

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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# 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.

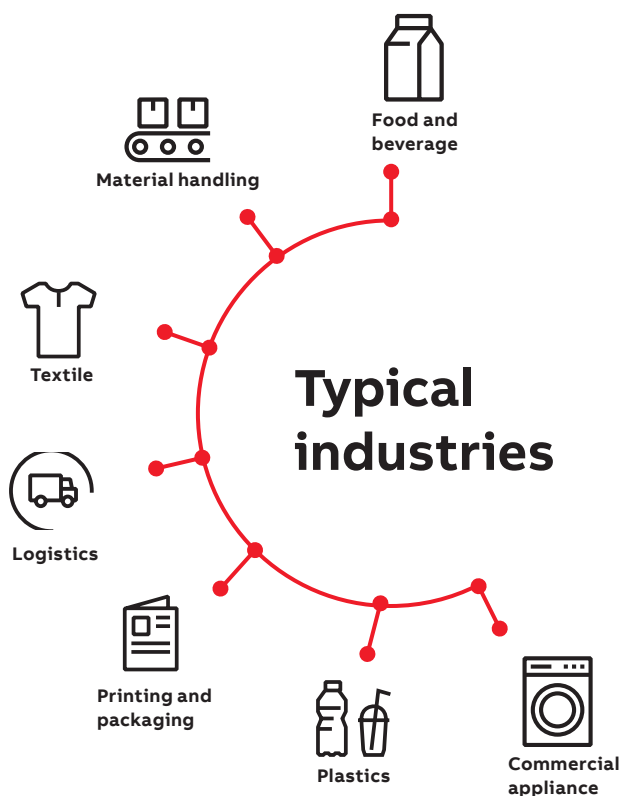
### Scalability

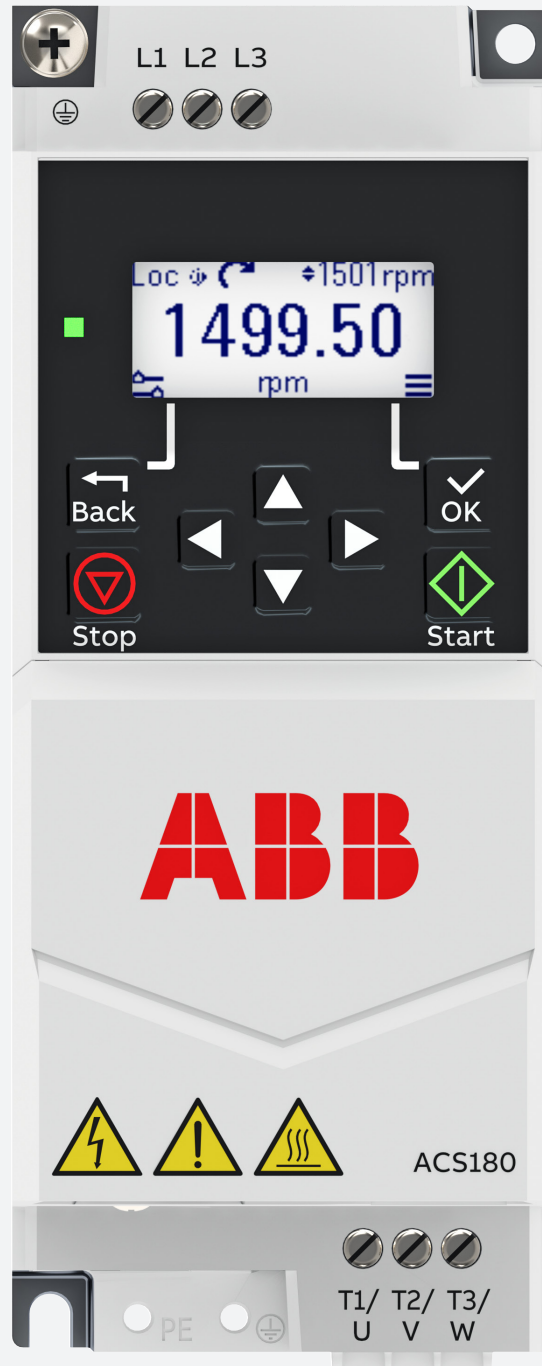
ACS180 drives support sensorless vector control with induction and permanent magnet motors. Customized functions with adaptive and sequence programming are possible.

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

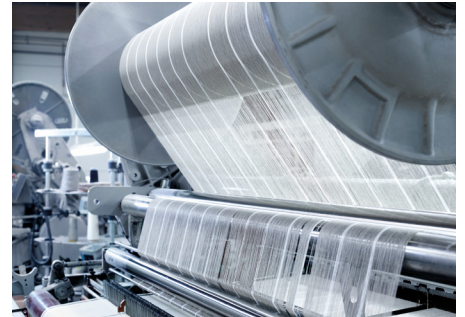
ACS180 drives improve process performance, increase productivity, reduce external components, and ensure machine and personnel safety.



01



02



03



04



05



06



07



08

- 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><br>        | 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><br>        | 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><br>                 | 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><br>              | 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><br> | 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><br>               | 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><br>   | 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.

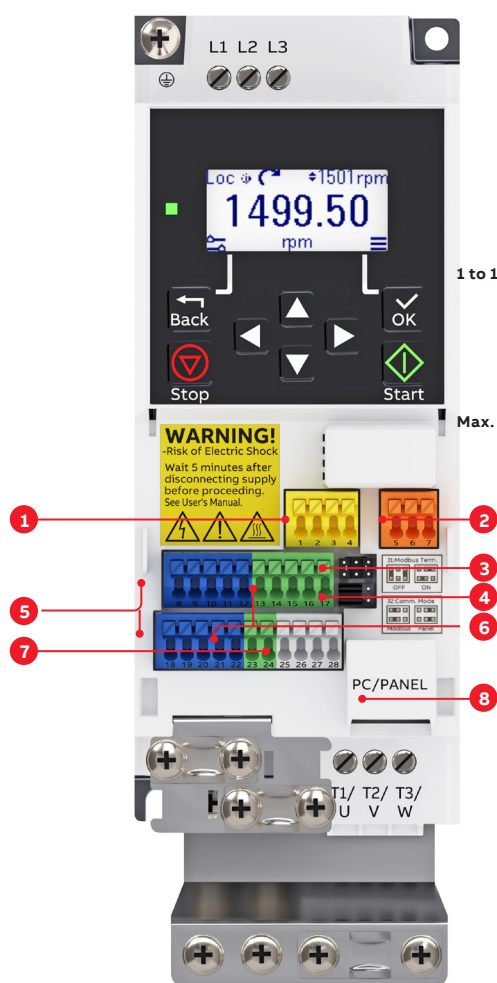
**Many protective and process limit functions** for protecting your machine through long-term running. The ACS180 not only offers various functions to protect the motor, such as overload, overheat, overcurrent, overvoltage, phase loss or phase-ground protections, but also has functions to protect the 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                                                                                         |
|----------------------------|---------|------------------------------------------------------------------------------------------------------|
| Digital inputs and outputs |         |                                                                                                      |
| 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                                                                     |
| Analog inputs and outputs  |         |                                                                                                      |
| 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)                                                                         |
| Safe torque off (STO) *)   |         |                                                                                                      |
| 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     |                                                                                                      |
| Relay output               |         |                                                                                                      |
| 5                          | NC      | No fault [Fault (-1)]                                                                                |
| 6                          | COM     |                                                                                                      |
| 7                          | NO      |                                                                                                      |
| EIA-485 Modbus RTU         |         |                                                                                                      |
| 25                         | B+      | Embedded Modbus RTU (EIA-485)<br>External panel and Modbus RTU share same port internally.           |
| 26                         | A-      |                                                                                                      |
| 27                         | AGND    |                                                                                                      |
| 28                         | SHIELD  |                                                                                                      |
| Termination                |         |                                                                                                      |

### PC/PANEL connection

|                                                  |                                                                                                                                                                 |
|--------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>PC/PANEL(RJ45)</b><br>*) Only with S-variant. | 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.<br>Note: This connection is not a network port, DO NOT connect it to Ethernet. |

# 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

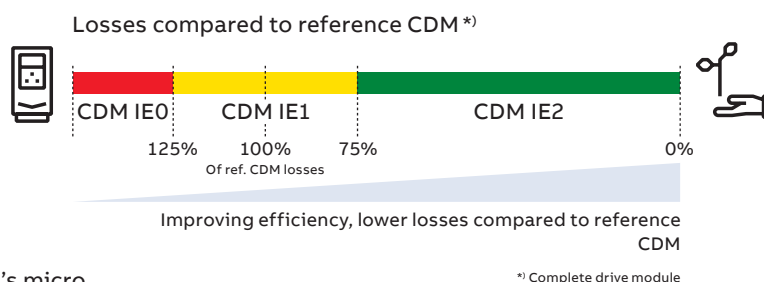
IE2 (90;100) 2,3 %

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:

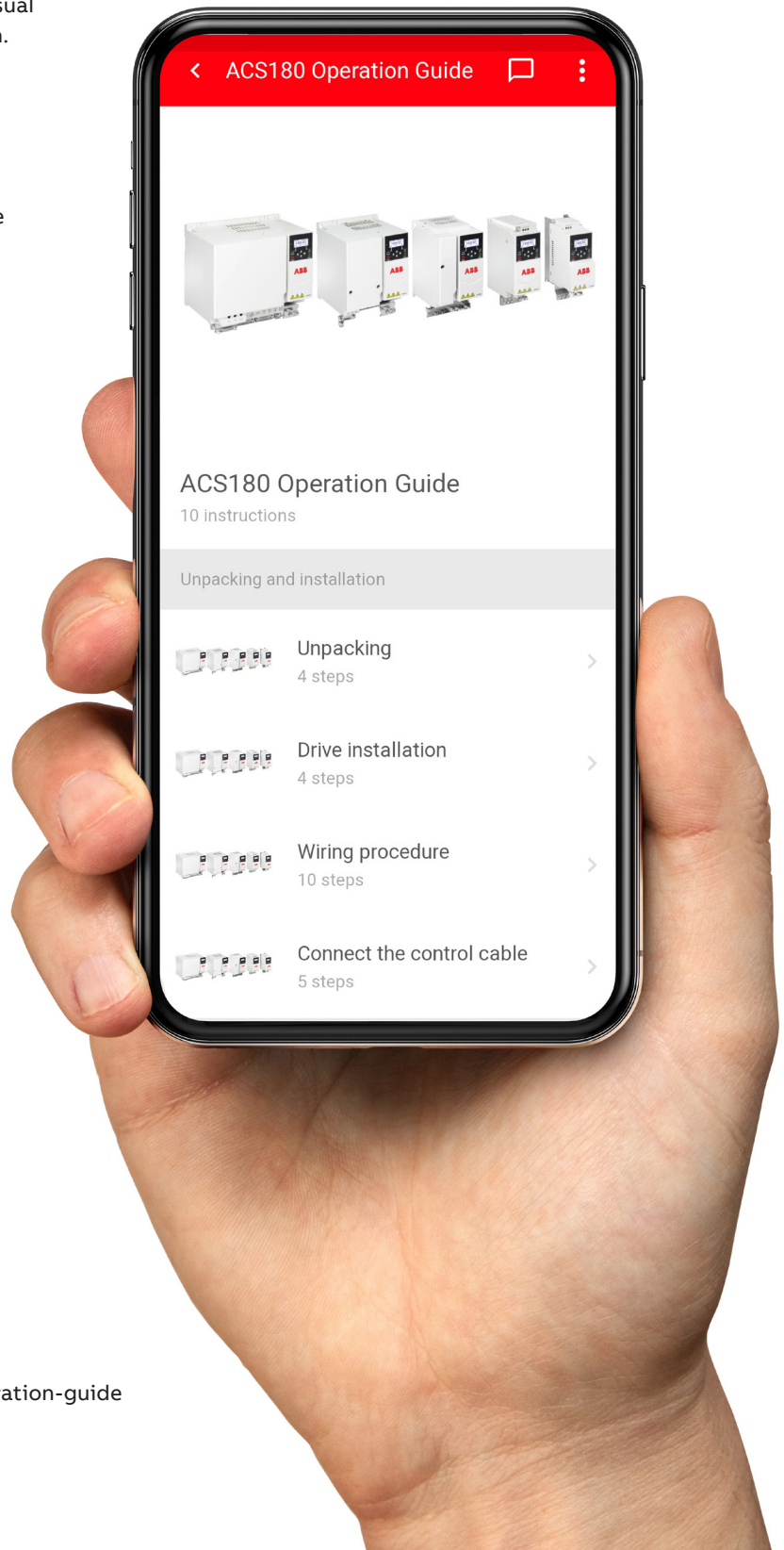
- All drives without CE marking
- Following low voltage AC drives: regenerative drives, low-harmonic drives (THD < 10%), multiple AC-output drives and single-phase drives.
- Drive cabinets with already conformity assessed modules
- Medium voltage drives, DC drives and traction drives

# 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

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

| Functional safety                                                     |                                                                                                                                                   |
|-----------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------|
| 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                   |
| Environmental limits                                                  |                                                                                                                                                   |
| Ambient temperature                                                   |                                                                                                                                                   |
| Operation                                                             | -10 to +50 °C at heavy duty<br>-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<br>(see allowed power systems in HW manual)<br>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)<br>Class 1S2 (solid particles)                                                                          |
| Transportation                                                        | IEC 60721-3-2, Class 2C2 (chemical gases)<br>Class 2S2 (solid particles)                                                                          |
| Operation                                                             | IEC 60721-3-3, Class 3C2 (chemical gases)<br>Class 3S2 (solid particles)                                                                          |
| Product compliance                                                    |                                                                                                                                                   |
| 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 |                                                                                                                                                   |
| EMC according to EN 61800-3:2004 + A1:2012                            |                                                                                                                                                   |
| ACS180-04S-xxxx-1: Class C2 as standard                               |                                                                                                                                                   |
| ACS180-04S-xxxx-4: Class C3 as standard                               |                                                                                                                                                   |
| ACS180-04S-xxxx-2: 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.

**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

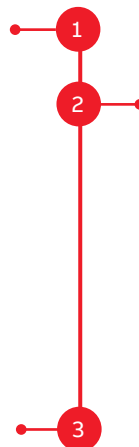
**Base code**

| Segment | Option                | Description                                                                                |
|---------|-----------------------|--------------------------------------------------------------------------------------------|
| A       | Type and construction | 04 = Standard offering                                                                     |
| B       | EMC and STO variant   | S = Standard offering with STO and EMC filter**                                            |
| C       | Current rating        | 02A6 = 2.6 A                                                                               |
| D       | Voltage rating        | 4 = 3-phase 200 to 240 V, 3-phase 200 to 240 V, 3-phase 200 to 240 V, 3-phase 200 to 240 V |

\*\*\*Only 3-phase 200 to 240 V and 3-phase 200 to 240 V drives have 4 variant available.  
\*\*\*The variant has limited general availability - please confirm your local ABB.



Page 17



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

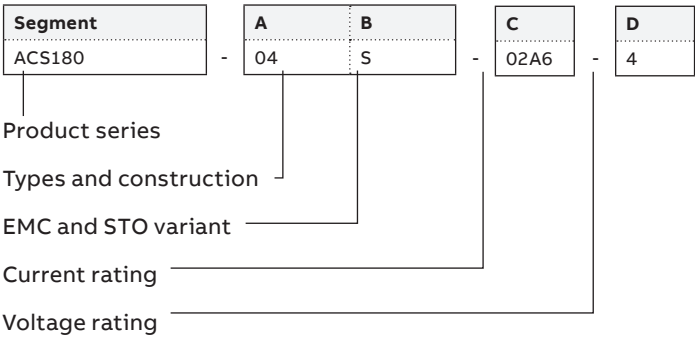
# Ratings, types and voltages

| ACS180-04S-02A6-0 to ACS180-04S-02A6-75 |  |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------------|--|--|--|--|--|--|--|--|--|--|--|--|--|
| ACS180-04S-02A6-0 to ACS180-04S-02A6-75 |  |  |  |  |  |  |  |  |  |  |  |  |  |
| ACS180-04S-02A6-0 to ACS180-04S-02A6-75 |  |  |  |  |  |  |  |  |  |  |  |  |  |
| ACS180-04S-02A6-0 to ACS180-04S-02A6-75 |  |  |  |  |  |  |  |  |  |  |  |  |  |
| ACS180-04S-02A6-0 to ACS180-04S-02A6-75 |  |  |  |  |  |  |  |  |  |  |  |  |  |
| ACS180-04S-02A6-0 to ACS180-04S-02A6-75 |  |  |  |  |  |  |  |  |  |  |  |  |  |
| ACS180-04S-02A6-0 to ACS180-04S-02A6-75 |  |  |  |  |  |  |  |  |  |  |  |  |  |
| ACS180-04S-02A6-0 to ACS180-04S-02A6-75 |  |  |  |  |  |  |  |  |  |  |  |  |  |
| ACS180-04S-02A6-0 to ACS180-04S-02A6-75 |  |  |  |  |  |  |  |  |  |  |  |  |  |
| ACS180-04S-02A6-0 to ACS180-04S-02A6-75 |  |  |  |  |  |  |  |  |  |  |  |  |  |
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| ACS180-04S-02A6-0 to ACS180-04S-02A6-75 |  |  |  |  |  |  |  |  |  |  |  |  |  |
| ACS180-04S-02A6-0 to ACS180-04S-02A6-75 |  |  |  |  |  |  |  |  |  |  |  |  |  |
| ACS180-04S-02A6-0 to ACS180-04S-02A6-75 |  |  |  |  |  |  |  |  |  |  |  |  |  |
| ACS180-04S-02A6-0 to ACS180-04S-02A6-75 |  |  |  |  |  |  |  |  |  |  |  |  |  |
| ACS180-04S-02A6-0 to ACS180-04S-02A6-75 |  |  |  |  |  |  |  |  |  |  |  |  |  |
| ACS180-04S-02A6-0 to ACS180-04S-02A6-75 |  |  |  |  |  |  |  |  |  |  |  |  |  |
| ACS180-04S-02A6-0 to ACS180-04S-02A6-75 |  |  |  |  |  |  |  |  |  |  |  |  |  |
| ACS180-04S-02A6-0 to ACS180-04S-02A6-75 |  |  |  |  |  |  |  |  |  |  |  |  |  |
| ACS180-04S-02A6-0 to ACS180-04S-02A6-75 |  |  |  |  |  |  |  |  |  |  |  |  |  |
| ACS180-04S-02A6-0 to ACS180-04S-02A6-75 |  |  |  |  |  |  |  |  |  |  |  |  |  |
| ACS180-04S-02A6-0 to ACS180-04S-02A6-75 |  |  |  |  |  |  |  |  |  |  |  |  |  |
| ACS180-04S-02A6-0 to ACS180-04S-02A6-75 |  |  |  |  |  |  |  |  |  |  |  |  |  |
| ACS180-04S-02A6-0 to ACS180-04S-02A6-75 |  |  |  |  |  |  |  |  |  |  |  |  |  |
| ACS180-04S-02A6-0 to ACS180-04S-02A6-75 |  |  |  |  |  |  |  |  |  |  |  |  |  |
| ACS180-04S-02A6-0 to ACS180-04S-02A6-75 |  |  |  |  |  |  |  |  |  |  |  |  |  |
|                                         |  |  |  |  |  |  |  |  |  |  |  |  |  |

# 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 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*)<br>1-phase 200 to 240 V: Class C2<br>3-phase 200 to 240 V: Class C4<br>3-phase 380 to 480 V: Class C3<br>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,  $U_n = 230$  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,  $U_n = 230$  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 |
|-------------------|------------|-----------------|-------|-------|----------------|----------|----------|----------------|----------|----------|---------------------|
|                   |            | $I_N$           | $P_N$ | $P_N$ | $I_{Ld}$       | $P_{Ld}$ | $P_{Ld}$ | $I_{Hd}$       | $P_{Hd}$ | $P_{Hd}$ |                     |
|                   |            | (A)             | (hp)  | (kW)  | (A)            | (hp)     | (kW)     | (A)            | (hp)     | (kW)     |                     |
| ACS180-04S-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.

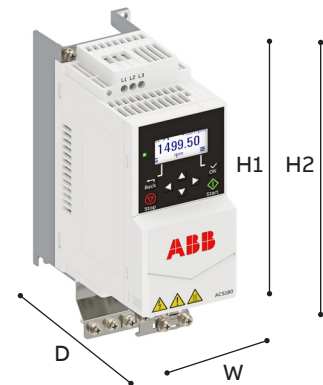
# Dimensions

## 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.



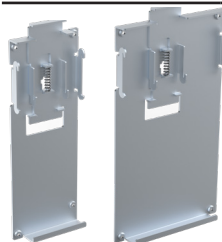
| MRP code        | Description           | Type designation |
|-----------------|-----------------------|------------------|
| 3AXD50000032449 | PC cable, USB to RJ45 | BCBL-01          |

### 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<br>(5 sets per each package) | BDRK-01          |
| 3AXD50000900510 | DIN rail mounting kit for R2<br>(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                     |
| Single phase drive - 200-240V applications |            |      |              |                         |
| 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                    |
| Three phase drive - 200-240V applications  |            |      |              |                         |
| 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                      |
| Three phase drive - 380-480V applications  |            |      |              |                         |
| 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   |
| ACS180-04S-                                                                          |       |                            |                                          |                          |                         |            |                    |     |                                    |            |                    |      |                                     |            |                    |      |
| 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   |
| ACS180-04S-                                          |       |                            |                                          |                          |                         |            |                    |     |                                    |            |                    |      |                                     |            |                    |      |
| 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   |
| ACS180-04S-                                          |       |                            |                                          |                          |                         |            |                    |     |                                    |            |                    |      |                                     |            |                    |      |
| 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 with 3% choke | 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   |
| ACS180-04S-  |       |                            |                                          |                          |                         |            |                    |     |                                    |            |                    |      |                                     |            |                    |      |
| 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 with 3% choke | 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   |
| ACS180-04S-  |       |                            |                                          |                          |                         |            |                    |     |                                    |            |                    |      |                                     |            |                    |      |
| 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                      | KDRMA28L2               | 42         | 4.44x4.25x2.64     | 3   | KDRMA28L2E01                       | 42         | 12.25x12.5x6.75    | 13.4 | KDRMA28L2E3R1                       | 42         | 11.45x10.31x12     | 18   |
| 07A8-2       | 1.5   | 11                         | 7.8                                      | 6.6                      | KDRMA28L2               | 42         | 4.44x4.25x2.64     | 3   | KDRMA28L2E01                       | 42         | 12.25x12.5x6.75    | 13.4 | KDRMA28L2E3R1                       | 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 with 3% choke | 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   |
| ACS180-04S-  |       |                            |                                          |                          |                         |            |                    |     |                                    |            |                    |      |                                     |            |                    |      |
| 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 $U_N = 230$ V (range 200 to 240 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  |
| ACS180-04S-02A4-1 | R0         | 50               | —*)     | —**)             | 10        | gG        | 32        | gR        | 6        | UL class T |
| ACS180-04S-03A7-1 | R0         | 62               | —*)     | —**)             | 16        | gG        | 32        | gR        | 10       | UL class T |
| ACS180-04S-04A8-1 | R0         | 71               | —*)     | —**)             | 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 $U_N = 230$ V (range 200 to 240 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  |
| ACS180-04S-02A4-2 | R0         | 50               | —*)     | —**)             | 6         | gG        | 25        | gR        | 6        | UL class T |
| ACS180-04S-03A7-2 | R0         | 62               | —*)     | —**)             | 8         | gG        | 32        | gR        | 10       | UL class T |
| ACS180-04S-04A8-2 | R0         | 71               | —*)     | —**)             | 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 |

\*) Frame size R0 with free convection cooling.

\*\*) 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  |
| 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.

| Circuit breakers                                  |            |                                    |                  |
|---------------------------------------------------|------------|------------------------------------|------------------|
| 1-phase $U_N = 230\text{ V}$ (range 200 to 240 V) |            |                                    |                  |
| Drive type                                        | Frame size | ABB miniature circuit breaker Type | kA <sup>*)</sup> |
| 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                |
| 3-phase $U_N = 230\text{ V}$ (range 200 to 240 V) |            |                                    |                  |
| 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                |
| 3-phase $U_N = 400\text{ V}$ (range 380 to 480 V) |            |                                    |                  |
| 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 |                    |                      |                     |
|-------------------|------------|------------------------|--------------------|----------------------|---------------------|
|                   |            | $R_{min}$<br>(ohm)     | $R_{max}$<br>(ohm) | $P_{BRcont}$<br>(kW) | $P_{BRmax}$<br>(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)

| Type CR Resistors (available for the Small HP series 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)

| Type CR resistors (Available for the Smart 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

| 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.



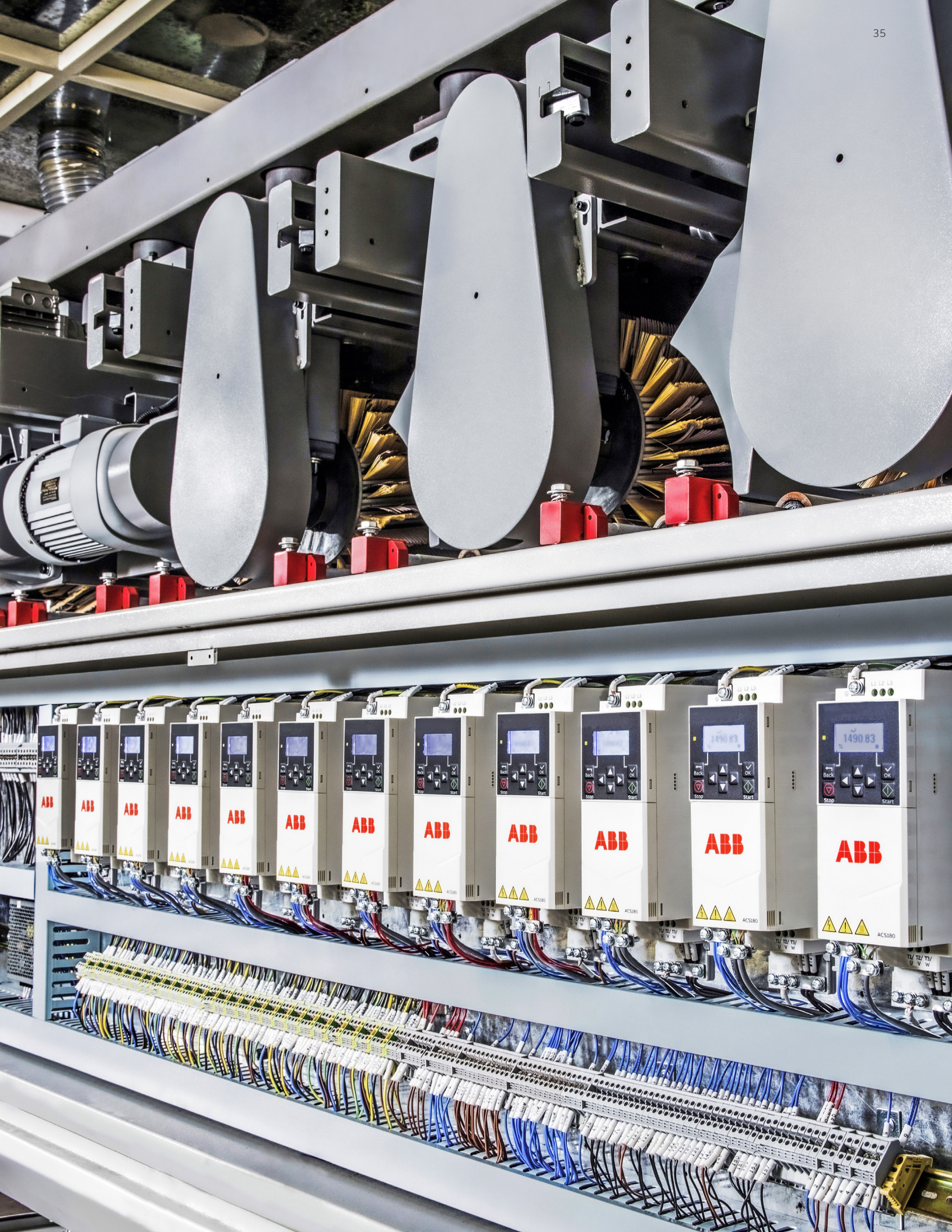
## All-compatible drives portfolio

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.

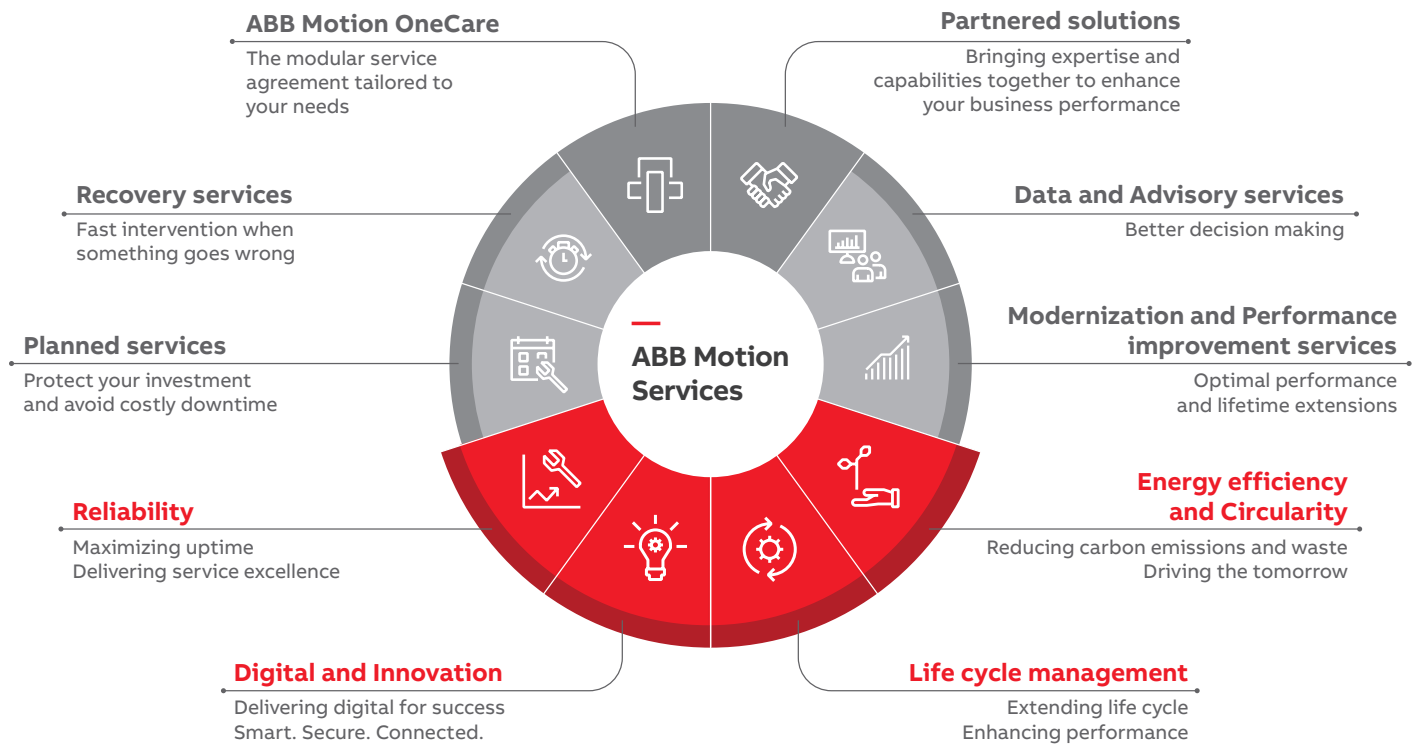
With a service offering tailored to your needs, ABB Motion Services maximizes the uptime and extends the life cycle of your electrical motion solutions, while optimizing their performance and maximizing your energy efficiency gains throughout the entire lifetime of your applications. We help to keep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

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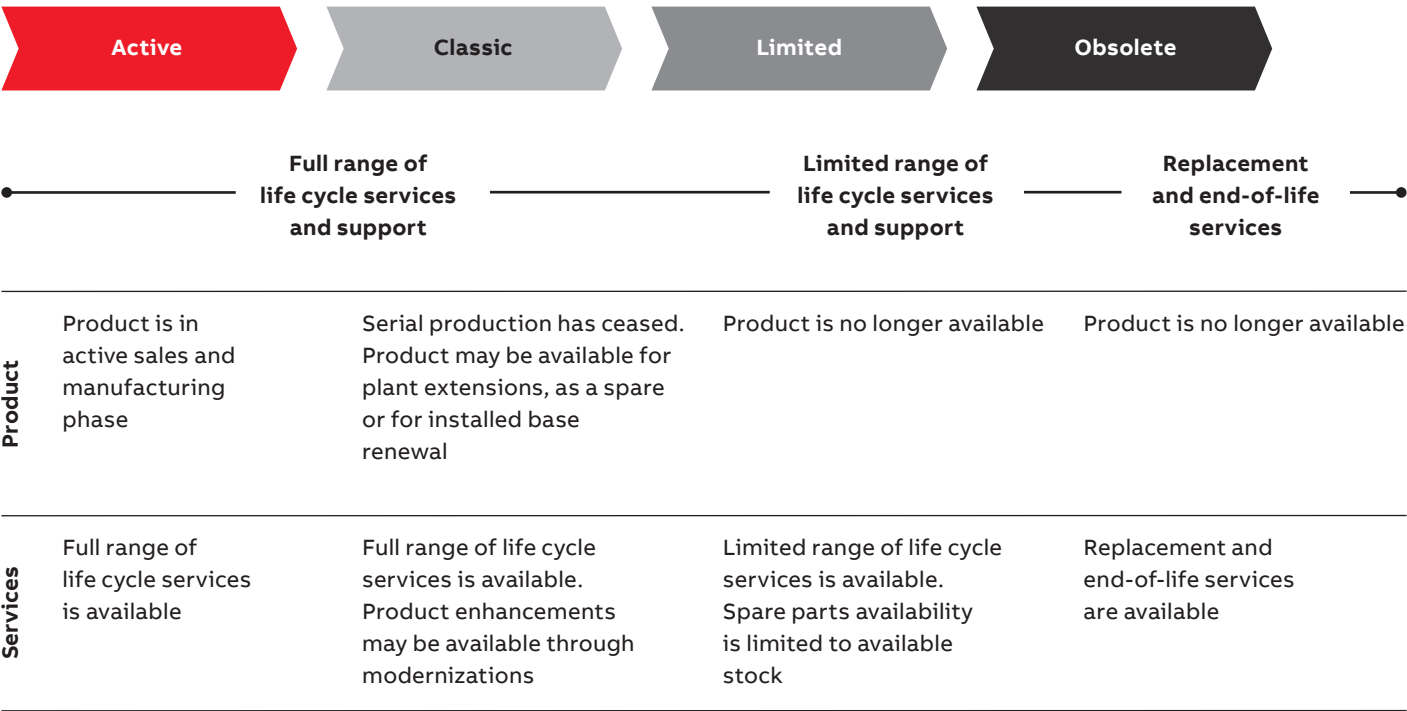
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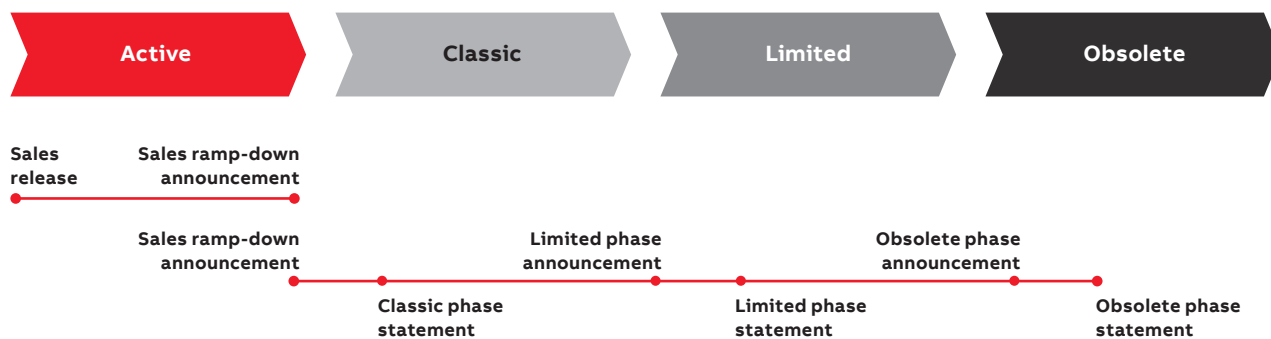
Now it's easy for you to see the exact service and maintenance available for your drives.



## 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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