



LOW VOLTAGE AC DRIVES

# ABB machinery drives

ACS180, 1/3 to 30 HP (0.25 to 22 kW)



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**Reliable machine operations and essential application control for machine builders in a compact footprint.**

**ACS180 machinery drives.**

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# Table of contents

ACS180 machinery drives .....	4
Simplify your application with reliable and cost-effective performance.....	6
Typical industries and applications.....	8
ACS180 drives software with versatile features.....	10
Standard interface for ACS180 machinery drives .....	11
EU Ecodesign Regulation .....	12
ABB SmartGuide – ACS180 .....	13
Mobile application for wireless access.....	14
Technical data .....	15
How to select a drive.....	16
Ordering information.....	17
Ratings, types and voltages.....	18
Dimensions .....	20
Drive commissioning and adaptable use with your control panel.....	21
Commissioning, programming and customization tools.....	22
EMC – electromagnetic compatibility.....	24
Input reactors .....	25
Cooling and fuses.....	28
Circuit breakers .....	30
Resistor braking.....	31
Braking resistors.....	32
ACS180 drives are compatible with the wide ABB product offering .....	34
Our service expertise, your advantage.....	36
ABB Drives Life Cycle Management.....	38
Notes .....	40

# ACS180 machinery drives

## Reliable machine operations and essential application control

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) 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 cost. 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.

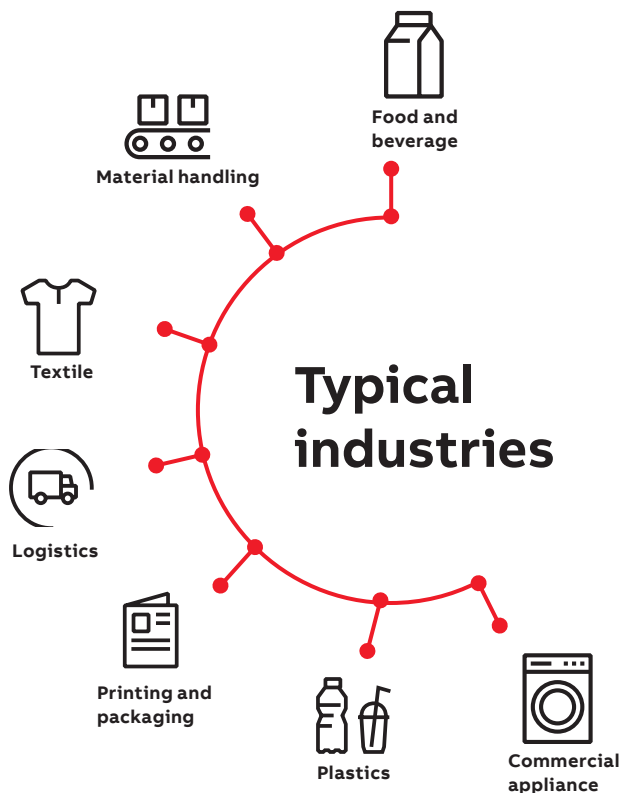
### Scalability

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.

### Energy efficiency and Ecodesign

ACS180 is designed to run your motors based on the current demands of your processes rather than running them at full speed and reducing output using mechanical controls like throttles, dampers, or gears, and help our customers secure a more sustainable future by reducing energy consumption and CO<sub>2</sub> emissions.





# Simplify your application with reliable and cost-effective performance

The ACS180 machinery drive is equipped with built-in features that simplify ordering and delivery, and reduce commissioning costs, since everything is provided in a single, compact and ready-to-use package.



## All-compatible user interface

The ACS180 is part of the ABB all-compatible drives portfolio like ACS380, ACS480, ACS580 and ACS880 drives. All these drives have the same easy to use PC tools and a similar intuitive multilingual user interface and parameter structure making using and learning them fast and easy.



## Drive-based programmability

Adaptive and sequence programming allows the customization of the drive software using sequence and function block programming. This means system costs can be reduced by replacing the need for a PLC for logic execution. This is a standard feature in the ACS180 drive, requiring no additional downloads or licenses.

## Built-in EMC filter

High-frequency noise can directly affect sensitive electronic equipment and high-speed communication fieldbuses. The ACS180-04S drive is equipped with a built-in EMC filter to reduce high-frequency emissions. The built-in EMC filter allows the drive to be used in industrial or domestic environments without the need to buy and install additional external filters.

## Simple and flexible installation

The compact size of the ACS180 drive and possibility for side-by-side installation ensure optimized use of cabinet space and help save costs. Installation and commissioning of the drive are quick and easy thanks to its intuitive graphical user interface, simple parameter structure and spring control terminals.





### Designed for maximum reliability

Design features like coated circuit boards, minimized airflow through the electronics, reliable earth fault protection, and its design for a 60 °C ambient temperature make the ACS180 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.



### Communication

The standard Modbus RTU interface enables connectivity with an industrial automation network. The predefined Modbus macro allows your drive to connect with a PLC in a few seconds.



### Remote connectivity

The drive can be accessed remotely with a Bluetooth control panel to monitor or adjust the drive's parameters, for example.



### Safe torque off

Safe torque off (SIL 3, PL e) is a standard built-in feature in ACS180-04S drives.

# Typical industries and applications

ACS180 drives improve process performance, increase productivity, reduce external components, and ensure machine and personnel safety.



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- 01 Food and beverage
- 02 Material handling
- 03 Textile
- 04 Logistics
- 05 Printing and packaging
- 06 Plastics
- 07 Commercial appliance
- 08 Pumps and fans



Industry	Application	Customer benefits
<b>Food and beverage</b> 	Blowers, conveyors, fans, pumps, mixers, dryers, ovens	<ul style="list-style-type: none"> <li>• Accurate control and reliable design increase productivity.</li> <li>• Precise speed and torque control increases production uptime even when the load varies.</li> <li>• Safe torque off (SIL 3) function ensures machine and personnel safety.</li> <li>• Minimized downtime with robust and reliable design.</li> </ul>
<b>Material handling</b> 	Conveyors, polishing, cutting, drills	<ul style="list-style-type: none"> <li>• Precise speed or torque control for high stretching accuracy and better quality of the end product.</li> <li>• Safe torque off (SIL 3) function ensures machine and personnel safety.</li> <li>• Soft acceleration and deceleration can be achieved by S-curve speed ramp, reducing the stress on mechanical parts.</li> <li>• Minimized downtime with robust and reliable design.</li> </ul>
<b>Textile</b> 	Conveyors, drum washers, fans, dyeing machines, pumps	<ul style="list-style-type: none"> <li>• Precise speed or torque control for high stretching accuracy and better quality of the end product.</li> <li>• Adjustable torque limit to prevent damage to mechanical equipment.</li> <li>• Minimized downtime with robust and reliable design.</li> <li>• Undervoltage control ensures uninterrupted production during power network disturbances.</li> </ul>
<b>Logistics</b> 	Belt conveyors, roller conveyors	<ul style="list-style-type: none"> <li>• Accurate and precise speed and torque control increases production uptime even when the load varies.</li> <li>• Adjustable torque limit to prevent damage to mechanical equipment.</li> <li>• Flux braking improves the dynamic performance.</li> <li>• Safe torque off (SIL 3) function ensures machine and personnel safety.</li> <li>• Implements machine logic with adaptive and sequence programming and reduces the number of external components.</li> </ul>
<b>Printing and packaging</b> 	Compressors, presses, winders	<ul style="list-style-type: none"> <li>• The robust design of the drive reduces mechanical stress on process line equipment, reducing maintenance costs and capital expenditure.</li> <li>• Precise speed and torque control of applications increases process uptime by optimizing motor control.</li> </ul>
<b>Plastics</b> 	Auxiliary devices for extrusion and injection molding machines, cooling pumps and fans	<ul style="list-style-type: none"> <li>• Accurate and precise speed and torque control increases production uptime even when the load varies.</li> <li>• Smooth acceleration to prevent breaking the web of plastic film.</li> <li>• The scalable all-compatible platform allows easy process and component optimization with different drive types that share the same user interface and tools.</li> </ul>
<b>Commercial appliance</b> 	Washing machines, automatic gates, rotary gate, treadmills	<ul style="list-style-type: none"> <li>• Compact design for installing in commercial appliances.</li> <li>• Enhanced quality of end products with smooth control of the motor and process.</li> <li>• Adjustable torque limit to prevent damage to mechanical equipment.</li> <li>• Safe torque off (SIL 3) function ensures machine and personnel safety.</li> <li>• Built-in EMC filter for domestic environment.</li> </ul>

# ACS180 drives software with versatile features



**One drive to control different types of motor.** The ACS180 supports both induction and permanent magnet motors.

**Excellent motor control performance.** Thanks to its sensorless vector control, the ACS180 supports precise torque control even without encoder feedback. Furthermore, in more demanding applications, the ACS180 also offers rich functions, such as flystart, torque boost, DC injection, and slip compensation, to outstanding performance for various operating modes.

**“Mini PLC” included in the drive.** By using intuitive and visualized Adaptive Programming, which offers numerous logical or mathematical function blocks, the user can build their own logic to scale up and customize the drive to your application’s requirements. The PC tool Drive Composer Entry, which is used to edit the Adaptive Programming, is also free.

**Energy optimization function** can automatically adjust the motor flux to its most efficient level: this helps reduce motor current and thus reduce power consumption and noise.

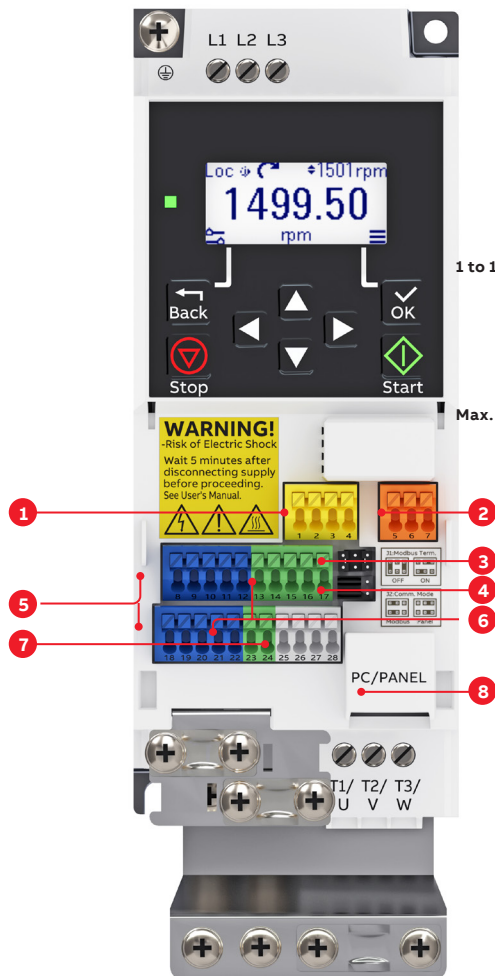
**Many protective and process limit functions** for protecting your machine through long-term running. The ACS180 not only offers various functions to protect the motor, such as overload, overheat, overcurrent, overvoltage, phase loss or phase-ground protections, but also has functions to protect the machine, such as limit of speed, torque or time.

**Load profile** feature collects drive values, such as current and stores them in a log. This enables you to analyze and optimize the application with the help of historical data load.

# Standard interface for ACS180 machinery drives

ACS180 drives offer a wide range of standard interfaces via spring terminals. The standard variant includes:

- 4 DI + 1 DO + 2 AI + 1 AO + 1 RO + STO + 10 & 24 VDC
- Embedded Modbus RTU (external panel)



1. Safe torque off (STO)
2. Relay output
3. Modbus termination
4. Communication mode jumper
5. Digital inputs and outputs
6. Analog inputs and outputs
7. EIA-485 Modbus RTU
8. Panel connector (external panel or adapter for PC connection)

## Default I/O connections of standard variant

Terminals	Descriptions
<b>Digital inputs and outputs</b>	
21 24 V	Aux. voltage output +24 V DC
22 DGND	Aux. voltage output common
8 DI1	Digital input 1: Stop (0)/Start (1)
9 DI2	Digital input 2: Forward (0)/Reverse (1)
10 DI3	Digital input 3: Speed selection
11 DI4	Digital input 4: Speed selection
12 DCOM	Digital input common for all
18 DO	Digital output (running)
19 DO COM	Digital output common
20 DO SRC	Digital output auxiliary voltage
<b>Analog inputs and outputs</b>	
14 AI1/DI5	Analog input 1/Digital input 5: Speed reference (0...10 V)
13 AGND	Analog input circuit common
15 AI2	Analog input 2 (not used)
16 AGND	Analog input circuit common
17 AO	Analog output: Output frequency (0...20 mA)
23 10 V	Reference voltage +10 V DC
24 SCREEN	Signal cable shield (screen)
<b>Safe torque off (STO) *)</b>	
1 S+	Safe torque off function. Connected at the factory. Drive starts only when both circuits are closed.
2 SGND	
3 S 1	
4 S 2	
<b>Relay output</b>	
5 NC	No fault [Fault (-1)]
6 COM	
7 NO	
<b>EIA-485 Modbus RTU</b>	
25 B+	Embedded Modbus RTU (EIA-485) External panel and Modbus RTU share same port internally.
26 A-	
27 AGND	
28 SHIELD	
<b>Termination</b>	

### PC/PANEL connection

<b>PC/PANEL(RJ45)</b>	Use standard Cat 5e or better Ethernet cable with male RJ45 connector to connect external control panel. Or use the BCBL-01 (USB to EIA-485) cable to connect the drive with PC directly. Note: This connection is not a network port, DO NOT connect it to Ethernet.
*) Only with S-variant.	

# EU Ecodesign Regulation

The EU has agreed upon the new, more demanding regulation (EU) 2019/1781, replacing regulation 640/2009. The new Ecodesign Regulation (EU) 2019/1781 sets the minimum efficiency levels not only for direct-on-line rated low voltage induction motors but now also for variable speed drives with a voltage up to 1000 V. The regulation will be implemented in two steps July 1, 2021 and July 1, 2023.



## Variable speed drives

### Step 1: July 1, 2021

#### IE2 efficiency level mandatory for AC drives

- Power range from 0.12 to 1000 kW.
- 3-phase drives with diode rectifier including ABB's micro, machinery, general purpose, industrial and industry-specific drives.
- 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.
- All the covered ABB products fulfill the requirements.

#### Markings on the ABB AC drives

Unique identifier QR code to Ecodesign information



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

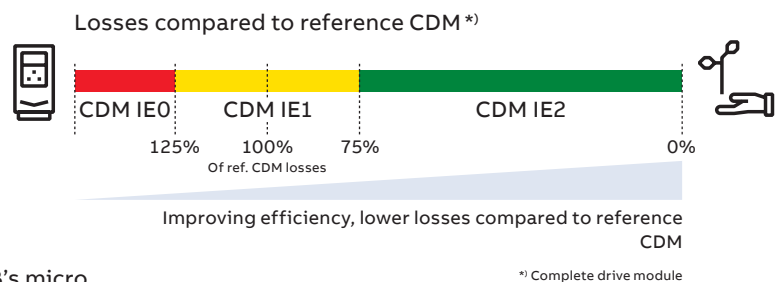
IE2 (90;100) 2,3 %

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

### Step 2: July 1, 2023

No changes for drives from July 1, 2021

For more information, see Ecodesign tool: <https://ecodesign.drivesmotors.abb.com/>



#### Excluded from the regulation:

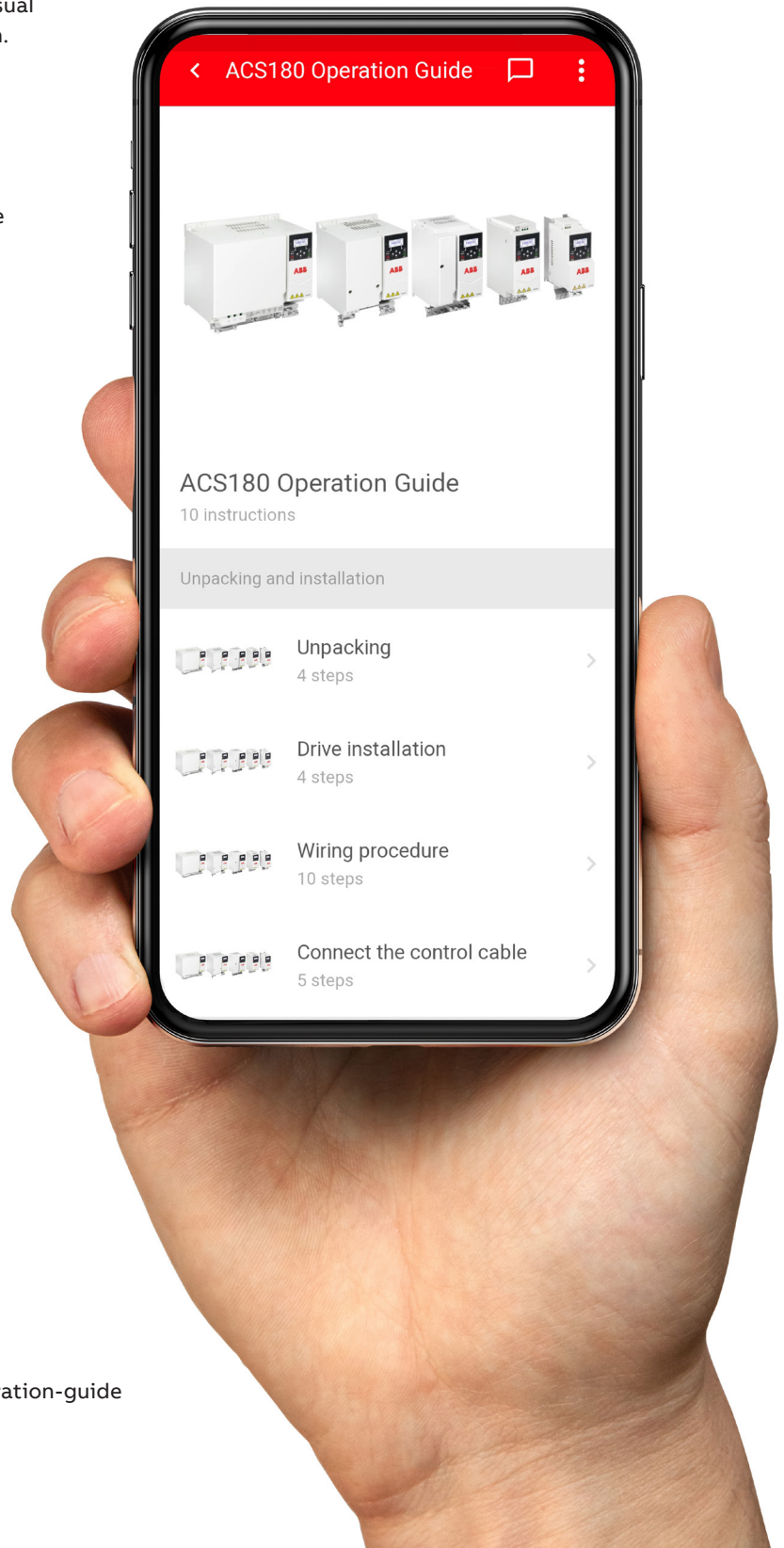
- All drives without CE marking
- Following low voltage AC drives: regenerative drives, low-harmonic drives (THD < 10%), multiple AC-output drives and single-phase drives.
- Drive cabinets with already conformity assessed modules
- Medium voltage drives, DC drives and traction drives

# ABB SmartGuide – ACS180

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 and test it yourself!



<https://drives-abb.swipeguide.com/guide/acs180-operation-guide>  
<https://drives-abb.swipeguide.com/>

# Mobile application for wireless access

Better user experience and Bluetooth connectivity with ABB drives.

**Drivetune App** provides a powerful tool for performing basic drive start-up 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 do not need to enter hazardous or difficult-to-reach work areas to access information necessary to help them commission and tune a drive.



Start up, 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

**ABB Ability™ Mobile Connect** for drives gives you access to technical support for fast problem solving. Mobile Connect makes all the necessary data instantly available to the support provider.

Remote and rapid access to ABB's drive experts can save you and your team considerable time, money and headaches. Check Mobile Connect availability in your country.



Download Drivetune using the QR codes or directly from the app stores:



Drivetune for commissioning and managing drives

# Technical data

<b>Mains connection</b>	
Voltage and power range	<b>1-phase, 200 to 240 V, +10%/-15%</b> 1/3 to 3 HP (0.25 to 3 kW) <b>3-phase, 200 to 240 V, +10%/-15%</b> 1/3 to 15 HP (0.25 to 11 kW) <b>3-phase, 380 to 480 V, +10%/-15%</b> 1/2 to 30 HP (0.37 to 22 kW)
Supply network type	TN, TT, IT ACS180-04N-xxxx-4 does not support corner-grounded delta network
Frequency	from 47 to 63 Hz
Power factor	cosφ = 0.98
Efficiency (at nominal power)	98%
<b>Efficiency class</b> (IEC 61800-9-2)	<b>IE2</b>
<b>Motor connection</b>	
Voltage	0 to $U_N$ , 3-phase
Frequency	0 to 599 Hz
Motor control	Scalar control Sensorless vector control
Switching frequency	1.5 to 12 kHz, default 4 kHz
<b>Motor control performance</b>	
Speed control performance, open loop	
Static accuracy	20% of motor rated slip
Dynamic accuracy	1% seconds with 100% torque step
Torque control performance	
Torque step rise time	< 10 ms, rated torque step
Non-linearity	±5% with rated torque
<b>Braking power connection</b>	
Brake chopper	Only on frames R2 to R4
Brake resistor	Only on frames R2 to R4
DC connection	Only on frames R2 to R4
<b>Control and connectivity</b>	
Analog input	2 mA or V configure by parameter AI1 can be used as DI5
Analog output	1 mA or V configure by parameter
Digital input	4 PNP or NPN
Digital output	1 Transistor output, 60mA
Relay output	1 NO+NC, 230 V, 2 A
Communication	1 x RJ45 for external control panel/PC tool Terminals for EIA-485 Modbus RTU External panel and Modbus RTU share same port internally – cannot be used together

<b>Functional safety</b>	
Built-in safety features (for ACS180-04S-xxxx-x)	Safe torque off (STO) acc. to EN/IEC61800-5-2: IEC61508 ed2: SIL 3, IEC 61511: SIL 3, IEC 62061: SIL CL 3, EN ISO 13849-1: PL e
<b>Environmental limits</b>	
Ambient temperature	
Operation	-10 to +50 °C at heavy duty -10 to +40 °C at light and nominal duty with derating up to 60 °C (except R0, which has max. temperature of 50 °C)
Transportation and storage	-40 to +70 °C
Cooling method	Air-cooled, dry clean air
Altitude	0 to 2,000 m (see allowed power systems in HW manual) derating above 1,000 m
Relative humidity	5 to 95%, no condensation allowed
Degree of protection	IP20 as standard
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)
<b>Product compliance</b>	
	CE Low Voltage Directive 2014/35/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 and delegated directive (EU) 2015/863 Ecodesign (EU) 2019/1781 China RoHS II GB/T 26572 UL, cUL RCM KC TÜV Nord (safety functions) UKCA Quality assurance system ISO 9001 and Environmental system ISO 14001 Waste electrical and electronic equipment directive (WEEE) 2002/96/EC
<b>EMC according to EN 61800-3:2004 + A1:2012</b>	
	<b>ACS180-04S-xxxx-1:</b> Class C2 as standard
	<b>ACS180-04S-xxxx-4:</b> Class C3 as standard
	<b>ACS180-04S-xxxx-2:</b> Class C4 as standard

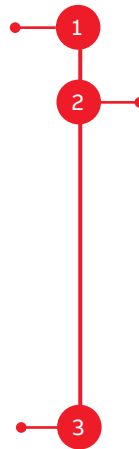


# How to select a drive

## How you build up your ordering code

Start by identifying your supply voltage. This indicates what rating table you should use. See pages 18 and 19.

Select the ordering code for the ACS180 machinery drive by choosing either the standard offering or without STO and EMC filter.



Choose the motor power and current rating from the ratings table on pages 18 and 19.

**Ordering information**

The type designation indicates the specifications and configuration of the drive. The table shows the primary drive variants.

Sample type code: ACS180-04S-02A6-4 (U<sub>n</sub> = 2.6 A 3-phase 400 V, with STO and C3 EMC filter)

Segment	A	B	C	D
ACS180	04	S	02A6	4

Product series  
Types and construction  
EMC and STO variant  
Current rating  
Voltage rating

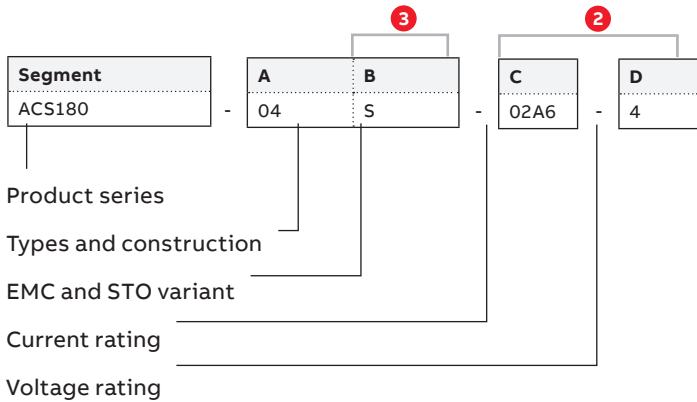
Segment	Option	Description
A	Type and construction	S1 - Standard offering S2 - Without STO S3 - Without STO and EMC filter
B	EMC and STO variant	S1 - Standard offering with STO and EMC filter** S2 - Without STO and EMC filter** S3 - Without STO and EMC filter**
C	Current rating	For example, 02A6 when the nominal output current is 2.6 A.
D	Voltage rating	S1 - 3-phase 200V to 240V, 3* S2 - 3-phase 200V to 240V, 3* S3 - 3-phase 200V to 240V, 3* S4 - 3-phase 200V to 240V, 3* S5 - 3-phase 200V to 240V, 3* S6 - 3-phase 200V to 240V, 3* S7 - 3-phase 200V to 240V, 3* S8 - 3-phase 200V to 240V, 3* S9 - 3-phase 200V to 240V, 3* S10 - 3-phase 200V to 240V, 3* S11 - 3-phase 200V to 240V, 3* S12 - 3-phase 200V to 240V, 3* S13 - 3-phase 200V to 240V, 3* S14 - 3-phase 200V to 240V, 3* S15 - 3-phase 200V to 240V, 3* S16 - 3-phase 200V to 240V, 3* S17 - 3-phase 200V to 240V, 3* S18 - 3-phase 200V to 240V, 3* S19 - 3-phase 200V to 240V, 3* S20 - 3-phase 200V to 240V, 3* S21 - 3-phase 200V to 240V, 3* S22 - 3-phase 200V to 240V, 3* S23 - 3-phase 200V to 240V, 3* S24 - 3-phase 200V to 240V, 3* S25 - 3-phase 200V to 240V, 3* S26 - 3-phase 200V to 240V, 3* S27 - 3-phase 200V to 240V, 3* S28 - 3-phase 200V to 240V, 3* S29 - 3-phase 200V to 240V, 3* S30 - 3-phase 200V to 240V, 3* S31 - 3-phase 200V to 240V, 3* S32 - 3-phase 200V to 240V, 3* S33 - 3-phase 200V to 240V, 3* S34 - 3-phase 200V to 240V, 3* S35 - 3-phase 200V to 240V, 3* S36 - 3-phase 200V to 240V, 3* S37 - 3-phase 200V to 240V, 3* S38 - 3-phase 200V to 240V, 3* S39 - 3-phase 200V to 240V, 3* S40 - 3-phase 200V to 240V, 3* S41 - 3-phase 200V to 240V, 3* S42 - 3-phase 200V to 240V, 3* S43 - 3-phase 200V to 240V, 3* S44 - 3-phase 200V to 240V, 3* S45 - 3-phase 200V to 240V, 3* S46 - 3-phase 200V to 240V, 3* S47 - 3-phase 200V to 240V, 3* S48 - 3-phase 200V to 240V, 3* S49 - 3-phase 200V to 240V, 3* S50 - 3-phase 200V to 240V, 3* S51 - 3-phase 200V to 240V, 3* S52 - 3-phase 200V to 240V, 3* S53 - 3-phase 200V to 240V, 3* S54 - 3-phase 200V to 240V, 3* S55 - 3-phase 200V to 240V, 3* S56 - 3-phase 200V to 240V, 3* S57 - 3-phase 200V to 240V, 3* S58 - 3-phase 200V to 240V, 3* S59 - 3-phase 200V to 240V, 3* S60 - 3-phase 200V to 240V, 3* S61 - 3-phase 200V to 240V, 3* S62 - 3-phase 200V to 240V, 3* S63 - 3-phase 200V to 240V, 3* S64 - 3-phase 200V to 240V, 3* S65 - 3-phase 200V to 240V, 3* S66 - 3-phase 200V to 240V, 3* S67 - 3-phase 200V to 240V, 3* S68 - 3-phase 200V to 240V, 3* S69 - 3-phase 200V to 240V, 3* S70 - 3-phase 200V to 240V, 3* S71 - 3-phase 200V to 240V, 3* S72 - 3-phase 200V to 240V, 3* S73 - 3-phase 200V to 240V, 3* S74 - 3-phase 200V to 240V, 3* S75 - 3-phase 200V to 240V, 3* S76 - 3-phase 200V to 240V, 3* S77 - 3-phase 200V to 240V, 3* S78 - 3-phase 200V to 240V, 3* S79 - 3-phase 200V to 240V, 3* S80 - 3-phase 200V to 240V, 3* S81 - 3-phase 200V to 240V, 3* S82 - 3-phase 200V to 240V, 3* S83 - 3-phase 200V to 240V, 3* S84 - 3-phase 200V to 240V, 3* S85 - 3-phase 200V to 240V, 3* S86 - 3-phase 200V to 240V, 3* S87 - 3-phase 200V to 240V, 3* S88 - 3-phase 200V to 240V, 3* S89 - 3-phase 200V to 240V, 3* S90 - 3-phase 200V to 240V, 3* S91 - 3-phase 200V to 240V, 3* S92 - 3-phase 200V to 240V, 3* S93 - 3-phase 200V to 240V, 3* S94 - 3-phase 200V to 240V, 3* S95 - 3-phase 200V to 240V, 3* S96 - 3-phase 200V to 240V, 3* S97 - 3-phase 200V to 240V, 3* S98 - 3-phase 200V to 240V, 3* S99 - 3-phase 200V to 240V, 3* S100 - 3-phase 200V to 240V, 3*

Page 17

**Ratings, types and voltages**

Drive type	Phase bus	Rated output	Light-duty	Power output	Max. output current
	U <sub>n</sub>	P <sub>n</sub>	I <sub>n</sub>	P <sub>150%</sub>	I <sub>150%</sub>
ACS180-04S-02A6-1	400	0.75	0.75	1.125	1.5
ACS180-04S-02A6-2	400	1.5	1.5	2.25	3.0
ACS180-04S-02A6-3	400	3.0	3.0	4.5	6.0
ACS180-04S-02A6-4	400	4.5	4.5	6.75	9.0
ACS180-04S-02A6-5	400	7.5	7.5	11.25	15.0
ACS180-04S-02A6-6	400	15.0	15.0	22.5	30.0
ACS180-04S-02A6-7	400	22.5	22.5	33.75	45.0
ACS180-04S-02A6-8	400	30.0	30.0	45.0	60.0
ACS180-04S-02A6-9	400	45.0	45.0	67.5	90.0
ACS180-04S-02A6-10	400	75.0	75.0	112.5	150.0
ACS180-04S-02A6-11	400	150.0	150.0	225.0	300.0
ACS180-04S-02A6-12	400	225.0	225.0	337.5	450.0
ACS180-04S-02A6-13	400	300.0	300.0	450.0	600.0
ACS180-04S-02A6-14	400	450.0	450.0	675.0	900.0
ACS180-04S-02A6-15	400	750.0	750.0	1125.0	1500.0
ACS180-04S-02A6-16	400	1500.0	1500.0	2250.0	3000.0
ACS180-04S-02A6-17	400	2250.0	2250.0	3375.0	4500.0
ACS180-04S-02A6-18	400	3000.0	3000.0	4500.0	6000.0
ACS180-04S-02A6-19	400	4500.0	4500.0	6750.0	9000.0
ACS180-04S-02A6-20	400	7500.0	7500.0	11250.0	15000.0
ACS180-04S-02A6-21	400	15000.0	15000.0	22500.0	30000.0
ACS180-04S-02A6-22	400	22500.0	22500.0	33750.0	45000.0
ACS180-04S-02A6-23	400	30000.0	30000.0	45000.0	60000.0
ACS180-04S-02A6-24	400	45000.0	45000.0	67500.0	90000.0
ACS180-04S-02A6-25	400	75000.0	75000.0	112500.0	150000.0
ACS180-04S-02A6-26	400	150000.0	150000.0	225000.0	300000.0
ACS180-04S-02A6-27	400	225000.0	225000.0	337500.0	450000.0
ACS180-04S-02A6-28	400	300000.0	300000.0	450000.0	600000.0
ACS180-04S-02A6-29	400	450000.0	450000.0	675000.0	900000.0
ACS180-04S-02A6-30	400	750000.0	750000.0	1125000.0	1500000.0
ACS180-04S-02A6-31	400	1500000.0	1500000.0	2250000.0	3000000.0
ACS180-04S-02A6-32	400	2250000.0	2250000.0	3375000.0	4500000.0
ACS180-04S-02A6-33	400	3000000.0	3000000.0	4500000.0	6000000.0
ACS180-04S-02A6-34	400	4500000.0	4500000.0	6750000.0	9000000.0
ACS180-04S-02A6-35	400	7500000.0	7500000.0	11250000.0	15000000.0
ACS180-04S-02A6-36	400	15000000.0	15000000.0	22500000.0	30000000.0
ACS180-04S-02A6-37	400	22500000.0	22500000.0	33750000.0	45000000.0
ACS180-04S-02A6-38	400	30000000.0	30000000.0	45000000.0	60000000.0
ACS180-04S-02A6-39	400	45000000.0	45000000.0	67500000.0	90000000.0
ACS180-04S-02A6-40	400	75000000.0	75000000.0	112500000.0	150000000.0
ACS180-04S-02A6-41	400	150000000.0	150000000.0	225000000.0	300000000.0
ACS180-04S-02A6-42	400	225000000.0	225000000.0	337500000.0	450000000.0
ACS180-04S-02A6-43	400	300000000.0	300000000.0	450000000.0	600000000.0
ACS180-04S-02A6-44	400	450000000.0	450000000.0	675000000.0	900000000.0
ACS180-04S-02A6-45	400	750000000.0	750000000.0	1125000000.0	1500000000.0
ACS180-04S-02A6-46	400	1500000000.0	1500000000.0	2250000000.0	3000000000.0
ACS180-04S-02A6-47	400	2250000000.0	2250000000.0	3375000000.0	4500000000.0
ACS180-04S-02A6-48	400	3000000000.0	3000000000.0	4500000000.0	6000000000.0
ACS180-04S-02A6-49	400	4500000000.0	4500000000.0	6750000000.0	9000000000.0
ACS180-04S-02A6-50	400	7500000000.0	7500000000.0	11250000000.0	15000000000.0

Pages 18 and 19

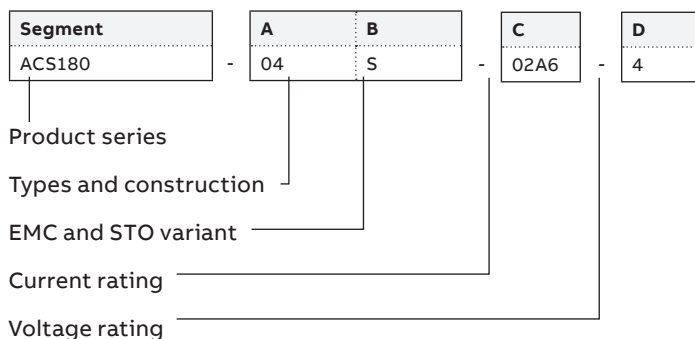




# Ordering information

The type designation indicates the specifications and configuration of the drive.  
The table shows the primary drive variants.

Sample type code: ACS180-04S-02A6-4 ( $I_N = 2.6 \text{ A}$ , 3-phase 400 V, with STO and C3 EMC filter)



Basic codes		
Segment	Option	Description
A	Types and construction	04 = Module, IP20
B	EMC and STO variant	S = Standard offering with STO and EMC filter*) 1-phase 200 to 240 V: Class C2 3-phase 200 to 240 V: Class C4 3-phase 380 to 480 V: Class C3 N***) = Without STO and EMC filter
C	Current rating	For example, 02A6 refers to a nominal output current of 2.6 A
D	Voltage rating	1 = 1-phase 200 to 240 V, 2 = 3-phase 200 to 240 V, 4 = 3-phase 380 to 480 V

\*) For 3-phase 200 to 240 V, ACS180-04S-xxxx-2 does not have built-in EMC filter as standard, only STO.

\*\*) Only 1-phase 200 to 240 V and 3-phase 380 to 480 V drives have N-variant available.

\*\*) N-variant has limited global availability – please contact your local ABB.



# Ratings, types and voltages

## 1-phase, $U_n = 230\text{ V}$ (range 200 to 240 V). The power ratings are valid at nominal voltage 230 V (0.25 to 3 kW).

Drive type	Frame Size	Nominal ratings			Light-duty use			Heavy-duty use			Max. output Current
		$I_N$	$P_N$	$P_N$	$I_{Ld}$	$P_{Ld}$	$P_{Ld}$	$I_{Hd}$	$P_{Hd}$	$P_{Hd}$	
		(A)	(hp)	(kW)	(A)	(hp)	(kW)	(A)	(hp)	(kW)	
ACS180-04S-02A4-1	R0	2.4	0.5	0.37	2.3	0.5	0.37	1.8	0.33	0.25	3.2
ACS180-04S-03A7-1	R0	3.7	0.75	0.55	3.5	0.75	0.55	2.4	0.5	0.37	4.3
ACS180-04S-04A8-1	R0	4.8	1	0.75	4.6	1	0.75	3.7	0.75	0.55	6.7
ACS180-04S-06A9-1	R1	6.9	1.5	1.1	6.6	1.5	1.1	4.5	1	0.75	8.1
ACS180-04S-07A8-1	R1	7.8	2	1.5	7.4	2	1.5	6.6	1.5	1.1	11.9
ACS180-04S-09A8-1	R1	9.8	3	2.2	9.3	3	2.2	7.4	2	1.5	13.3
ACS180-04S-12A2-1	R2	12.2	3	3	11.6	3	3	9.8	3	2.2	17.6

## 3-phase, $U_n = 230\text{ V}$ (range 200 to 240 V). The power ratings are valid at nominal voltage 230 V (0.25 to 11 kW).

Drive type	Frame Size	Nominal ratings			Light-duty use			Heavy-duty use			Max. output Current
		$I_N$	$P_N$	$P_N$	$I_{Ld}$	$P_{Ld}$	$P_{Ld}$	$I_{Hd}$	$P_{Hd}$	$P_{Hd}$	
		(A)	(hp)	(kW)	(A)	(hp)	(kW)	(A)	(hp)	(kW)	
ACS180-04S-02A4-2	R0	2.4	0.5	0.37	2.3	0.5	0.37	1.8	0.33	0.25	3.2
ACS180-04S-03A7-2	R0	3.7	0.75	0.55	3.5	0.75	0.55	2.4	0.5	0.37	4.3
ACS180-04S-04A8-2	R0	4.8	1	0.75	4.6	1	0.75	3.7	0.75	0.55	6.7
ACS180-04S-06A9-2	R1	6.9	1.5	1.1	6.6	1.5	1.1	4.5	1	0.75	8.1
ACS180-04S-07A8-2	R1	7.8	2	1.5	7.4	2	1.5	6.6	1.5	1.1	11.9
ACS180-04S-09A8-2	R1	9.8	3	2.2	9.3	3	2.2	7.4	2	1.5	13.3
ACS180-04S-15A6-2	R2	15.6	3	3	14.6	3	3	10.7	3	2.2	19.3
ACS180-04S-17A5-2	R2	17.5	5	4	16.7	5	4	12.2	3	3	22
ACS180-04S-25A0-2	R3	25	7.5	5.5	24.2	7.5	5.5	17.5	5	4	31.5
ACS180-04S-033A-2	R3	32	10	7.5	30.8	10	7.5	25	7.5	5.5	45
ACS180-04S-048A-2	R4	48	15	11	46.2	15	11	32	10	7.5	57.6
ACS180-04S-055A-2	R4	55	20	11	52.8	20	11	48	15	11	86.4

1-phase 200 to 240 V: Class C2

3-phase 200 to 240 V: Class C4 (no built-in EMC filter)

3-phase 380 to 480 V: Class C3

### Nominal ratings

$I_N$  Rated current available continuously without overload ability at 40 °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 40 °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, then as long as allowed by drive temperature.

For derating at higher altitudes, temperatures or switching frequencies, see the user's HW manuals, document codes: 3AXD50000467945.

**3-phase,  $U_N = 400$  V (range 380 to 480 V). The power ratings are valid at nominal voltage 400 V (0.25 to 11 kW).**

Drive type	Frame Size	Nominal ratings			Light-duty use			Heavy-duty use			Max. output Current $I_{max}$ (A)
		$I_N$ (A)	$P_N$ (hp)	$P_N$ (kW)	$I_{Ld}$ (A)	$P_{Ld}$ (hp)	$P_{Ld}$ (kW)	$I_{Hd}$ (A)	$P_{Hd}$ (hp)	$P_{Hd}$ (kW)	
ACS180-04S-01A8-4	R0	1.8	0.75	0.55	1.7	0.75	0.55	1.2	0.5	0.37	2.2
ACS180-04S-02A6-4	R0	2.6	1	0.75	2.5	1	0.75	1.8	0.75	0.55	3.2
ACS180-04S-03A3-4	R0	3.3	1.5	1.1	3.1	1.5	1.1	2.4	1	0.75	4.3
ACS180-04S-04A0-4	R1	4	2	1.5	3.8	2	1.5	3.3	1.5	1.1	5.9
ACS180-04S-05A6-4	R1	5.6	2	2.2	5.3	2	2.2	4	2	1.5	7.2
ACS180-04S-07A2-4	R1	7.2	3	3	6.8	3	3	5.6	2	2.2	10.1
ACS180-04S-09A4-4	R1	9.4	5	4	8.9	5	4	7.2	3	3	13
ACS180-04S-12A6-4	R2	12.6	7.5	5.5	12	7.5	5.5	9.4	5	4	16.9
ACS180-04S-17A0-4	R2	17	10	7.5	16.2	10	7.5	12.6	7.5	5.5	22.7
ACS180-04S-25A0-4	R3	25	15	11	23.8	15	11	17	10	7.5	30.6
ACS180-04S-033A-4	R3	32	20	15	30.5	20	15	25	15	11	45
ACS180-04S-038A-4	R4	38	25	18.5	36	25	18.5	32	20	15	57.6
ACS180-04S-045A-4	R4	45	30	22	42	30	22	38	25	18.5	68.4
ACS180-04S-050A-4	R4	50	30	22	48	30	22	42	30	22	81

1-phase 200 to 240 V: Class C2

3-phase 200 to 240 V: Class C4 (no built-in EMC filter)

3-phase 380 to 480 V: Class C3

**Nominal ratings** $I_N$  Rated current available continuously without overload ability at 40 °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 40 °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, then as long as allowed by drive temperature.

For derating at higher altitudes, temperatures or switching frequencies, see the user's HW manuals, document codes: 3AXD50000467945.

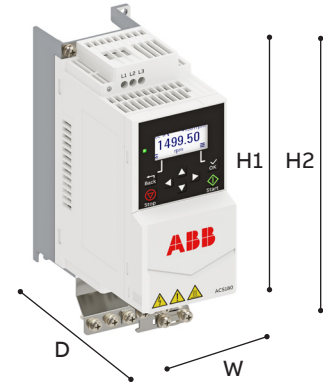
# Dimensions

## ACS180 IP20

Frame size	Height 1 (mm)	Height 2 (mm)	Width (mm)	Depth (mm)	Weight (kg)
R0	174	209	70	143	0.9
R1	190	220	70	143	1.3
R2	202	230	120	143	1.9
R3	205	241	170	174	3.3
R4	205	240	260	178	5.3

Height 1: Total height of the drive without grounding plate.

Height 2: Total height of the drive with grounding plate



# Drive commissioning and adaptable use with your control panel

The ACS180 drive has an integrated control panel with a display and control keys. External control panels are also available for installation on a cabinet door or for operation via a Bluetooth connection.



## Control panel as standard

Almost anyone can set up and commission the machinery drive using the available control panels. The ACS180 comes with the integrated icon-based control panel as standard. You do not need to know any drive parameters, because the control panel helps you to set up the essential settings quickly and get the drive into action. In addition, the ACS180 supports the assistant control panel (AP-I, AP-S or AP-W).



## Assistant control panel, ACS-AP-I \*)

The optional Assistant control has a graphical multilingual display. There is no need to know any drive parameters, because the control panel helps you set up the essential settings quickly and get the drive into action without hassle. The panel can be used with any products in the ABB all-compatible product portfolio.



## 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 commission and monitor the drive remotely, for example.



## Basic control panel, ACS-BP-S

If there is a need to install a basic panel in the cabinet door, the ACS-BP-S is the right choice. The icon-based control panel supports users with basic operation, settings and fault tracking when nothing extra is needed.



## Control panel mounting platform, DPMP-01

This mounting platform is for flush mountings. The panel mounting platform does not include the control panel.



## Control panel mounting platform, DPMP-02

This mounting platform is for surface mounting. The panel mounting platform does not include the control panel.



## Control panel mounting platform, DPMP-04

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

\*) Also compatible with the following ABB all-compatible drives: ACS380, ACS480, ACS580, and ACS880 drives.

## Control panel options

Ordering code	Description	Control panel
3AUA0000088311	Assistant control panel	ACS-AP-I
3AUA0000064884	Assistant control panel	ACS-AP-S
3AXD0000025965	Assistant control panel with Bluetooth interface	ACS-AP-W
3AXD50000028828	Basic control panel	ACS-BP-S
3AUA0000108878	Control panel mounting platform (flush-mounted)	DPMP-01
3AXD50000009374	Control panel mounting platform (surface-mounted)	DPMP-02
3AXD50000217717	Control panel mounting platform (outdoor installation)	DPMP-04

# Commissioning, programming and customization tools

Your engineering efficiency is boosted with our commissioning and programming tools, giving you the optimal solution to perform virtualization, planning, commissioning and maintenance.

## 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 could be used to set up adaptive programming. Adaptive programming is embedded inside the drive, is especially handy when there is a need to distribute some of the machine's control logic to the drive, it brings energy savings when the drive is adjusted to control the application optimally. 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.

## Mini USB connection on the panel

When using the Assistant control panel, the Drive Composer tool is connected to the drive using the mini USB connection on the panel.

## RJ45 connection at the bottom of ACS180

Through the RJ45 connection at the bottom of the drive, use male RJ-45 connector, cable type Cat 5e or better, the other side connects to the RJ45 behind the control panel.

Drive Composer	Entry level (free)	Pro level
	Basic functionality	Entry-level features
	Multi-language UI	Networked drives
	Parameter setting	Control diagrams
	Backup-restore	Data logger(s)
	Adaptive programming	Graphical safety setup
	Simple monitoring	Advanced monitoring
	Single-point connection	Multiple-point connection
	Connection via USB	Connection via USB/Ethernet
	–	Control diagrams
	–	Datalogger
–	Graphical safety setup	

Link/MRP codes	Description	Type designation
<a href="http://new.abb.com/drives/software-tools/drive-composer">new.abb.com/drives/software-tools/drive-composer</a>	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

## Mini USB connection on the panel



It connects the Drive Composer tool and the drive.

## RJ45 connection



It connects drive and control panel.

**Safe configuration for unpowered drives**

The CCA-01 cold configuration adapter provides a serial communication interface for unpowered ACS180 R2 to R4 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 ACS180 R2 to R4 drive.

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

**BCBL-01 cable**

Using the BCBL-01 cable, the PC can be connected directly to the RJ-45 panel port on the bottom of the ACS180 drive.

**BCBL-01**



It connects PC and RJ-45 panel port.

MRP code	Description	Type designation
3AXD50000032449	PC cable, USB to RJ45	BCBL-01

**DIN rail mounting kit**

For ACS180 frames R0 to R2, it is possible to install the drive to a standard 35 mm DIN rail with an optional kit. ACS180 R3/R4 support standard DIN rail installation. DIN rail installation passes ISTA standard road transport simulation tests, it ensures that the ACS180 installed in the electrical cabinet is stable and reliable during transportation.

**DIN rail mounting kit**



It connects the drive and DIN rail.

MRP code	Description	Type designation
3AXD50000900183	DIN rail mounting kit for R0 or R1 (5 sets per each package)	BDRK-01
3AXD50000900510	DIN rail mounting kit for R2 (5 sets per each package)	BDRK-02

# EMC – electromagnetic compatibility

ACS180-04S machinery drives are equipped with a built-in filter (C2 for 200 V and C3 for 400 V) to reduce high-frequency emissions.

## EMC standards

The EMC product standard (EN 61800-3) covers the specific EMC requirements stated for drives (tested with motor and cable) within the EU. EMC standards such as EN 55011 or EN 61000-6-3/4 are applicable to industrial and domestic equipment and systems that include components inside the drive. Drive units complying with the requirements of EN 61800-3 are compliant with comparable categories in EN 55011 and EN 61000-6-3/4, but not necessarily vice versa. EN 55011 and EN

61000-6-3/4 do not specify cable length or require a motor to be connected as a load. The emission limits are comparable to EMC standards according to the table below.

## Domestic environments versus public low voltage networks

The first 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 second environment includes all establishments directly connected to public low voltage power supply networks.

### Comparison of EMC standards

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

### EMC compliance and maximum motor cable length

Voltage	Drive type	Frame size	EMC category (EN 61800-3), max. cable length with internal filter			EMC category (EN 61800-3), max. cable length with external filters		
			C1	C2	C3	C1	C2	C3
1-phase 230 V	ACS180-04S-xxxx-1	R0						
		R1	–	5 m	10 m	10 m	30 m	–
		R2						
3-phase 230 V	ACS180-04S-xxxx-2	R0						
		R1	–	–	–	–	30 m	30 m
		R2						
		R3	–	–	–	–	20 m	20 m
3-phase 400 V	ACS180-04S-xxxx-4	R4						
		R0						
		R1	–	–	10 m	10 m	30 m	–
		R2						
		R3	–	–	30 m	40 m	40 m	40 m
		R4				30 m	30 m	30 m

Built-in EMC filter: C2 with ACS180-04S-xxxx-1, C3 with ACS180-04S-xxxx-4. ACS180-04S-xxxx-2 and ACS180-04N-xxxx-x: Class C4.



# Input reactors

## Applications

Line side power conditioning for AC motor controls to prevent unwanted harmonics and nuisance drive trips as well as to prevent excess current during line disturbances that can damage power semi-conductors. There should be a minimum impedance associated with the drive using either AC or DC magnetics. In many applications, this impedance can come from a supply transformer, or if long enough, the supply cable themselves. In most cases, however, the use of an additional input reactor is recommended.

## Features

UL Listed Open, UL Listed Type 1 and UL Listed Type 3R construction with connection terminals. 3% and 5% impedance rating at rated current. UL Listed reactors below 80A include lugs. Lugs are not included with reactor above 80A.

## Drive input current with and without input reactor

Type Code	Frame Size	Phd	Input Rating	INPUT WITH 5% REACTOR**
		hp	lhd	lhd
<b>Single phase drive - 200-240V applications</b>				
ACS180-04S-02A4-1	R0	0.33	5	3.3
ACS180-04S-03A7-1	R0	0.5	6.9	4.8
ACS180-04S-04A8-1	R0	0.75	9	6.2
ACS180-04S-06A9-1	R1	1	12.6	9.2
ACS180-04S-07A8-1	R1	1.5	17.3	12
ACS180-04S-09A8-1	R2	2	21.8	17
ACS180-04S-12A2-1	R2	3	23.9	21.1
<b>Three phase drive - 200-240V applications</b>				
ACS180-04S-02A4-2	R0	0.33	3.6	2.4
ACS180-04S-03A7-2	R0	0.5	5.6	3.7
ACS180-04S-04A8-2	R0	0.75	7.2	4.8
ACS180-04S-06A9-2	R1	1	10.4	6.9
ACS180-04S-07A8-2	R1	1.5	11.7	7.8
ACS180-04S-09A8-2	R1	2	14.7	9.8
ACS180-04S-15A6-2	R2	3	19.2	15.6
ACS180-04S-17A5-2	R2	3	23.6	17.5
ACS180-04S-25A0-2	R3	5	27.2	25
ACS180-04S-032A-2	R3	7.5	35	32
ACS180-04S-048A-2	R4	10	48	48
ACS180-04S-055A-2	R4	15	60	55
<b>Three phase drive - 380-480V applications</b>				
ACS180-04S-01A8-4	R0	0.5	1.9	1.3
ACS180-04S-02A6-4	R0	0.75	2.4	1.6
ACS180-04S-03A3-4	R0	1	3.5	2.1
ACS180-04S-04A0-4	R1	1.5	4.6	2.8
ACS180-04S-05A6-4	R1	2	6.9	3.8
ACS180-04S-07A2-4	R1	2	7.2	5
ACS180-04S-09A4-4	R1	3	10.3	6.7
ACS180-04S-12A6-4	R2	5	14.8	11
ACS180-04S-17A0-4	R2	7.5	20.3	14
ACS180-04S-25A0-4	R3	10	26.6	21
ACS180-04S-032A-4	R3	15	33.9	27
ACS180-04S-038A-4	R4	20	41.3	34
ACS180-04S-045A-4	R4	25	46.9	40
ACS180-04S-050A-4	R4	30	46.9	42

# Input reactors - high impedance

## Input Reactors for Single Phase 200-240V applications (connect to terminals A and C)

Drive Part #	HP PN	Drive Input Current @ 230V	Drive Input Current @ 230V with 5% choke	Drive Output Current I2N	KDR 5%, UL Listed, Open				KDR 5%, UL Listed Type 1 Enclosure				KDR 5%, UL Listed Type 3R Enclosure			
					Part Number	Watts Loss	Dimensions (HxWxD)	Wt	Part Number	Watts Loss	Dimensions (HxWxD)	Wt	Part Number	Watts Loss	Dimensions (HxWxD)	Wt
02A4-1	0.33	5	3.3	1.8	KDRMA23H1	16.1	3.63x4.45x1.78	1.4	KDRMA23H1E01	16.1	12.25x12.5x6.75	11.8	KDRMA23H1E3R1	16.1	11.45x10.31x12	16.4
03A7-1	0.5	6.9	4.8	2.4	KDRMA25H1	28.6	3.63x4.45x1.78	1.5	KDRMA25H1E01	28.6	12.25x12.5x6.75	11.9	KDRMA25H1E3R1	28.6	11.45x10.31x12	16.5
04A8-1	0.75	9	6.2	3.7	KDRMA26H1	32.5	3.63x4.45x1.78	1.5	KDRMA26H1E01	32.5	12.25x12.5x6.75	11.9	KDRMA26H1E3R1	32.5	11.45x10.31x12	16.5
06A9-1	1	12.6	9.2	4.5	KDRB25H	53.1	5x6x4	8	KDRB25HE01	53.1	12.25x12.5x6.75	18.5	KDRB25HE3R	53.1	11.45x10.31x12	23
07A8-1	1.5	17	12	6.6	KDRB25H	53.1	5x6x4	8	KDRB25HE01	53.1	12.25x12.5x6.75	18.5	KDRB25HE3R	53.1	11.45x10.31x12	23
09A8-1	2	21.8	17	7.4	KDRB26H	66.5	5x6x4	8	KDRB26HE01	66.5	12.25x12.5x6.75	18.5	KDRB26HE3R	66.5	11.45x10.31x12	23
12A2-1	3	23.9	21.1	9.8	KDRB26H	66.5	5x6x4	8	KDRB26HE01	66.5	12.25x12.5x6.75	18.5	KDRB26HE3R	66.5	11.45x11.31x12	23

All KDR resistors in sizes that match with ACS180 drives include lugs, no separate lug kits are required  
Wt - weight

## Input Reactors for Three Phase 200-240V applications

Drive Part #	HP PN	Drive Input Current @ 230V	Drive Input Current @ 230V with 5% choke	Drive Output Current I2N	KDR 5%, UL Listed, Open				KDR 5%, UL Listed Type 1 Enclosure				KDR 5%, UL Listed Type 3R Enclosure			
					Part Number	Watts Loss	Dimensions (HxWxD)	Wt	Part Number	Watts Loss	Dimensions (HxWxD)	Wt	Part Number	Watts Loss	Dimensions (HxWxD)	Wt
02A4-2	0.33	3.6	2.4	1.8	KDRMA23H1	16	3.63x4.45x1.78	1.4	KDRMA23H1E01	16	12.25x12.5x6.75	11.8	KDRMA23H1E3R1	16	11.45x10.31x12	16.4
03A7-2	0.5	5.6	3.7	2.4	KDRMA25H1	28.6	3.63x4.45x1.78	1.5	KDRMA25H1E01	28.6	12.25x12.5x6.75	11.9	KDRMA25H1E3R1	28.6	11.45x10.31x12	16.4
04A8-2	0.75	7.2	4.8	3.7	KDRMA25H1	28.6	3.63x4.45x1.78	1.5	KDRMA25H1E01	28.6	12.25x12.5x6.75	11.9	KDRMA25H1E3R1	28.6	11.45x10.31x12	16.5
06A9-2	1	10.4	6.9	4.5	KDRAA28H2	44.6	4.44x4.25x2.64	2.6	KDRAA28H2E01	44.6	12.25x12.5x6.75	13	KDRAA28H2E3R1	44.6	11.45x10.31x12	17.6
07A8-2	1.5	11	7.8	6.6	KDRAA28H2	44.6	4.44x4.25x2.64	2.6	KDRAA28H2E01	44.6	12.25x12.5x6.75	13	KDRAA28H2E3R1	44.6	11.45x10.31x12	17.6
09A8-2	2	14.7	9.8	7.4	KDRB25H	53.1	5x6x4	8	KDRB25HE01	53.1	12.25x12.5x6.75	18.5	KDRB25HE3R	53.1	11.45x10.31x12	23
15A6-2	3	19.2	15.6	10.7	KDRB26H	66.5	5x6x4	8	KDRB26HE01	66.5	12.25x12.5x6.75	18.5	KDRB26HE3R	66.5	11.45x10.31x12	23
17A5-2	3	23.6	17.5	12.2	KDRB26H	66.5	5x6x4	8	KDRB26HE01	66.5	12.25x12.5x6.75	18.5	KDRB26HE3R	66.5	11.45x10.31x12	23
25A0-2	5	27.2	25	17.5	KDRD21H	91.8	5.75x7.2x4.25	12	KDRD21HE01	91.8	12.25x12.5x6.75	22.5	KDRD21HE3R	91.8	11.45x10.31x12	27
033A-2	7.5	35	32	25	KDRD22H	107.8	5.75x7.2x4.25	12	KDRD22HE01	107.8	12.25x12.5x6.75	22.5	KDRD22HE3R	107.8	11.45x10.31x12	27
048A-2	10	48	48	32	KDRC22H	113.1	5.75x7.2x5	15	KDRC22HE01	113.1	12.25x12.5x6.75	25.5	KDRC22HE3R	113.1	11.45x10.31x12	30
055A-2	15	60	55	46.2	KDRC22H	113.1	5.75x7.2x5	15	KDRC22HE01	113.1	12.25x12.5x6.75	25.5	KDRC22HE3R	113.1	11.45x10.31x12	30

All KDR resistors in sizes that match with ACS180 drives include lugs, no separate lug kits are required  
Wt - weight

## Input Reactors for Three Phase 380-480V applications

Drive Part #	HP PN	Drive Input Current @ 480V	Drive Input Current @ 480V with 5% choke	Drive Output Current I2N	KDR 5%, UL Listed, Open				KDR 5%, UL Listed Type 1 Enclosure				KDR 5%, UL Listed Type 3R Enclosure			
					Part Number	Watts Loss	Dimensions (HxWxD)	Wt	Part Number	Watts Loss	Dimensions (HxWxD)	Wt	Part Number	Watts Loss	Dimensions (HxWxD)	Wt
01A8-4	0.5	1.9	1.3	1.1	KDRMA3H1	14.3	3.63x4.45x1.78	1.3	KDRMA3H1E01	14.3	12.25x12.5x6.75	11.7	KDRMA3H1E3R1	14.3	11.45x10.31x12	16.3
02A6-4	0.75	2.3	1.6	1.6	KDRMA5H1	26.7	3.63x4.45x1.78	1.4	KDRMA5H1E01	26.7	12.25x12.5x6.75	11.8	KDRMA5H1E3R1	26.7	11.45x10.31x12	16.4
03A3-4	1	3.5	2.1	2.1	KDRMA6H1	30	3.63x4.45x1.78	1.6	KDRMA6H1E01	30	12.25x12.5x6.75	13.4	KDRMA6H1E3R1	30	11.45x10.31x12	16.6
04A0-4	1.5	4.6	2.8	3	KDRAA2H2	41.8	4.44x4.25x2.64	3	KDRAA2H2E01	41.8	12.25x12.5x6.75	13.4	KDRAA2H2E3R1	41.8	11.45x10.31x12	18
05A6-4	2	6.9	3.8	3.4	KDRAA6H2	50.2	4.44x4.25x2.64	3.4	KDRAA6H2E01	50.2	12.25x12.5x6.75	13.8	KDRAA6H2E3R1	50.2	11.45x10.31x12	18.4
07A2-4	3	9.2	5	4.8	KDRAA4H2	70	4.44x4.25x2.64	4	KDRAA4H2E01	70	12.25x12.5x6.75	14.4	KDRAA4H2E3R1	70	11.45x10.31x12	19
09A4-4	3	10.3	6.7	6.3	KDRAA4H2	70	4.44x4.25x2.64	4	KDRAA4H2E01	70	12.25x12.5x6.75	14.4	KDRAA4H2E3R1	70	11.45x10.31x12	19
12A6-4	5	14	11	7.6	KDRAA5H2	97.7	4.44x4.25x2.64	4.2	KDRAA5H2E01	97.7	12.25x12.5x6.75	14.6	KDRAA5H2E3R1	97.7	11.45x10.31x12	19.2
17A0-4	7.5	20.3	14	11	KDRB2H	133	5x6x4	7	KDRB2HE01	133	12.25x12.5x6.75	17.5	KDRB2HE3R	133	11.45x10.31x12	22
25A0-4	10	26.6	21	14	KDRB2H	133	5x6x4	7	KDRB2HE01	133	12.25x12.5x6.75	17.5	KDRB2HE3R	133	11.45x10.31x12	22
033A-4	15	33.9	27	21	KDRC1H	112	5.75x7.2x5	15	KDRC1HE01	112	12.25x12.5x6.75	25.5	KDRC1HE3R	112	11.45x10.31x12	30
038A-4	20	41.3	34	27	KDRE2H	141	5.75x7.2x5	16	KDRE2HE01	141	12.25x12.5x6.75	26.5	KDRE2HE3R	141	11.45x10.31x12	31
045A-4	25	46.9	40	34	KDRF4H	169	7x9x6	25	KDRF4HE01	169	19.13x15.66x15.8	67	KDRF4HE3R	169	19.18x15.6x19.5	63
050A-4	30	46.9	42	40	KDRF4H	169	7x9x6	25	KDRF4HE01	169	19.13x15.66x15.8	67	KDRF4HE3R	169	19.18x15.6x19.5	63

All KDR resistors in sizes that match with ACS180 drives include lugs, no separate lug kits are required  
Wt - weight

# Input reactors - low impedance

## Input Reactors for Single Phase 200-240V applications (connect to terminals A and C)

Drive Part #	HP PN	Drive Input Current @ 230V	Drive Input Current @ 230V	Drive Output Current I2N	KDR 3%, UL Listed, Open				KDR 3%, UL Listed Type 1 Enclosure				KDR 3%, UL Listed Type 3R Enclosure			
					Part Number	Watts Loss	Dimensions (HxWxD)	Wt	Part Number	Watts Loss	Dimensions (HxWxD)	Wt	Part Number	Watts Loss	Dimensions (HxWxD)	Wt
02A4-1	0.33	5	3.3	1.8	KDRMA22L1	6.8	3.63x4.45x1.78	1.4	KDRMA22L1E01	6.8	12.25x12.5x6.75	11.8	KDRMA22L1E3R1	6.8	11.45x10.31x12	16.4
03A7-1	0.5	6.9	4.8	2.4	KDRMA25L1	23.3	3.63x4.45x1.78	1.2	KDRMA25L1E01	23.3	12.25x12.5x6.75	11.6	KDRMA25L1E3R1	23.3	11.45x10.31x12	16.2
04A8-1	0.75	9	6.2	3.7	KDRMA27L1	27	3.63x4.45x1.78	1.3	KDRMA27L1E01	27	12.25x12.5x6.75	14.5	KDRMA27L1E3R1	27	11.45x10.31x12	16.3
06A9-1	1	12.6	9.2	4.5	KDRB22L	38	5x6x4	8	KDRB22LE01	38	12.25x12.5x6.75	18.5	KDRB22LE3R	38	11.45x10.31x12	23
07A8-1	1.5	17.3	12	6.6	KDRB22L	38	5x6x4	8	KDRB22LE01	38	12.25x12.5x6.75	18.5	KDRB22LE3R	38	11.45x10.31x12	23
09A8-1	2	21.8	17	7.4	KDRB23L	48	5x6x4	8	KDRB23LE01	48	12.25x12.5x6.75	18.5	KDRB23LE3R	48	11.45x10.31x12	23
12A2-1	3	23.9	21.1	9.8	KDRB23L	48	5x6x4	8	KDRB23LE01	48	12.25x12.5x6.75	18.5	KDRB23LE3R	48	11.45x10.31x12	23

All KDR resistors in sizes that match with ACS180 drives include lugs, no separate lug kits are required  
Wt - weight

## Input Reactors for Three Phase 200-240V applications

Drive Part #	HP PN	Drive Input Current @ 230V	Drive Input Current @ 230V	Drive Output Current I2N	KDR 3%, UL Listed, Open				KDR 3%, UL Listed Type 1 Enclosure				KDR 3%, UL Listed Type 3R Enclosure			
					Part Number	Watts Loss	Dimensions (HxWxD)	Wt	Part Number	Watts Loss	Dimensions (HxWxD)	Wt	Part Number	Watts Loss	Dimensions (HxWxD)	Wt
02A4-2	0.33	3.6	2.4	1.8	KDRMA22L1	6.8	3.63x4.45x1.78	1.4	KDRMA22L1E01	6.8	12.25x12.5x6.75	11.8	KDRMA22L1E3R1	6.8	11.45x10.31x12	16.4
03A7-2	0.5	5.6	3.7	2.4	KDRMA25L1	23.3	3.63x4.45x1.78	1.2	KDRMA25L1E01	23.3	12.25x12.5x6.75	11.6	KDRMA25L1E3R1	23.3	11.45x10.31x12	16.2
04A8-2	0.75	7.2	4.8	3.7	KDRMA25L1	23.3	3.63x4.45x1.78	1.2	KDRMA25L1E01	23.3	12.25x12.5x6.75	11.6	KDRMA25L1E3R1	23.3	11.45x10.31x12	16.2
06A9-2	1	10.4	6.9	4.5	KDRAA28L2	42	4.44x4.25x2.64	3	KDRAA28L2E01	42	12.25x12.5x6.75	13.4	KDRAA28L2E3R1	42	11.45x10.31x12	18
07A8-2	1.5	11	7.8	6.6	KDRAA28L2	42	4.44x4.25x2.64	3	KDRAA28L2E01	42	12.25x12.5x6.75	13.4	KDRAA28L2E3R1	42	11.45x10.31x12	18
09A8-2	2	14.7	9.8	7.4	KDRB22L	38	5x6x4	8	KDRB22LE01	38	12.25x12.5x6.75	18.5	KDRB22LE3R	38	11.45x10.31x12	23
15A6-2	3	19	15.6	10.7	KDRB22L	38	5x6x4	8	KDRB22LE01	38	12.25x12.5x6.75	18.5	KDRB22LE3R	38	11.45x10.31x12	23
17A5-2	3	23.6	17.5	12.2	KDRB23L	48	5x6x4	8	KDRB23LE01	48	12.25x12.5x6.75	18.5	KDRB23LE3R	48	11.45x10.31x12	23
25A0-2	5	27.2	25	17.5	KDRD25L	64	5.75x7.2x4.25	12	KDRD25LE01	64	12.25x12.5x6.75	22.5	KDRD25LE3R	64	11.45x10.31x12	27
033A-2	7.5	35	32	25	KDRD24L	85	5.75x7.2x4.25	12	KDRD24LE01	85	12.25x12.5x6.75	22.5	KDRD24LE3R	85	11.45x10.31x12	27
048A-2	10	48	48	32	KDRD24L	85	5.75x7.2x4.25	12	KDRD24LE01	85	12.25x12.5x6.75	22.5	KDRD24LE3R	85	11.45x10.31x12	27
055A-2	15	60	55	46.2	KDRD26L	94	5.75x7.2x4.25	12	KDRD26LE01	94	12.25x12.5x6.75	22.5	KDRD26LE3R	94	11.45x10.31x12	27

All KDR resistors in sizes that match with ACS180 drives include lugs, no separate lug kits are required  
Wt - weight

## Input Reactors for Three Phase 380-480V applications

Drive Part #	HP PN	Drive Input Current @ 480V	Drive Input Current @ 480V	Drive Output Current I2N	KDR 3%, UL Listed, Open				KDR 3%, UL Listed Type 1 Enclosure				KDR 3%, UL Listed Type 3R Enclosure			
					Part Number	Watts Loss	Dimensions (HxWxD)	Wt	Part Number	Watts Loss	Dimensions (HxWxD)	Wt	Part Number	Watts Loss	Dimensions (HxWxD)	Wt
01A8-4	0.5	1.9	1.3	1.1	KDRMA4L1	12.1	3.63x4.45x1.78	1.3	KDRMA4L1E01	12.1	12.25x12.5x6.75	11.7	KDRMA4L1E3R1	12.1	11.45x10.31x12	16.3
02A6-4	0.75	2.4	1.6	1.6	KDRMA6L1	26.4	3.63x4.45x1.78	1.4	KDRMA6L1E01	26.4	12.25x12.5x6.75	11.8	KDRMA6L1E3R1	26.4	11.45x10.31x12	16.4
03A3-4	1	3.5	2.1	2.1	KDRMA7L1	23.5	3.63x4.45x1.78	1.4	KDRMA7L1E01	23.5	12.25x12.5x6.75	11.8	KDRMA7L1E3R1	23.5	11.45x10.31x12	16.4
04A0-4	1.5	4.6	2.8	3	KDRMA8L1	30.6	3.63x4.45x1.78	1.4	KDRMA8L1E01	30.6	12.25x12.5x6.75	11.8	KDRMA8L1E3R1	30.6	11.45x10.31x12	16.4
05A6-4	2	6.9	3.8	3.4	KDRAA6L2	39.2	4.44x4.25x2.64	3	KDRAA6L2E01	39.2	12.25x12.5x6.75	13.4	KDRAA6L2E3R1	39.2	11.45x10.31x12	18
07A2-4	3	9.2	5	4.8	KDRAA3L2	48.8	4.44x4.25x2.64	3	KDRAA3L2E01	48.8	12.25x12.5x6.75	13.4	KDRAA3L2E3R1	48.8	11.45x10.31x12	18
09A4-4	3	10.3	6.7	6.3	KDRAA4L2	62.9	4.44x4.25x2.64	3.2	KDRAA4L2E01	62.9	12.25x12.5x6.75	13.6	KDRAA4L2E3R1	62.9	11.45x10.31x12	18.2
12A6-4	5	14	11	7.6	KDRAA5L2	77.7	4.44x4.25x2.64	3.3	KDRAA5L2E01	77.7	12.25x12.5x6.75	13.7	KDRAA5L2E3R1	77.7	11.45x10.31x12	18.3
17A0-4	7.5	20.3	14	11	KDRB2L	65	5x6x4	8	KDRB2LE01	65	12.25x12.5x6.75	18.5	KDRB2LE3R	65	11.45x10.31x12	23
25A0-4	10	26.6	21	14	KDRB1L	79	5x6x4	8	KDRB1LE01	79	12.25x12.5x6.75	18.5	KDRB1LE3R	79	11.45x10.31x12	23
033A-4	15	33.9	27	21	KDRD2L	105	5.75x7.2x4.25	10	KDRD2LE01	105	12.25x12.5x6.75	20.5	KDRD2LE3R	105	11.45x10.31x12	25
038A-4	20	41.3	34	27	KDRD2L	105	5.75x7.2x4.25	10	KDRD2LE01	105	12.25x12.5x6.75	20.5	KDRD2LE3R	105	11.45x10.31x12	25
045A-4	25	46.9	40	34	KDRC1L	114	5.75x7.2x5	15	KDRC1LE01	114	12.25x12.5x6.75	25.5	KDRC1LE3R	114	11.45x10.31x12	30
050A-4	30	46.9	42	40	KDRC1L	114	5.75x7.2x5	15	KDRC1LE01	114	12.25x12.5x6.75	25.5	KDRC1LE3R	114	11.45x10.31x12	30

All KDR resistors in sizes that match with ACS180 drives include lugs, no separate lug kits are required  
Wt - weight

# Cooling and fuses

## Cooling

ACS180 drives are fitted with cooling air fans from frame size R1. The cooling air must be free of corrosive materials and must not exceed the maximum ambient temperature of 50 °C (60 °C with derating).

## Fuses

Standard fuses can be used with the ACS180. For input fuses, see the table below. Manual motor protectors can also be used. See hardware manual for details.

### Cooling airflow and recommended input protection fuses

#### 1-phase $U_N = 230\text{ V}$ (range 200 to 240 V)

Drive type	Frame size	Heat dissipation (W)	Airflow (m <sup>3</sup> /h)	Max. noise level (dBA)	IEC fuses		IEC fuses		UL fuses	
					(A)	Fuse type	(A)	Fuse type	(A)	Fuse type
ACS180-04S-02A4-1	R0	50	— <sup>*)</sup>	— <sup>**)</sup>	10	gG	32	gR	6	UL class T
ACS180-04S-03A7-1	R0	62	— <sup>*)</sup>	— <sup>**)</sup>	16	gG	32	gR	10	UL class T
ACS180-04S-04A8-1	R0	71	— <sup>*)</sup>	— <sup>**)</sup>	16	gG	40	gR	15	UL class T
ACS180-04S-06A9-1	R1	98	27	51.8	20	gG	50	gR	20	UL class T
ACS180-04S-07A8-1	R1	100	27	51.8	25	gG	50	gR	25	UL class T
ACS180-04S-09A8-1	R1	124	27	51.8	40	gG	50	gR	35	UL class T
ACS180-04S-12A2-1	R2	159	130	62	40	gG	63	gR	35	UL class T

### Cooling airflow and recommended input protection fuses

#### 3-phase $U_N = 230\text{ V}$ (range 200 to 240 V)

Drive type	Frame size	Heat dissipation (W)	Airflow (m <sup>3</sup> /h)	Max. noise level (dBA)	IEC fuses		IEC fuses		UL fuses	
					(A)	Fuse type	(A)	Fuse type	(A)	Fuse type
ACS180-04S-02A4-2	R0	50	— <sup>*)</sup>	— <sup>**)</sup>	6	gG	25	gR	6	UL class T
ACS180-04S-03A7-2	R0	62	— <sup>*)</sup>	— <sup>**)</sup>	8	gG	32	gR	10	UL class T
ACS180-04S-04A8-2	R0	71	— <sup>*)</sup>	— <sup>**)</sup>	16	gG	32	gR	10	UL class T
ACS180-04S-06A9-2	R1	98	27	51.8	16	gG	50	gR	15	UL class T
ACS180-04S-07A8-2	R1	100	27	51.8	20	gG	50	gR	20	UL class T
ACS180-04S-09A8-2	R1	124	27	51.8	25	gG	50	gR	20	UL class T
ACS180-04S-15A6-2	R2	186	130	62	32	gG	50	gR	30	UL class T
ACS180-04S-17A5-2	R2	216	130	62	32	gG	50	gR	35	UL class T
ACS180-04S-25A0-2	R3	178	128	66	50	gG	80	gR	40	UL class T
ACS180-04S-033A-2	R3	236	128	66	63	gG	100	gR	50	UL class T
ACS180-04S-048A-2	R4	337	150	69	100	gG	160	gR	70	UL class T
ACS180-04S-055A-2	R4	453	150	69	100	gG	160	gR	80	UL class T

<sup>\*)</sup> Frame size R0 with free convection cooling.

<sup>\*\*)</sup> Frame size R0 is noise-free.

Cooling airflow and recommended input protection fuses										
3-phase $U_N = 400\text{ V}$ (range 380 to 480 V)										
Drive type	Frame size	Heat dissipation	Airflow	Max. noise level	IEC fuses		IEC fuses		UL fuses	
					(A)	Fuse type	(A)	Fuse type	(A)	Fuse type
		(W)	(m <sup>3</sup> /h)	(dBA)						
ACS180-04S-01A8-4	R0	48	— <sup>*)</sup>	— <sup>**)</sup>	4	gG	20	gR	6	UL class T
ACS180-04S-02A6-4	R0	58	— <sup>*)</sup>	— <sup>**)</sup>	6	gG	20	gR	6	UL class T
ACS180-04S-03A3-4	R0	69	— <sup>*)</sup>	— <sup>**)</sup>	10	gG	20	gR	10	UL class T
ACS180-04S-04A0-4	R1	85	36.29	50.9	10	gG	25	gR	10	UL class T
ACS180-04S-05A6-4	R1	115	36.29	50.9	16	gG	25	gR	20	UL class T
ACS180-04S-07A2-4	R1	121	36.29	50.9	20	gG	32	gR	20	UL class T
ACS180-04S-09A4-4	R1	154	36.29	50.9	25	gG	32	gR	25	UL class T
ACS180-04S-12A6-4	R2	175	130.44	62	32	gG	50	gR	30	UL class T
ACS180-04S-17A0-4	R2	242	130.44	62	40	gG	50	gR	35	UL class T
ACS180-04S-25A0-4	R3	328	128	66	50	gG	80	gR	40	UL class T
ACS180-04S-033A-4	R3	444	128	66	63	gG	100	gR	60	UL class T
ACS180-04S-038A-4	R4	546	150	69	80	gG	125	gR	70	UL class T
ACS180-04S-045A-4	R4	647	150	69	100	gG	160	gR	70	UL class T
ACS180-04S-050A-4	R4	647	150	69	100	gG	160	gR	70	UL class T

<sup>\*)</sup> Frame size R0 with free convection cooling.

<sup>\*\*)</sup> Frame size R0 is noise-free.

# Circuit breakers

The miniature circuit breakers listed below are tested and approved for use with ACS180 drives. Other circuit breakers can also be used with the drive if they provide the same electrical characteristics.

<b>Circuit breakers</b>			
<b>1-phase <math>U_N = 230\text{ V}</math> (range 200 to 240 V)</b>			
<b>Drive type</b>	<b>Frame size</b>	<b>ABB miniature circuit breaker Type</b>	<b>kA<sup>*)</sup></b>
ACS180-04S-02A4-1	R0	S 201P-B10NA	5
ACS180-04S-03A7-1	R0	S 201P-B10NA	5
ACS180-04S-04A8-1	R0	S 201P-B16NA	5
ACS180-04S-06A9-1	R1	S 201P-B20NA	5
ACS180-04S-07A8-1	R1	S 201P-B25NA	5
ACS180-04S-09A8-1	R1	S 201P-B32NA	5
ACS180-04S-12A2-1	R2	S 201P-B40NA	5
<b>3-phase <math>U_N = 230\text{ V}</math> (range 200 to 240 V)</b>			
ACS180-04S-02A4-2	R0	S 203P-Z 6 NA	5
ACS180-04S-03A7-2	R0	S 203P-Z 8 NA	5
ACS180-04S-04A8-2	R0	S 203P-Z 10 NA	5
ACS180-04S-06A9-2	R1	S 203P-Z 16 NA	5
ACS180-04S-07A8-2	R1	S 203P-Z 20NA	5
ACS180-04S-09A8-2	R1	S 203P-Z 20NA	5
ACS180-04S-15A6-2	R2	S 203P-Z 32 NA	5
ACS180-04S-17A5-2	R2	S 203P-Z 32 NA	5
ACS180-04S-25A0-2	R3	S 203P-Z 50 NA	5
ACS180-04S-033A-2	R3	S 203P-Z 63 NA	5
ACS180-04S-048A-2	R4	Contact ABB	5
ACS180-04S-055A-2	R4	Contact ABB	5
<b>3-phase <math>U_N = 400\text{ V}</math> (range 380 to 480 V)</b>			
ACS180-04S-01A8-4	R0	S 203P-B6	5
ACS180-04S-02A6-4	R0	S 203P-B6	5
ACS180-04S-03A3-4	R0	S 203P-B6	5
ACS180-04S-04A0-4	R1	S 203P-B8	5
ACS180-04S-05A6-4	R1	S 203P-B10	5
ACS180-04S-07A2-4	R1	S 203P-B16	5
ACS180-04S-09A4-4	R1	S 203P-B16	5
ACS180-04S-12A6-4	R2	S 203P-B25	5
ACS180-04S-17A0-4	R2	S 203P-B40	5
ACS180-04S-25A0-4	R3	S203P-B50	5
ACS180-04S-033A-4	R3	S203P-B63	5
ACS180-04S-038A-4	R4	S803S-B80	5
ACS180-04S-045A-4	R4	S803-B100	5
ACS180-04S-050A-4	R4	S803-B100	5

<sup>\*)</sup> Maximum allowed rated conditional short-circuit current (IEC 61800-5-1) of the electrical power network to use with this type of miniature circuit breaker.

# Resistor braking

## Brake chopper

The brake chopper is standard for the ACS180 R2 and above frame size. It not only controls braking, but also supervises system status and detects failures such as brake resistor and resistor cable short-circuits, chopper short-circuit, and calculated resistor over-temperature. See the tables for internal brake chopper specifications for each drive type.

The ACS180 frame R0 and R1 do not have internal braking chopper nor the DC connection.

## Brake resistor

The brake resistors are separately available for the ACS180. Resistors other than the standard option resistors may be used, provided that the specified resistance value is within the specified limits and that the heat dissipation capacity of the resistor is sufficient for the drive application (see hardware manual). No separate fuses in the brake circuit are required if the conditions for the mains cable, for example, are protected with fuses and no mains cable/fuse overrating occurs.

### 1-phase 230 V

Drive type	Frame size	Internal brake chopper			
		$R_{\min}$ (ohm)	$R_{\max}$ (ohm)	$P_{BRcont}$ (kW)	$P_{BRmax}$ (kW)
ACS180-04x-xxxx-1	R0-R1	–	–	–	–
ACS180-04x-12A2-1	R2	19.5	47.1	2.2	3.3

### 3-phase 230 V

ACS180-04S-xxxx-2	R0-R1	–	–	–	–
ACS180-04S-15A6-2	R2	19.5	51.9	2.2	3.3
ACS180-04S-17A5-2	R2	15.6	38.5	3	4.5
ACS180-04S-25A0-2	R3	14	28	4	6
ACS180-04S-033A-2	R3	10	20	5.5	8.3
ACS180-04S-048A-2	R4	3	14	7.5	11.3
ACS180-04S-055A-2	R4	3	10	11	16.5

### 3-phase 400 V

ACS180-04x-xxxx-4	R0-R1	–	–	–	–
ACS180-04x-12A6-4	R2	31.6	75.7	4	6
ACS180-04x-17A0-4	R2	31.6	54.4	5.5	8.3
ACS180-04x-25A0-4	R3	37	49	7.5	11.3
ACS180-04x-033A-4	R3	24	33	11	16.5
ACS180-04x-038A-4	R4	6	23.7	15	22.5
ACS180-04x-045A-4	R4	6	19.7	18.5	27.8
ACS180-04x-050A-4	R4	6	19.7	22	33

$R_{\min}$  = The minimum permitted resistance value of the brake resistor

$R_{\max}$  = The maximum resistance value of the brake resistor that can provide  $P_{BRcont}$

$P_{BRcont}$  = The continuous braking capacity of the drive

$P_{BRmax}$  = The maximum braking capacity of the drive, when the length of the braking pulse is at most 1 minute for each 10 minutes ( $P_{BRcont} \times 1.5$ ). The maximum braking capacity must be more than the desired braking power.

Example brake resistor → Check the allowed braking cycle from the resistor data sheet.

Please see the ACS180 hardware manual for the selection guidelines.

# Braking resistors

## Dynamic Braking Using the Built-in Braking Chopper (Transistor)

All ACS380 drives include a built-in brake chopper for use with a braking resistor to perform dynamic braking. No separate option kits need to be selected, no additional panel space is required, no additional installation time is needed to assemble a brake chopper. No separate fuses in the brake circuit are required if the mains cable is protected with fuses and no mains cable/fuse overrating takes place.

Use the following tables to select the correct brake resistor for your application. Either compact CR type resistors (for smaller drives) or standard enclosed resistor packages are available. For more information regarding the selection of other braking resistors and the limits of the built-in brake chopper, see the ACS380 Hardware Manual 3AXD50000029274.

### Single phase 200-240V applications, stopping duty only

#### Type CR Resistors (Available for the small HP drives as listed below)

Duty Cycle		3sec on/27sec off			10sec on/50sec off			30sec on/180sec off			60sec on/180sec off			
ACS180-04S-	HP	Frame Size	CR Part No.	Ohms	Watts	CR Part No.	Ohms	Watts	Enclosed Res Part No.	Ohms	Watts	Enclosed Res Part No.	Ohms	Watts
xxxx-1*	.33-2	R0-R1	-	-	-	-	-	-	-	-	-	-	-	-
12A2-1	3	R2	P14494-CR-26	40	300	P14494-CR-34	40	400	P14494-31	35	300	P14494-31	35	300
Duty Cycle		30sec on/180sec off			60sec on/180sec off			30sec on/180sec off			60sec on/180sec off			
ACS180-04S-	HP	Frame Size	CR Part No.	Ohms	Watts	CR Part No.	Ohms	Watts	Enclosed Res Part No.	Ohms	Watts	Enclosed Res Part No.	Ohms	Watts
xxxx-1*	.33-2	R0-R1	-	-	-	-	-	-	-	-	-	-	-	-
12A2-1	3	R2	P14494-CR-34	40	400	-	-	-	P14494-32	35	820	P14494-32	35	820

Notes: To determine resistor type, dimensions and weights refer to Resistor Technical Data Tables

\* R0 and R1 do not have a brake chopper

### Three phase 200-240 V applications, stopping duty only

#### Type CR resistors (available for the small Hp drives as listed below)

Duty Cycle		3sec on/27sec off			10sec on/50sec off			30sec on/180sec off			60sec on/180sec off			
ACS180-04S-	HP	Frame Size	CR Part No.	Ohms	Watts	CR Part No.	Ohms	Watts	CR Part No.	Ohms	Watts	CR Part No.	Ohms	Watts
xxxx-2*	.33-2	R0-R1	-	-	-	-	-	-	-	-	-	-	-	-
15A6-2	3	R2	P14494-CR-12	50	150	P14494-CR-24	50	300	P14494-CR-33	45	400	-	-	-
17A5-2	3	R2	P14494-CR-54	18	300	P14494-CR-54	18	300	P14494-CR-55	18	400	-	-	-
25A0-2	5	R3	P14494-CR-54	18	300	P14494-CR-56	18	500	-	-	-	-	-	-
033A-2	7.5	R3	P14494-CR-55	18	400	-	-	-	-	-	-	-	-	-
048A-2	10	R4	-	-	-	-	-	-	-	-	-	-	-	-
055A-2	15	R4	-	-	-	-	-	-	-	-	-	-	-	-

Notes: To determine resistor type, dimensions and weights refer to Resistor Technical Data Tables

\* R0 and R1 do not have a brake chopper

### Standard Enclosed Resistor Packages

Duty Cycle		3sec on/27sec off			10sec on/50sec off			30sec on/180sec off			60sec on/180sec off			
ACS180-04S-	HP	Frame Size	Enclosed Res Part No.	Ohms	Watts	Enclosed Res Part No.	Ohms	Watts	Enclosed Res Part No.	Ohms	Watts	Enclosed Res Part No.	Ohms	Watts
xxxx-2*	.33-2	R0-R1	-	-	-	-	-	-	-	-	-	-	-	-
15A6-2	3	R2	P14494-24	45	300	P14494-24	45	300	P14494-25	45	800	P14494-25	45	800
17A5-2	3	R2	P14494-31	35	300	P14494-31	35	300	P14494-32	35	820	P14494-32	35	820
25A0-2	5	R3	P14494-39	21	400	P14494-40	21	750	P14494-40	21	750	P14494-41	21	1050
033A-2	7.5	R3	ABB-48431-060	11	409	ABB-48431-061	11	704	ABB-48431-062	11	931	ABB-48431-064	11	1584
048A-2	10	R4	ABB-48431-061	11	704	ABB-48431-062	11	931	ABB-48431-063	11	1213	ABB-48431-066	11	2475
055A-2	15	R4	P14494-56	10	720	P14494-57	10	1250	P14494-58	10	1800	P14494-59	10	3600

Notes: To determine resistor type, dimensions and weights refer to Resistor Technical Data Tables

\* R0 and R1 do not have a brake chopper



# Braking resistors

**Single phase 380-480V applications, stopping duty only**  
**Type CR Resistors (Available for the small HP drives as listed below)**

Duty Cycle		3sec on/27sec off			10sec on/50sec off			30sec on/180sec off			60sec on/180sec off			
ACS180-04S-	HP	Frame Size	CR Part No.	Ohms	Watts	CR Part No.	Ohms	Watts	CR Part No.	Ohms	Watts	CR Part No.	Ohms	Watts
xxxx-4*	.5-3	R0-R1	-	-	-	-	-	-	-	-	-	-	-	-
12A6-4	5	R2	P14494-CR-24	50	300	P14494-CR-40	50	500						
17A0-4	7.5	R2	P14494-CR-32	50	400									
25A0-4	10	R3	P14494-CR-38	23	500									
033A-4	15	R3												
038A-4	20	R4												
045A-4	25	R4												
050A-4	30	R4												

Notes: To determine resistor type, dimensions and weights refer to Resistor Technical Data Tables  
 \* R0 and R1 do not have a brake chopper

**Standard Enclosed Resistor Packages**

Duty Cycle		3sec on/27sec off			10sec on/50sec off			30sec on/180sec off			60sec on/180sec off			
ACS180-04S-	HP	Frame Size	Enclosed Res Part No.	Ohms	Watts	Enclosed Res Part No.	Ohms	Watts	Enclosed Res Part No.	Ohms	Watts	Enclosed Res Part No.	Ohms	Watts
xxxx-4*	.5-3	R0-R1	-	-	-	-	-	-	-	-	-	-	-	-
12A6-4	5	R2	P14494-24	45	300	P14494-25	45	800	P14494-25	45	800	P14494-26	45	1260
17A0-4	7.5	R2	P14494-25	45	800	P14494-25	45	800	P14494-26	45	1260	P14494-27	45	1920
25A0-4	10	R3	P14494-32	35	820	P14494-33	35	1200	P14494-33	35	1200	P14494-35	35	2500
033A-4	15	R3	ABB-41154	22	900	ABB-44471	22	1455	ABB-44472	22	1904	ABB-48431-008	22	3168
038A-4	20	R4	ABB-41154	22	900	ABB-44472	22	1904	ABB-48431-007	22	2426	ABB-48431-009	22	5632
045A-4	25	R4	ABB-48431-063	11	1213	ABB-48431-066	11	2475	ABB-48431-067	11	3564	ABB-48431-069	11	6875
050A-4	30	R4	ABB-48431-064	11	1584	ABB-48431-066	11	2475	ABB-48431-067	11	3564	ABB-48431-069	11	6875

Notes: To determine resistor type, dimensions and weights refer to Resistor Technical Data Tables  
 \* R0 and R1 do not have a brake chopper

# ACS180 drives are 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.



## 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.



## Control panels

CP600-eCo, CP600 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 a single touch.



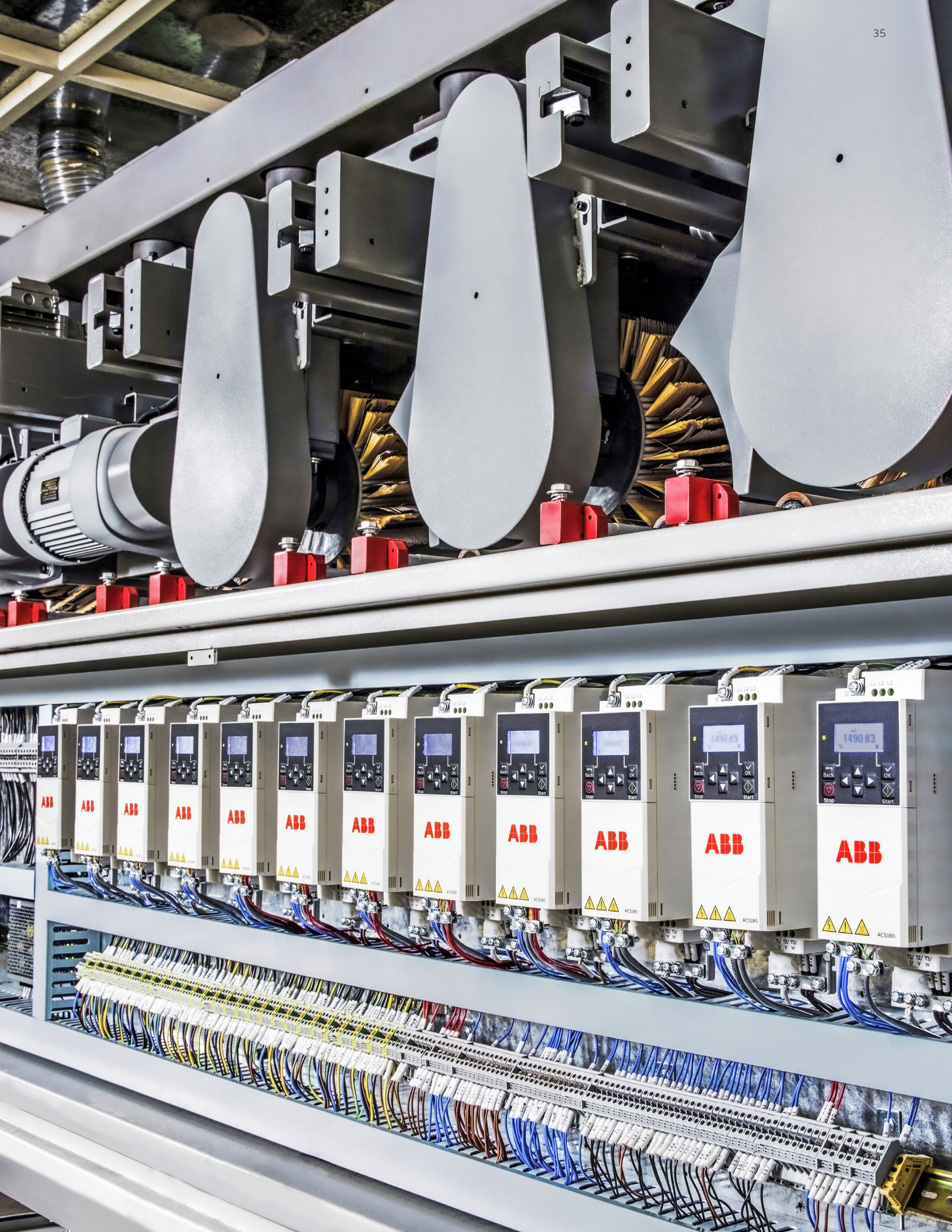
## All-compatible drives portfolio

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 between.



## 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.



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## 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.

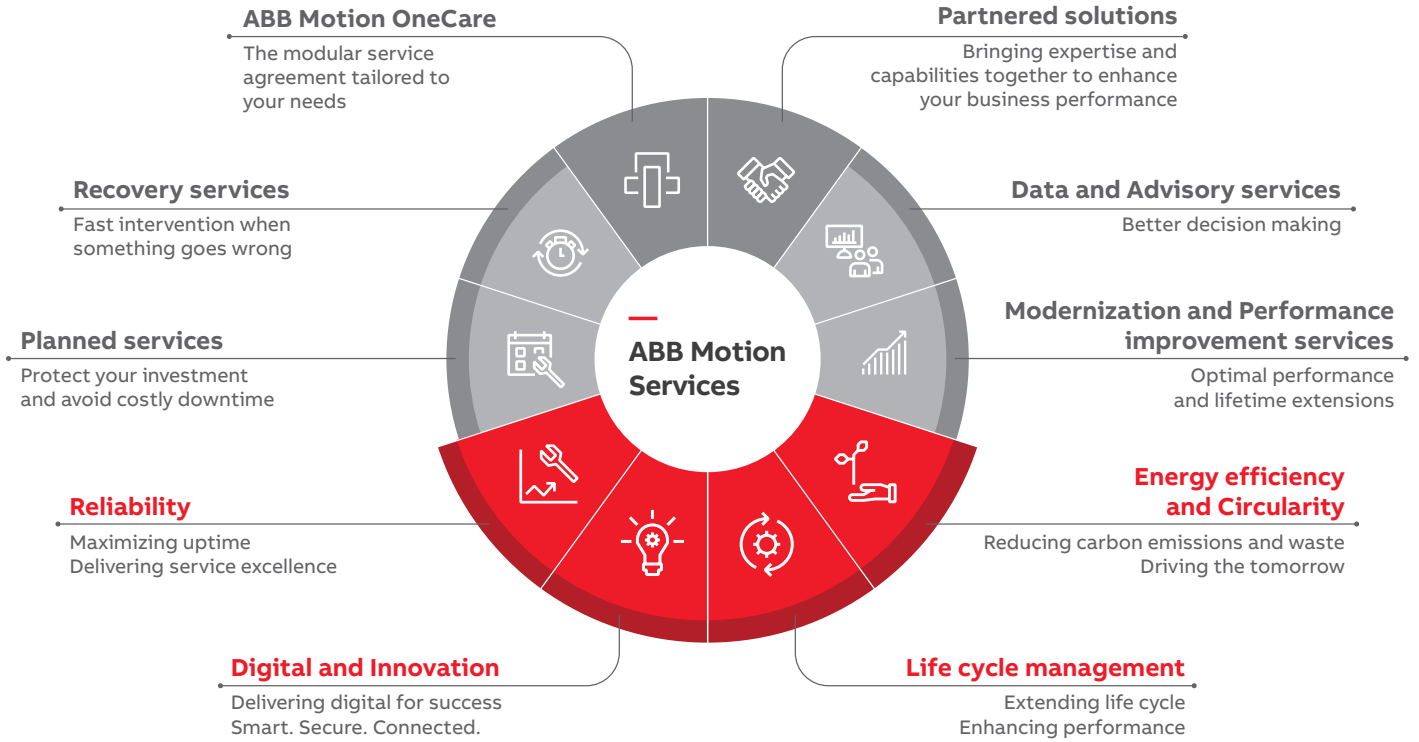
With a service offering tailored to your needs, ABB Motion Services maximizes the uptime and extends the life cycle of your electrical motion solutions, while optimizing their performance and maximizing your energy efficiency gains throughout the entire lifetime of your applications. We help to keep 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 via our easy-to-use cloud service solutions. Connecting your applications also gives you access to our in-depth service domain expertise.

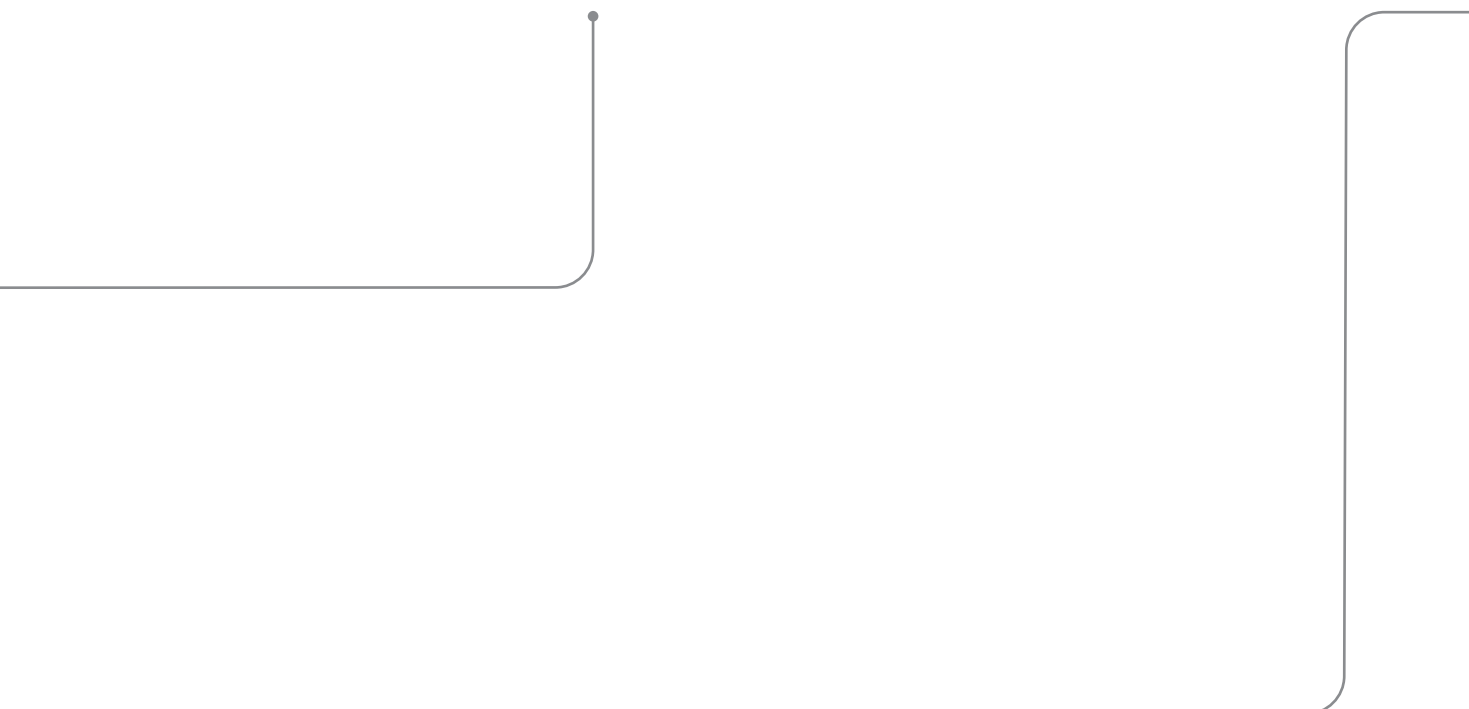
We quickly respond to your service needs. Together with our partners, local field service experts, and service workshop networks, we provide and install original spare parts to help resolve any issues and minimize the impact of unexpected disruptions.

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

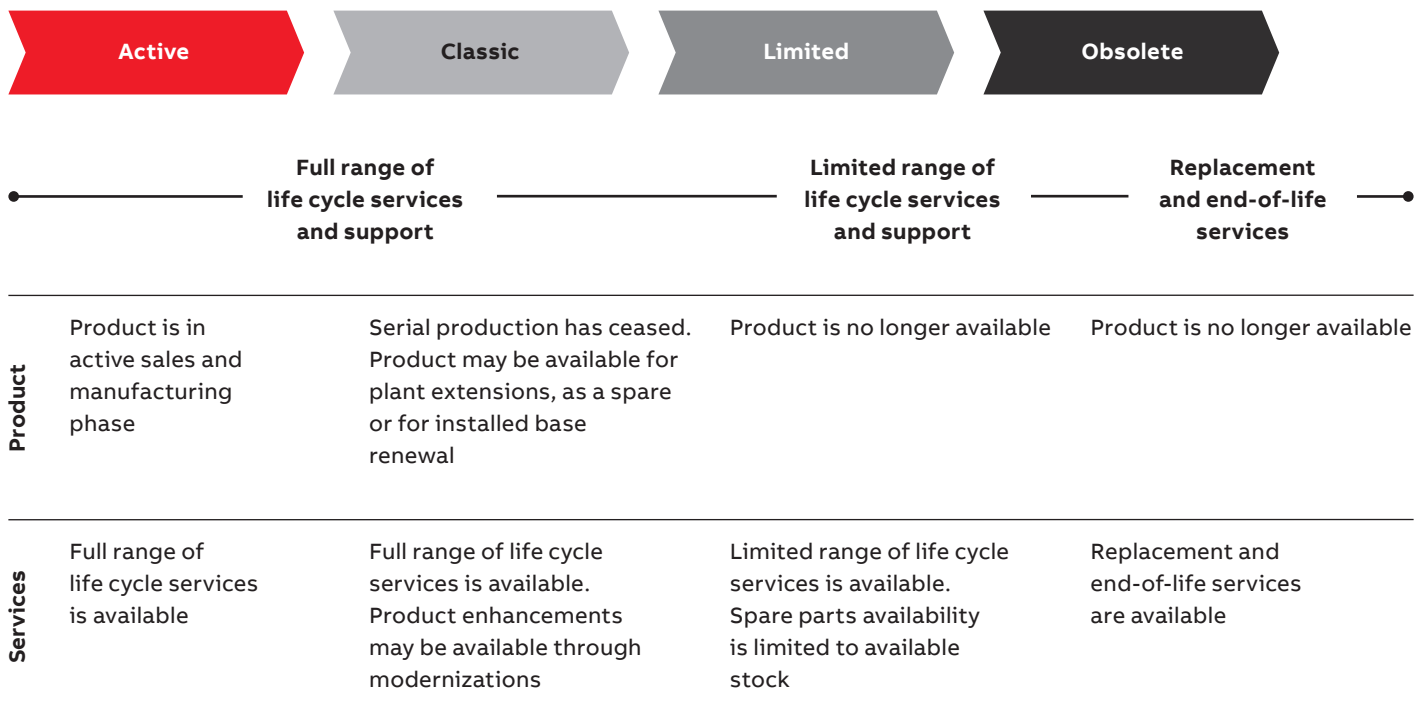


# ABB Drives Life Cycle Management

## 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.

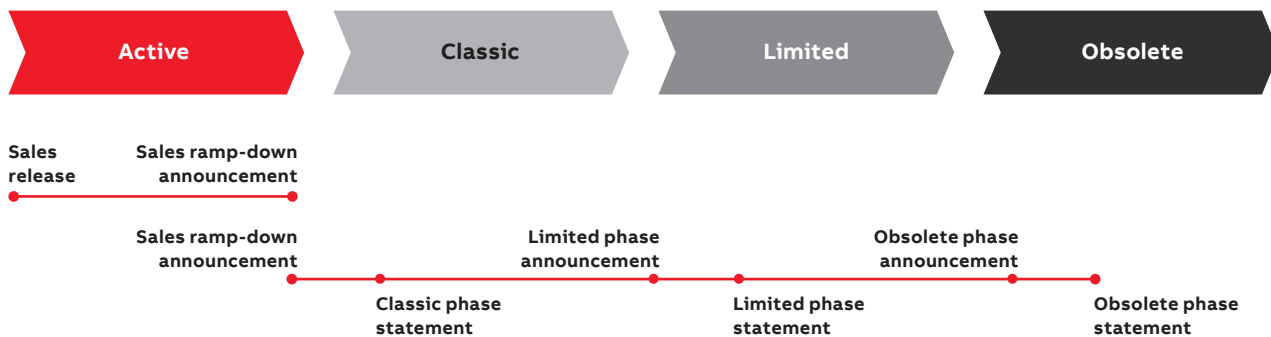
Now it's easy for you to see the exact service and maintenance available for your drives.



## 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

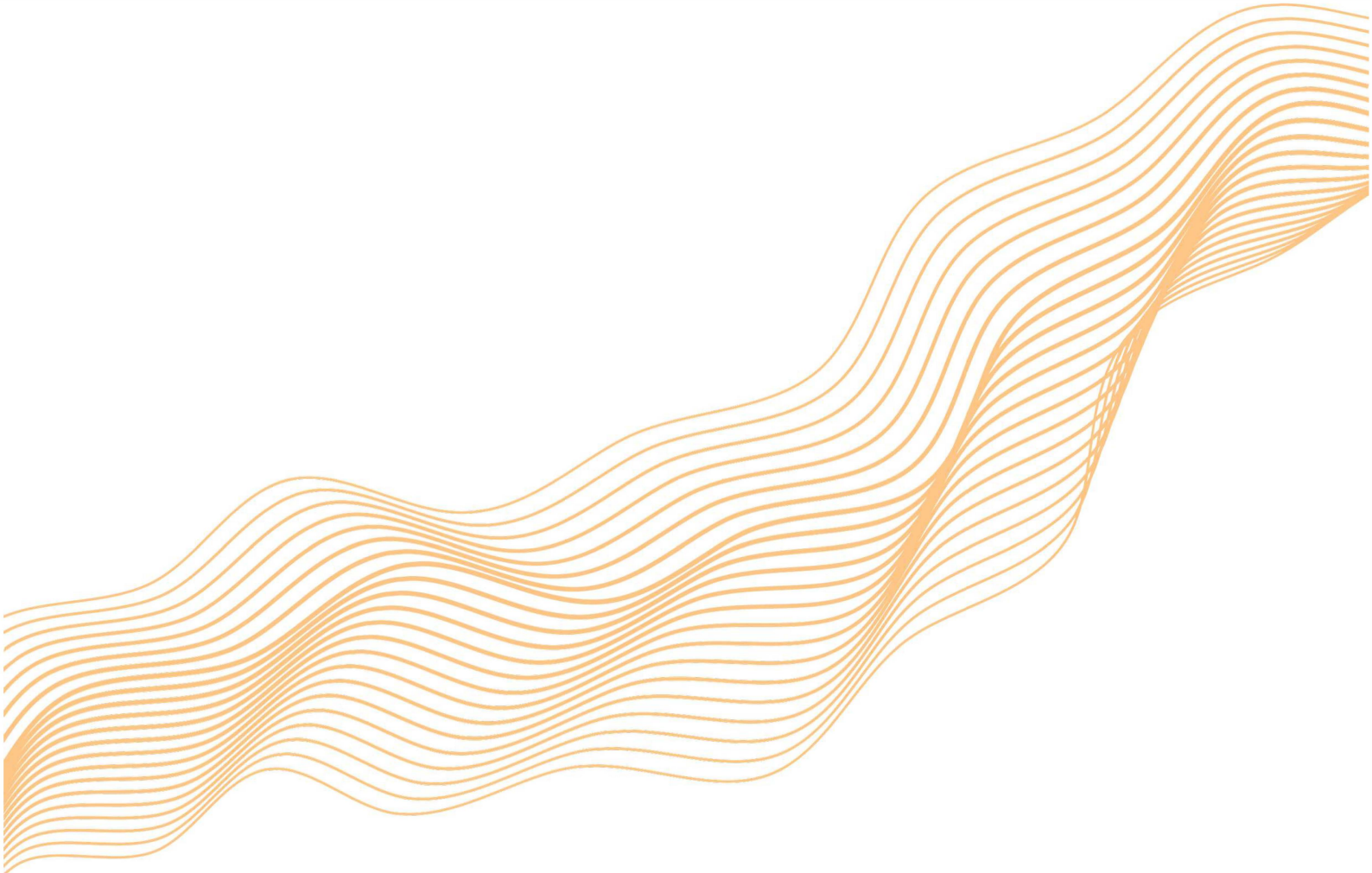
Last time buy and last deliveries dates, informed well in advance.

### 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.



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