

LOW VOLTAGE AC DRIVES

ABB general purpose drives

ACS480, 0.37 to 22 kW



—

Get it fast.

Use it easily.

Improve efficiency.

**ACS480: compact general
purpose drives.**

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The all-compatible ACS480 series

Essential process efficiency and simplicity

Some applications need only the essentials from their drives: efficiency and simplicity in a small package, delivered as effortlessly as possible. The ACS480 general purpose drive is exactly that: it brings all the essentials effortlessly together for you to run basic speed-controlled applications and save costs.

Efficiency and simplicity for many applications

All the essential features are built-in, which makes the drive suitable for a broad range of applications. Built-in features and components simplify drive selection and reduce the need for additional hardware. The user-friendly, functionality-focused menu with multiple languages on the ACS480 control panel provides smart and quick commissioning and startup of the drive. Users can also upgrade the panel to an optimal Bluetooth control panel for wireless commissioning and monitoring. Primary settings and integrated macros are designed to make setting parameters and commissioning as simple as possible with only a few clicks.

Scalable offering

What if you require even more flexibility? You can choose the next member of the all-compatible drives portfolio, such as the ACS580 general purpose drive, or for even more demanding applications, the ACS880 is there to help you.

These drives share similar user interfaces and options, enabling you to use the knowledge you have gained with the ACS480 drives. You increasingly keep saving time, as it is not wasted on learning one new interface after another. And saving time translates to saving money and improving profit potential.

Instant availability

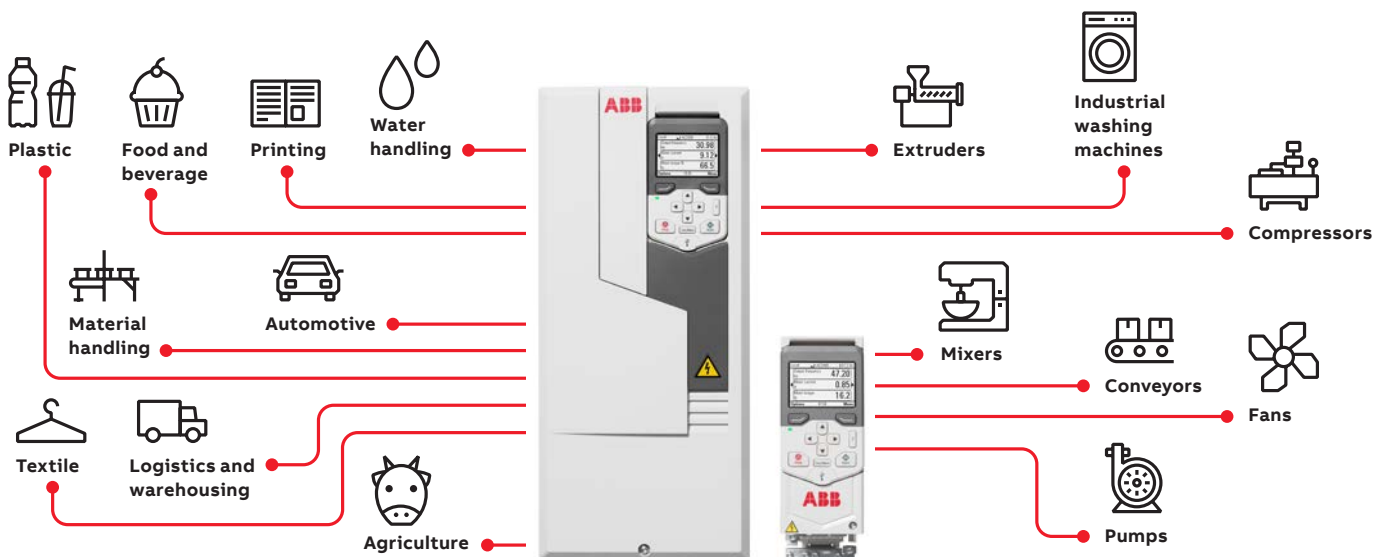
ACS480 products are available from central stocks around the world for immediate delivery. The product is also widely available from ABB distributors.

Maximum reliability

Design features like coated circuit boards, minimized airflow through the control board section, earth fault protection and design for 50 °C ambient temperature make the ACS480 a safe choice. These features prolong the lifetime of the drives and protect your applications from unexpected downtimes. In addition, all the units are tested during production in maximum temperature with nominal loads.

ABB general purpose drives

Industries and applications





Simplicity at the core of your application

Built-in features and primary settings simplify ordering and delivery and reduce commissioning costs. Everything is provided in a single, compact and ready-to-use package for you to run your applications effectively.



Startup and maintenance tool

Drive Composer PC tool for startup, configuration, monitoring and process tuning. The PC tool is connected to the drive's control panel via a USB interface.

Simple to select, install and use

Built-in features, such as an EMC C2 filter, a Modbus RTU fieldbus interface and Safe Torque Off functionality, simplify drive selection, installation and use.



Simplicity at your fingertips as standard

The control panel's straightforward primary settings menu with assistants help you set up and operate the drive quickly and effectively.

Part of the all-compatible offering

All-compatible drives, ACS480, ACS380, ACS580, and ACS880, share the same software platform, tools, user interfaces and options. Yet, there is an optimal drive from the smallest water pump to the biggest cement kiln. When you have learned to use one drive it is easy to use other drives in the portfolio.



Easiness with the built-in STO SIL 3 / PL e

STO protects both people and machines by preventing unexpected startup and stopping-related functions, enabling safe machine maintenance and operation.



Leverage the compact design of the ACS480 for a cost-effective and efficient solution. The cabinet optimized design with built-in features and control functions provide you with streamlined process automation and efficiency to improve your bottom line.



Easiness with all major automation networks

Optional fieldbus adapters enable connectivity with all major industrial automation networks. A fieldbus enables communication between drives and PLC systems, I/O devices and the process, while reducing wiring costs compared to traditional hardwired input/output connections.

Boosting energy efficiency

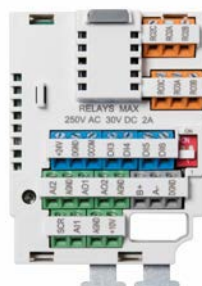
Energy efficiency information is available in the energy optimizer feature to help you optimize your processes. The energy optimizer feature operates both in scalar and vector control modes, ensuring maximum torque per ampere and reducing energy drawn from the supply. You can follow the saved energy, CO₂ emissions or money, and see how fast the drive brings you a return on investment.

Easiness with built-in brake chopper

A brake chopper is built-in as standard for all the ACS480 drives. The brake chopper enables shorter and more accurate braking times, which instantly increases productivity.

Easiness with the built-in EMC C2 filter

High-frequency noise can directly affect sensitive electronic equipment and high-speed communication fieldbuses. Each ACS480 drive is equipped with a built-in EMC filter to reduce high-frequency emissions. The built-in EMC C2 filter allows the drive to be used in industrial and commercial (building) environments without a need to buy and install any external filters.



Easiness with extensive I/O connections and built-in Modbus RTU

The ACS480 comes as standard with an I/O module that features extensive input and output connections for flexible configuration in various applications. In addition, the I/O module includes Modbus RTU interface that easily connects to the automation network. Colored terminals and a possibility to remove the I/O module ensure easy configuration and minimize mistakes in wiring.

Typical industries and applications

ACS480 drives improve process performance, increase productivity, reduce external components and ensure machine and personnel safety.



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02



03



04



05



06



07



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09









- 01 Food and beverage
- 02 Material handling
- 03 Printing

- 04 Rubber and plastics
- 05 Textile
- 06 Sawmill

- 07 Water handling
- 08 Agriculture
- 09 Automotive

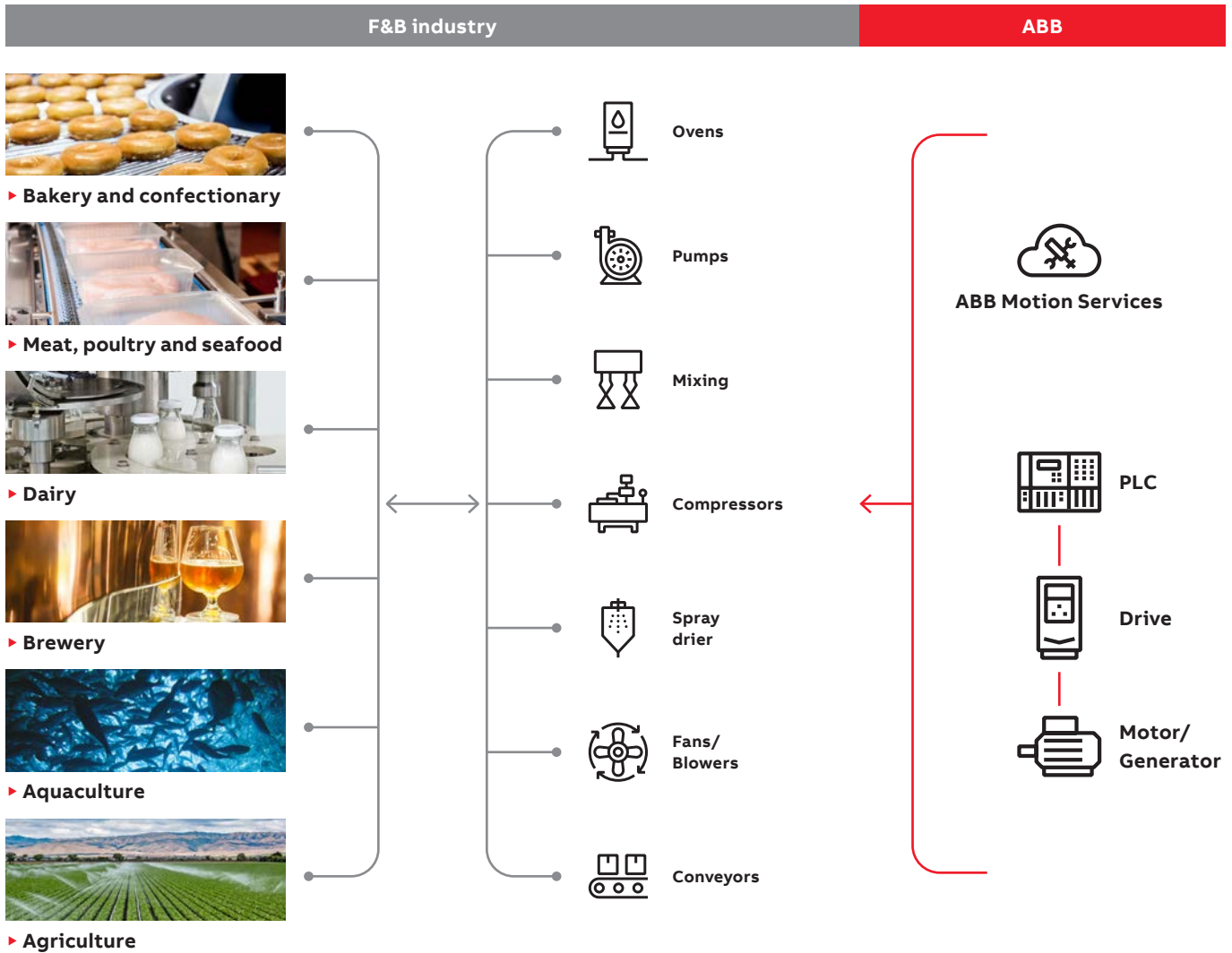
Typical applications

ACS480 drives improve process reliability, increase productivity and ensure machine and personnel safety.

Industry	Application	Customer benefits
Food and beverage 	Blowers, compressors, conveyors, fans, mills, pumps, dryers	<ul style="list-style-type: none"> Accurate control of the process increases the speed of food production while saving energy and improving work safety. Precise speed control increases production uptime even when the load varies. Increased starting torque with boost function allows the same drive series to be used in different applications in the manufacturing plant. Safe Torque Off (SIL 3/PL e) function ensures machine and personnel safety. The easy-to-use control panel with multiple local languages and robust design reduces the time needed for maintenance.
Material handling 	Conveyors	<ul style="list-style-type: none"> Accurate and precise speed control increases production uptime even when the load varies. Safe Torque Off (SIL 3/PL e) function ensures machine and personnel safety. Minimized downtime with robust and reliable design. Integrated brake chopper enabling faster and more accurate start and stop cycles. User load curve function monitors an input signal as a function of frequency or speed, and load, and gives a warning or fault if the curve does not stay within a user-defined profile.
Printing 	Compressors, presses, winders	<ul style="list-style-type: none"> Smooth acceleration prevents breaking the paper. The robust design of the drive reduces mechanical stress on process line equipment, lowering maintenance costs and capital expenditure. Precise speed control of applications increases process uptime by optimizing motor control.
Textile 	Bleaching machines, compressors, conveyors, fans, jet dyeing machines, pumps	<ul style="list-style-type: none"> Precise speed control for high stretching accuracy and better quality of the end product. Adjustable acceleration/deceleration ramps to improve pump control. Real-time clock and timed functions for process optimization. Increased productivity and faster payback times with multiple setups. Built-in counters for additional energy savings and preventive maintenance.
Water handling 	Compressors, pump stations	<ul style="list-style-type: none"> Additional energy savings with energy optimizer function. Adjustable acceleration/deceleration ramps to improve pump control. Built-in PFC macro to control up to six pumps or compressors, allowing flow optimization. Soft pipe fill help to avoid sudden pressure peaks and reduce the risk of water hammer. Dry run protection to prevent the pump from running dry. Pump clean function to prevent unplanned downtime caused by pump blockages. PID/loop control to optimize motor speed according to the process variable, such as pressure or flow.
Agriculture 	Fans, irrigators, pumps, sorters	<ul style="list-style-type: none"> Optimized for cabinet installations with unified height and depth and panel door mounting options. Timed functions to adjust the process control depending on e.g. the time of the day. Three relay outputs and PFC feature to control up to four pumps and to optimize output.
Sawmill 	Wood drying kilns, conveyors for chips	<ul style="list-style-type: none"> Safe Torque Off (SIL 3/PL e) function ensures machine and personnel safety. Integrated brake chopper speeds up braking and productivity. Heavy-duty rating and higher starting torque improves robustness. Three relay outputs connects even four fans without external components. Turning on and off parallel fans based on the humidity of air (requires an external sensor).
Automotive 	Conveyors, fans, pumps	<ul style="list-style-type: none"> Increased productivity and faster payback times with multiple setups. Enhanced quality of end products with smooth control of the motor and process. Safe Torque Off (SIL 3/PL e) function ensures machine and personnel safety. Common fieldbus networks supported. The robust design of the drive reduces mechanical stress on process line equipment, lowering maintenance costs and ensuring high production quality.

Food and beverage domain expertise

ABB has strong domain expertise in the food and beverage industry and its many subsegments. As part of ABB's general purpose drives family, the ACS480 is well suited to support a wide range of applications in the food and beverage subsegments below.



Food and beverage software license for ACS480 (+N8057)

To help our customers to be more effective, we offer a software for the ACS480 which is dedicated to the food and beverage industry. This software will improve your processes by utilizing segment-specific functions:

Food and beverage software license option for ACS480	
Plus code	Description
+N8057	Anti-cavitation ^{*)}

^{*)} More details on page 11

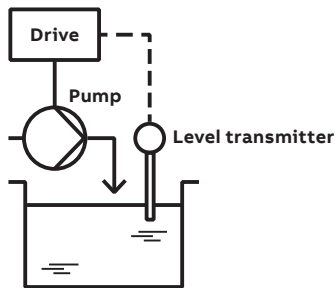
Pumping in food and beverage

A majority of the pump applications in food and beverage benefit from using a drive. The drive matches the pump-flow-rate with the actual demand, while saving energy and optimizing the production process.

The drive controls the pump-flow-rate by utilizing PID control and feedback from the sensor. This functionality controls the level, pressure, flow or temperature automatically.

Application example:

Level control of a beverage tank

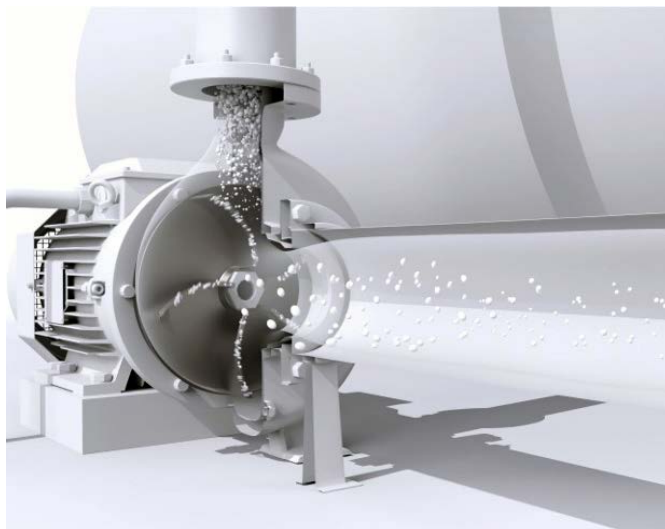


Food and beverage software license for ACS480 (+N8057)

Anti-cavitation

Cavitation is caused by local pressure changes in a liquid, creating vapor bubbles that can damage the pump and process when the vapor bubbles implode.

In addition, cavitation can also cause unplanned downtime, production losses and even harm the end-product.



Quality in end-product

Anti-cavitation helps to avoid shock waves in the liquid. This may lead to poor product quality and lost revenues.

Lower total cost of ownership

Anti-cavitation eliminates the need for external sensors and reduces maintenance.

The Anti-cavitation feature enables reliable pump operations and increases productivity in the food and beverage industry.

Standard ACS480 drive software with versatile features

Improve the performance of the motor and process with sophisticated process control in scalar and vector control modes. Scalar control is a good choice when simplicity is at the core, while vector control is especially for accurate and energy-efficient speed control in demanding applications.

Save commissioning and learning time with the assistant control panel's clear and intuitive user interface and different assistants.

Optimize energy efficiency with features that help you save and manage energy. You can monitor the hourly, daily and cumulative energy consumption via kWh counters. Support for high-efficiency induction, synchronous reluctance and permanent magnet motors enables even higher system efficiency.

Reduce motor noise by spreading the switching frequencies over a user-specified range.

Reduce costs with the built-in and standalone process PID. It makes the ACS480 a self-governing unit requiring only an external process measurement. No external logic input from the control room is needed.

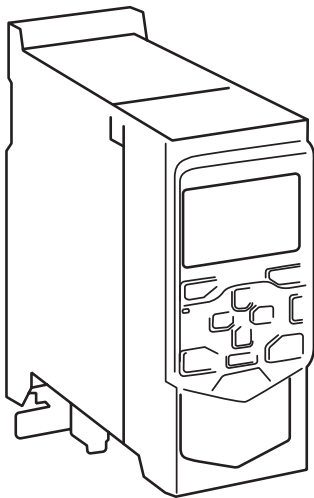
Analyze and optimize the application with the load profile log, which shows you how the drive is operating. Monitor values that matter to you on multiple home view displays.

Control delicate loads with care with mechanical brake control. It prevents small movements of, for example, a belt conveyor while halted.

Save time with primary settings that enable quick access to the most commonly used parameters and settings without a need to go through the complete parameter list.

Analyze and resolve issues with the control panel's diagnostics menu. You can quickly analyze why the drive is performing as it is; running, stopped or running at the present speed.

Reduce manual work with functions that do it for you. The timing function switches between different setpoints based on a predefined schedule, the accel/decel ramps accelerate and decelerate the motor as you want, and the ready made PFC macro sets on and off parallel motors in order to ensure optimal output.



Software features for water and wastewater applications

The ACS480 drive has a built-in pump specific functionality for securing smooth water flow. The functions protect the pumping system and help you to save on operating costs, increase energy efficiency and reduce CO₂ emissions.

Soft pipe filling

The soft pipe fill function manages the pressure of water by filling the pipeline with a gentle approach. This helps to avoid sudden pressure peaks and reduces the risk of water hammer which can cause damage to the water pipes.

The PID/loop control

Optimizes the motor speed according to the process variable, such as pressure. It makes the drive a self-governing unit that requires no external logic input from the control room but requires only an external process measurement.

Adaptive programming

This functionality provides extra flexibility by offering easy alternative for simple programming needs.

Dry run protection

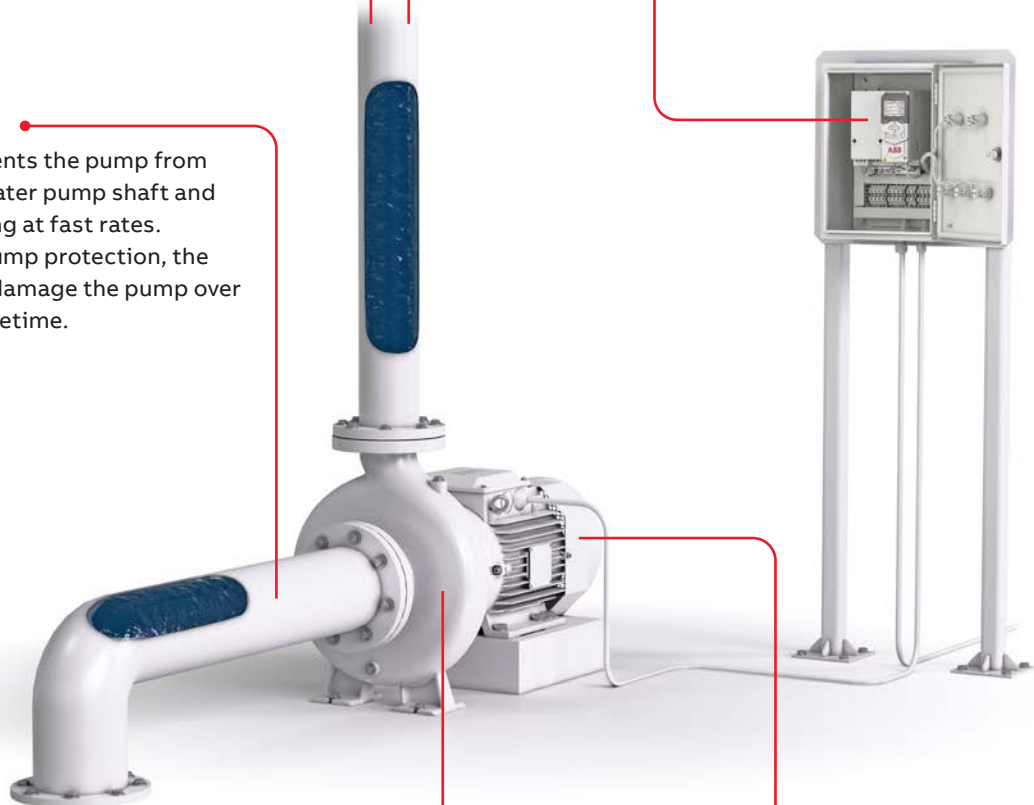
This function prevents the pump from running dry. The water pump shaft and impeller are rotating at fast rates. If there is no dry pump protection, the released heat can damage the pump over time, limiting its lifetime.

Pump cleaning

Achieve savings by preventing unplanned downtime. This function keeps the impeller of the pump clean by running a sequence of aggressive ramps between minimum and maximum pump speed.

Pump and fan control

With a built-in PFC macro one drive controls up to six pumps or blowers in parallel and eliminates the need for an external programmable logic controller. This results in reduced stress on the mains and the system as well as in lower maintenance and operation costs.



How to select a drive

The standard delivery includes all the built-in features, the assistant control panel and the I/O module. The control panel and the I/O module can be replaced with other panels and fieldbus options. The following instructions show you how to order the right drive for your application.

Determine the voltage range and the overload in your application. Typically, fans and pumps can be dimensioned according to light-duty use, while for applications requiring higher torque, it is recommended to dimension according to heavy-duty use.

1

2

Select your drive's order code from the rating table based on your motor's power rating according to light-duty or heavy-duty use.

ABB GENERAL PURPOSE DRIVES, ACS480, CATALOG

Ratings, types and voltages

ACS480-01 (3-phase, 0.1-2.0 kW)

Power type	Power rate (kW)	Nominal voltage (V)			Light-duty use			Heavy-duty use			Max. output current (A)
		U _N	I _N	I _N	I ₂	T ₂	I ₂	T ₂			
ACS480-01-00A01-1	0.15	2.3	2.3	2.3	2.3	1.8	0.25	0.25	0.25	0.25	
ACS480-01-00A01-2	0.35	2.3	2.3	2.3	2.3	1.8	0.25	0.25	0.25	0.25	
ACS480-01-00A01-3	0.75	4.8	4.8	4.8	4.8	1.7	0.25	0.25	0.25	0.25	
ACS480-01-00A01-4	1.5	6.9	6.9	6.9	6.9	1.6	0.25	0.25	0.25	0.25	
ACS480-01-00A01-5	3.0	9.9	9.9	9.9	9.9	1.5	0.25	0.25	0.25	0.25	
ACS480-01-00A01-6	4.5	11.4	11.4	11.4	11.4	1.4	0.25	0.25	0.25	0.25	

ACS480-01 (3-phase, 0.1-2.0 kW)

Power type	Power rate (kW)	Nominal voltage (V)			Light-duty use			Heavy-duty use			Max. output current (A)
		U _N	I _N	I _N	I ₂	T ₂	I ₂	T ₂			
ACS480-01-00A01-1	0.15	2.3	2.3	2.3	2.3	1.8	0.25	0.25	0.25	0.25	
ACS480-01-00A01-2	0.35	2.3	2.3	2.3	2.3	1.8	0.25	0.25	0.25	0.25	
ACS480-01-00A01-3	0.75	4.8	4.8	4.8	4.8	1.7	0.25	0.25	0.25	0.25	
ACS480-01-00A01-4	1.5	6.9	6.9	6.9	6.9	1.6	0.25	0.25	0.25	0.25	
ACS480-01-00A01-5	3.0	9.9	9.9	9.9	9.9	1.5	0.25	0.25	0.25	0.25	
ACS480-01-00A01-6	4.5	11.4	11.4	11.4	11.4	1.4	0.25	0.25	0.25	0.25	

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ABB GENERAL PURPOSE DRIVES, ACS480, CATALOG

ACS480-01 (3-phase, 0.1-2.0 kW) | Power type | Power rate (kW) | Nominal voltage (V) | | | Light-duty use | | | Heavy-duty use | | | Max. output current (A) | |-------------------|-----------------|---------------------|----------------|----------------|----------------|----------------|----------------|----------------|------|------|-------------------------| | | | U _N | I _N | I _N | I ₂ | T ₂ | I ₂ | T ₂ | | | | | ACS480-01-00A01-1 | 0.15 | 2.3 | 2.3 | 2.3 | 2.3 | 1.8 | 0.25 | 0.25 | 0.25 | 0.25 | | | ACS480-01-00A01-2 | 0.35 | 2.3 | 2.3 | 2.3 | 2.3 | 1.8 | 0.25 | 0.25 | 0.25 | 0.25 | | | ACS480-01-00A01-3 | 0.75 | 4.8 | 4.8 | 4.8 | 4.8 | 1.7 | 0.25 | 0.25 | 0.25 | 0.25 | | | ACS480-01-00A01-4 | 1.5 | 6.9 | 6.9 | 6.9 | 6.9 | 1.6 | 0.25 | 0.25 | 0.25 | 0.25 | | | ACS480-01-00A01-5 | 3.0 | 9.9 | 9.9 | 9.9 | 9.9 | 1.5 | 0.25 | 0.25 | 0.25 | 0.25 | | | ACS480-01-00A01-6 | 4.5 | 11.4 | 11.4 | 11.4 | 11.4 | 1.4 | 0.25 | 0.25 | 0.25 | 0.25 | | **ACS480-01 (3-phase, 0.1-2.0 kW)** | Power type | Power rate (kW) | Nominal voltage (V) | | | Light-duty use | | | Heavy-duty use | | | Max. output current (A) | |-------------------|-----------------|---------------------|----------------|----------------|----------------|----------------|----------------|----------------|------|------|-------------------------| | | | U _N | I _N | I _N | I ₂ | T ₂ | I ₂ | T ₂ | | | | | ACS480-01-00A01-1 | 0.15 | 2.3 | 2.3 | 2.3 | 2.3 | 1.8 | 0.25 | 0.25 | 0.25 | 0.25 | | | ACS480-01-00A01-2 | 0.35 | 2.3 | 2.3 | 2.3 | 2.3 | 1.8 | 0.25 | 0.25 | 0.25 | 0.25 | | | ACS480-01-00A01-3 | 0.75 | 4.8 | 4.8 | 4.8 | 4.8 | 1.7 | 0.25 | 0.25 | 0.25 | 0.25 | | | ACS480-01-00A01-4 | 1.5 | 6.9 | 6.9 | 6.9 | 6.9 | 1.6 | 0.25 | 0.25 | 0.25 | 0.25 | | | ACS480-01-00A01-5 | 3.0 | 9.9 | 9.9 | 9.9 | 9.9 | 1.5 | 0.25 | 0.25 | 0.25 | 0.25 | | | ACS480-01-00A01-6 | 4.5 | 11.4 | 11.4 | 11.4 | 11.4 | 1.4 | 0.25 | 0.25 | 0.25 | 0.25 | |

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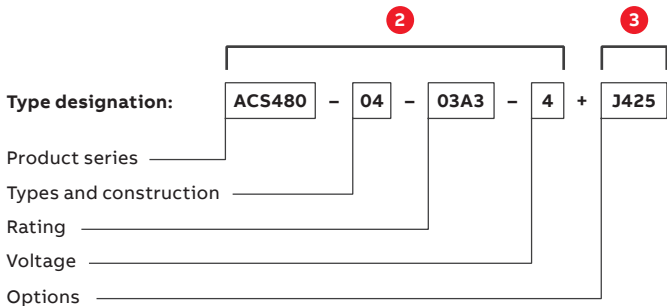
Choose your panels and options (on pages 22) and add the codes to the drive's order code if needed. Remember to use a "+" mark before each option code.

3

ACS480 drives are optimized especially for cabinet installations. Uniform height and depth across the full power range allow easy installation using a single rail inside the cabinet, and side-by-side mounting saves space and enables smaller cabinets to be used. The door mounting kit simplifies drive operation, as the control panel is easy to mount on the cabinet door.

ABB GENERAL PURPOSE DRIVES, ACS480, CATALOG

Option code	Description	Max. charge code
ACS480-01-00A01-1	Assistant control panel or controller	ACS480-01
ACS480-01-00A01-2	Industrial assistant control panel	ACS480-02
ACS480-01-00A01-3	Control panel with Bluetooth module	ACS480-03
ACS480-01-00A01-4	Basic control panel	ACS480-04
ACS480-01-00A01-5	Basic control panel with I/O module	ACS480-05
ACS480-01-00A01-6	Control panel mounting plate (Not for use with ACS480-01)	ACS480-06
ACS480-01-00A01-7	Control panel mounting plate (For use with ACS480-01)	ACS480-07
ACS480-01-00A01-8	Door mounting kit for the panel (For use with ACS480-01 and ACS480-02)	ACS480-08
ACS480-01-00A01-9	Door mounting kit for the panel (For use with ACS480-03 and ACS480-04)	ACS480-09



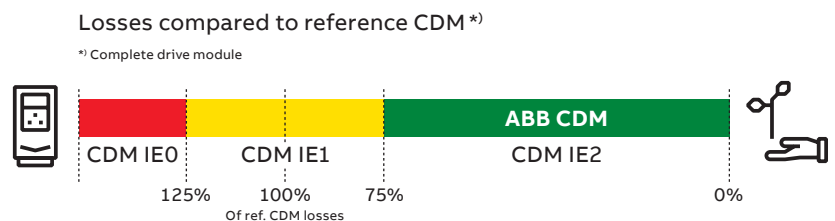
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ABB AC drives comply with the EU Ecodesign requirements

The Ecodesign regulation (EU) 2019/1781 is the legislative framework, that sets minimum energy efficiency requirements for low voltage induction motors and variable speed drives. AC drives and power drive systems are classified according to their power losses. From July 2021, the minimum requirement for non-regenerative AC drives in EU is IE2.

ABB's AC drives (micro and machinery, general purpose, industrial and industry-specific drives) comply with the strictest requirements of the standard for energy efficiency and are classified as IE2.

Energy efficiency classes for a Complete Drive Module (CDM)



Markings on the ABB LV AC drives

Unique identifier QR code to Ecodesign information



IE class and % loss of rated apparent power 50 Hz, 400 V

IE2 (90;100) 2,3 %

Unique QR codes are located on the rating plate and/or the front side of the drive.

ABB EcoDesign web-based tool



- Calculates absolute and relative losses and efficiency data at standard and user-defined operating points according to EU regulation 2019/1781 for complete drive module (CDM), LV motors with VSD supply, and power drive system (PDS)
- Losses and efficiency data at operating points in graphical and table format
- Printable efficiency report with possibility to customize title and additional details
- Report can be converted to PDF or CSV format and shared via email

The regulation was implemented in two steps:

Step 1: July 1, 2021

- Power range: from 0.12 to 1000 kW
- 3-phase LV AC drives with diode rectifier
- Drive manufacturers must declare power losses in percentage of the rated apparent output power at 8 different operating points as well as standby losses. The international IE level is given at the nominal point. Drives fulfilling the requirements will be CE marked.

Out of scope of the regulation:

- All drives without CE marking
- Following low voltage AC drives: regenerative drives, low-harmonic drives (THD < 10%), multiple AC-output drives and single-phase drives.
- Medium voltage drives, DC drives and traction drives
- Drive cabinets with already conformity assessed modules

Step 2: July 1, 2023

No changes for AC drives

For more information, see: ecodesign.drivesmotors.abb.com

Technical data

Mains connection	
Voltage and power range	1-phase, 200 V to 240 V, +10%/-15% from 0.37 to 22 kW
	3-phase, 200 V to 240 V, +10%/-15% from 0.37 to 22 kW
	3-phase, 380 to 480 V, +10%/-15% from 0.75 up to 22 kW
Frequency	from 48 to 63 Hz
Efficiency class (IEC 61800-9-2)	IE2

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% seconds 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
	EC RoHS directive 2011/65/EU
	TÜV certification for functional safety
	UL, cUL certification
	UKCA
	Ecodesign (EU) 2019/1781

Harmonics compliance	
	When installing ACS480 drives to public network, the drives may require external harmonic mitigation to be compliance with the IEC 61000-3-12 or IEC 61000-3-2. See further information in hardware manual.

EMC according to EN 61800-3: 2004 + A1: 2012	
	ACS480 cabinet-mounted drive with built-in C2 category filter as standard
Environmental limits	
Ambient temperature	
Transport	-40 to +70 °C
Storage	-40 to +70 °C
Operation area	-10 to +50 °C no derating required, no frost allowed +50 °C - +60 °C with derating
Cooling method	Dry clean air
Air-cooled	
Altitude	
0 to 1,000 m	Without derating
1,000 to 2,000 m	With derating of 1%/100 m
Above 2,000 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

Dimensions

ACS480 IP20								
Frames	Height *)		Width		Depth		Weight	
	(mm)	(in)	(mm)	(in)	(mm)	(in)	(kg)	(lb)
R0	223.0	8.78	73.0	2.87	208.0	8.19	1.70	3.74
R1	223.0	8.78	73.0	2.87	207.1	8.15	1.77	3.90
R2	223.0	8.78	96.6	3.80	207.1	8.15	2.35	5.19
R3	220.0	8.66	171.7	6.76	207.1	8.15	3.52	7.76
R4	240.0	9.45	260.0	10.24	212.1	8.35	6.02	13.28

*) Footprint height of the drive with clamp





Ratings, types and voltages

ACS480-04 (1-phase, $U_N = 230$ V)

Frame type	Frame size	Nominal ratings		Light-duty use		Heavy-duty use		Max. output current	
		P_N (kW)	I_N (A)	I_{Ld} (A)	P_{Ld} (kW)	I_{Hd} (A)	P_{Hd} (kW)	I_{max} (A)	
ACS480-04-02A4-1	R0	0.37	2.4	2.3	0.37	1.8	0.25	3.2	
ACS480-04-03A7-1	R0	0.55	3.7	3.5	0.55	2.4	0.37	4.3	
ACS480-04-04A8-1	R1	0.75	4.8	4.6	0.75	3.7	0.55	6.7	
ACS480-04-06A9-1	R1	1.1	6.9	6.6	1.1	4.8	0.75	8.6	
ACS480-04-07A8-1	R1	1.5	7.8	7.4	1.5	6.9	1.1	12.4	
ACS480-04-09A8-1	R2	2.2	9.8	9.3	2.2	7.8	1.5	14	
ACS480-04-12A2-1	R2	3	12.2	11.6	3	9.8	2.2	17.6	

ACS480-04 (3-phase, $U_N = 230$ V)

Frame type	Frame size	Nominal ratings		Light-duty use		Heavy-duty use		Max. output current	
		P_N (kW)	I_N (A)	I_{Ld} (A)	P_{Ld} (kW)	I_{Hd} (A)	P_{Hd} (kW)	I_{max} (A)	
ACS480-04-02A4-2	R1	0.37	2.4	2.3	0.37	1.8	0.25	3.2	
ACS480-04-03A7-2	R1	0.55	3.7	3.5	0.55	2.4	0.37	4.3	
ACS480-04-04A8-2	R1	0.75	4.8	4.6	0.75	3.7	0.55	6.7	
ACS480-04-06A9-2	R1	1.1	6.9	6.6	1.1	4.8	0.75	8.6	
ACS480-04-07A8-2	R1	1.5	7.8	7.5	1.5	6.9	1.1	12.4	
ACS480-04-09A8-2	R1	2.2	9.8	9.3	2.2	7.8	1.5	14.0	
ACS480-04-12A2-2	R2	3.0	12.2	11.6	3.0	9.8	2.2	17.6	
ACS480-04-17A5-2	R3	4.0	17.5	16.7	4.0	12.2	3.0	22.0	
ACS480-04-25A0-2	R3	5.5	25.0	24.2	5.5	17.5	4.0	31.5	
ACS480-04-032A-2	R4	7.5	32.0	30.8	7.5	25.0	5.5	45.0	
ACS480-04-048A-2	R4	11.0	48.0	46.2	11.0	32.0	7.5	57.6	

Wall-mounted drives, ACS480-04 (3-phase supply voltage range 380-480 V)

Frame type	Frame size	3-phase, $U_N = 400\text{ V}$							3-phase, $U_N = 480\text{ V}$				
		Nominal ratings		Light-duty use		Heavy-duty use			Light-duty use		Heavy-duty use		Max. output current
		P_N (kW)	I_N (A)	I_{Ld} (A)	P_{Ld} (kW)	I_{Hd} (A)	P_{Hd} (kW)	I_{max} (A)	I_{Ld} (A)	P_{Ld} (hp)	I_{Hd} (A)	P_{Hd} (hp)	I_{max} (A)
ACS480-04-02A7-4	R1	0.75	2.6	2.5	0.75	1.8	0.55	3.2	2.1	1.0	1.6	0.75	2.9
ACS480-04-03A4-4	R1	1.1	3.3	3.1	1.1	2.6	0.75	4.7	3.0	1.5	2.1	1.0	3.8
ACS480-04-04A1-4	R1	1.5	4.0	3.8	1.5	3.3	1.1	5.9	3.5	2.0	3.0	1.5	5.4
ACS480-04-05A7-4	R1	2.2	5.6	5.3	2.2	4.0	1.5	7.2	4.8	3.0	3.4	2.0	6.1
ACS480-04-07A3-4	R1	3.0	7.2	6.8	3.0	5.6	2.2	10.1	6.0	3.0	4.0	2.0	7.2
ACS480-04-09A5-4	R1	4.0	9.4	8.9	4.0	7.2	3.0	13.0	7.6	5.0	4.8	3.0	8.6
ACS480-04-12A7-4	R2	5.5	12.6	12.0	5.5	9.4	4.0	16.9	11.0	7.5	7.6	5.0	13.7
ACS480-04-018A-4	R3	7.5	17.0	16.2	7.5	12.6	5.5	22.7	14.0	10.0	11.0	7.5	19.8
ACS480-04-026A-4	R3	11.0	25.0	23.8	11.0	17.0	7.5	30.6	21.0	15.0	14.0	10.0	25.2
ACS480-04-033A-4	R4	15.0	32.0	30.5	15.0	25.0	11.0	45.0	27.0	20.0	21.0	15.0	37.8
ACS480-04-039A-4	R4	18.5	38.0	36.0	18.5	32.0	15.0	57.6	34.0	25.0	27.0	20.0	48.6
ACS480-04-046A-4	R4	22.0	45.0	42.8	22.0	38.0	18.5	68.4	40.0	30.0	34.0	25.0	61.2
ACS480-04-050A-4	R4	22.0	50.0	48.0	22.0	45.0	22.0	81.0	42.0	30.0	40.0	30.0	72.0

Nominal ratings

I_N	Rated current available continuously without overloadability at 50 °C.
P_N	Typical motor power in no-overload use.

Light-duty use

I_{Ld}	Continuous current allowing 110% I_{Ld} for 1 minute every 10 minutes at 50 °C.
P_{Ld}	Typical motor power in light-duty use.

Heavy-duty use

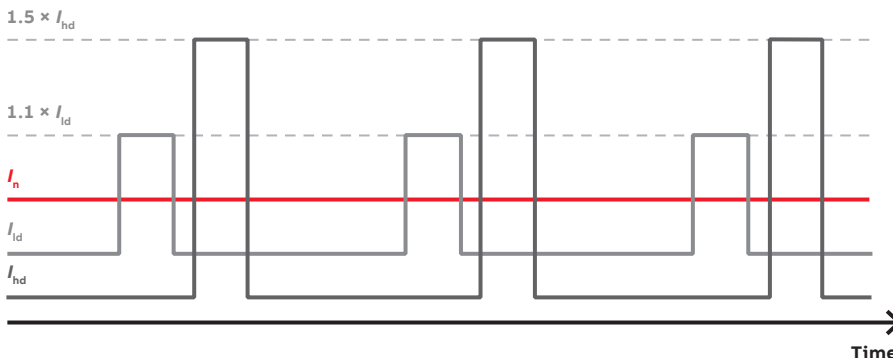
I_{Hd}	Continuous current allowing 150% I_{Hd} for 1 minute every 10 minutes at 50 °C.
P_{Hd}	Typical motor power in heavy-duty use.

Maximum output current

I_{max}	Maximum output current. Available for 2 seconds at start.
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The ratings apply at 50 °C ambient temperatures.
 For derating at higher altitudes, temperatures or switching frequencies, see the hardware manual, document code: 3AXD50000047392

Overloadability and output current illustration



Definition	ACS480
No overload	I_n
110% overload 1 min / 10 minutes	I_{ld}
150% overload 1 min / 10 minutes	I_{hd}

Easiness on a whole new level



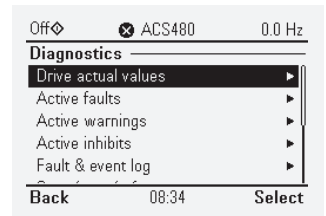
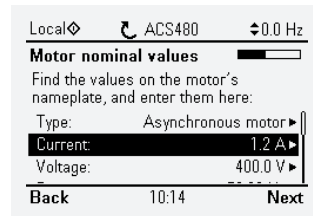
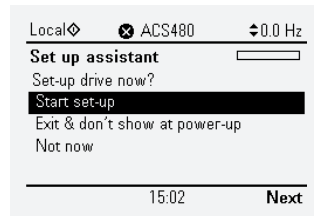
The assistant control panel's intuitive user interface, assistants and ready-made macros offer simplicity for your every day life and saves your time. The panel guides you through commissioning without a need to know any drive parameters and helps in unclear situations.

Assistant control panel, ACS-AP-S

Set up the drive, fine-tune motor control and monitor values that matter using the assistant control panel, delivered as standard with all ACS480 drives. The assistant control panel can also be used with the ACS580 and the ACS380.

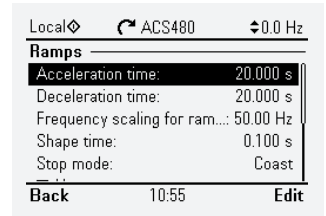
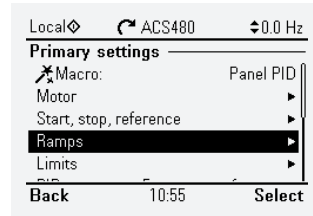
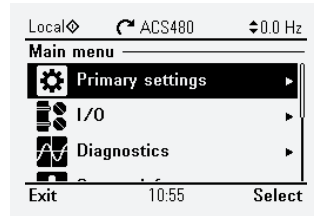
Commission without a hassle

Select language, set time and date, name the drive, enter motor values, test rotating the motor.



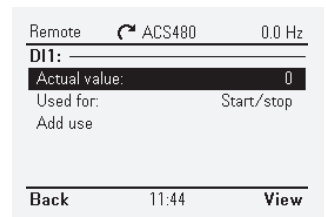
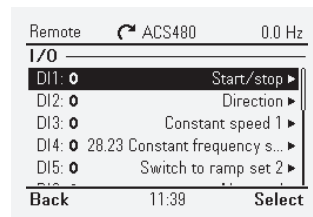
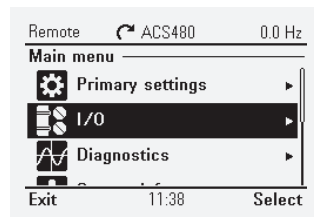
Primary settings

Select ready-made macros, perform ID-run, fine-tune settings related to e.g. ramps, limits, PIDs, fieldbuses, reset to defaults.



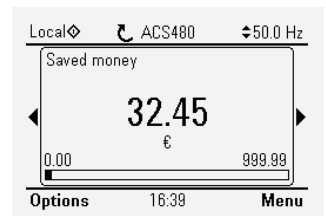
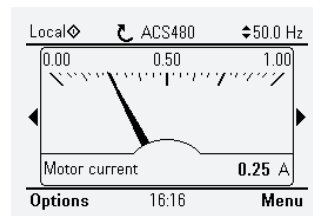
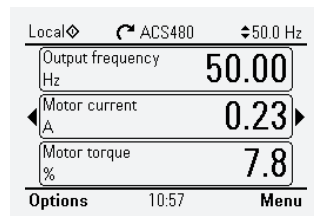
Input/output menu

Set and monitor your input/output (I/O) connections for real-time diagnostics



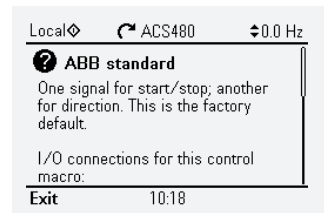
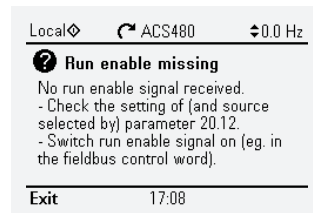
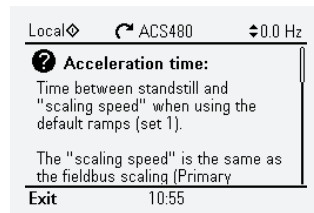
Home view displays

Monitor the values that are the most important to you. You can select values for monitoring from a ready-made list or choose user-defined parameters.



Help button

The help button provides more information about your selection and it can be pressed in any view.



Control panel options and mounting kits

The standard delivery of the ACS480 includes the assistant control panel, but it can be replaced by other panels using the +J codes.



Bluetooth control panel, ACS-AP-W *)

The optional Bluetooth panel enables connection with the Drivetune mobile app. The app is available for free from Google Play and the Apple App store. Together with the Drivetune app and the Bluetooth panel, users can, for example, commission and monitor the drive remotely.



Control panel mounting platform, DPMP-01

This mounting platform is for flush mountings. This requires also RDUM-01 (blank control panel with the RJ-45 connector) and a control panel (assistant, basic, Bluetooth or industrial).



Basic control panel, ACS-BP-S

The icon-based control panel supports users with parameter backup, settings and fault tracking in basic operation.



Control panel mounting platform, DPMP-02

This mounting platform is for surface mountings. This requires also RDUM-01 (blank control panel with the RJ-45 connector) and a control panel (assistant, basic, Bluetooth or industrial).



Blank control panel cover with RJ-45 connector, RDUM-01

The RDUM-01 panel is used in cabinet installations to connect the assistant control panel, basic control panel, or Bluetooth control panel on the cabinet door to the drive with the RJ-45 cable.



Door mounting kit, DPMP-EXT2

The door mounting kit is ideal for cabinet installations. A kit for one drive includes one DPMP-02 and one RDUM-01 (blank control panel cover with RJ-45 connector). If a different control panel than the assistant panel is desired for cabinet door installation, it needs to be ordered separately.



Industrial control panel, ACS-AP-I *)

The industrial control panel is compatible with all ABB drives, making it simple to use a single panel with different products.



Control panel bus adapters, CDPI-02

Control panel bus adapters are used to connect HVAC control panels with a RJ-45 cable to the drive from a distance, e.g. when mounting the control panel on a cabinet door. In addition, CDPI adapters can be used to daisy chain several ACH drives together to be controlled with a single control panel or PC tool.



Control panel mounting kit for outdoor installation, DPMP-04/05

Enables control panel outdoor mounting thanks to IP66 protection class, UV resistance and IK07 impact protection rating.

*) Also compatible with other ABB all-compatible drives: ACS380, ACS580, and ACS880 drives.

—

ACS480 drives are optimized especially for cabinet installations. Uniform height and depth across the full power range allow easy installation using a single rail inside the cabinet, and side-by-side mounting saves space and enables smaller cabinets to be used. The door mounting kit simplifies drive operation, as the control panel is easy to mount on the cabinet door.

Control panel options			
Loose option code	Plus code	Description	Type designation
3AUA0000064884	–	Assistant control panel as standard	ACS-AP-S
3AUA0000088311	+J425	Industrial Assistant control panel	ACS-AP-I
3AXD50000025965	+J429	Control panel with Bluetooth interface	ACS-AP-W
3AXD50000028828	+J404	Basic control panel	ACS-BP-S
3AXD50000040850	+J424	Blank control panel cover with RJ-45 connector	RDUM-01
3AUA0000108878	–	Control panel mounting platform (flush mounted, requires also panel bus adapter on the drive)	DPMP-01
3AXD50000009374	–	Control panel mounting platform (surface mounted, requires also panel bus adapter on the drive)	DPMP-02
3AXD50000048730	–	Door mounting kit for the panel (for one drive, contains DPMP-02 and RDUM-01)	DPMP-EXT2
+0J400		If no control panel is needed, the assistant control panel can be removed from the standard delivery.	



Standard interface and extensions for plug-in connectivity

ACS480 drives offer a wide range of standard interfaces. In addition, the drive has one slot for either an I/O module or a fieldbus module.



Default factory I/O connection diagram

Terminal	Meaning	Default macro connections	
Reference voltage and analog inputs and outputs.			
1	SCR	Signal cable shield (screen)	
2	AI1	Output frequency/speed reference: 0...10 V	
3	AGND	Analog input circuit common	
4	+10 V	Reference voltage 10 V DC	
5	AI2	Not configured	
6	AGND	Analog input circuit common	
7	AO1	Output frequency: 0...20 mA	
8	AO2	Output current: 0...20 mA	
9	AGND	Analog output circuit common	
Aux. voltage output and programmable digital inputs			
10	+24 V	Auxiliary voltage output +24 V DC, max. 250 mA	
11	DGND	Auxiliary voltage output common	
12	DCOM	Digital input common for all	
13	DI1	Stop (0)/Start (1)	
14	DI2	Forward (0)/Reverse (1)	
15	DI3	Constant frequency/speed selection	
16	DI4	Constant frequency/speed selection	
17	DI5	Ramp set 1 (0)/Ramp set 2 (1)	
18	DI6	Not configured	
Relay outputs			
19	RO1C		Ready
20	RO1A		250 V AC/30 V DC
21	RO1B		Running
22	RO2C		250 V AC/30 V DC
23	RO2A		Fault (-1)
24	RO2B		250 V AC/30 V DC
25	RO3C		2 A
26	RO3A		2 A
27	RO3B		2 A
EIA-485 Modbus RTU			
29	B+	Embedded Modbus RTU (EIA-485)	
30	A-		
31	DGND		
S100	TERM&BIAS	Serial data link termination switch	
Safe torque off			
34	SGND	Safe Torque Off. Factory connection. Both circuits must be closed for the drive to start. See chapter The Safe Torque Off function in the Hardware manual of the drive.	
35	IN1		
36	IN2		
37	OUT1		
42	+24 V	Auxiliary voltage output. The alternative terminals have the same supply as the base unit.	
43	DGND		
44	DCOM		

The standard delivery of the ACS480 includes the I/O module. If a fieldbus adapter is needed instead, it should be ordered with a corresponding plus code.

Options

The standard delivery includes an I/O module with Modbus RTU fieldbus interface. The I/O module can be replaced by various fieldbus adapters. Side options bring even more functionality to match your needs.

Fieldbus adapter modules

The ACS480 general purpose drives are compatible with a wide range of fieldbus protocols. Fieldbus communication reduces wiring costs when compared to traditional hardwired input/output connections. A fieldbus adapter replaces an I/O module, meaning they cannot be used simultaneously. Note also that the Modbus RTU fieldbus interface is included in the I/O module.



Input/output extension

A fieldbus adapter replaces the standard I/O module, leaving only the base unit's I/O connections. If the base unit is not sufficient an I/O extension, BIO-01, can be installed underneath the fieldbus adapter, adding the number of available I/O terminals.



Base unit

The ACS480 comes as standard with the I/O module that can be replaced with a fieldbus adapter. If neither the I/O module nor a fieldbus is needed, the drive can be also ordered as a base unit.



Fieldbus adapters

Loose option code	Plus code	Fieldbus protocol	Adapter
68469325	+K454	PROFIBUS DP, DPV0/DPV1	FPBA-01
68469341	+K451	DeviceNet	FDNA-01
3AXD50000049964	+K491	Two-Port Modbus/TCP	FMBT-21
3AXD50000192786	+K490	Two-Port Ethernet/IP	FEIP-21
3AXD50000192779	+K492	Two-Port PROFINET IO	FPNO-21
68469376	+K457	CANopen	FCAN-01
3AUA0000094512	+K462	ControlNet	FCNA-01
3AUA0000072069	+K469	EtherCAT	FECA-01
3AUA0000072120	+K470	POWERLINK	FEPL-02

I/O extension

Loose option code	Plus code	Description	Adapter
3AXD50000191635	+L515	I/O extension module including three digital inputs, one digital output and one analog input.	BIO-01
	+L534	Auxiliary power extension module enables the use of an external auxiliary power supply with the drive. It is not compatible with BREL.	BAPO-01
	+L511	Relay output extension module adds four relay outputs to the drive.	BREL-01

Remove the I/O module

+OL540	Removes the I/O module (RIIO-01) and Modbus RTU interface from the delivery leaving only the base unit I/O connections (2 x digital input, 1 x relay output STO).
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Tools

Enjoy the easiness offered by the cold configuration tool and Drive Composer PC tool. These tools lighten your workload, especially if there are many drives. The cold configurator tool provides a quick way to parametrize unpowered drives even in their boxes, and the Drive Composer PC tool offers advanced means, for example, for commissioning and monitoring.

Safe configuration for unpowered drives

The CCA-01 cold configuration adapter provides a serial communication interface for unpowered ACS480 drives. With the adapter, safety isolation of both serial communication and control board power supply is possible. The power supply is taken from a PC USB port.

Cold configurator



Users can download the software and parameters to drives without powering the drive.

MRP code	Description	Type designation
3AXD50000019865	Cold configurator adapter, packed kit	CCA-01

Drive Composer

The Drive Composer PC tool offers fast and harmonized setup, commissioning and monitoring for all-compatible drives. The free version of the tool provides startup and maintenance capabilities and gathers all drive information, such as parameter loggers, faults, backups and lists, into a support diagnostics file. Drive Composer pro provides additional features such as custom parameter windows, graphical control diagrams of the drive's configuration, and improved monitoring and diagnostics.

Drive Composer	Entry level (free)	Pro level
	Basic functionality	Entry-level features
	Parameter setting	Networked drives
	Point-to-point connection	Control diagrams
	Simple monitoring	Data logger(s)
	Supports adaptive programming	Graphical safety set-up
	–	Multiple backup and restore
	–	Adaptive (block) programming
–	Drive configuration by using virtual drive	

Link/MRP codes	Description	Type designation
new.abb.com/drives/software-tools/drive-composer	Link to download free Drive Composer entry	–
9AKK105408A3415	Drive Composer entry PC tool (document)	–
3AUA0000108087	Drive Composer pro PC tool (single user license)	DCPT-01
3AUA0000145150	Drive Composer pro PC tool (10 users license)	DCPT-01
3AUA0000145151	Drive Composer pro PC tool (20 users license)	DCPT-01

Automation Builder

ABB Automation Builder is the integrated software suite for machine builders and system integrators wanting to automate their machines and systems in a productive way. Combining the tools required for configuring, programming, debugging and maintaining automation projects in a common, intuitive interface, Automation Builder addresses the largest single cost element of most of today's industrial automation projects: software.

Automation Builder



ABB Automation Builder covers the engineering of ABB PLCs, safety PLCs, control panels, drives, motion and robots.

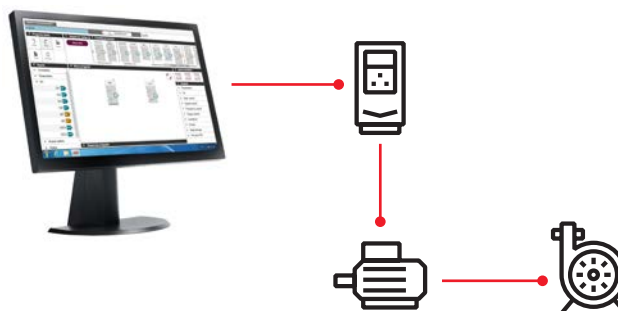
The common engineering tool Automation Builder is used for drive and PLC programming and configuration.

Automation Builder is available in Basic, Standard and Premium editions, fitting the needs of small projects and managing the challenges of many and large projects for OEM and system integrators.

Adaptive programming

Adaptive programming software, embedded inside the drive, is especially handy when there is a need to distribute some of the machine's control logic to the drive. Adaptive programming brings energy savings when the drive is adjusted to control the application optimally. You can use our Drive Composer pro PC tool to set up the adaptive programming. The drive also offers sequence programming capabilities. Adaptive programming makes it possible to enhance the existing application control program to precisely fit users' application needs. The program is also handy for ensuring that the drive's electrical design is connected as it should be with working drive signals.

Adaptive programming



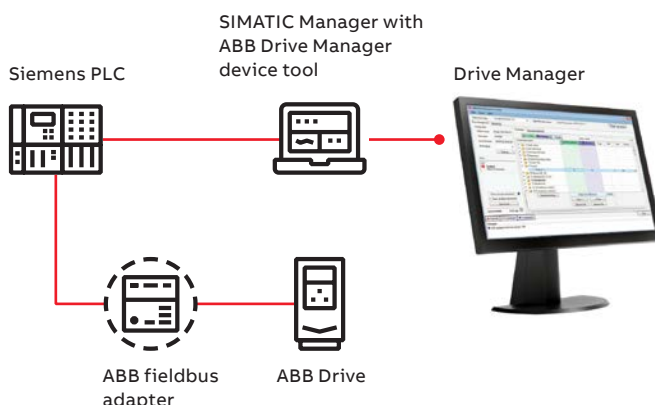
Drive manager

Drive Manager for SIMATIC (DM4S-01) is a plug-in device tool that can be easily installed, for example, in the STEP 7 and TIA Portal. It utilizes the TCI interface of the SIMATIC PLC to communicate with drives connected to PROFIBUS or a PROFINET network.

Drive Manager for SIMATIC offers several useful, ready-made features that simplify the setup of ABB low voltage drives used in combination, for example, with SIMATIC S7 PLCs including:

- Network connection over PROFIBUS and PROFINET (single point of access)
- Online and offline configuration of drives
- Monitoring of actual drive values
- Export to/import from the drive-dedicated PC tools
- Saving drive parameter settings within the SIMATIC PLC project

Drive manager



EMC – electromagnetic compatibility

What is EMC?

EMC stands for electromagnetic compatibility. It is the ability of electrical/electronic equipment to operate without problems in an electromagnetic environment.

Likewise, the equipment must not disturb or interfere with any other product or system in its locality. This is a legal requirement for all equipment taken into service within the European Economic Area (EEA).

Installation environments

A power drive system (PDS) can be connected to either industrial or public power distribution networks. The environment class depends on the way the PDS is connected to power supply.

The 1st environment includes domestic premises. It also includes establishments directly connected without an intermediate transformer to a low voltage power supply network that supplies buildings used for domestic purposes.

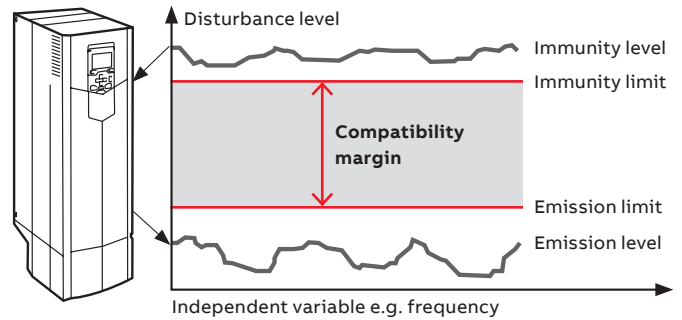
The 2nd environment includes all establishments directly connected to public low voltage power supply networks.

EMC solutions

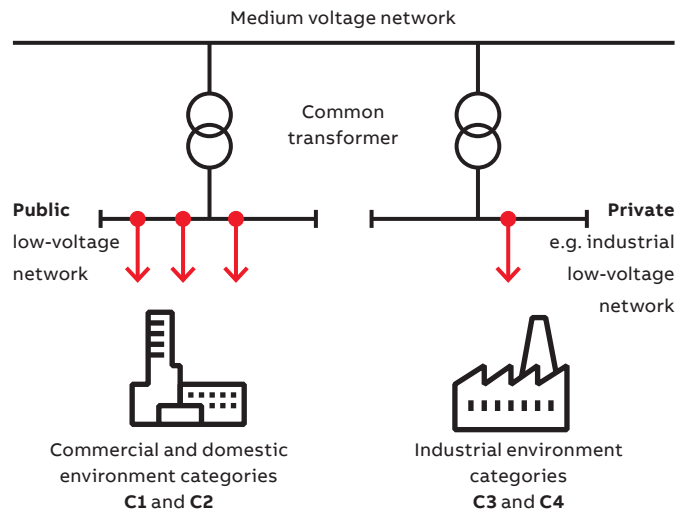
To fulfill the EMC requirements, the drives are equipped with standard or optional RFI filtering for HF disturbances.

- Using ferrite rings in power connection points
- Using an AC or DC choke (while they are meant to protect against harmonics, they reduce HF disturbances as well)
- Using an LCL filter in the case of regenerative drives
- Using a du/dt filter

Immunity and emission compatibility



Installation environments



The product standard EN 61800-3 divides PDSs into four categories according to the intended use

<p>C1 – 1st environment</p> <ul style="list-style-type: none"> • Household appliances • Usually plug connectible to any wall outlet • Anyone can connect these to the network • Examples: washing machines, TV sets, computers, microwave ovens, etc. 	<p>C2 – 1st environment</p> <ul style="list-style-type: none"> • Fixed household and public appliances • Need to be installed or operated by a professional • Examples: elevators, rooftop fans, residential booster pumps, gates and barriers, supermarket freezers, etc. 	<p>C3 – 2nd environment</p> <ul style="list-style-type: none"> • Professional equipment • Needs to be installed or operated by a professional • In some rare cases, may also be pluggable • Examples: any equipment for industrial usage only, such as conveyors, mixers, etc. 	<p>C4 – 2nd environment</p> <ul style="list-style-type: none"> • Professional equipment • Needs to be fixed installation and operated by a professional • Examples: paper machines, rolling mills, etc.
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Every ACS480 drive is equipped with a built-in filter to reduce high-frequency emissions.

EMC product standard (EN 61800-3) category C2 is fulfilled with the internal EMC filter.

Comparison of EMC standards

EN 61800-3, product standard	EN 61800-3, product standard	EN 55011, product family standard for industrial, scientific and medical (ISM) equipment	EN 6100-6-4, generic emission standard for industrial environments	EN 61000-6-3, generic emission standard for residential, commercial and light-industrial environments
Category C1	1 st environment, unrestricted distribution	Group 1. Class B	Not applicable	Applicable
Category C2	1 st environment, restricted distribution	Group 1. Class A	Applicable	Not applicable
Category C3	2 nd environment, unrestricted distribution	Group 2. Class A	Not applicable	Not applicable
Category C4	2 nd environment, restricted distribution	Not applicable	Not applicable	Not applicable

EMC compliance and maximum cable length of ACS480-04 units ^{*)}

Type	Voltage	Frame sizes	1 st environment, restricted distribution, C1, grounded network (TN)	1 st environment, restricted distribution, C2, grounded network (TN)	2 nd environment, unrestricted distribution, C3, grounded network (TN)	2 nd environment, unrestricted distribution, C3, ungrounded network (IT)
ACS480-04	200-240 V, 1-phase	R0-R2	10 m with an optional external EMC filter	10 m as standard	10 m as standard	–
ACS480-04	200-240 V, 3-phase	R1-R4	–	10 m as standard / 20 m with an optional external EMC filter	R1, R3, R4 30 m as standard. R2 20 m as standard	–
ACS480-04	380-480 V, 3-phase	R1-R4	30 m with an optional external EMC filter	10 m as standard. 30 m with an optional external EMC filter	R1, R2 20 m and R3, R4 30 m as standard. 30 m with an optional external EMC filter	–

^{*)} For the maximum motor cable length and further information, see the Hardware manual 3AXD50000047392.

Cooling and fuses

Cooling

ACS480 drives are fitted with variable-speed cooling air fans. The cooling air must be free from corrosive materials and not exceed the maximum ambient temperature of 50 °C (60 °C with derating). The speed-controlled fans cool the drive only when needed, which reduces overall noise level and energy consumption.

Fuse connections

Standard fuses can be used with ABB general purpose drives. For input fuses, see the table below.

Cooling air flow and recommended input protection fuses for ACS480, 1-phase, $U_N = 230\text{ V}$

Drive type	Frame size	Cooling air flow					Recommended input protection fuses					
		Heat dissipation*)		Air flow		Max. noise level**) (dBA)	IEC fuses		IEC fuses		UL fuses	
		(W)	(BTU/h)	(m ³ /h)	(ft ³ /min)		(A)	Fuse type	(A)	Fuse type	(A)	Fuse type
ACS480-04-02A4-1	R0	-	-	-	-	-	10	gG	32	gR	10	UL class T
ACS480-04-03A7-1	R0	-	-	-	-	-	10	gG	32	gR	10	UL class T
ACS480-04-04A8-1	R1	-	-	57	33	63	16	gG	40	gR	20	UL class T
ACS480-04-06A9-1	R1	-	-	57	33	63	20	gG	50	gR	20	UL class T
ACS480-04-07A8-1	R1	-	-	57	33	63	25	gG	63	gR	25	UL class T
ACS480-04-09A8-1	R2	-	-	63	37	59	32	gG	63	gR	25	UL class T
ACS480-04-12A2-1	R2	-	-	63	37	59	35	gG	63	gR	35	UL class T

Cooling air flow and recommended input protection fuses for ACS480, 3-phase, $U_N = 230\text{ V}$

ACS480-04-02A4-2	R1	-	-	57	33	63	6	gG	25	gR	6	UL class T
ACS480-04-03A7-2	R1	-	-	57	33	63	10	gG	32	gR	10	UL class T
ACS480-04-04A8-2	R1	-	-	57	33	63	10	gG	32	gR	10	UL class T
ACS480-04-06A9-2	R1	-	-	57	33	63	16	gG	40	gR	20	UL class T
ACS480-04-07A8-2	R1	-	-	57	33	63	16	gG	40	gR	20	UL class T
ACS480-04-09A8-2	R1	-	-	57	33	63	16	gG	40	gR	20	UL class T
ACS480-04-12A2-2	R2	-	-	63	37	59	25	gG	50	gR	25	UL class T
ACS480-04-17A5-2	R3	-	-	128	75	66	32	gG	63	gR	35	UL class T
ACS480-04-25A0-2	R3	-	-	128	75	66	50	gG	80	gR	40	UL class T
ACS480-04-032A-2	R4	-	-	150	88	69	63	gG	100	gR	60	UL class T
ACS480-04-048A-2	R4	-	-	150	88	69	100	gG	160	gR	100	UL class T

Cooling air flow and recommended input protection fuses for ACS480, 380 to 415 V units

Drive type	Frame size	Cooling air flow 380 to 415 V units					Recommended input protection fuses 380 to 415 V units***)					
		Heat dissipation*)		Air flow		Max. noise level**) (dBA)	IEC fuses		IEC fuses		UL fuses	
		(W)	(BTU/h)	(m ³ /h)	(ft ³ /min)		(A)	Fuse type	(A)	Fuse type	(A)	Fuse type
ACS480-04-02A7-4	R1	55	189	57	33	63	6	gG	25	gR	6	UL class T
ACS480-04-03A4-4	R1	62	213	57	33	63	6	gG	25	gR	6	UL class T
ACS480-04-04A1-4	R1	70	240	57	33	63	10	gG	32	gR	10	UL class T
ACS480-04-05A7-4	R1	88	302	57	33	63	10	gG	32	gR	10	UL class T
ACS480-04-07A3-4	R1	108	368	57	33	63	16	gG	40	gR	20	UL class T
ACS480-04-09A5-4	R1	135	461	57	33	63	16	gG	40	gR	20	UL class T
ACS480-04-12A7-4	R2	178	609	63	37	59	25	gG	50	gR	25	UL class T
ACS480-04-018A-4	R3	230	784	128	75	66	32	gG	63	gR	35	UL class T
ACS480-04-026A-4	R3	344	1174	128	75	66	50	gG	80	gR	50	UL class T
ACS480-04-033A-4	R4	465	1587	150	88	69	63	gG	100	gR	60	UL class T
ACS480-04-039A-4	R4	566	1934	150	88	69	80	gG	125	gR	80	UL class T
ACS480-04-046A-4	R4	668	2281	150	88	69	100	gG	160	gR	100	UL class T
ACS480-04-050A-4	R4	668	2281	150	88	69	100	gG	160	gR	100	UL class T

*) Heat dissipation value is a reference for cabinet thermal design.

**) The maximum noise level at full fan speed. When the drive is not operating at full load and at maximum ambient temperature the noise level is lower.

***) For detailed fuse sizes and types, please see the ACS480 hardware manual, document code: 3AXD50000047392.

Input chokes, du/dt filters, C1 filters

Input chokes, du/dt filters, C1 filters

External input chokes can be used with the ACS480 drives if there is a need to optimize the line-side harmonics. du/dt filtering, on the other hand, suppresses inverter output voltage spikes and rapid voltage changes that stress motor insulation. Additionally, du/dt filtering reduces capacitive leakage currents and high-frequency emissions from the motor cable as well as high-frequency losses and bearing

currents in the motor. The need for du/dt filtering depends on the motor insulation.

To comply with European EMC Directive Category C1 (standard IEC/EN 61800-3) with optional external EMC filter, use motor cables with maximum length of 10 meters for 4 kHz switching frequency. In addition, please note that Category C1 is with conducted emissions only.

External input chokes, du/dt filters, and C1 filters for ACS480, 1-phase, $U_N = 230\text{ V}$

Drive type	Frame size	Input choke, max. ambient temp. 40 °C	du/dt filter type, max. ambient temp. 40 °C	EMC C1 filter ABB code/ Schaffner code
ACS480-04-02A4-1	R0	CHK-A1	ACS-CHK-B3	RFI-11
ACS480-04-03A7-1	R0	CHK-B1	ACS-CHK-B3	RFI-12
ACS480-04-04A8-1	R1	CHK-B1	ACS-CHK-B3	RFI-12
ACS480-04-06A9-1	R1	CHK-C1	ACS-CHK-C3	RFI-12
ACS480-04-07A8-1	R1	CHK-C1	ACS-CHK-C3	RFI-12
ACS480-04-09A8-1	R2	CHK-D1	ACS-CHK-C3	–
ACS480-04-12A2-1	R2	CHK-D1	ACS-CHK-C3	–

External input chokes, du/dt filters, and C1 filters for ACS480, 3-phase, $U_N = 230\text{ V}$

ACS480-04-02A4-2	R1	CHK-01	–	RFI-32
ACS480-04-03A7-2	R1	CHK-02	–	RFI-32
ACS480-04-04A8-2	R1	CHK-03	–	RFI-32
ACS480-04-06A9-2	R1	CHK-03	–	RFI-32
ACS480-04-07A8-2	R1	CHK-03	–	RFI-32
ACS480-04-09A8-2	R1	CHK-04	–	RFI-32
ACS480-04-12A2-2	R2	CHK-04	–	RFI-33
ACS480-04-17A5-2	R3	CHK-04	–	RFI-33
ACS480-04-25A0-2	R3	CHK-06	–	RFI-33
ACS480-04-032A-2	R4	CHK-06	–	RFI-34
ACS480-04-048A-2	R4	CHK-07	–	RFI-34

External input chokes, du/dt filters, and C1 filters for ACS480, 380 to 480 V units

ACS480-04-02A7-4	R1	CHK-01	ACS-CHK-B3	RFI-32/ FN 3268-7-44
ACS480-04-03A4-4	R1	CHK-01	ACS-CHK-B3	RFI-32/ FN 3268-7-44
ACS480-04-04A1-4	R1	CHK-02	ACS-CHK-C3	RFI-32/ FN 3268-7-44
ACS480-04-05A7-4	R1	CHK-02	ACS-CHK-C3	RFI-32/ FN 3268-7-44
ACS480-04-07A3-4	R1	CHK-02	NOCH0016-6x	RFI-32/ FN 3268-16-44
ACS480-04-09A5-4	R1	CHK-03	NOCH0016-6x	RFI-32/ FN 3268-16-44
ACS480-04-12A7-4	R2	CHK-03	NOCH0016-6x	RFI-33/ FN 3268-16-44
ACS480-04-018A-4	R3	CHK-04	NOCH0030-6x	RFI-33/ FN 3268-30-33
ACS480-04-026A-4	R3	CHK-04	NOCH0030-6x	RFI-33/ FN 3268-30-33
ACS480-04-033A-4	R4	CHK-05	NOCH-0030-6x	RFI-34/ FN 3258-100-35
ACS480-04-039A-4	R4	CHK-05	NOCH-0070-6x	RFI-34/ FN 3258-100-35
ACS480-04-046A-4	R4	CHK-05	NOCH-0070-6x	RFI-34/ FN 3258-100-35
ACS480-04-050A-4	R4	CHK-06	NOCH-0070-6x	RFI-34/ FN 3258-100-35

For information on the construction of the motor insulation, consult the manufacturer.

More information on the du/dt and C1 filters can be found in the ACS480 hardware manual.

Brake choppers and resistors

Brake chopper and resistor

All ACS480 drives are equipped with a built-in brake chopper. The brake chopper prevents the drive from tripping due to overvoltage while allowing faster braking. Faster braking enables shorter start and stop cycles, and thus productivity can be increased.

To benefit from the brake chopper, an external brake resistor needs to be connected to the chopper. The brake resistor transfers the braking energy into heat.

Brake choppers and brake resistors for ACS480, 1-phase, $U_N = 230\text{ V}$

Drive type	Frame size	Internal brake chopper				Example brake resistor(s)
		P_{BRcont} (kW)	P_{BRmax} (kW)	R_{min} (ohm)	R_{max} (ohm)	Reference resistor types Danotherm
02A4-1	R0	0.25	0.38	32.5	468	CBH 360 C T 406 210R or CAR 200 D T 406 210R
03A7-1	R0	0.37	0.56	32.5	316	
04A8-1	R1	0.55	0.83	32.5	213	
06A9-1	R1	0.75	1.1	32.5	145	CBR-V 330 D T 406 78R UL
07A8-1	R1	1.1	1.7	32.5	96.5	
09A8-1	R2	1.5	2.3	32.5	69.9	CBR-V 560 D HT 406 39R UL
12A2-1	R2	2.2	3.3	19.5	47.1	

Brake choppers and brake resistors for ACS480, 3-phase, $U_N = 230\text{ V}$

02A4-2	R1	0.25	0.38	39	474	CBH 360 C T 406 210R or CAR 200 D T 406 210R
03A7-2	R1	0.37	0.56	39	319	
04A8-2	R1	0.55	0.83	39	217	
06A9-2	R1	0.75	1.13	39	145	CBR-V 330 D T 406 78R UL
07A8-2	R1	1.1	1.65	39	105	
09A8-2	R1	1.5	2.25	20	71	CBR-V 560 D HT 406 39R UL
12A2-2	R2	2.2	3.3	20	52	
17A5-2	R3	3	4.5	16	38	CBT-H 560 D HT 406 19R
25A0-2	R3	4	6	16	28	
032A-2	R4	5.5	8.25	3	20	CBT-V 760 G H T 282 8R
048A-2	R4	7.5	11.25	3	14	

Brake choppers and brake resistors for ACS480, 380 to 415 V units

ACS480-04-02A7-4	R1	0.55	0.83	99	628	CBH 360 C T 406 210R or CAR 200 D T 406 210R
ACS480-04-03A4-4	R1	0.75	1.13	99	428	
ACS480-04-04A1-4	R1	1.1	1.65	99	285	
ACS480-04-05A7-4	R1	1.5	2.25	99	206	CBR-V 330 D T 406 78R UL
ACS480-04-07A3-4	R1	2.2	3.3	53	139	
ACS480-04-09A5-4	R1	3.0	4.5	53	102	
ACS480-04-12A7-4	R2	4.0	6.0	32	76	CBR-V 560 D HT 406 39R UL
ACS480-04-018A-4	R3	5.5	8.25	32	54	
ACS480-04-026A-4	R3	7.5	11.25	23	39	
ACS480-04-033A-4	R4	11.0	17.0	6	29	CBT-H 560 D HT 406 19R
ACS480-04-039A-4	R4	15.0	23.0	6	24	
ACS480-04-046A-4	R4	18.5	28.0	6	20	CBT-H 760 D HT 406 16R
ACS480-04-050A-4	R4	22.0	33.0	6	20	

Everything for your application

The ACS480 and ACS580 share the same assistant control panel and operation logic, making it easy to switch between them. The ACS480 offers the basic essentials while the ACS580 equippes users e.g. with a wider power range, higher protection class for wall mounting, and more options.



ACS480

- Optimized for cabinets, IP20
- Power up to 22 kW
- Optimized and compact size for cabinet installations



ACS580

- Wall-mounted drives, cabinet-built drives, drive modules, flange mounting
- Power up to 500 kW
- IP55 across the full power range
- DC-choke for harmonics mitigation
- Speed controlled mains fan
- More I/O extensions and ATEX options
- Motor cables up to 300 meters

The ACS480 is also compatible with the wide ABB product offering



Programmable Logic Controllers PLCs

The AC500, AC500-eCo, AC500-S and AC500-XC 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.



All-compatible drives portfolio

The all-compatible drives share the same architecture: software platform, tools, user interfaces and options. Yet, there is an optimal drive from the smallest water pump to the biggest cement kiln, and everything in the between.



AC motors

ABB's low voltage AC motors are designed to save energy, reduce operating costs and minimize unscheduled downtime. General performance motors ensure convenience, while process performance motors provide a broad set of motors for the process industries and heavy-duty applications.



Automation Builder Engineering suite

ABB Automation Builder is the software for machine builders and system integrators wanting to automate their machines and systems in a unified and efficient way. Automation Builder connects the engineering tools for PLC, safety, control panels, SCADA, drives, motion and robots.



Control panels

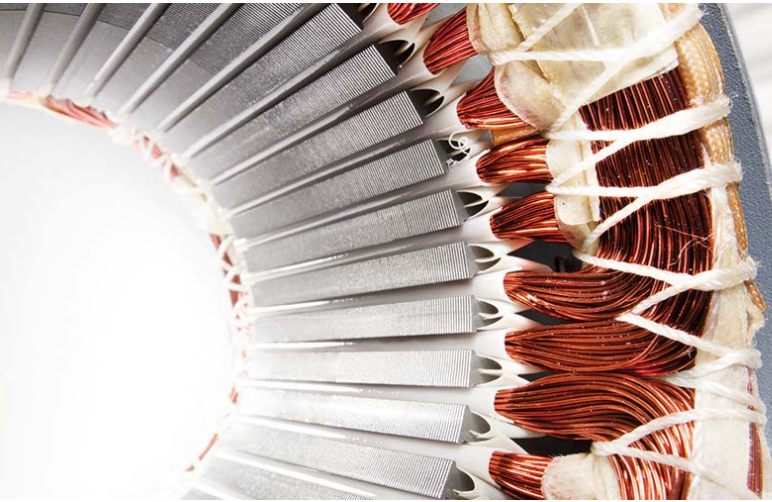
CP600-eCo and CP600 HMI control panels offer a wide range of features and functionalities for maximum operability. ABB control panels are distinguished by their robustness and high usability, providing all the relevant information from production plants and machines at one single touch.



Safety products

ABB safety products are helping machine builders to create production-friendly and safe work environments for operators. We deliver machine safety solutions for single machines or entire production lines. Our long experience of helping customers making solutions for demanding environments has made us experts in combining production demands with safety demands for production-friendly solutions.

Choose the right motor for your application



Choose the best motor for your application. A natural match for induction motors, ABB general purpose drives can also control high-efficiency motors such as permanent magnet or synchronous reluctance motors for greater efficiency.

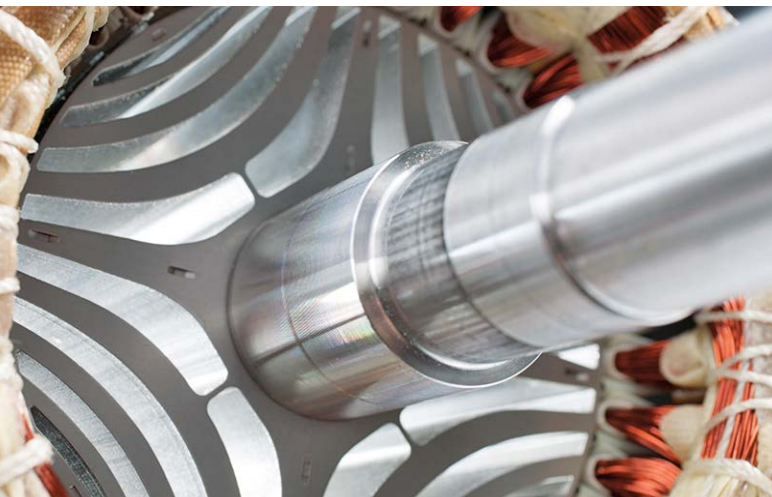
Induction motors, the industry workhorse

Pair the ACS480 or ACS580 with an induction motor (IM) for simple and reliable operation in many applications and in a wide range of environments. Further simplifying setup, the general purpose drives can be integrated with virtually any type of IM by entering the nameplate motor data only.



Permanent magnet motors for smooth operation

Permanent magnet technology is used for improved motor characteristics in terms of energy efficiency and compactness. This technology is particularly well-suited for low speed control applications, as they eliminate the need to use gear boxes. Even without speed or rotor position sensors, the ACS480 or ACS580 drives control most types of permanent magnet motors.



IE5 SynRM for optimized energy efficiency

Combining ABB's general purpose drive control technology with our synchronous reluctance motors will give you a motor and a drive package that ensures high energy efficiency, reduces motor temperatures, and provides a significant reduction in motor noise. The key is in the efficiency-optimized rotor design of our SynRM motors.

Synchronous reluctance motors

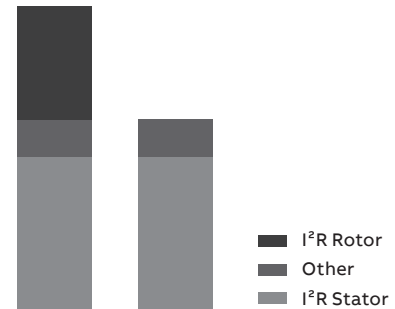
Ultimate efficiency and reliability to optimize your cost of ownership



Traditional induction motor



IE5 SynRM motor



Losses IM vs SynRM

Innovation inside

The idea is simple. Take a conventional, proven stator technology and an innovative rotor design. Then combine them with an ABB general purpose drive loaded with software with versatile features. Finally, optimize the whole package for applications such as compressors, conveyors, mixers, pumps, centrifuges, fans and many other variable and constant torque applications.

Magnet-free design

Synchronous reluctance technology combines the performance of a permanent magnet motor with the simplicity and service-friendliness of an induction motor. The new rotor has neither magnets nor windings, and suffers virtually no power losses. And because there are no magnetic forces in the rotor, maintenance is as straightforward as with induction motors.

Superior reliability to minimize the cost of not running

International Efficiency class IE5 synchronous reluctance motors (SynRM) have very low winding temperatures, which increases the reliability and lifetime of the winding. More importantly, a cool synchronous reluctance rotor means significantly lower bearing temperatures – an important factor because bearing failures cause about 70 percent of unplanned motor outages.

Perfect for retrofits

The SynRM package is a perfect solution for motor retrofits. The IE5 SynRM is the same size as an IE3 induction motor, eliminating the need for mechanical modifications. The increased efficiency will, on the other hand, reduce the payback time of the investment.

Full motor control, down to zero speed

Many processes require accurate speed control. SynRM always runs at reference speed with practically no error, without an encoder. Even the best slip compensation systems in an induction motor inverter will never match the precision of SynRM. Sometimes your application may require you to run your motor at slow speeds. If you are using SynRM and your drive cannot provide the necessary torque, it may trip. ABB drives provide full control and torque down to zero speed, even without speed sensors.

For all applications

This is important if you are planning on using the motor with applications other than quadratic torque applications like pumps and fans. Our drives provide full SynRM motor control for constant torque applications such as extruders, conveyors and wire drawing machines.

SynRM technology	Benefit
Higher efficiency IE5	Lowest energy consumption
No rare earth metals	Environmental sustainability
Magnet-free rotor	Easy service
Lower winding and bearing temperatures	Longer life time, extended service intervals
Better controllability	Accurate speed and torque control
Lower noise level	Better working and living environment
Same size with IE3	Perfect for retrofits

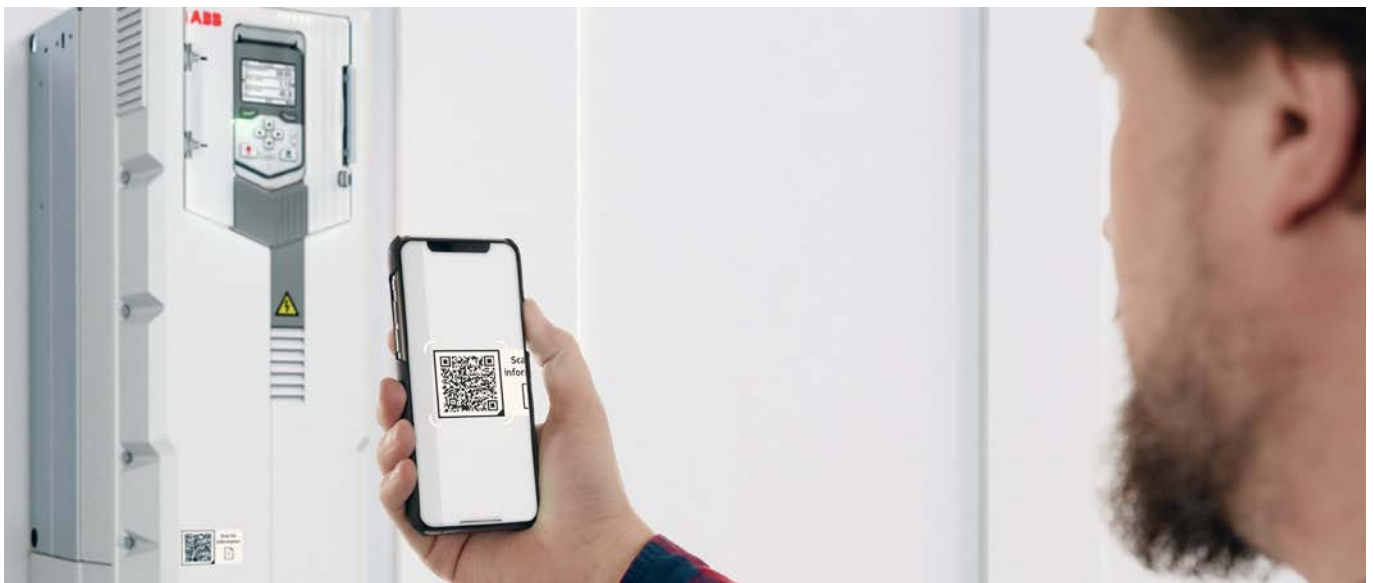




ABB Access

Scan the QR code to access 24/7 self-services for ABB drives, motors and PLCs

With ABB Access, you can unlock all aspects of your drives, motors or PLCs, from one central location: the palm of your hand.



Simply scan the QR code on the ABB product to get started

ABB Access, helps you easily find up-to-date product online data. It also provides easy access to documentation and manuals. If you happen to experience issues with your ABB product, this can be fastly and easily reported online to reach expert support from ABB.

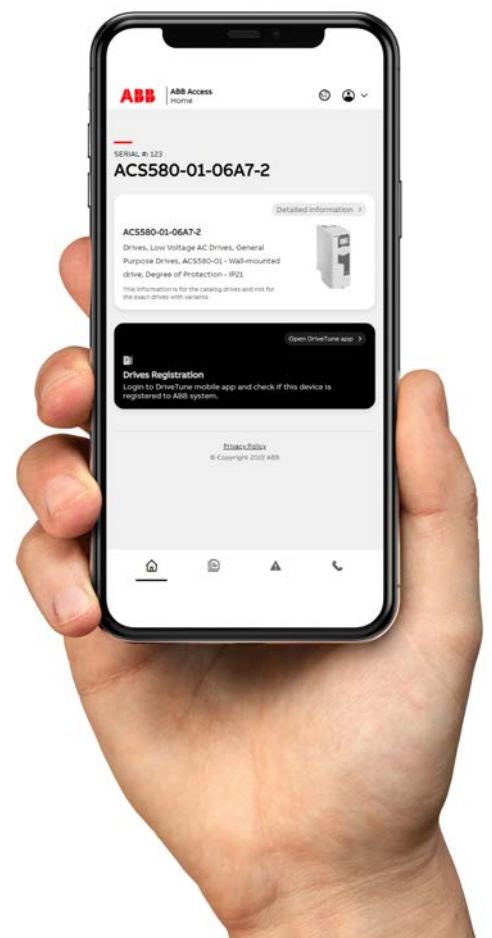


ABB Ability™ Mobile Connect for drives

Easy access to remote support

ABB Ability™ Mobile Connect for drives is a platform for remote drive support consisting of the Mobile Connect web portal and the Drivetune mobile app.

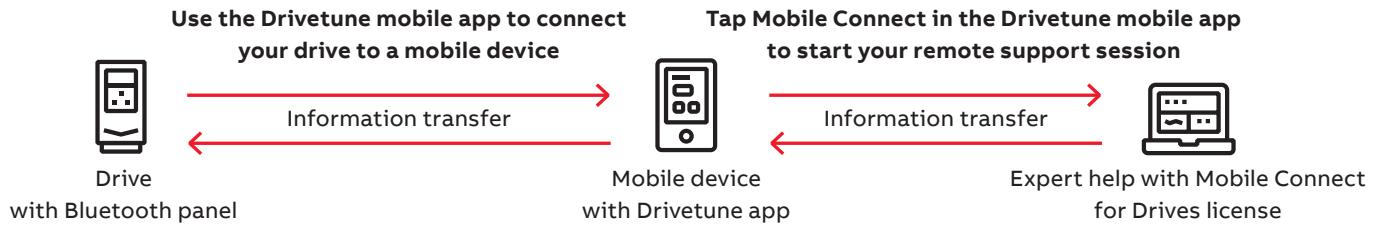
The platform allows ABB service partners to provide remote commissioning and troubleshooting support for personnel on-site without any complex connectivity infrastructure. Chats, sharing images and backups, viewing parameters online and sending support packages

are all possible, making your technical support process quick and efficient.

All that is needed is the Bluetooth control panel and a mobile device.

The platform is available for ABB partners and OEMs under a renewable subscription-based agreement.

[ABB Ability™ Mobile Connect for drives support portal](#)



Drivetune mobile app for managing drives via an intuitive interface

Drivetune mobile app is a powerful tool for performing basic drive startup and troubleshooting tasks. It is possible to connect with drives and access data available in the Internet at the same time. The wireless Bluetooth

connectivity means that users won't need to enter hazardous or difficult-to-reach work areas to access information necessary to help them commission and tune the drive.



- **Startup, commission and tune your drive and application with full parameter access**
- **Optimize performance via drive troubleshooting features**
- **Create and share backups and support packages**
- **Keep track of drives installed base**

Download Drivetune mobile app



ABB SmartGuide – ACS480



Being one of the handiest ways to get short and clear visual instructions on drive installation, startup, and operation.

Mobile-friendly digital user guides provide simple and animated step-by-step instructions to assist with wall

mounting of drives, electrical installation and drive programming. The content is frequently updated and further developed, making it your comprehensive source of instructions and help.



Scan the QR code or click [here](#) to access the user guide.

Our service expertise, your advantage

ABB Motion Services helps customers around the globe by maximizing uptime, extending product life cycle, and enhancing the performance and energy efficiency of electrical motion solutions. We enable innovation and success through digitalization by securely connecting and monitoring our customers' motors and drives, increasing operational uptime, and improving efficiency. We make the difference for our customers and partners every day by keeping their operations running profitably, safely and reliably.

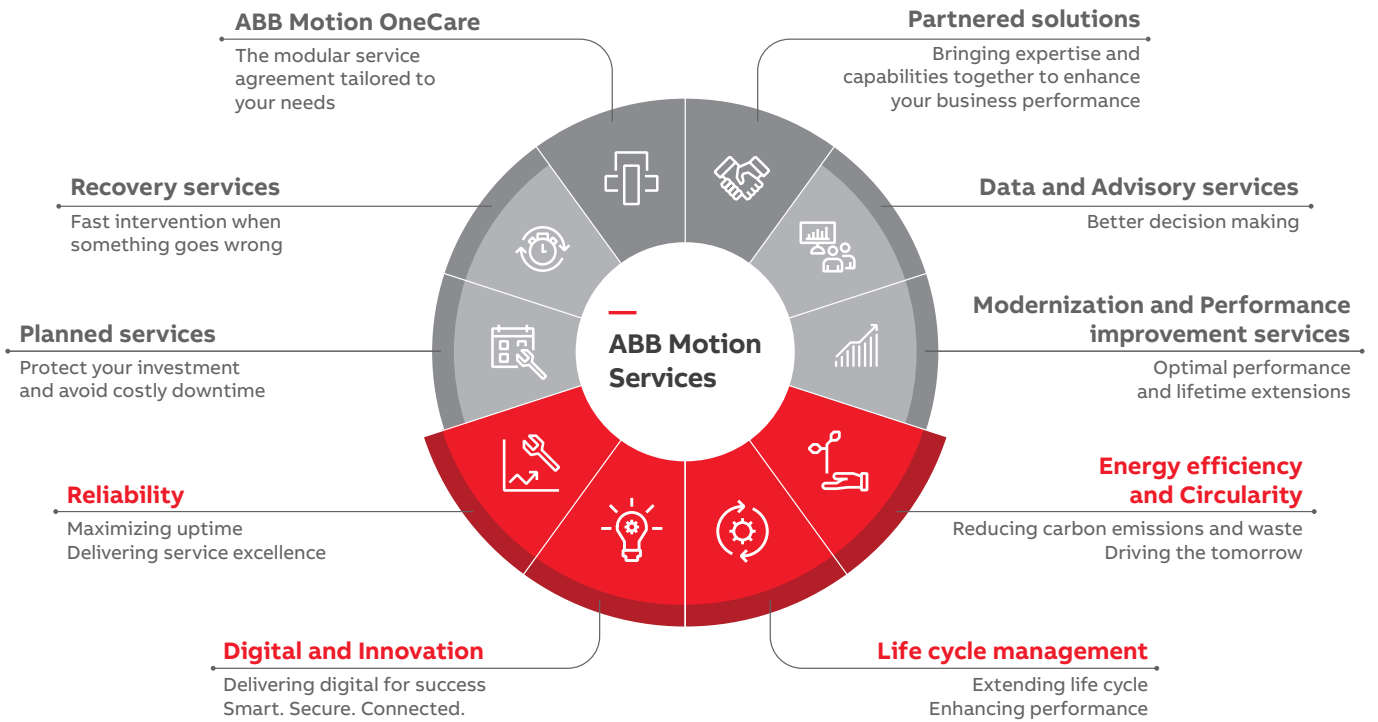
With a service offering tailored to your needs, ABB Motion Services maximizes the uptime and extends the life cycle of your electrical motion solutions, while optimizing their performance and maximizing your energy efficiency gains throughout the entire lifetime of your applications. We help to keep your applications turning profitably, safely, and reliably.

Digitalization enables new smart and secured ways to prevent unexpected downtime while optimizing the operation and maintenance of your assets. We securely connect and monitor your motors, drives or your entire powertrain to our easy to use cloud service solutions. Connecting your applications also gives you access to our in-depth service domain expertise.

We quickly respond to your service needs. Together with our partners, local field service experts, and service workshop networks, we provide and install original spare parts to help resolve any issues and minimize the impact of unexpected disruptions.

Our tailored to your needs service offerings and digital solutions will enable you to unlock new possibilities. Not only are we your premier supplier of motion equipment, we are your trusted partner and advisor offering support throughout the entire life cycle of your assets. We ensure your operations run profitably, safely and reliably and continue to drive real world results, now and in the future. Our service teams work with you, delivering the expertise needed to keep your world turning while saving energy every day.





OUR EXPERTISE
YOUR ADVANTAGE

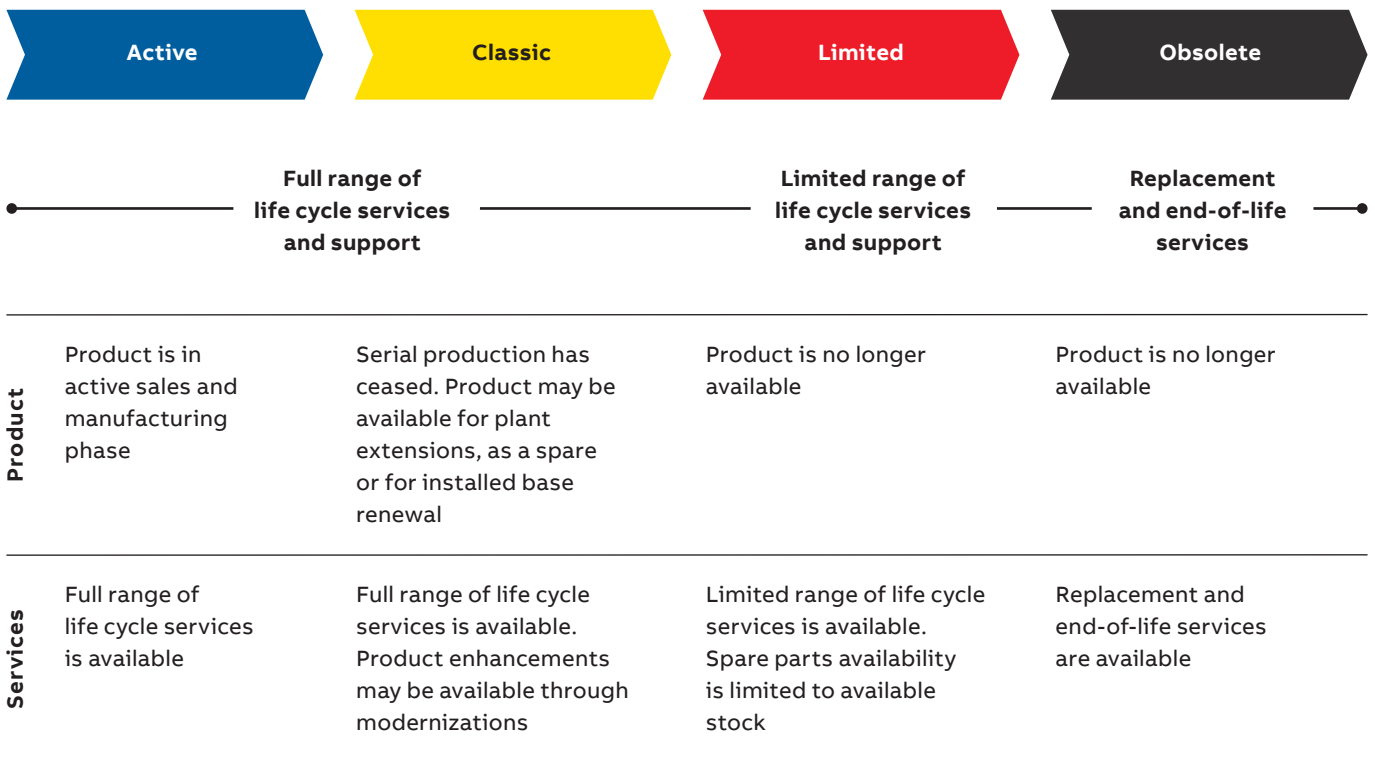


ABB Drives Life Cycle Management

A life time of peak performance

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

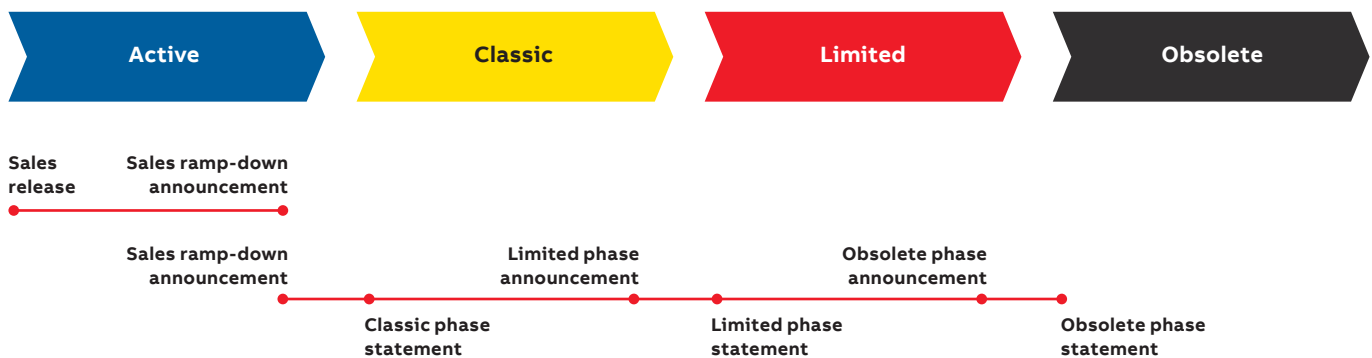
Now it's easy for you to see the exact service and maintenance available for your drives.



Keeping you informed throughout the life cycle

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

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



Sales release

Details about product portfolio and release schedule.

Sales ramp down announcement

Last time buy and last deliveries dates, informed well in advance.

Life cycle phase change announcement

Early information about the upcoming life cycle phase change and affects on the service availability. Informed well in advance, minimum six months prior to the change.

Life cycle phase statement

Information about the current life cycle status, product and services availability and recommended actions. Plan for the next life cycle phase transition.



Ordering information

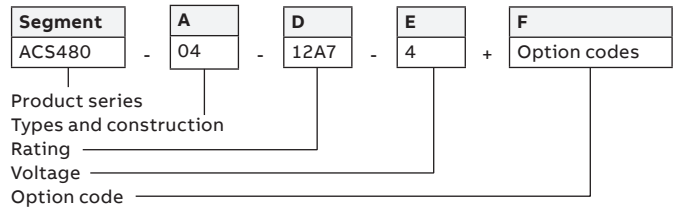
How to built up your ordering code

ACS480-04

The type designation tells you the specifications and configuration of the drive.

The table shows the primary drive variants.

Sample type code: ACS480-04-12A7-4+XXXX



Basic codes			
Segment	Option		Description
A	Construction		04 = Wall mounted, IP20 (UL Type 1), assistant control panel with a USB port, EMC C2 filter (internal EMC filter), Safe Torque Off, braking chopper, coated boards, quick installation and start-up guide
D	Current rating		Refer to the rating table
E	Voltage rating		1 = 230 V, 1-phase (200 ... 240 V) 2 = 230 V, 3-phase (200 ... 240 V) 4 = 400/480 V (380 ... 480 V)
Option codes			
Segment	Option	Code	Description
F	Control panel and panel options	+0J400	No control panel
		+J400	ACS-AP-S Assistant control panel (as standard)
		+J404	ACS-BP-S Basic control panel
		+J424	Blank panel with RJ-45 connector (RDUM-01)
		+J425	ACS-AP-I Assistant control panel
		+J429	ACS-AP-W Assistant control panel with a Bluetooth interface
		+J431	USB to RJ-45 cable that is used together with RDUM-01 for PC connection
	I/O (one slot available for I/O options)	+L540	Standard I/O & Modbus RTU module RIIO-01 (as standard)
		+0L540	Remove the standard I/O module RIIO-01
		+L515	BIO-01 I/O extension module for 3xDI, 1xDO, 1xAI (can be used together with fieldbus)
I/O (one slot available for FBA options)	+K451	DeviceNet™ (FDNA-01)	
	+K454	PROFIBUS® DP (FPBA-01)	
	+K457	CANopen® (FCAN-01)	
	+K462	ControlNet™ (FCNA-01)	
	+K469	EtherCAT® (FECA-01)	
	+K470	Ethernet POWERLINK (FEPL-01)	
	+K475	2-port Ethernet (EtherNet/IP™, Modbus®/TCP, PROFINET®)	
	+K490	EtherNet/IP™ (FEIP-21)	
Embedded fieldbus	+K491	Modbus®/TCP (FMBT-21)	
	+K492	PROFINET® IO (FPNO-21)	
	+EIA-485	Embedded Modbus RTU adapter (as standard)	

Side I/O options BREL-01 (relay option: 4xRO) and BAPO-01 (External +24 DC option) are available as loose items only. Only one slot for side I/O option is available. For other options please contact local ABB.

Additional information

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your local ABB representative or visit

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