CATALOG

# ABB drives for HVACR

ACH480, 0.37 to 22 kW, 0.5 to 30 hp

ACH580, 0.75 to 500 kW, 1 to 700 hp

# ACH480 and ACH580 series
## Leading the way in HVACR drives

**Comfort. It's something we take for granted in the buildings we live and work in. But comfort requires efficient systems to control heating, ventilation, air conditioning and refrigeration (HVACR) to ensure the air we breathe is pure and the temperature is comfortable. We also need to ensure air quality and safety in the most energy-efficient and cost-effective way in both normal and mission-critical situations.**

**ABB has been leading the way in optimizing HVACR systems using drive control to ensure that you can take comfort for granted. The new series of HVACR dedicated variable frequency drives (VFDs) provide the quality, reliability, and energy savings you expect, and are easy to use and safe to maintain. All you need to do is to set the drive up, and then focus on what counts.**

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# The next step in HVACR drives

We understand the complexity of air handling systems and the need to produce high levels of comfort and safety. Be assured that, regardless of the season or external conditions, we'll help make your system efficient, reliable, and informative, with ABB HVACR drives ACH480 and ACH580.

**Complete HVACR functionality**
ABB HVACR drives come with complete HVACR functionality in a package tailored to your needs and share the same user interface. Fireman's override, intelligent pump control, active braking for tunnel ventilation and many other application-specific features are offered.

**Easy selection and installation**
Depending on the drive model, various power and voltage ranges and all the essentials – chokes, EMC C1 and C2 filters, cabling clamps, enclosures from IP20/UL (NEMA) Type Open to IP55/UL (NEMA) Type 12 – are offered, thus simplifying selection, installation, and commissioning.

**Safe maintenance**
The Safe Torque Off (STO) function is TÜV-certified to SIL 3/PL e and built in as standard in all HVACR drives to protect both people and machines. The ACH580 packaged disconnect solution provides a main disconnect switch, which further increases safety for people working on HVACR equipment.

**Motor control options to meet your application needs**
ABB HVACR drives can be integrated with several types of AC motors, including induction, permanent magnet (PM) and even synchronous reluctance (SynRM) and permanent magnet assisted synchronous reluctance (PMaSynRM) motors. The ability to use advanced motor technologies can reduce your energy costs even more.

**Added flexibility with I/O extensions**
ABB HVACR drives have extensive I/O connections as standard and provide control flexibility with additional I/O configurations.

**Compliance with industry-specific standards and directives**
The ACH580 drives exclusively offer compliance with A2L and A3 refrigerants according to IEC/UL 60335-2-40:2022 “Safety requirements for electrical heat pumps, air-conditioners and dehumidifiers” meaning the drives are not going to be a source of potential ignition and safe to operate next to HVACR equipment running on those refrigerants.

For tunnel ventilation, we offer compliance with EN 12101-3:2015 “Smoke and heat control systems. Specification of powered fans for smoke and heat control ventilators (fans)” in collaboration with fan OEMs to ensure safe system operation in mission-critical infrastructures.

**Effortless commissioning and operation**
The drive’s HVACR-specific software, intuitive keypad with customizable text and views, and menu-driven programming simplify set-up and operation of even complex applications. The optional Bluetooth® capability together with ABB’s Drivetune smartphone app allows you to commission the drive remotely, providing access to the same menus available on the drive’s HVACR control panel.

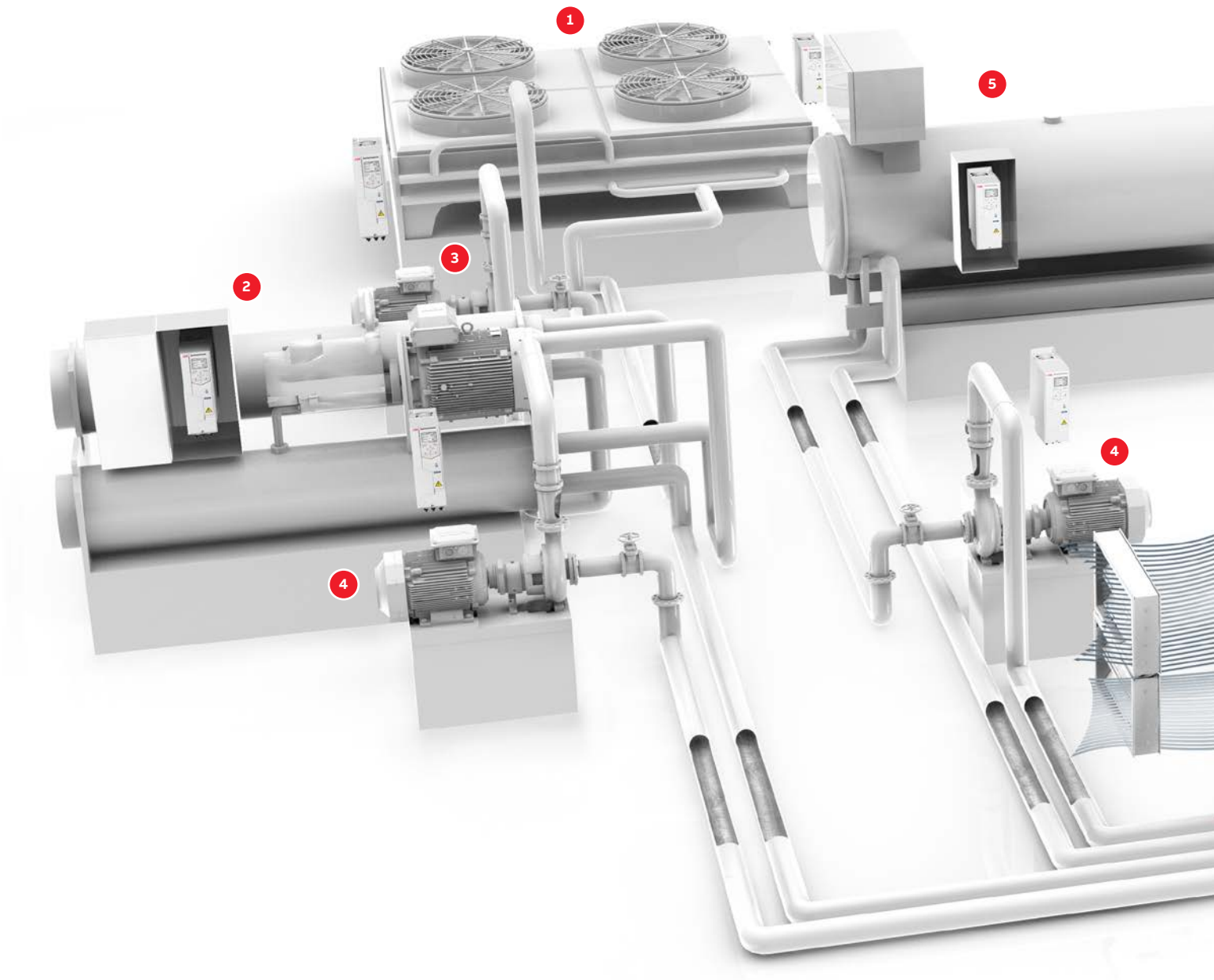
**Smooth integration into HVACR systems**
BTL certified BACnet MS/TP, Modbus RTU, and N2 come as standard in every ACH480 and ACH580 drive. In addition, a wide range of optional fieldbus adapters, including BTL certified BACnet/IP, are available to enable connectivity with all major building automation and control systems.

**Clean power supply**
The ACH580 ultra-low harmonic (ULH) drives secure a unity power factor and the lowest harmonic distortion in the network, for the most efficient and reliable operation. In combination with the ACH480 and the ACH580 6-pulse drives, the optimum cost/performance ratio can be achieved.

**Advanced software tools for easy configuration, startup and maintenance**
Drive Composer PC tool can be simply connected to the drive’s control panel via a USB interface. It supports startup, configuration, monitoring and process tuning. CCA-01 cold configuration adapter saves time as parameters for unpowered drives can already be set in the warehouse.

# Premier HVACR control

ABB HVACR drives are ideal for all your HVACR applications, such as air-handling units, chillers, heat pumps and cooling towers. They are suitable for use in a wide range of facilities from residential and commercial buildings to hospitals, data centers, airports and tunnels.



**1 Cooling tower**
Cools down the condenser water.
- The drive controls the speed of multiple fans simultaneously to achieve high energy savings, while optimising the installation cost

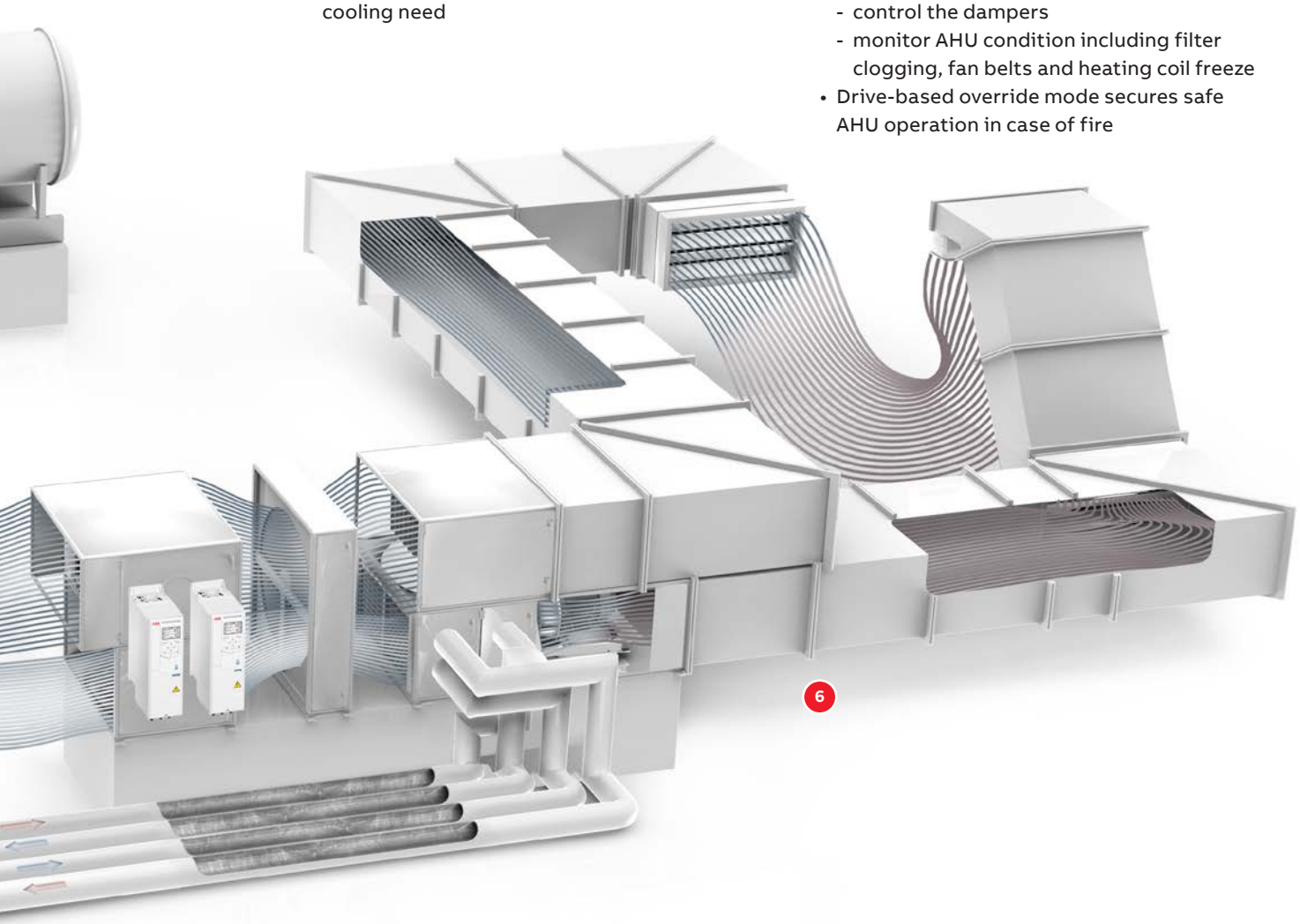
**2 Chiller**
Chills water or other liquid to cool down and dehumidify the indoor air.
- The drive controls the speed of the compressor for better energy efficiency
- By-pass valves can be avoided
- Less mechanical stress as there are less starts and stops, and they are soft
- Mechanical resonance speeds can be avoided
- Maximum speed is not limited by nominal supply frequency
- Less stress to supply network as inrush currents can be avoided with VFD controlled start

**3 Condenser water pump**
Circulates water between the cooling tower and the chiller.
- Energy savings can be achieved with variable frequency drives that adjust pump speed to the cooling need

**4 Chilled and hot water circulator pumps**
Circulate water (or other liquid) between heating coil and boiler or cooling coil and chiller.
- The cooling and heating loads vary a lot over time. Speed controlled circulator pumps make sure that an adequate amount of heating or cooling is distributed in the building.
- Soft start and stop of the pump reduces hydraulic stress on pipelines and valves

**5 Boiler**
Heats up the water for heating/domestic hot water supply.
- The drive controls the burner fan to adjust the amount of combustion air to the heating load

**6 Air handling unit**
Supplies, mixes, cleans, humidifies/dehumidifies, heats/cools air.
- Drives can be used to
  - control the speed of supply and return fans
  - eliminate mechanical stress
  - avoid fan resonance
  - control the speed of the rotary heat exchangers
  - control the dampers
  - monitor AHU condition including filter clogging, fan belts and heating coil freeze
- Drive-based override mode secures safe AHU operation in case of fire



# HVACR application specific software features of the ACH480 and ACH580 drives

The ACH480 and ACH580 drives come with a range of advanced application features that provide a thorough heating, ventilation, air conditioning and refrigeration control.

**Soft start and stop**
User defined ramps for softer fan/pump/compressor starts and stops eliminate mechanical and electrical stresses on the system.

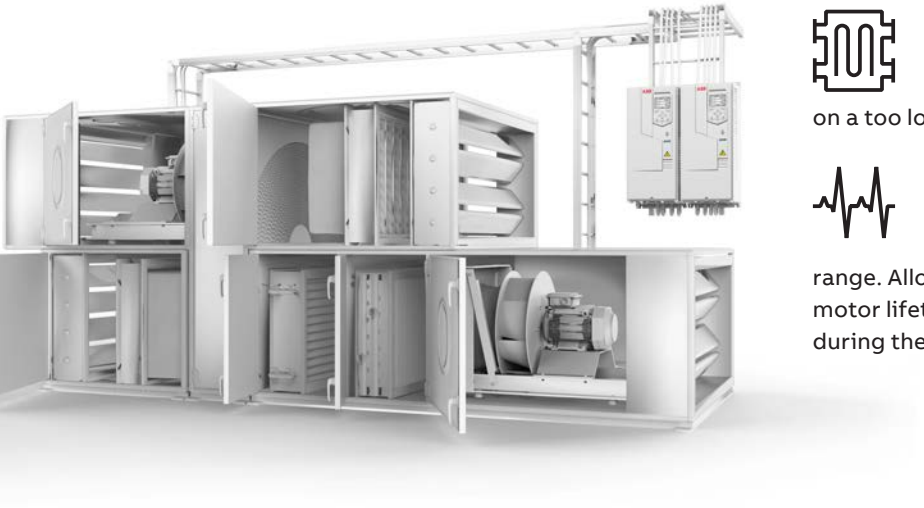
**Flying start**
Allows to catch free-wheeling fans and smoothly accelerate or decelerate them to a required speed, without wasting time on braking.

**Air filter monitoring**
The drive alarms on a clogged filter, to maintain air quality and avoid energy losses.

**Leakage monitoring**
In closed loop HVACR systems, drives can alarm on the leakage in the system, preventing flooding and property damage.

**Resonance monitoring**
Mechanical resonance damages the application itself and connected piping/ductwork, while acoustic resonance makes the environment noisy. ABB drives skip resonance frequencies for better comfort and longer equipment lifetime.

**System overpressure protection**
Protects water pipes/air ducts by stopping pump/fan operation when the measured pressure exceeds a threshold, e.g. due to closed valves/dampers.



**Fireman's override**
In case of fire emergency, drives run fans ignoring faults and warnings, to ensure safe evacuation and mitigate the spread of smoke.

**Active braking**
In tunnel ventilation, it's required to stop fans promptly in case of fire. ABB's ACH580-31/34 HVACR drives enable fast fan stop, regenerating braking energy to the network.

**Intelligent pump control**
Maintains stable pumping process for up to 8 pumps operating in parallel. Optimizes the speed and number of pumps for required flow and pressure, even if one or more pumps fail.

**Bearing monitoring**
Bearings are one of the weakest points in HVACR applications. Drives can alarm on the bearing upcoming failure, so it could be replaced timely, without HVACR process interruption.

**Motor heating**
Prevents condensation and saves the motor from failure due to corrosion, which is typical for rooftop mounted air handlers.

**Pump dry run protection**
Stops operation when the pressure on the pump suction side is below a threshold, to prevent pump damage from running dry.

**Frost protection**
Cold temperatures outside might lead to heating coil freezing. To avoid damage, drives can alarm on a too low air temperature and shut down the system.

**Sleep/boost**
Stops the pump at low demand, instead of running it slowly below its efficient operating range. Allows to save energy and extend the pump and motor lifetime by decreasing the number of starts/stops during the day.

# Generic software features of the ABB all-compatible drives

The all-compatible drives platform offers features that make drive integration, commissioning, operation and diagnostics easier than ever before.

**Startup assistant** allows first-time users to quickly customize the drive according to their needs. Complemented by a built-in help function to make parameter-by-parameter setting easy.

**Motor control** is implemented in scalar and vector modes for induction, permanent magnet and synchronous reluctance or permanent magnet assisted synchronous reluctance motors. Motor protection features like thermal and overload protection are also established.

**The energy optimizer feature** optimizes the motor flux so that motor energy consumption and noise level are reduced when operating below the nominal load. The total efficiency can be improved by 1…20% depending on load torque and speed.

**Energy counter** monitors used and saved energy and displays it in kWh, currency or $CO_2$ emissions, to know how much exactly was saved.

**Drive safety and protection features** include overcurrent, DC over- and undervoltage, drive overheating and short circuit protection, motor phase loss and supply phase loss detection, local control loss detection and many more.

**People and machine safety** is ensured with drive-based Safe-Torque-Off feature, also allowing to conduct maintenance on the mechanical parts of equipment without shutting it down.

**Diagnostic assistant** helps in locating the cause of any disturbance to the drive, and suggests possible remedies. This reduces downtime by making repairs or adjustments effortless.

**A built-in process PID/loop controller** makes the drive a self-governing unit that requires no external logic input from the control room but only an external process measurement.

**Backup and restore feature** makes automatic and manual backups of the drive settings to the assistant panel. A backup can be restored to another drive.

**Adaptive programming** provides extra flexibility by offering easy alternative for simple programming needs. Download Drive Composer entry for free to start writing your application.

# Complete HVACR drive offering

No matter the construction type or power, all ABB HVACR drives offer ease of use, scalability, and quality.

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01 Drive modules for cabinet installation, ACH480-04
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02 Wall-mounted drives, ACH580-01 and ACH580-31 ultra-low harmonic version
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03 Drive modules for cabinet installation, ACH580-04 and ACH580-34 ultra-low harmonic version
—
04 Cabinet-built drives, ACH580-07

**Drive modules for cabinet installation, ACH480-04**
The ACH480 drive modules have a compact size making them a perfect solution for HVACR OEMs and panel builders. Available in IP20 with optional UL Type 1 kit, with power range up to 22 kW.

**Wall-mounted drives, ACH580-01 and ACH580-31 ultra-low harmonic version**
ACH580 wall-mounted drives are available in IP21/UL Type 1 to IP55/UL Type 12 protection class with a power range up to 250 kW for ACH580-01 and up to 110 kW for ACH580-31 ultra-low harmonic variant. Drives offer side-by-side, flange, and horizontal mounting options.

The IP55/UL Type 12 variants are designed for applications exposed to dust, moisture, vibration, and other harsh conditions.

The ACH580-01 is a six-pulse drive that includes an optimized DC or AC choke for harmonic mitigation.

ACH580-31 ultra-low harmonic drives with embedded active front end and LCL filter keep the power network clean providing exceptionally low harmonic content. This brings improved reliability and increased energy savings, as well as extended equipment lifetime.

**Drive modules for cabinet installation, ACH580-04 and ACH580-34 ultra-low harmonic version**
ACH580 drive modules are perfect for system integrators, cabinet builders, and OEMs who want to optimize cabinet design using ACH580-04 in power range 250–500 kW or ACH580-34 ultra-low harmonic version in power range 132–355 kW and protection classes IP00 (UL Type Open) and IP20 (UL Type 1), without compromising on easy installation, commissioning and maintenance.

The ACH580-04 comes with a choke for harmonic mitigation and ACH580-34 has embedded active front end and LCL filter keeping harmonics to a minimum.

**Cabinet-built drives, ACH580-07**
Cabinet-built ACH580-07 drives are available in IP21 protection class as standard (UL Type 1) and optional IP42 (UL Type 1 Filtered) or IP54 (UL Type 12) in frame sizes R6 to R11. The drives feature an optimised cooling arrangement and a high-quality, global cabinet design. Available in a power range of 75–500 kW. ACH580-07 drives always have chokes for harmonic mitigation built-in.

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01

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# ACH480-04
## Compact drive for cabinet installations

- Take advantage of flexible, cost-optimised cabinet installation
- Uniform enclosure height and depth in all power sizes, DIN-rail and screw mounting, zero side clearance
- Platform reliability and robustness
- Comprehensive HVACR functionality inside

The ACH480-04 drive is designed for optimized cabinet installations. The uniform height and depth of all drives in the series saves valuable space in the cabinets, where the cabinet depth will not increase with higher drive powers.

Cabinet installations can be optimized further with the ability to share e.g. a single choke or control panel among all the drives in the cabinet.

### Protection for higher safety of the equipment and personnel

The UL Type 1 kit adds conduit box and dust hood to the standard ACH480-04 drive, making it possible to wall mount the ACH480 and comply with installation regulations in many parts of the world.

| Ordering code | Frame | Description |
|---|---|---|
| 3AXD50000176779 | R1 | Conduit box and a hood protecting from falling particles |
| 3AXD50000178780 | R2 | |
| 3AXD50000179220 | R3 | |
| 3AXD50000179336 | R4 | |

# ACH580-01
## All-in-one drive for wall mounting

- Take advantage of flexible, cabinet-free installation
- Save space and reduce overall costs
- Maintain process continuity in harsh conditions
- Minimize downtime and optimize HVACR operation

The ACH580-01 can be installed in normal equipment rooms, or even dusty and wet environments, thanks to the drive's wall mountable construction in both IP21 and IP55 protection classes. The robust and protective design with all built-in ensures that no additional enclosures or components, such as filters and fans, are needed.

## High protection for operation in harsh environments

The wall-mounted IP55 ACH580-01 drive is designed for applications exposed to dust, moisture and other harsh environments. It is similar in size to the compact IP21 drives, and provides significant savings in space, maintenance, engineering, material costs, as well as in setup and commissioning time.

| Option code | Description |
|---|---|
| +B056 | IP55/UL Type 12 Unit |

## Ready made accessories for simplified cabinet assembly

Installing ACH580-01 drive modules into Rittal VX25 cabinets is made easier with mechanical and electrical accessory kits. The ready made accessories will save time in design and building to ensure faster cabinet delivery. This will enable machine builders, system integrators and panel builders to built drive packages using their own cabinet design with ABB technology.

For more information and ordering details, please see manual supplement 3AXD50000523191.

## Main disconnect switch for increased safety

The main disconnect switch option allows to disconnect the drive from the main supply when needed. It saves time, money and space as it is integrated in the drive. There is no need to install external isolation devices to the supply side of the drive. The option improves safety as it is always visible, when operating on the drive.

An auxiliary contact allows signaling the switch position to a PLC to avoid unnecessary alarms. The switch can be padlocked to the open position to disable drive operation during e.g. maintenance.

The ACH580-01 IP55/UL Type 12 units can be ordered with an integrated main switch and/or EMC C1 filter (R1-R5). Having the EMC C1 filter embedded to the drive, there is no need to order, install and test it separately. The integrated filter is already tested with the drive and prewired so there is no need for additional cabling.

| Option code | Description |
|---|---|
| +B056 | IP55/UL Type 12 unit (R1-R9) |
| +F278 | Integrated main switch (R1-R5) |
| +E223 | Integrated C1 filter (R1-R5) |
| +F316 | Integrated main switch and C1 filter (R1-R5) |

## IP20 option without a conduit box for cabinet installations

The option removes the conduit box from ACH580-01 frames R5-R9, making it easier to install the drive in cabinets with limited space. These IP20 units optimize the installation from cost and dimensioning point of view, and reduce waste. The option is also compatible with the flange mounting option for ACH580-01 frames R5-R9.

| Option code | Description |
|---|---|
| +P944 | Conduit box removal (R5-R9) |

## Flange mounting

The ACH580-01 wall-mounted drive offers flange mounting as an option, separating the control electronics from the main circuit cooling airflow, saving space and ensuring optimal cooling. This results in better thermal management in panel installation. The flange mounting option enables smaller cabinets to be used as the backside of the drive is installed outside of the cabinet.

The option is compatible only with the standard IP21 units. It maintains the protection class of IP55 on the backside of the drive, while the front side of the drive is IP20. The option is also available as a loose item with an MRP code. If necessary, the conduit box can be removed from the frames R5-R9.

| Option code | Description |
|---|---|
| +C135 | Flange mounting |
| +P944 | Conduit box removal (R5-R9) |

# ACH580-04
## High power drive module for cabinet builders

- Compact drive module for cabinet mounting, saving floor space
- High power in compact size
- Easy installation, commissioning and maintenance with pedestal on wheels and ramp

ACH580-04 drive modules have been optimized for assembly into the customer's own cabinets to ensure high quality and compact installation at minimal cost.

Specifically designed for cabinet builders and systems integrators, the module variant is as standard IP00 but available as IP20 with additional finger shrouds.
For optimized cabinet usage, features include power input connections on the top of the module and power output on the bottom. The control unit can be installed inside or outside of the module, enabling free location of input/output terminals. The external control unit can be mounted separately into a SELV enclosure.

| Option code | Description |
|---|---|
| +B051 | IP20 / UL Type 1 finger shrouds for modules |
| +H370 | Full-size cable connection terminals for input power cables |
| +0H371 | Drive module without full-size output cable connection terminals |
| +0H354 | No pedestal |
| +0P919 | No cabinet installation ramp |
| +P906 | External control unit |

# ACH580-07

## Effortless process automation in a ready-made cabinet

- Easy to order with ready made standard design and variety of options
- Easy to maintain with effortlessly accessible and smartly positioned components
- EMC and thermal tested with certified results
- Adaptable to harsh environments with unique cooling system

The ACH580-07 drives are easy to use and maintain, and quickly available from the factory. An EMC filter, chokes, assistant control panel, Modbus RTU and BACnet MS/TP, STO and installation tools are included as standard, and in addition there are several options available to further fulfill your needs. Smartly positioned fans and filters ensure the longevity of the drive and its components. When it is time to do maintenance, the necessary components are in easily accessible locations. The simple and robust design ensures reliable operation even in harsh environments.

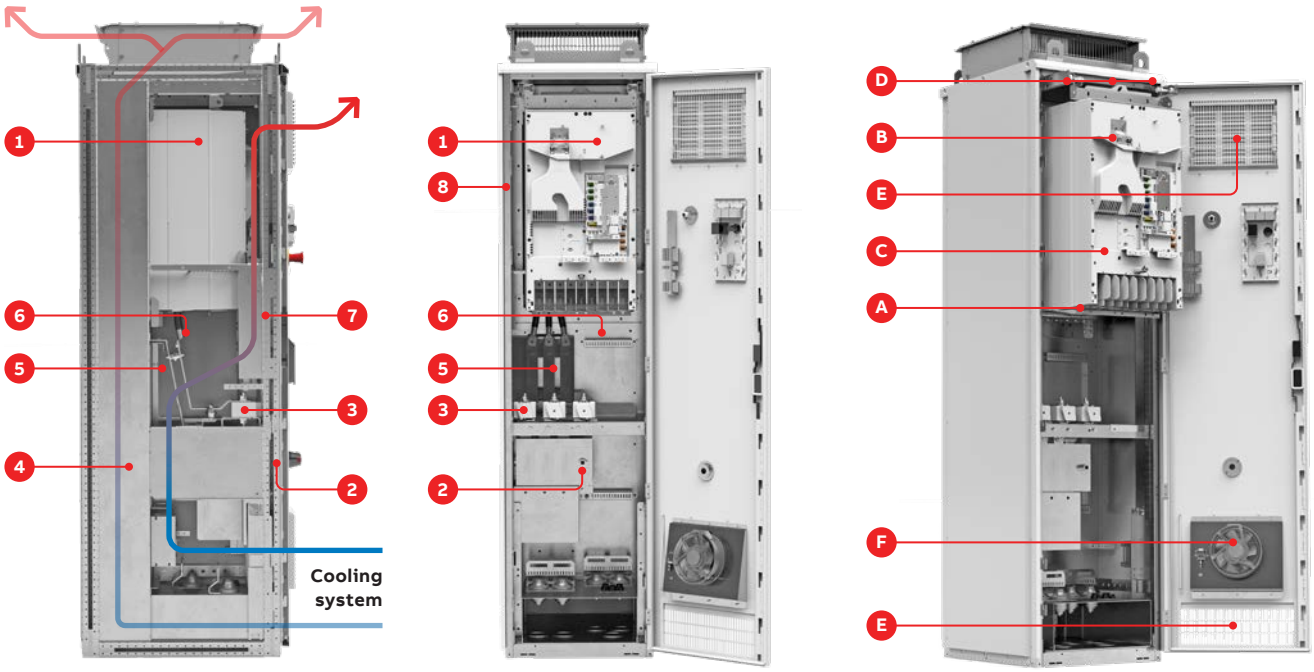
| Option code | Description |
|---|---|
| +B054 | IP42 / UL Type 1 filtered for cabinet-built drives |
| +B055 | IP54 UL Type 12 for cabinet-built drives |

Empty cabinet options are available to the customers who need additional space for installation of auxiliary devices such as PLCs, relays, filters, brake resistors or by-pass systems.
For more information, please contact your local ABB representative.

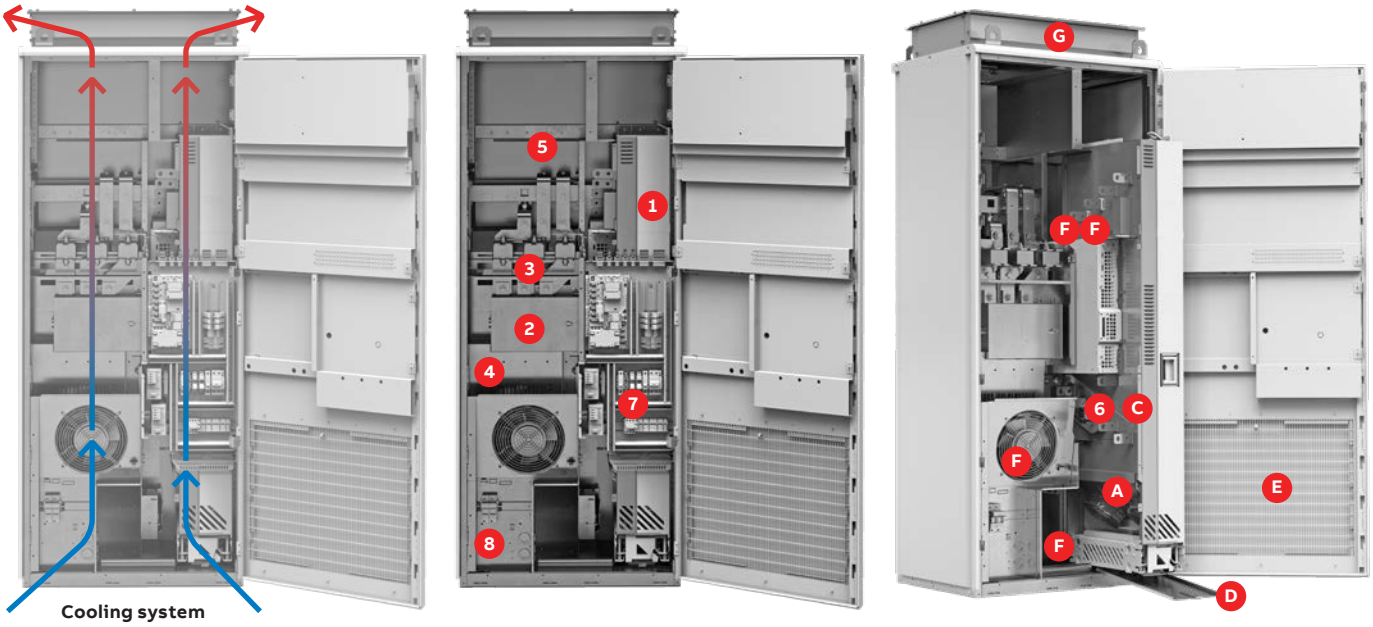
## Factory acceptance test (FAT)

To ensure that the cabinet solutions meet the specifications and the customer expectations, ABB offers to have a factory acceptance test (FAT) in our drives factory. Remote FAT or visual inspection is possible via online services.

## Frame sizes R6-R9




## Frame sizes R10-R11




**Cabinet components**

1. Module
2. Main switch or MCC8, option +F289
3. Fuses
4. Space for optional du/dt filter or cabinet resistors
5. Space for a line contactor option +F250
6. Common mode filter allocation
7. Space for safety, ATEX or external power supply options
8. Space for auxiliary motor fan starter options +M600...+M605

**Maintenance operation components**

**A** Main fans
**B** Auxiliary fans
**C** Capacitors (inside the module)
**D** Rails and ramp supporting maintenance operation
**E** Filters for dust and external components
**F** Other supporting fans for R10 and R11
**G** Roof top for R10 and R11 (only IP54)

# ACH580-31

## The benefits of a drive without the inconvenience of harmonics

- Full HVACR functionality with clean power supply (THDi less than 3%)
- No overdimensioned transformers, switchgears or cables
- Simple to install – three wires in, three wires out, no external hardware required
- Active braking feature for tunnel ventilation

ACH580-31 wall-mountable ultra-low harmonic drives have full HVACR functionality and harmonic content less than 3%. It helps to keep the supply clean and meets the standards effortlessly. Everything comes as one compact package – the drive is easy to install and requires no external hardware.

The drives can be installed in wet and dusty environments, with robust IP55 enclosure. Flange mounting option allows optimal cooling or space saving in compact cabinets.

| Option code | Description |
|---|---|
| +B056 | IP55 / UL Type 12 for wall-mounted drive |
| +C135 | Flange mounting |

# ACH580-34
## Exceptionally low harmonics in high power

- Optimized for cabinet builder needs
- High power in compact size and clean supply (THDi less than 3%)
- Easy installation and commissioning, no external filters needed
- Easy to maintain and service with pedestal on wheels and ramp

ACH580-34 ultra-low harmonic drive modules have been optimized for assembly into the customer's own cabinets to ensure high quality and compact installation at minimal cost. The drive module is available from 132 kW to 355 kW. Installation and maintenance is made easy with wheeled pedestal and ramp that allows moving the module in and outside of the cabinet.

The module variant is IP00 but available as IP20 with additional finger shrouds. The control unit can be installed inside or outside of the module, enabling free location of input/output terminals. The external control unit can be mounted separately into a SELV enclosure.

| Option code | Description |
|---|---|
| +B051 | IP20 / UL Type 1 finger shrouds for modules |
| +H370 | Full-size cable connection terminals for input power cables |
| +0H371 | Drive module without full-size output cable connection terminals |
| +0H354 | No pedestal |
| +0P919 | No cabinet installation ramp |
| +P906 | External control unit |

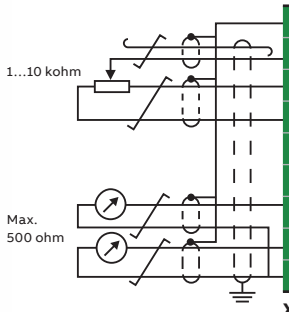
**Ready made accessories for simplified cabinet assembly**
Installing ACH580-34 drive modules into Rittal VX25 cabinets is made easier with mechanical and electrical accessory kits. The ready made accessories will save time in design and building to ensure faster cabinet delivery. This will enable machine builders, system integrators and panel builders to built drive packages using their own cabinet design with ABB technology.

For more information and ordering details, please see manual supplement 3AXD50000815838.

# ACH480 standard I/O interface

## Default control connections

1. Panel port (PC tools, control panel)
2. ABB drive customizer port for programming the drive without mains
3. Analog inputs (2 × AI)
4. Analog outputs (2 × AO)
5. 24 V DC output
6. Digital inputs (6 × DI)
7. Safe Torque Off (STO)
8. Embedded fieldbus
9. Communication (fieldbus) options (replace some I/O)
10. I/O options
11. Relay outputs (3 × RO)
12. Mains and motor connection




| Terminal | Meaning | Default macro connections | |
|---|---|---|---|
| **X1** | **Reference voltage and analog inputs and outputs** | | |
| 1 | SCR | Signal cable shield (screen) | |
| 2 | AI1 | Output frequency/speed reference: 0 to 10 V | |
| 3 | AGND | Analog input circuit common | |
| 4 | +10 V | Reference voltage 10 V DC | |
| 5 | AI2 | Actual feedback: 0...20 mA | |
| 6 | AGND | Analog input circuit common | |
| 7 | AO1 | Output frequency: 0 to 10 V | |
| 8 | AO2 | Motor current: 0...20 mA | |
| 9 | AGND | Analog output circuit common | |
| **X2 & X3** | **Aux. voltage output and programmable digital inputs** | | |
| 10 | +24 V | Aux. voltage output +24 V DC, max. 200 mA | |
| 11 | DGND | Aux. voltage output common | |
| 12 | DCOM | Digital input common for all | |
| 13 | DI1 | Stop (0)/Start (1) | |
| 14 | DI2 | Not configured | |
| 15 | DI3 | Constant frequency/speed selection | |
| 16 | DI4 | Start interlock 1 (1 = allow start) | |
| 17 | DI5 | Not configured | |
| 18 | DI6 | Not configured | |
| **X6, X7, X8** | **Relay outputs** | | |
| 19 | RO1C | **Damper control** 250 V AC/30 V DC 2 A | Energize damper 19 connected to 21 |
| 20 | RO1A | | |
| 21 | RO1B | | |
| 22 | RO2C | **Running** 250 V AC/30 V DC 2 A | Running 22 connected to 24 |
| 23 | RO2A | | |
| 24 | RO2B | | |
| 25 | RO3C | **Fault (-1)** 250 V AC/30 V DC 2 A | Fault condition 25 connected to 26 |
| 26 | RO3A | | |
| 27 | RO3B | | |
| **X5** | **Embedded fieldbus** | | |
| 29 | B+ | Embedded fieldbus (EIA-485): Modbus RTU, BACnet MS/TP, N2 | |
| 30 | A- | | |
| 31 | DGND | | |
| S100 | TERM&BIAS | Termination switch and bias resistor switch | |
| **X4** | **Safe Torque Off** | | |
| 34 | SGND | Safe Torque Off. Factory connection. Both circuits must be closed for the drive to start. See chapter The Safe Torque Off function in the Hardware manual of the drive. | |
| 35 | IN1 | | |
| 36 | IN2 | | |
| 37 | OUT1 | | |
| **X10** | **24 V AC/DC** | | |
| 42 | +24 V | Aux. voltage output, same supply as for terminal 10 *) | |
| 43 | DGND | Aux. voltage output common *) | |
| 44 | DCOM | Digital input common for all | |

Damper actuator

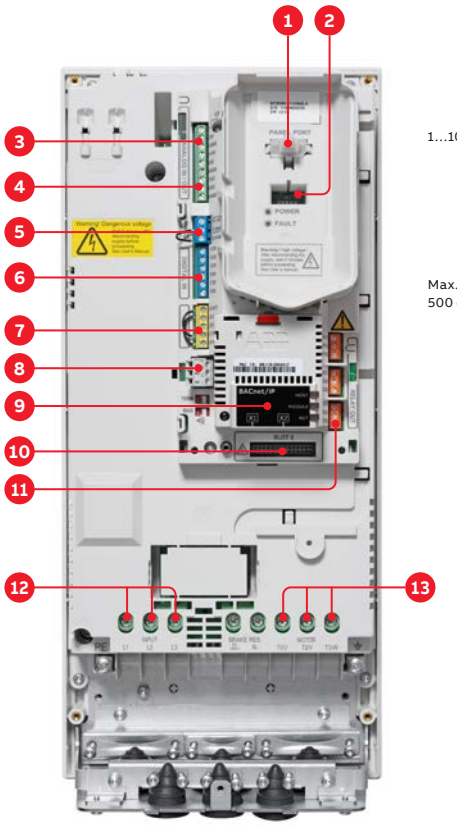
Run status

Fault status

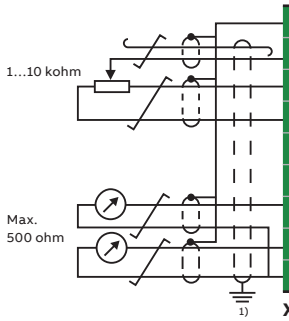
*) Terminals can be used as auxiliary voltage input with BAPO-01 option.

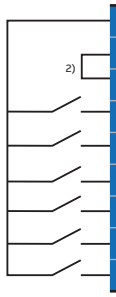
# ACH580 standard I/O interface

## Default control connections




1. Panel port (PC tools, control panel)
2. ABB drive customizer port for programming the drive without mains
3. Analog inputs (2 × AI)
4. Analog outputs (2 × AO)
5. 24 V DC output
6. Digital inputs (6 × DI)
7. Safe Torque Off (STO)
8. Embedded fieldbus
9. Communication options (fieldbuses)
10. I/O extensions
11. Relay outputs (3 × RO)
12. Mains connection
13. Motor connection




| Terminal | Meaning | Default connections | |
|---|---|---|---|
| **X1** | **Reference voltage and analog inputs and outputs** | | |
| 1 | SCR | Signal cable shield (screen) | |
| 2 | AI1 | Output frequency/speed reference: 0 to 10 V | |
| 3 | AGND | Analog input circuit common | |
| 4 | +10 V | Reference voltage 10 V DC | |
| 5 | AI2 | Actual feedback: 0 to 20 mA | |
| 6 | AGND | Analog input circuit common | |
| 7 | AO1 | Output frequency: 0 to 10 V | |
| 8 | AO2 | Motor current: 0 to 20 mA | |
| 9 | AGND | Analog output circuit common | |
| **X2 & X3** | **Aux. voltage output and programmable digital inputs** | | |
| 10 | +24 V | Aux. voltage output +24 V DC, max. 250 mA | |
| 11 | DGND | Aux. voltage output common | |
| 12 | DCOM | Digital input common for all | |
| 13 | DI1 | Stop (0)/Start (1) | |
| 14 | DI2 | Not configured | |
| 15 | DI3 | Constant frequency/speed selection | |
| 16 | DI4 | Start interlock 1 (1 = allow start) | |
| 17 | DI5 | Not configured | |
| 18 | DI6 | Not configured | |
| **X6, X7, X8** | **Relay outputs** | | |
| 19 | RO1C | **Damper control** 250 V AC/30 V DC 2 A | Energize damper 19 connected to 21 |
| 20 | RO1A | | |
| 21 | RO1B | | |
| 22 | RO2C | **Running** 250 V AC/30 V DC 2 A | Running 22 connected to 24 |
| 23 | RO2A | | |
| 24 | RO2B | | |
| 25 | RO3C | **Fault (-1)** 250 V AC/30 V DC 2 A | Fault condition 25 connected to 26 |
| 26 | RO3A | | |
| 27 | RO3B | | |
| **X5** | **Embedded fieldbus** | | |
| 29 | B+ | Embedded fieldbus (EIA-485): Modbus RTU, BACnet MS/TP, N2 | |
| 30 | A- | | |
| 31 | DGND | | |
| S4 | TERM | Termination switch | |
| S5 | BIAS | Bias resistors switch | |
| **X4** | **Safe Torque Off** | | |
| 34 | OUT1 | Safe Torque off. Factory connection. Both circuits must be closed for the drive to start. See chapter The Safe Torque Off function in the hardware manual of the drive. | |
| 35 | OUT2 | | |
| 36 | SGND | | |
| 37 | IN1 | | |
| 38 | IN2 | | |
| **X10** | **24 V AC/DC** | | |
| 40 | 24 V AC/DC+ in | R6 to R11 and all ACH580-31: Ext. 24 V AC/DC input to power up the control unit when the main supply is disconnected. | |
| 41 | 24 V AC/DC- in | | |

Damper actuator

Run status

Fault status

**Notes:**

1) Ground the outer shield of the cable 360° under the grounding clamp on the grounding shelf for the control cables.

2) Connected with jumpers at the factory.

# ABB AC drives comply with the EU Ecodesign requirements

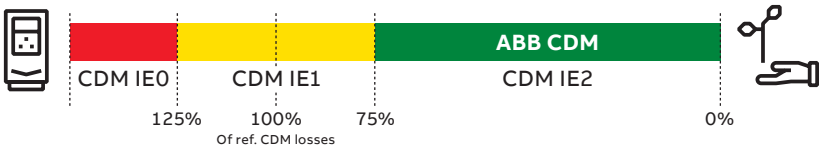
The Ecodesign regulation (EU) 2019/1781 is the legislative framework, that sets minimum energy efficiency requirements for low voltage induction motors and variable speed drives. AC drives and power drive systems are classified according to their power losses. From July 2021, the minimum requirement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

Losses compared to reference CDM *)

*) Complete drive module




### Markings on the ABB LV AC drives

Unique identifier QR code to Ecodesign information

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

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

### ABB EcoDesign web-based tool

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

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

**Step 1: July 1, 2021**
- Power range: from 0.12 to 1000 kW
- 3-phase LV AC drives with diode rectifier
- Drive manufacturers must declare power losses in percentage of the rated apparent output power at 8 different operating points as well as standby losses. The international IE level is given at the nominal point. Drives fulfilling the requirements will be CE marked.

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

**Step 2: July 1, 2023**
No changes for AC drives

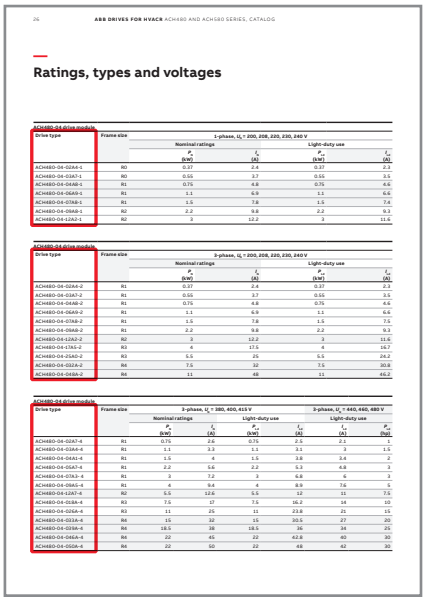
For more information, see: ecodesign.drivesmotors.abb.com

# How to select a drive

This is how you build up your own ordering code using the type designation key.

**Start by identifying your supply voltage.**
This tells you what rating table to use.
See pages 26, 27, 28 and 29.

**Select your drive's order code** from the rating table based on your motor's nominal power rating.


26 ABB DRIVES FOR HVACR ACH480 AND ACH580 SERIES, CATALOG

**Ratings, types and voltages**

ACH580-04 drive module

| Drive type | Frame size | 1-phase, $U_N$ = 200, 208, 220, 230, 240 V | | | |
|---|---|---|---|---|---|
| | | Nominal ratings | | Light-duty use | |
| | | $P_N$ (kW) | $I_N$ (A) | $P_{LD}$ (kW) | $I_{Ld}$ (A) |
| ACH580-04-02A4-1 | R0 | 0.37 | 2.4 | 0.37 | 2.3 |
| ACH580-04-03A7-1 | R0 | 0.55 | 3.7 | 0.55 | 3.5 |
| ACH580-04-06A8-1 | R1 | 0.75 | 4.8 | 0.75 | 4.6 |
| ACH580-04-08A8-1 | R1 | 1.1 | 6.9 | 1.1 | 6.6 |
| ACH580-04-07A8-1 | R1 | 1.5 | 7.8 | 1.5 | 7.4 |
| ACH580-04-09A8-1 | R2 | 2.2 | 9.8 | 2.2 | 9.3 |
| ACH580-04-12A2-1 | R2 | 3 | 12.2 | 3 | 11.6 |

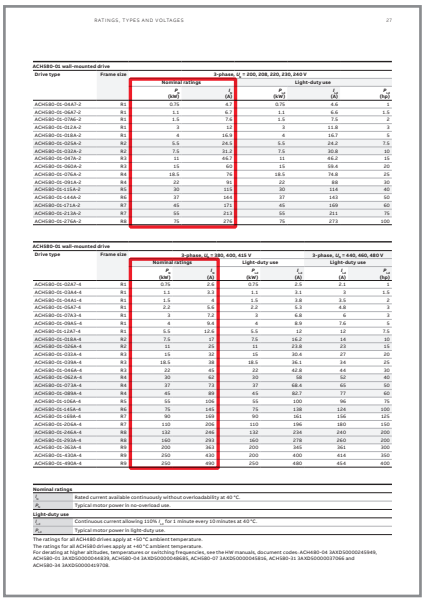
ACH580-04 drive module

| Drive type | Frame size | 3-phase, $U_N$ = 200, 208, 220, 230, 240 V | | | |
|---|---|---|---|---|---|
| | | Nominal ratings | | Light-duty use | |
| | | $P_N$ (kW) | $I_N$ (A) | $P_{LD}$ (kW) | $I_{Ld}$ (A) |
| ACH580-04-02A4-2 | R1 | 0.37 | 2.4 | 0.37 | 2.3 |
| ACH580-04-03A7-2 | R1 | 0.55 | 3.7 | 0.55 | 3.5 |
| ACH580-04-06A8-2 | R1 | 0.75 | 4.8 | 0.75 | 4.6 |
| ACH580-04-06A9-2 | R1 | 1.1 | 6.9 | 1.1 | 6.6 |
| ACH580-04-07A8-2 | R1 | 1.5 | 7.8 | 1.5 | 7.5 |
| ACH580-04-09A8-2 | R1 | 2.2 | 9.8 | 2.2 | 9.3 |
| ACH580-04-12A2-2 | R2 | 3 | 12.2 | 3 | 11.6 |
| ACH580-04-17A5-2 | R3 | 4 | 17.5 | 4 | 16.7 |
| ACH580-04-25A0-2 | R3 | 5.5 | 25 | 5.5 | 24.2 |
| ACH580-04-032A-2 | R4 | 7.5 | 32 | 7.5 | 30.8 |
| ACH580-04-048A-2 | R4 | 11 | 48 | 11 | 46.2 |

ACH580-04 drive module

| Drive type | Frame size | 3-phase, $U_N$ = 380, 400, 415 V | | | | 3-phase, $U_N$ = 440, 460, 480 V | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | Nominal ratings | | Light-duty use | | Light-duty use | | | |
| | | $P_N$ (kW) | $I_N$ (A) | $P_{LD}$ (kW) | $I_{Ld}$ (A) | $I_{Ld}$ (A) | $P_{LD}$ (hp) | | |
| ACH580-04-02A7-4 | R1 | 0.75 | 2.6 | 0.75 | 2.5 | 2.1 | 1 | | |
| ACH580-04-03A4-4 | R1 | 1.1 | 3.3 | 1.1 | 3.1 | 3 | 1.5 | | |
| ACH580-04-04A1-4 | R1 | 1.5 | 4 | 1.5 | 3.8 | 3.4 | 2 | | |
| ACH580-04-05A7-4 | R1 | 2.2 | 5.6 | 2.2 | 5.3 | 4.8 | 3 | | |
| ACH580-04-07A3-4 | R1 | 3 | 7.2 | 3 | 6.8 | 6 | 3 | | |
| ACH580-04-09A5-4 | R1 | 4 | 9.4 | 4 | 8.9 | 7.6 | 5 | | |
| ACH580-04-12A7-4 | R2 | 5.5 | 12.6 | 5.5 | 12 | 11 | 7.5 | | |
| ACH580-04-018A-4 | R3 | 7.5 | 17 | 7.5 | 16.2 | 14 | 10 | | |
| ACH580-04-026A-4 | R3 | 11 | 25 | 11 | 23.8 | 21 | 15 | | |
| ACH580-04-033A-4 | R4 | 15 | 32 | 15 | 30.5 | 27 | 20 | | |
| ACH580-04-039A-4 | R4 | 18.5 | 38 | 18.5 | 36 | 34 | 25 | | |
| ACH580-04-046A-4 | R4 | 22 | 45 | 22 | 42.8 | 40 | 30 | | |
| ACH580-04-060A-4 | R4 | 22 | 50 | 22 | 48 | 42 | 30 | | |

**Choose your motor's power and current rating** from the ratings tables on pages 26, 27, 28 and 29.


RATINGS, TYPES AND VOLTAGES 27

ACH580-01 wall-mounted drive

| Drive type | Frame size | 3-phase, $U_N$ = 200, 208, 220, 230, 240 V | | | | |
|---|---|---|---|---|---|---|
| | | Nominal ratings | | Light-duty use | | |
| | | $P_N$ (kW) | $I_N$ (A) | $P_{LD}$ (kW) | $I_{Ld}$ (A) | $P_{LD}$ (hp) |
| ACH580-01-04A7-2 | R1 | 0.75 | 4.7 | 0.75 | 4.6 | 1 |
| ACH580-01-06A7-2 | R1 | 1.1 | 6.7 | 1.1 | 6.6 | 1.5 |
| ACH580-01-07A6-2 | R1 | 1.5 | 7.6 | 1.5 | 7.5 | 2 |
| ACH580-01-012A-2 | R1 | 3 | 12 | 3 | 11.8 | 3 |
| ACH580-01-018A-2 | R1 | 4 | 16.9 | 4 | 16.7 | 5 |
| ACH580-01-025A-2 | R2 | 5.5 | 24.3 | 5.5 | 24.2 | 7.5 |
| ACH580-01-032A-2 | R2 | 7.5 | 31.2 | 7.5 | 30.8 | 10 |
| ACH580-01-047A-2 | R3 | 11 | 46.2 | 11 | 46.2 | 15 |
| ACH580-01-062A-2 | R3 | 15 | 60 | 15 | 59.4 | 20 |
| ACH580-01-076A-2 | R4 | 18.5 | 76 | 18.5 | 74.8 | 25 |
| ACH580-01-091A-2 | R4 | 22 | 91 | 22 | 88 | 30 |
| ACH580-01-114A-2 | R4 | 30 | 115 | 30 | 114 | 40 |
| ACH580-01-144A-2 | R4 | 37 | 144 | 37 | 143 | 50 |
| ACH580-01-171A-2 | R7 | 45 | 171 | 45 | 169 | 60 |
| ACH580-01-213A-2 | R7 | 55 | 213 | 55 | 211 | 75 |
| ACH580-01-276A-2 | R8 | 75 | 276 | 75 | 273 | 100 |

ACH580-01 wall-mounted drive

| Drive type | Frame size | 3-phase, $U_N$ = 380, 400, 415 V | | | | 3-phase, $U_N$ = 440, 460, 480 V | | |
|---|---|---|---|---|---|---|---|---|
| | | Nominal ratings | | Light-duty use | | Light-duty use | | |
| | | $P_N$ (kW) | $I_N$ (A) | $P_{LD}$ (kW) | $I_{Ld}$ (A) | $I_{Ld}$ (A) | $P_{LD}$ (hp) | |
| ACH580-01-02A7-4 | R1 | 0.75 | 2.6 | 0.75 | 2.5 | 2.1 | 1 | |
| ACH580-01-03A4-4 | R1 | 1.1 | 3.3 | 1.1 | 3.1 | 3 | 1.5 | |
| ACH580-01-04A1-4 | R1 | 1.5 | 4 | 1.5 | 3.8 | 3.5 | 2 | |
| ACH580-01-05A7-4 | R1 | 2.2 | 5.6 | 2.2 | 5.3 | 4.8 | 3 | |
| ACH580-01-07A3-4 | R1 | 3 | 7.2 | 3 | 6.8 | 6 | 3 | |
| ACH580-01-09A5-4 | R1 | 4 | 9.4 | 4 | 8.9 | 7.6 | 5 | |
| ACH580-01-12A7-4 | R2 | 5.5 | 12.6 | 5.5 | 12 | 12 | 7.5 | |
| ACH580-01-018A-4 | R2 | 7.5 | 17 | 7.5 | 16.2 | 14 | 10 | |
| ACH580-01-026A-4 | R3 | 11 | 25 | 11 | 23.8 | 23 | 15 | |
| ACH580-01-033A-4 | R3 | 15 | 32 | 15 | 30.4 | 27 | 20 | |
| ACH580-01-046A-4 | R3 | 22 | 45 | 22 | 42.8 | 44 | 30 | |
| ACH580-01-062A-4 | R4 | 30 | 62 | 30 | 59 | 52 | 40 | |
| ACH580-01-073A-4 | R4 | 37 | 73 | 37 | 68.4 | 65 | 50 | |
| ACH580-01-089A-4 | R4 | 45 | 89 | 45 | 82.7 | 77 | 60 | |
| ACH580-01-106A-4 | R5 | 55 | 106 | 55 | 100 | 96 | 75 | |
| ACH580-01-145A-4 | R6 | 75 | 145 | 75 | 138 | 124 | 100 | |
| ACH580-01-169A-4 | R7 | 90 | 169 | 90 | 161 | 156 | 125 | |
| ACH580-01-206A-4 | R7 | 110 | 206 | 110 | 196 | 180 | 150 | |
| ACH580-01-246A-4 | R8 | 132 | 246 | 132 | 234 | 240 | 200 | |
| ACH580-01-293A-4 | R8 | 160 | 293 | 160 | 278 | 260 | 200 | |
| ACH580-01-363A-4 | R9 | 200 | 363 | 200 | 345 | 361 | 300 | |
| ACH580-01-430A-4 | R9 | 250 | 430 | 200 | 400 | 414 | 350 | |
| ACH580-01-592A-4 | R9 | 250 | 490 | 250 | 480 | 454 | 400 | |

Nominal ratings

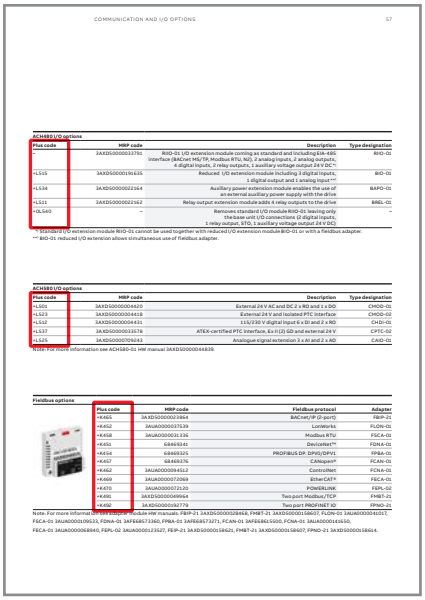
| | |
|---|---|
| $I_N$ | Rated current available continuously without overloadability at 40 °C. |
| $P_N$ | Typical motor power in no-overload use. |

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. |

The ratings for all ACH480 drives apply at +50 °C ambient temperature.
The ratings for all ACH580 drives apply at +40 °C ambient temperature.
For more information on the ratings, see the hardware manuals, document codes: ACH480-04 3AXD50000245949, ACH480-01 3AXD50000044839, ACH580-04 3AXD50000048635, ACH580-07 3AXD50000048635, ACH580-01 3AXD50000037068 and ACH580-34 3AXD50000419708.

**Choose your options** on pages 12-13, 15-16, 18-19, 47, 57, 65-71 and add the option codes to the drive's order code. Remember to use a "+" mark before each option code.


COMMUNICATION AND I/O OPTIONS 67

ACH580 I/O options

| Plus code | MRP code | Description | Type designation |
|---|---|---|---|
| – | 3AXD50000033791 | RIO0-01 I/O extension module coming as standard and including E14-485 interface (BACnet MS/TP, Modbus RTU, N2), 2 analog inputs, 2 analog outputs, 4 digital inputs, 2 relay outputs, 1 auxiliary voltage output 24 V DC*; | RIO-01 |
| +L515 | 3AXD50000196635 | Reduced I/O extension module including 3 digital inputs, 1 digital output and 1 analog input** | BIO-01 |
| +L534 | 3AXD50000022164 | Auxiliary power extension module enables the use of an external auxiliary power supply with the drive | BAPO-01 |
| +L511 | 3AXD50000022162 | Relay output extension module adds 4 relay outputs to the drive | BREL-01 |
| +0L540 | – | Removes standard I/O module RIO0-01 leaving only the base unit I/O connections (2 digital inputs, 1 relay output, STO, 1 auxiliary voltage output 24 V DC) | – |

* Standard I/O extension module RIO-01 cannot be used together with reduced I/O extension module BIO-01 or with a fieldbus adapter.
** BIO-01 reduced I/O extension allows simultaneous use of fieldbus adapter.

ACH580 I/O options

| Plus code | MRP code | Description | Type designation |
|---|---|---|---|
| +L501 | 3AXD50000044420 | External 24 V AC and DC 2 x RO and 1 x DO | CMOD-01 |
| +L523 | 3AXD50000044418 | External 24 V and isolated PTC interface | CMOD-02 |
| +L512 | 3AXD50000044431 | 115/230 V digital input 6 x DI and 2 x RO | CHDI-01 |
| +L537 | 3AXD50000051678 | ATEX-certified PTC interface, 0x (1) (2) GD and external 24 V | CPTC-02 |
| +L525 | 3AXD50000709243 | Analogue signal extension 3 x AI and 2 x AO | CAIO-01 |

Note: For more information see ACH580-01 HW manual 3AXD50000044839.

Fieldbus options

| Plus code | MRP code | Fieldbus protocol | Adapter |
|---|---|---|---|
| +K465 | 3AXD50000072864 | BACnet/IP (2-port) | FBIP-21 |
| +K452 | 3AUA0000037539 | LonWorks | FLON-01 |
| +K458 | 3AUA0000031336 | Modbus RTU | FSCA-01 |
| +K451 | 68469841 | DeviceNet™ | FDNA-01 |
| +K454 | 68469325 | PROFIBUS DP, DP-V0/DP-V1 | FPBA-01 |
| +K457 | 68469376 | CANopen® | FCAN-01 |
| +K462 | 3AUA0000054612 | ControlNet | FCNA-01 |
| +K469 | 3AUA0000072069 | EtherCAT® | FECA-01 |
| +K470 | 3AUA0000072120 | POWERLINK | FEPL-02 |
| +K491 | 3AXD50000049964 | Two port Modbus/TCP | FMBT-21 |
| +K492 | 3AXD50000092779 | Two port PROFINET IO | FPNO-21 |

Note: For more information see ACH580-01 HW manual. FBIP-21 3AXD50000038466, FMBT-21 3AXD50000158607, FLON-01 3AUA0000024017, FSCA-01 3AUA0000109533, FDNA-01 3AFE68573360, FPBA-01 3AFE68573271, FCAN-01 3AFE68615500, FCNA-01 3AUA0000141650, FECA-01 3AUA0000068940, FEPL-02 3AUA0000123527, FEIP-21 3AXD50000158621, FMBT-21 3AXD50000158607, FPNO-21 3AXD50000158614.

**Type designation example:**

| ACH580 | – | 0 | 1 | – | 03A3 | – | 4 | + | L501 |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | 3 | | 4 |

Product series ACH480 or ACH580
Type: 0 = standard, 1 = regen, 3 = ultra low harmonic
Construction: 1 = wall mounted, 4 = drive module, 7 = cabinet-built
Rating
Voltage: 1 = 1 ph 230 V, 2 = 3 ph 230 V, 4 = 3 ph 400 V
Options

# ACH480 technical data

| **Mains connection** | |
|---|---|
| **Input voltage and output power range** | 1-phase, $U_N$ 200 to 240 V, +10%/-15% from 0.37 up to 3 kW<br>3-phase, $U_N$ 200 to 240 V, +10%/-15% from 0.37 up to 11 kW<br>3-phase, $U_N$ 380 to 480 V, +10%/-15% from 0.75 up to 22 kW |
| **Frequency** | 48 to 63 Hz |
| **Power factor** | 0.98 |
| **Efficiency class (IEC 61800-9-2)** | IE2 |
| **Motor connection** | |
| **Voltage** | 0 to $U_N$, 3-phase |
| **Frequency** | 0 to 500 Hz |
| **Motor control** | Scalar and vector |
| **Supported motor types** | Asynchronous, permanent magnet, synchronous reluctance, permanent magnet assisted synchronous reluctance |
| **Environmental limits** | |
| **Transportation and storage temperature** | -40 to +70 °C |
| **Operation temperature** | -10 to +60 °C<br>(from +50 to +60 °C with derating) |
| **Relative humidity** | 5 to 95% no condensation allowed |
| **Altitude** | Rated current available at 0 to 1000 m<br>Reduced by 1% per 100 m over 1000 m up to 4000 m |
| **Degree of protection** | IP20<br>UL Type 1 as option |
| **Contamination level** | Operation at Class 3C2, Class 3S2 according to IEC 60721-3-3<br>Transportation at Class 2C2, Class 2S2 according to IEC 60721-3-3<br>Storage at Class 1C2, Class 1S2 according to IEC 60721-3-3 |
| **Inputs and outputs (standard configuration)** | |
| **2 analog inputs** | Selection of Current/Voltage input mode is user programmable. |
| **Voltage signal** | 0 (2) to 10 V, $R_{in}$ > 200 kΩ |
| **Current signal** | 0 (4) to 20 mA, $R_{in}$ = 137 Ω |
| **Potentiometer reference value** | 10 V ±1% max. 10 mA |
| **2 analog outputs** | AO1 is user programmable for current or voltage.<br>AO2 current |
| **Voltage signal** | 0 to 10 V, $R_{load}$: >200 kΩ |
| **Current signal** | 0 to 20 mA, $R_{load}$: <500 Ω |
| **Internal auxiliary voltage** | 24 V DC ±10%, max. 200 mA |
| **6 digital inputs** | 12 to 24 V DC, 24 V AC. PNP or NPN connection (5 DIs with NPN connection). |
| **3 relay outputs** | Maximum switching voltage 250 V AC/30 V DC<br>Maximum continuous current 2 A rms |
| **Supported thermistors** | Any of the analog inputs are configurable for PTC.<br>Both analog outputs can be used to feed the PT100, PT1000, KTY83, KTY84 or Ni1000 sensors. |
| **External power supply** | 1.04 A at 24 V AC/DC ±10% as option |

| **Communication** |
|---|
| Protocols as standard (EIA-485): BACnet MS/TP, Modbus RTU and N2.<br>Available as 2-port plug-in options: BACnet/IP, Modbus TCP, PROFINET IO, EtherNet/IP, EtherCAT, EtherNet POWERLINK.<br>Available as plug-in options: CANopen, DeviceNet, Profibus DP.<br>Available as an external 2-port option: EtherNet adapter for remote monitoring. |
| **Application functions** |
| First start assistant<br>Primary settings for HVACR applications<br>Hand-Off-Auto operation mode<br>Start interlock (de-frost)<br>Delayed start<br>Run permissive (damper monitoring)<br>Override operation mode<br>Intelligent pump control<br>Pump dry run protection<br>Air filter monitoring<br>Real-time clock (scheduling)<br>Resonance monitoring<br>PID controllers for motor and process<br>Motor flying start<br>Motor preheating<br>Energy optimizer and calculators |
| **Protection functions** |
| Overvoltage controller<br>Undervoltage controller<br>Motor and motor cable earth-leakage monitoring<br>Motor and motor cable short-circuit protection<br>Motor overtemperature protection<br>Output and input switch supervision<br>Motor overload protection<br>Phase-loss detection (both motor and supply)<br>Under load supervision (belt loss detection)<br>Overload supervision<br>Stall protection<br>Loss of control reference |
| **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<br>Quality assurance system ISO 9001 and Environmental system ISO 14001<br>Waste electrical and electronic equipment directive (WEEE) 2002/96/EC<br>Galvanic isolation according to PELV<br>UL, EAC, RCM, cUL<br>TÜV Nord (safety functions)<br>UKCA<br>Ecodesign (EU) 2019/1781 |
| **Harmonics compliance** |
| Compliance with IEC 61000-3-12:2011 with external chokes |
| **EMC compliance** |
| EMC according to IEC 61800-3:2004 + A1:2012<br>Class C2 as standard<br>Class C1 with external factory tested filter as option |
| **Functional safety** |
| STO according to EN 61800-5-2:2016, IEC 61508 Parts 1-2:2010, ISO 13849-1:2015, ISO 13849-2:2012, IEC 62061:2015<br>SIL 3/PL e |

# ACH580 technical data

| | |
|---|---|
| **Mains connection** | |
| **Input voltage and output power range** | 3-phase, $U_N$ 200 to 240 V, +10%/-15%<br>ACH580-01: from 0.75 up to 75 kW<br>3-phase, $U_N$ 380 to 480 V, +10%/-15%<br>ACH580-01: from 0.75 up to 250 kW<br>ACH580-31: from 4 to 110 kW<br>ACH580-34: from 132 to 355 kW<br>3-phase, UN 380 to 480 V, +10%/-10%<br>ACH580-04: from 250 up to 500 kW<br>ACH580-07: from 75 up to 500 kW |
| **Frequency** | 48 to 63 Hz |
| **Power factor ACH580-01, ACH580-04 and ACH580-07** | 0.98 |
| **Power factor ACH580-31 and ACH580-34** | 1.0 |
| **Efficiency class (IEC 61800-9-2) ACH580-01, ACH580-04, ACH580-07** | IE2 |
| **Motor connection** | |
| **Voltage** | 0 to $U_N$, 3-phase |
| **Frequency** | 0 to 598 Hz |
| **Motor control** | Scalar and vector |
| **Supported motor types** | Asynchronous, permanent magnet, synchronous reluctance, permanent magnet assisted synchronous reluctance |
| **Environmental limits** | |
| **Transportation and storage temperature** | -40 to +70 °C |
| **Operation temperature** | ACH580-01, ACH580-31, ACH580-04 and ACH580-34: -15 to +50 °C (from +40 to +50 °C with derating)<br>ACH580-07: 0 to +50 °C (from +40 to +50 °C with derating) |
| **Relative humidity** | 5 to 95 % no condensation allowed |
| **Altitude** | Rated current available at 0 to 1000 m<br>Reduced by 1% per 100 m over 1000 m up to 4000 m |
| **Degree of protection** | ACH580-01 and ACH580-31: IP21 (UL Type 1) or IP55 (UL Type 12)<br>ACH580-04 and ACH580-34: IP00 (UL Type Open) or IP20 (UL Type 1)<br>ACH580-07: IP21 (UL Type 1), IP42 (UL Type 1 Filtered) or IP54 (UL Type 12) |
| **Contamination level** | Operation:<br>IEC 60721-3-3:2019 and ISO9223: ANSI-ISA 71.04<br>Chemical gases:<br>IEC Class C3, ANSI G2 for IP21 base drive<br>IEC Class C4, ANSI G3/GX up to 2300 Å /30d corrosivity for IP55 drive<br>Solid particles:<br>Class 3S6, no conductive dust allowed<br>Storage:<br>IEC 60721-3-1:2018<br>Chemical gases: Class 1C2<br>Solid particles: Class 1S3 (packaging must be Class 2S2, otherwise this is 1S2)<br>Transportation:<br>IEC 60721-3-2:2018<br>Chemical gases: Class 2C2<br>Solid particles: Class 2S2 |
| **Inputs and outputs (standard configuration)** | |
| **2 analog inputs** | Selection of Current/Voltage input mode is user programmable. |
| **Voltage signal** | 0 (2) to 10 V, $R_{in}$ >200 kΩ |
| **Current signal** | 0 (4) to 20 mA, $R_{in}$ = 100 Ω |
| **Potentiometer reference value** | 10 V ±1% max. 20 mA |
| **2 analog outputs** | AO1 is user programmable for current or voltage.<br>AO2 current |
| **Voltage signal** | 0 to 10 V, $R_{load}$: >100 kΩ |
| **Current signal** | 0 to 20 mA, $R_{load}$: < 500 Ω |
| **Internal auxiliary voltage** | 24 V DC ±10%, max. 250 mA |
| **6 digital inputs** | 12 to 24 V DC, 24 V AC, Connectivity of PTC sensors supported by a single digital input. PNP or NPN connection (5 DIs with NPN connection). |
| **3 relay outputs** | Maximum switching voltage 250 V AC/30 V DC<br>Maximum continuous current 2 A rms |
| **Supported thermistors** | Any of the analog inputs, or digital input 6, are configurable for PTC with up to 6 sensors.<br>Both analog outputs can be used to feed the PT100, PT1000, KTY83, KTY84 or Ni1000 sensors. |
| **External power supply** | |
| **Standard:** | |
| ACH580-01 frames R6-R9, ACH580-04 all frames, ACH580-07 all frames, ACH580-31 all frames, ACH580-34 all frames | 1.5 A at 24 V AC/DC ±10% |
| **With option:** | |
| ACH580-01 frames R1-R5 | 1.04 A at 24 V AC/DC ±10% |

**Communication**

Protocols as standard (EIA-485): BACnet MS/TP, Modbus RTU and N2.
Available as 2-port plug-in options: BACnet/IP, Modbus TCP, PROFINET IO, EtherNet/IP, EtherCAT, EtherNet POWERLINK.
Available as plug-in options: CANopen, DeviceNet, LonWorks, Profibus DP.
Available as an external 2-port option: EtherNet adapter for remote monitoring.

**Application functions**

First start assistant
Primary settings for HVACR applications
Hand-Off-Auto operation mode
Start interlock (de-frost)
Delayed start
Run permissive (damper monitoring)
Override operation mode
Intelligent pump control
Pump dry run protection
Air filter monitoring
Real-time clock (scheduling)
Active braking for tunnel ventilation (ACH580-31/34)
Resonance monitoring
PID controllers for motor and process
Motor flying start
Motor preheating
Energy optimizer and calculators

**Protection functions**

Overvoltage controller
Undervoltage controller
Motor and motor cable earth-leakage monitoring
Motor and motor cable short-circuit protection
Motor overtemperature protection
Output and input switch supervision
Motor overload protection
Phase-loss detection (both motor and supply)
Under load supervision (belt loss detection)
Overload supervision
Stall protection
Loss of control reference

**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
Quality assurance system ISO 9001 and
Environmental system ISO 14001
Waste electrical and electronic equipment directive (WEEE) 2002/96/EC
Galvanic isolation according to PELV
UL, EAC, RCM, cUL
TÜV Nord (safety functions)
UKCA
Ecodesign (EU) 2019/1781
IEC 60335-2-40:2022 Safety requirements for electrical heat pumps, air-conditioners and dehumidifiers

**Harmonics compliance**

Built-in optimized DC choke as standard in ACH580-01/04/07 meets the requirements of IEC 61000-3-12:2011.
ACH580-31/34 with active front-end helps system to comply with IEEE519 and G5/4 requirements.

**EMC compliance**

EMC according to IEC 61800-3:2004 + A1:2012
Class C1 with built-in filter as option for ACH580-01 up to 55 kW
Class C2 as standard for ACH580-01/31
Class C3 as standard for ACH580-04/34 and ACH580-07

**Functional safety**

STO according to EN 61800-5-2:2016, IEC 61508 Parts 1-2:2010, ISO 13849-1:2015, ISO 13849-2:2012, IEC 62061:2015
SIL 3/PL e

# Ratings, types and voltages

| ACH480-04 drive module | | | | | |
|---|---|---|---|---|---|
| **Drive type** | **Frame size** | **1-phase, $U_N$ = 200, 208, 220, 230, 240 V** | | | |
| | | **Nominal ratings** | | **Light-duty use** | |
| | | **$P_N$ (kW)** | **$I_N$ (A)** | **$P_{Ld}$ (kW)** | **$I_{Ld}$ (A)** |
| ACH480-04-02A4-1 | R0 | 0.37 | 2.4 | 0.37 | 2.3 |
| ACH480-04-03A7-1 | R0 | 0.55 | 3.7 | 0.55 | 3.5 |
| ACH480-04-04A8-1 | R1 | 0.75 | 4.8 | 0.75 | 4.6 |
| ACH480-04-06A9-1 | R1 | 1.1 | 6.9 | 1.1 | 6.6 |
| ACH480-04-07A8-1 | R1 | 1.5 | 7.8 | 1.5 | 7.4 |
| ACH480-04-09A8-1 | R2 | 2.2 | 9.8 | 2.2 | 9.3 |
| ACH480-04-12A2-1 | R2 | 3 | 12.2 | 3 | 11.6 |

| ACH480-04 drive module | | | | | |
|---|---|---|---|---|---|
| **Drive type** | **Frame size** | **3-phase, $U_N$ = 200, 208, 220, 230, 240 V** | | | |
| | | **Nominal ratings** | | **Light-duty use** | |
| | | **$P_N$ (kW)** | **$I_N$ (A)** | **$P_{Ld}$ (kW)** | **$I_{Ld}$ (A)** |
| ACH480-04-02A4-2 | R1 | 0.37 | 2.4 | 0.37 | 2.3 |
| ACH480-04-03A7-2 | R1 | 0.55 | 3.7 | 0.55 | 3.5 |
| ACH480-04-04A8-2 | R1 | 0.75 | 4.8 | 0.75 | 4.6 |
| ACH480-04-06A9-2 | R1 | 1.1 | 6.9 | 1.1 | 6.6 |
| ACH480-04-07A8-2 | R1 | 1.5 | 7.8 | 1.5 | 7.5 |
| ACH480-04-09A8-2 | R1 | 2.2 | 9.8 | 2.2 | 9.3 |
| ACH480-04-12A2-2 | R2 | 3 | 12.2 | 3 | 11.6 |
| ACH480-04-17A5-2 | R3 | 4 | 17.5 | 4 | 16.7 |
| ACH480-04-25A0-2 | R3 | 5.5 | 25 | 5.5 | 24.2 |
| ACH480-04-032A-2 | R4 | 7.5 | 32 | 7.5 | 30.8 |
| ACH480-04-048A-2 | R4 | 11 | 48 | 11 | 46.2 |

| ACH480-04 drive module | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Drive type** | **Frame size** | **3-phase, $U_N$ = 380, 400, 415 V** | | | | **3-phase, $U_N$ = 440, 460, 480 V** | |
| | | **Nominal ratings** | | **Light-duty use** | | **Light-duty use** | |
| | | **$P_N$ (kW)** | **$I_N$ (A)** | **$P_{Ld}$ (kW)** | **$I_{Ld}$ (A)** | **$I_{Ld}$ (A)** | **$P_{Ld}$ (hp)** |
| ACH480-04-02A7-4 | R1 | 0.75 | 2.6 | 0.75 | 2.5 | 2.1 | 1 |
| ACH480-04-03A4-4 | R1 | 1.1 | 3.3 | 1.1 | 3.1 | 3 | 1.5 |
| ACH480-04-04A1-4 | R1 | 1.5 | 4 | 1.5 | 3.8 | 3.4 | 2 |
| ACH480-04-05A7-4 | R1 | 2.2 | 5.6 | 2.2 | 5.3 | 4.8 | 3 |
| ACH480-04-07A3- 4 | R1 | 3 | 7.2 | 3 | 6.8 | 6 | 3 |
| ACH480-04-09A5-4 | R1 | 4 | 9.4 | 4 | 8.9 | 7.6 | 5 |
| ACH480-04-12A7-4 | R2 | 5.5 | 12.6 | 5.5 | 12 | 11 | 7.5 |
| ACH480-04-018A-4 | R3 | 7.5 | 17 | 7.5 | 16.2 | 14 | 10 |
| ACH480-04-026A-4 | R3 | 11 | 25 | 11 | 23.8 | 21 | 15 |
| ACH480-04-033A-4 | R4 | 15 | 32 | 15 | 30.5 | 27 | 20 |
| ACH480-04-039A-4 | R4 | 18.5 | 38 | 18.5 | 36 | 34 | 25 |
| ACH480-04-046A-4 | R4 | 22 | 45 | 22 | 42.8 | 40 | 30 |
| ACH480-04-050A-4 | R4 | 22 | 50 | 22 | 48 | 42 | 30 |

**ACH580-01 wall-mounted drive**

| Drive type | Frame size | 3-phase, $U_N$ = 200, 208, 220, 230, 240 V | | | | |
|---|---|---|---|---|---|---|
| | | Nominal ratings | | Light-duty use | | |
| | | $P_N$ (kW) | $I_N$ (A) | $P_{Ld}$ (kW) | $I_{Ld}$ (A) | $P_{Ld}$ (hp) |
| ACH580-01-04A7-2 | R1 | 0.75 | 4.7 | 0.75 | 4.6 | 1 |
| ACH580-01-06A7-2 | R1 | 1.1 | 6.7 | 1.1 | 6.6 | 1.5 |
| ACH580-01-07A6-2 | R1 | 1.5 | 7.6 | 1.5 | 7.5 | 2 |
| ACH580-01-012A-2 | R1 | 3 | 12 | 3 | 11.8 | 3 |
| ACH580-01-018A-2 | R1 | 4 | 16.9 | 4 | 16.7 | 5 |
| ACH580-01-025A-2 | R2 | 5.5 | 24.5 | 5.5 | 24.2 | 7.5 |
| ACH580-01-032A-2 | R2 | 7.5 | 31.2 | 7.5 | 30.8 | 10 |
| ACH580-01-047A-2 | R3 | 11 | 46.7 | 11 | 46.2 | 15 |
| ACH580-01-060A-2 | R3 | 15 | 60 | 15 | 59.4 | 20 |
| ACH580-01-076A-2 | R4 | 18.5 | 76 | 18.5 | 74.8 | 25 |
| ACH580-01-091A-2 | R4 | 22 | 91 | 22 | 88 | 30 |
| ACH580-01-115A-2 | R5 | 30 | 115 | 30 | 114 | 40 |
| ACH580-01-144A-2 | R6 | 37 | 144 | 37 | 143 | 50 |
| ACH580-01-171A-2 | R7 | 45 | 171 | 45 | 169 | 60 |
| ACH580-01-213A-2 | R7 | 55 | 213 | 55 | 211 | 75 |
| ACH580-01-276A-2 | R8 | 75 | 276 | 75 | 273 | 100 |

**ACH580-01 wall-mounted drive**

| Drive type | Frame size | 3-phase, $U_N$ = 380, 400, 415 V | | | | 3-phase, $U_N$ = 440, 460, 480 V | |
|---|---|---|---|---|---|---|---|
| | | Nominal ratings | | Light-duty use | | Light-duty use | |
| | | $P_N$ (kW) | $I_N$ (A) | $P_{Ld}$ (kW) | $I_{Ld}$ (A) | $I_{Ld}$ (A) | $P_{Ld}$ (hp) |
| ACH580-01-02A7-4 | R1 | 0.75 | 2.6 | 0.75 | 2.5 | 2.1 | 1 |
| ACH580-01-03A4-4 | R1 | 1.1 | 3.3 | 1.1 | 3.1 | 3 | 1.5 |
| ACH580-01-04A1-4 | R1 | 1.5 | 4 | 1.5 | 3.8 | 3.5 | 2 |
| ACH580-01-05A7-4 | R1 | 2.2 | 5.6 | 2.2 | 5.3 | 4.8 | 3 |
| ACH580-01-07A3-4 | R1 | 3 | 7.2 | 3 | 6.8 | 6 | 3 |
| ACH580-01-09A5-4 | R1 | 4 | 9.4 | 4 | 8.9 | 7.6 | 5 |
| ACH580-01-12A7-4 | R1 | 5.5 | 12.6 | 5.5 | 12 | 12 | 7.5 |
| ACH580-01-018A-4 | R2 | 7.5 | 17 | 7.5 | 16.2 | 14 | 10 |
| ACH580-01-026A-4 | R2 | 11 | 25 | 11 | 23.8 | 23 | 15 |
| ACH580-01-033A-4 | R3 | 15 | 32 | 15 | 30.4 | 27 | 20 |
| ACH580-01-039A-4 | R3 | 18.5 | 38 | 18.5 | 36.1 | 34 | 25 |
| ACH580-01-046A-4 | R3 | 22 | 45 | 22 | 42.8 | 44 | 30 |
| ACH580-01-062A-4 | R4 | 30 | 62 | 30 | 58 | 52 | 40 |
| ACH580-01-073A-4 | R4 | 37 | 73 | 37 | 68.4 | 65 | 50 |
| ACH580-01-089A-4 | R4 | 45 | 89 | 45 | 82.7 | 77 | 60 |
| ACH580-01-106A-4 | R5 | 55 | 106 | 55 | 100 | 96 | 75 |
| ACH580-01-145A-4 | R6 | 75 | 145 | 75 | 138 | 124 | 100 |
| ACH580-01-169A-4 | R7 | 90 | 169 | 90 | 161 | 156 | 125 |
| ACH580-01-206A-4 | R7 | 110 | 206 | 110 | 196 | 180 | 150 |
| ACH580-01-246A-4 | R8 | 132 | 246 | 132 | 234 | 240 | 200 |
| ACH580-01-293A-4 | R8 | 160 | 293 | 160 | 278 | 260 | 200 |
| ACH580-01-363A-4 | R9 | 200 | 363 | 200 | 345 | 361 | 300 |
| ACH580-01-430A-4 | R9 | 250 | 430 | 200 | 400 | 414 | 350 |
| ACH580-01-490A-4 | R9 | 250 | 490 | 250 | 480 | 454 | 400 |

| **Nominal ratings** | |
|---|---|
| $I_N$ | Rated current available continuously without overloadability 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. |

The ratings for all ACH480 drives apply at +50 °C ambient temperature.
The ratings for all ACH580 drives apply at +40 °C ambient temperature.
For derating at higher altitudes, temperatures or switching frequencies, see the HW manuals, document codes: ACH480-04 3AXD50000245949, ACH580-01 3AXD50000044839, ACH580-04 3AXD50000048685, ACH580-07 3AXD50000045816, ACH580-31 3AXD50000037066 and ACH580-34 3AXD50000419708.

# Ratings, types and voltages

**ACH580-04 drive module**

| Drive type | Frame size | 3-phase, $U_N$ = 380, 400, 415 V | | | | 3-phase, $U_N$ = 440, 460, 480 V | |
|---|---|---|---|---|---|---|---|
| | | Nominal ratings | | Light-duty use | | Light-duty use | |
| | | $P_N$ (kW) | $I_N$ (A) | $P_{Ld}$ (kW) | $I_{Ld}$ (A) | $I_{Ld}$ (A) | $P_{Ld}$ (hp) |
| ACH580-04-505A-4 | R10 | 250 | 505 | 250 | 485 | 483 | 400 |
| ACH580-04-585A-4 | R10 | 315 | 585 | 315 | 575 | 573 | 450 |
| ACH580-04-650A-4 | R10 | 355 | 650 | 355 | 634 | 623 | 500 |
| ACH580-04-725A-4 | R11 | 400 | 725 | 400 | 715 | 705 | 600 |
| ACH580-04-820A-4 | R11 | 450 | 820 | 450 | 810 | 807 | 700 |
| ACH580-04-880A-4 | R11 | 500 | 880 | 500 | 865 | 807 | 700 |

**ACH580-07 cabinet-built drive**

| Drive type | Frame size | 3-phase, $U_N$ = 380, 400, 415 V | | | | 3-phase, $U_N$ = 440, 460, 480 V | |
|---|---|---|---|---|---|---|---|
| | | Nominal ratings | | Light-duty use | | Light-duty use | |
| | | $P_N$ (kW) | $I_N$ (A) | $P_{Ld}$ (kW) | $I_{Ld}$ (A) | $I_{Ld}$ (A) | $P_{Ld}$ (hp) |
| ACH580-07-145A-4 | R6 | 75 | 145 | 75 | 138 | 124 | 100 |
| ACH580-07-169A-4 | R7 | 90 | 169 | 90 | 161 | 156 | 125 |
| ACH580-07-206A-4 | R7 | 110 | 206 | 110 | 196 | 180 | 150 |
| ACH580-07-246A-4 | R8 | 132 | 246 | 132 | 234 | 240 | 200 |
| ACH580-07-293A-4 | R8 | 160 | 293 | 160 | 278 | 260 | 200 |
| ACH580-07-363A-4 | R9 | 200 | 363 | 200 | 345 | 361 | 300 |
| ACH580-07-430A-4 | R9 | 250 | 430 | 200 | 400 | 414 | 350 |
| ACH580-07-505A-4 | R10 | 250 | 505 | 250 | 485 | 483 | 400 |
| ACH580-07-585A-4 | R10 | 315 | 585 | 315 | 575 | 573 | 450 |
| ACH580-07-650A-4 | R10 | 355 | 650 | 355 | 634 | 623 | 500 |
| ACH580-07-725A-4 | R11 | 400 | 725 | 400 | 715 | 705 | 600 |
| ACH580-07-820A-4 | R11 | 450 | 820 | 450 | 810 | 807 | 700 |
| ACH580-07-880A-4 | R11 | 500 | 880 | 500 | 865 | 807 | 700 |

**ACH580-31 ultra-low harmonic wall-mounted drive**

| Drive type | Frame size | 3-phase, $U_N$ = 380, 400, 415 V | | | | 3-phase, $U_N$ = 440, 460, 480 V | |
|---|---|---|---|---|---|---|---|
| | | Nominal ratings | | Light-duty use | | Light-duty use | |
| | | $P_N$ (kW) | $I_N$ (A) | $P_{Ld}$ (kW) | $I_{Ld}$ (A) | $I_{Ld}$ (A) | $P_{Ld}$ (hp) |
| ACH580-31-09A5-4 | R3 | 4 | 9.4 | 4 | 8.9 | 7.6 | 5 |
| ACH580-31-12A7-4 | R3 | 5.5 | 12.6 | 5.5 | 12 | 12 | 7.5 |
| ACH580-31-018A-4 | R3 | 7.5 | 17 | 7.5 | 16.2 | 14 | 10 |
| ACH580-31-026A-4 | R3 | 11 | 25 | 11 | 23.8 | 23 | 15 |
| ACH580-31-033A-4 | R6 | 15 | 32 | 15 | 30 | 27 | 20 |
| ACH580-31-039A-4 | R6 | 18.5 | 38 | 18.5 | 36 | 34 | 25 |
| ACH580-31-046A-4 | R6 | 22 | 45 | 22 | 43 | 44 | 30 |
| ACH580-31-062A-4 | R6 | 30 | 62 | 30 | 59 | 52 | 40 |
| ACH580-31-073A-4 | R6 | 37 | 73 | 37 | 69 | 65 | 50 |
| ACH580-31-088A-4 | R6 | 45 | 88 | 45 | 84 | 77 | 60 |
| ACH580-31-106A-4 | R8 | 55 | 106 | 55 | 101 | 96 | 75 |
| ACH580-31-145A-4 | R8 | 75 | 145 | 75 | 138 | 124 | 100 |
| ACH580-31-169A-4 | R8 | 90 | 169 | 90 | 161 | 156 | 125 |
| ACH580-31-206A-4 | R8 | 110 | 206 | 110 | 196 | 180 | 150 |

**ACH580-34 ultra-low harmonic drive module**

| Drive type | Frame size | 3-phase, $U_N$ = 380, 400, 415 V | | | | 3-phase, $U_N$ = 440, 460, 480 V | |
|---|---|---|---|---|---|---|---|
| | | Nominal ratings | | Light-duty use | | Light-duty use | |
| | | $P_N$ (kW) | $I_N$ (A) | $P_{Ld}$ (kW) | $I_{Ld}$ (A) | $I_{Ld}$ (A) | $P_{Ld}$ (hp) |
| ACH580-34-246A-4 | R11 | 132 | 246 | 132 | 234 | 240 | 200 |
| ACH580-34-293A-4 | R11 | 160 | 293 | 160 | 278 | 260 | 200 |
| ACH580-34-365A-4 | R11 | 200 | 365 | 200 | 347 | 361 | 300 |
| ACH580-34-442A-4 | R11 | 250 | 442 | 250 | 420 | 414 | 350 |
| ACH580-34-505A-4 | R11 | 250 | 505 | 250 | 480 | 414 | 350 |
| ACH580-34-585A-4 | R11 | 315 | 585 | 315 | 556 | 430 | 350 |
| ACH580-34-650A-4 | R11 | 355 | 650 | 355 | 618 | 483 | 400 |

| **Nominal ratings** | |
|---|---|
| $I_N$ | Rated current available continuously without overloadability 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. |

The ratings for all ACH480 drives apply at +50 °C ambient temperature.
The ratings for all ACH580 drives apply at +40 °C ambient temperature.
For derating at higher altitudes, temperatures or switching frequencies, see the HW manuals, document codes: ACH480-04 3AXD50000245949, ACH580-01 3AXD50000044839, ACH580-04 3AXD50000048685, ACH580-07 3AXD50000045816, ACH580-31 3AXD50000037066 and ACH580-34 3AXD50000419708.

# Dimensions

**ACH480-04 drive module, IP20**

| Frames | Height *) | | Width | | Depth | | Weight | |
|---|---|---|---|---|---|---|---|---|
| | (mm) | (in) | (mm) | (in) | (mm) | (in) | (kg) | (lb) |
| R1 | 223 | 8.8 | 73 | 2.9 | 208 | 8.2 | 1.7 | 3.6 |
| R2 | 223 | 8.8 | 97 | 3.8 | 208 | 8.2 | 2.2 | 4.9 |
| R3 | 220 | 8.7 | 172 | 6.8 | 208 | 8.2 | 2.5 | 5.5 |
| R4 | 240 | 9.5 | 262 | 10.3 | 213 | 10.3 | 5.6 | 12.3 |

*) Height of the drive with cable clamp

**ACH480-04 drive module, UL Type 1**

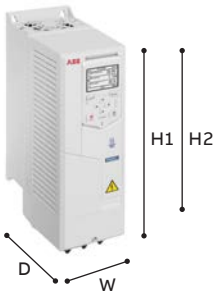
| Frames | Height *) | | Width | | Depth | | Weight | |
|---|---|---|---|---|---|---|---|---|
| | (mm) | (in) | (mm) | (in) | (mm) | (in) | (kg) | (lb) |
| R1 | 293 | 11.5 | 73 | 2.9 | 208 | 8.2 | 2.1 | 4.6 |
| R2 | 293 | 11.5 | 97 | 3.8 | 208 | 8.2 | 2.7 | 6 |
| R3 | 329 | 13 | 172 | 6.8 | 208 | 8.2 | 3.2 | 7.1 |
| R4 | 391 | 15.4 | 260 | 10.3 | 213 | 10.3 | 6.9 | 15.1 |

*) Height of the drive with cable clamp

**ACH580-01 wall-mounted drive, IP21**

| Frames | Height | | | | Width | | Depth | | Weight | |
|---|---|---|---|---|---|---|---|---|---|---|
| | H1 *) | | H2 **) | | | | | | | |
| | (mm) | (in) | (mm) | (in) | (mm) | (in) | (mm) | (in) | (kg) | (lb) |
| R1 | 373 | 14.7 | 331 | 13 | 125 | 4.9 | 223 | 8.8 | 4.6 | 10.1 |
| R2 | 473 | 18.6 | 432 | 17 | 125 | 4.9 | 229 | 8.9 | 6.6 | 14.6 |
| R3 | 490 | 19.3 | 490 | 19.3 | 203 | 8 | 229 | 8.9 | 11.8 | 26 |
| R4 | 636 | 25 | 636 | 25 | 203 | 8 | 257 | 10.2 | 19 | 41.9 |
| R5 | 732 | 28.8 | 596 | 23.5 | 203 | 8 | 295 | 11.6 | 28.3 | 62.4 |
| R6 | 727 | 28.6 | 548 | 21.6 | 252 | 9.9 | 369 | 14.5 | 42.4 | 93.5 |
| R7 | 880 | 34.6 | 600 | 23.6 | 284 | 11.2 | 370 | 14.6 | 54 | 119.1 |
| R8 | 965 | 38 | 680 | 26.8 | 300 | 11.8 | 393 | 15.5 | 69 | 152.2 |
| R9 | 955 | 37.6 | 680 | 26.8 | 380 | 15 | 418 | 16.5 | 97 | 213.9 |

*) Height of the drive with gland box
**) Height of the drive without gland box




**ACH580-01 wall-mounted drive, IP55**

| Frames | Height *) | | Width | | Depth | | Weight | |
|---|---|---|---|---|---|---|---|---|
| | (mm) | (in) | (mm) | (in) | (mm) | (in) | (kg) | (lb) |
| R1 | 403 | 15.9 | 128 | 5 | 233 | 9.2 | 4.8 | 10.6 |
| R2 | 503 | 19.8 | 128 | 5 | 239 | 9.4 | 6.8 | 15 |
| R3 | 490 | 19.3 | 206 | 8.1 | 237 | 9.3 | 13 | 28.7 |
| R4 | 636 | 25 | 203 | 8 | 265 | 10.4 | 20 | 44.1 |
| R5 | 732 | 28.8 | 203 | 8 | 320 | 12.6 | 29 | 64 |
| R6 | 727 | 28.6 | 252 | 9.9 | 380 | 15 | 43 | 94.8 |
| R7 | 880 | 34.6 | 284 | 11.2 | 381 | 15 | 56 | 123.5 |
| R8 | 965 | 38 | 300 | 11.8 | 452 | 17.8 | 77 | 169.8 |
| R9 | 955 | 37.6 | 380 | 15 | 477 | 18.8 | 103 | 227.1 |

*) Height of the drive with gland box
H2 dimension is the same as IP21 type

**ACH580-01 wall-mounted drive, IP55 with disconnect switch or/and EMC C1**

| Frames | Height | | Width | | Depth | | Weight | |
|---|---|---|---|---|---|---|---|---|
| | (mm) | (in) | (mm) | (in) | (mm) | (in) | (kg) | (lb) |
| R1 | 403 | 15.9 | 128 | 5 | 255 | 10 | 5.4 | 11.8 |
| R2 | 503 | 19.8 | 128 | 5 | 257 | 10.1 | 7.5 | 16.4 |
| R3 | 733 | 28.9 | 207 | 8.2 | 258 | 10.2 | 15 | 33.1 |
| R4 | 879 | 34.6 | 206 | 8.1 | 286 | 11.3 | 23.3 | 51.5 |
| R5 | 1023 | 40.3 | 203 | 8 | 342 | 13.5 | 33 | 64 |

**ACH580-01 flange mounting**

| Frames | Height | | Width | | Offset out | | Offset in | | Weight | |
|---|---|---|---|---|---|---|---|---|---|---|
| | (mm) | (in) | (mm) | (in) | (mm) | (in) | (mm) | (in) | (kg) | (lb) |
| R1 | 461 | 18.2 | 206 | 8.1 | 133 | 5.2 | 109 | 4.3 | 4.6 | 10.1 |
| R2 | 551 | 21.7 | 206 | 8.1 | 130 | 5.1 | 114 | 4.5 | 6.5 | 14.6 |
| R3 | 613 | 24.1 | 290 | 11.4 | 118 | 4.6 | 116 | 4.6 | 11.8 | 26 |
| R4 | 776 | 30.6 | 290 | 11.4 | 120 | 4.7 | 137 | 5.4 | 19 | 41.9 |
| R5 | 776 | 30.6 | 290 | 11.4 | 124 | 4.9 | 173 | 6.8 | 28.3 | 62.4 |
| R6 | 672 | 26.5 | 374 | 14.7 | 193 | 7.6 | 167 | 6.6 | 42.4 | 93.5 |
| R7 | 722 | 28.4 | 406 | 16 | 194 | 7.6 | 169 | 6.7 | 54 | 119.1 |
| R8 | 814 | 32.1 | 433 | 17 | 202 | 8 | 184 | 7.2 | 69 | 152.2 |
| R9 | 804 | 31.7 | 502 | 19.8 | 204 | 8 | 209 | 8.2 | 97 | 213.9 |

**ACH580-04 drive module, IP00/IP20**

| Frames | Height | | Width | | Depth | | Weight | |
|---|---|---|---|---|---|---|---|---|
| | (mm) | (in) | (mm) | (in) | (mm) | (in) | (kg) | (lb) |
| R10 | 1462 | 57.6 | 350 | 13.8 | 529 | 20.8 | 161 | 355 |
| R11 | 1662 | 65.4 | 350 | 13.8 | 529 | 20.8 | 199 | 439 |

**ACH580-07 cabinet-built drive, IP21**

| Frames | Height | | Width | | Depth | | Weight | |
|---|---|---|---|---|---|---|---|---|
| | (mm) | (in) | (mm) | (in) | (mm) | (in) | (kg) | (lb) |
| R6 | 2145 | 84.4 | 430 | 16.9 | 673 | 26.5 | 210 | 463 |
| R7 | 2145 | 84.4 | 430 | 16.9 | 673 | 26.5 | 220 | 485 |
| R8 | 2145 | 84.4 | 530 | 20.9 | 673 | 26.5 | 255 | 562 |
| R9 | 2145 | 84.4 | 530 | 20.9 | 673 | 26.5 | 275 | 606 |
| R10 | 2145 | 84.4 | 830 | 32.7 | 698 | 27.5 | 410 | 904 |
| R11 | 2145 | 84.4 | 830 | 32.7 | 698 | 27.5 | 440 | 970 |

**ACH580-07 cabinet-built drive, IP42**

| Frames | Height | | Width | | Depth | | Weight | |
|---|---|---|---|---|---|---|---|---|
| | (mm) | (in) | (mm) | (in) | (mm) | (in) | (kg) | (lb) |
| R6 | 2145 | 84.4 | 430 | 16.9 | 673 | 26.5 | 210 | 463 |
| R7 | 2145 | 84.4 | 430 | 16.9 | 673 | 26.5 | 220 | 485 |
| R8 | 2145 | 84.4 | 530 | 20.9 | 673 | 26.5 | 255 | 562 |
| R9 | 2145 | 84.4 | 530 | 20.9 | 673 | 26.5 | 275 | 606 |
| R10 | 2145 | 84.4 | 830 | 32.7 | 698 | 27.5 | 535 | 1179 |
| R11 | 2145 | 84.4 | 830 | 32.7 | 698 | 27.5 | 581 | 1280 |

**ACH580-07 IP54 cabinet-built drive, +B055**

| Frames | Height | | Width | | Depth | | Weight | |
|---|---|---|---|---|---|---|---|---|
| | (mm) | (in) | (mm) | (in) | (mm) | (in) | (kg) | (lb) |
| R6 | 2145 | 84.4 | 430 | 16.9 | 673 | 26.5 | 210 | 463 |
| R7 | 2145 | 84.4 | 430 | 16.9 | 673 | 26.5 | 220 | 485 |
| R8 | 2145 | 84.4 | 530 | 20.9 | 673 | 26.5 | 255 | 562 |
| R9 | 2145 | 84.4 | 530 | 20.9 | 673 | 26.5 | 275 | 606 |
| R10 | 2315 | 91.14 | 830 | 32.7 | 698 | 27.5 | 535 | 1179 |
| R11 | 2315 | 91.14 | 830 | 32.7 | 698 | 27.5 | 581 | 1280 |

# Dimensions

**ACH580-31 ultra-low harmonic wall-mounted drive, IP21**

| Frames | Height | | Width | | Depth | | Weight | |
|---|---|---|---|---|---|---|---|---|
| | (mm) | (in) | (mm) | (in) | (mm) | (in) | (kg) | (lb) |
| R3 | 495 | 19.5 | 205 | 8.1 | 354 | 13.9 | 21 | 46 |
| R6 | 771 | 30.4 | 252 | 9.9 | 392 | 15.5 | 61 | 134 |
| R8 | 965 | 38 | 300 | 11.8 | 438 | 17.3 | 118 | 260 |

**ACH580-31 ultra-low harmonic wall-mounted drive, IP55**

| Frames | Height | | Width | | Depth | | Weight | |
|---|---|---|---|---|---|---|---|---|
| | (mm) | (in) | (mm) | (in) | (mm) | (in) | (kg) | (lb) |
| R3 | 495 | 19.5 | 205 | 8.1 | 360 | 14.2 | 21 | 46 |
| R6 | 771 | 30.4 | 252 | 9.9 | 448 | 17.6 | 63 | 139 |
| R8 | 965 | 38 | 300 | 11.8 | 496 | 19.5 | 124 | 273 |

**ACH580-34 ultra-low harmonic drive module, IP00**

| Frames | Height | | Width | | Depth | | Weight | |
|---|---|---|---|---|---|---|---|---|
| | (mm) | (in) | (mm) | (in) | (mm) | (in) | (kg) | (lb) |
| R11 | 1726 | 68 | 648 | 25.5 | 508 | 20 | 435 | 959 |

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# Cooling and fuses

### Cooling

ACH480 and ACH580 drives are fitted with variable-speed cooling air fans. The cooling air must be free from corrosive materials and not exceed the maximum ambient temperature of 50 °C (60 °C with derating) for ACH480 and 40 °C for ACH580, frames R1 to R9 (50 °C with derating). The speed-controlled fans cool the drive only when needed, which reduces overall noise level and energy consumption.

### Fuse connections

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

| ACH480-04 drive module | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Type designation** | **Frame size** | **Cooling air flow 200 to 240 V units** | | | | | **Recommended input protection fuses for 200 to 240 V units** | | | |
| | | **Typical heat dissipation *)** | | **Air flow** | | **Max. noise level **)** | **IEC fuses** | | **IEC fuses** | |
| | | **(W)** | **(BTU/h)** | **($m^3$/h)** | **($ft^3$/min)** | **(dBA)** | **(A)** | **Fuse type** | **(A)** | **Fuse type** |
| **1-phase $U_N$ = 230 V** | | | | | | | | | | |
| ACH480-04-02A4-1 | R0 | 33 | 113 | – | – | < 30 | 10 | gG | 32 | gR |
| ACH480-04-03A7-1 | R0 | 49 | 167 | – | – | < 30 | 10 | gG | 32 | gR |
| ACH480-04-04A8-1 | R1 | 67 | 229 | 57 | 33 | 63 | 16 | gG | 40 | gR |
| ACH480-04-06A9-1 | R1 | 93 | 317 | 57 | 33 | 63 | 20 | gG | 50 | gR |
| ACH480-04-07A8-1 | R1 | 106 | 362 | 57 | 33 | 63 | 25 | gG | 63 | gR |
| ACH480-04-09A8-1 | R2 | 92 | 314 | 63 | 37 | 59 | 32 | gG | 63 | gR |
| ACH480-04-12A2-1 | R2 | 115 | 392 | 63 | 37 | 59 | 35 | gG | 63 | gR |
| **3-phase $U_N$ = 230 V** | | | | | | | | | | |
| ACH480-04-02A4-2 | R1 | 39 | 133 | 57 | 33 | 63 | 6 | gG | 25 | gR |
| ACH480-04-03A7-2 | R1 | 57 | 194 | 57 | 33 | 63 | 10 | gG | 32 | gR |
| ACH480-04-04A8-2 | R1 | 72 | 246 | 57 | 33 | 63 | 10 | gG | 32 | gR |
| ACH480-04-06A9-2 | R1 | 111 | 379 | 57 | 33 | 63 | 16 | gG | 40 | gR |
| ACH480-04-07A8-2 | R1 | 105 | 358 | 57 | 33 | 63 | 16 | gG | 40 | gR |
| ACH480-04-09A8-2 | R1 | 140 | 478 | 57 | 33 | 63 | 16 | gG | 40 | gR |
| ACH480-04-12A2-2 | R2 | 149 | 508 | 63 | 37 | 59 | 25 | gG | 50 | gR |
| ACH480-04-17A5-2 | R3 | 265 | 904 | 128 | 75 | 66 | 32 | gG | 63 | gR |
| ACH480-04-25A0-2 | R3 | 398 | 1358 | 128 | 75 | 66 | 50 | gG | 80 | gR |
| ACH480-04-032A-2 | R4 | 350 | 1194 | 150 | 88 | 69 | 63 | gG | 100 | gR |
| ACH480-04-048A-2 | R4 | 561 | 1914 | 150 | 88 | 69 | 100 | gG | 160 | gR |

*) Heat dissipation value is a reference for cabinet thermal design.
**) The maximum noise level at full fan speed. When the drive is not operating at full load and at maximum ambient temperature the noise level is lower.

**ACH480-04 drive module**

| Type designation | Frame size | Cooling air flow 380 to 415 V units | | | | | Recommended input protection fuses 380 to 415 V units ***) | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Typical heat dissipation *) | | Air flow | | Max. noise level **) | IEC fuses | | IEC fuses | | UL fuses | |
| | | (W) | (BTU/h) | ($m^3$/h) | ($ft^3$/min) | (dBA) | (A) | Fuse type | (A) | Fuse type | (A) | Fuse type |
| ACH480-04-02A7-4 | R1 | 44 | 150 | 57 | 33 | 63 | 6 | gG | 25 | gR | 6 | UL class T |
| ACH480-04-03A4-4 | R1 | 55 | 188 | 57 | 33 | 63 | 6 | gG | 25 | gR | 6 | UL class T |
| ACH480-04-04A1-4 | R1 | 62 | 212 | 57 | 33 | 63 | 10 | gG | 32 | gR | 10 | UL class T |
| ACH480-04-05A7-4 | R1 | 91 | 311 | 57 | 33 | 63 | 10 | gG | 32 | gR | 10 | UL class T |
| ACH480-04-07A3-4 | R1 | 100 | 341 | 57 | 33 | 63 | 16 | gG | 40 | gR | 20 | UL class T |
| ACH480-04-09A5-4 | R1 | 140 | 478 | 57 | 33 | 63 | 16 | gG | 40 | gR | 20 | UL class T |
| ACH480-04-12A7-4 | R2 | 165 | 563 | 63 | 37 | 59 | 25 | gG | 50 | gR | 25 | UL class T |
| ACH480-04-018A-4 | R3 | 259 | 884 | 128 | 75 | 66 | 32 | gG | 63 | gR | 35 | UL class T |
| ACH480-04-026A-4 | R3 | 390 | 1331 | 128 | 75 | 66 | 50 | gG | 80 | gR | 50 | UL class T |
| ACH480-04-033A-4 | R4 | 396 | 1351 | 150 | 88 | 69 | 63 | gG | 100 | gR | 60 | UL class T |
| ACH480-04-039A-4 | R4 | 497 | 1696 | 150 | 88 | 69 | 80 | gG | 125 | gR | 80 | UL class T |
| ACH480-04-046A-4 | R4 | 582 | 1986 | 150 | 88 | 69 | 100 | gG | 160 | gR | 100 | UL class T |
| ACH480-04-050A-4 | R4 | 672 | 2293 | 150 | 88 | 69 | 100 | gG | 160 | gR | 100 | UL class T |

*) Heat dissipation value is a reference for cabinet thermal design.
**) The maximum noise level at full fan speed. When the drive is not operating at full load and at maximum ambient temperature the noise level is lower.
***) For detailed fuse sizes and types, please see the ACH480 hardware manual, document code: 3AXD50000245949.

**ACH580-01 wall-mounted drive**

| Type designation | Frame size | Cooling air flow 200 to 240 V units | | | | Recommended input protection fuses for 200 to 240 V units | |
|---|---|---|---|---|---|---|---|
| | | Typical heat dissipation *) | Air flow | | Max. noise level **) | IEC fuses | |
| | | (W) | ($m^3$/h) | ($ft^3$/min) | (dBA) | (A) | Fuse type |
| ACH580-01-04A7-2 | R1 | 53 | 43 | 25 | 59 | 25 | gG |
| ACH580-01-06A7-2 | R1 | 72 | 43 | 25 | 59 | 25 | gG |
| ACH580-01-07A6-2 | R1 | 82 | 43 | 25 | 59 | 25 | gG |
| ACH580-01-012A-2 | R1 | 143 | 43 | 25 | 59 | 25 | gG |
| ACH580-01-018A-2 | R1 | 230 | 43 | 25 | 59 | 25 | gG |
| ACH580-01-025A-2 | R2 | 255 | 101 | 59 | 64 | 40 | gG |
| ACH580-01-032A-2 | R2 | 359 | 101 | 59 | 64 | 40 | gG |
| ACH580-01-047A-2 | R3 | 533 | 179 | 105 | 76 | 63 | gG |
| ACH580-01-060A-2 | R3 | 781 | 179 | 105 | 76 | 63 | gG |
| ACH580-01-076A-2 | R4 | 811 | 159 | 94 | 70 | 100 | gG |
| ACH580-01-091A-2 | R4 | 917 | 159 | 94 | 70 | 125 | gG |
| ACH580-01-115A-2 | R5 | 1285 | 139 | 82 | 63 | 125 | gG |
| ACH580-01-144A-2 | R6 | 1932 | 435 | 256 | 67 | 200 | gG |
| ACH580-01-171A-2 | R7 | 2000 | 450 | 265 | 67 | 250 | gG |
| ACH580-01-213A-2 | R7 | 2854 | 450 | 265 | 67 | 315 | gG |
| ACH580-01-276A-2 | R8 | 3571 | 550 | 324 | 65 | 400 | gG |

*) Heat dissipation value is a reference for cabinet thermal design. According to Ecodesign regulations.
**) The maximum noise level at full fan speed. When the drive is not operating at full load and at maximum ambient temperature the noise level is lower.

# Cooling and fuses

**ACH580-01 wall-mounted drive**

| Type designation | Frame size | Cooling air flow 380 to 480 V units | | | | Recommended input protection fuses for 380 to 480 V units ***) | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | Typical heat dissipation *) | Air flow | | Max. noise level **) | IEC fuses | | UL fuses | |
| | | (W) | ($m^3$/h) | ($ft^3$/min) | (dBA) | (A) | Fuse type | (A) | Fuse type |
| ACH580-01-02A7-4 | R1 | 44 | 43 | 25 | 59 | 4 | gG | 15 | UL Class T |
| ACH580-01-03A4-4 | R1 | 51 | 43 | 25 | 59 | 6 | gG | 15 | UL Class T |
| ACH580-01-04A1-4 | R1 | 60 | 43 | 25 | 59 | 6 | gG | 15 | UL Class T |
| ACH580-01-05A7-4 | R1 | 85 | 43 | 25 | 59 | 10 | gG | 15 | UL Class T |
| ACH580-01-07A3-4 | R1 | 98 | 43 | 25 | 59 | 10 | gG | 15 | UL Class T |
| ACH580-01-09A5-4 | R1 | 136 | 43 | 25 | 59 | 16 | gG | 15 | UL Class T |
| ACH580-01-12A7-4 | R1 | 213 | 43 | 25 | 59 | 16 | gG | 15 | UL Class T |
| ACH580-01-018A-4 | R2 | 240 | 101 | 59 | 64 | 25 | gG | 30 | UL Class T |
| ACH580-01-026A-4 | R2 | 383 | 101 | 59 | 64 | 32 | gG | 30 | UL Class T |
| ACH580-01-033A-4 | R3 | 492 | 179 | 105 | 76 | 40 | gG | 40 | UL Class T |
| ACH580-01-039A-4 | R3 | 523 | 179 | 105 | 76 | 50 | gG | 60 | UL Class T |
| ACH580-01-046A-4 | R3 | 672 | 179 | 105 | 76 | 63 | gG | 60 | UL Class T |
| ACH580-01-062A-4 | R4 | 776 | 150 | 88 | 70 | 80 | gG | 80 | UL Class T |
| ACH580-01-073A-4 | R4 | 858 | 150 | 88 | 70 | 100 | gG | 90 | UL Class T |
| ACH580-01-089A-4 | R4 | 1028 | 159 | 94 | 70 | 100 | gG | 110 | UL Class T |
| ACH580-01-106A-4 | R5 | 1290 | 139 | 82 | 63 | 125 | gG | 150 | UL Class T |
| ACH580-01-145A-4 | R6 | 1960 | 435 | 256 | 67 | 160 | gG | 200 | UL Class T |
| ACH580-01-169A-4 | R7 | 2021 | 450 | 265 | 67 | 250 | gG | 225 | UL Class T |
| ACH580-01-206A-4 | R7 | 2785 | 450 | 265 | 67 | 315 | gG | 300 | UL Class T |
| ACH580-01-246A-4 | R8 | 3131 | 550 | 324 | 65 | 355 | gG | 350 | UL Class T |
| ACH580-01-293A-4 | R8 | 4071 | 550 | 324 | 65 | 425 | gG | 400 | UL Class T |
| ACH580-01-363A-4 | R9 | 4834 | 1150 | 677 | 68 | 500 | gG | 500 | UL Class T |
| ACH580-01-430A-4 | R9 | 6072 | 1150 | 677 | 68 | 630 | gG | 600 | UL Class T |
| ACH580-01-490A-4 | R9 | 5831 | 1150 | 677 | 68 | 630 | gG | 600 | UL Class T |

*) Heat dissipation value is a reference for cabinet thermal design. According to Ecodesign regulations.
**) The maximum noise level at full fan speed. When the drive is not operating at full load and at maximum ambient temperature the noise level is lower.
***) For detailed fuse sizes and types, please see the ACH580-01 HW manual, document code: 3AXD50000044839.
Note: For flange mounting, please refer to the ACH580-01 HW manual, document code: 3AXD50000044839.

**ACH580-04 drive module**

| Type designation | Frame size | Cooling air flow 380 to 480 V units | | | | Recommended input protection fuses for 380 to 480 V units ***) | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | Typical heat dissipation *) | Air flow | | Max. noise level **) | IEC fuses | | UL fuses | |
| | | (W) | ($m^3$/h) | ($ft^3$/min) | (dBA) | (A) | Fuse type | (A) | Fuse type |
| ACH580-04-505A-4 | R10 | 6492 | 1200 | 707 | 72 | 800 | 170M6012 | 600 | JJS-600 |
| ACH580-04-585A-4 | R10 | 6840 | 1200 | 707 | 72 | 1000 | 170M6014 | 800 | A4BY800 |
| ACH580-04-650A-4 | R10 | 8046 | 1200 | 707 | 72 | 1000 | 170M6014 | 800 | A4BY800 |
| ACH580-04-725A-4 | R11 | 8108 | 1200 | 707 | 72 | 1250 | 170M6016 | 1000 | A4BY1000 |
| ACH580-04-820A-4 | R11 | 9652 | 1200 | 707 | 72 | 1600 | 170M6269 | 1000 | A4BY1000 |
| ACH580-04-880A-4 | R11 | 10887 | 1420 | 848 | 71 | 1600 | 170M6269 | 1000 | A4BY1000 |

*) Heat dissipation value is a reference for cabinet thermal design. According to Ecodesign regulations.
**) The maximum noise level at full fan speed. When the drive is not operating at full load and at maximum ambient temperature the noise level is lower.
***) For detailed fuse sizes and types, please see the ACH580-04 HW manual, document code: 3AXD50000048685.

**ACH580-07 cabinet-built drive**

| Type designation | Frame size | Cooling air flow 380 to 480 V units | | | | | Recommended input protection fuses for 380 to 480 V units ***) | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Typical heat dissipation *) | | Air flow IP21, IP42 (UL Type 1) | | Max. noise level **) | IEC fuses | | UL fuses | |
| | | (W) | (BTU/Hr) | ($m^3$/h) | ($ft^3$/min) | (dBA) | (A) | Fuse type | (A) | Fuse type |
| ACH580-07-0145A-4 | R6 | 2487 | 8485 | 685 | 403 | 67 | 250 | 170M3816D | 250 | DFJ-250 |
| ACH580-07-0169A-4 | R7 | 2497 | 8519 | 700 | 412 | 67 | 250 | 170M3816D | 300 | DFJ-300 |
| ACH580-07-0206A-4 | R7 | 3314 | 11307 | 700 | 412 | 67 | 315 | 170M3817D | 300 | DFJ-300 |
| ACH580-07-0246A-4 | R8 | 3806 | 12987 | 800 | 471 | 65 | 400 | 170M5408 | 400 | 170M5408 |
| ACH580-07-0293A-4 | R8 | 4942 | 16863 | 800 | 471 | 65 | 500 | 170M5410 | 500 | 170M5410 |
| ACH580-07-0363A-4 | R9 | 5868 | 20024 | 1400 | 824 | 68 | 630 | 170M6410 | 630 | 170M6410 |
| ACH580-07-0430A-4 | R9 | 7600 | 25932 | 1400 | 824 | 68 | 700 | 170M6411 | 700 | 170M6411 |
| ACH580-07-0505A-4 | R10 | 8353 | 28502 | 1900 | 1118 | 72 | 800 | 170M6412 | 800 | 170M6412 |
| ACH580-07-0585A-4 | R10 | 9471 | 32317 | 1900 | 1118 | 72 | 900 | 170M6413 | 900 | 170M6413 |
| ACH580-07-0650A-4 | R10 | 11200 | 38215 | 1900 | 1118 | 72 | 1000 | 170M6414 | 1000 | 170M6414 |
| ACH580-07-0725A-4 | R11 | 11386 | 38851 | 2400 | 1413 | 72 | 1250 | 170M6416 | 1250 | 170M6416 |
| ACH580-07-0820A-4 | R11 | 13725 | 46831 | 2400 | 1413 | 72 | 1250 | 170M6416 | 1250 | 170M6416 |
| ACH580-07-0880A-4 | R11 | 15300 | 52207 | 2620 | 1542 | 71 | 1400 | 170M6417 | 1400 | 170M6417 |

*) Heat dissipation value is a reference for cabinet thermal design. According to Ecodesign regulations.
**) The maximum noise level at full fan speed. When the drive is not operating at full load and at maximum ambient temperature the noise level is lower.
***) For detailed fuse sizes and types, please see the ACH580-07 HW manual, document code: 3AXD50000045816.

**ACH580-31 ultra-low harmonic wall-mounted drive**

| Type designation | Frame size | Cooling air flow | | | Recommended input protection fuses ***) | | | |
|---|---|---|---|---|---|---|---|---|
| | | Typical heat dissipation *) | Air flow IP21 | Max. noise level **) | IEC fuses | | UL fuses | |
| | | (W) | ($m^3$/h) | (dBA) | (A) | Fuse type | (A) | Fuse type |
| ACH580-31-09A5-4 | R3 | 265 | 361 | 57 | 10 | 170M1308 | 15 | JJS-15 |
| ACH580-31-12A7-4 | R3 | 429 | 361 | 57 | 16 | 170M1309 | 20 | JJS-20 |
| ACH580-31-018A-4 | R3 | 436 | 361 | 57 | 25 | 170M1311 | 25 | JJS-25 |
| ACH580-31-026A-4 | R3 | 792 | 361 | 57 | 25 | 170M1311 | 35 | JJS-35 |
| ACH580-31-033A-4 | R6 | 629 | 550 | 71 | 40 | 170M1313 | 40 | JJS-40 |
| ACH580-31-039A-4 | R6 | 812 | 550 | 71 | 63 | 170M1315 | 50 | JJS-50 |
| ACH580-31-046A-4 | R6 | 1063 | 550 | 71 | 63 | 170M1315 | 60 | JJS-60 |
| ACH580-31-062A-4 | R6 | 1093 | 550 | 71 | 80 | 170M1316 | 80 | JJS-80 |
| ACH580-31-073A-4 | R6 | 1419 | 550 | 71 | 100 | 170M1317 | 90 | JJS-90 |
| ACH580-31-088A-4 | R6 | 1967 | 550 | 71 | 125 | 170M1318 | 110 | JJS-110 |
| ACH580-31-106A-4 | R8 | 1574 | 860 | 68 | 160 | 170M1319 | 150 | JJS-150 |
| ACH580-31-145A-4 | R8 | 2577 | 860 | 68 | 200 | 170M3015 | 200 | JJS-200 |
| ACH580-31-169A-4 | R8 | 2963 | 860 | 68 | 250 | 170M3016 | 225 | JJS-225 |
| ACH580-31-206A-4 | R8 | 3566 | 860 | 68 | 315 | 170M3017 | 300 | JJS-300 |

*) Heat dissipation value is a reference for cabinet thermal design not determining Ecodesign ratings.
**) The maximum noise level at full fan speed. When the drive is not operating at full load and at maximum ambient temperature the noise level is lower.
***) For detailed fuse sizes and types, please see the ACH580-31 HW manual, document code: 3AXD50000037066.

**ACH580-34 ultra-low harmonic drive module**

| Type designation | Frame size | Cooling air flow | | | Recommended input protection fuses ***) | | | |
|---|---|---|---|---|---|---|---|---|
| | | Typical heat dissipation *) | Air flow | Max. noise level **) | IEC fuses | | UL fuses | |
| | | (W) | ($m^3$/h) | (dBA) | (A) | Fuse type | (A) | Fuse type |
| ACH580-34-246A-4 | R11 | 5280 | 2100 | 72 | 400 | 170M5408 | 400 | 170M5008 |
| ACH580-34-293A-4 | R11 | 6400 | 2100 | 72 | 500 | 170M5410 | 500 | 170M5010 |
| ACH580-34-365A-4 | R11 | 8000 | 2100 | 72 | 630 | 170M6410 | 630 | 170M6010 |
| ACH580-34-442A-4 | R11 | 10000 | 2100 | 72 | 700 | 170M6411 | 700 | 170M6011 |
| ACH580-34-505A-4 | R11 | 10000 | 2100 | 72 | 800 | 170M6412 | 800 | 170M6012 |
| ACH580-34-585A-4 | R11 | 12600 | 2100 | 72 | 1000 | 170M6414 | 1000 | – |
| ACH580-34-650A-4 | R11 | 14200 | 2100 | 72 | 1000 | 170M6414 | 1000 | – |

*) Heat dissipation value is a reference for cabinet thermal design not determining Ecodesign ratings.
**) The maximum noise level at full fan speed. When the drive is not operating at full load and at maximum ambient temperature the noise level is lower.
***) For detailed fuse sizes and types, please see the ACH580-34 HW manual, document code: 3AXD50000419708.

# Circuit breakers

Circuit breakers are automatically-operated electrical switches for protecting electrical circuits from excess currents causing damage. The circuit breakers listed below are tested and approved for use with the ABB drives. Other circuit breakers can also be used with the drives if they provide the same electrical characteristics.

| **ACH480-04 drive module** | | | |
|---|---|---|---|
| **Type designation** | **Frame size** | **ABB miniature circuit breaker** | |
| | | **Type** | **(kA) *)** |
| **1-phase $U_N$ = 230 V** | | | |
| ACH480-04-02A4-1 | R0 | S 201P-B 10 NA | 5 |
| ACH480-04-03A7-1 | R0 | S 201P-B 10 NA | 5 |
| ACH480-04-04A8-1 | R1 | S 201P-B 16 NA | 5 |
| ACH480-04-06A9-1 | R1 | S 201P-B 20 NA | 5 |
| ACH480-04-07A8-1 | R1 | S 201P-B 25 NA | 5 |
| ACH480-04-09A8-1 | R2 | S 201P-B 25 NA | 5 |
| ACH480-04-12A2-1 | R2 | S 201P-B 32 NA | 5 |
| **3-phase $U_N$ = 230 V** | | | |
| ACH480-04-02A4-2 | R1 | S 203P-Z 6 NA | 5 |
| ACH480-04-03A7-2 | R1 | S 203P-Z 8 NA | 5 |
| ACH480-04-04A8-2 | R1 | S 203P-Z 10 NA | 5 |
| ACH480-04-06A9-2 | R1 | S 203P-Z 16 NA | 5 |
| ACH480-04-07A8-2 | R1 | S 203P-Z 16 NA | 5 |
| ACH480-04-09A8-2 | R1 | S 203P-Z 25 NA | 5 |
| ACH480-04-12A2-2 | R2 | S 203P-Z 25 NA | 5 |
| ACH480-04-17A5-2 | R3 | S 203P-Z 32 NA | 5 |
| ACH480-04-25A0-2 | R3 | S 203P-Z 50 NA | 5 |
| ACH480-04-032A-2 | R4 | S 203P-Z 63 NA | 5 |
| ACH480-04-048A-2 | R4 | Contact ABB | 5 |
| **3-phase, $U_N$ = 380...480 V (380, 400, 415 V)** | | | |
| ACH480-04-02A7-4 | R1 | S 203P-B 6 | 5 |
| ACH480-04-03A4-4 | R1 | S 203P-B 6 | 5 |
| ACH480-04-04A1-4 | R1 | S 203P-B 8 | 5 |
| ACH480-04-05A7-4 | R1 | 203P-B 10 | 5 |
| ACH480-04-07A3-4 | R1 | S 203P-B 16 | 5 |
| ACH480-04-09A5-4 | R1 | S 203P-B 16 | 5 |
| ACH480-04-12A7-4 | R2 | S 203P-B 25 | 5 |
| ACH480-04-018A-4 | R3 | S 203P-B 32 | 5 |
| ACH480-04-026A-4 | R3 | S 203P-B 50 | 5 |
| ACH480-04-033A-4 | R4 | S 203P-B 63 | 5 |
| ACH480-04-039A-4 | R4 | S 803S-B 80 | 5 |
| ACH480-04-046A-4 | R4 | S 803S-B 100 | 5 |
| ACH480-04-050A-4 | R4 | S 803S-B 100 | 5 |

*) Maximum allowed rated conditional short-circuit current (IEC 61800-5-1) of the electrical power network.

**ACH580-01 wall-mounted drive**

| Type designation | Frame size | Aux. Contr. Volt.: | Miniature circuit breaker | $T_{max}$ moulded case circuit breaker | Switch-disconnector | | Main contactor (≤40 °C) |
|---|---|---|---|---|---|---|---|
| | | | | | Main switch | Main switch UL | |
| | | | ABB type | ABB type | ABB type | ABB type | ABB type |
| **3-phase, $U_N$ = 380...480 V (380, 400, 415 V)** | | | | | | | |
| ACH580-01-02A7-4 | R1 | 230/115 | S 303P-B/C/Z 10 | – | OT16F3 | OT16F3 | AF09-30-22-13 |
| ACH580-01-03A4-4 | R1 | 230/115 | S 303P-B/C/Z 10 | – | OT16F3 | OT16F3 | AF09-30-22-13 |
| ACH580-01-04A1-4 | R1 | 230/115 | S 303P-B/C/Z 10 | – | OT16F3 | OT16F3 | AF09-30-22-13 |
| ACH580-01-05A7-4 | R1 | 230/115 | S 303P-B/C/Z 10 | – | OT16F3 | OT16F3 | AF09-30-22-13 |
| ACH580-01-07A3-4 | R1 | 230/115 | S 303P-B/C/Z 10 | – | OT16F3 | OT16F3 | AF09-30-22-13 |
| ACH580-01-09A5-4 | R1 | 230/115 | S 303P-B/C/Z 10 | – | OT16F3 | OT16F3 | AF09-30-22-13 |
| ACH580-01-12A7-4 | R1 | 230/115 | S 303P-B/C/Z 16 | – | OT16F3 | OT16F3 | AF09-30-22-13 |
| ACH580-01-018A-4 | R2 | 230/115 | S 303P-B/C/Z 20 | – | OT25F3 | OT25F3 | AF09-30-22-13 |
| ACH580-01-026A-4 | R2 | 230/115 | S 303P-B/C/Z 25 | – | OT25F3 | OT25F3 | AF12-30-22-13 |
| ACH580-01-033A-4 | R3 | 230/115 | S 303P-B/C/Z 32 | – | OT63F3 | OT63F3 | AF26-30-22-13 |
| ACH580-01-039A-4 | R3 | 230/115 | S 303P-B/C/Z 40 | – | OT63F3 | OT63F3 | AF52-30-22-13 |
| ACH580-01-046A-4 | R3 | 230/115 | S 303P-B/C/Z 50 | – | OT63F3 | OT63F3 | AF52-30-22-13 |
| ACH580-01-062A-4 | R4 | 230/115 | S 803S-B/C 80 | – | OT100F | OT100F | AF52-30-22-13 |
| ACH580-01-073A-4 | R4 | 230/115 | S 803S-B/C 80 | – | OT100F | OT100F | AF52-30-22-13 |
| ACH580-01-089A-4 | R4 | 230/115 | S 803S-B/C 100 | – | OT160EV | OT200U | AF65-30-22-13 |
| ACH580-01-106A-4 | R5 | 230/115 | S 803S-B/C 125 | – | OT160EV | OT200U | AF146-30-22-13 |
| ACH580-01-145A-4 | R6 | 230/115 | XT4 L 250 Ekip LS/I $I_n$ = 250 3p F F | 1SDA068555R1 Prospective SC current 65kA | OT160EV | OT200U | AF146-30-22-13 |
| ACH580-01-169A-4 | R7 | 230/115 | XT4 L 250 Ekip LS/I $I_n$ = 250 3p F F | 1SDA068555R1 Prospective SC current 65kA | OT250E | OT400U | AF146-30-22-13 |
| ACH580-01-206A-4 | R7 | 230/115 | T4 L 320 PR221DS-LS/I $I_n$ = 320 3p F F | 1SDA054141R1 Prospective SC current 65kA | OT250E | OT400U | AF146-30-22-13 |
| ACH580-01-246A-4 | R8 | 230/115 | T5 L 400 PR221DS-LS/I $I_n$ = 400 3p F F | 1SDA054365R1 Prospective SC current 65kA | OT400E | OT400U | AF265-30-22-13 |
| ACH580-01-293A-4 | R8 | 230/115 | T5 L 630 PR221DS-LS/I $I_n$ = 630 3p F F | 1SDA054420R1 Prospective SC current 65kA | OT400E | OT400U | AF265-30-22-13 |
| ACH580-01-363A-4 | R9 | 230/115 | T5 L 630 PR221DS-LS/I $I_n$ = 630 3p F F | 1SDA054420R1 Prospective SC current 65kA | OT630E | OT600U | AF400-30-22-70 |
| ACH580-01-430A-4 | R9 | 230/115 | T5 L 630 PR221DS-LS/I $I_n$ = 630 3p F F | 1SDA054420R1 Prospective SC current 65kA | OT630E | OT600U | AF400-30-22-70 |
| ACH580-01-490A-4 | R9 | 230/115 | – | – | – | – | – |

**ACH580-04 drive module**

| Type designation | Frame size | Aux. Contr. Volt.: | Miniature circuit breaker | $T_{max}$ moulded case circuit breaker | Switch-disconnector | | Main contactor (≤40 °C) |
|---|---|---|---|---|---|---|---|
| | | | | | Main switch | Main switch UL | |
| | | | ABB type | ABB type | ABB type | ABB type | ABB type |
| **3-phase, $U_N$ = 380...480 V (380, 400, 415 V)** | | | | | | | |
| ACH580-04-505A-4 | R10 | 230/115 | – | 1SDA054412R1 (T5H 630 PR221DS-LS/I $I_n$ = 630 3p F F) | OT630E | OT600U | – |
| ACH580-04-585A-4 | R10 | 230/115 | – | 1SDA069428R1 (T6V 800 PR221DS-LS/I $I_n$ = 800 3p F F) | OT630E | OT600U | – |
| ACH580-04-650A-4 | R10 | 230/115 | – | 1SDA069428R1 (T6V 800 PR221DS-LS/I $I_n$ = 800 3p F F) | OT800E | OT800U | – |
| ACH580-04-725A-4 | R11 | 230/115 | – | 1SDA062770R1 (T7H 1000 PR231/P LS/I $I_n$ = 1000A 3p F F) | OT800E | OT800U | – |
| ACH580-04-820A-4 | R11 | 230/115 | – | 1SDA062770R1 (T7H 1000 PR231/P LS/I $I_n$ = 1000A 3p F F) | OT1000E | OT1200U | – |
| ACH580-04-880A-4 | R11 | 230/115 | – | 1SDA062770R1 (T7H 1000 PR231/P LS/I $I_n$ = 1000A 3p F F) | OT1000E | OT1200U | – |

# Sine filters

Sine filters are low-pass filters that suppress the high frequency components of the drive output.

A sine filter consists of single- or three-phase reactors and delta- or star-connected capacitors. The sine filter provides true sinusoidal voltage waveform at the drive output by suppressing the high frequency voltage components of the drive output. Suppression of the high frequency voltage components is needed when extra-long motor cables are used, there is a step-up transformer between the drive and a motor, or when a drive is installed with an old direct-on-line motor.

| **ACH580-01 wall-mounted drive** | | | |
|---|---|---|---|
| **Type designation** | **Type code Sine filter IP00** | **Type code Housing case IP21 *)** | **$I_{cont.}$ max (A)** |
| **3-phase, $U_N$ = 380...480 V. The power ratings are valid at nominal voltage 400 V (0.75 to 250 kW).** | | | |
| ACH580-01-02A7-4 | B84143V0004R229 | B84143Q0002R229 | 2.3 |
| ACH580-01-03A4-4 | B84143V0004R229 | B84143Q0002R229 | 3.1 |
| ACH580-01-04A1-4 | B84143V0004R229 | B84143Q0002R229 | 3.8 |
| ACH580-01-05A7-4 | B84143V0006R229 | B84143Q0002R229 | 5.3 |
| ACH580-01-07A3-4 | B84143V0011R229 | B84143Q0004R229 | 6.9 |
| ACH580-01-09A5-4 | B84143V0011R229 | B84143Q0004R229 | 9.2 |
| ACH580-01-12A7-4 | B84143V0016R229 | B84143Q0006R229 | 12.1 |
| ACH580-01-018A-4 | B84143V0025R229 | B84143Q0008R229 | 16 |
| ACH580-01-026A-4 | B84143V0025R229 | B84143Q0008R229 | 24 |
| ACH580-01-033A-4 | B84143V0033R229 | B84143Q0008R229 | 31 |
| ACH580-01-039A-4 | B84143V0050R229 | B84143Q0010R229 | 37 |
| ACH580-01-046A-4 | B84143V0050R229 | B84143Q0010R229 | 43 |
| ACH580-01-062A-4 | B84143V0066R229 | B84143Q0010R229 | 58 |
| ACH580-01-073A-4 | B84143V0075R229 | B84143Q0010R229 | 64 |
| ACH580-01-089A-4 | B84143V0095R229 | B84143Q0012R229 | 77 |
| ACH580-01-106A-4 | B84143V0130S230 | B84143Q0020R229 | 91 |
| ACH580-01-145A-4 | B84143V0162S229 | B84143Q0014R229 | 126 |
| ACH580-01-169A-4 | B84143V0162S229 | B84143Q0014R229 | 153 |
| ACH580-01-206A-4 | B84143V0230S229 | B84143Q0016R229 | 187 |
| ACH580-01-246A-4 | B84143V0230S229 | B84143Q0016R229 | 209 |
| ACH580-01-293A-4 | B84143V0390S229 | B84143Q0018R229 | 249 |
| ACH580-01-363A-4 | B84143V0390S229 | B84143Q0018R229 | 297 |
| ACH580-01-430A-4 | B84143V0390S229 | B84143Q0018R229 | 352 |

*) If a sinus filter IP21 is needed please order both type codes for Housing case IP21 and Sine filter IP00.
Example: if an IP21 sine filter is needed for an ACH580-01-02A7-4 it is necessary to order both B84143V0004R229 and B84143Q0002R229.

# du/dt filters

du/dt filtering suppresses inverter output voltage spikes and rapid voltage changes that stress motor insulation. Additionally, du/dt filtering reduces capacitive leakage currents and high- frequency emissions from the motor cable as well as high-frequency losses and bearing currents in the motor. The need for du/dt filtering depends on the motor insulation. For information on the construction of the motor insulation, consult the manufacturer. More information on the du/dt filters can be found in the ACH480 and ACH580 hardware manuals.

**ACH580-01 wall-mounted drive and ACH580-04 drive module**

| | du/dt filter type *) 3 filters included, dimensions apply to one filter. | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Unprotected (IP00) | | | | | | | | Protected to IP22 | | | | Protected to IP54 | | | |
| Type designation | NOCH0016-60 | NOCH0030-60 | NOCH0070-60 | NOCH0120-60 *) | FOCH0260-70 | FOCH0320-50 | FOCH0610-70 | FOCH0875-70 | NOCH0016-62 | NOCH0030-62 | NOCH0070-62 | NOCH0120-62 | NOCH0016-65 | NOCH0030-65 | NOCH0070-65 | NOCH0120-65 |
| ACH580-01-02A7-4 | x | | | | | | | | x | | | | x | | | |
| ACH580-01-03A4-4 | x | | | | | | | | x | | | | x | | | |
| ACH580-01-04A1-4 | x | | | | | | | | x | | | | x | | | |
| ACH580-01-05A7-4 | x | | | | | | | | x | | | | x | | | |
| ACH580-01-07A3-4 | x | | | | | | | | x | | | | x | | | |
| ACH580-01-09A5-4 | x | | | | | | | | x | | | | x | | | |
| ACH580-01-12A7-4 | x | | | | | | | | x | | | | x | | | |
| ACH580-01-018A-4 | | x | | | | | | | | x | | | | x | | |
| ACH580-01-026A-4 | | x | | | | | | | | x | | | | x | | |
| ACH580-01-033A-4 | | | x | | | | | | | | x | | | | x | |
| ACH580-01-039A-4 | | | x | | | | | | | | x | | | | x | |
| ACH580-01-046A-4 | | | x | | | | | | | | x | | | | x | |
| ACH580-01-062A-4 | | | x | | | | | | | | x | | | | x | |
| ACH580-01-073A-4 | | | | x | | | | | | | | x | | | | x |
| ACH580-01-089A-4 | | | | x | | | | | | | | x | | | | x |
| ACH580-01-106A-4 | | | | x | | | | | | | | x | | | | x |
| ACH580-01-145A-4 | | | | | x | | | | | | | | | | | |
| ACH580-01-169A-4 | | | | | x | | | | | | | | | | | |
| ACH580-01-206A-4 | | | | | x | | | | | | | | | | | |
| ACH580-01-246A-4 | | | | | x | | | | | | | | | | | |
| ACH580-01-293A-4 | | | | | x | | | | | | | | | | | |
| ACH580-01-363A-4 | | | | | | x | | | | | | | | | | |
| ACH580-01-430A-4 | | | | | | x | | | | | | | | | | |
| ACH580-04-505A-4 | | | | | | | x | | | | | | | | | |
| ACH580-04-585A-4 | | | | | | | x | | | | | | | | | |
| ACH580-04-650A-4 | | | | | | | x | | | | | | | | | |
| ACH580-04-725A-4 | | | | | | | | x | | | | | | | | |
| ACH580-04-820A-4 | | | | | | | | x | | | | | | | | |
| ACH580-04-880A-4 | | | | | | | | x | | | | | | | | |

**ACH580-07 cabinet-built drive**

| | du/dt filter type *) 3 filters included, dimensions apply to one filter. | | |
|---|---|---|---|
| | Protected to IP54 | | |
| Type designation | BOCH-0880A-7 | COF-01 | COF-02 |
| ACH580-07-0145A-4 | | x | |
| ACH580-07-0169A-4 | | x | |
| ACH580-07-0206A-4 | | x | |
| ACH580-07-0246A-4 | | | x |
| ACH580-07-0293A-4 | | | x |
| ACH580-07-0363A-4 | | | x |
| ACH580-07-0430A-4 | | | x |
| ACH580-07-0505A-4 | x | | |
| ACH580-07-0585A-4 | x | | |
| ACH580-07-0650A-4 | x | | |
| ACH580-07-0725A-4 | x | | |
| ACH580-07-0820A-4 | x | | |
| ACH580-07-0880A-4 | x | | |

**ACH480-04 drive module**

| Type designation | Frame size | du/dt filter type, max. ambient temp. 40 °C |
|---|---|---|
| ACH480-04-02A7-4 | R1 | ACS-CHK-B3 |
| ACH480-04-03A4-4 | R1 | ACS-CHK-B3 |
| ACH480-04-04A1-4 | R1 | ACS-CHK-C3 |
| ACH480-04-05A7-4 | R1 | ACS-CHK-C3 |
| ACH480-04-07A3-4 | R1 | NOCH0016-6x |
| ACH480-04-09A5-4 | R1 | NOCH0016-6x |
| ACH480-04-12A7-4 | R2 | NOCH0016-6x |
| ACH480-04-018A-4 | R3 | NOCH0030-6x |
| ACH480-04-026A-4 | R3 | NOCH0030-6x |
| ACH480-04-033A-4 | R4 | NOCH-0030-6x |
| ACH480-04-039A-4 | R4 | NOCH-0070-6x |
| ACH480-04-046A-4 | R4 | NOCH-0070-6x |
| ACH480-04-050A-4 | R4 | NOCH-0070-6x |

**Dimensions and weights of the du/dt filters**

| du/dt filter | Height (mm) | Width (mm) | Depth (mm) | Weight (kg) |
|---|---|---|---|---|
| NOCH0016-60 | 195 | 140 | 115 | 2.4 |
| NOCH0016-62/65 | 323 | 199 | 154 | 6 |
| NOCH0030-60 | 215 | 165 | 130 | 4.7 |
| NOCH0030-62/65 | 348 | 249 | 172 | 9 |
| NOCH0070-60 | 261 | 180 | 150 | 9.5 |
| NOCH0070-62/65 | 433 | 279 | 202 | 15.5 |
| NOCH0120-60 3) | 200 | 154 | 106 | 7 |
| NOCH0120-62/65 | 765 | 308 | 256 | 45 |

**Dimensions and weights of the du/dt filters**

| du/dt filter | Height (mm) | Width (mm) | Depth (mm) | Weight (kg) |
|---|---|---|---|---|
| FOCH0260-70 | 382 | 340 | 254 | 47 |
| FOCH0320-50 | 662 | 319 | 293 | 65 |
| FOCH0610-70 | 662 | 319 | 293 | 65 |
| FOCH0875-70 | 662 | 319 | 293 | 65 |
| BOCH-0880A-7 | 400 | 248 | 456 | 18 |
| COF-01 | 570 | 296 | 360 | 23 |
| COF-02 | 570 | 360 | 301 | 23 |

# Input chokes and C1 filters

ACH580 has input chokes built-in as standard. External input chokes can be used with the ACH480 drives if there is a need to optimize the line-side harmonics. To comply with European EMC Directive Category C1 (standard IEC/EN 61800-3), use optional external EMC filter. In addition, please note that Category C1 requirements can be met with conducted emissions only.

| **ACH480-04 drive module** | | | |
|---|---|---|---|
| **Type designation** | **Frame size** | **Input choke, max. ambient temperature 40 °C** | **C1 filter, max. 40 m motor cable** |
| **1-phase $U_N$ = 230 V** | | | |
| ACH480-04-02A4-1 | R0 | ABB CHK-A1 | RFI-11 |
| ACH480-04-03A7-1 | R0 | ABB CHK-B1 | RFI-12 |
| ACH480-04-04A8-1 | R1 | ABB CHK-B1 | RFI-12 |
| ACH480-04-06A9-1 | R1 | ABB CHK-C1 | RFI-12 |
| ACH480-04-07A8-1 | R1 | ABB CHK-C1 | RFI-12 |
| ACH480-04-09A8-1 | R2 | ABB CHK-D1 | – |
| ACH480-04-12A2-1 | R2 | ABB CHK-D1 | – |
| **3-phase $U_N$ = 230 V** | | | |
| ACH480-04-02A4-2 | R1 | CHK-01 | RFI-32 |
| ACH480-04-03A7-2 | R1 | CHK-02 | RFI-32 |
| ACH480-04-04A8-2 | R1 | CHK-03 | RFI-32 |
| ACH480-04-06A9-2 | R1 | CHK-03 | RFI-32 |
| ACH480-04-07A8-2 | R1 | CHK-03 | RFI-32 |
| ACH480-04-09A8-2 | R1 | CHK-04 | RFI-32 |
| ACH480-04-12A2-2 | R2 | CHK-04 | RFI-33 |
| ACH480-04-17A5-2 | R3 | CHK-04 | RFI-33 |
| ACH480-04-25A0-2 | R3 | CHK-06 | RFI-33 |
| ACH480-04-032A-2 | R4 | CHK-06 | RFI-34 |
| ACH480-04-048A-2 | R4 | CHK-07 | RFI-34 |
| **3-phase, $U_N$ = 380...480 V (380, 400, 415 V)** | | | |
| ACH480-04-02A7-4 | R1 | CHK-01 | RFI-32 |
| ACH480-04-03A4-4 | R1 | CHK-01 | RFI-32 |
| ACH480-04-04A1-4 | R1 | CHK-02 | RFI-32 |
| ACH480-04-05A7-4 | R1 | CHK-02 | RFI-32 |
| ACH480-04-07A3-4 | R1 | CHK-02 | RFI-32 |
| ACH480-04-09A5-4 | R1 | CHK-03 | RFI-32 |
| ACH480-04-12A7-4 | R2 | CHK-03 | RFI-33 |
| ACH480-04-018A-4 | R3 | CHK-04 | RFI-33 |
| ACH480-04-026A-4 | R3 | CHK-04 | RFI-33 |
| ACH480-04-033A-4 | R4 | CHK-05 | RFI-34 |
| ACH480-04-039A-4 | R4 | CHK-06 | RFI-34 |
| ACH480-04-046A-4 | R4 | CHK-06 | RFI-34 |
| ACH480-04-050A-4 | R4 | CHK-07 | RFI-34 |

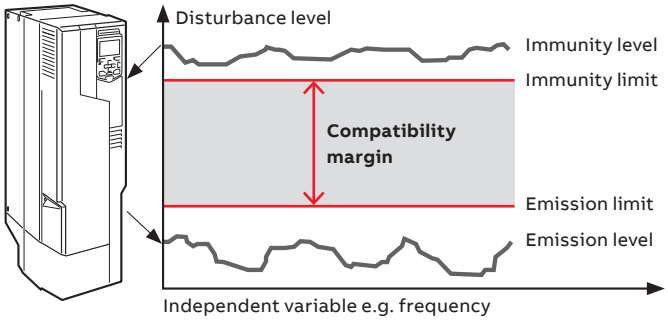
| **ACH580-01 wall-mounted drive** | | |
|---|---|---|
| **Option code** | **Description** | **Frames** |
| +F316 | Main disconnect switch with auxiliary contact (NO) and EMC C1 filter | R1 to R5, IP55 |
| +E223 | EMC C1 filter | R1 to R5, IP55 |

# EMC – electromagnetic compatibility

The ABB's HVACR drives have been designed to meet the EMC requirements set in the product standard IEC/EN61800-3. The ACH480, wall-mounted ACH580-01 and ACH580-31 drives meet category C2 high frequency emission limits as standard. The single standing drive modules ACH580-04, ACH580-34 and ACH580-07 cabinet-built drives meet category C3 limits without options.

**EMC standards**
The EMC product standard EN 61800-3 covers the specific EMC requirements stated for drives (tested with motor and motor 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 including 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.

—
**Immunity and emission compatibility**




**Domestic environments versus public low voltage networks**
1st environment includes domestic premises. It also includes establishments directly connected without an intermediate transformer to a low voltage power supply network that supplies buildings used for domestic purposes. 2nd environment includes all establishments directly connected to public low voltage power supply networks.

**Harmonics as part of EMC**
ACH580 drives are equipped with built-in chokes which provide a sufficient level of harmonic mitigation for most operation environments and make the units compliant with EN 61000-3-12 specifying limits for harmonic currents produced by equipment connected to public low-voltage systems. The ACH580-31/34 ultra-low harmonic drive versions are available for cases where extremely low harmonic mitigation for compliance with system level standards for harmonics like IEEE519 or G5/4 is required.

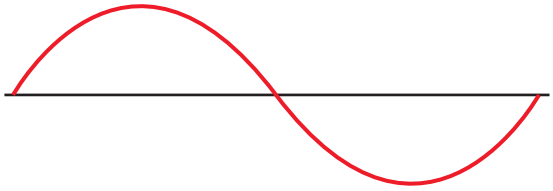
**Comparison of EMC standards**

| EMC according to EN 61800-3 product standard before EN 61800-3:2004 | 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 |

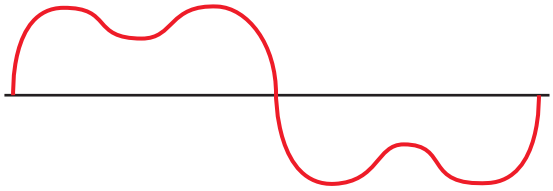
# Overcome challenges of harmonics

Excessive content of electrical harmonics in the network leads to lower efficiency and reliability. ACH580 ultra-low harmonic drives mitigate harmonics to a minimum and perfectly suite the applications that cannot handle high harmonic content in the network.

**What are harmonics**
Rotation of generators in power plants results in a sine-wave shaped current in an AC grid in the ideal case.



However, in reality, the network current is not pure sine wave due to harmonics - electromagnetic distortion caused by various types of electrical equipment. Current harmonics are measured as a percentage value, called total harmonic distortion (THDi).



**Problems caused by harmonic distortion**
High levels of harmonic distortion in an utility can create a wide range of problems. Some of the problems that may be encountered are:

- Premature failure and reduced lifespan of devices due to overheating caused by harmonics
- Nuisance trips of breakers and blowing of fuses
- Unstable operation of backup generators
- Unstable operation of sensitive electronics that require a pure sinusoidal AC waveform – interference to communication equipment
- Flickering lights

**All-in-one concept for a clean network**
ABB's ACH580 ultra-low harmonic (ULH) drives for HVACR are designed with built-in harmonic mitigation technology to comply with stringent harmonics standards IEC61000-3-12, IEEE519 and G5/4. With a THDi of 3% or less, there is no need to install external components for reducing harmonics, this drive doesn't create the harmonics to fix.

| | Six-pulse VFD no reactor/ choke | Six-pulse VFD Low DC bus capacitance | Six-pulse VFD + 5% reactor/choke | 3-phase VFD Active front end drive *) |
|---|---|---|---|---|
| **Typical $THD_I$** | 90-120% | 35-40% | 35-45 % | 3-5 % |
| **VFD system price **)** | $ | $ | $$ | $$$ |
| **Footprint** | ⬠ | ⬠ | ⬠⬠ | ⬠⬠⬠ |
| **Pros** | Simple and low cost solution, acceptable for installations with low quantities of small drives. | Simple and low cost solution that results in some mitigation of current harmonics ($THD_I$). | Standard solution in HVACR applications. | Best harmonic performance of any of the solutions.<br><br>Easy installation, only 3 wires in and 3 wires out.<br><br>Ability to boost output voltage during low-line conditions.<br><br>Unity true power factor. |
| **Cons** | High harmonic content, not recommended for installations with higher quantities of drives.<br><br>Susceptible to poor power quality. | Higher voltage distortion ($THD_V$), more than the six-pulse VFD with 5% reactor/ choke.<br><br>More susceptible to problems caused by poor power quality.<br><br>Almost no under voltage ride-through ability. | Systems with a large quantity or large sizes of drives, may require additional harmonic mitigation. | The drive itself generates higher losses than a standard six-pulse drive with reactor. |

*) Valuations are based on ABB low harmonic drives
**) System price considers VFD & installation costs

**Savings in total cost of ownership**
Installation costs are reduced with the simple three wires in and three wires out design. Maintenance costs are lowered as compared to other harmonic mitigation solutions like passive filters, multi-pulse and active filters there are less components to maintain and stock as spares. Using the ACH580 ULH allows your engineer to design your electrical system and backup generators to the right size and not oversizing for the harmonics in the network. And all-in-one concept allows to save valuable space in the building, significantly reducing installation footprint.

**Reliability for your building**
Harmonics could cause problems with other electrical equipment in the same electrical network. In the worst case it might make sensitive electrical equipment fail.

In retrofit projects, a transformer might not be able to meet the harmonic levels caused by nonlinear loads such as standard 6-pulse drives, so there is a risk of overloading the transformer.

In addition to harmonics related problems, also weak network with sags in line voltage can bring troubles to your systems resulting in motor overheating, tripping and failure.

The ACH580 ULH drive offers a reliable solution to overcome these challenges as it is able to lower the harmonic content so that sensitive equipment stay running and transformers or generators don't fail. Also the ACH580 ULH can boost output voltage so that motor always runs with nominal voltage despite the fluctuations in line voltage.

**Complete HVACR functionality**
The ACH580 ULH comes standard with an intuitive Hand-Off-Auto control panel to configure, control, and monitor the drive. An optional Bluetooth control panel allows the drive to be configured via the control panel also remotely via the DriveTune app.

A robust software provides drive, motor, and application protection features. HVACR specific features, such as accepting four separate start interlocks, along with fan flying start or firemen's override, are also included. The drive offers BACnet MS/TP, Modbus RTU, and N2 as standard.

There are many ways to mitigate harmonics and there is no "one size fits all" solution. The table below compares the THDI of various harmonic mitigation technologies, along with other comparisons.

| | Six-pulse VFD + passive filter | Matrix technology drives | Multipulse VFD | Six-pulse VFD + active filter |
|---|---|---|---|---|
| **Typical $THD_i$** | 5-10% | 5-13 % | 12 pulse 10-15%<br>18 Pulse 5-8%<br>due to actual system dynamics, phase unbalance and background distortion. | 4-7% |
| **VFD system price**)** | $$$ | $$$$ | $$$$ | $$$$$ |
| **Footprint** | ⬠⬠⬠⬠ | ⬠⬠⬠ | ⬠⬠⬠⬠⬠ | ⬠⬠⬠⬠ |
| **Pros** | Assuming physical space is available, a passive harmonic filter can be added after the drive is installed, if harmonics are determined to be a problem. | Includes regenerative braking. | Traditional harmonic mitigation method. | One active filter can clean up the harmonics from multiple drives/loads. |
| **Cons** | Leading power factor at light loads unless the filter's capacitors are switched out of the circuit.<br><br>Risk of resonances between the filter capacitors and other capacitors in the system.<br><br>Complex wiring. | Low harmonic mode (5% $THD_i$) does not allow full speed control throughout the entire frequency range, as it can only modulate up to 93% voltage.<br><br>No under voltage ride-through of power circuitry due to the lack of DC bus. | Very large footprint.<br><br>Significant number of points of failure.<br><br>Optimal harmonic performance requires perfectly balanced AC power feed with little background distortion.<br><br>Complex wiring and special transformer required.<br><br>Very difficult to retrofit in the field. | Typically the most expensive solution.<br><br>The filter becomes a single point of failure for harmonic mitigation.<br>A filter failure could result in significant/immediate harmonic related issues within the system.<br><br>Complex wiring. |

# Control panel options and mounting kits

The standard delivery of the ABB HVACR drives include the HVACR control panel, which has the Hand-Off-Auto operation logic and multiple other HVACR features. A variety of different control panel accessories are available for ACH480 and ACH580 drives.

**Bluetooth 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. With the Drivetune app HVACR users have all the similar functions as there is on the standard ACH-AP-H or ACH-AP-W control panels: Primary settings, I/O menu, diagnostics and full parameter list among other functions.

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

**Control panel bus adapters**
**CDPI-01 for ACH580**
**CDPI-02 for ACH480**
Control panel bus adapters are used to connect HVACR control panels with a RJ-45 cable to the drive from a distance, e.g. when mounting the control panel on a cabinet door.
In addition, CDPI adapters can be used to daisy chain several ACH drives together to be controlled with a single control panel or PC tool.

**Control panel mounting kit for outdoor installation**
**DPMP-04/05**
Enables control panel outdoor mounting thanks to IP66 protection class, UV resistance and IK07 impact protection rating.

**Control panel mounting platform**
**DPMP-01**
This mounting platform is for flush mountings. This requires also RDUM-01 for ACH480 or CDPI-01 for ACH580 (blank control panel with the RJ-45 connector) and a control panel.

**Control panel mounting platform**
**DPMP-02 for ACH480-04, ACH580-01 and ACH580-31,**
**DPMP-03 for ACH580-04/34**
This mounting platform is for surface mountings. This requires also RDUM-01 (for ACH480) or CDPI-01 (for ACH580) (blank control panel with the RJ-45 connector) and a control panel (HVACR, Bluetooth® or industrial).

**Door mounting kits**
**DPMP-EXT for ACH580-01 and ACH580-31**
**DPMP-EXT2 for ACH480-04/34**
The door mounting kit is ideal for cabinet installations. Both kits for a single drive include one DPMP-02 and either one RDUM-01 (for ACH480) or one CDPI-01 (for ACH580). Should you want to use a different control panel than the one delivered with the drive, it needs to be ordered separately.

# Control panel door mounting and daisy chaining

Improve safety and optimize installation cost with a door mounting kit and a panel bus adapter.

Door mounting fosters easy operation and safety. It enables you to operate the drive without opening the cabinet door, saving time and keeping all the electronics isolated. And to optimize installation costs, up to 32 drives can be connected to one control panel via panel bus adapters.

**Cabinet door**

**Surface mounting platform**
The platform comes with an RJ-45 cable for connecting the control panel and the panel bus adapter. There are surface mounting platform kits available for the drives, which include a surface mounting platform, a panel bus adapter and an RJ-45 cable for connecting the control panel and the panel bus adapter.

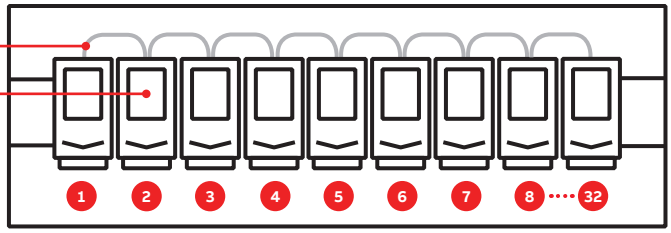
**Assistant control panel**
The assistant control panel is delivered as standard with the ACH480 and ACH580 drives. Also a Bluetooth or industrial control panel can be used.

**RJ-45 cable for daisy chaining drives**

**Panel bus adapter**
The panel bus adapter can be ordered with an MRP code as a loose option.

**Cabinet, outside**

**Cabinet, inside**




The ACH-AP-H (Hand-off-Auto) assistant control panel (plus code +J400) is included as standard in the delivery. If no code is mentioned in the ACH480 or ACH580 order, the assistant control panel is automatically added to the delivery. It can be replaced by one of the other +Jxxx options listed in the table.

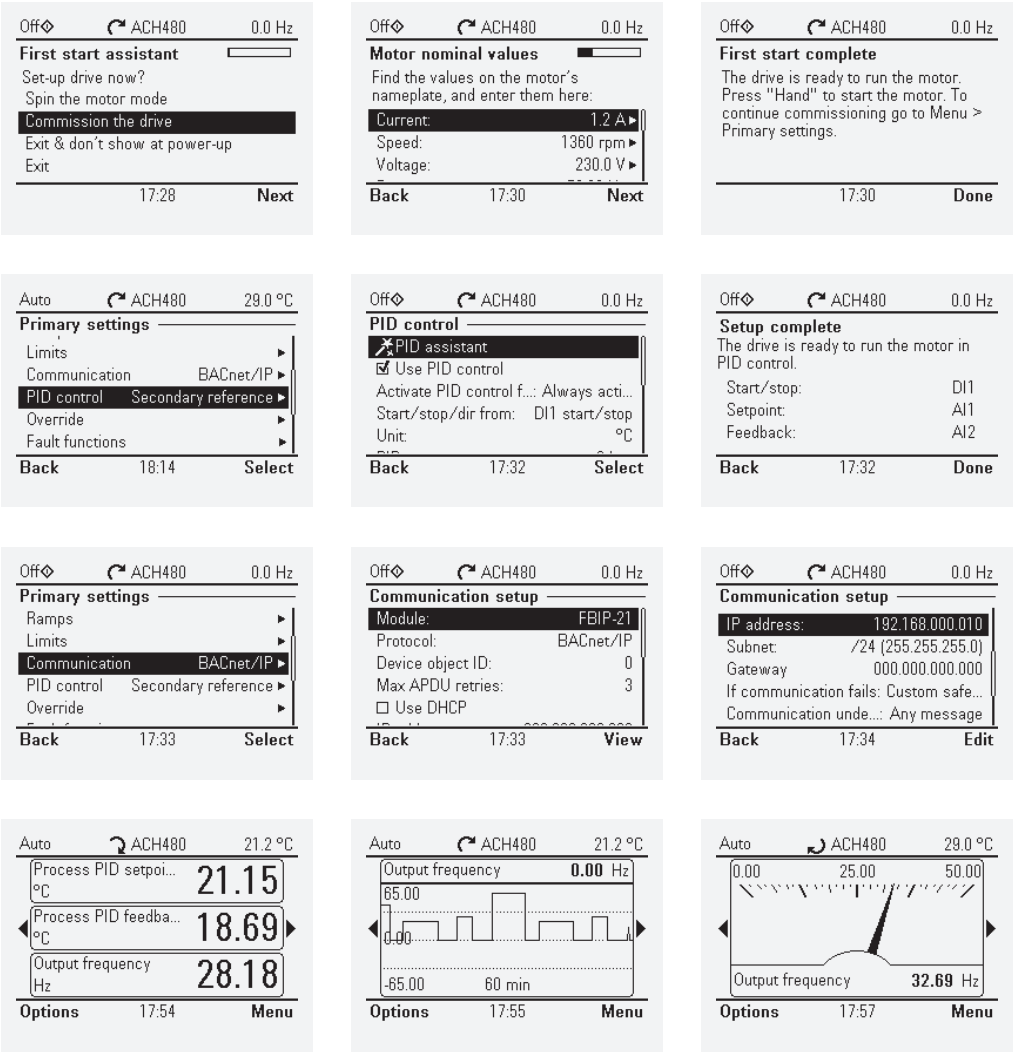
| MRP code | Plus code | Description | Type designation |
|---|---|---|---|
| 3AUA0000064884 | +J400 | Assistant control panel (Hand-Off-Auto) | ACH-AP-H |
| 3AXD50000030358 | +J429 | Control panel with Bluetooth interface (Hand-Off-Auto) | ACH-AP-W |
| 3AUA0000088311 | +J425 | Industrial assistant control panel | ACS-AP-I |
| 3AXD50000009843 | +J424 | Blank control panel cover (no control panel delivered) | CDUM-01 |
| 3AXD50000004419 | – | Panel bus adapter ACH580 | CDPI-01 |
| 3AXD50000275595 | – | Panel bus adapter ACH480 | CDPI-02 |
| 3AUA0000108878 | – | Control panel mounting platform (flush mounted, requires also panel bus adapter on the drive) | DPMP-01 |
| 3AXD50000009374 | – | Control panel mounting platform (surface mounted, requires also panel bus adapter on the drive) | DPMP-02 |
| 3AXD50000016230 | – | Control panel mounting platform option, only for ACH580-04/34 modules | DPMP-03 |
| 3AXD50000217717 | | Control panel mounting kit for outdoor installation | DPMP-04 |
| 3AXD50000240319 | | Control panel mounting kit for outdoor installation, only for ACH580-04/34 | DPMP-05 |
| 3AXD50000010763 | – | Door mounting kit for the panel (for one drive, contains both DPMP-02 and CDPI-01) | DPMP-EXT |

# Easiness on a whole new level

Enjoy the simplicity with the assistant control panel's intuitive user interface, assistants and ready-made macros. The panel guides you through commissioning without a need to know any drive parameters and helps in unclear situations.

**Assistant control panel, ACH-AP-H**
Set up the drive, fine-tune motor control and monitor values that matter using the assistant control panel, delivered as standard with all HVACR drives.

Hand-Off-Auto control logic allows the operator to quickly and simply override the external HVACR control when required.




**Commission without a hassle**
Select language, set time and date, name the drive, enter motor values, test rotating the motor.

**Primary settings**
Commission HVACR controllers with the intuitive PID assistant. Set the communication up. Tune the limits, commission override function, set the ramps, everything can be done with primary settings.

**Home view displays**
Effortlessly monitor the values that are the most important to you. You can select values for monitoring from a ready-made list or choose user-defined parameters.

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

# ABB Ability™ Mobile Connect for drives

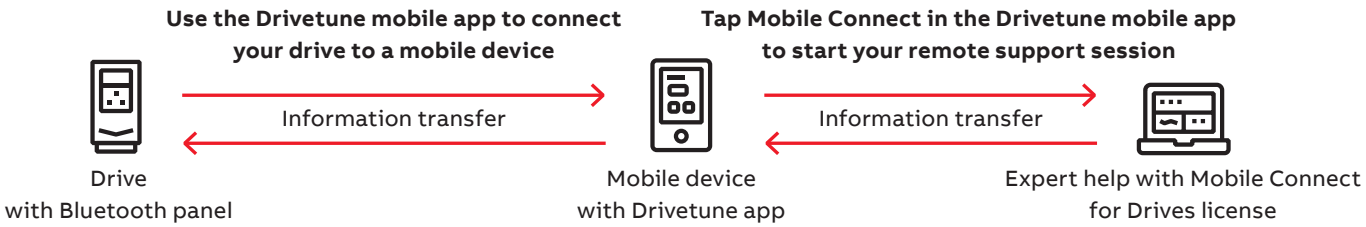
**Easy access to remote support**
ABB Ability™ Mobile Connect for drives is a platform for remote drive support consisting of the Mobile Connect web portal and the Drivetune mobile app.

The platform allows ABB service partners to provide remote commissioning and troubleshooting support for personnel on-site without any complex connectivity infrastructure. Chats, sharing images and backups, viewing parameters online and sending support packages are all possible, making your technical support process quick and efficient.

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

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

ABB Ability™ Mobile Connect for drives support portal




## Drivetune mobile app for managing drives via an intuitive interface

**Drivetune mobile app** is a powerful tool for performing basic drive startup and troubleshooting tasks. It is possible to connect with drives and access data available in the Internet at the same time. The wireless Bluetooth connectivity means that users won't need to enter hazardous or difficult-to-reach work areas to access information necessary to help them commission and tune the drive.

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

Download Drivetune mobile app

ANDROID APP ON Google play

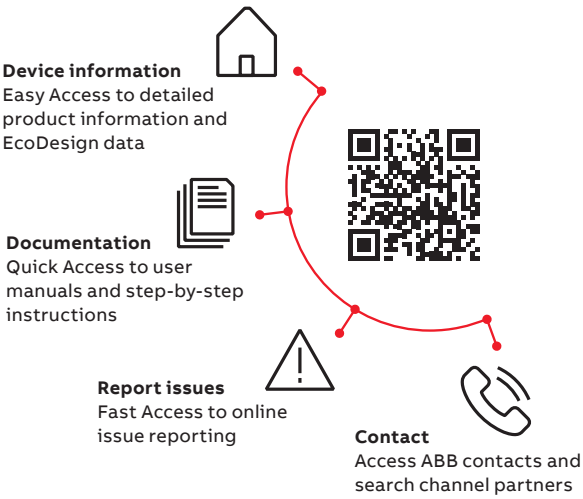
Available on the App Store

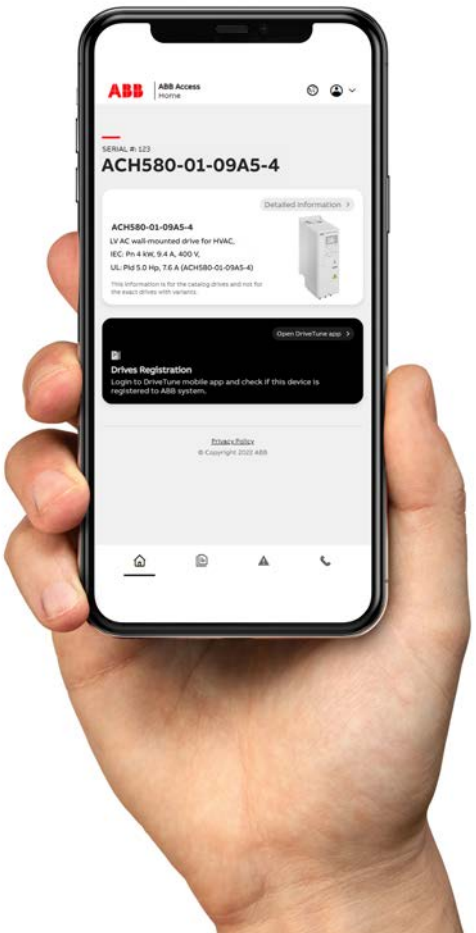
# ABB Access

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

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

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



# ABB SmartGuide for ACH480 and ACH580 drives

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.

## ACH480

Scan the QR code or click here to access the user guide.

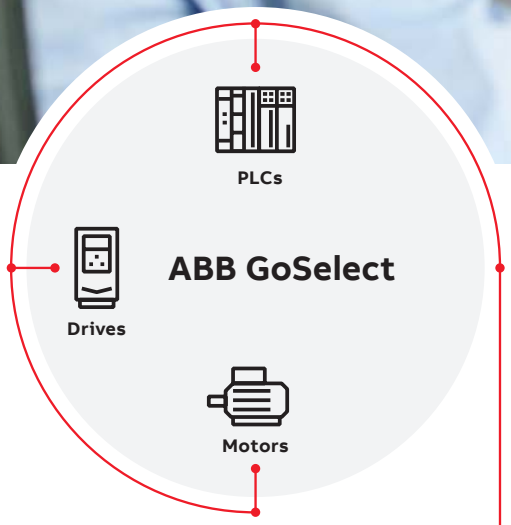
## ACH580

Scan the QR code or click here to access the user guide.

# ABB GoSelect web-based tool

## Build the optimal solution for your application quickly and easily online

ABB GoSelect is a web-based selection and dimensioning tool for motors, drives, and PLCs. Build the optimal solution for your application and efficiently create, collect, and manage documentation and reports – all in one place.




**Improved productivity**
ABB GoSelect's modern, intuitive interface is easy to use. You can start by following the guided selection journey to get help finding the most suitable products. If you have already identified the right product for your application, you can proceed directly to sizing. The tool can also be used to validate the selected solution directly.

**All in one place**
With ABB GoSelect you can select, dimension, and validate your solution – all-in-one convenient online portal, with or without logging in. No more searching and saving links or skipping between different tools. The tool eliminates the need to duplicate input data across multiple tools, bringing all your project documentation together in one place. No more wasted time.

**Efficient collaboration**
With ABB GoSelect, the whole team can provide their input in one place in real time. You can create different alternatives in one project to make it easy to compare your options and track the project history. No more time-consuming and confusing file exchanges via email.

For more information, see:
**goselect.motion.abb.com**

# ABB Ability™ Digital Powertrain service
## Condition monitoring for drives and motors

Accurate, real-time information about powertrain events. When you have the facts, you can make the right decisions.

Condition Monitoring gives you fact-based insight into your powertrain assets, such as drives and motors, via KPIs and signal data, to identify irregularities before they become problems. This helps you make proactive decisions, built on real-time information – and saves you money!

**The service can be tailored to fit your needs**
Our standard package gives you industry leading monitoring capabilities – whether you want to view the drive status through ABB's Internet portal or integrate this data with your existing monitoring systems.

**The standard package includes the following services:**
- Condition Monitoring
- Alarm Management
- Asset Health
- Team Support
- Backup Management

**The standard package can be supplemented with optional services:**
- Condition-Based Maintenance
- Offline Data Collection
- Expert Reports
- Remote Assistance
- Condition monitoring of your entire powertrain

**Solid fact-based decision making**
Get the facts, and the history, to help run your operations better and more safely.

**Always stay one step ahead of problems**
Recognize early signs of possible failures and assess the risks, before they turn into serious operational issues.

**Find the root cause of process issues**
Remotely access data from ABB drives built-in sensors to track the cause of problems. Get back to smooth operation quickly with data back-ups.

**Remotely analyze and optimize drives**
Get critical drive information anywhere anytime – even in difficult to access sites, or when a site visit is impossible.

## NETA-21

NETA-21 connects the drive to the cloud via the Internet or local Ethernet network.

- The module comes with a built-in web server and requires no Flash/Java plugins
- In the absence of a customer local area network, it can be connected via a mobile network router (either Ethernet or USB network adapter)
- One module can be connected to several drives at the same time

| NETA-21 | Ordering code | Description |
|---|---|---|
| | 3AUA0000094517 | 2 x panel bus interface |
| | | max. 9 drives |
| | | 2 x Ethernet interface |
| | | SD memory card |

## Edge Industrial Gateway

The ABB Ability™ Edge Industrial Gateway uses IoT technology to simplify existing gateways. It is designed to collect all generated field device and parameter data, feeding it into one user-friendly dashboard.

This solution makes it possible to monitor all of your downstream devices via the cloud or an on-premise system, with optional wi-fi and cellular connectivity.

| Edge gateway | Ordering code | Description |
|---|---|---|
| | 1SDA115508R1 | ABB Ability™ Industrial gateway |
| | 1SDA115509R1 | ABB Ability™ Industrial gateway 3G EU |
| | 1SDA115510R1 | ABB Ability™ Industrial gateway 3G US |

## Customers can configure powertrains and customize the digital service plan

1 Choose one or more assets you want to protect

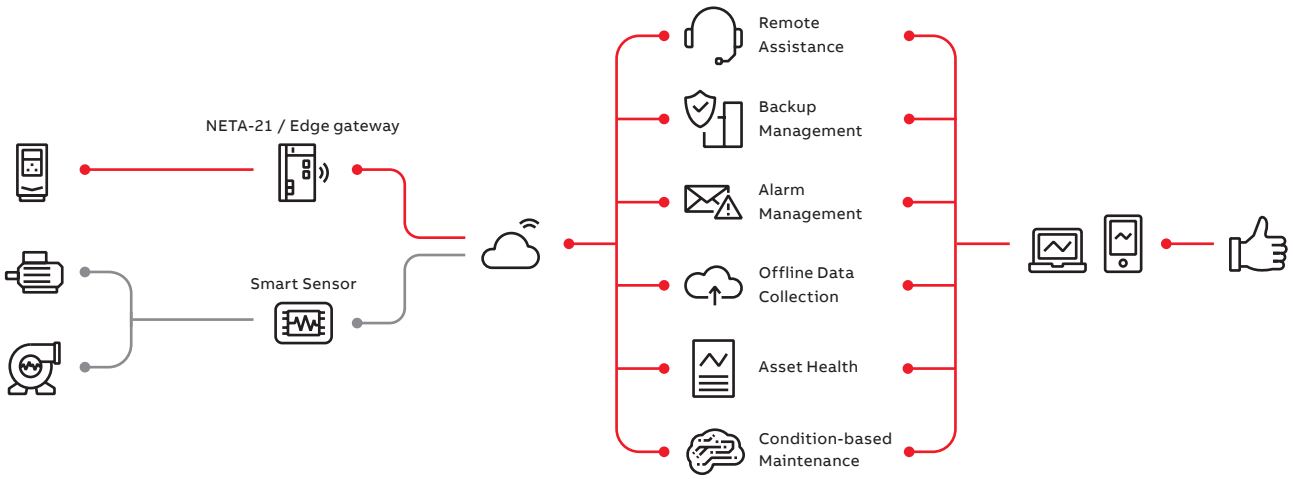
2 Install the connectivity device

3 Activate access to the Condition Monitoring basic feature

4 Pick optional features and customize

5 Start monitoring

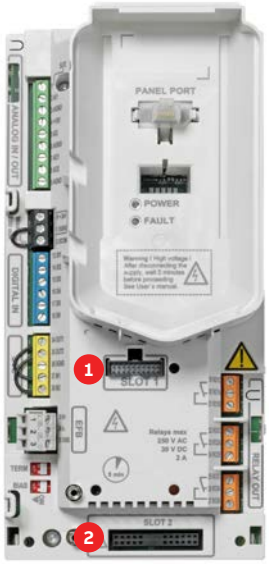
6 Enjoy the customized service



# Communication and I/O options

**Fieldbus adapter modules**
The ACH480 and ACH580 drives come with Modbus RTU, BACnet MS/TP and N2 communication protocols as standard, and there is also a wide range of optional fieldbus protocols available including BACnet/IP. Fieldbus communication reduces wiring costs compared to traditional hardwired input/output connections. The fieldbus options can be installed into the slot one (1).

**Input/output extension modules**
Standard inputs and outputs of ACH580 can be extended by using optional input/output extension modules installed in the slot two (2) on the drive. Standard inputs and outputs of ACH480 (RIIO-01 module) can be easily reduced by removing the module or changing it to reduced I/O module (BIO-01). The modules are easily installed in the extension slot two (2) located on the drive.




**ACH580 control unit**

**ACH480 control unit**

**ACH480 I/O options**

—
BIO-01

—
RIIO-01

—
BAPO-01
BREL-01

**ACH580 I/O options**

—
CMOD-01

—
CMOD-02

—
CAIO-01

—
CHDI-01

—
CPTC-02

**ACH480 I/O options**

| Plus code | MRP code | Description | Type designation |
|---|---|---|---|
| – | 3AXD50000033791 | RIIO-01 I/O extension module coming as standard and including EIA-485 interface (BACnet MS/TP, Modbus RTU, N2), 2 analog inputs, 2 analog outputs, 4 digital inputs, 2 relay outputs, 1 auxiliary voltage output 24 V DC *) | RIIO-01 |
| +L515 | 3AXD50000191635 | Reduced I/O extension module including 3 digital inputs, 1 digital output and 1 analog input **) | BIO-01 |
| +L534 | 3AXD50000022164 | Auxiliary power extension module enables the use of an external auxiliary power supply with the drive | BAPO-01 |
| +L511 | 3AXD50000022162 | Relay output extension module adds 4 relay outputs to the drive | BREL-01 |
| +0L540 | – | Removes standard I/O module RIIO-01 leaving only the base unit I/O connections (2 digital inputs, 1 relay output, STO, 1 auxiliary voltage output 24 V DC) | – |

*) Standard I/O extension module RIIO-01 cannot be used together with reduced I/O extension module BIO-01 or with a fieldbus adapter.
**) BIO-01 reduced I/O extension allows simultaneous use of fieldbus adapter.

**ACH580 I/O options**

| Plus code | MRP code | Description | Type designation |
|---|---|---|---|
| +L501 | 3AXD50000004420 | External 24 V AC and DC 2 x RO and 1 x DO | CMOD-01 |
| +L523 | 3AXD50000004418 | External 24 V and isolated PTC interface | CMOD-02 |
| +L512 | 3AXD50000004431 | 115/230 V digital input 6 x DI and 2 x RO | CHDI-01 |
| +L537 | 3AXD50000033578 | ATEX-certified PTC interface, Ex II (2) GD and external 24 V | CPTC-02 |
| +L525 | 3AXD50000709243 | Analogue signal extension 3 x AI and 2 x AO | CAIO-01 |

Note: For more information see ACH580-01 HW manual 3AXD50000044839.

**Fieldbus options**

| Plus code | MRP code | Fieldbus protocol | Adapter |
|---|---|---|---|
| +K465 | 3AXD50000023864 | BACnet/IP (2-port) | FBIP-21 |
| +K452 | 3AUA0000037539 | LonWorks | FLON-01 |
| +K458 | 3AUA0000031336 | Modbus RTU | FSCA-01 |
| +K451 | 68469341 | DeviceNet™ | FDNA-01 |
| +K454 | 68469325 | PROFIBUS DP. DPV0/DPV1 | FPBA-01 |
| +K457 | 68469376 | CANopen® | FCAN-01 |
| +K462 | 3AUA0000094512 | ControlNet | FCNA-01 |
| +K469 | 3AUA0000072069 | EtherCAT® | FECA-01 |
| +K470 | 3AUA0000072120 | POWERLINK | FEPL-02 |
| +K491 | 3AXD50000049964 | Two port Modbus/TCP | FMBT-21 |
| +K492 | 3AXD50000192779 | Two port PROFINET IO | FPNO-21 |

Note: For more information see adapter module HW manuals: FBIP-21 3AXD50000028468, FMBT-21 3AXD50000158607, FLON-01 3AUA0000041017, FSCA-01 3AUA0000109533, FDNA-01 3AFE68573360, FPBA-01 3AFE68573271, FCAN-01 3AFE68615500, FCNA-01 3AUA0000141650, FECA-01 3AUA0000068940, FEPL-02 3AUA0000123527, FEIP-21 3AXD50000158621, FMBT-21 3AXD50000158607, FPNO-21 3AXD50000158614.

# Thermistor protection I/O option for increased safety

**What is a potentially explosive atmosphere and where can it be?**
Explosive atmospheres occur when flammable gases, mist, vapors or dust are mixed with air, which creates a risk of explosion. A potentially explosive area is defined as a location where there is a risk of flammable mixes. These atmospheres can be found throughout industries, from chemical, pharmaceutical and food, to power and wood processing. The electrical equipment that is installed in such locations must be designed and tested to endure these conditions and guarantee a safe function.

**What does ATEX mean?**
The term ATEX comes from the French words "ATmosphères EXplosibles", and it is a combination of two EU directives: the Worker Protection Directive 1999/92/EC and the Product Directive 2014/34/ EU. The ATEX Directives are designed to protect employees, the public and the environment from accidents owing to explosive atmospheres.

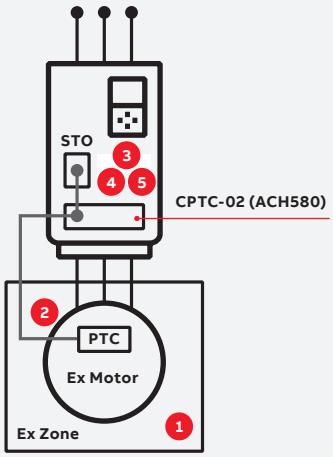
ATEX provides similar guidelines to the IECEx System (a certification that verifies compliance with IEC standards related to safety in explosive atmospheres), with a few exceptions, and with certification of protective devices (e.g. drive-integrated safety functions).

**How to ensure safe operation with ABB's ATEX-certified offering and services?**
Motors are directly connected to the machines in the potentially explosive atmosphere, and certain aspects need to be considered when selecting a motor together with a drive.

Thus, the installation should be compatible with a certain potentially explosive atmosphere zone, e.g. potentially explosive atmospheres can occur accidentally/ occasionally/continuously, flammable medium can be gas, dust and so on (see ATEX classification for explosive proof equipment for details).

ABB's motor and drive combinations are tested and certified for compliance with ATEX. By using an ABB motor for explosive atmospheres together with an ABB drive and an ATEX drive option, enjoy the benefits of efficient, high-performance motors with optimal control accuracy – without compromising on safety in explosive atmospheres with characteristics EX 2 (II) GD.

ABB's CPTC-02 ATEX-certified thermistor protection module for drives and safe disconnection function offer a motor thermistor connection for supervising the motor temperature and one relay output, which indicate motor overtemperature and stop it to avoid an explosion.




1. Motor temperature rises above the PTC sensor limit temperature
2. The sensor resistance increases very sharply and indicates overheating to the ATEX-certified module
3. The module switches the STO (Safe Torque Off) circuit off, which activates the STO function
4. The STO function disables the control voltage in the power semiconductors of the drive output stage
5. The drive is prevented from generating torque to rotate the motor – the safe state is guaranteed

—
CPTC-02 ATEX certified thermistor protection module, EX II (2) GD

| Option code | Description | Type designation |
|---|---|---|
| +L537 +Q971 | ATEX certified PTC interface, EX II (2) GD and Safe Disconnection Function | CPTC-02 |

# Tools for configuration, monitoring and process tuning

ACH480 and ACH580 have various tools to simplify the commissioning, operation and monitoring of the drives.

**Easy configuration for unpowered drives**
With the CCA-01 tool, it is possible to configure drive parameters and even download new software from PC to the unpowered drives. The power is supplied by a PC USB port.

**Drive Composer**
The Drive Composer PC tool offers fast and harmonized setup, commissioning and monitoring. Drive Composer entry (a free version of the tool) provides startup and maintenance capabilities and gathers all drive information, such as parameter loggers, faults, and backups 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.

**Connection with cable**
Using the BCBL-01 cable, the PC can be connected directly to the RJ-45 panel port on the drive.

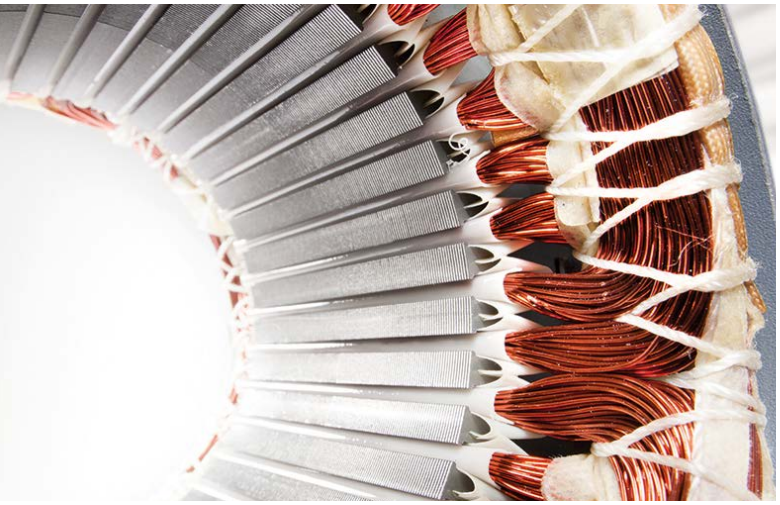
**Connection to assistant panel**
When using the Assistant control panel, the Drive composer tool is connected to the drive using the mini USB connection on the panel.

**Adaptive programming**
Adaptive programming enhances the existing drive application control program to precisely fit users' application needs. Adaptive programming software embedded inside the drive allows to distribute some of the machine's control logic to the drive. You can use Drive composer PC tool to set up the adaptive programming. The drives also offer sequence programming capabilities.

| Ordering code | Description | Type designation |
|---|---|---|
| 3AXD50000032449 | PC cable, USB to RJ45 | BCBL-01 |
| 3AXD50000019865 | Cold configurator adapter, packed kit | CCA-01 |
| 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 |

Free Drive Composer entry available at https://new.abb.com/drives/software-tools/drive-composer

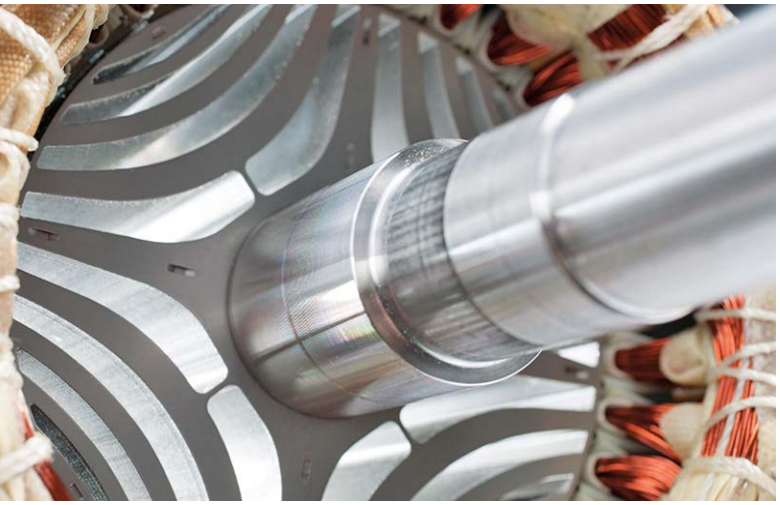
# Choose the motor for your HVACR application



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

**Induction motors, the industry workhorse**
Pair the ACH480 or ACH580 with an induction motor (IM) for simple and reliable operation in many HVACR applications and in a wide range of environments. Further simplifying setup, the HVACR drives can be integrated with virtually any type of IM by entering the nameplate motor data only.

**Permanent magnet motors for smooth operation**
Permanent magnet technology is used for improved motor characteristics in terms of energy efficiency and compactness. This technology is particularly well-suited for low speed control applications, as they eliminate the need to use gear boxes. Even without speed or rotor position sensors, the ACH480 or ACH580 drives control most types of permanent magnet motors.



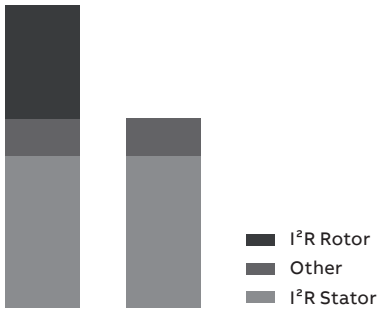
**IE5 SynRM for optimized energy efficiency**
Combining ABB's HVACR drive control technology with our synchronous reluctance motors will give you a motor and a drive package that ensures high energy efficiency, reduces motor temperatures, and provides a significant reduction in motor noise. The key is in the efficiency-optimized rotor design of our SynRM motors.

# Synchronous reluctance motors

## Ultimate efficiency and reliability to optimize your cost of ownership

**Traditional induction motor**

**IE5 SynRM motor**




**Losses IM vs SynRM**

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

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

**Superior reliability to minimize the cost of not running**
International Efficiency class IE5 synchronous reluctance motors (SynRM) have very low winding temperatures, which increases the reliability and lifetime of the winding. More importantly, a cool synchronous reluctance rotor means significantly lower bearing temperatures – an important factor because bearing failures cause about 70 percent of unplanned motor outages.

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

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

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

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

# Selection guide
## IE5 synchronous reluctance motors

This table presents performance data for IE5 SynRM motor and ACH580 drive package. Variant codes and construction details are based on the M3BP motor, protection IP55, cooling IC 411, insulation class F, temperature rise class B.

| Output (kW) | Motor type *) | Product code | Motor efficiency (%) | Motor nominal current (A) | Motor nominal torque (Nm) | Motor weight (kg) | Matched ACH580-01 drive | Package efficiency **) IES at nominal point (Pn) (%) | PDS ***) IES2 efficiency class low limit (%) | Package efficiency above IES2 efficiency class low limit (%) | Drive frame size |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **3000 RPM / 100 Hz** | | | | | | | **400 V network** | | | | |
| 5.5 | M3AL132SMA4 | 3GAL132217-•SC | 92.8 | 12.1 | 17.5 | 41 | ACH580-01-12A7-4 | 89.6 | 82.5 | 8.6 | R1 |
| 7.5 | M3AL132SMB4 | 3GAL132227-•SC | 93.1 | 16.5 | 23.9 | 41 | ACH580-01-018A-4 | 90.4 | 83.9 | 7.7 | R2 |
| 11 | M3AL132SMC4 | 3GAL132237-•SC | 94 | 24.5 | 35 | 47 | ACH580-01-026A-4 | 90.9 | 85.3 | 6.6 | R2 |
| 11 | M3BL160MLA4 | 3GBL162417-•SC | 93.6 | 25.6 | 35 | 133 | ACH580-01-033A-4 | 90.4 | 85.3 | 6 | R3 |
| 15 | M3AL132SMD4 | 3GAL132247-•SC | 94.1 | 32.9 | 47.8 | 47 | ACH580-01-039A-4 | 91.2 | 86.2 | 5.8 | R3 |
| 15 | M3BL160MLB4 | 3GBL162427-•SC | 95.1 | 34.6 | 48 | 133 | ACH580-01-039A-4 | 92.2 | 86.2 | 7 | R3 |
| 18.5 | M3BL160MLC4 | 3GBL162437-•SC | 94.6 | 43.3 | 59 | 133 | ACH580-01-046A-4 | 91.3 | 86.9 | 5.1 | R3 |
| 22 | M3BL180MLB4 | 3GBL182427-•SC | 95.5 | 50.5 | 70 | 190 | ACH580-01-062A-4 | 92.5 | 87.3 | 6 | R4 |
| 30 | M3BL200MLC4 | 3GBL202437-•SC | 95.9 | 68.9 | 95.6 | 277 | ACH580-01-073A-4 | 92.5 | 88.1 | 5 | R4 |
| 37 | M3BL200MLD4 | 3GBL202447-•SC | 96.1 | 84.5 | 118 | 277 | ACH580-01-089A-4 | 93.5 | 88.6 | 5.5 | R4 |
| 45 | M3BL225SMB4 | 3GBL222227-•SC | 96.1 | 99.8 | 143 | 330 | ACH580-01-106A-4 | 93.5 | 89 | 5.1 | R5 |
| 55 | M3BL250SMA4 | 3GBL252217-•SC | 96.4 | 123 | 175 | 396 | ACH580-01-145A-4 | 93.6 | 89.4 | 4.7 | R6 |
| 75 | M3BL250SMB4 | 3GBL252227-•SC | 96.5 | 167 | 239 | 396 | ACH580-01-169A-4 | 93.8 | 90 | 4.2 | R7 |
| 90 | M3BL250SMC4 | 3GBL252237-•SC | 96.4 | 198 | 286 | 454 | ACH580-01-206A-4 | 93.4 | 90.2 | 3.5 | R7 |
| **1500 RPM / 50 Hz** | | | | | | | | | | | |
| 5.5 | M3AL132SMA4 | 3GAL132213-•SC | 93.7 | 11.7 | 35 | 63 | ACH580-01-12A7-4 | 90.4 | 82.5 | 9.6 | R1 |
| 7.5 | M3AL132SMB4 | 3GAL132223-•SC | 93.7 | 15.7 | 47.8 | 63 | ACH580-01-018A-4 | 91 | 83.9 | 8.5 | R2 |
| 11 | M3AL132SMC4 | 3GAL132233-•SC | 94.2 | 23.8 | 70 | 69 | ACH580-01-026A-4 | 90.9 | 85.3 | 6.6 | R2 |
| 11 | M3BL160MLA4 | 3GBL162413-•SC | 94 | 24.2 | 70 | 160 | ACH580-01-026A-4 | 90.8 | 85.3 | 6.4 | R2 |
| 15 | M3BL160MLB4 | 3GBL162423-•SC | 94.9 | 31.3 | 95 | 177 | ACH580-01-039A-4 | 91.9 | 86.2 | 6.6 | R3 |
| 18.5 | M3BL180MLB4 | 3GBL182423-•SC | 95 | 42.8 | 118 | 222 | ACH580-01-046A-4 | 91.4 | 86.9 | 5.2 | R3 |
| 22 | M3BL180MLC4 | 3GBL182433-•SC | 95.4 | 49.4 | 140 | 222 | ACH580-01-062A-4 | 92.1 | 87.3 | 5.5 | R4 |
| 30 | M3BL200MLB4 | 3GBL202423-•SC | 95.9 | 65 | 191 | 304 | ACH580-01-073A-4 | 92.5 | 88.1 | 5 | R4 |
| 37 | M3BL225SMB4 | 3GBL222223-•SC | 96.3 | 79.3 | 236 | 385 | ACH580-01-089A-4 | 93.8 | 88.6 | 5.9 | R4 |
| 45 | M3BL225SMC4 | 3GBL222233-•SC | 96.3 | 98.5 | 286 | 350 | ACH580-01-106A-4 | 93.5 | 89 | 5.1 | R5 |
| 55 | M3BL250SMB4 | 3GBL252223-•SC | 96.5 | 117 | 350 | 454 | ACH580-01-145A-4 | 93.5 | 89.4 | 4.6 | R6 |
| 75 | M3BL280SMA4 | 3GBL282213-•DC | 96.2 | 166 | 478 | 639 | ACH580-01-169A-4 | 93.6 | 90 | 4 | R7 |
| 90 | M3BL280SMB4 | 3GBL282223-•DC | 96.5 | 199 | 573 | 639 | ACH580-01-206A-4 | 93.5 | 90.2 | 3.7 | R7 |
| 110 | M3BL280SMC4 | 3GBL282233-•DC | 96.7 | 241 | 699 | 697 | ACH580-01-246A-4 | 93.9 | 90.5 | 3.8 | R8 |
| 110 | M3BL315SMA4 | 3GBL312213-•DC | 96.8 | 243 | 702 | 873 | ACH580-01-246A-4 | 94.1 | 90.5 | 4 | R8 |
| 132 | M3BL315SMB4 | 3GBL312223-•DC | 96.8 | 290 | 842 | 925 | ACH580-01-293A-4 | 93.8 | 90.7 | 3.4 | R8 |
| 160 | M3BL315SMC4 | 3GBL312233-•DC | 97.1 | 343 | 1018 | 965 | ACH580-01-363A-4 | 94.2 | 90.9 | 3.6 | R9 |
| 200 | M3BL315MLA4 | 3GBL312413-•DC | 97.2 | 428 | 1272 | 1116 | ACH580-01-430A-4 | 94.1 | 91.1 | 3.3 | R9 |
| 250 | M3BL315LKA4 | 3GBL312813-•DC | 97.1 | 552 | 1591 | 1357 | ACH580-04-585A-4 | 94.6 | 91.2 | 3.7 | R10 |
| 315 | M3BL315LKC4 | 3GBL312833-•DC | 97.2 | 662 | 2006 | 1533 | ACH580-04-725A-4 | 94.9 | 91.2 | 4.1 | R11 |

*) Motor type M3AL = aluminum motor frame
Motor type M3BL = cast iron motor frame

**) Calculated package efficiency values for ACH580-01
***) PDS = Power Drive System

| Output (kW) | Motor type *) | Product code | Motor efficiency (%) | Motor nominal current (A) | Motor nominal torque (Nm) | Motor weight (kg) | Matched ACH580-01 drive | Package efficiency **) IES at nominal point (Pn) (%) | PDS ***) IES2 efficiency class low limit (%) | Package efficiency above IES2 efficiency class low limit (%) | Drive frame size |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **1000 RPM / 33.3 Hz** | | | | | | | **400 V network** | | | | |
| 7.5 | M3BL160MLA4 | 3GBL162412-•SC | 93.1 | 16.5 | 72 | 160 | ACH580-01-018A-4 | 90.2 | 83.9 | 7.5 | R2 |
| 11 | M3BL160MLB4 | 3GBL162422-•SC | 93.7 | 24.1 | 105 | 177 | ACH580-01-026A-4 | 90.4 | 85.3 | 6 | R2 |
| 15 | M3BL180MLC4 | 3GBL182432-•SC | 94.2 | 34.1 | 143 | 216 | ACH580-01-039A-4 | 90.9 | 86.2 | 5.5 | R3 |
| 18.5 | M3BL200MLA4 | 3GBL202412-•SC | 95.2 | 39.9 | 177 | 304 | ACH580-01-046A-4 | 91.9 | 86.9 | 5.8 | R3 |
| 22 | M3BL200MLB4 | 3GBL202422-•SC | 95 | 47 | 210 | 304 | ACH580-01-062A-4 | 91.9 | 87.3 | 5.3 | R4 |
| 30 | M3BL225SMB4 | 3GBL222222-•SC | 95.5 | 64.7 | 287 | 348 | ACH580-01-073A-4 | 92.1 | 88.1 | 4.5 | R4 |
| 37 | M3BL250SMA4 | 3GBL252212-•SC | 95.6 | 80.5 | 353 | 428 | ACH580-01-089A-4 | 93.3 | 88.6 | 5.3 | R4 |
| 45 | M3BL280SMA4 | 3GBL282212-•DC | 96.2 | 98.6 | 430 | 639 | ACH580-01-106A-4 | 93.5 | 89 | 5.1 | R5 |
| 55 | M3BL280SMB4 | 3GBL282222-•DC | 96 | 119 | 526 | 639 | ACH580-01-145A-4 | 93 | 89.4 | 4 | R6 |
| 75 | M3BL280SMC4 | 3GBL282232-•DC | 96.2 | 160 | 715 | 697 | ACH580-01-169A-4 | 93.6 | 90 | 4 | R7 |
| 75 | M3BL315SMA4 | 3GBL312212-•DC | 96.5 | 164 | 717 | 873 | ACH580-01-169A-4 | 93.8 | 90 | 4.2 | R7 |
| 90 | M3BL315SMB4 | 3GBL312222-•DC | 96.8 | 199 | 859 | 925 | ACH580-01-206A-4 | 93.7 | 90.2 | 3.9 | R7 |
| 110 | M3BL315SMC4 | 3GBL312232-•DC | 96.8 | 241 | 1051 | 965 | ACH580-01-246A-4 | 93.9 | 90.5 | 3.8 | R8 |
| 132 | M3BL315MLA4 | 3GBL312412-•DC | 97.1 | 278 | 1261 | 1116 | ACH580-01-293A-4 | 94 | 90.7 | 3.6 | R8 |
| 160 | M3BL315LKA4 | 3GBL312812-•DC | 97.1 | 341 | 1527 | 1357 | ACH580-01-363A-4 | 94.2 | 90.9 | 3.6 | R9 |
| 200 | M3BL315LKC4 | 3GBL312832-•DC | 97.3 | 416 | 1910 | 1533 | ACH580-01-430A-4 | 94.3 | 91.1 | 3.5 | R9 |

*) Motor type M3AL = aluminum motor frame
Motor type M3BL = cast iron motor frame

**) Calculated package efficiency values for ACH580-01
***) PDS = Power Drive System

# ABB automation products

**AC500**
ABB's powerful flagship PLC offering, ideal for such applications as district energy, provides wide range of performance levels and scalability within a single simple concept where most competitors require multiple product ranges to deliver similar functionality.

**AC500-S**
A PLC based modular automation solution that makes it easier than before to mix and match standard and safety I/O modules to expertly meet your safety requirements in all functional safety applications. "Extreme conditions" version is also offered.

**AC500-eCo**
Meets the cost-effective demands of the small PLC market while offering total inter-operability with the core AC500 range. Web server, FTP server and Modbus-TCP for all Ethernet versions. A Pulse Train Out-put module is available for multi-axis positioning.

**AC500-XC**
"Extreme conditions" modules with extended operating temperature, immunity to vibration and hazardous gases. for use at high altitudes, in humid conditions. etc. It replaces expensive cabinets with its built-in protection against dirt, water, gases and dust.

**BMS controllers**
BTL-certified BACnet/IP and MS/TP controllers for building's systems support simultaneous routing of communication protocols to IP layer without the use of external gateways. Easily extend I/Os using the field level extension modules to meet the most complex HVACR strategies. Enjoy flexible programming with pre-engineered application libraries.

**Automation builder**
Integrates the engineering and maintenance for PLC, drives, motion. HMI and robotics. It complies with the IEC 61131-3 standard offering all five IEC programming languages for PLC and drive configuration. Automation Builder supports a number of languages and comes with new libraries. FTP functions, SMTP, SNTP, smart diagnostics and debugging capabilities.

**Control panels**
Our control panels offer a wide range of touchscreen graphical displays from 3.5" up to 15". They are provided with user-friendly configuration software that enables tailor made customized HMI solutions. Rich sets of graphical symbols and the relevant drivers for ABB automation products are provided. Control panels for visualization of AC500 web server applications are available.

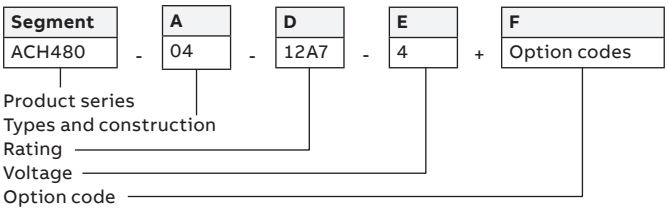
**Softstarters**
ABB's softstarters increase a motor's lifetime by protecting it from electrical stresses. With everything that you need in one unit, from bypass contactor to overload protection, a single Softstarter makes for a compact and complete starting solution.

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

# Summary of drive ordering codes

## ACH480-04

The type designation tells you the specifications and configuration of the drive.
The table shows the primary drive variants.
Sample type code: ACH480-04-12A7-4+XXXX




**Basic codes**

| Segment | Option | Description |
|---|---|---|
| A | Construction | 04 = when no options are selected: drive module, IP20 (UL Type open), ACH-AP-H control panel with a USB port, BACnet MS/TP, Modbus RTU, N2 as part of RIIO-01 I/O standard module, internal EMC C2 filter, Safe Torque Off, brake chopper, coated boards, quick installation and start-up guide (multilingual) |
| D | Current rating | Refer to the rating table |
| E | Voltage rating | 4 = 400/480 V (380 ... 480 V)<br>2 = 3 phase 230 V (200 ... 240 V)<br>1 = 1 phase 230 V (200 ... 240 V) |

**Option codes**

| Segment | Option | Code | Description |
|---|---|---|---|
| F | Control panel and panel options | +0J400 | No control panel |
| | | +J400 | ACH-AP-H assistant control panel (as standard) |
| | | +J424 | RDUM-01 blank panel with RJ-45 connector |
| | | +J425 | ACS-AP-I industrial assistant control panel |
| | | +J429 | ACH-AP-W assistant control panel with a Bluetooth interface |
| | | +J431 | USB to RJ-45 cable that is used together with RDUM-01 for PC connection |
| | I/O (one slot available for I/O options) | +L540 | I/O & BACnet MS/TP, Modbus RTU, N2 module RIIO-01 (as standard) |
| | | +0L540 | Remove the standard I/O module RIIO-01 |
| | | +L515 | BIO-01 reduced I/O module (can be used together with fieldbus adapter) |
| | I/O (one slot available for FBA options) | +K465 | BACnet/IP 2-port (FBIP-21) |
| | | +K451 | DeviceNet™ (FDNA-01) |
| | | +K454 | PROFIBUS® DP (FPBA-01) |
| | | +K457 | CANopen® (FCAN-01) |
| | | +K458 | Modbus RTU (FSCA-01) |
| | | +K462 | ControlNet™ (FCNA-01) |
| | | +K469 | EtherCAT® (FECA-01) |
| | | +K470 | Ethernet POWERLINK (FEPL-01) |
| | | +K490 | EtherNet/IP™ (FEIP-21) |
| | | +K491 | Modbus®/TCP (FMBT-21) |
| | | +K492 | PROFINET® IO (FPNO-21) |
| | ABB Ability™ Condition Monitoring for drives | +K496 | NETA-21 wired remote monitoring system |

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

# Summary of drive ordering codes

## ACH580-01

The type designation tells you the specifications and configuration of the drive.
The table shows the primary drive variants.
Sample type code: ACH580-01-12A7-4+XXXX

| Segment | | A | | D | | E | | F |
|---|---|---|---|---|---|---|---|---|
| ACH580 | - | 01 | - | 12A7 | - | 4 | + | Option codes |

Product series
Types and construction
Rating
Voltage
Option code

**Basic codes**

| Segment | Option | Description |
|---|---|---|
| A | Construction | 01 = when no options are selected: wall-mounted drive, IP21 (UL Type 1), ACH-AP-H control panel with a USB port, embedded BACnet MS/TP, Modbus RTU, N2, choke, internal EMC C2 filter, Safe Torque Off, braking chopper in frames R1, R2, R3, coated boards, cable lead through entry from the bottom, cable box or the conduit plate with cable entries, quick installation and start-up guide (multilingual) |
| D | Current rating | Refer to the rating table |
| E | Voltage rating | 4 = 400/480 V (380...480 V)<br>2 = 230 V (200...240 V) |

**Option codes**

| Segment | Option | Code | Description |
|---|---|---|---|
| F | Control panel and panel options | +J400 | ACH-AP-H assistant control panel (as standard) |
| | | +0J400 | Removes control panel |
| | | +J424 | CDUM-01 blank control panel cover (no control panel) |
| | | +J425 | ACS-AP-I industrial assistant control panel |
| | | +J429 | ACH-AP-W assistant control panel with a Bluetooth interface |
| | | +J461 | ACH-DCP-11 connectivity panel hardware (EU variant) |
| | | +J482 | 2-year condition monitoring cloud subscription by ACH-DCP-11 |
| | I/O (one slot available for I/O options) | +L501 | CMOD-01 external 24 V AC/DC and digital I/O extension (2×RO and 1×DO) |
| | | +L512 | CHDI-01 115/230 V digital input extension (6×DI and 2×RO) |
| | | +L523 | CMOD-02 external 24 V AC/DC and isolated PTC interface |
| | | +L525 | CAIO-01 analogue signal extension (3 x AI and 2 x AO) |
| | | +L537 | CPTC-02 ATEX-certified PTC interface, Ex II (2) GD and external 24 V. Requires also option +Q971. |
| | Safety | +Q971 | ATEX-certified Safe Disconnection Function, Ex II (2) GD. Sold only with option +L537. |
| | Fieldbus (One fieldbus adapter supported. Fieldbus adapters available as loose options for retrofit.) | +K465 | BACnet/IP 2-port (FBIP-21) |
| | | +K451 | DeviceNet™ (FDNA-01) |
| | | +K454 | PROFIBUS® DP (FPBA-01) |
| | | +K457 | CANopen® (FCAN-01) |
| | | +K458 | Modbus RTU (FSCA-01) |
| | | +K462 | ControlNet™ (FCNA-01) |
| | | +K469 | EtherCAT® (FECA-01) |
| | | +K470 | Ethernet POWERLINK (FEPL-01) |
| | | +K490 | EtherNet/IP™ (FEIP-21) |
| | | +K491 | Modbus®/TCP (FMBT-21) |
| | | +K492 | PROFINET® IO (FPNO-21) |
| | ABB Ability™ Condition Monitoring for drives | +K496 | NETA-21 wired remote monitoring system |
| | IP enclosure | +B056 | IP55 (UL Type 12). Factory option, retrofit not possible. |
| | Construction | +C135 | Flange mounting kit (only available for 400V IP21 drives) |
| | | +H358 | Cable conduit plate, blank |
| | | +P944 | Drive without cable entry box. Version for cabinet mounting (R5-R9). |
| | | +F278 | Main switch disconnector (R1-R5) |
| | | +E223 | EMC filter, category C1 for earthed network (R1-R5) |
| | | +F316 | Main switch and EMC filter, category C1 for earthed network (R1-R5) |
| | Complementary options | +P931 | Extended warranty up to 36 months |
| | | +P932 | Extended warranty up to 60 months |
| | | +P952 | European Union Country of origin |
| | Software | +N2000 | Standard language package |
| | | +N2901 | Europe language package |
| | | +N2902 | Asia language package |

## ACH580-04

The type designation tells you the specifications and configuration of the drive.
The table shows the primary drive variants.
Sample type code: ACH580-04-505A-4+XXXX

| Segment | | A | | D | | E | | F |
|---|---|---|---|---|---|---|---|---|
| ACH580 | - | 04 | - | 505A | - | 4 | + | Option codes |

Product series
Types and construction
Rating
Voltage
Option code

**Basic codes**

| Segment | Option | Description |
|---|---|---|
| A | Construction | 04 = when no options are selected: drive module, IP00 (UL Type open), bookshelf mounting with pedestal, integrated control unit (inside the drive module), ACH-AP-H control panel with a USB port, embedded BACnet MS/TP, Modbus RTU, N2, build-in choke, extraction/installation ramp, full-size output cable connection terminals, common mode filter (+E208), DPMP-03 mounting platform, internal EMC C2 filter TN (grounded) and IT (ungrounded) systems (+E210), no DC connection busbars, Safe Torque Off, coated boards, quick installation and start-up guide (multilingual). |
| D | Current rating | Refer to the rating table |
| E | Voltage rating | 4 = 400/480 V (380…480 V) |

**Option codes**

| Segment | Option | Code | Description |
|---|---|---|---|
| F | Control panel and panel options | +J400 | ACH-AP-H assistant control panel (as standard) |
| | | +0J400 | Removes control panel |
| | | +J425 | ACS-AP-I industrial assistant control panel |
| | | +J429 | ACA-AP-W assistant control panel with a Bluetooth interface |
| | | +J461 | ACH-DCP-11 connectivity panel hardware (EU variant) |
| | | +J482 | 2-year condition monitoring cloud subscription by ACH-DCP-11 |
| | I/O (one slot available for I/O options) (L501, L523 and L512 available as retrofit options) | +L501 | External 24 V DC/AC and Digital I/O extension (2xRO and 1xDO) / CMOD-01 |
| | | +L512 | 115/230V Digital input (6xDI and 2xRO) / CHDI-01 |
| | | +L523 | External 24 V and isolated PTC interface / CMOD-02 |
| | | +L525 | CAIO-01 analogue signal extension (3 x AI and 2 x AO) |
| | | +L537 | ATEX-certified PTC interface, Ex II (2) GD and external 24 V / CPTC-02. Requires also +Q971 option. |
| | Safety | +Q971 | ATEX-certified Safe Disconnection Function, Ex II (2) GD / CPTC-02 (+Q971 option sold only together with +L537 option) |
| | Fieldbus (One fieldbus adapter supported. Fieldbus adapters available as loose options for retrofit.) | +K465 | BACnet/IP 2-port (FBIP-21) |
| | | +K451 | DeviceNet™ (FDNA-01) |
| | | +K454 | PROFIBUS® DP (FPBA-01) |
| | | +K457 | CANopen® (FCAN-01) |
| | | +K458 | Modbus RTU (FSCA-01) |
| | | +K462 | ControlNet™ (FCNA-01) |
| | | +K469 | EtherCAT® (FECA-01) |
| | | +K470 | Ethernet POWERLINK (FEPL-01) |
| | | +K490 | EtherNet/IP™ (FEIP-21) |
| | | +K491 | Modbus®/TCP (FMBT-21) |
| | | +K492 | PROFINET® IO (FPNO-21) |
| | ABB Ability™ Condition Monitoring for drives | +K496 | NETA-21 wired remote monitoring system |
| | IP enclosure | +B051 | IP20 Finger safe |
| | Construction | +J410 | Control panel door mounting kit (+J410 Includes DPMP-03) |
| | | +H370 | Full-size input terminals |
| | | +H381 | Full power cabling panels to be attached to a cabinet, the drive module can be pulled out from the cabinet without disconnecting the power cables |
| | | +P906 | Remote control board |
| | | +0H371 | No full size output terminals |
| | | +0H534 | No pedestal |
| | | +0P919 | No cabinet installation ramp |
| | Filters | +E202 | EMC/RFI-filter, C2, 1st environment (earthened networks) |
| | | +E210 | EMC/RFI-filter, C3, 2nd environment, unrestricted (earthed and unearthed networks) |
| | | +E208 | Common mode filter |
| | Resistor braking | +D150 | Brake chopper |
| | Complementary options | +P931 | Extended warranty up to 36 months |
| | | +P932 | Extended warranty up to 60 months |
| | | +P952 | European Union Country of origin |

# Summary of drive ordering codes

## ACH580-07

The type designation tells you the specifications and configuration of the drive.
The table shows the primary drive variants.
Sample type code: ACH580-07-145A-4+XXXX

| Segment | | A | | D | | E | | F |
|---|---|---|---|---|---|---|---|---|
| ACH580 | - | 07 | - | 145A | - | 4 | + | Option codes |

Product series
Types and construction
Rating
Voltage
Option code

**Basic codes**

| Segment | Option | Description |
|---|---|---|
| A | Construction | 07 = when no options are selected: cabinet-installed drive, IP21 (UL Type 1), ACH-AP-H control panel with a USB port, embedded BACnet MS/TP, Modbus RTU, N2, main switch, AC fuses, internal EMC C3 filter (TN grounded), common mode filter in frames R10 and R11, Safe Torque Off, bottom entry and exit of cables, USB memory containing all manuals. |
| D | Current rating | Refer to the rating table |
| E | Voltage rating | 4 = 400/480 V (380...480 V) |

**Option codes**

| Segment | Option | Code | Description |
|---|---|---|---|
| | Control panel and panel options | +J429 | ACH-AP-W assistant control panel with a Bluetooth interface |
| | | +J461 | ACH-DCP-11 connectivity panel hardware (EU variant) |
| | | +J482 | 2-year condition monitoring cloud subscription by ACH-DCP-11 |
| | I/O (one slot available for I/O options) | +L501 | External 24 V DC/AC and Digital I/O extension (2xRO and 1xDO) |
| | | +L504 | Additional I/O-Terminal Block |
| | | +L512 | 115/230V Digital input (6xDI and 2xRO) |
| | | +L523 | External 24 V and isolated PTC interface |
| | | +L525 | CAIO-01 analogue signal extension (3 x AI and 2 x AO) |
| | | +L537 | ATEX-certified thermistor protection module, Ex II (2) GD (requires ATEX-certified Safe Disconnection Function, Ex II (2) GD, add +Q971 to code) |
| | Safety | +Q971 | ATEX-certified Safe Disconnection Function, Ex II (2) GD (+Q971 option sold only together with +L537 option. Not available with +Q951) |
| | | +Q951 | Safety option of emergency stop where Main breaker is opened during emergency |
| | | +Q963 | Safety option of emergency stop where main breaker is not opened during emergency |
| | Fieldbus (One fieldbus adapter supported. Fieldbus adapters available as loose options for retrofit.) | +K465 | BACnet/IP 2-port (FBIP-21) |
| | | +K451 | DeviceNet™ (FDNA-01) |
| | | +K454 | PROFIBUS® DP (FPBA-01) |
| | | +K457 | CANopen® (FCAN-01) |
| | | +K458 | Modbus RTU (FSCA-01) |
| | | +K462 | ControlNet™ (FCNA-01) |
| | | +K469 | EtherCAT® (FECA-01) |
| | | +K470 | Ethernet POWERLINK (FEPL-01) |
| | | +K490 | EtherNet/IP™ (FEIP-21) |
| | | +K491 | Modbus®/TCP (FMBT-21) |
| | | +K492 | PROFINET® IO (FPNO-21) |
| | ABB Ability™ Condition Monitoring for drives | +K496 | NETA-21 wired remote monitoring system |
| | IP enclosure | +B054 | IP42 (UL Type 1) |
| | | +B055 | IP54 (UL Type 12) |
| | Construction | +C129 | Cabinet drive is UL listed |
| | | +C180 | Seismic design |

**Option codes**

| Segment | Option | Code | Description |
|---|---|---|---|
| F | Filters, contactors, circuit breakers | +E205 | Du/dt filter |
| | | +E208 | Common mode filter (as a default for R10-R11) |
| | | +F250 | Line contactor |
| | | +F289 | Molded case circuit breaker (UL listed, requires C129 option) |
| | Cabling | +H351 | Top entry (additional channel for frames R6-R9, +125 mm the drive cabinet width) |
| | | | Top entry through roof (frames R10-R11) |
| | | +H353 | Top exit (additional channel for frames R6-R9, +125mm the drive cabinet width) |
| | | | Top exit (frames R10-R11) – additional 150 mm channel |
| | | +H358 | Cable conduit entry (Default in US, anywhere else specify in order) |
| | | +C164 | Plinth 100 mm (separate in package) |
| | | +C179 | Plinth 200 mm (separate in package) |
| | Cabinet options | +C128 | Cooling air intake through bottom of cabinet |
| | | +C130 | Channeled air outlet |
| | | +C196 | Empty cabinet 400 mm on right side |
| | | +C197 | Empty cabinet 600 mm on right side |
| | | +C198 | Empty cabinet 800 mm on right side |
| | | +C199 | Empty cabinet 400 mm on left side |
| | | +C200 | Empty cabinet 600 mm on left side |
| | | +C201 | Empty cabinet 800 mm on left side |
| | | +G300 | Cabinet heater (External supply) |
| | | +G313 | Output for motor heater |
| | | +G327 | Ready Pilot light, white |
| | | +G328 | Run Pilot light, green |
| | | +G329 | Fault Pilot light, red |
| | Starter for auxiliary motor fan | +M600 | 1…1.6 A; 1PC-s, dimensioned by fan size, Includes protective devices |
| | | +M601 | 1.6…2.5 A; 1PC-s, dimensioned by fan size, Includes protective devices |
| | | +M602 | 2.5…4 A; 1PC-s, dimensioned by fan size, Includes protective devices |
| | | +M603 | 4…6.3 A; 1PC-s, dimensioned by fan size, Includes protective devices |
| | | +M604 | 6.3…10 A;1PC-s, dimensioned by fan size, Includes protective devices |
| | | +M605 | 10…16 A;1PC-s, dimensioned by fan size, Includes protective devices |
| | Complementary options | +P931 | Extended warranty up to 36 months |
| | | +P932 | Extended warranty up to 60 months |
| | Specialities | +P912 | Seaworthy Packing (R10, R11: High Cube (HC) container required for reshipping) |
| | Software | +N2000 | Standard language package |
| | | +N2901 | Europe language package |
| | | +N2902 | Asia language package |

# Summary of drive ordering codes

## ACH580-31

The type designation tells you the specifications and configuration of the drive.
The table shows the primary drive variants.
Sample type code: ACH580-31-12A7-4+XXXX

| Segment | | A | | D | | E | | F |
|---|---|---|---|---|---|---|---|---|
| ACH580 | - | 31 | - | 12A7 | - | 4 | + | Option codes |

Product series
Types and construction
Rating
Voltage
Option code

**Basic codes**

| Segment | Option | Description |
|---|---|---|
| A | Construction | 31 = when no options are selected: ultra-low harmonic wall-mounted drive, IP21 (UL Type 1), ACH-AP-H control panel with a USB port, embedded BACnet MS/TP, Modbus RTU, N2, choke, internal EMC C2 filter in frames R3 and R8, internal EMC C3 filter in frame R6, internal common mode filter, Safe Torque Off, coated boards, cable entry from the bottom, cable box or the conduit plate with cable entries, quick installation and start-up guide (multilingual) |
| D | Current rating | Refer to the rating table |
| E | Voltage rating | 4 = 400/480 V (380...480 V) |

**Option codes**

| Segment | Option | Code | Description |
|---|---|---|---|
| F | Control panel and panel options | +J400 | ACH-AP-H assistant control panel (as standard) |
| | | +0J400 | Removes control panel |
| | | +J424 | CDUM-01 blank control panel cover (no control panel) |
| | | +J425 | ACS-AP-I industrial assistant control panel |
| | | +J429 | ACH-AP-W assistant control panel with a Bluetooth interface |
| | | +J461 | ACH-DCP-11 connectivity panel hardware (EU variant) |
| | | +J482 | 2-year condition monitoring cloud subscription by ACH-DCP-11 |
| | I/O (one slot available for I/O options) | +L501 | CMOD-01 External 24 V AC/DC and digital I/O extension (2×RO and 1×DO) |
| | | +L512 | CHDI-01 115/230 V Digital input extension (6×DI and 2×RO) |
| | | +L523 | CMOD-02 External 24 V AC/DC and isolated PTC interface |
| | | +L525 | CAIO-01 analogue signal extension (3 x AI and 2 x AO) |
| | | +L537 | CPTC-02 ATEX-certified PTC interface, Ex II (2) GD and external 24 V. Requires also option +Q971. |
| | Safety | +Q971 | ATEX-certified Safe Disconnection Function, Ex II (2) GD. Sold only with option +L537. |
| | Fieldbus (One fieldbus adapter supported. Fieldbus adapters available as loose options for retrofit.) | +K465 | BACnet/IP 2-port (FBIP-21) |
| | | +K451 | DeviceNet™ (FDNA-01) |
| | | +K454 | PROFIBUS® DP (FPBA-01) |
| | | +K457 | CANopen® (FCAN-01) |
| | | +K458 | Modbus RTU (FSCA-01) |
| | | +K462 | ControlNet™ (FCNA-01) |
| | | +K469 | EtherCAT® (FECA-01) |
| | | +K470 | Ethernet POWERLINK (FEPL-01) |
| | | +K490 | EtherNet/IP™ (FEIP-21) |
| | | +K491 | Modbus®/TCP (FMBT-21) |
| | | +K492 | PROFINET® IO (FPNO-21) |
| | IP enclosure | +B056 | IP55 (UL type 12). Factory option, retrofit not possible. |
| | Construction | +C135 | Flange mounting kit. (Only available for 400V IP21 drives) |
| | | +H358 | Cable conduit plate, blank |
| | | +P944 | Drive without cable entry box. Version for cabinet mounting (R5-R9). |
| | Complementary options | +P931 | Extended warranty up to 36 months |
| | | +P932 | Extended warranty up to 60 months |
| | | +P952 | European Union Country of origin |
| | Software | +N2000 | Standard language package |
| | | +N2901 | Europe language package |
| | | +N2902 | Asia language package |

## ACH580-34

The type designation tells you the specifications and configuration of the drive.
The table shows the primary drive variants.
Sample type code: ACH580-34-505A-4+XXXX

| Segment | | A | | D | | E | | F |
|---|---|---|---|---|---|---|---|---|
| ACH580 | - | 34 | - | 505A | - | 4 | + | Option codes |

Product series
Types and construction
Rating
Voltage
Option code

**Basic codes**

| Segment | Option | Description |
|---|---|---|
| A | Construction | 34 = when no options are selected: ultra-low-harmonic drive module, IP00 (UL Type open), bookshelf mounting with pedestal, integrated control unit, ACH-AP-H control panel with a USB port, embedded BACnet MS/TP, Modbus RTU, N2, build-in LCL filter, full-size output cable connection terminals, internal EMC C3 filter (+E210), common mode filter (+E208), DC connection busbars, extraction/installation ramp, Safe Torque Off, coated boards, quick installation and start-up guides (multilingual) |
| D | Current rating | Refer to the rating table |
| E | Voltage rating | 4 = 400/480 V (380...480 V) |

**Option codes**

| Segment | Option | Code | Description |
|---|---|---|---|
| F | Control panel and panel options | +J400 | ACH-AP-H assistant control panel (as standard) |
| | | +0J400 | Removes control panel |
| | | +J425 | ACS-AP-I industrial assistant control panel |
| | | +J429 | ACA-AP-W assistant control panel with a Bluetooth interface |
| | | +J461 | ACH-DCP-11 connectivity panel hardware (EU variant) |
| | | +J482 | 2-year condition monitoring cloud subscription by ACH-DCP-11 |
| | I/O (one slot available for I/O options) (L501, L523 and L512 available as retrofit options) | +L501 | External 24 V DC/AC and Digital I/O extension (2xRO and 1xDO) / CMOD-01 |
| | | +L512 | 115/230V Digital input (6xDI and 2xRO) / CHDI-01 |
| | | +L523 | External 24 V and isolated PTC interface / CMOD-02 |
| | | +L525 | CAIO-01 analogue signal extension (3 x AI and 2 x AO) |
| | | +L537 | ATEX-certified PTC interface, Ex II (2) GD and external 24 V / CPTC-02. Requires also +Q971 option. |
| | Safety | +Q971 | ATEX-certified Safe Disconnection Function, Ex II (2) GD / CPTC-02 (+Q971 option sold only together with +L537 option) |
| | Fieldbus (One fieldbus adapter supported. Fieldbus adapters available as loose options for retrofit.) | +K465 | BACnet/IP 2-port (FBIP-21) |
| | | +K451 | DeviceNet™ (FDNA-01) |
| | | +K454 | PROFIBUS® DP (FPBA-01) |
| | | +K457 | CANopen® (FCAN-01) |
| | | +K458 | Modbus RTU (FSCA-01) |
| | | +K462 | ControlNet™ (FCNA-01) |
| | | +K469 | EtherCAT® (FECA-01) |
| | | +K470 | Ethernet POWERLINK (FEPL-01) |
| | | +K490 | EtherNet/IP™ (FEIP-21) |
| | | +K491 | Modbus®/TCP (FMBT-21) |
| | | +K492 | PROFINET® IO (FPNO-21) |
| | IP enclosure | +B051 | IP20 Finger safe |
| | Construction | +J410 | Control panel door mounting kit (+J410 Includes DPMP-03) |
| | | +H370 | Full-size input terminals |
| | | +H381 | Full power cabling panels to be attached to a cabinet, the drive module can be pulled out from the cabinet without disconnecting the power cables |
| | | +P906 | Remote control board |
| | | +0H371 | No full size output terminals |
| | | +0P919 | No cabinet installation ramp |
| | Filters | +E202 | EMC/RFI-filter, C2, 1st environment (earthened networks) |
| | | +E210 | EMC/RFI-filter, C3, 2nd environment, unrestricted (earthed and unearthed networks) |
| | | +E208 | Common mode filter |
| | Complementary options | +P931 | Extended warranty up to 36 months |
| | | +P932 | Extended warranty up to 60 months |
| | | +P952 | European Union Country of origin |

# Our service expertise, your advantage

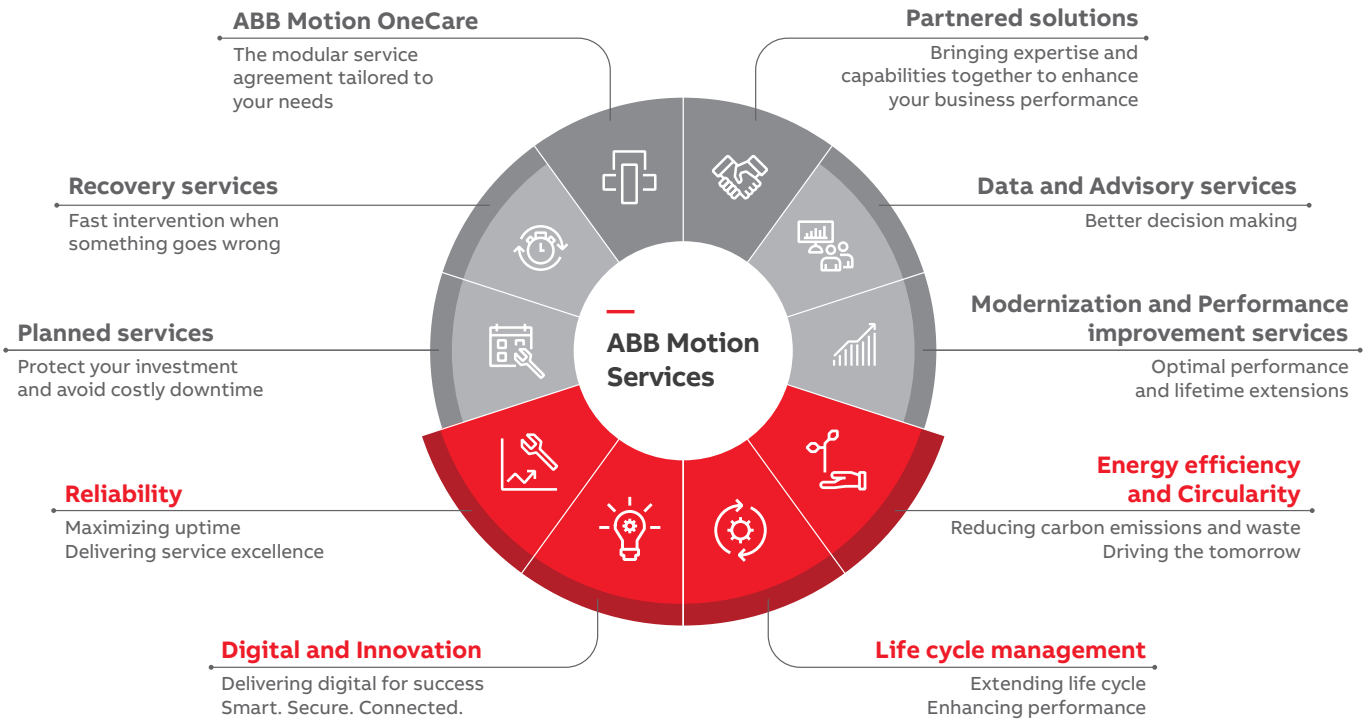
ABB Motion Services helps customers around the globe by maximizing uptime, extending product life cycle, and enhancing the performance and energy efficiency of electrical motion solutions. We enable innovation and success through digitalization by securely connecting and monitoring our customers' motors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

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

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

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

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




# OUR EXPERTISE
# YOUR ADVANTAGE

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

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

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

| | Active | Classic | Limited | Obsolete |
|---|---|---|---|---|
| | **Full range of life cycle services and support** | | **Limited range of life cycle services and support** | **Replacement and end-of-life services** |
| **Product** | Product is in active sales and manufacturing phase | Serial production has ceased. Product may be available for plant extensions, as a spare 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 |

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

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