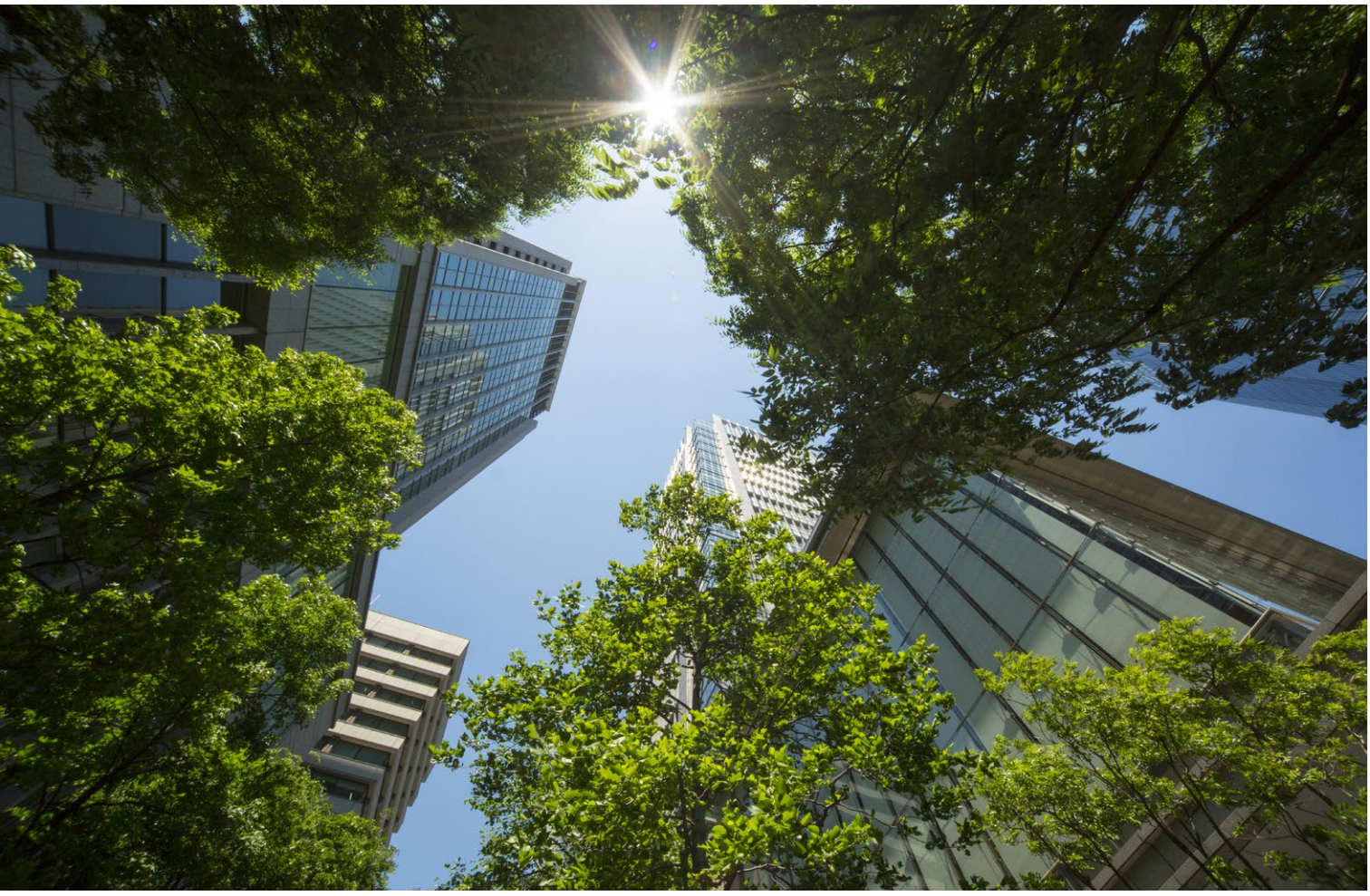
CATALOG

# ABB drives for HVACR

## ACH180, 0.37 to 22 kW



# Essential and reliable climate control in a compact footprint. ACH180 drives for HVACR.

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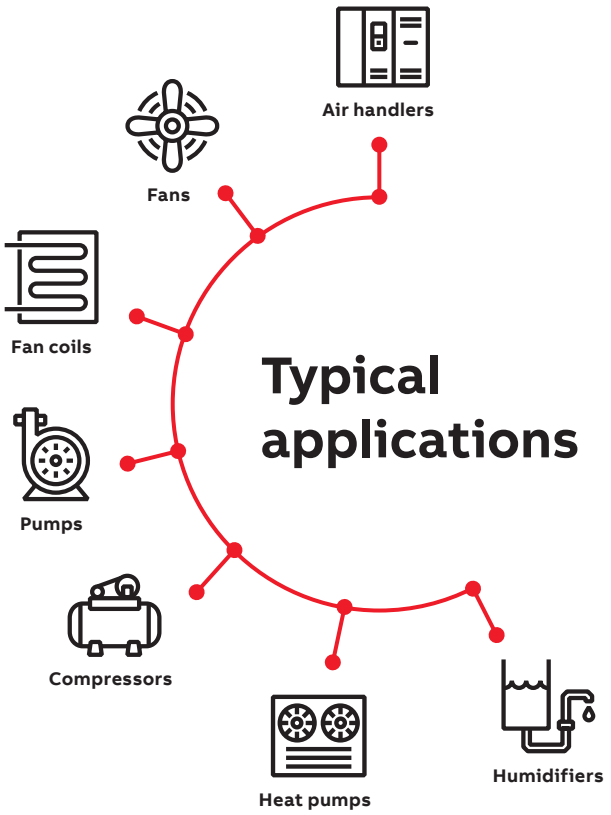
# ACH180 drives for HVACR
## Essential and reliable climate control in a compact footprint

The ACH180 is an all-compatible ABB HVACR drive ideal for compact machines. This cost-effective drive with a small footprint is optimized for HVACR machine builders requiring ease of use and reliable performance.




**Essential features for HVACR applications**
The ACH180 drive offers excellent performance and quality at its price level with all essential HVACR application features embedded. Meanwhile, the built-in EMC filter, building automation protocols and STO bring savings in cabinet size and cost.

**Reliable operation even in harsh conditions**
ACH180 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 60 °C ambient temperature with derating, allowing to save on the cabinet air conditioning.

**Ease of use**
Installation and commissioning are quick and easy thanks to the ACH180's intuitive graphical user interface, simple parameter structure and spring control terminals. A compact drive design and the possibility of side-by-side installation help reduce the cabinet size.

**Scalability**
ACH180 drives support induction, permanent magnet and permanent magnet assisted synchronous reluctance motors. Customized functions with adaptive programming are possible. The ACH180 drive is part of the ABB all-compatible drives portfolio, all with the same user interface, PC tools and options.

**Energy efficiency and Ecodesign**
The ACH180 drive is designed to run your motors based on the HVACR process demands rather than running them at full speed and reducing output using mechanical controls like throttles or dampers, and help you secure a sustainable future by reducing energy consumption and $CO_2$ emissions.


L1 L2 L3
Auto
19.5 Hz
19.50
Hz
Back
OK
Off
Auto/Hand
ABB
ACH180
T1/ U
T2/ V
T3/ W

# Simplify your HVACR application with reliable and cost-effective performance

The ACH180 HVACR drive is equipped with built-in application specific features that simplify ordering and delivery, and reduce commissioning costs, since everything is provided in a single, compact and ready-to-use package.

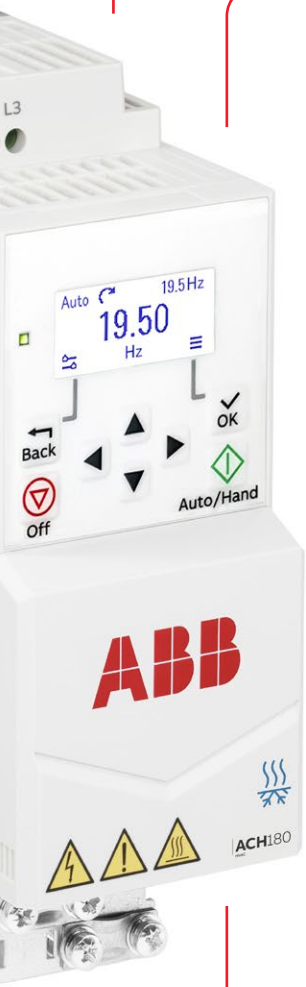
**User-friendly interface**
The ACH180 has a standard backlit display with an icon-based menu helping to set up the drive quickly and effectively without needing to study manuals.

The user interface can be extended with an alphanumeric, multilingual graphical control panel with customizable texts and views, and menu-driven programming simplifying set-up and operation of HVACR applications.


**Advanced software tools for easy configuration, startup and maintenance**
Drive Composer PC tool can be connected to the drive via an RJ-45 interface for easy startup, configuration, monitoring and process tuning. Adaptive programming allows the customization of the drive software replacing the need for a PLC. CCA-01 cold configuration adapter saves time as parameters for unpowered drives can already be set in the warehouse.


**Built-in EMC filter**
High-frequency noise can directly affect sensitive electronic equipment and high-speed communication fieldbuses.
The ACH180 drive is equipped with a built-in EMC filter to reduce high-frequency emissions. It 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 ACH180 and possibility for side-by-side mounting ensure optimized use of cabinet space and save costs. Installation process is quick and easy thanks to spring control terminals.




**Essential HVACR functionality**
Essential HVACR features are built-in: fireman's override, soft pump, fan or compressor start and stop, resonance control, bearing health monitoring, pump dry run protection and many more.

**Motor control options**
ACH180 can be integrated with several AC motor types, including induction, permanent magnet (PM) and ferrite assisted synchronous reluctance motors (PMaSynRM) motor variants. The ability to use high efficiency motor technologies can reduce your energy costs even more.

**Reliable design**
Design features like coated circuit boards, minimized airflow through the electronics, earth fault protection, and its design for a 60 °C ambient temperature make the ACH180 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.

**Built-in communication**
The standard Modbus RTU and BTL-certified BACnet MS/TP interface enables effortless connectivity with a building automation network. The predefined macros allow your drive to connect with a PLC in a few seconds.

**Remote connectivity**
The optional Bluetooth® capability together with ABB's Drivetune smartphone app allows to commission the drive remotely, providing access to the same menus available on the drive's control panel.


**Safe torque off**
Safe torque off (SIL 3, PL e) is a standard built-in feature in ACH180 drives.

# Typical HVACR applications

ACH180 drives improve the efficiency and reliability of HVACR processes, reduce external components, and ensure machine and personnel safety.

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01

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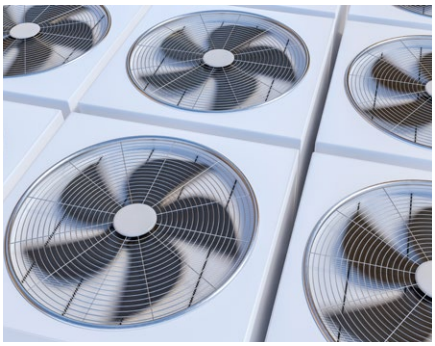
02



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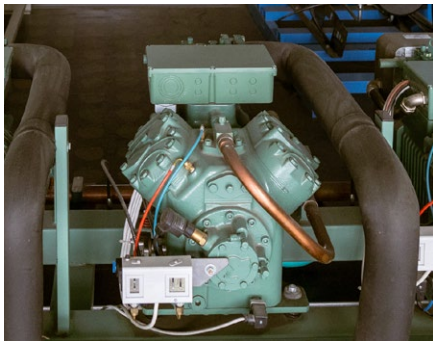
06



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07

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08

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09

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01 Air handlers
—
02 Fans
—
03 Fan arrays

—
04 Burners
—
05 Cooling towers
—
06 Pumps

—
07 Compressors
—
08 Heat pumps
—
08 Humidifiers

| Application | Customer benefits |
|---|---|
| **01 Air handlers**  | • Substantial energy savings at partial loads<br>• Filter monitoring with user-defined load curves<br>• Drive-based control capabilities and fieldbuses to enhance external controller tasks and eliminate gateways<br>• Safe torque off (SIL 3) function for personnel safety when conducting maintenance on mechanical parts<br>• Minimized downtime with robust and reliable design<br>• Fireman's override mode for increased occupant safety |
| **02 Fans**  | • Substantial energy savings at partial loads<br>• Fan bearing monitoring<br>• Resonance control |
| **03 Fan arrays**  | • Cost effective installation<br>• Substantial energy savings at partial loads<br>• Drive switching frequency adjustment for lower fan noise |
| **04 Burners**  | • Burner control ensures the hot water for heating or domestic use has the required temperature |
| **05 Cooling towers**  | • Optimized entering condenser water temperature for higher efficiency<br>• Increased fan lifetime thanks to soft starts and stops |
| **06 Pumps**  | • Pump bearing monitoring<br>• Dry pump run protection<br>• Soft start and stop to avoid water hammer |
| **07 Compressors**  | • Resonance control<br>• Easy start with 150% of the rated starting torque for 30 seconds with no need for oversized drive<br>• Substantial energy savings at partial loads |
| **08 Heat pumps**  | • Safe torque off (SIL 3) function for personnel safety when conducting maintenance on mechanical parts<br>• Minimized downtime with robust |
| **09 Humidifiers**  | • Precise humidity control<br>• Optimized water usage |

# ACH180 drives software with essential HVACR features


**One drive to control different types of motor.** The ACH180 supports induction, permanent magnet and ferrite assisted synchronous reluctance motors, for increased energy savings in HVACR.

**HVACR specific software.** Multiple application features are built into the ACH180 including fireman's override, flying starts, resonance control, load curve based filter monitoring, leakage or dry run protection, etc. The support of most common building automation protocols like Modbus and BACnet comes as standard as well.

**"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 specific HVACR 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 in quadratic torque applications like fans and pumps.

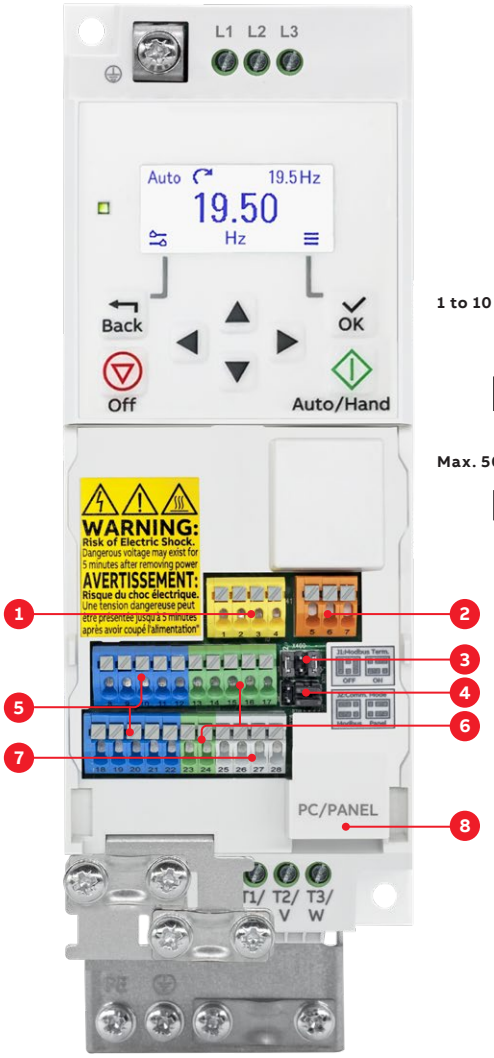
**Protective and process limit functions** for both the motor and the machine. These include overload, overheat, overcurrent, overvoltage, phase loss, phase-ground protections, and limit of speed, torque, or time. It also features drive-based safe-torque-off to protect personnel who are doing maintenance activities.

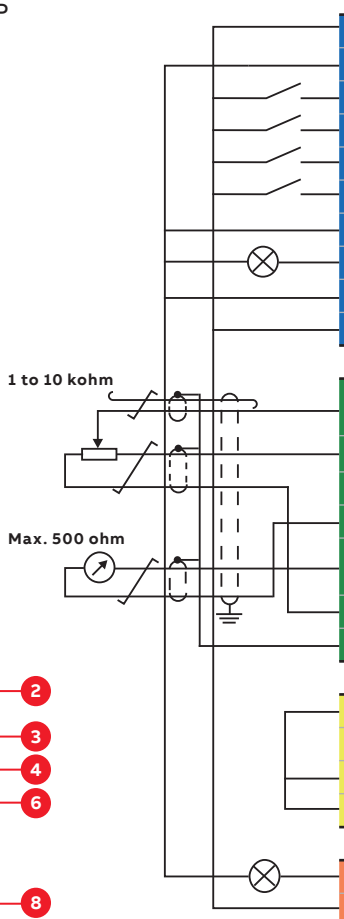
**Load profile** feature collects drive values, such as current and stores them in a log. This enables you to analyze and optimize the application with the help of historical data load.

# Standard interface for ACH180 HVACR drives

ACH180 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, BACnet MS/TP




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, BACnet MS/TP
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, BACnet MS/TP, etc.)** |
| 25 | B+ | Embedded fieldbus (EIA-485). External panel and EIA-485 share same port internally. |
| 26 | A- | |
| 27 | AGND | |
| 28 | SHIELD | |
| | Termination | |
| | | **PC/PANEL connection** |
| PC/PANEL(RJ45) | | Use standard Cat 5e or better Ethernet cable with male RJ45 connector to connect external control panel. Or use the BCBL-01 (USB to EIA-485) cable to connect the drive with PC directly. Note: This connection is not a network port, DO NOT connect it to Ethernet. |

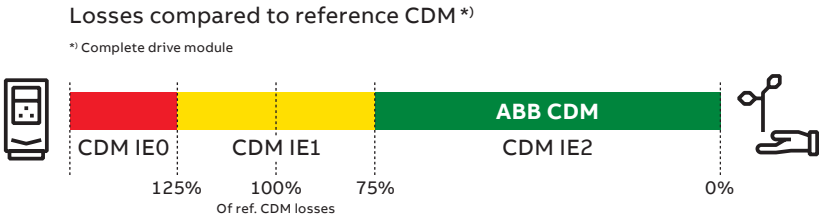
*) Only with S-variant.

# ABB AC drives comply with the EU Ecodesign requirements

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

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

## Energy efficiency classes for a Complete Drive Module (CDM)




### Markings on the ABB LV AC drives

Unique identifier QR code to Ecodesign information

IE class and % loss of rated apparent power 50 Hz, 400 V — IE2 (90;100) 2,3 %

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

### ABB provides tool to make efficiency calculation easy


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

**The regulation was implemented in two steps:**

**Step 1: July 1, 2021**

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

**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.
- Medium voltage drives, DC drives and traction drives
- Drive cabinets with already conformity assessed modules

**Step 2: July 1, 2023**

No changes for AC drives

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

# How to select a drive

## How you build up your ordering code

1

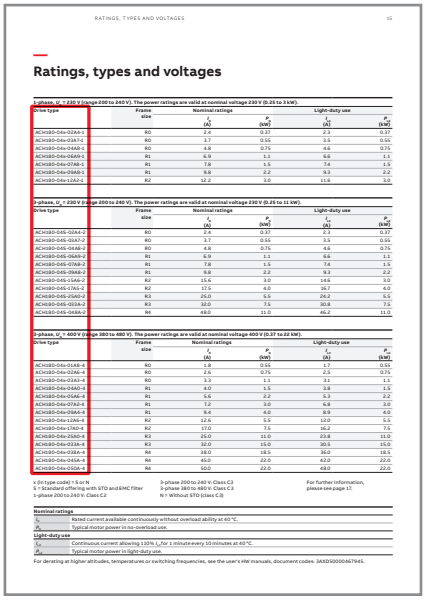
Start by identifying your supply voltage. This indicates what rating table you should use. See page 15.

2

Choose the motor power and current rating from the ratings table on page 15.

3

Select the ordering code for the ACH180 from the rating table based on the motor's nominal power rating.



RATINGS, TYPES AND VOLTAGES 15

**Ratings, types and voltages**

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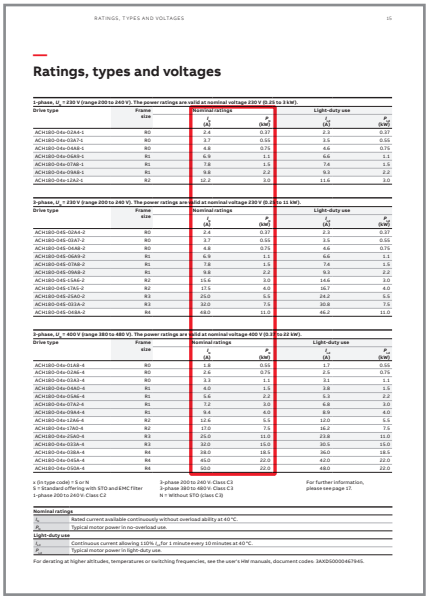

RATINGS, TYPES AND VOLTAGES 15

**Ratings, types and voltages**

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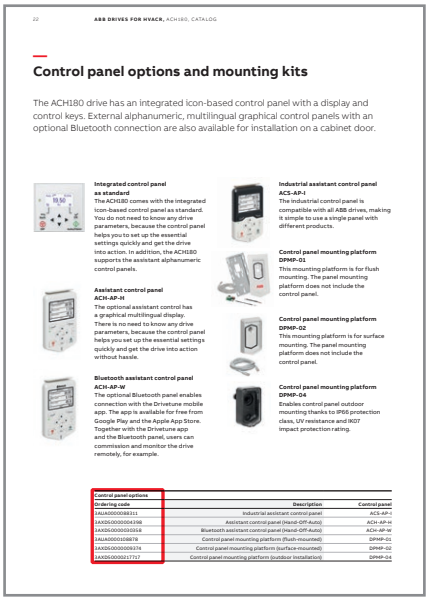
Choose your options on page 22.



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**Control panel options and mounting kits**

The ACH180 drive has an integrated icon-based control panel with a display and control keys. External alphanumeric, multilingual graphical control panels with an optional Bluetooth connection are also available for installation on a cabinet door.

**Integrated control panel as standard**
The ACH180 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 ACH180 supports the assistant alphanumeric control panels.

**Assistant control panel ACH-AP-H**
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.

**Bluetooth assistant control panel ACH-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.

**Industrial assistant control panel ACS-AP-I**
The industrial control panel is compatible with all ABB drives, making it simple to use a single panel with different products.

**Control panel mounting platform DPMP-01**
This mounting platform is for flush mounting. 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.

Control panel options

| Ordering code | Description | Control panel |
|---|---|---|
| 7AUA0000083011 | Industrial assistant control panel | ACS-AP-I |
| 3AXD50000041398 | Assistant control panel (Hand-Off-Auto) | ACH-AP-H |
| 3AXD50000030364 | Bluetooth assistant control panel (Hand-Off-Auto) | ACH-AP-W |
| 3AUA0000108878 | Control panel mounting platform (flush-mounted) | DPMP-01 |
| 3AXD50000009374 | Control panel mounting platform (surface-mounted) | DPMP-02 |
| 3AXD50000217757 | Control panel mounting platform (outdoor installation) | DPMP-04 |

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**Type designation example:**

| ACH180 | - | 0 | 4 | S | - | 02A6 | - | 4 |
|---|---|---|---|---|---|---|---|---|

Product series

Type: 0 = standard, 1 = regen, 3 = ultra low harmonic

Construction: 1 = wall mounted, 4 = module, 7 = cabinet-built

STO variant: N = Basic variant (without STO),
S = Standard variant (integrated STO)

Current rating

Voltage rating: 1 = 1 ph 230 V, 3 = 3 ph 230 V, 4 = 3 ph 400 V

# Technical data

| **Mains connection** | |
|---|---|
| Voltage and power range | 1-phase, 200 to 240 V, +10%/-15%<br>0.37 to 3 kW<br>3-phase, 200 to 240 V, +10%/-15%<br>0.37 to 11 kW<br>3-phase, 380 to 480 V, +10%/-15%<br>0.55 to 22 kW |
| Supply network type | TN, TT, IT<br>ACH180-04N-xxxx-4 does not support corner-grounded delta network |
| Frequency | from 47 to 63 Hz |
| Power factor | cosφ = 0.98 |
| Efficiency (at nominal power) | 98% |
| 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 |
| **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/ BACnet MS/TP |

| **Functional safety** | |
|---|---|
| Built-in safety features (for ACH180-04S-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 | R0: -10 to 50 °C with derating<br>R1-R4: -10 to 60 °C with derating |
| 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<br>Low Voltage Directive 2014/35/EU, EN 61800-5-1: 2007<br>Machinery Directive 2006/42/EC, EN 61800-5-2: 2007<br>EMC Directive 2014/30/EU, EN 61800-3: 2004 + A1: 2012<br>RoHS directive 2011/65/EU and delegated directive (EU) 2015/863<br>Ecodesign (EU) 2019/1781<br>China RoHS II GB/T 26572<br>UL, cUL<br>TÜV Nord (safety functions)<br>UKCA<br>Quality assurance system ISO 9001 and Environmental system ISO 14001<br>Waste electrical and electronic equipment directive (WEEE) 2002/96/EC |
| **EMC according to EN 61800-3:2004 + A1:2012** | |
| | **ACH180-04S/N-xxxx-1:** Class C2 as standard |
| | **ACH180-04S/N-xxxx-2:** Class C3 as standard |
| | **ACH180-04S/N-xxxx-4:** Class C3 as standard |

# 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 | |
|---|---|---|---|---|---|
| | | $I_N$ (A) | $P_N$ (kW) | $I_{Ld}$ (A) | $P_{Ld}$ (kW) |
| ACH180-04x-02A4-1 | R0 | 2.4 | 0.37 | 2.3 | 0.37 |
| ACH180-04x-03A7-1 | R0 | 3.7 | 0.55 | 3.5 | 0.55 |
| ACH180-04x-04A8-1 | R0 | 4.8 | 0.75 | 4.6 | 0.75 |
| ACH180-04x-06A9-1 | R1 | 6.9 | 1.1 | 6.6 | 1.1 |
| ACH180-04x-07A8-1 | R1 | 7.8 | 1.5 | 7.4 | 1.5 |
| ACH180-04x-09A8-1 | R1 | 9.8 | 2.2 | 9.3 | 2.2 |
| ACH180-04x-12A2-1 | R2 | 12.2 | 3.0 | 11.6 | 3.0 |

**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 | |
|---|---|---|---|---|---|
| | | $I_N$ (A) | $P_N$ (kW) | $I_{Ld}$ (A) | $P_{Ld}$ (kW) |
| ACH180-04S-02A4-2 | R0 | 2.4 | 0.37 | 2.3 | 0.37 |
| ACH180-04S-03A7-2 | R0 | 3.7 | 0.55 | 3.5 | 0.55 |
| ACH180-04S-04A8-2 | R0 | 4.8 | 0.75 | 4.6 | 0.75 |
| ACH180-04S-06A9-2 | R1 | 6.9 | 1.1 | 6.6 | 1.1 |
| ACH180-04S-07A8-2 | R1 | 7.8 | 1.5 | 7.4 | 1.5 |
| ACH180-04S-09A8-2 | R1 | 9.8 | 2.2 | 9.3 | 2.2 |
| ACH180-04S-15A6-2 | R2 | 15.6 | 3.0 | 14.6 | 3.0 |
| ACH180-04S-17A5-2 | R2 | 17.5 | 4.0 | 16.7 | 4.0 |
| ACH180-04S-25A0-2 | R3 | 25.0 | 5.5 | 24.2 | 5.5 |
| ACH180-04S-033A-2 | R3 | 32.0 | 7.5 | 30.8 | 7.5 |
| ACH180-04S-048A-2 | R4 | 48.0 | 11.0 | 46.2 | 11.0 |

**3-phase, $U_N$ = 400 V (range 380 to 480 V). The power ratings are valid at nominal voltage 400 V (0.37 to 22 kW).**

| Drive type | Frame size | Nominal ratings | | Light-duty use | |
|---|---|---|---|---|---|
| | | $I_N$ (A) | $P_N$ (kW) | $I_{Ld}$ (A) | $P_{Ld}$ (kW) |
| ACH180-04x-01A8-4 | R0 | 1.8 | 0.55 | 1.7 | 0.55 |
| ACH180-04x-02A6-4 | R0 | 2.6 | 0.75 | 2.5 | 0.75 |
| ACH180-04x-03A3-4 | R0 | 3.3 | 1.1 | 3.1 | 1.1 |
| ACH180-04x-04A0-4 | R1 | 4.0 | 1.5 | 3.8 | 1.5 |
| ACH180-04x-05A6-4 | R1 | 5.6 | 2.2 | 5.3 | 2.2 |
| ACH180-04x-07A2-4 | R1 | 7.2 | 3.0 | 6.8 | 3.0 |
| ACH180-04x-09A4-4 | R1 | 9.4 | 4.0 | 8.9 | 4.0 |
| ACH180-04x-12A6-4 | R2 | 12.6 | 5.5 | 12.0 | 5.5 |
| ACH180-04x-17A0-4 | R2 | 17.0 | 7.5 | 16.2 | 7.5 |
| ACH180-04x-25A0-4 | R3 | 25.0 | 11.0 | 23.8 | 11.0 |
| ACH180-04x-033A-4 | R3 | 32.0 | 15.0 | 30.5 | 15.0 |
| ACH180-04x-038A-4 | R4 | 38.0 | 18.5 | 36.0 | 18.5 |
| ACH180-04x-045A-4 | R4 | 45.0 | 22.0 | 42.0 | 22.0 |
| ACH180-04x-050A-4 | R4 | 50.0 | 22.0 | 48.0 | 22.0 |

x (in type code) = S or N
S = Standard offering with STO and EMC filter
1-phase 200 to 240 V: Class C2
3-phase 200 to 240 V: Class C3
3-phase 380 to 480 V: Class C3
N = Without STO (class C3)

For further information, please see page 17.

| **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. |

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

# Dimensions

| ACH180 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.


# Cooling and fuses

### Cooling

ACH180 drives are fitted with cooling air fans. 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 ACH180. 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 | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | (W) | (m³/h) | (dBA) | (A) | Fuse type | (A) | Fuse type | (A) | Fuse type |
| ACH180-04x-02A4-1 | R0 | 26 | –*) | –**) | 10 | gG | 32 | gR | 6 | UL class T |
| ACH180-04x-03A7-1 | R0 | 42 | –*) | –**) | 16 | gG | 32 | gR | 10 | UL class T |
| ACH180-04x-04A8-1 | R0 | 48 | –*) | –**) | 16 | gG | 40 | gR | 15 | UL class T |
| ACH180-04x-06A9-1 | R1 | 64 | 27 | 51.8 | 20 | gG | 50 | gR | 20 | UL class T |
| ACH180-04x-07A8-1 | R1 | 69 | 27 | 51.8 | 25 | gG | 50 | gR | 25 | UL class T |
| ACH180-04x-09A8-1 | R1 | 84 | 27 | 51.8 | 40 | gG | 50 | gR | 35 | UL class T |
| ACH180-04x-12A2-1 | R2 | 141 | 130 | 62.0 | 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 | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | (W) | (m³/h) | (dBA) | (A) | Fuse type | (A) | Fuse type | (A) | Fuse type |
| ACH180-04S-02A4-2 | R0 | 23 | –*) | –**) | 6 | gG | 25 | gR | 6 | UL class T |
| ACH180-04S-03A7-2 | R0 | 37 | –*) | –**) | 8 | gG | 32 | gR | 10 | UL class T |
| ACH180-04S-04A8-2 | R0 | 44 | –*) | –**) | 16 | gG | 32 | gR | 10 | UL class T |
| ACH180-04S-06A9-2 | R1 | 58 | 27 | 51.8 | 16 | gG | 50 | gR | 15 | UL class T |
| ACH180-04S-07A8-2 | R1 | 63 | 27 | 51.8 | 20 | gG | 50 | gR | 20 | UL class T |
| ACH180-04S-09A8-2 | R1 | 76 | 27 | 51.8 | 25 | gG | 50 | gR | 20 | UL class T |
| ACH180-04S-15A6-2 | R2 | 168 | 130 | 62.0 | 32 | gG | 50 | gR | 30 | UL class T |
| ACH180-04S-17A5-2 | R2 | 198 | 130 | 62.0 | 32 | gG | 50 | gR | 35 | UL class T |
| ACH180-04S-25A0-2 | R3 | 400 | 128 | 66.0 | 50 | gG | 80 | gR | 40 | UL class T |
| ACH180-04S-033A-2 | R3 | 407 | 128 | 66.0 | 63 | gG | 100 | gR | 50 | UL class T |
| ACH180-04S-048A-2 | R4 | 586 | 150 | 69.0 | 100 | gG | 160 | gR | 70 | 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 V (range 380 to 480 V)**

| Drive type | Frame size | Heat dissipation | Airflow | Max. noise level | IEC fuses | | IEC fuses | | UL fuses | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | (W) | (m³/h) | (dBA) | (A) | Fuse type | (A) | Fuse type | (A) | Fuse type |
| ACH180-04x-01A8-4 | R0 | 22 | –*) | –**) | 4 | gG | 20 | gR | 6 | UL class T |
| ACH180-04x-02A6-4 | R0 | 29 | –*) | –**) | 6 | gG | 20 | gR | 6 | UL class T |
| ACH180-04x-03A3-4 | R0 | 38 | –*) | –**) | 10 | gG | 20 | gR | 10 | UL class T |
| ACH180-04x-04A0-4 | R1 | 46 | 36.3 | 50.9 | 10 | gG | 25 | gR | 10 | UL class T |
| ACH180-04x-05A6-4 | R1 | 69 | 36.3 | 50.9 | 16 | gG | 25 | gR | 20 | UL class T |
| ACH180-04x-07A2-4 | R1 | 86 | 36.3 | 50.9 | 20 | gG | 32 | gR | 20 | UL class T |
| ACH180-04x-09A4-4 | R1 | 119 | 36.3 | 50.9 | 25 | gG | 32 | gR | 25 | UL class T |
| ACH180-04x-12A6-4 | R2 | 157 | 130.4 | 62.0 | 32 | gG | 50 | gR | 30 | UL class T |
| ACH180-04x-17A0-4 | R2 | 224 | 130.4 | 62.0 | 40 | gG | 50 | gR | 35 | UL class T |
| ACH180-04x-25A0-4 | R3 | 393 | 128.0 | 66.0 | 50 | gG | 80 | gR | 40 | UL class T |
| ACH180-04x-033A-4 | R3 | 551 | 128.0 | 66.0 | 63 | gG | 100 | gR | 60 | UL class T |
| ACH180-04x-038A-4 | R4 | 504 | 150.0 | 69.0 | 80 | gG | 125 | gR | 70 | UL class T |
| ACH180-04x-045A-4 | R4 | 587 | 150.0 | 69.0 | 100 | gG | 160 | gR | 70 | UL class T |
| ACH180-04x-050A-4 | R4 | 679 | 150.0 | 69.0 | 100 | gG | 160 | gR | 70 | UL class T |

*) Frame size R0 with free convection cooling. **) Frame size R0 is noise-free.

# Resistor braking

**Brake chopper**
The brake chopper is standard for the ACH180 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 ACH180 frame R1 do not have internal braking chopper nor the DC connection.

**Brake resistor**
The brake resistors are separately available for the ACH180. 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** | | | | **Example brake resistor** |
| | | **$R_{min}$ (ohm)** | **$R_{max}$ (ohm)** | **$P_{BRcont}$ (kW)** | **$P_{BRmax}$ (kW)** | **Danotherm type** |
| ACH180-04x-xxxx-1 | R0-R1 | – | – | – | – | No support |
| ACH180-04x-12A2-1 | R2 | 19.5 | 47.1 | 2.2 | 3.3 | CBR-V 560 D HT 406 39R UL |
| **3-phase 230 V** | | | | | | |
| ACH180-04S-xxxx-2 | R0-R1 | – | – | – | – | No support |
| ACH180-04S-15A6-2 | R2 | 19.5 | 51.9 | 2.2 | 3.3 | CBR-V 560 D HT 406 39R UL |
| ACH180-04S-17A5-2 | R2 | 15.6 | 38.5 | 3 | 4.5 | CBT-H 560 D HT 406 19R |
| ACH180-04S-25A0-2 | R3 | 14 | 28 | 4 | 6 | CBT-H 560 D HT 406 19R |
| ACH180-04S-033A-2 | R3 | 10 | 20 | 5.5 | 8.3 | CBT-H 560 D HT 406 19R |
| ACH180-04S-048A-2 | R4 | 3 | 14 | 7.5 | 11.3 | CBT-V 760 G HT 282 8R |
| **3-phase 400 V** | | | | | | |
| ACH180-04x-xxxx-4 | R0-R1 | – | – | – | – | No support |
| ACH180-04x-12A6-4 | R2 | 31.6 | 75.7 | 4 | 6 | CBR-V 330 D T 406 78R UL |
| ACH180-04x-17A0-4 | R2 | 31.6 | 54.4 | 5.5 | 8.3 | CBR-V 560 D HT 406 39R UL |
| ACH180-04x-25A0-4 | R3 | 37 | 49 | 7.5 | 11.3 | CBR-V 560 D HT 406 39R UL |
| ACH180-04x-033A-4 | R3 | 24 | 33 | 11 | 16.5 | CBT-H 560 D HT 406 19R |
| ACH180-04x-038A-4 | R4 | 6 | 23.7 | 15 | 22.5 | CBT-H 560 D HT 406 19R |
| ACH180-04x-045A-4 | R4 | 6 | 19.7 | 18.5 | 27.8 | CBT-H 760 D HT 406 16R |
| ACH180-04x-050A-4 | R4 | 6 | 19.7 | 22 | 33 | CBT-H 760 D HT 406 16R |

$R_{min}$ = 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 ($P_{BRcont}$ × 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 ACH180 hardware manual for the selection guidelines.

# Circuit breakers

The miniature circuit breakers listed below are tested and approved for use with ACH180 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 V (range 200 to 240 V)** | | | |
| **Drive type** | **Frame size** | **ABB miniature circuit breaker Type** | **kA*)** |
| ACH180-04x-02A4-1 | R0 | S 201P-B10NA | 5 |
| ACH180-04x-03A7-1 | R0 | S 201P-B10NA | 5 |
| ACH180-04x-04A8-1 | R0 | S 201P-B16NA | 5 |
| ACH180-04x-06A9-1 | R1 | S 201P-B20NA | 5 |
| ACH180-04x-07A8-1 | R1 | S 201P-B25NA | 5 |
| ACH180-04x-09A8-1 | R1 | S 201P-B32NA | 5 |
| ACH180-04x-12A2-1 | R2 | S 201P-B40NA | 5 |
| **3-phase $U_N$ = 230 V (range 200 to 240 V)** | | | |
| ACH180-04S-02A4-2 | R0 | S 203P-Z 6 NA | 5 |
| ACH180-04S-03A7-2 | R0 | S 203P-Z 8 NA | 5 |
| ACH180-04S-04A8-2 | R0 | S 203P-Z 10 NA | 5 |
| ACH180-04S-06A9-2 | R1 | S 203P-Z 16 NA | 5 |
| ACH180-04S-07A8-2 | R1 | S 203P-Z 20NA | 5 |
| ACH180-04S-09A8-2 | R1 | S 203P-Z 20NA | 5 |
| ACH180-04S-15A6-2 | R2 | S 203P-Z 32 NA | 5 |
| ACH180-04S-17A5-2 | R2 | S 203P-Z 32 NA | 5 |
| ACH180-04S-25A0-2 | R3 | S 203P-Z 50 NA | 5 |
| ACH180-04S-033A-2 | R3 | S 203P-Z 63 NA | 5 |
| ACH180-04S-048A-2 | R4 | Contact ABB | 5 |
| **3-phase $U_N$ = 400 V (range 380 to 480 V)** | | | |
| ACH180-04x-01A8-4 | R0 | S 203P-B6 | 5 |
| ACH180-04x-02A6-4 | R0 | S 203P-B6 | 5 |
| ACH180-04x-03A3-4 | R0 | S 203P-B6 | 5 |
| ACH180-04x-04A0-4 | R1 | S 203P-B8 | 5 |
| ACH180-04x-05A6-4 | R1 | S 203P-B10 | 5 |
| ACH180-04x-07A2-4 | R1 | S 203P-B16 | 5 |
| ACH180-04x-09A4-4 | R1 | S 203P-B16 | 5 |
| ACH180-04x-12A6-4 | R2 | S 203P-B25 | 5 |
| ACH180-04x-17A0-4 | R2 | S 203P-B40 | 5 |
| ACH180-04x-25A0-4 | R3 | S203P-B50 | 5 |
| ACH180-04x-033A-4 | R3 | S203P-B63 | 5 |
| ACH180-04x-038A-4 | R4 | S803S-B80 | 5 |
| ACH180-04x-045A-4 | R4 | S803-B100 | 5 |
| ACH180-04x-050A-4 | R4 | S803-B100 | 5 |

*) 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.

# EMC – electromagnetic compatibility

ACH180 HVACR drives are equipped with a built-in filter (C2 for 1-phase 200 V and C3 for 3-phase 200 V and 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 |
|---|---|---|---|---|
| 1st environment, unrestricted distribution | Category C1 | Group 1, Class B | Not applicable | Applicable |
| 1st environment, restricted distribution | Category C2 | Group 1, Class A | Applicable | Not applicable |
| 2nd environment, unrestricted distribution | Category C3 | Group 2, Class A | Not applicable | Not applicable |
| 2nd 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 | ACH180-04S-xxxx-1 | R0 | – | 5 m | 10 m | 10 m | 30 m | – |
| | | R1 | | | | | | |
| | | R2 | | | | | | |
| 3-phase 230 V | ACH180-04S-xxxx-2 | R0 | – | – | 10 m | – | 30 m | 30 m |
| | | R1 | | | | | | |
| | | R2 | | | | | | |
| | | R3 | – | – | 30 m | – | 20 m | 20 m |
| | | R4 | | | | | | |
| 3-phase 400 V | ACH180-04S-xxxx-4 | R0 | – | – | 10 m | 10 m | 30 m | – |
| | | R1 | | | | | | |
| | | R2 | | | | | | |
| | | R3 | – | – | 30 m | 40 m | 40 m | 40 m |
| | | R4 | | | | 30 m | 30 m | 30 m |

Built-in EMC filter: C2 with ACH180-04S-xxxx-1, C3 with ACH180-04S-xxxx-4.
ACH180-04S-xxxx-2 and ACH180-04N-xxxx-x: Class C4.

# Filters and chokes

If it is necessary to optimize the line side harmonics, an external input choke can be used together with the ACH180.

It is advisable to use a mains choke if the short-circuit capacity of the network at the drive terminals is higher than specified in the table.

| 1-phase $U_N$ = 230 V (range 200 to 240 V) | | | |
|---|---|---|---|
| **Drive type** | **C1 filter ABB type / Schaffner type** | **Input choke, max. ambient temp. 40 °C** | **du/dt filter type, max. ambient temp. 40 °C** |
| ACH180-04x-02A4-1 | RFI-12/FS 21754-16.1-07 | CHK-A1 | ACS-CHK-B3 |
| ACH180-04x-03A7-1 | RFI-12/FS 21754-16.1-07 | CHK-B1 | ACS-CHK-B3 |
| ACH180-04x-04A8-1 | RFI-12/FS 21754-16.1-07 | CHK-B1 | ACS-CHK-B3 |
| ACH180-04x-06A9-1 | RFI-12/FS 21754-16.1-07 | CHK-C1 | ACS-CHK-C3 |
| ACH180-04x-07A8-1 | RFI-12/FS 21754-16.1-07 | CHK-C1 | ACS-CHK-C3 |
| ACH180-04x-09A8-1 | Contact ABB | CHK-D1 | ACS-CHK-C3 |
| ACH180-04x-12A2-1 | Contact ABB | CHK-D1 | ACS-CHK-C3 |

| 3-phase $U_N$ = 230 V (range 200 to 240 V) | | | |
|---|---|---|---|
| **Drive type** | **C1 filter ABB type / Schaffner type** | **Input choke, max. ambient temp. 40 °C** | **du/dt filter type, max. ambient temp. 40 °C** |
| ACH180-04S-02A4-2 | RFI-311/FS43566-16-44 | CHK-01 | ACS-CHK-B3 |
| ACH180-04S-03A7-2 | RFI-311/FS43566-16-44 | CHK-01 | ACS-CHK-B3 |
| ACH180-04S-04A8-2 | RFI-311/FS43566-16-44 | CHK-02 | ACS-CHK-B3 |
| ACH180-04S-06A9-2 | RFI-311/FS43566-16-44 | CHK-03 | ACS-CHK-B3 |
| ACH180-04S-07A8-2 | RFI-311/FS43566-16-44 | CHK-03 | ACS-CHK-C3 |
| ACH180-04S-09A8-2 | RFI-311/FS43566-16-44 | CHK-04 | ACS-CHK-C3 |
| ACH180-04S-15A6-2 | RFI-321/FS43566-30-33 | CHK-04 | NOCH0016-6x |
| ACH180-04S-17A5-2 | RFI-321/FS43566-30-33 | CHK-04 | NOCH0016-6x |
| ACH180-04S-25A0-2 | RFI-33/FN 3258-30-33 | CHK-05 | NOCH0030-6x |
| ACH180-04S-033A-2 | RFI-34/FN 3258-100-35 | CHK-06 | NOCH0030-6x |
| ACH180-04S-048A-2 | RFI-34/FN 3258-100-35 | CHK-06 | NOCH0070-6x |

| 3-phase $U_N$ = 400 V (range 380 to 400 V) | | | |
|---|---|---|---|
| **Drive type** | **C1 filter ABB type / Schaffner type** | **Input choke, max. ambient temp. 40 °C** | **du/dt filter type, max. ambient temp. 40 °C** |
| ACH180-04x-01A8-4 | RFI-311/FS 43566-16-44 | CHK-01 | ACS-CHK-B3 |
| ACH180-04x-02A6-4 | RFI-311/FS 43566-16-44 | CHK-01 | ACS-CHK-B3 |
| ACH180-04x-03A3-4 | RFI-311/FS 43566-16-44 | CHK-01 | ACS-CHK-B3 |
| ACH180-04x-04A0-4 | RFI-311/FS 43566-16-44 | CHK-02 | ACS-CHK-C3 |
| ACH180-04x-05A6-4 | RFI-311/FS 43566-16-44 | CHK-02 | ACS-CHK-C3 |
| ACH180-04x-07A2-4 | RFI-311/FS 43566-16-44 | CHK-02 | NOCH0016-6x |
| ACH180-04x-09A4-4 | RFI-311/FS 43566-16-44 | CHK-03 | NOCH0016-6x |
| ACH180-04x-12A6-4 | RFI-321/FS 43566-30-33 | CHK-03 | NOCH0016-6x |
| ACH180-04x-17A0-4 | RFI-321/FS 43566-30-33 | CHK-04 | NOCH0016-6x |
| ACH180-04x-25A0-4 | RFI-33/FN 3258-30-33 | CHK-04 | NOCH0030-6x |
| ACH180-04x-033A-4 | RFI-34/FN 3258-100-35 | CHK-05 | NOCH0030-6x |
| ACH180-04x-038A-4 | RFI-34/FN 3258-100-35 | CHK-06 | NOCH0070-6x |
| ACH180-04x-045A-4 | RFI-34/FN 3258-100-35 | CHK-06 | NOCH0070-6x |
| ACH180-04x-050A-4 | RFI-34/FN 3258-100-35 | CHK-07 | NOCH0070-6x |

# Control panel options and mounting kits

The ACH180 drive has an integrated icon-based control panel with a display and control keys. External alphanumeric, multilingual graphical control panels with an optional Bluetooth connection are also available for installation on a cabinet door.


**Integrated control panel as standard**
The ACH180 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 ACH180 supports the assistant alphanumeric control panels.

**Assistant control panel ACH-AP-H**
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.


**Bluetooth assistant control panel ACH-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.

**Industrial assistant control panel ACS-AP-I**
The industrial control panel is compatible with all ABB drives, making it simple to use a single panel with different products.


**Control panel mounting platform DPMP-01**
This mounting platform is for flush mounting. 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.

| Control panel options | | |
|---|---|---|
| **Ordering code** | **Description** | **Control panel** |
| 3AUA0000088311 | Industrial assistant control panel | ACS-AP-I |
| 3AXD50000004398 | Assistant control panel (Hand-Off-Auto) | ACH-AP-H |
| 3AXD50000030358 | Bluetooth assistant control panel (Hand-Off-Auto) | ACH-AP-W |
| 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 |

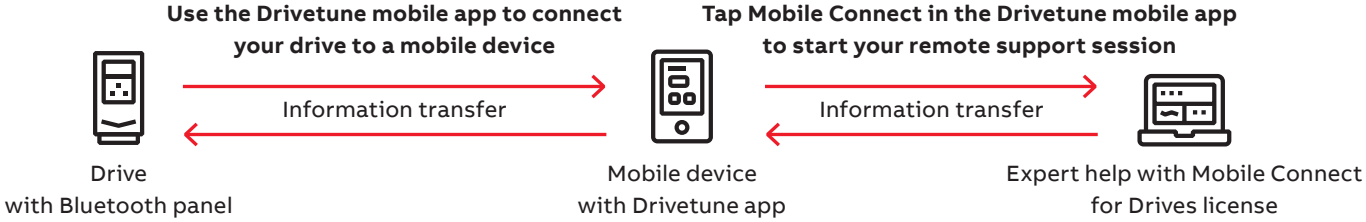
# Drivetune mobile app for managing drives via an intuitive interface

**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.

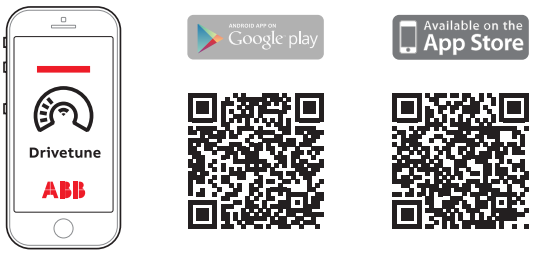
- Startup, commission and tune your drive and application with full parameter access
- Optimize performance via drive troubleshooting features
- Create and share backups and support packages
- Keep track of drives installed base

**ABB Ability™ Mobile Connect** for drives is a module in the Drivetune app. It gives you the access to the technical support for fast problem solving. Mobile Connect makes all the necessary data instantly available to the expert, providing support.

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 mobile app



# Commissioning, programming, customization and monitoring tools

Your engineering efficiency is boosted with our tools, giving you the optimal solution to perform.

**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. Adaptive programming makes it possible to enhance the existing application control program to precisely fit users' application needs.

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

**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.

| Mini USB connection on the panel | |
|---|---|
|  | It connects the Drive Composer tool and the drive. |

**RJ45 connection at the bottom of ACH180**
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 RJ-45 behind the control panel.

| 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 ACH180 R2 to R4 drives to configure drive parameters and download new software from PC. 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 ACH180 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 ACH180 drive.

**BCBL-01**

It connects PC and RJ-45 panel port.

| MRP code | Description | Type designation |
|---|---|---|
| 3AXD50000032449 | PC cable, USB to RJ-45 | BCBL-01 |

**DIN rail mounting kit**
For ACH180 frames R1 to R2, it is possible to install the drive to a standard 35 mm DIN rail with an optional kit. ACH180 R3/R4 support DIN rail installation as standard. DIN rail installation passes ISTA road transport simulation tests, it ensures that the ACH180 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 R1 (5 sets per each package) | BDRK-01 |
| 3AXD50000900510 | DIN rail mounting kit for R2 (5 sets per each package) | BDRK-02 |

# ACH180 drives are compatible with the wide ABB product offering

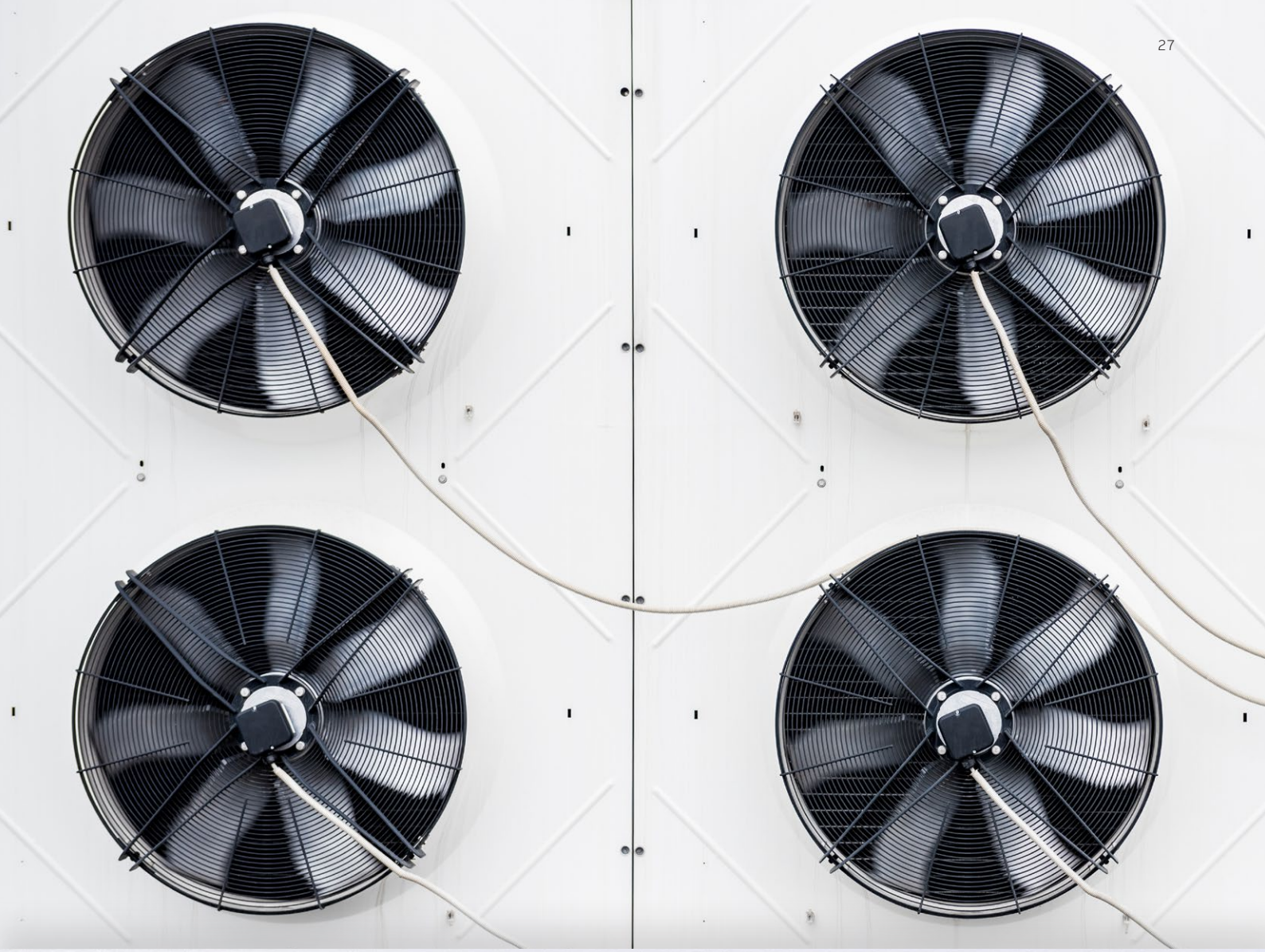
**Programmable logic controllers, PLCs**
The AC500, AC500-eCo, AC500-S and AC500-XC scalable PLC ranges provide solutions for small, medium and high-end applications. Our AC500 PLC platform offers different performance levels and is the ideal choice for high availability, extreme environments, condition monitoring, or safety solutions.

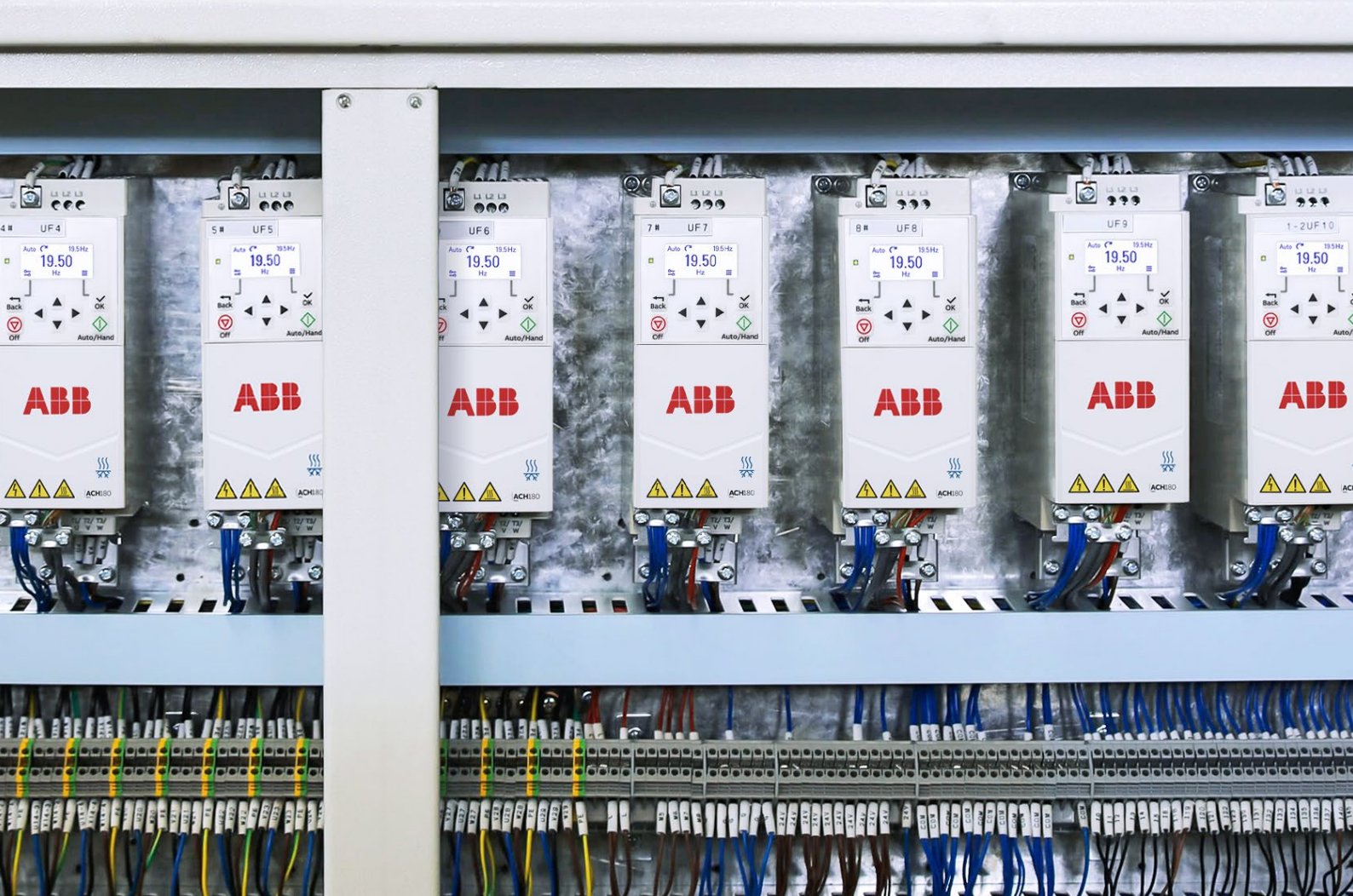
**All-compatible drives portfolio**
The all-compatible drives share the same architecture, software platform, tools, user interfaces and options. Yet, there is an optimal drive from the smallest water pump to the biggest refrigeration compressor, and everything in between.

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

**Safety products**
ABB safety products are helping machine builders to create production-friendly and safe 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.

**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 machines at a single touch.

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# Our service expertise, your advantage

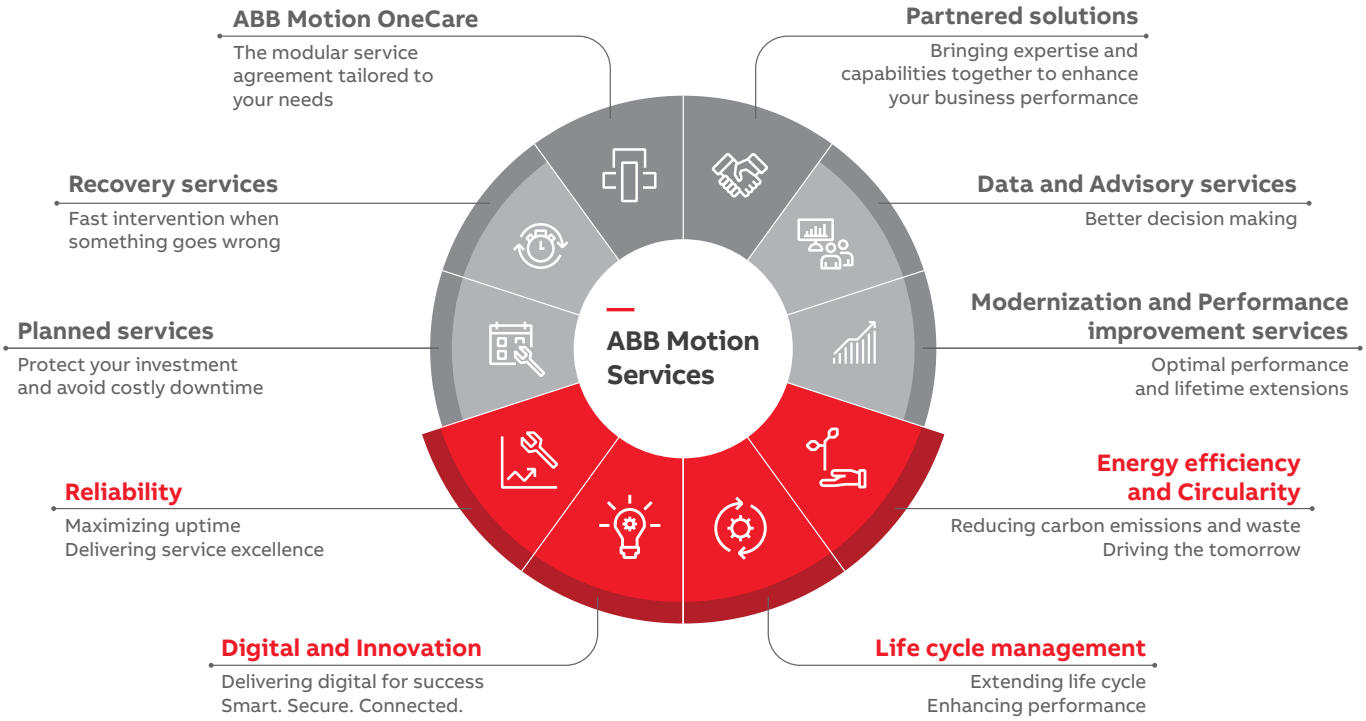
ABB Motion Services helps customers around the globe by maximizing uptime, extending product life cycle, and enhancing the performance and energy efficiency of electrical motion solutions. We enable innovation and success through digitalization by securely connecting and monitoring our customers' motors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

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

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

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

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




# OUR EXPERTISE
# YOUR ADVANTAGE

# ABB Drives Life Cycle Management
## A life time of peak performance

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

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


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

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

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

**new.abb.com/drives**
**new.abb.com/drives/drivespartners**
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Learn more from ACH180 website.

Learn more from ABB variable speed drives, motors and PLCs for HVAC website.



3AXD50000981847 REV A EN 26.10.2023