CATALOG

ABB drives for HVAC

ACH580, 0.75 to 500 kW, 1 to 700 hp

ACH580 series
Leading the way in HVAC 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, and air conditioning (HVAC) 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.

For half a century, ABB has been leading the way in optimizing HVAC systems using drive control to ensure that you can take comfort for granted. The new ACH580 series of 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.

Contents

The next step in HVAC drives

The new ACH580 drives come with a range of advanced features, such as a new primary settings menu that makes commissioning the drives much easier and faster. Bluetooth connectivity offers improved accessibility for drives in remote areas and increases safety by letting users stay out of arc flash zones.

Simple to select, install and use
All the essentials – such as chokes, EMC filters, cabling clamps, certified BACnet communication, and enclosures from IP21/UL (NEMA) Type 1 to IP55/UL (NEMA) Type 12 – are a standard part of the drive, simplifying selection, installation, and commissioning.

Safe maintenance
The new packaged disconnect solution provides a main disconnect switch, further increasing safety for people working on air-handling units.

Motor control options to meet your application needs
ACH580 drives can be integrated with several types of AC motors, even high-efficiency permanent magnet (PM) and synchronous reluctance (SynRM) motors. Using these motors can reduce your energy costs even more.

Additional I/O options
Take advantage of the added flexibility and accessibility – never be without back-up I/O points at the job site again.

ACH580 drives are ideal for the HVAC fans, pumps, compressors, air-handling units, and chillers used in hospitals, data centers, shopping centers, tunnel ventilation, factories, office buildings, and more.

Intuitive control panel
The drive's HVAC-specific software, intuitive keypad with customizable text, and menu-driven programming simplify setup and operation of even the most complex applications. You can customize the view so that it only shows the information you need, and it automatically saves a backup of your most recent configuration so that it's always available.

Optional Bluetooth® capability
ABB's new HVAC Bluetooth control panel lets you commission the drive remotely, safely outside the arc flash boundary. The Drivetune smartphone app allows you to commission and tune the drive from a distance, giving you access to the same primary settings and other menus available on the drive's HVAC control panel.

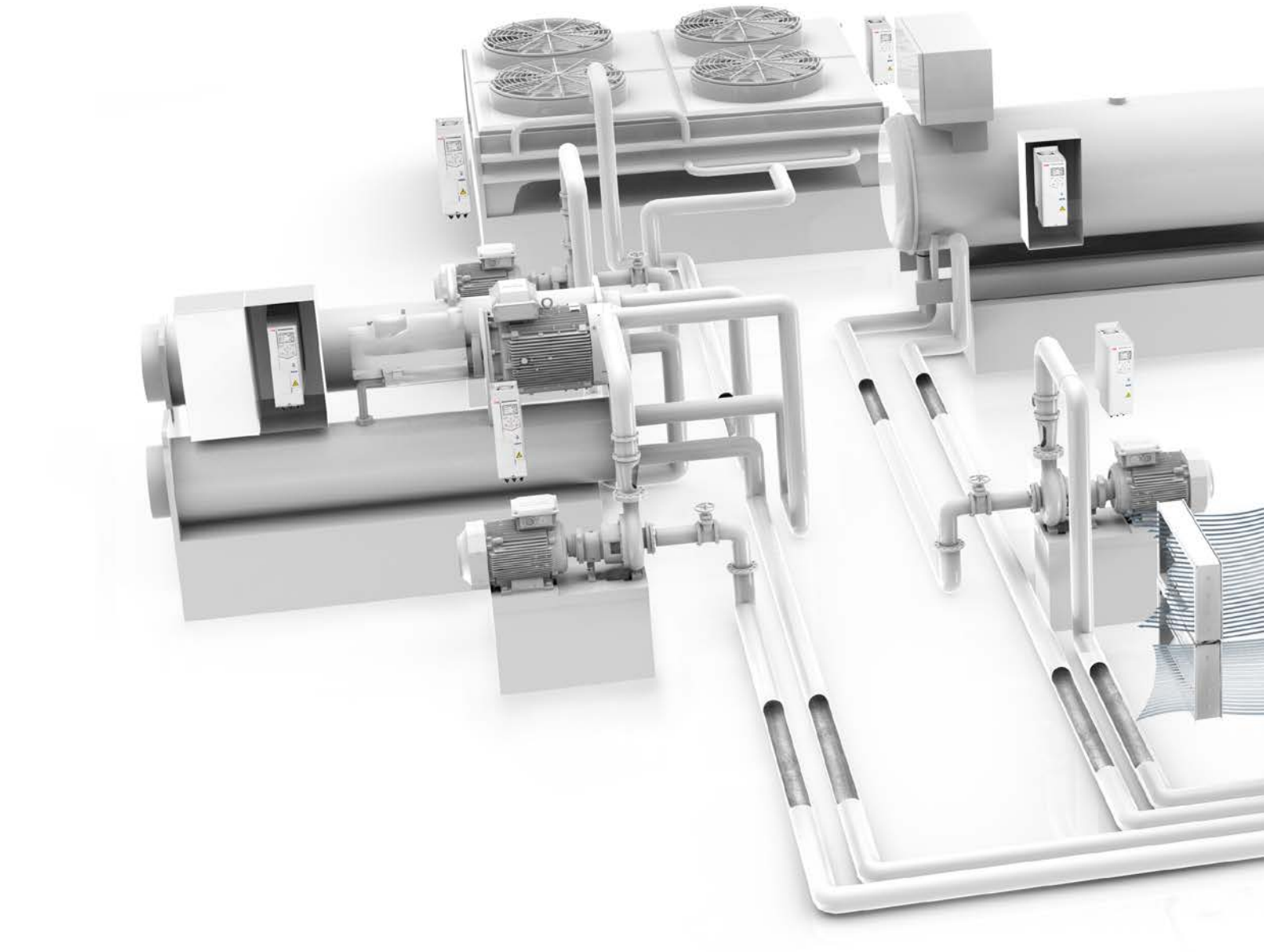
Reliable communication
BACnet MS/TP, Modbus RTU and N2 are embedded in every ACH580. In addition, a wide range of optional fieldbus adapters are available to enable connectivity with all major building automation and control systems.

Harmonic mitigation
The drive provides reduced harmonics with built-in, second-generation swinging choke technology in a small and lightweight design.

Optional ultra-low harmonics (ULH) for a clean network
The revolutionary ACH580 ultra-low harmonic drive is designed specifically for the HVAC market, minimizing the effect of harmonics on your system. This all-in-one solution is fully integrated with the ACH580 platform and leverages the same programming tools, user settings, options, and functions, while providing superior harmonic performance.

Premier air handling

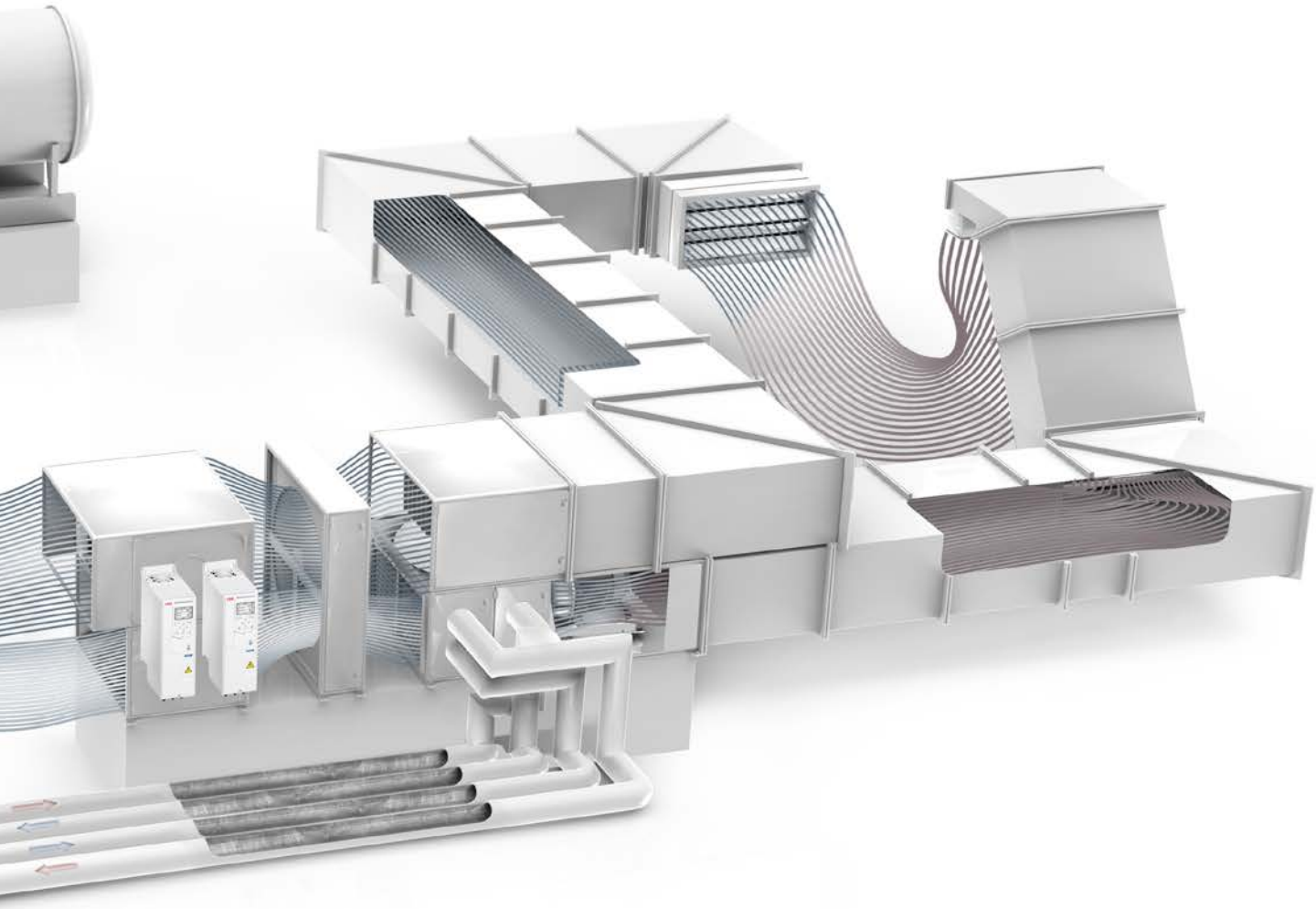
We understand the complexity of air handling systems and the need to produce high levels of comfort, control, and safety. Regardless of the season or external conditions, we help make your system efficient, safe, and informative.



Effortless system startup
The ACH580 ensures a smooth, coordinated start to your HVAC system. Embedded interlock logic enables the drive to confirm that equipment such as dampers are in the right position and sensors are showing the correct status before operations begin. The Drive Composer PC tool simplifies the use of the drive, and the control panel's primary settings menu and built-in assistants speed up commissioning, allowing basic setup to be completed in minutes.

Increased energy savings
Achieve increased energy savings by using the appropriate motor and drive combination. The ACH580 drive works with induction, PM, or SynRM motors, enabling high efficiencies.

Improved safety
Built-in safety functionality, such as override mode, enables your system to ignore all non-essential faults during emergencies to maintain air quality in the fire exit paths.



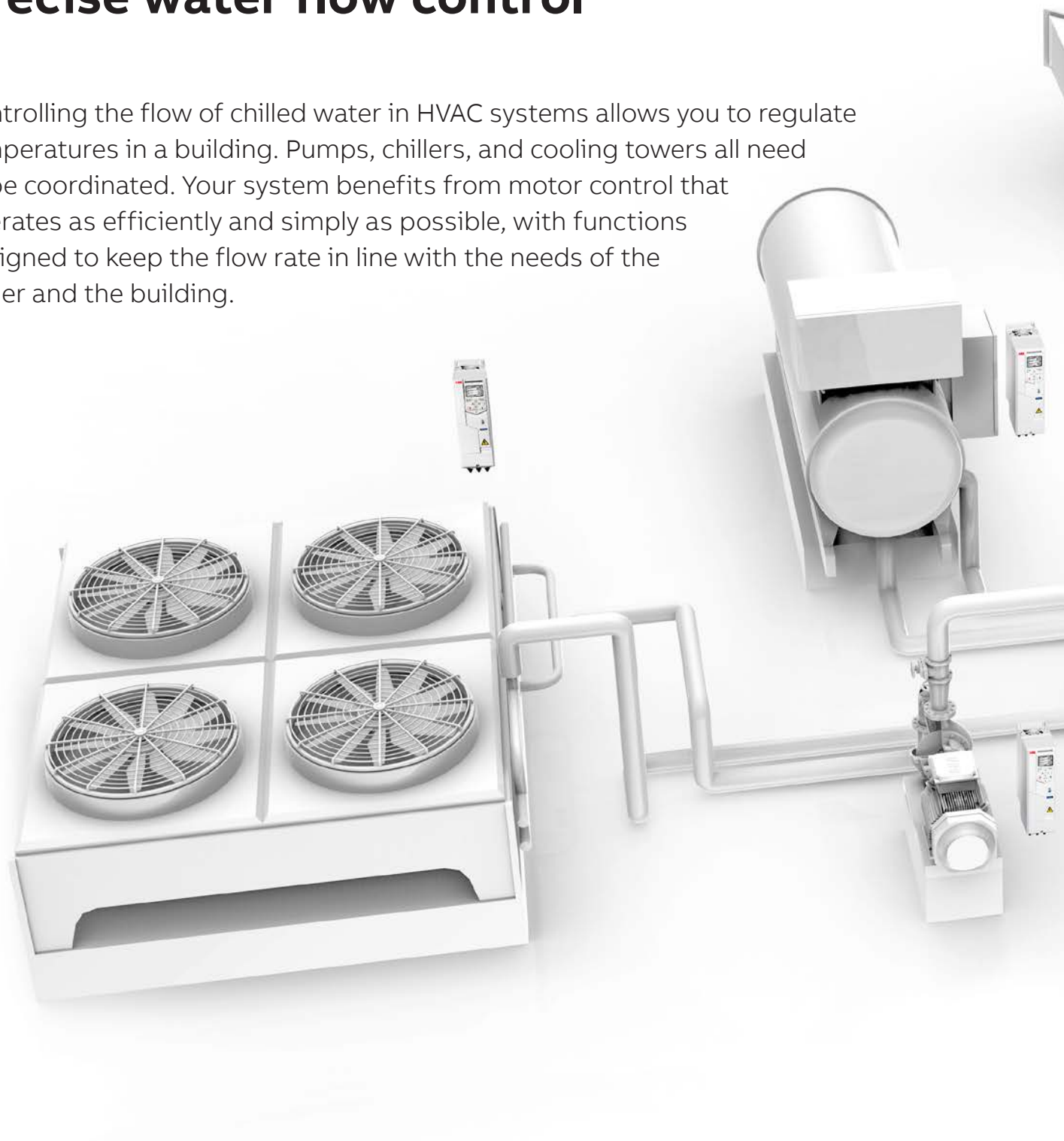
The keypad's optional Bluetooth capability provides an extra level of safety for commissioning and troubleshooting.

Reduced costs
The ACH580 reduces costs, for example by eliminating dependencies on external controllers. The drive can use its internal PID loops to maintain a pressure setpoint by checking the active pressure and adjusting the fan speed accordingly.

Improved monitoring and maintenance
Leverage advanced system monitoring, giving you access to data on all aspects of the operation. Use this information to plan maintenance based on the actual needs of the application. For example, with built-in monitoring, the drive lets you know when it's time to take action if a fan stalls, a belt breaks, a filter clogs, and more.

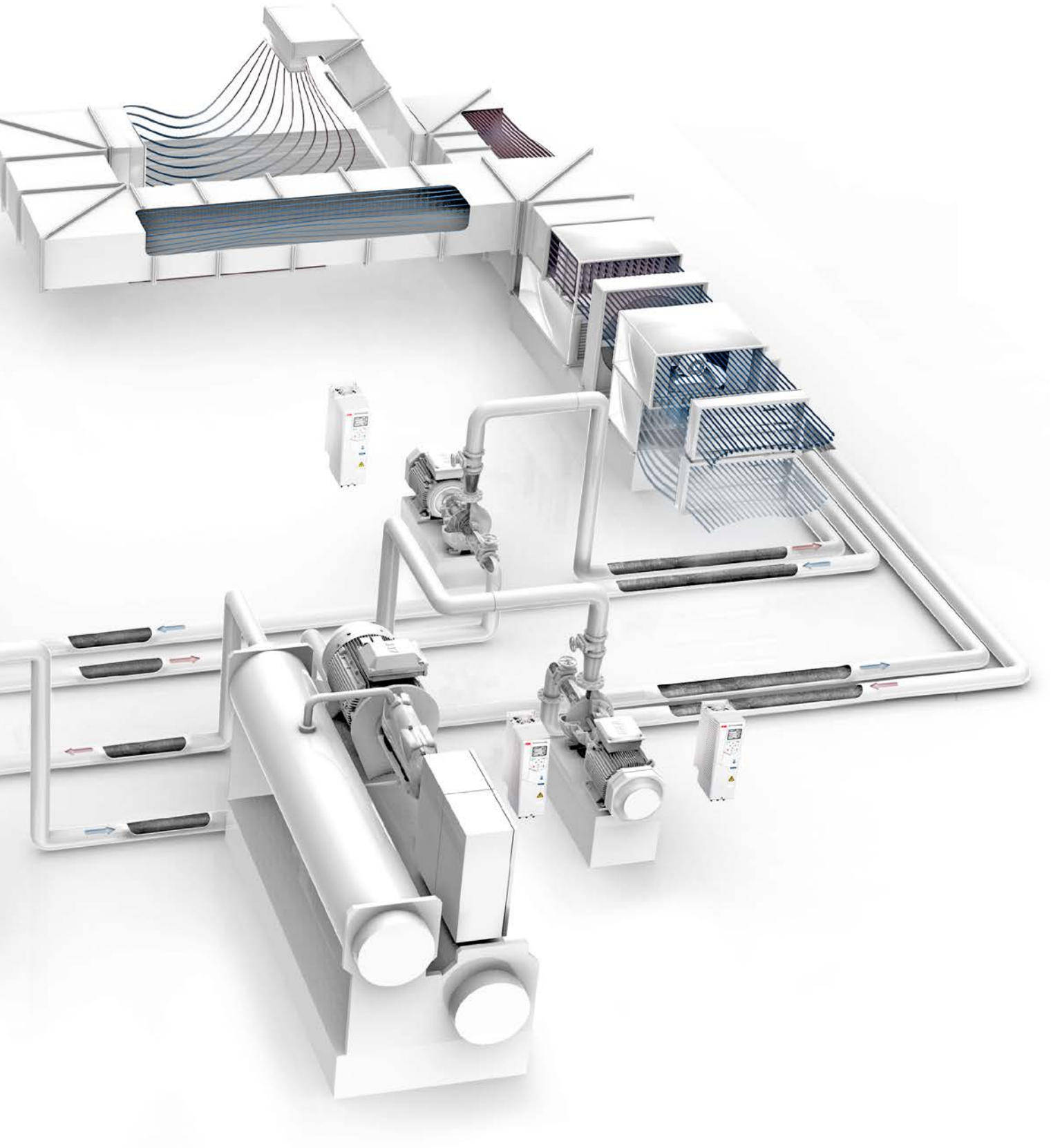
Precise water flow control

Controlling the flow of chilled water in HVAC systems allows you to regulate temperatures in a building. Pumps, chillers, and cooling towers all need to be coordinated. Your system benefits from motor control that operates as efficiently and simply as possible, with functions designed to keep the flow rate in line with the needs of the chiller and the building.



Motor monitoring prevents problems
Protect your investment with onboard monitoring. Monitor and show trends of key attributes for preventative maintenance.

Protect your equipment
Extend the life of your equipment (e. g. pipes, motors, check valves, and pumps) with intelligent motor control. By starting the pumping system smoothly, you protect the system from pressure surges, and can precisely manage the flow and the pressure.



Energy savings through intelligent control
Intelligent motor control replaces throttle or bypass valves, enabling better control of flow, and resulting in energy savings. In addition, fewer mechanical parts means minimal wear and tear on the system. For additional savings, pair drives with premium-efficiency motors and enable energy optimizer functions to reduce operating costs over the lifetime of the pumping system.

System optimization
As demand fluctuates during the day, the system automatically adjusts. The ACH580 provides optimal pressure when needed, and goes into sleep mode when it's not. For example, if the chiller shuts off as demand varies throughout the day, the pump can go into standby.

ACH580 drives offering

No matter the frame size or power, all ACH580 drives offer ease of use, scalability, and quality.

Wall-mounted drives, ACH580-01
ACH580-01 wall-mounted drives are available in IP21/UL (NEMA) Type 1 to IP55/UL (NEMA) Type 12 protection class with a power range up to 250 kW/350 hp and offer side-by-side, flange, and horizontal mounting options. The IP55/UL (NEMA) 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 a second-generation swinging choke for harmonic mitigation.

Drive modules for cabinet installation, ACH580-04
ACH580-04 drive modules are perfect for system integrators, cabinet builders, and OEMs who want to optimize cabinet design in the 250–500 kW range without compromising on easy installation, commissioning and maintenance. The ACH580-04 module has an embedded choke for harmonic mitigation.

Cabinet-built drives, ACH580-07
Cabinet-built ACH580-07 drives are available with IP21 protection class as standard (with optional IP42 and IP54 enclosures) in frame sizes R6 to R11. The drives feature a new cooling arrangement and a high-quality, global cabinet design. Available in a power and voltage range of 75–500 kW and 3-phase, 380–480 V. ACH580-07 drives always have chokes for harmonic mitigation built-in.

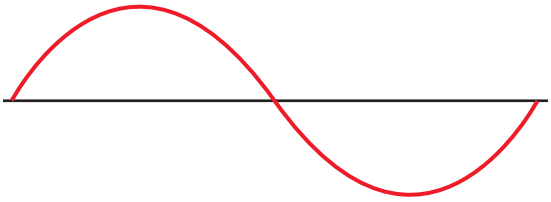
Ultra-low harmonic drives, ACH580-31
ACH580-31 ultra-low harmonic drives help to keep the power network clean. With harmonics mitigation built into the drive, the ultra-low harmonic drive produces exceptionally low harmonic content. This provides significant benefits, including improved reliability and increased energy savings, as well as extended equipment lifetime.

The ACH580 drives series provides common features throughout the whole product family, making it easy for you to install, commission, and use them for your entire installation.

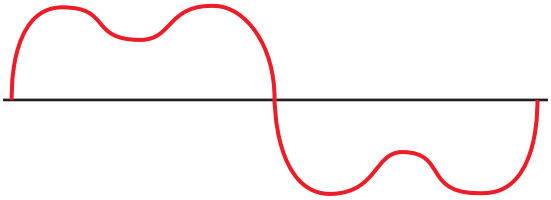
Overcome challenges of harmonics

ACH580 ultra-low harmonic drives have excellent harmonics performance and are perfectly suited for places that cannot handle high harmonic content in the network.

The problem with harmonics
Generators in power plants rotate at constant and regulated speed, resulting in a sine-wave-shaped current in an AC grid in the ideal case.



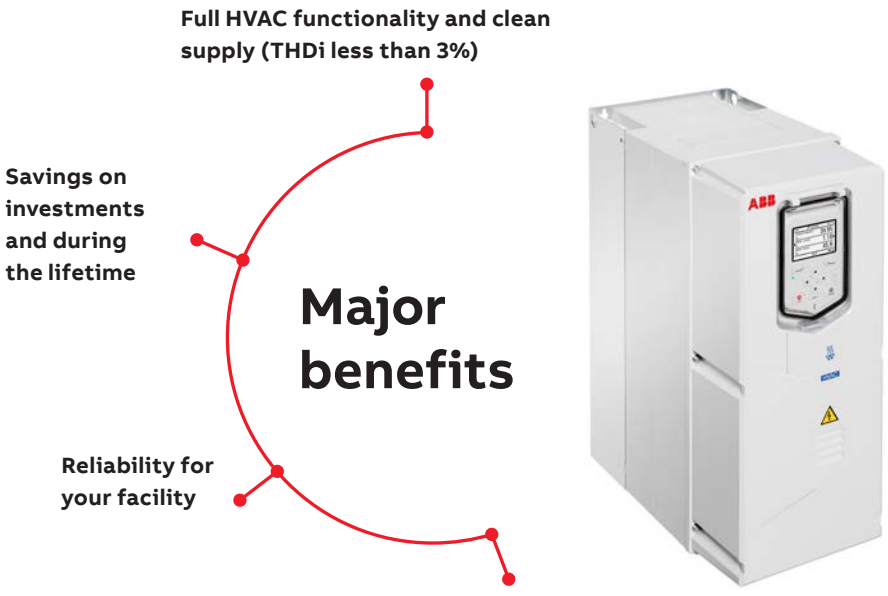
However, in the modern world, the network is not pure sine wave. Electricity networks are affected by harmonics: higher-order oscillations introduced by various types of electrical equipment.



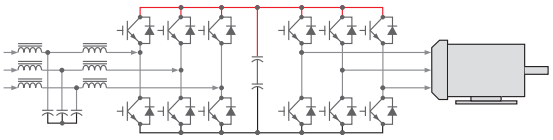
Harmonics in the electrical system can have negative effects, such as overheating or malfunctioning network components, including transformers or other equipment in the same grid. Even with 40% THDi, there is still approximately 35 percent over-dimensioning needed for the transformer.

All-in-one concept for a clean network
ABB's HVAC ultra-low harmonic (ULH) drives are designed with built-in harmonic avoidance systems and help your system to meet IEEE519 and G5/4 harmonic recommendations. By equipping the drives with specific features and capabilities, the problems caused by harmonics are avoided in the first place.

There is no need for external harmonic filters or multi-pulse transformers, leading to significant savings in the footprint. Compared to other harmonic mitigation solutions, ULH drives have excellent harmonic performance, ensuring that the current harmonics in undistorted networks and at nominal load are below 3 percent.



ULH drive technology
With an integrated design that leverages drive technology as part of the harmonic solution, there is no risk of nuisance trips due to incompatible components, no need for additional hardware, and no additional cooling requirements.



Lower energy consumption at system level
ABB's HVAC ULH drives reach a unity power factor, indicating that electrical energy is being used efficiently. Active power factor compensation allows the ULH drive to improve the power factor of the building grid, while maintaining the unity power factor on the connected equipment.

Reliable operation under special conditions
ULH drives ensure that the motor receives the full voltage, even in low-voltage utility conditions. Thanks to the drives' capability to provide an output voltage up to 15 percent greater than the supply voltage, applications can overcome voltage drops caused by long supply or motor cables. All this is done without costly additional equipment or oversizing of drive system components.

Other ways of mitigating harmonics
Passive filter equipment must always be sized for the maximum current, but the duration of partial-load operation is very significant. Oversizing gives poor mitigation performance and high running costs when running at partial load. It is also a waste of money, as it does not mitigate harmonics properly under partial-load conditions.

With multipulse transformers, you always need to install additional transformers, and the mitigation level isn't at the same low level as in a ULH drive.

Of course, needs for mitigation vary and there is no one-size-fits-all solution.

Common characteristics of the ACH580 drives family

ACH580 series

HVAC control panel with primary settings
- Primary settings makes commissioning the drive easier than ever before
- The optional Bluetooth-enabled control panel allows easy smartphone connection and remote support possibilities
- Easily available USB interface for PC and tool connection
- Help button for problem-solving

HVAC communication protocols
- The most common HVAC communication protocols – BACnet MS/TP, N2 and Modbus RTU – as standard
- BACnet/IP with an internal option

ATEX-certified PTC thermistor support
- Extensive I/O connections for flexible configuration in various applications
- Colored terminals for easy configuration

Ingress protection
- ACH580 drives are available in multiple different IP and UL/NEMA classes. Check the details at the end of this catalogue.

Suitable for various HVAC applications
- Suitable not only for variable-torque applications like fans and pumps, but also for basic constant-torque applications like compressors
- Support for induction, PM and SynRM motors

Reliability and quality
- All units are tested under full load at maximum allowed ambient temperature to verify the quality
- Printed circuit boards have an extra coating to protect against humid and harsh environments

Harmonic mitigation options
- The ACH580-01 has swinging chokes as standard for harmonic mitigation.
- Compliant with IEC/EN61000-3-12
- The ACH580-31 ultra-low harmonic drive has an even better solution for more demanding environments, with a THDi as low as 3 percent, meaning the ACH580-31 meets even the strictest IEEE519 requirements.

Shared features of the ABB all-compatible drives portfolio

Drivetune smartphone app
- The Drivetune smartphone app together with the Bluetooth-enabled control panel allow you to set up and commission the drive remotely from a safe and comfortable location, using the same primary settings menu that is available on the control panel on the drive.

Integrated and certified Safe Torque Off (STO)
- Certified Safe Torque Off helps to build functionally safe HVAC machines, and you can prove the SIL level
- Embedded STO is of SIL 3/PL e

Energy efficiency calculators
- Optimize energy efficiency with features that help you to save and manage energy. You can monitor the hourly, daily cumulative, last hour, last day and last month energy consumption via kWh counters.

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

Embedded load analyzers
- Analyze and optimize the application with the load profile log, which shows how the drive has been operating.

EMC/RFI category C2
- The EMC category C2 level design allows installation in commercial and residental buildings: the "first environment."

Reduced motor noise
- Spreading the switching frequencies over a user-specified range

Integrated process control
- Reduce costs with the built-in, standalone loop controllers. They make HVAC drives a self-governing unit requiring only an external feedback signal. No external controllers are necessary.

Flexibility in programming
- Scale up and customize the drive to the needs of your application with flexible parameter pointers or visual adaptive programming.

Extensive I/O capabilities
- ABB HVAC drives have the same extensive number of I/O terminals in standard configuration
- Colored terminals and clear terminal marking significantly ease drive wiring process
- I/O status can be monitored via the I/O menu
- I/O can be forced on or off to verify the drive's programming

Same PC tools for ABB all-compatible drives
- Drive Composer entry available for free at www.abb.com
- Same parameter structure makes the all-compatible platform easy to use

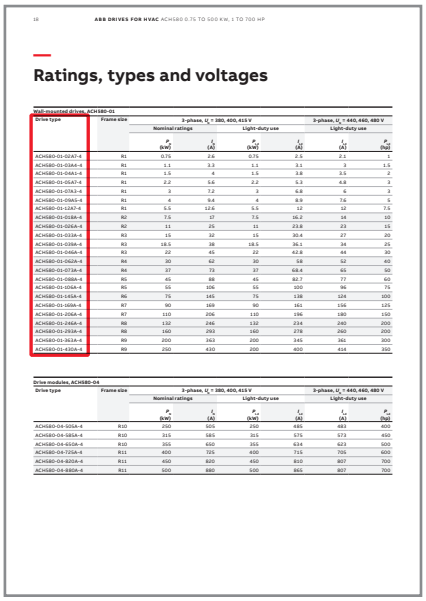
Connectivity
- ABB's F-series fieldbus adapters can be used throughout the all-compatible platform
- Mobile phone connectivity via the optional Bluetooth assistant control panel
- Fieldbus settings are made easy with the primary settings menu

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 18 and 19.

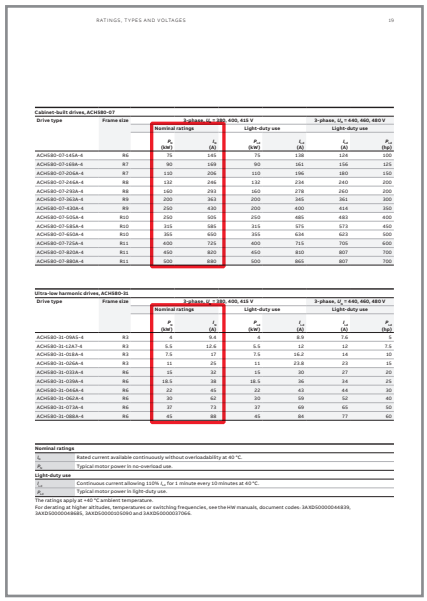
Select your drive's order code from the rating table based on the nominal current rating of your motor.



Ratings, types and voltages

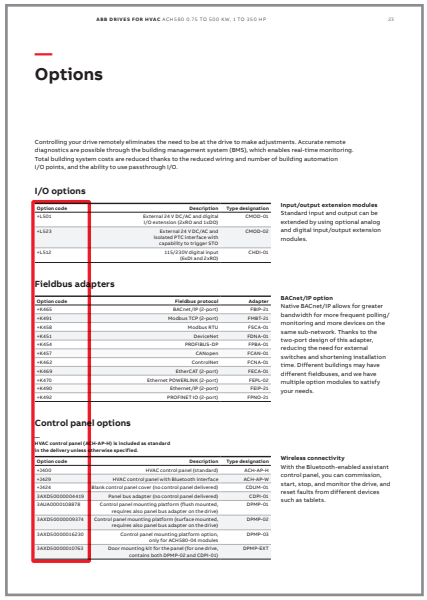
Pages 18 and 19

Choose the power and current rating of your motor from the ratings tables on pages 18 and 19.



Pages 18 and 19

Choose your options (on page 23) and add the option codes to the drive's order code. Remember to use a "+" sign before each option code.



Options

Page 23

Type designation: ACH580 – 01 – 03A3 – 4 + L501

- 01 / 04 / 07 / 31 — Product series
- 03A3 — Types and construction
- 4 — Rating
- L501 — Voltage
- Options

Technical data

Mains connection	
Input voltage and output power range	3-phase, U_N 380 to 480 V, +10/-15% ACH580-01: from 0.75 up to 250 kW ACH580-04: from 250 up to 500 kW ACH580-07: from 75 up to 500 kW ACH580-31: from 4 to 45 kW auto-identification of supply voltage
Frequency	48 to 63 Hz
Power factor ACH580-01, ACH580-04 and ACH580-07	0.98
Power factor ACH580-31	1.0
Motor connection	
Voltage	0 to U_N, 3-phase
Frequency	0 to 500 Hz
Motor control	Scalar and vector
Supported motor types	Asynchronous motor, permanent magnet motor (vector), SynRM (vector)
Environmental limits	
Transportation and storage temperature	-40 to +70 °C
Operation temperature	ACH580-01, ACH580-31: -15 to +50 °C ACH580-04: -15 to +55 °C ACH580-07: 0 to +50 °C
Relative humidity	5 to 95 % no condensation allowed
Altitude	Rated current available at 0 to 1000 m 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) ACH580-04: IP00, IP20 ACH580-07: IP21 as standard, IP42 or IP54 as option
Contamination level	Operation at Class 3C2, Class 3S2 according to IEC 60721-3-3 Transportation at Class 2C2, Class 2S2 according to IEC 60721-3-3 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} = 100 Ω
Potentiometer reference value	10 V ±1% max. 20 mA
2 analog outputs	AO1 is user programmable for current or voltage. 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 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. 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	1.5 A at 24 V AC/DC ±10%
ACH580-04 all frames	1.5 A at 24 V AC/DC ±10%
ACH580-07 all frames	1.5 A at 24 V AC/DC ±10%
ACH580-31 all frames	1.5 A at 24 V AC/DC ±10%
With option:	
R1-R5 (up to 55 kW)	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, EtherNet/IP, EtherCAT, EtherNet POWERLINK.
Available as plug-in options: CANopen, DeviceNet.
Available as an external 2-port option: EtherNet adapter for remote monitoring.

Application functions

First start assistant
Primary settings for HVAC applications
Hand-Off-Auto operation mode
Start interlock (de-frost)
Delayed start
Run permissive (damper monitoring)
Override operation mode
Real-time clock (scheduling)
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)

Harmonics compliance

Built-in swinging choke as standard in ACH580-01 meets the requirements of IEC 61000-3-12:2011.
ACH580-31 helps system to comply with IEEEE519 and G5/4 requirements.

EMC according to EN 61800-3:2004 + A1:2012

Frames R1 to R9 (up to 250 kW) designed to comply with EMC category C2 requirements as standard. Frames R10 and R11 (up to 500 kW) comply with category C3 with standard pre-configured built-in filter.

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

Wall-mounted drives, ACH580-01

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
ACH580-01-088A-4	R5	45	88	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

Drive modules, ACH580-04

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

Cabinet-built drives, ACH580-07

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

Ultra-low harmonic drives, ACH580-31

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

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.

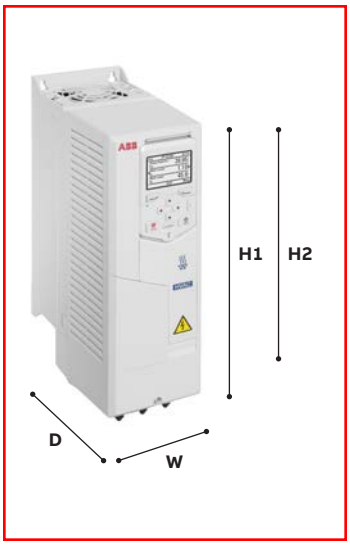
The ratings apply at +40 °C ambient temperature.
For derating at higher altitudes, temperatures or switching frequencies, see the HW manuals, document codes: 3AXD50000044839, 3AXD50000048685, 3AXD50000105090 and 3AXD50000037066.

Dimensions

ACH580-01, wall-mounted frames IP21

Frames	Height				Width		Depth		Weight	
	H1 *)		H2 **)							
	(mm)	(in)	(mm)	(in)	(mm)	(in)	(mm)	(in)	(kg)	(lb)
R1	373	14.7	331	13.0	125	4.9	223	8.8	4.6	10.1
R2	473	18.6	432	17.0	125	4.9	229	8.9	6.5	14.6
R3	490	19.3	490	19.3	203	8.0	229	8.9	11.8	26.0
R4	636	25.0	636	25.0	203	8.0	258	10.2	19.0	41.9
R5	732	28.8	596	23.5	203	8.0	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	38.0	680	26.8	300	11.8	393	15.5	69	152.2
R9	955	37.6	680	26.8	380	15.0	418	16.5	97	213.9

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



ACH580-01, wall-mounted frames IP55 (option +B056)

Frames	Height *)		Width		Depth		Weight	
	(mm)	(in)	(mm)	(in)	(mm)	(in)	(kg)	(lb)
R1	403	15.9	128	5.0	233	9.2	4.8	10.6
R2	503	19.8	128	5.0	239	9.4	6.8	15.0
R3	490	19.3	206	8.1	237	9.3	13.0	28.7
R4	636	25.0	206	8.1	265	10.2	20	44.1
R5	732	28.8	203	8.0	320	12.6	29	64.0
R6	727	28.6	252	9.9	380	15.0	43	94.8
R7	880	34.6	284	11.2	381	15.0	56	123.5
R8	965	38.0	300	11.8	452	17.8	77	169.8
R9	955	37.6	380	15.0	477	18.8	103	227.1

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

ACH580-04, module frames 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	162	357.5
R11	1662	65.4	350	13.8	529	20.8	200	440.9

ACH580-07, cabinet-built frames 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	535	1179
R11	2145	84.4	830	32.7	698	27.5	581	1280

ACH580-31, ultra-low harmonic frames IP21

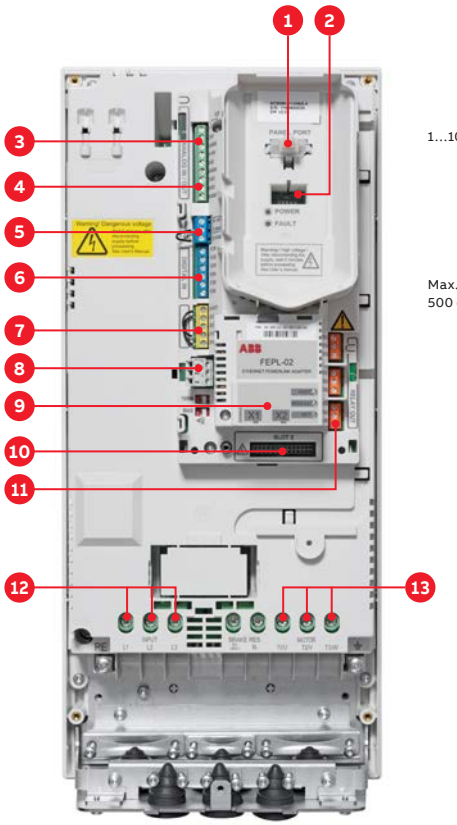
Frames	Height		Width		Depth		Weight	
	(mm)	(in)	(mm)	(in)	(mm)	(in)	(kg)	(lb)
R3	495	19.5	205	8.1	349	13.8	25	47
R6	771	30.4	252	9.9	392	15.5	61	134

ACH580-31, ultra-low harmonic frames IP55

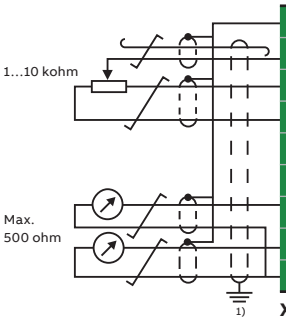
Frames	Height		Width		Depth		Weight	
	(mm)	(in)	(mm)	(in)	(mm)	(in)	(kg)	(lb)
R3	495	19.5	205	8.1	360	14.2	23	51
R6	771	30.4	252	9.9	449	17.7	63	139

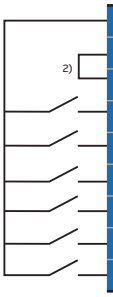
ACH580 standard I/O diagram

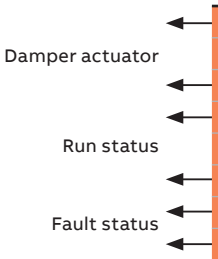
Default control connections

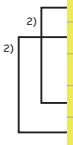


1. Panel port (PC tools, control panel)
2. ABB drive customizer port for programming the drive without mains
3. Analog inputs (2 × AI)
4. Analog outputs (2 × AO)
5. 24 V DC output
6. Digital inputs (6 × DI)
7. Safe torque off (STO)
8. Embedded fieldbus
9. Communication options (fieldbuses)
10. I/O extensions
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, EFB (EIA-485)	
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		

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.

Options

Controlling your drive remotely eliminates the need to be at the drive to make adjustments. Accurate remote diagnostics are possible through the building management system (BMS), which enables real-time monitoring. Total building system costs are reduced thanks to the reduced wiring and number of building automation I/O points, and the ability to use passthrough I/O.

I/O options

Option code	Description	Type designation
+L501	External 24 V DC/AC and digital I/O extension (2xRO and 1xDO)	CMOD-01
+L523	External 24 V DC/AC and isolated PTC interface with capability to trigger STO	CMOD-02
+L512	115/230V digital input (6xDI and 2xRO)	CHDI-01

Input/output extension modules
Standard input and output can be extended by using optional analog and digital input/output extension modules.

Fieldbus adapters

Option code	Fieldbus protocol	Adapter
+K465	BACnet/IP (2-port)	FBIP-21
+K491	Modbus TCP (2-port)	FMBT-21
+K458	Modbus RTU	FSCA-01
+K451	DeviceNet	FDNA-01
+K454	PROFIBUS-DP	FPBA-01
+K457	CANopen	FCAN-01
+K462	ControlNet	FCNA-01
+K469	EtherCAT (2-port)	FECA-01
+K470	Ethernet POWERLINK (2-port)	FEPL-02
+K490	Ethernet/IP (2-port)	FEIP-21
+K492	PROFINET IO (2-port)	FPNO-21

BACnet/IP option
Native BACnet/IP allows for greater bandwidth for more frequent polling/monitoring and more devices on the same sub-network. Thanks to the two-port design of this adapter, the need for external switches is reduced and installation time is shortened. Different buildings may have different fieldbuses, and we have multiple option modules to satisfy your needs.

Control panel options

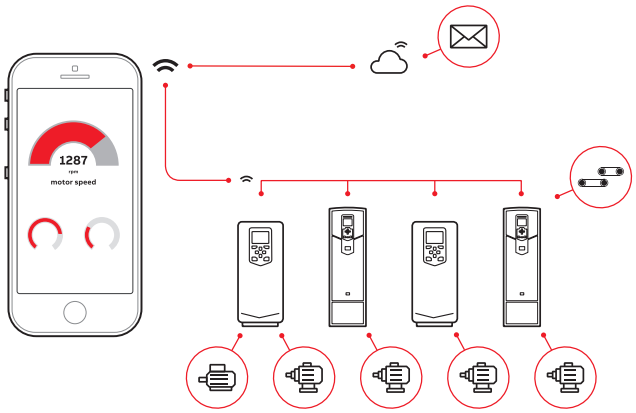
The HVAC control panel (ACH-AP-H) is included as standard in the delivery unless otherwise specified.

Option code	Description	Type designation
+J400	HVAC control panel (standard)	ACH-AP-H
+J429	HVAC control panel with Bluetooth interface	ACH-AP-W
+J424	Blank control panel cover (no control panel delivered)	CDUM-01
3AXD50000004419	Panel bus adapter (no control panel delivered)	CDPI-01
3AUA0000108878	Control panel mounting platform (flush-mounted, also requires panel bus adapter on the drive)	DPMP-01
3AXD50000009374	Control panel mounting platform (surface-mounted, also requires panel bus adapter on the drive)	DPMP-02
3AXD50000016230	Control panel mounting platform option, only for ACH580-04 modules	DPMP-03
3AXD50000010763	Door mounting kit for the panel (for one drive, contains both DPMP-02 and CDPI-01)	DPMP-EXT

Wireless connectivity
With the Bluetooth-enabled assistant control panel, you can commission, start, stop, and monitor the drive, and reset faults from different devices such as tablets.

ABB Ability™ smartphone apps

Better connectivity and user experience with Drivetune



Easy and fast access to product information and support

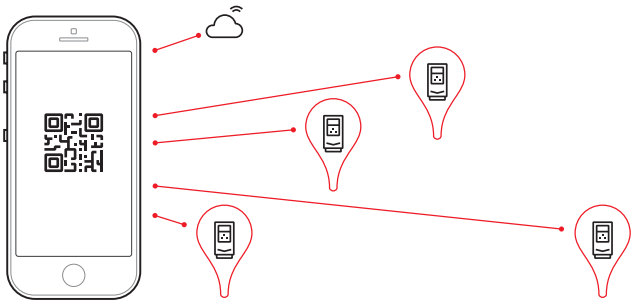
Startup, commission and tune your drive and application

Instantly access drive status and configuration with a simplified user guidance

Optimize performance via drive troubleshooting features

Create and share backups and support packages

Services and support on the go with Drivebase



Search for support documents and contacts

Access your product and service information in the cloud from anywhere

View your drives installed base and plan service activities

Use dynamic QR code to troubleshoot your drive

Report service events

Access information anywhere

Download the apps using the QR codes below or directly from the app stores

Drivetune for commissioning and managing drives

Drivebase for ensured reliability and reduced downtime on production sites

High protection for operation in harsh environments

Thanks to the drive's wall-mountable construction in both IP21 and IP55 configurations the ACH580-01 can be installed in clean rooms, and even dusty and wet environments. The cabinet-built variant comes with IP21 as standard and is also available with IP42 and IP54 protection classes for use in harsh environments.

The robust, protective design ensures that no additional enclosures or components, such as dust filters and fans, are needed. Overall, drives for harsh environments require smaller capital expenses by avoiding or advancing maintenance of external components, which in turn improves the reliability of the drive and the process.

Reduced panel cooling need

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 during panel installation and reduces the overall enclosure size. Furthermore, the need for air-conditioning can often be eliminated, as up to 80 percent of the heat load is removed through the back of the panel.

Advanced cooling

The simple and robust design of the ACH580-07 cabinet-built drive ensures reliable operation, even in harsh environments. The flange-mounting feature is standard for the cabinet-built ACH580 drive, which separates the heat-generating power electronics from the more sensitive control electronics and extends the product's lifetime. The hot air can be ducted away from the motor control center, reducing the need for air-conditioning significantly.

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 du/dt filters can be found in the ACH580 hardware manual.

External du/dt filter for ACH580-01 and ACH580-04

	du/dt filter type *) 3 filters included, dimensions apply to one filter.															
	Unprotected (IP00)								Protected to IP22				Protected to IP54			
ACH580 400 V	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
ACH580-01-088A-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								

External du/dt filters for ACH580-07

	du/dt filter type *) 3 filters included, dimensions apply to one filter.		
	Protected to IP54		
ACH580 400 V	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		

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
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

Selection guide
IE4 synchronous reluctance motors

This table presents technical performance data for IE4 SynRM motors. Variant codes and construction details are based on the M3BP motor. IP55 protection, IC 411 cooling, insulation class F, temperature rise class B. Motor values are given with an ACH580 drive supply.

Output (kW)	Motor type *)	Product code	Motor efficiency (%)	Motor nominal current (A)	Motor nominal torque (Nm)	Motor weight (kg)	Matched ACH580-01 drive for HVAC fan, pump and compressor use	Package efficiency **) IES at nominal point (Pn) (%)	PDS ***) IES2 efficiency class low limit (%)	Above IES2 low limit (%)	Frame size
3000 RPM / 100 Hz							**400 V network**				
1.5	M3AL90L4	3GAL092 507-_SB[2)]	84.2	3.9	4.8	13	ACH580-01-04A1-4	82.1	76.2	7.7	R1
2.2	M3AL90LA4	3GAL092517-_SB[2)]	85.9	5.6	7.0	13	ACH580-01-05A7-4	83.8	78.3	6.9	R1
3	M3AL100LB4	3GAL102527-_SB[1)2)]	88.6	9.5	9.6	23	ACH580-01-12A7-4	86.4	79.8	8.2	R1
4	M3AL112MB4	3GAL112327-_SB[1)2)]	89.9	13.6	12.7	33	ACH580-01-018A-4	87.7	81.1	8.1	R1
5.5	M3AL132SMA4	3GAL132217-_SC	90.9	12.6	17.5	41	ACH580-01-12A7-4	88.4	82.5	7.2	R1
7.5	M3AL132SMB4	3GAL132227-_SC	91.7	16.9	23.9	41	ACH580-01-018A-4	89.3	83.9	6.4	R2
11	M3AL132SMC4	3GAL132237-_SC	92.6	25	35.0	47	ACH580-01-026A-4	90.0	85.3	5.5	R2
11	M3BL160MLA4	3GBL162417-_SC	92.6	25.0	35.0	133	ACH580-01-026A-4	90.2	85.3	5.8	R2
15	M3AL132SMD4	3GAL132247-_SC	93.3	33.5	47.7	47	ACH580-01-039A-4	90.7	86.2	5.2	R3
15	M3BL160MLB4	3GBL162427-_SC	93.3	34.8	48.0	133	ACH580-01-039A-4	90.5	86.2	5.0	R3
18.5	M3BL160MLC4	3GBL162437-_SC	93.7	42.8	59.0	133	ACH580-01-046A-4	91.4	86.9	5.2	R3
22	M3BL180MLA4	3GBL182417-_SC	94.0	50.0	70.0	160	ACH580-01-062A-4	91.6	87.3	4.9	R4
30	M3BL200MLA4	3GBL202417-_SC	94.5	68.8	95.0	259	ACH580-01-073A-4	92.2	88.1	4.6	R4
37	M3BL200MLB4	3GBL202427-_SC	94.8	84.6	118	259	ACH580-01-088A-4	92.7	88.6	4.7	R5
45	M3BL225SMA4	3GBL222217-_SC	95.0	103	143	282	ACH580-01-106A-4	92.2	89.0	3.6	R5
55	M3BL225SMF4	3GBL222267-_SC	95.3	122	175	282	ACH580-01-145A-4	92.6	89.4	3.5	R6
1500 RPM / 50 Hz											
1.1	M3AL90LA4	3GAL092513-_SB[2)]	81.4	2.9	7.0	13	ACH580-01-03A4-4	79.4	74.0	7.3	R1
1.5	M3AL90LB4	3GAL092523-_SB[2)]	82.8	3.8	9.6	16	ACH580-01-04A1-4	80.7	76.2	5.9	R1
2.2	M3AL100LB4	3GAL102523-_SB[1)2)]	86.2	5.8	14.0	23	ACH580-01-07A3-4	84.0	78.3	7.3	R1
3	M3AL100LB4	3GAL102523-_SB[2)]	85.5	7.1	19.1	23	ACH580-01-07A3-4	83.4	79.8	4.4	R1
4	M3AL112MB4	3GAL112323-_SB[1)2)]	88.0	10.6	25.5	33	ACH580-01-12A7-4	85.8	81.1	5.8	R1
5.5	M3AL132SMA4	3GAL132213-_SC	91.9	12.1	35.0	63	ACH580-01-12A7-4	89.6	82.5	8.6	R1
7.5	M3AL132SMB4	3GAL132223-_SC	92.6	16.2	47.7	63	ACH580-01-018A-4	90.1	83.9	7.4	R2
11	M3AL132SMC4	3GAL132233-_SC	93.3	24	70	69	ACH580-01-026A-4	90.6	85.3	6.2	R2
11	M3BL160MLA4	3GBL162413-_SC	93.3	24.9	70	160	ACH580-01-026A-4	90.9	85.3	6.6	R2
15	M3BL160MLB4	3GBL162423-_SC	93.9	33.7	95	177	ACH580-01-039A-4	91.3	86.2	5.9	R3
18.5	M3BL180MLA4	3GBL182413-_SC	94.2	42.0	118	177	ACH580-01-046A-4	92.0	86.9	5.9	R3
22	M3BL200MLF4	3GBL202463-_SC	94.5	49.1	140	304	ACH580-01-062A-4	92.2	87.3	5.6	R4
30	M3BL200MLA4	3GBL202413-_SC	94.9	66.7	191	304	ACH580-01-073A-4	92.6	88.1	5.1	R4
37	M3BL250SMF4	3GBL252263-_SC	95.2	82.0	236	428	ACH580-01-088A-4	93.1	88.6	5.1	R5
45	M3BL250SMG4	3GBL252273-_SC	95.4	99.5	286	428	ACH580-01-106A-4	92.8	89.0	4.3	R5
55	M3BL250SMA4	3GBL252213-_SC	95.7	121	350	454	ACH580-01-145A-4	93.1	89.4	4.1	R6
75	M3BL280SMA4	3GBL282213-_DC	96.0	173	478	639	ACH580-01-206A-4	93.6	90.0	4.0	R7
90	M3BL280SMB4	3GBL282223-_DC	96.1	202	573	639	ACH580-01-206A-4	93.7	90.2	3.9	R7
110	M3BL280SMC4	3GBL282233-_DC	96.3	245	699	697	ACH580-01-246A-4	93.5	90.5	3.3	R8
110	M3BL315SMA4	3GBL312213-_DC	96.3	244	702	873	ACH580-01-246A-4	94.0	90.5	3.9	R8
132	M3BL315SMB4	3GBL312223-_DC	96.4	290	842	925	ACH580-01-293A-4	94.0	90.7	3.6	R8
160	M3BL315SMC4	3GBL312233-_DC	96.6	343	1018	965	ACH580-01-363A-4	94.2	90.9	3.6	R9
200	M3BL315MLA4	3GBL312413-_DC	96.7	427	1272	1116	ACH580-01-430A-4	94.5	91.1	3.7	R9

[1)] Motor with restamped output required (option +002)
[2)] Motor does not conform with IE4 EE class

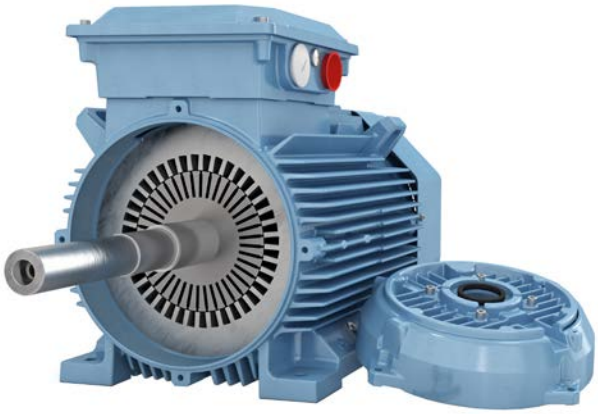
*) Motor type M3AL = aluminum motor frame
*) Motor type M3BL = cast iron motor frame
**) Calculated package efficiency values for ACH580-01
***) PDS = power drive system

Output	Motor type *)	Product code	Motor efficiency	Motor nominal current	Motor nominal torque	Motor weight	Suggested ACH580 drive for no overload pump use *)	Package efficiency **) IES at nominal point (Pn)	PDS ***) IES2 efficiency class low limit	Above IES2 low limit	Frame size
(kW)			(%)	(A)	(Nm)	(kg)		(%)	(%)	(%)	
3000 rpm											
55	M3BL225SMF4	3GBL 222267-_SC	95.3	122	175	282	ACH580-07-145A-4	92.6	89.4	3.5	R6
1500 rpm											
55	M3BL250SMA4	3GBL 252213-_SC	95.7	121	350	454	ACH580-07-145A-4	93.1	89.4	4.1	R6
75	M3BL280SMA4	3GBL 282213-_DC	96.0	173	478	639	ACH580-07-206A-4	93.6	90.0	4.0	R7
90	M3BL280SMB4	3GBL 282223-_DC	96.1	202	573	639	ACH580-07-206A-4	93.7	90.2	3.9	R7
110	M3BL280SMC4	3GBL 282233-_DC	96.3	245	699	697	ACH580-07-246A-4	93.5	90.5	3.3	R8
110	M3BL315SMA4	3GBL 312213-_DC	96.3	244	702	873	ACH580-07-246A-4	94.0	90.5	3.9	R8
132	M3BL315SMB4	3GBL 312223-_DC	96.4	290	842	925	ACH580-07-293A-4	94.0	90.7	3.6	R8
160	M3BL315SMC4	3GBL 312233-_DC	96.6	343	1018	965	ACH580-07-363A-4	94.2	90.9	3.6	R9
200	M3BL315MLA4	3GBL 312413-_DC	96.7	427	1272	1116	ACH580-07-430A-4	94.5	91.1	3.7	R9

[1] Motor with restamped output required (option +002)
[2] Motor does not conform with IE4 EE class

*) Motor type M3AL = aluminum motor frame
*) Motor type M3BL = cast iron motor frame
**) Calculated package efficiency values for ACH580-01
***) PDS = power drive system

Ultimate efficiency and reliability to optimize your system's total cost of ownership



Traditional IE2 induction motor

IE4 synchronous reluctance motor SynRM

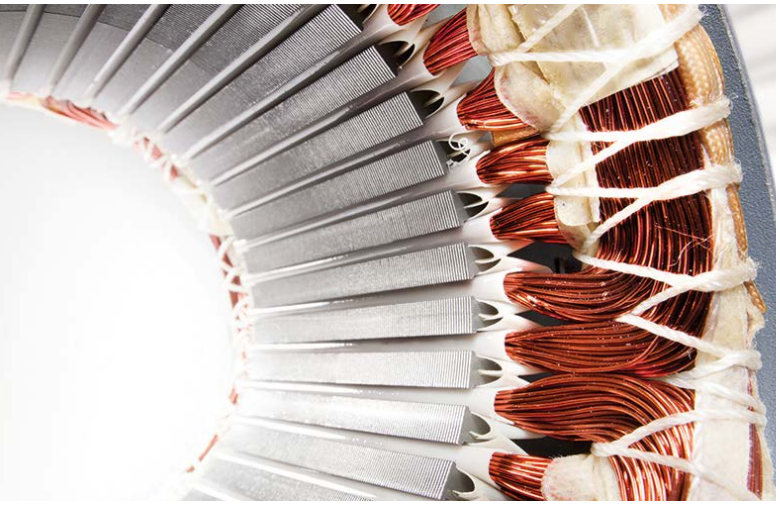
Losses

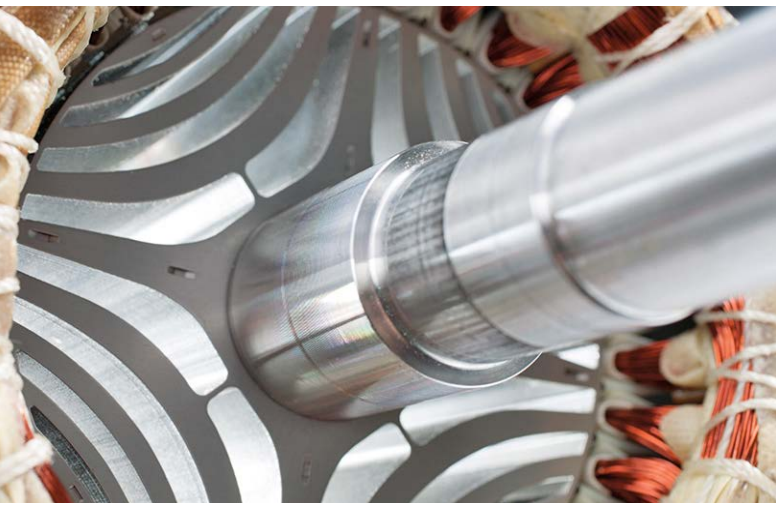
Innovation inside
The idea is simple: Take a conventional, proven stator technology and a totally new rotor design. Then combine them with a dedicated HVAC industry drive loaded with new, application-specific software. Finally, optimize the whole package for applications such as fans, pumps, compressors, air-handling units and chillers.

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 as it has an identical footprint, it is easy to replace an induction motor with a SynRM.

Superior reliability to minimize the cost of not running
IE4 synchronous reluctance motors have very low winding temperatures, which increases the reliability and life 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.

Choose the motor for your HVAC application





Choose the best motor for your application. A natural match for induction motors, the ACH580 can also control high-efficiency motors such as permanent magnet or synchronous reluctance motors for greater efficiency.

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

Permanent magnet motors for smooth operation
ABB has the software, hardware and application knowledge to support PM motor technology. PM technology offers users high efficiency across the speed range and customized housing for applications such as fan walls and cooling towers, as well as eliminating the need for mechanical speed reduction equipment.

IE4 SynRM for optimized energy efficiency
Combining the ACH580's 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.

Services to match your needs

Your service needs depend on your operations, the life cycle of your equipment, and your business priorities. We have identified our customers' four most common needs, and we created service options to satisfy them. Which will you choose to keep your drives at peak performance?

Is uptime your priority?

Keep your drives running with precisely planned and executed maintenance.

Example services include:
- ABB Ability™ Life Cycle Assessment
- Installation and Commissioning
- Spare Parts
- Preventive Maintenance
- Reconditioning
- ABB Drive Care agreement
- Drive Exchange

Operational efficiency

Is rapid response a key consideration?

If your drives need immediate action, our global network is at your service.

Example services include:
- Technical Support
- On-site Repair
- ABB Ability™ Remote Assistance
- Response time agreements
- Training

Rapid response

Drives service
Your choice, your future

The longevity of your drives is influenced by the service you choose.
Whatever you choose, it should be a well-informed decision. We have the expertise and experience to help you find and implement the right service for your drive equipment. Start by asking yourself these two critical questions:
- Why would my drive be serviced?
- What would my optimal service options be?

From here, count on our guidance and full support throughout the entire lifetime of your drives.

Your choice, your business efficiency
ABB Drive Care lets you focus on your core business. A selection of predefined service options matching your needs provides optimal, more reliable performance, extends your drive's lifetime, and controls costs. This reduces the risk of unplanned downtime and makes it easier to budget for maintenance.

We can help you more if we know where you are!
Register your drive for advanced services.

Need to extend your assets' lifetime?

Maximize the lifetime of your drive with our services.

Example services include:
- ABB Ability™ Life Cycle Assessment
- Upgrades, Retrofits and Modernization
- Replacement, Disposal and Recycling

Life cycle management

Is performance most critical to your operation?

Get optimal performance out of your machinery and systems.

Example services include:
- ABB Ability™ Remote Services
- Engineering and Consulting
- Inspection and Diagnostics
- Upgrades, Retrofits and Modernization
- Workshop Repair
- Tailored services

Performance improvement

A lifetime of peak performance

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

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

ABB drives life cycle phases explained:

	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 part 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 upgrade and retrofit solutions.	Limited range of life cycle services is available. Spare parts availability is limited to available stock.	Replacement and end-of-life services are available.

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

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

Step 1

Life Cycle Status Announcement
Provides early information about the upcoming life cycle phase change and how it affects the availability of services.

Step 2

Life Cycle Status Statement
Provides information about the drive's current life cycle status, the availability of product and services, the life cycle plan, and recommended actions.

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

—

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

new.abb.com/drives/HVAC
abb.com/drivespartners
abb.com/motors&generators

ACH580-01 drives hardware manual

ACH580-04 drives hardware manual

ACH580-07 drives hardware manual

ACH580 drives HVAC control program firmware manual

3AUA0000186691 REV E EN 10.12.2018