculation
  - Level control
  - Soft pipe fill
  - Quick ramps
  - Pump cleaning
  - Dry pump protection
- **Harmonic mitigation without the need for** external filters or multi-pulse transformers

There is more to this drive

Programmable
The drive can be commissioned and programmed via the standard control panel or with the Drive composer PC tool.

If extra features are required, adaptive programming provides an easy way to add the functionality.

Learn it once, use it everywhere
Enables a smooth transition to other all-compatible drives in the ABB portfolio,

For more information please contact your local ABB representative or visit:

abb.com/drives
abb.com/drivespartners
abb.com/water

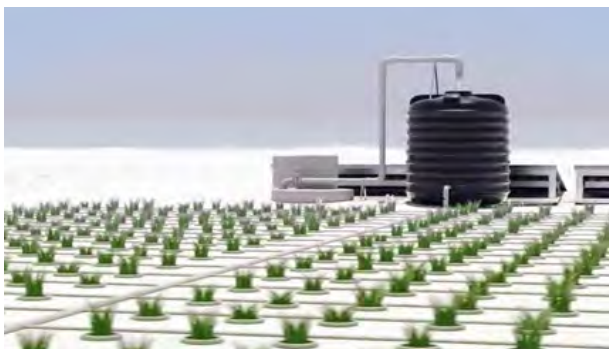
Learn more from ACQ580 website

LOW VOLTAGE AC DRIVES

Drives for Solar Pump

ACQ80, 0.75 to 22 kW

ABB ACQ80 solar pump drive is an innovative solution that uses solar power as a clean energy source for pumping water.



ACQ80-04
All-compatible ACQ80 solar pump drives enhance the methodology of water pumping by putting the sun to work for all water pumping needs. From dawn to dusk, the drive operates without energy costs easily and safely, keeping CO_2 emissions to a minimum.

Support for multiple pump motor types
The drive has the ability to control standard asynchronous pump motors, as well as more efficient permanent magnet pump motors.

Built-in MPPT
The maximum power point tracking functionality ensures that you get the most power output possible from your solar panel and maximizes the performance of your pump throughout the day.

Best on-grid and off-grid solution
To get maximum water flow throughout the day and reduce grid power consumption, both grid and PV can be connected. For places where electricity is unpredictable, users need not depend on grid electricity for their water pumping equipments. Water pumping can be done via a PV power source as an off-grid solution.

Technical data

Mains connection	
Voltage and power range	AC: 3-phase, 380 to 480 V, +10%/-15% DC: 225 to 800 V from 0.75 to 22 kW
Frequency	DC and AC from 47.5 to 63 Hz
Motor connection	
Voltage	0 to U_N, 3-phase
Frequency	0 to 599 Hz
Motor control	Scalar and vector control
Speed control	Static accuracy: 20% of motor nominal slip Dynamic accuracy: 1 %s with 100% torque step
Product compliance	
	CE Low Voltage Directive 2014/34/EU, EN 61800-5-1: 2007 Machinery Directive 2006/42/EC, EN 61800-5-2: 2007 EMC Directive 2014/30/EU, EN 61800-3: 2004 + A1: 2012 RoHS directive 2011/65/EU Quality assurance system ISO 9001 Environmental system ISO 14001 Waste electrical and electronic equipment directive (WEEE) 2002/96/EC RoHS directive 2011/65/EU TÜV certification for functional safety
EMC according to EN 61800-3: 2004 + A1: 2012	
	ACQ80 cabinet-mounted drive with built-in C2 category filter as standard
Environmental limits	
Ambient temperature	
Transport Storage	-40 to +70 °C -40 to +70 °C
Operation area	-10 to +50 °C no derating required, no frost allowed +50 °C - +60 °C with derating
Cooling method Air-cooled	Dry clean air
Altitude 0 to 1,000 m 1,000 to 2,000 m Above 2,000 m	 Without derating With derating of 1%/100 m For information on the correct derating values, contact your local ABB representative.
Relative humidity	5 to 95%, no condensation allowed
Degree of protection	IP20
Functional safety	Safe torque off (STO according EN 61800-5-2) IEC 61508 ed2: SIL 3. IEC 61511: SIL 3. IEC 62061: SIL CL 3. EN ISO 13849-1: PL e
Contamination levels	No conductive dust allowed
Storage	IEC 60721-3-1. Class 1C2 (chemical gases). Class 1S2 (solid particles) *)
Transportation	IEC 60721-3-2. Class 2C2 (chemical gases) Class 2S2 (solid particles) *)
Operation	IEC 60721-3-3. Class 3C2 (chemical gases). Class 3S2 (solid particles) *)

*) C = chemically active substances
S = mechanically active substances

- **Control panel** features intuitive use and easy navigation. Control panel with Bluetooth functionality connected to the Drivetune mobile App provides easy and fast access to product information and support without opening the drive cabinet.
- **Multiple operating modes** ensure water saving and optimal control of the pumping, based on the need and application: the solar radiation intensity, the desired time on any day of a week, manually with external push buttons, remote cellular-based control or based on the tank level.
- **Pump cleaning keeps** the pump's impeller clean by running a sequence of aggressive ramps between minimum and maximum pump speed.
- **PID/Loop Control** to maintain Static pressure or flow without adding external controllers.
- **The flow calculation function** measures the amount of water flowing without the need for external sensors, based on the pump characteristics data or the pulse count.
- **Dry run protection** prevents the pump from running dry. If there is no water in the pump, released heat can damage the pump over time, limiting its lifetime.
- **The programmable protection functions** generates warnings and faults based on external signals or internal monitoring for extended safety, reliability and an extended lifetime.

For more information please contact your local ABB representative or visit:

abb.com/drives

abb.com/drivespartners

new.abb.com/drives/ACQ80-solar-pump

Learn more from ACQ80 website

ABB Industrial Drives


Bluetooth
Local
ACS880
1400.0 Rpm
Motor speed
Rpm
1400.0
Motor current
A
28.8
Flow rate
m³/s
10.9
Options
07:38
Menu
?
Stop
Loc/Rem
Start
ABB

LOW VOLTAGE AC DRIVES

ABB industrial drives

ACS880, Drive Modules , 0.55 to 6000 kW

The AC880 is an all-compatible ABB industrial drive, offered in a range of wall-mounted drives, drive modules and cabinet-built drives.

- **Reliability and consistent high quality**
  ACS880 drives are designed for customers who value high quality and robustness in their applications. They have features such as coated boards and high enclosure classes, making the ACS880 suitable for harsh conditions. Additionally, every ACS880 drive is factory-tested at full load to ensure maximum reliability. The tests include performance and all protective functions.

- **High performance, safety and configurability**
  The ACS880 offers the highest level of performance. The drives are equipped with ABB's signature direct torque control (DTC), which provides precise speed and torque control for all applications and supports virtually any type of motor.

- Extensive ACS880 offering includes wall-mounted drives, drive modules and cabinet-built drives, as well as low harmonic and regenerative variants.

- The ACS880 has all the essential features built-in reducing the time required for engineering, installation and commissioning. A wide range of options are also available to optimize the drive for different requirements, including certified, integrated safety features.

Technical data

Mains connection	
Voltage and power range	3-phase, U_{N2} 208 to 240 V, +10%/-15% (-01) 3-phase, U_{N3} 380 to 415 V, +10%/-15% (-01, -11, -31), ±10% (-07,-17-37) 3-phase, U_{N5} 380 to 500 V, +10%/-15% (-01, -11, -31), ±10% (-07,-17-37) 3-phase, U_{N7} 525 to 690 V, +10%/-15% (-01), ±10% (-07,-17,-37, -07CLC, -17/37LC) 0.55 to 250 kW (-01) 2.2 to 110 kW (-11, -31) 45 to 2800 kW (-07) 45 to 3200 kW (-17, -37) 250 to 6000 kW (-07CLC, -17/37LC)
Frequency	50/60 Hz ±5%
Power factor	
ACS880-01, -07, -07CLC	cosφ = 0.98 (fundamental) cosφ = 0.93 to 0.95 (total)
ACS880-11, -31, -17, -37, -17/37LC	cosφ = 1 (fundamental)
Efficiency (at nominal power)	ACS880-01, -07, -07CLC, -17/37LC: 98% ACS880-11, -31, -17, -37: 97%
Motor connection	
Voltage	3-phase output voltage 0 to U_{N2} / U_{N3} / U_{N5} / U_{N7}
Frequency	0 to ±598 Hz [1) 2)]
Motor control	Direct torque control (DTC)
Torque control	Torque step rise time:
Open loop	<5 ms with nominal torque
Closed loop	<5 ms with nominal torque
	Non-linearity:
Open loop	± 4% with nominal torque
Closed loop	± 3% with nominal torque
Speed control	Static accuracy:
Open loop	10% of motor nominal slip
Closed loop	0.01% of nominal speed
	Dynamic accuracy:
Open loop	0.3 to 0.4% seconds with 100% torque step
Closed loop	0.1 to 0.2% seconds with 100% torque step

Product compliance
CE Low Voltage Directive 2014/35/EU according to EN 61800-5-1:2007 Machinery Directive 2006/42/EC EMC Directive 2014/30/EU ATEX Directive 2014/34/EU, EN 50495 Quality assurance system ISO 9001 and Environmental system ISO 14001 RoHS 2011/65/EU and Delegated Directive (EU) 2015/836 RCM, EAC [4)] TÜV Nord certification for functional safety [3)] ATEX-certified safe disconnection function and thermistor and PT100 protection functions, Ex II (2) GD [2) 7)] Marine type approvals for -01: ABS, Bureau veritas, CCS, DNV GL, KR, Lloyd's, NK, RINA, RMRS. For other drives, see https://new.abb.com/drives/segments/marine/marine-type-approvals UL, CSA: -01: cULus listed according to UL 508C and CSA C22.2 No. 274, CSA certified according to CSA C22.2 No. 274. -11, -31: cULus listed according to UL 61800-5-1 and CSA C22.2 No. 274 -07, -17, -37: cULus listed according to UL 508A and CSA C22.2 No. 14, CSA certified according to CSA C22.2 No. 14. -07CLC, -17/37LC: UL and CSA pending.
EMC according to EN 61800-3: 2004 + A1: 2012.
Category C3 and C2 with internal option or as standard.

Environmental limits	
Ambient temperature	
Transport	-40 to +70 °C
Storage	-40 to +70 °C
Operation area (air-cooled)	-15 to +40 °C as standard (-01, -11, -31) 0 to +40 °C as standard (-07, -17, -37) +40 to +55 °C with derating of 1%/1 °C (-01, -11, -31) +40 to +50 °C with derating of 1%/1 °C (-07,-17,-37)
(liquid-cooled)	0 to +45 °C as standard (-07CLC, -17/37LC) +45 to 55 °C with derating of 0.5%/1 °C (-07CLC, -17/37LC)
Cooling method	
Air-cooled	Dry clean air
Liquid-cooled -07CLC, -17/37LC	Direct liquid-cooling, Antifrogen® L
Without liquid-cooling unit	Incoming coolant temperature 0 to +40 °C as standard +40 to +45 °C with derating of 2%/1 °C +45 to +50 °C with derating of 2%/1 °C or 6%/1 °C [5)]
With liquid-cooling unit	Incoming coolant temperature 0 to +36 °C as standard +36 to +46 °C with derating of 2%/1 °C
Altitude	
0 to 1,000 m	Without derating
1,000 to 4,000 m	With derating of 1% / 100 m [6)]
Relative humidity	5 to 95%, no condensation allowed
Degree of protection	
IP20	Option (-01, -11, -31)
IP21	Standard (-01, -11, -31)
IP22	Standard (-07, -17, -37)
IP42	Standard (-07CLC, -17/37LC). Option (-07, -17, -37)
IP54	Option (-07, -17, -37, -07CLC, -17/37LC)
IP55	Option (-01, -11, -31)
Paint color	RAL 9017/9002 (-01, -11, -31), RAL 9017/7035 (-07, -17, -37, -07CLC, -17/37LC)
Pollution degree	PD 2
Contamination levels	No conductive dust allowed
Storage	IEC 60721-3-1:1997, IEC 60721-3-1, Class 1C2 (chemical gases), Class 1S2 (solid particles) *)
Operation	IEC 60721-3-3:2002, IEC 60721-3-3, Class 3C2 (chemical gases), Class 3S2 (solid particles) *)
Transportation	IEC 60721-3-2:1997, IEC 60721-3-2, Class 2C2 (chemical gases), Class 2S2 (solid particles) *)

Built-in functional safety.	
For safe torque off (STO) and safety functions modules	EN/IEC 61800-5-2, IEC 61508: SIL 3, IEC 61511: SIL 3,EN/IEC 62061: SIL CL 3, EN ISO 13849-1: PL e - TÜV Nord certified
Safety over fieldbus	PROFIsafe over PROFINET, certified

*) C = Chemically active substances. S = Mechanically active substances.
1) Operation above 120 Hz might require type-specific derating. For higher output frequencies, please contact your local ABB office. Output filters may limit the output frequency. See product specific hardware manual for details.
2) Safe disconnection function (+Q971), Thermistor protection function (+L537+Q971) PTC/PT100 thermal motor protection for -07/17/37/17LC/37LC (+L513/L514+Q971)
3) For available certificates, see http://new.abb.com/drives/functional-safety
4) EAC directives: TR CU 020/2011 (EMC directive); TR CU 004/2011 (low voltage directive) EAC has replaced GOST R
5) See product specific hardware manual for detailed derating rules
6) Derating reduced by lower than 40 °C ambient temperature
7) Not applicable for -07CLC

For more information, please contact your local ABB representative or visit

new.abb.com/drives/ACS880

new.abb.com/drives

Learn more from ACS880 website

LOW VOLTAGE AC DRIVES

ABB industrial drives

ACS880 regenerative drives, 2.2 to 3200 kW

ACS880 regenerative drives are suitable for applications with cyclic or continuous braking. Regenerative drives are capable of recovering braking energy and feeding it back to the network. The drive package includes everything needed for regenerative operation.

Energy savings
With regenerative functionality, braking energy is fed back to the supply network so that it can be utilized by other equipment. Compared to mechanical or resistor braking, which waste braking energy as heat, regenerative operation offers significant savings in energy consumption and cooling.

Minimized downtime
Regenerative drives ensure reliable operation in unstable supply network conditions. The drive's active supply unit is able to boost output to guarantee full motor voltage even when the supply voltage is below nominal.

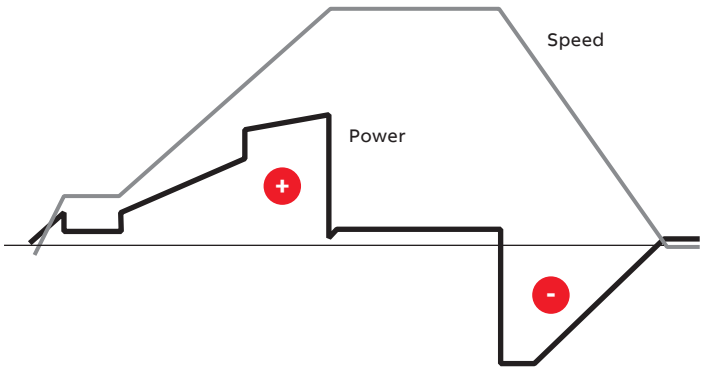
Optimized cost and space
Everything needed for regenerative operation, such as an active supply unit and a line filter, is included with the drive. As no external braking devices are needed, the installation footprint is reduced, as well as the time needed for engineering and assembly.

Maximized motor performance and efficiency
ABB's direct torque control (DTC) provides precise speed and torque control for maximum motor performance and efficiency. The drive's voltage boost capability also improves motor efficiency – with a higher voltage, the same power is achieved with less current.

Technical data

ACS880-11 wall-mounted regenerative drives	
Power range	2.2 to 110 kW
Voltage range	3-phase, 380 to 500 V
Enclosure	IP20, IP21 (as standard) and IP55. Flange mounting with IP55 back side protection as an option.
ACS880-14 regenerative drive modules	
Power range	110 to 400 kW
Voltage range	3-phase, 380 to 690 V
Enclosure	IP20
ACS880-14 regenerative drive module packages	
Power range	160 to 2200 kW
Voltage range	3-phase, 380 to 690 V
Enclosure	IP00

Speed and power curves in cyclic operation



Key features

- **Possibility to regenerate 100% of power continuously**
- **Everything for regenerative operation included in a compact package**
  Designed for easy installation.
- **Easy commissioning**
  No need to set extra parameters for the active supply unit.
- **Low harmonic content**
  Total harmonic current distortion is typically <3% in nominal situation and undistorted network. Fulfills harmonic recommendations, such as IEEE 519, IEC 61000-3-2, IEC 61000-3-12 and G5/4.
- **Unity power factor**
  Possibility also for network power factor correction.
- **Voltage boost**
  Guarantees full motor voltage in all conditions and can also be utilized to overcome a voltage drop caused by long supply or motor cables or output filters. Voltage boost capability may allow a smaller motor to be used.
- **Nine-year maintenance interval**
- **Factory-tested solution for high reliability**
  All ACS880 drives are tested at maximum temperature with nominal loads.

For more information please contact your local ABB representative or visit:

www.abb.com/drives
www.abb.com/drivespartners
new.abb.com/drives/regenerativedrives

Learn more from ACS880 Regenerative website

LOW VOLTAGE AC DRIVES

ABB industrial drives

ACS880 ultra-low harmonic drives, 2.2 to 3200 kW

ACS880 ultra-low harmonic drives offer an easy harmonic reduction method which is incorporated in the drive. No additional filters or special transformers are needed. This compact, cost-effective solution meets the strictest harmonic recommendations.

Clean supply network
The drive produces exceptionally low harmonic content and exceeds the requirements of harmonic recommendations, such as IEEE 519 and G5/4. The total harmonic current distortion is typically <3% in nominal situation and undistorted network.

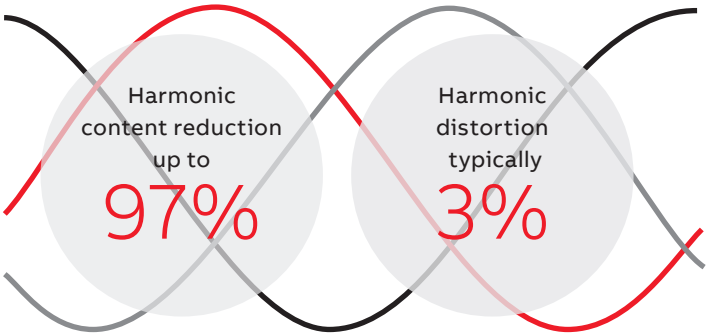
Minimized downtime
Ultra-low harmonic drives ensure reliable operation in unstable supply network conditions. The drive's active supply unit is able to boost output to guarantee full motor voltage even when the supply voltage is below nominal.

Optimized cost and space
The compact drive has harmonics mitigation built-in. This includes an active supply unit and a low harmonic line filter. As there is no need for external filters, multi-pulse arrangements or special transformers, the simple installation offers significant savings in space, time and cost.

Maximized motor performance and efficiency
ABB's direct torque control (DTC) provides precise speed and torque control for maximum motor performance and efficiency. The drive's voltage boost capability also improves motor efficiency – with a higher voltage, the same power is achieved with less current.

Technical data

ACS880-31 wall-mounted ultra-low harmonic drives	
Power range	2.2 to 110 kW
Voltage range	3-phase, 380 to 500 V
Enclosure	IP20, IP21 (as standard) and IP55. Flange mounting with IP55 back side protection as an option.
ACS880-34 ultra-low harmonic drive modules	
Power range	110 to 400 kW
Voltage range	3-phase, 380 to 690 V
Enclosure	IP00
ACS880-34 ultra-low harmonic drive module packages	
Power range	160 to 2200 kW
Voltage range	3-phase, 380 to 690 V
Enclosure	IP00



Key features

- **Compact package**
  Designed for easy installation.
- **Easy commissioning**
  No need to set extra parameters for the active supply unit.
- **Low harmonic content**
  Total harmonic current distortion is typically <3% in nominal situation and undistorted network.
- **Unity power factor**
  Possibility also for network power factor correction.
- **Voltage boost**
  Guarantees full motor voltage in all conditions and can also be utilized to overcome a voltage drop caused by long supply or motor cables or output filters. Voltage boost capability may allow a smaller motor to be used.
- **Nine-year maintenance interval**
- **Factory-tested solution for high reliability**
  All ACS880 drives are tested at maximum temperature with nominal loads.

For more information please contact your local ABB representative or visit:

www.abb.com/drives
www.abb.com/drivespartners
new.abb.com/drives/harmonics

Learn more from ACS880 ULH website

ABB PLC Automation

PLCs, Control Panels,
Engineering Suite

PLC Automation product family
Overview

ABB offers a comprehensive range of scalable PLCs and robust HMI control panels. Since its launch, the AC500 PLC platform has achieved significant industry recognition for delivering high performance, quality and reliability.

Comprehensive range
- ABB delivers scalable, flexible and efficient ranges of automation components to fulfill all conceivable requirements of the most diverse automation applications.
- ABB's automation devices deliver solutions with high performance and flexibility to be effectively deployed within various industries and applications including water, building infrastructure, data centers, renewable energy, machinery automation, material handling, marine and many more.

Engineering suite
- ABB Automation Builder is the integrated software suite for machine builders and system integrators requiring state-of-the-art productive machine and system automation.
- Combining the tools required for configuring, programming, debugging and maintaining automation projects from one common intuitive interface, Automation Builder addresses the largest single cost element of most of today's industrial automation projects - software.

Programmable Logic Controllers PLCs
- The AC500-eCo, AC500, AC500-XC and AC500-S scalable PLC ranges provide solutions for small, medium and high-end applications.
- Our AC500 PLC platform offers different performance levels and is the ideal choice for high availability, extreme environments, condition monitoring, motion control or safety solutions.
- Our AC500 PLC platform offers interoperability and compatibility in hardware and software from compact PLCs up to high end and safety PLCs.

Control panels
- CP600-eCo, CP600 2nd generation and CP600-Pro control panels offer a wide range of features and functionalities for maximum operability.
- ABB control panels are distinguished by their robustness and easy usability, providing all the relevant information from production plants and machines at one single touch.

Learn more from PLC website

PLC Automation product family
Overview

Engineering suite

Automation Builder

- Automation Builder connects the engineering tools for PLC, safety, control panels, SCADA, drives and motion.
- Automation Builder combines the tools required for configuring, programming, debugging and maintaining automation projects from one common intuitive interface.

Library packages

- For efficient engineering of demanding applications.
- Easy-to-use application examples.

CP6407 with Drives faceplate

- Readymade panel builder 600 project
- Control upto eight ACSx80 on one CP600 HMI

Visualization

CP600-eCo

- The economical CP600-eCo control panel is aimed for standard functions and high usability for clear interaction with the operation process.

Programmable Logic Controllers PLCs

AC500-eCo

- Compact PLC offering optimally suited flexible and economical configurations for automation solutions in smaller applications.
- ABB's AC500-eCo has been designed to integrate seamlessly into the broader AC500 PLC platform.

I/O modules

S500-eCo

- Range of modular I/Os for economical configurations in smaller applications.
- The I/O modules can be connected directly to the AC500 or AC500-eCo CPU modules.
- S500-eCo I/O modules can be mixed with standard S500 modules and also used as remote I/O with fieldbus communication interface modules.

CP600 2nd generation

- The robust CP600 2nd generation HMI provides high visualization performance, versatile communication and representative design for machines and systems.

CP600-Pro

- The CP600-Pro HMI portfolio comes with high end visualization performance, multi-touch operation, versatile trendsetting communication and representative design.

CP600-Pro

- Control panels CP6607...CP6615 can be used to alter functional safety control functions in industrial applications.

AC500

- Powerful PLC featuring a wide range of performance, communications and I/O capabilities for industrial applications.
- The ideal choice for complex, high-speed machinery and networking solutions.

AC500-XC

- Extreme condition PLC variant of the AC500 platform.
- With extended operating temperature, immunity to vibration and hazardous gases, use at high altitudes and in humid environments.

AC500-S

- Integrated safety PLC (SIL3, PL e) designed for safety applications involved in factory, machinery or process automation area.
- For simple and complex safety solutions.

S500

- Modular I/O assortment with protected outputs and comprehensive diagnosis, covering a wide range of signal types.
- The I/O modules can be installed as remote I/O with a communication interface module or be directly connected to the AC500 CPU.
- Support of different fieldbuses makes it possible to use the S500 I/O modules with PLCs from different manufacturers.

S500-XC

- Extreme condition variant of the S500 I/O system.
- With extended operating temperature, immunity to vibration and hazardous gases, use at high altitudes and in humid environments.

S500-S

- Safety variant of the S500 I/O system.
- Extreme condition variants available.

—

For more information please contact your local ABB representative or visit:

www.abb.com/plc

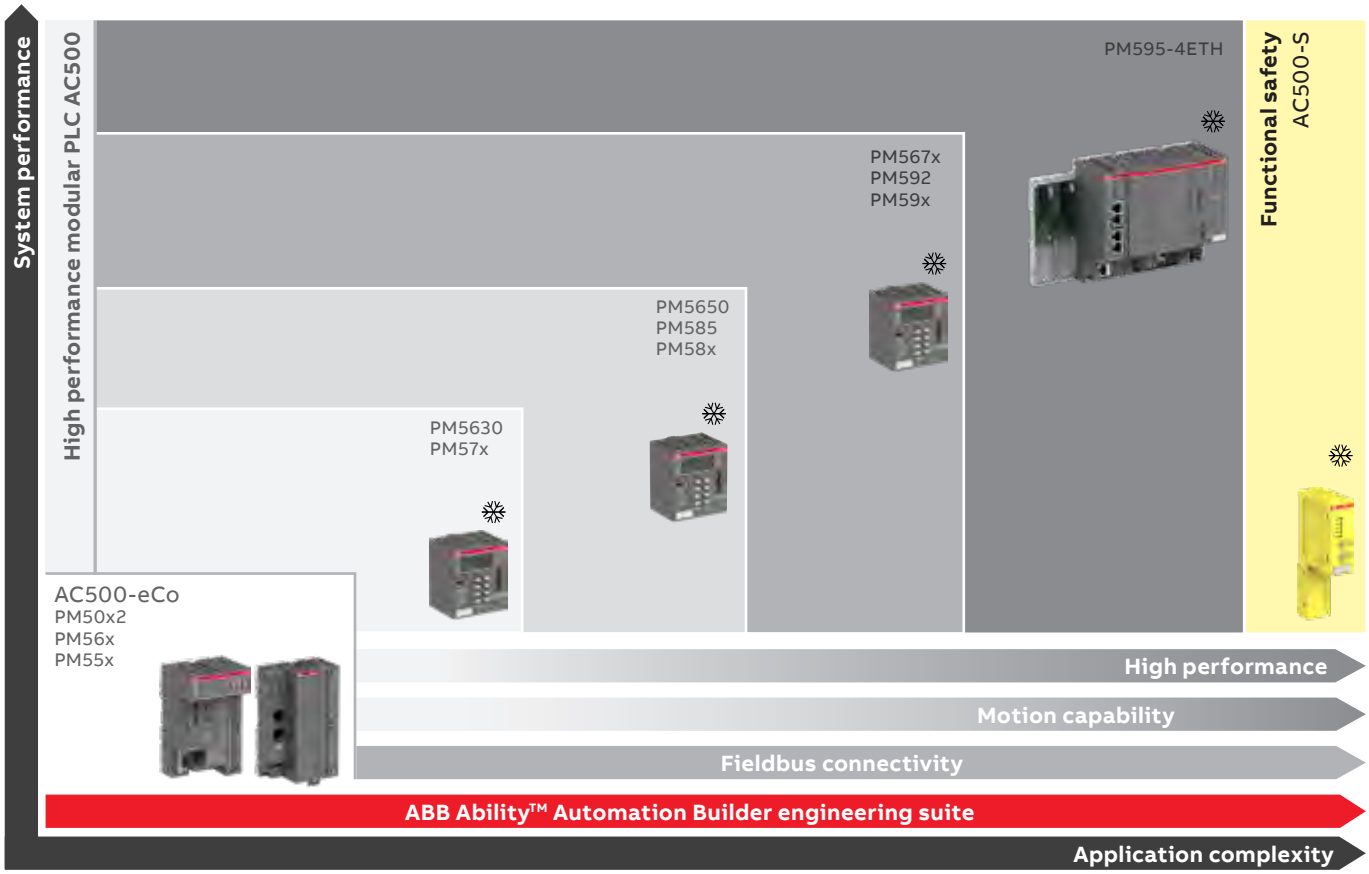
Learn more from PLC website

PLC Automation product family
PLCs at a glance…

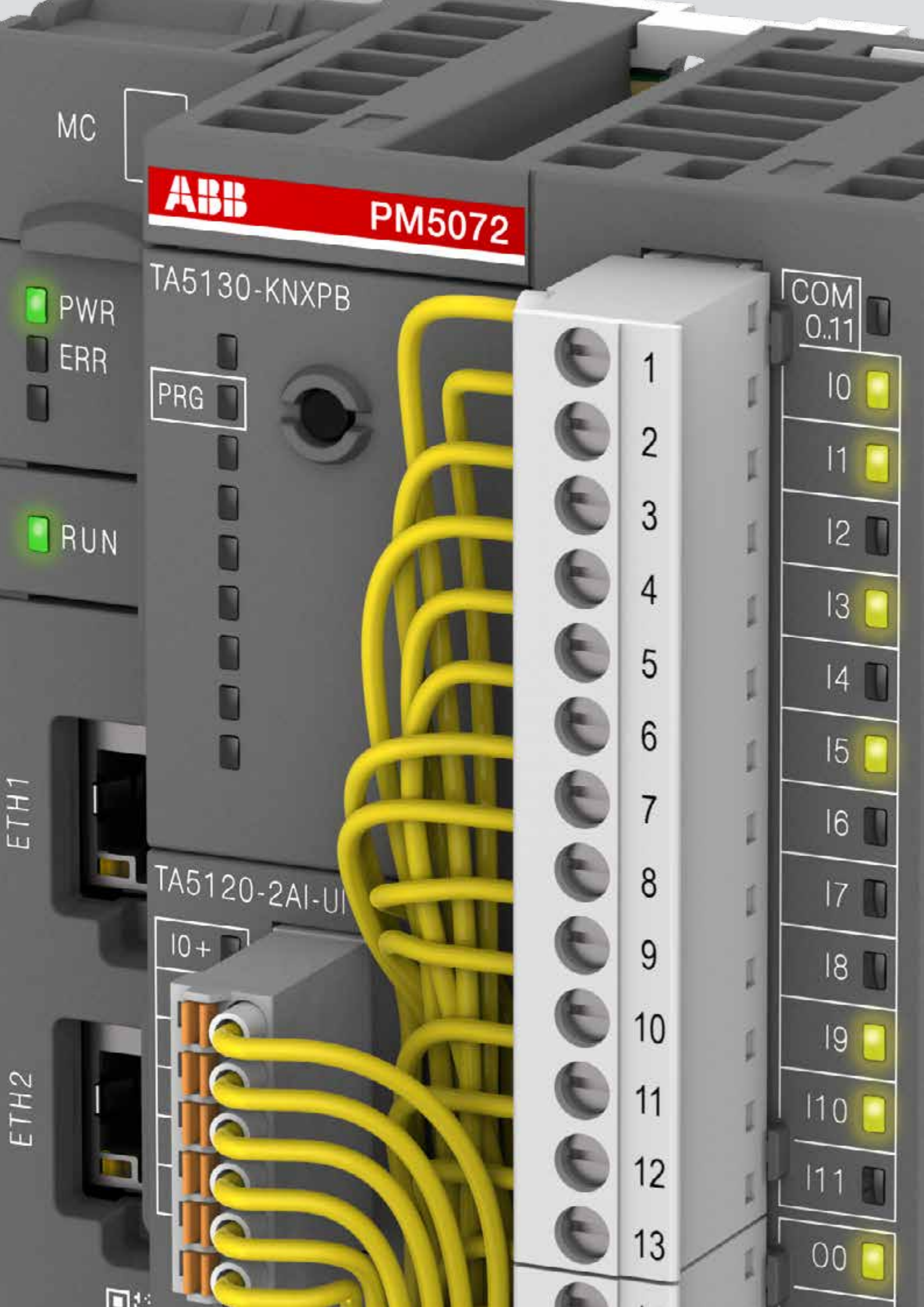
AC500 Programmable Logic Controllers with scalable, state-of-the-art technology for better performance.

Standard industrial communication fieldbus, network and protocols supported by the 'One Platform' solution make the AC500 the perfect automation solution in even the most demanding environments. Flexible and scalable superior CPUs deliver performance whenever and wherever you need it.

AC500 PLC platform



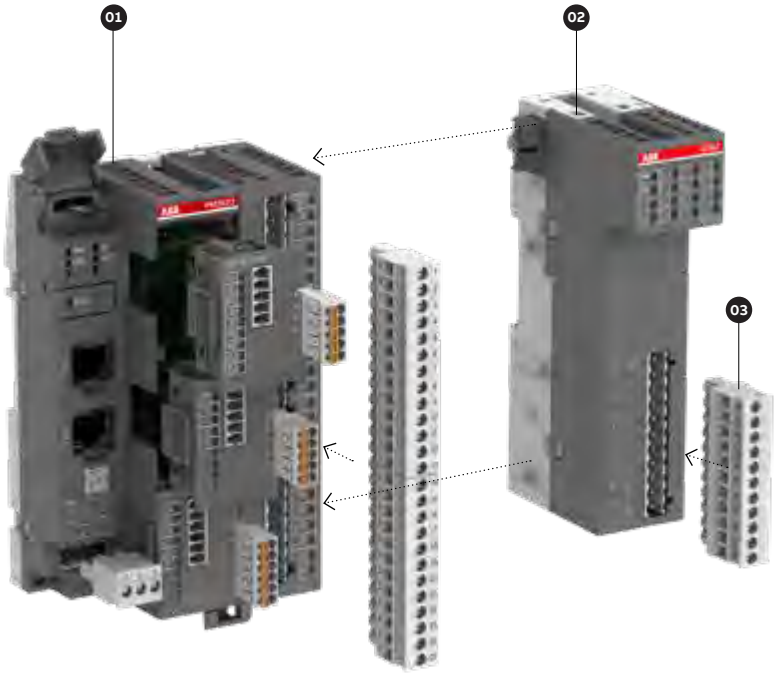
Learn more from PLC website


MC
ABB
PM5072
TA5130-KNXPB
PWR
ERR
PRG
RUN
ETH1
ETH2
TA5120-2AI-UI
I0+
1
2
3
4
5
6
7
8
9
10
11
12
13
COM 0..11
I0
I1
I2
I3
I4
I5
I6
I7
I8
I9
I10
I11
O0

PLC AUTOMATION

AC500-eCo V3 Basic, Standard and Pro CPUs

More modularity, connectivity and scalability



Eight new AC500-eCo V3 CPUs with different performance levels for small applications.
For digital and analog I/O or communication extension, option boards can be used.
Locally, AC500-eCo V3 Standard and Pro CPUs can be extended with up to 10 I/O modules.

—
01 – AC500-eCo V3 CPU
02 – S500-eCo I/O modules
03 – Terminal blocks

AC500-eCo V3 CPU features

- Three performance classes CPU (Basic, Standard and Pro) with large memory
- For low-entry cost optimized to large complex applications
- One or two independent Ethernet interfaces with integrated switch functionality
- Up to three RS232 or RS485 serial interfaces using option boards
- Micro memory card slot for data storage and program backup
- Real time clock for Standard and Pro CPU, optional for Basic
- Web server functionality with HTML5 Web visualization for Standard and Pro CPU
- Minimum cycle time per instruction: Bit 0.02 µs, Word 0.02 µs, Floating point 0,6 µs.
- High amount of onboard I/Os with relay or transistor outputs
- Onboard high-speed I/Os with motion control function for up to 4 axis PTO
- Can be extended with up to three digital or analog option boards
- Standard and Pro version locally extendable with up to 10 I/O modules (S500 and/or S500-eCo modules can be mixed)
- 24 V DC power supply.

Applications

Basic CPUs are recommended for extremely cost-sensitive simple applications and a small number of I/Os.

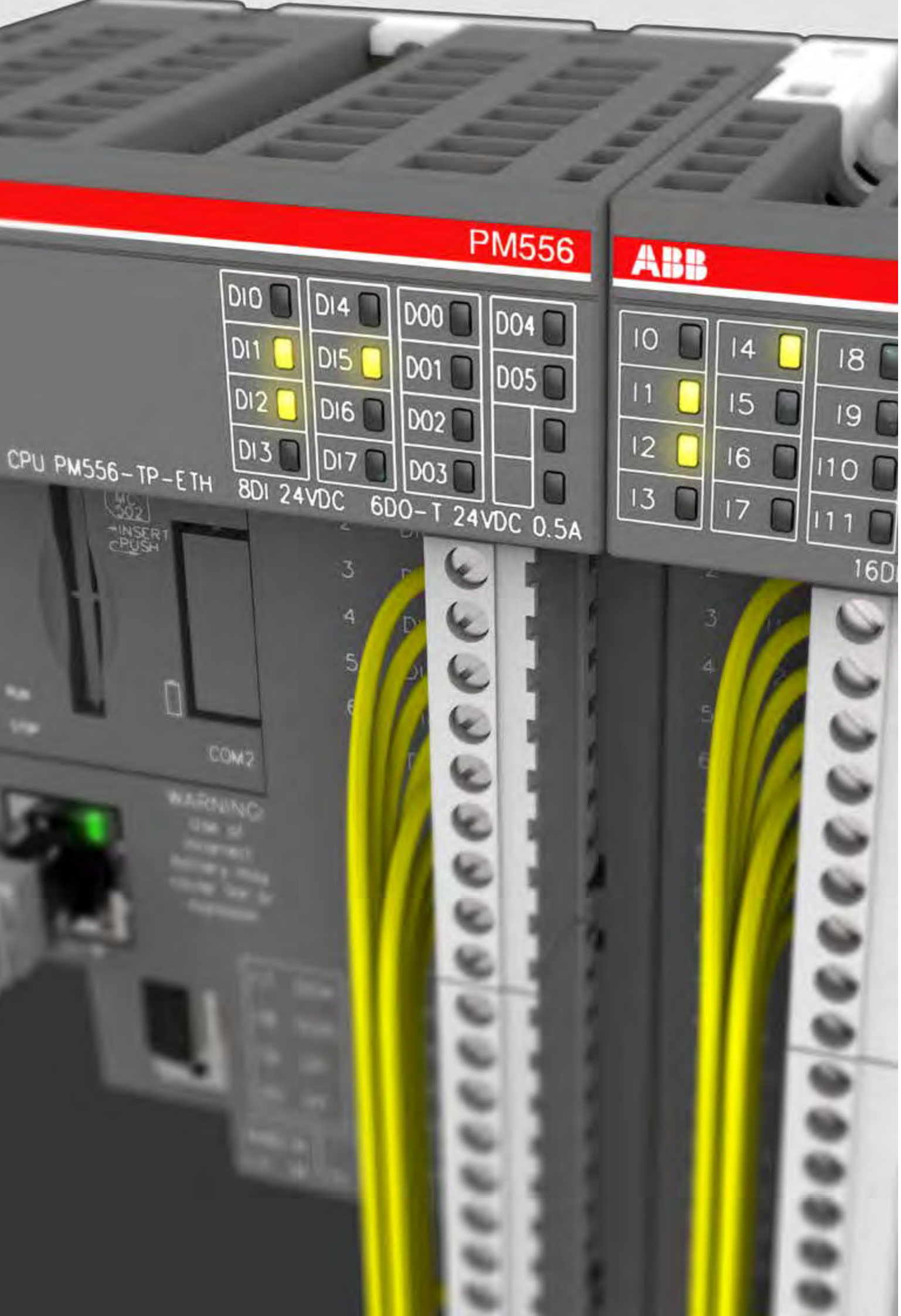
Standard CPUs are suitable for cost-effective small applications which require e.g.

- a large number of onboard I/Os
- effective modularity with option boards
- less-complex communication on Ethernet-based industrial fieldbus
- simple motion capability with high-speed onboard I/Os
- connectivity via web server, MQTT or OPC UA.

Pro CPUs are the ideal choice for small applications which require e.g.

- large program/data memory
- medium-complex communication via Ethernet-based industrial fieldbus
- IoT capability with MQTT and OPC UA
- building control applications with KNX
- simple or coordinated motion.

Learn more from PLC website


PM556
ABB
DI0
DI1
DI2
DI3
DI4
DI5
DI6
DI7
DO0
DO1
DO2
DO3
DO4
DO5
CPU PM556-TP-ETH
8DI 24VDC
6DO-T 24VDC 0.5A
INSERT
PUSH
COM2
WARNING
I0
I1
I2
I3
I4
I5
I6
I7
I8
I9
I10
I11

AC500-eCo
Key features

—

High performance variant with large memory available

—

- Up to 10 I/O modules connected to the CPU
- Compatible with all standard I/O modules (S500 and S500-eCo)
- Digital I/O module with configurable I/O available

—

- Three different types of terminal blocks available
- Integrated onboard I/O
- AC versions with integrated power supply

—

Comprehensive communication options:

- Ethernet for communication and web server for user defined visualization
- Up to two serial ports for decentralized I/O and communication

Learn more from PLC website

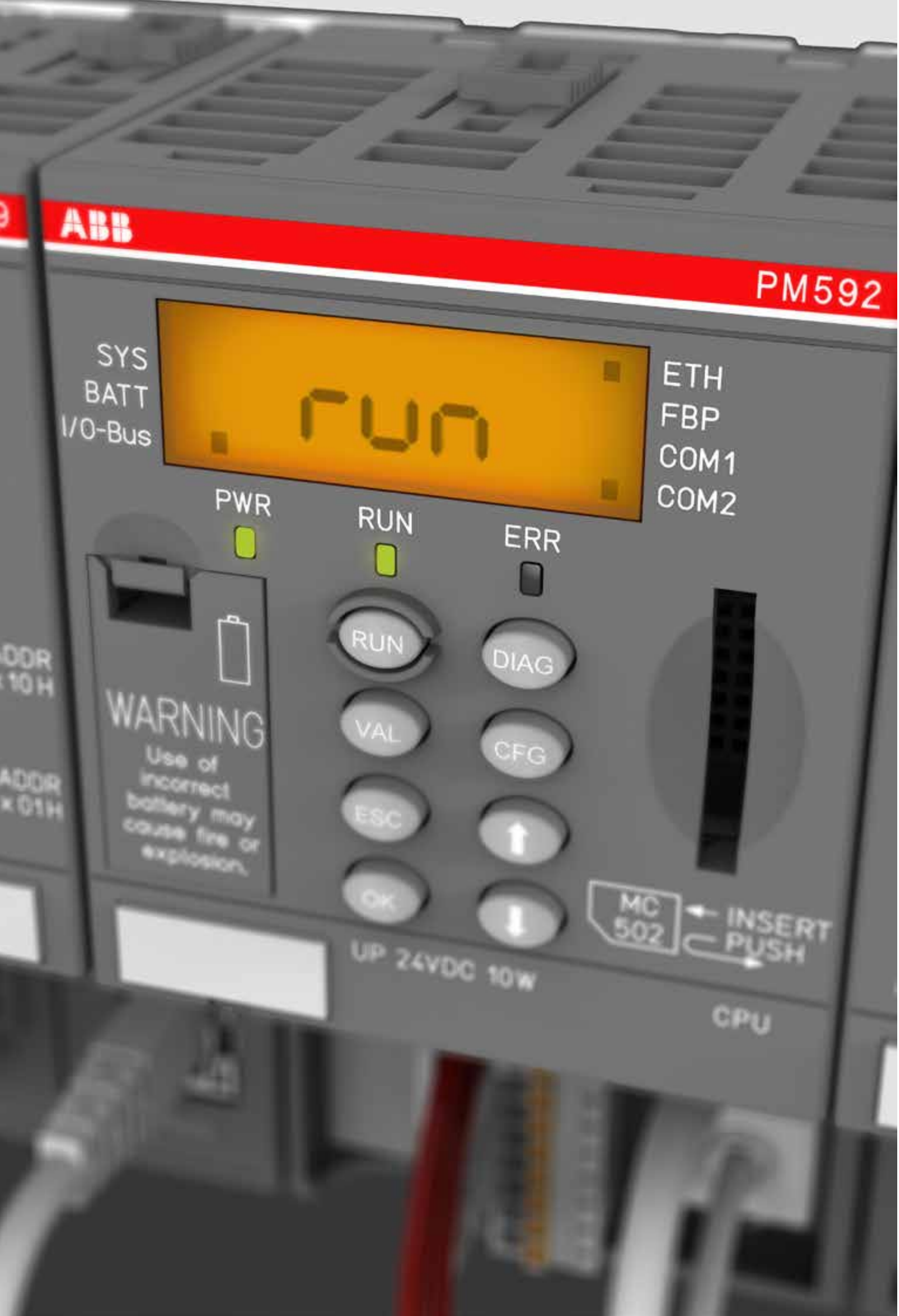


ABB
PM592
SYS
BATT
I/O-Bus
run
ETH
FBP
COM1
COM2
PWR
RUN
ERR
RUN
DIAG
VAL
CFG
ESC
OK
WARNING
Use of incorrect battery may cause fire or explosion.
MC 502
INSERT PUSH
UP 24VDC 10W
CPU

AC500
Key features

—

A high performance PLC:
- Large memory up to 160 MB
- Highly modular
- From 8 to +80 000 I/Os
- More communication possibilities (Ethernet, Internet, PROFINET, PROFIBUS, Modbus, CANopen, EtherCAT, EthernetIP, OPC UA, OPC DA, IEC 60870-5-104, IEC61850, MQTT, ...)

—

Common AC500 platform benefits: Automation Builder engineering suite, I/O modules, scalable and flexible

—

- Eight programming languages available (five IEC 61131-3, CFC, C-code and C++)
- Object oriented engineering
- Virtual controller
- Webvisu
- Data logging
- SD card for program back-up
- High Availability (HA) option
- Screw or spring terminal for I/Os
- Extensive programming libraries

Learn more from PLC website

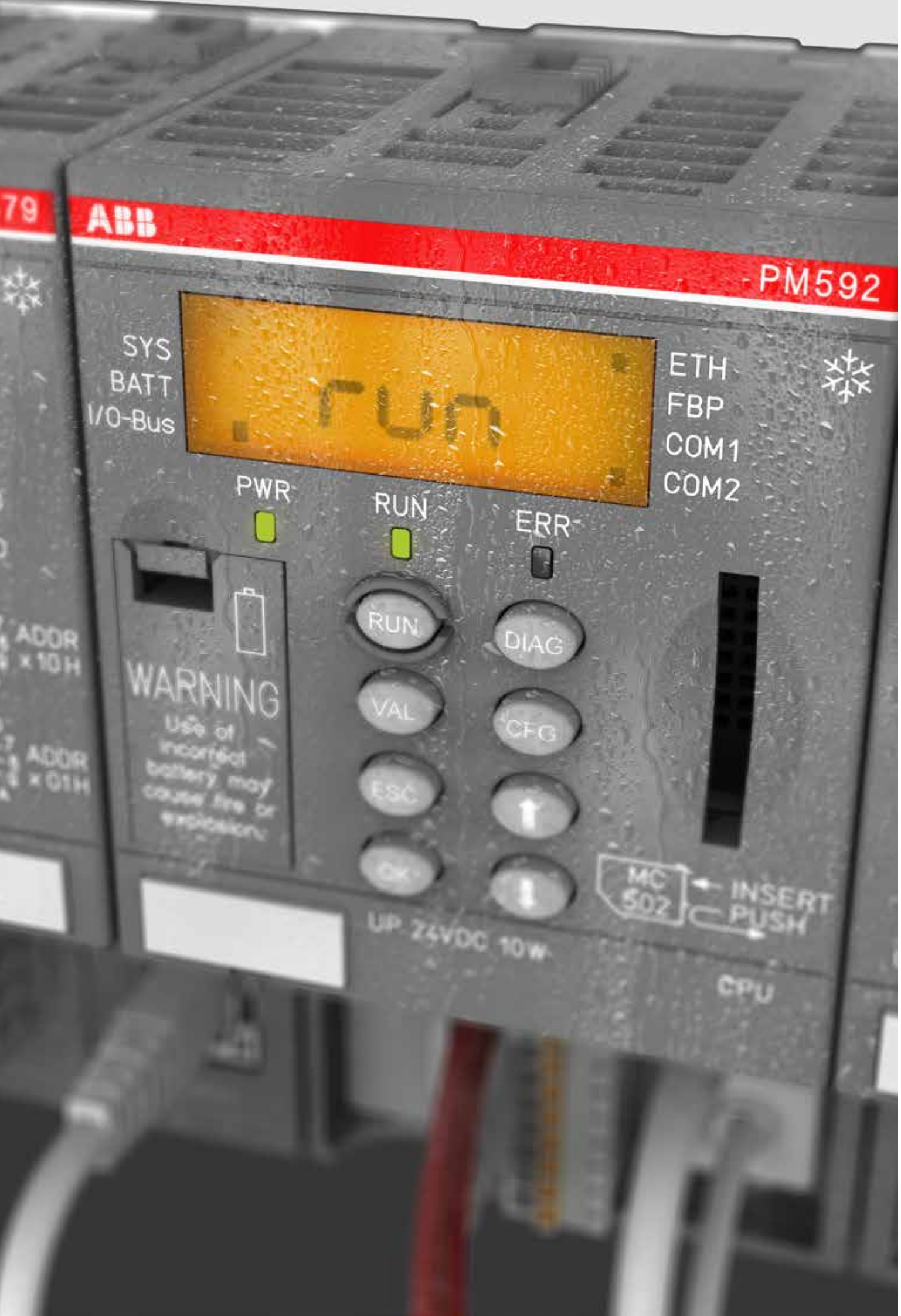


ABB
PM592
SYS
BATT
I/O-Bus
run
ETH
FBP
COM1
COM2
PWR
RUN
ERR
RUN
DIAG
VAL
CFG
ESC
OK
WARNING
MC 502
INSERT PUSH
UP 24VDC 10W
CPU

AC500-XC
Key features

—

Lower lifetime cost and many of the traditional practices are not required, such as: HVAC for the panel, shock absorbers, door sealing, etc...

—

Resistance to:
- High humidity
- Salt mist
- Vibration
- High altitude
- Corrosive gases
- Temperature: from -40 to +70 °C

—

All the benefits from AC500 range: Automation Builder engineering suite, I/O modules, scalable and flexible, same high performance communication, libraries and web services

Learn more from PLC website


SM560-S
ABB
SYS
BATT
I/O-Bus
run
PWR
RUN
ERR
RUN
DIAG
VAL
CFG
ESC
OK
WARNING
Use of incorrect battery may cause fire or explosion.
ADDR x10H
ADDR x01H
UP 24VDC 10W
MC 502

AC500-S
Key features

—

Easy integration: Simple expansion of ABB PLC with safety functions. One common engineering and diagnostic system for safety and standard CPUs. eXtreme Conditions (-XC) version is available.

—

Easy implementation of flexible configuration concept (one safety program for various machine types). Safety CPU can be configured to work even if standard CPU is in STOP mode.

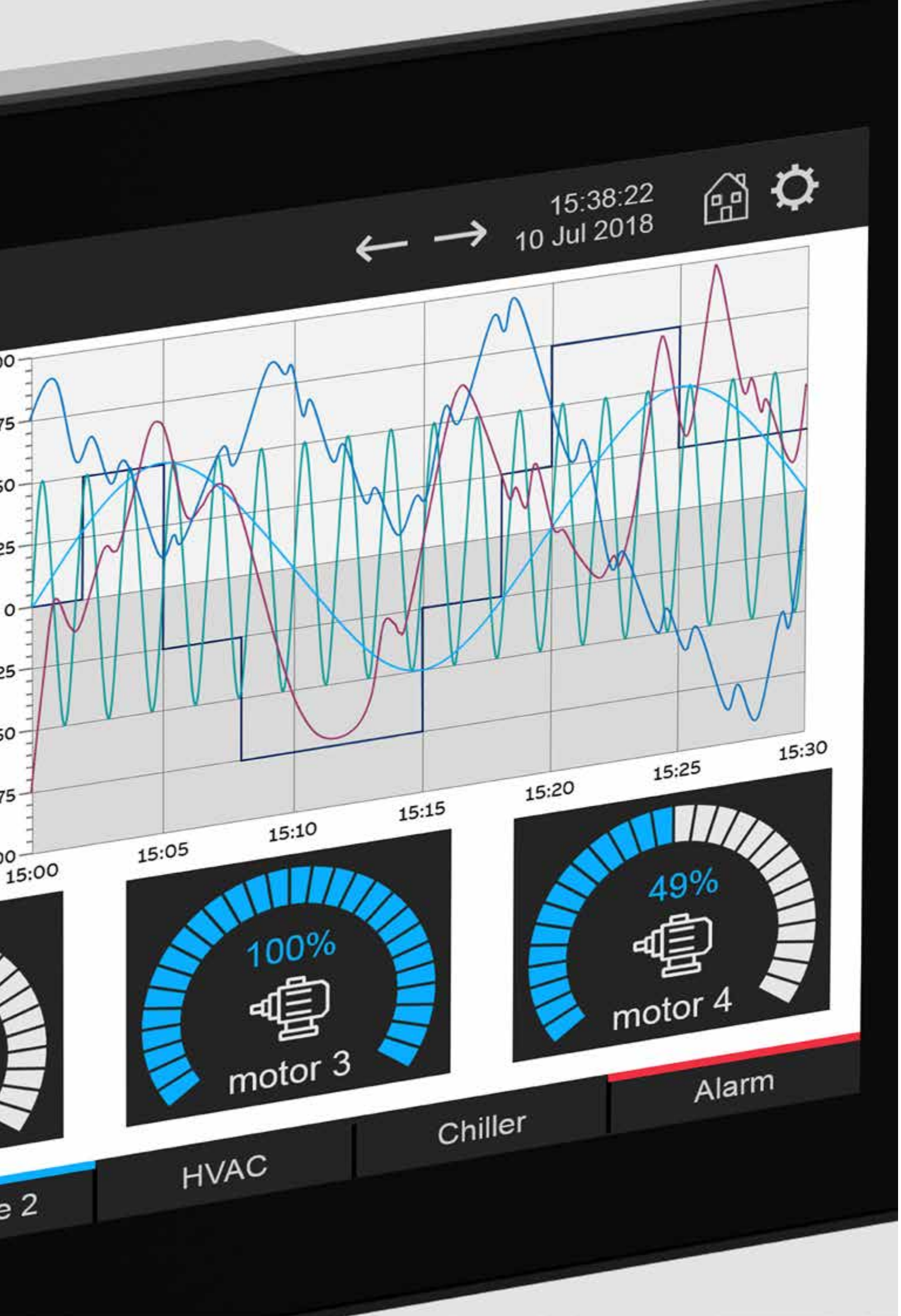
—

Automation Builder productivity suite providing integrated support of ST, Ladder (LD) and Function Block Diagram (FBD) programming with a common look and feel. Trigonometric functions are supported for easy implementation of complex calculation tasks.

—

PROFINET/PROFIsafe interface for decentralized safety I/Os, safe position and speed monitoring as well as triggering of safety drive functions.

Learn more from PLC website


15:38:22
10 Jul 2018
15:00
15:05
15:10
15:15
15:20
15:25
15:30
100%
motor 3
49%
motor 4
HVAC
Chiller
Alarm

CP600-eCo, CP600 and CP600-Pro
Key features

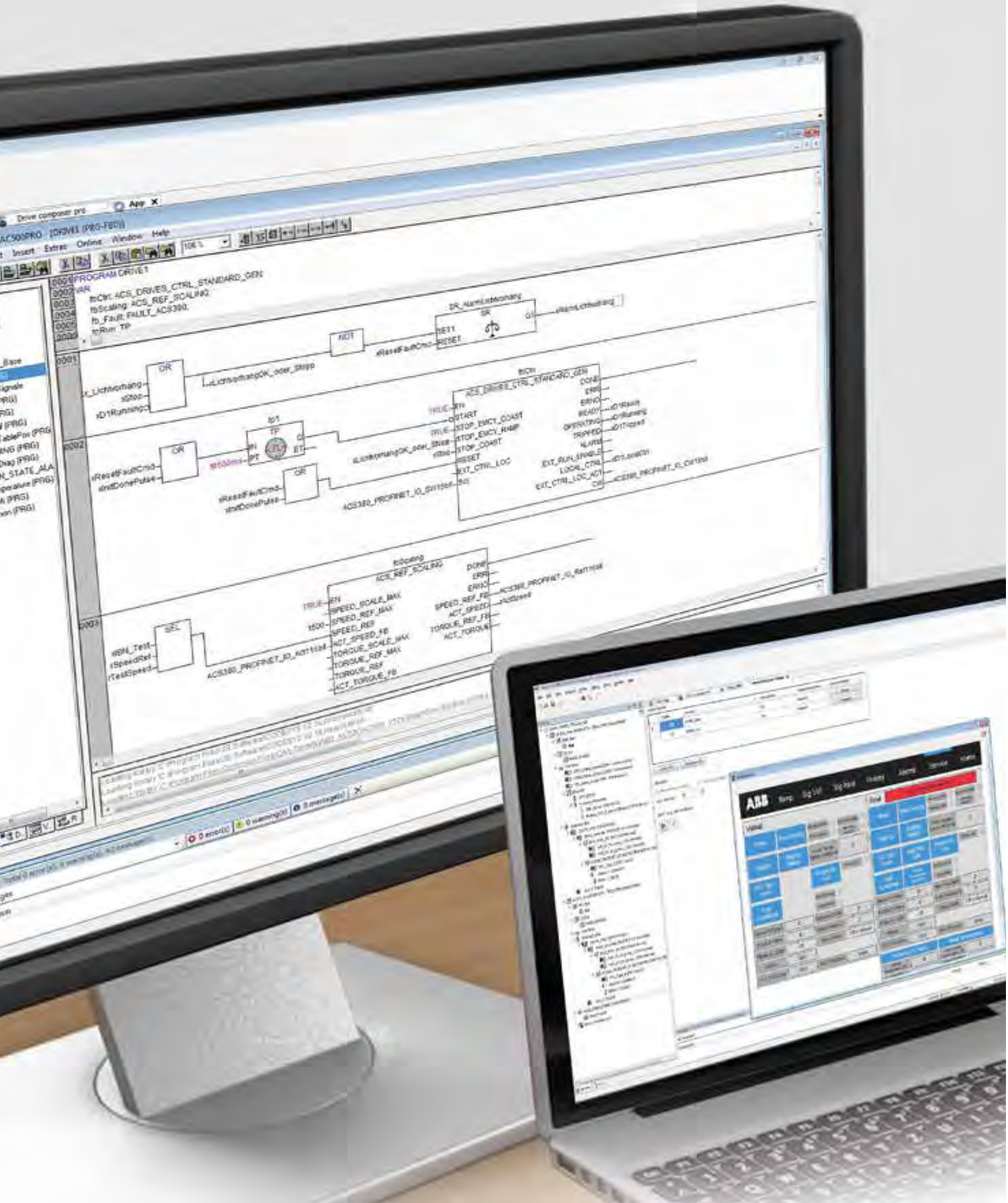
Various options for tailor made HMI solutions:
- PB610 Panel Builder 600 HMI applications
- Visualization of AC500 web servers
- Mobile remote access to HMI applications
- PB610-R PC runtime for Windows platforms
- Drivers for integration into automation systems
- OPC UA client and server

- CP600 2nd gen. brilliant colored display
- Aluminium enclosure
- Operating temp.: 0...60 °C
- Three different screen sizes
- CP600 available in parallel

- CP600-Pro multi-touch
- Brilliant real glass screen
- Aluminium enclosure
- Fast ETH 10/100/1000
- Operating temp.: -20...+60 °C
- Five different screen sizes from 5" to 21.5"

- CP600-eCo slim design for easy installation even in compact spaces
- Robust plastic enclosure
- Three different screen sizes

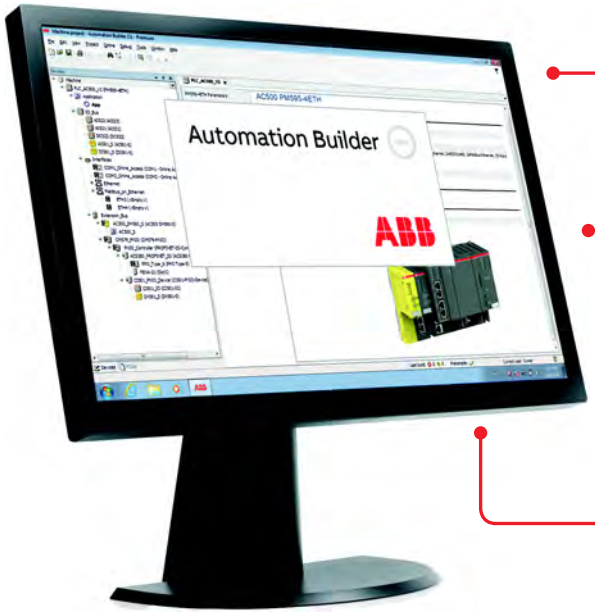
Download Automation Builder from
www.abb.com/automationbuilder



Automation Builder
Key features

—

Stay in control of your project: Automation Builder integrates engineering tools for PLCs, safety, drives, motion, control panels and SCADA



—

Reduce risk: Manage complexity and realize connectivity easily

—

Increase efficiency:
Build comprehensive solutions with integrated engineering that add value to your business

—

Combine tools: One common intuitive interface for configuring, programming, debugging and maintaining automation projects

—

Save time: Test systems effortlessly in virtual time without real hardware using Virtual Commissioning technology

—

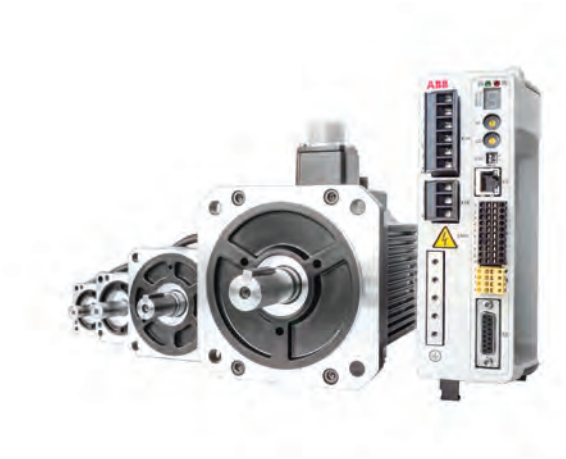
more information please contact
your local ABB representative or visit:
www.abb.com/automationbuilder

Learn more from website

ABB Servo Motion

Every detail and feature is reimagined with users in mind, to deliver one of the most flexible and dynamic servo drive-motor packages available. The package helps address the most demanding needs of system integrators, OEMs and machine builders. It provides unprecedented levels of productivity and performance improvements to the smart factory of today and tomorrow.

ABB highly dynamic packages



MicroFlex e190 and 220 V e-Series motor package

- This package's operating voltage is 200...240 V AC, 1-phase and 3-phase. The DC operating voltage is 270...340 V DC
- The MicroFlex e190 servo drive and 220 V e-Series servo motor (e-Series) provide a compact and highly dynamic motion control package with matched and tested components from a single supplier
- The package is suited to single axis intelligent applications as well as centralized motion for use with any controller supporting EtherCAT, POWERLINK, EtherNet/IP, Modbus TCP and PROFINET IO
- Low inertia system, higher acceleration, shorter operating cycle

MotiFlex e180 and 400 V e-Series motor package

- This package's AC operating voltage is 200...480 V AC, 3-phase. The DC operating voltage is 270...650 V DC
- The MotiFlex e180 and 400 V e-series servo motor (e-Series) offering provides versatile motion control package with matched and tested components from a single supplier
- The package is suited to single axis intelligent applications as well as centralized motion for use with any controller supporting EtherCAT, POWERLINK, EtherNet/IP, Modbus TCP and PROFINET IO
- High inertia system, higher torque accuracy and extremely low speed fluctuation, ensuring better product quality

Servo drive and motor packages highlights:

Low cost

- The package provides a lower total cost of ownership through efficient installation, commissioning, operation and maintenance. It is backed up by ABB's global service and support network
- Free license for Mint language/programmable drive, memory unit with Mint WorkBench as factory standard

Excellent servo performance

- Packages can operate in PTO, analog control, or from one of the selectable built-in Ethernet protocols, drives also operate as a self-contained programmable motion controller, with support for functions such as HMI, communications, simple position tasks and geared motion to a master (line shaft) encoder
- Many industry standard encoder types are supported to meet different application needs
- Powerful and intelligent PC tool with advanced motion programming-Mint language
- Minimizes EMC-related start-up and reliability issues by providing effective, easy to use, EMC bonding and cable support

Easy to use

- Configuration is streamlined by an intuitive drive configuration tool set that simplifies commissioning, tuning and motion programming when using the optional motion programming function
- Integrated real-time Ethernet and additional TCP/IP connection for configuration and other protocols
- Solder-free connector for easy assembly
- Convenient memory unit for Mint WorkBench and Firmware copy to drive
- Easy PC tool for configuration and machine tuning

Reliable operation

- Safe Torque Off (STO) as standard
- Motors are IP67 rated except for the shaft opening and connectors
- High quality motor shaft

Matched performance and typical application

MicroFlex e190 and 220 V e-Series motor package

MicroFlex e190	
Voltage	1-phase or 3-phase 200...240 V AC ±10% 270...340 V DC ±10%
Communications	EtherCAT POWERLINK EtherNet/IP Modbus TCP PROFINET IO
Degree of Protection	IP20 cabinet installation

e-Series Motor (220 V)	
Shaft length	25 mm, 30 mm, 35 mm, 40 mm, 58 mm
Rated torque/Peak torque	0.32...9.55 N·m/0.95...28.65 N·m
Rated speed/Max. speed	3000 rpm/6000 rpm
Motor Inertia	Without brake 0.041...12.14 kg·cm2 With brake 0.047...12.84 kg·cm2
Various Encoder supported	T1 = Absolute, Single-turn (SmartInc), 17 bits per revolution T2 = Absolute, Multi-turn (SmartAbs), 17 bits per revolution/16 bits multi-turn
Degree of Protection	IP67 rated except for the shaft opening and connectors

Other advantage
Highly dynamic: Low inertia package, higher acceleration, shorter operating cycle **High speed:** Maximum speed could be 6000rpm, improve system's productivity **Small size:** Can be used in portable equipment, and meet critical installation requirements

MotiFlex e180 and 400 V e-Series motor package

MotiFlex e180	
Voltage	3-phase 200...480 V AC ±10% 270...650 V DC ±10%
Communications	EtherCAT POWERLINK EtherNet/IP Modbus TCP PROFINET IO
Degree of Protection	IP20 cabinet installation

e-Series Motor (400 V)	
Shaft length	58 mm, 79 mm, 113 mm, 116 mm
Rated torque/Peak torque	9.55...95.5 N·m/28.65...214.9 N·m
Rated speed/Max. speed	3000 rpm/3500 rpm
Motor Inertia	Without brake 6.26...129.8 kg·cm2 With brake 6.96...145 kg·cm2
Various Encoder supported	T1 = Absolute, Single-turn (SmartInc), 17 bits per revolution T2 = Absolute, Multi-turn (SmartAbs), 17 bits per revolution/16 bits multi-turn
Degree of Protection	IP67 rated except for the shaft opening and connectors

Other advantage
Stable operation: Higher torque accuracy and extremely low speed fluctuations ensure better product quality **Torque output:** Rated torque reaches 95.5 N·m **Broad range of applications:** Big power range and large range of inertias, can be used for wide range of applications

Typical industries and applications		220 V Package - MicroFlex e190 and e-Series motor (220 V)	400 V Package - MotiFlex e180 and e-Series motor (400 V)
	Food and beverage	Labelling, HFFS, VFFS	VFFS, cartoners
	Metal cutting/forming	CNC laser/plasma/MMC/Lathe	CNC tube bending Drilling Metal cutting/forming
	Rubber and Plastic	Plastic bag making	Plastic bag making End of line extrusion processes
	Other	Water-jet, glue-laying, pick&place, woodworking	Textiles Wood working

MicroFlex e190 and MotiFlex e180 servo drives
Technology highlights

MicroFlex e190 and MotiFlex e180 drives deliver versatile motion control performance, capability and dependability to power machine innovations. Flexible connectivity with Ethernet and motor feedback technologies is highly integrated and optimized for demanding motion applications. With the MINT WorkBench PC tool you can quickly and easily customize the drive to the exact control requirements of your machine.

Advanced motion programming
Intelligent drive, offering MINT programming - a high level multitasking language - tailored for motion applications. This powerful but simple programming language, accessed using MINT WorkBench software, provides control of communications, logic, motion and HMI interactions.

Flexible Ethernet connectivity
Integrated and flexible Ethernet interface enables real-time connectivity with EtherCAT and POWERLINK protocols via E1 and E2 ports (Simply select the required protocol by switches on the drive). In addition PROFINET IO, EtherNet/IP, Modbus TCP and RAW Ethernet are supported via E3 ports.

HMI connection via multiple Ethernet protocols
PROFINET IO, Modbus TCP and EtherNet/IP provide support for HMI, PLC or upstream communication network

Dynamic overload
A peak overload of 300% of rms current maximizes available torque for dynamic acceleration to 300%. A peak torque of 300% delivers faster cycle times and increased productivity.

Wide range of feedback interfaces
Drive feedback options support different serial encoders (EnDat, SSI, BiSS, SmartAbs, Hiperface), resolver and incremental encoders. In addition DSL encoders are supported on e180 (46 A and below) to provide a single cable solution.

—

Memory unit
The compact memory unit stores drive's settings, parameters and application programs. Prepare drive settings off-site, manage functionality levels or move settings from one drive to another.

—

Safety
Safe torque-off (STO) SIL3 PLe is a standard feature. STO prevents torque from being applied at the motor shaft for machine safety applications, eliminating the need to remove AC power in most applications, minimizing downtime and maximizing machine utilization

—

I/O-digital and analog
I/O can be used for configurable drive functions, such as enable, end limits, home sensors or within MINT programming for typical machine functions such as push buttons

—

Two high speed registration inputs
Precise registration of print marks or product position achieved with 2 x 24 V fast isolated inputs that can be used to latch feedback device position in hardware and trigger software events locally in MINT.

—

Dual encoder
Dual encoder input for position and commutation. Provides line shaft following or dual loop control to eliminate mechanical errors.

—

Rotary and linear motors
Provides precision motor control of servo motors, both rotary and linear. Universal encoder interface can be simply configured by software to support a wide range of feedback types.

—

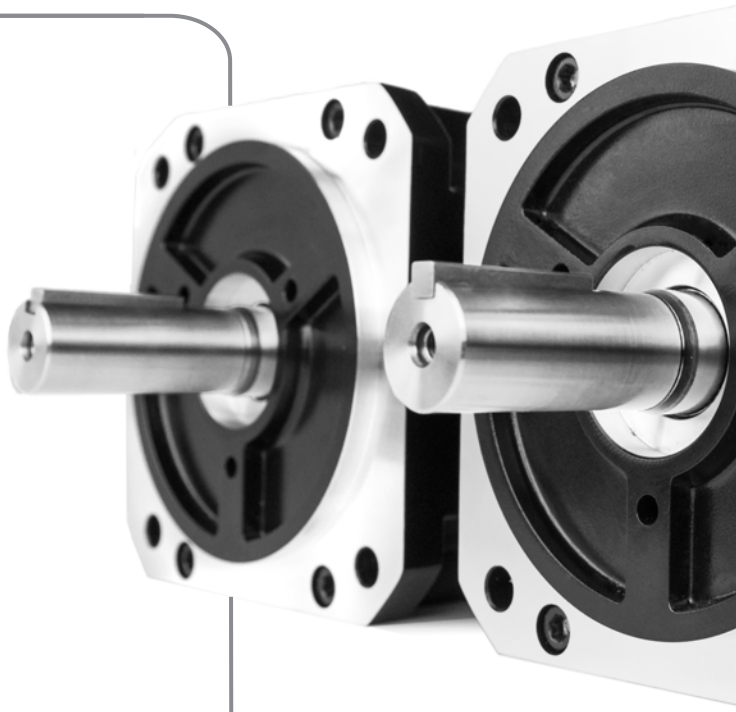
more information please contact
your local ABB representative or visit:
www.abb.com/motion

Learn more from motion website

e-Series motors
Technology highlights

e-Series servomotors for dynamic precision motion
Thanks to its high torque density, the e-Series servo motor is perfect for highly dynamic, precision motion. A choice of single- and multi-turn high resolution absolute encoder feedback options are available to match application requirements;

The e-Series motor range has power ratings from 100 to 7500 watts, in five nominal square frame sizes from 40 to 180 mm, motors are available with an optional brake and are IP67 rated except for the shaft opening and connectors. Flying leads for 40, 60 and 80 frame motors provide easy connection of both motor power and feedback. Motor mounted circular connectors are fitted to the larger frames sizes.

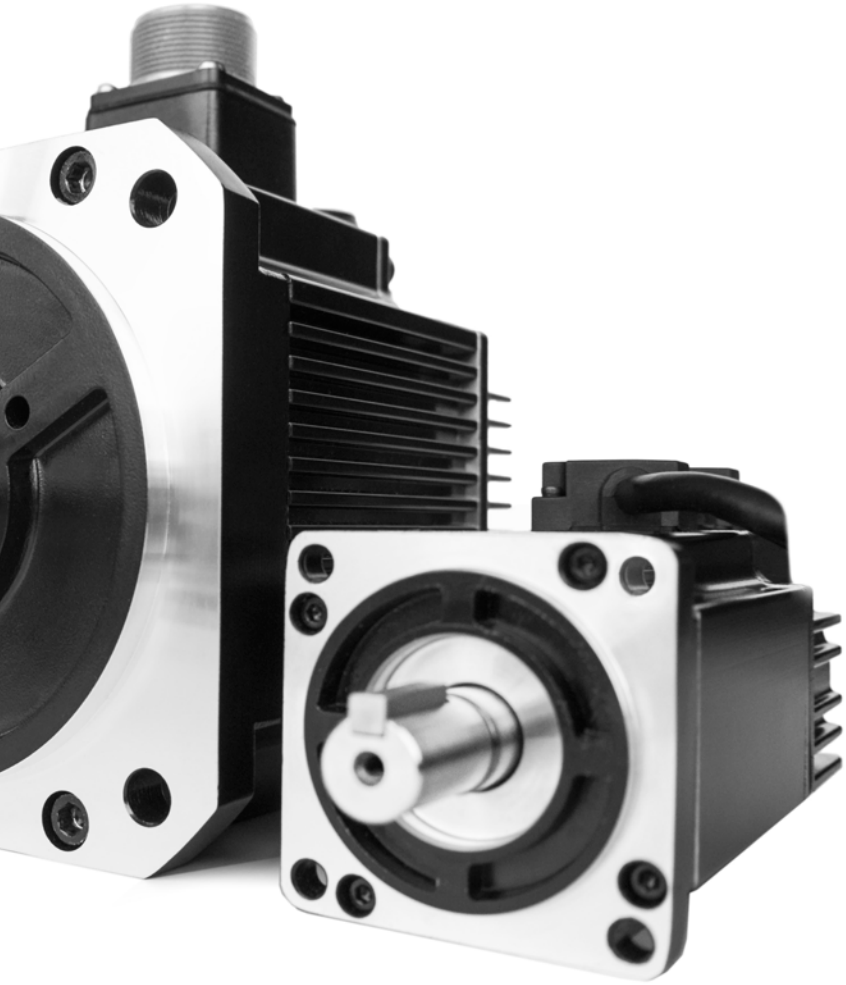


Compact and rugged brushless motors
Available in five square frame sizes, 40, 60, 80,130 mm and 180 mm, with high torque to inertia ratio and rapid acceleration capability.

High reliability and efficiency combined
Servomotors by design are extremely reliable, low maintenance and energy efficient. Combined with drives that absorb and re-use regenerative energy, overall system efficiency is superior to standard AC drives and motors.

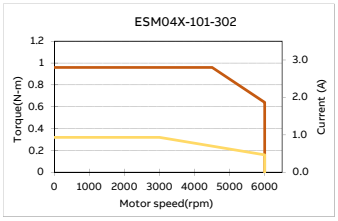
Practical installation options
A choice of pre-made cables sets to suit all feedback types, with or without drive interface connector, provide a flexible choice of drive interfacing to make installation simple.

Options and configuration
24 V holding brake is available on ESM06, ESM08, ESM13 and ESM18 frame sizes.



Absolute precision and performance
To meet the demands of higher productivity and product quality, e-Series motor digital feedback provides precise position information resulting in tighter control and lower settling times in dynamic movement. An absolute multi-turn option can eliminate homing cycles, reducing machine set-up time.

Dynamic performance
With a choice of 100, 200, 400, 750, 1000, 1500, 2000, 3000, 4400, 5000, 7500 watts output and continuous torque from 0.32 to 48N·m.



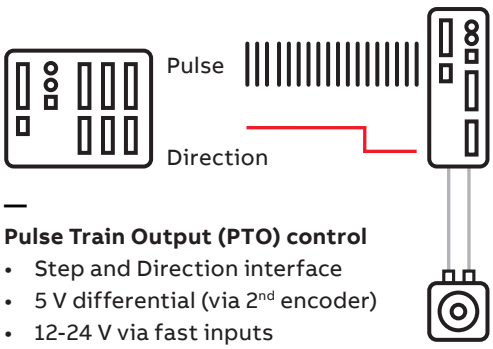
International standards
e-Series motors have cUL/ UL, CE approval

more information please contact
your local ABB representative or visit:
www.abb.com/motion

Learn more from motion website

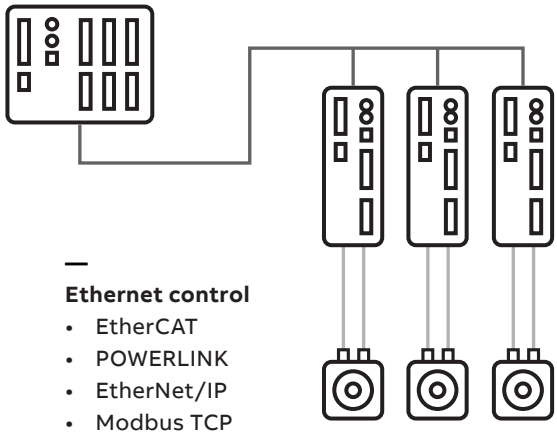
Capable of yesterdays, todays and tomorrows control methodologies

MicroFlex e190 and MotiFlex e180 both provide single scalable solutions that adapt to many different control modes. Operating in PTO, analog control, or from one of the selectable built-in Ethernet protocols, the e190 and e180 are a versatile choice for solving different levels of machine control. The e190 and e180 operate as self-contained programmable motion controllers, with support for functions such as HMI, communications, simple position tasks and geared motion to a master (line shaft) encoder.



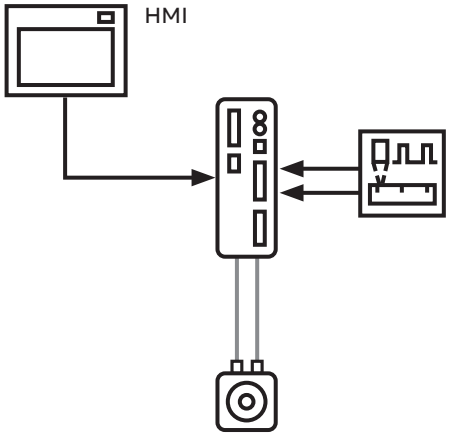
Pulse Train Output (PTO) control

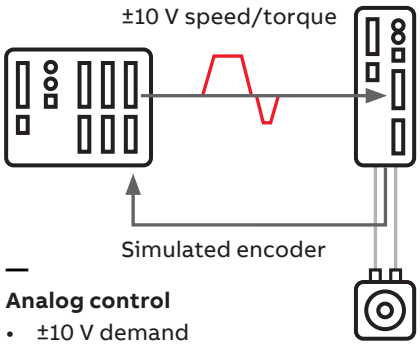
- Step and Direction interface
- 5 V differential (via 2nd encoder)
- 12-24 V via fast inputs



Ethernet control
- EtherCAT
- POWERLINK
- EtherNet/IP
- Modbus TCP
- PROFINET IO

Programmable motion drive
Installing a motion license memory unit unlocks powerful programmable machine control features. These help solve simple motion tasks or create a self-contained solution to a flying shear or labelling control with HMI and registration.





Analog control
- ±10 V demand
- Torque or Speed control
- Buffered/simulated encoder output

more information please contact
your local ABB representative or visit:
www.abb.com/motion

Learn more from motion website

We keep your world turning

Whatever your needs are, we offer the most extensive service offering for drives, motors and generators from spare parts and technical support to cloud-based condition monitoring solutions to keep your equipment running.

The global ABB service units complemented by external Value Providers form a service network on your doorstep. Maximize performance, uptime and efficiency throughout the life cycle of your assets.

With you every step of the way
Even before you buy a generator, drive, motor, bearing or softstarter, ABB's experts are on hand to offer technical advice from dimensioning through to potential energy saving.

When you've decided on the right product, ABB and its global network of Value Providers can help with installation and commissioning. They are also on hand to support you throughout the operation and maintenance phases of the products life cycle, providing maintenance programs tailored to your facility's needs.

ABB will ensure you are aware of any service opportunities. If you've registered your drives and motors with ABB, then its engineers will proactively contact you advising on your most effective service options. All of which helps maximize performance, uptime and efficiency throughout the lifetime of your powertrain.

Replacements
Fast and efficient replacement services to minimize production downtime.

End-of-life services
Responsible dismantling, recycling and reusing of products, according to local laws and industrial standards.

Maintenance
Systematic and organized maintenance and support over the life cycle of your assets.

Advanced services
Gain the unique ABB Ability™ digital advantage through data collection and analytics with advanced services.

Extensions, upgrades & retrofits
Up-to-date systems and devices with the best possible performance level.

Engineering & consulting
Ways to identify and improve the reliability, usability, maintainability and safety of your production processes.

Spares & consumables
Authentic, high-quality ABB spares and consumables with quick delivery.

Global service network 24/7

—

"I need operational excellence, rapid response, improved performance and life cycle management."

Technical support & repairs
Quick and accurate response during emergencies and efficient support during planned production breaks.

Installation & commissioning
Highly-trained and reliable installation and commissioning experts at your service.

Training
Comprehensive and professional training either at ABB premises or your own.

Agreements
Comprehensive bundling of relevant services into one contract to suit your needs.

Services to match your needs

Your service needs depend on your operations, the life cycle of your equipment, and your business priorities. We have identified our customers' four most common needs, and we created service options to satisfy them. Which will you choose to keep your drives at peak performance?

Is uptime your priority?

Keep your drives running with precisely planned and executed maintenance.

Example services include:
- ABB Ability™ Life Cycle Assessment
- Installation and Commissioning
- Spare Parts
- Preventive Maintenance
- Reconditioning
- ABB Drive Care agreement
- Drive Exchange

Operational efficiency

Is rapid response a key consideration?

If your drives need immediate action, our global network is at your service.

Example services include:
- Technical Support
- On-site Repair
- ABB Ability™ Remote Assistance
- Response time agreements
- Training

Rapid response

Drives service
Your choice, your future

The longevity of your drives is influenced by the service you choose.
Whatever you choose, it should be a well-informed decision. We have the expertise and experience to help you find and implement the right service for your drive equipment. Start by asking yourself these two critical questions:
- Why would my drive be serviced?
- What would my optimal service options be?

From here, count on our guidance and full support throughout the entire lifetime of your drives.

Your choice, your business efficiency
ABB Drive Care lets you focus on your core business. A selection of predefined service options matching your needs provides optimal, more reliable performance, extends your drive's lifetime, and controls costs. This reduces the risk of unplanned downtime and makes it easier to budget for maintenance.

We can help you more if we know where you are!
Register your drive for advanced services.

Need to extend your assets' lifetime?

Maximize the lifetime of your drive with our services.

Example services include:
- ABB Ability™ Life Cycle Assessment
- Upgrades, Retrofits and Modernization
- Replacement, Disposal and Recycling

Life cycle management

Is performance most critical to your operation?

Get optimal performance out of your machinery and systems.

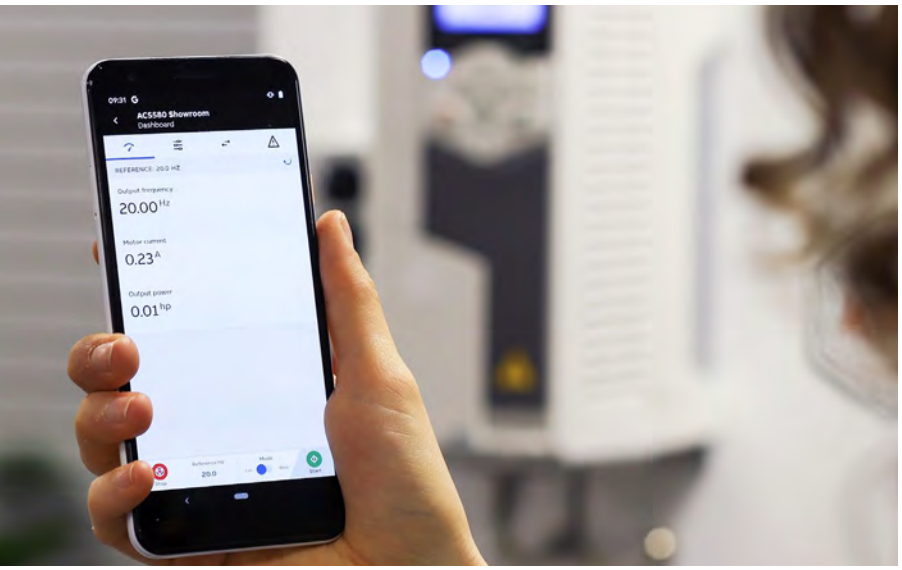
Example services include:
- ABB Ability™ Remote Services
- Engineering and Consulting
- Inspection and Diagnostics
- Upgrades, Retrofits and Modernization
- Workshop Repair
- Tailored services

Performance improvement

ABB DRIVES

ABB Ability™ Mobile Connect for drives

Access expert support, onsite, via your smartphone



Commission and troubleshoot your drives, quickly and easily, using the Drivetune mobile app to communicate with our experts.

ABB Ability™ Mobile Connect for drives gives you access to onsite technical support. Complete with sharing of images, chats and data by smartphone.

Access valuable expertise
Using Mobile Connect we are ready to assist you with expert troubleshooting advice. We can chat, exchange voice messages, videos and pictures, as well as propose parameter changes, create and send parameter backups and support packages.

Minimize your costs
By using on-line help for commissioning and troubleshooting, you get the process running quickly and avoid the unnecessary costs of an on-site visit.

Solve problems fast
Expert assistance available via Mobile Connect can save you significant time, compared to waiting for a support engineer to visit the site.

Increased uptime
Mobile Connect makes all the necessary data instantly available to your support provider. This can save you time in solving issues, and reduce possible downtime costs.

Use the Drivetune mobile app to connect your drive to a mobile device

Click Mobile Connect in Drivetune mobile app to start your remote support session

ABB DRIVES

ABB Ability™ Mobile Connect for drives

How it works in practice

What you need to get set up

- ABB drive with a Bluetooth control panel
- Drivetune mobile app
- Your myABB account
- Mobile Connect Case ID from your local support

Support is needed onsite
When support is needed for commissioning or troubleshooting of drives, simply contact ABB or our local channel partner for support case creation.

Mobile Connect case is created by the support team
We create a unique case ID for easy reference and security.

Activate remote assistance
Open Mobile Connect in the Drivetune mobile app and fill in the case ID. This will activate remote support connection with the expert.

Talking, chatting and parameter sharing
You can exchange details about the issue with our experts by sending us pictures, videos and voice messages. Parameter backups and support packages can also be shared.

Authorize online access for our support, when needed
For deeper analysis, we can access the drive parameters via your Drivetune mobile app for advanced troubleshooting and viewing of parameters, but only when you authorize such access.

We can propose parameter changes to resolve the issue
Based on our experience we often see possible solutions. However, for utmost security, you must review and accept all proposed parameter changes before they can be applied in your drive.

Problem solved; case closed
After solving the problem, the case will be closed in the portal and the case cannot be accessed from the Drivetune mobile app anymore.

Remote and rapid access to ABB's drive experts can save you and your team considerable time, money and headaches.

Contact us today to find out how easy it is to get these valuable benefits by using ABB Ability™ Mobile Connect for drives.

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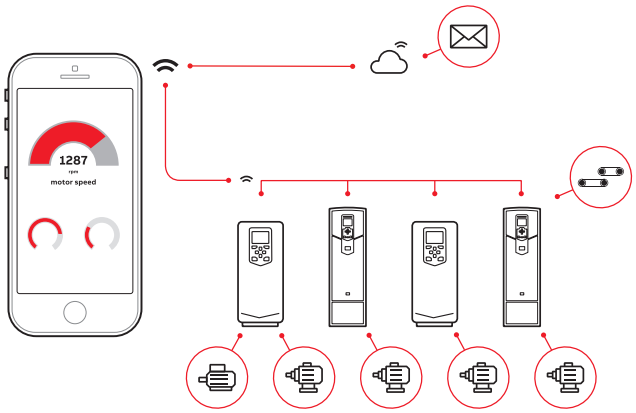
For more information please contact your local ABB representative or visit:

new.abb.com/drives
www.abb.com/searchchannels

ABB Ability™ smartphone apps

Better connectivity and user experience with Drivetune



Easy and fast access to product information and support

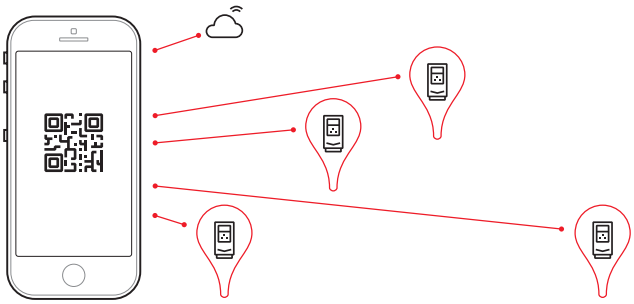
Startup, commission and tune your drive and application

Instantly access drive status and configuration with a simplified user guidance

Optimize performance via drive troubleshooting features

Create and share backups and support packages

Services and support on the go with Drivebase



Search for support documents and contacts

Access your product and service information in the cloud from anywhere

View your drives installed base and plan service activities

Use dynamic QR code to troubleshoot your drive

Report service events

Access information anywhere

Download the apps using the QR codes below or directly from the app stores

Drivetune

Drivetune for commissioning and managing drives

Drivebase

Drivebase for ensured reliability and reduced downtime on production sites

A lifetime of peak performance

You're in control of every phase of the life of your drive. At the heart of drive services is a four-phase product life cycle management model. This model defines the services recommended and available throughout your drive's lifespan.

Now it's easy for you to see the exact service and maintenance available for your drives.

ABB drives life cycle phases explained:

	Full range of life cycle services and support		Limited range of life cycle services and support	Replacement and end-of-life services
Product	Product is in active sales and manufacturing phase.	Serial production has ceased. Product may be available for plant extensions, as a spare part or for installed base renewal.	Product is no longer available.	Product is no longer available.
Services	Full range of life cycle services is available.	Full range of life cycle services is available. Product enhancements may be available through upgrade and retrofit solutions.	Limited range of life cycle services is available. Spare parts availability is limited to available stock.	Replacement and end-of-life services are available.

Keeping you informed
We notify you every step of the way using life cycle status statements and announcements.

The benefit for you is clear information about the status of your drives and the exact services available. It helps you plan the preferred service actions ahead of time and make sure that continuous support is always available.

Step 1

Life Cycle Status Announcement
Provides early information about the upcoming life cycle phase change and how it affects the availability of services.

Step 2

Life Cycle Status Statement
Provides information about the drive's current life cycle status, the availability of product and services, the life cycle plan, and recommended actions.

Notes

Additional information
We reserve the right to make technical changes or modify the contents of this document without prior notice. With regard to purchase orders, the agreed particulars shall prevail. ABB does not accept any responsibility whatsoever for potential errors or possible lack of information in this document.

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For more information, please contact
your local ABB representative or visit

new.abb.com/drives
www.abb.com/plc
www.abb.com/motion

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