

LOW VOLTAGE AC DRIVES

ABB DRIVES FOR WATER AND WASTEWATER

ACQ580, 1 to 700 HP



ACQ580

Always flowing. Never still.

Water utilities require reliable solutions that secure the flow of water and wastewater.

The ACQ580 Variable Frequency Drive (VFD) is designed to provide resilient operation of water and wastewater pumps and blowers, ensuring efficient supply and treatment process performance.

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DEFEAT 7 COMMON ENEMIES OF WATER TREATMENT PROCESSES

Municipal water supply and treatment facilities are under constant pressure to comply with continually evolving water quality standards and discharge permits. On top of that, they must meet capacity needs and provide uninterrupted service for their communities. All of this must be done while maintaining productivity, quality, and safety.

Operators and maintenance personnel continually strive to overcome challenges that can interrupt normal operations. Power quality, the ability to operate on a standby generator, as needed,

maintaining existing infrastructure, meeting environmental needs, and process control efficiency all play a part. By learning more about these enemies that threaten operations, you can strategically eliminate their impact to ensure your success.

ABB can help you address the seven enemies within municipal water processes that interrupt daily operations. We can help you build confidence in your operations.



Having access to ABB expertise can help defeat enemies, no matter the facility.



**Poor power quality and
generator instability**



Cavitation



Water hammer



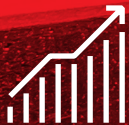
Aging infrastructure



Extreme environments



**Outdated installation
practices**



**Process control
efficiency**

THE ENERGY EFFICIENT DRIVE FOR WATER AND WASTEWATER PUMPING

Whether your pump system requires redundancy in multi-pump applications or built-in pump application functionalities designed for the water and wastewater industry, the ACQ580 is designed to meet your requirements, ensuring your overall water system is more resilient to downtime and malfunction. The ACQ580 is designed for inflow pumps, transfer pumps, dosing pumps, sludge pumps, booster pumps, submersible pumps, compressors, blowers, decanter centrifuges, mixers and fans and much more.

Drive firmware features specific to water and wastewater applications

Pump control and protection features such as, cavitation detection and control, pump deragging, quick ramps for submersible float bearing cooling, etc.

See more on pages 12.



Simplicity at your fingertips

The control panel's straightforward primary settings menu with assistants helps you set up the drive quickly and effectively, using common industry terms.

See more on page 103.

Speaks water-specific terminology

The drive has built-in pump application control programs to secure optimal operation of the water and wastewater pumps.

See more on pages 12.

Boosting energy efficiency

The energy optimizer helps you to save energy, and the energy efficiency information made available to you helps monitor and save the energy used in your processes. The drive meets IE2 energy efficiency requirements.

See more on page 14.

Ultra-low harmonic (ULH) solution to meet IEEE519

The ACQ580 ultra-low harmonic drive is designed to minimize the effect of harmonics distortion on your electrical system. The drive keeps the network in the water utility clean and stable. As a result, electrical equipment in the plant wastes less energy as heat and fewer unwelcome disturbances occur.

See more on page 18.



Human all-compatible

Whether you are operating an entire process or a single motor drive application it is important that you feel comfortable and safe around it. The drive user interfaces across the all-compatible drives portfolio are the same, offering an features that simplify everyday operation.

The intuitive Hand-Off-Auto control panel ensures that you have access to the essential information quickly. For accessing your drive from a distance and receiving valuable analytics, we offer remote monitoring solutions.

Environmental all-compatible

The drives have built-in features that help fine-tune your application for optimum energy use. Our PC tools help estimate the potential energy savings in your application, and our experts can visit you to estimate and discuss about a solution that fits to your environmental and business goals.

Process all-compatible

You don't need to settle to a compromise. Whether it is the motor power, voltage, enclosure rating, process feedback type, SCADA/fieldbus connection, or even exposure to corrosive chemicals and gases, we have the right drive for you.

Controls virtually any kind of motor

The drive has the ability to control almost any motors from induction and permanent magnet motors to synchronous reluctance motors.

See more on page 112.



Startup and maintenance tool

Drive composer PC tool for startup, configuration, monitoring and process tuning. The PC tool is connected to the drive's control panel with a standard USB cable.

See more on page 109.

Robust with built-in features

A robust performer with an enclosure class up to UL (NEMA) Type 3R, that is simple to select, and easy to install and use. Built-in features such as an EMC filter, choke, a Modbus RTU fieldbus interface and Safe Torque Off (STO) functionality simplify drive selection, installation and use.

See more on page 26.



Reliable communication

With its wide range of optional fieldbus adapters and embedded RTU Modbus, the drive enables connectivity with all major automation networks and control systems.

See more on page 105.



Input/output extensions

In addition to the standard interfaces, the drive has a built-in slot for additional input/output extension modules.

See more on page 106.



ACQ580 CORE BENEFITS FOR RESILIENT OPERATIONS

The ACQ580's water specific hardware and software features are designed to address all of your application needs, from handling environmental and power supply issues to pump protections and process control optimization.

User Interface - start up

Reduce start up time with the easy to use, intuitive programming interface. The 'primary setting' feature makes commissioning fast and simple - from power up to running in seven steps or less.

Field I/O

Ample on-board I/O capacity to handle common control signal needs, with add-on expansion I/O cards as needed. The drive can use field I/O in the case of the communication loss, to ensure uninterrupted operation.

Input power

Whether you are connected to utility power or backup generator, the ACQ580 Ultra-Low Harmonic variant offers protection against common power quality issues such as dips/sags while also producing very little harmonic distortion. Unity power factor ensures uninterrupted generator operation.

VFD basic functions

The ACQ580 provides precise speed/flow/pressure control, with built in features to smooth starts and stops to protect pumps, reduce water hammer and ensure energy efficient operation.

Pump control functions

Multiple built in features are provided to ensure uninterrupted operation. Pump cleaning to reduce clogs and obstructions, cavitation detection and control to protect impellers, and dry pump/no flow detection that prevents pumps from overheating are just some of the available features.

User Interface - monitoring

Monitor the health and operation of your pumps and blowers with configurable screens and SCADA data, allowing operating conditions and diagnostic information to be shared easily. Built in run time counters and starts per hour reduce external component costs and are easily accessible to users.

Fieldbus and SCADA connectivity

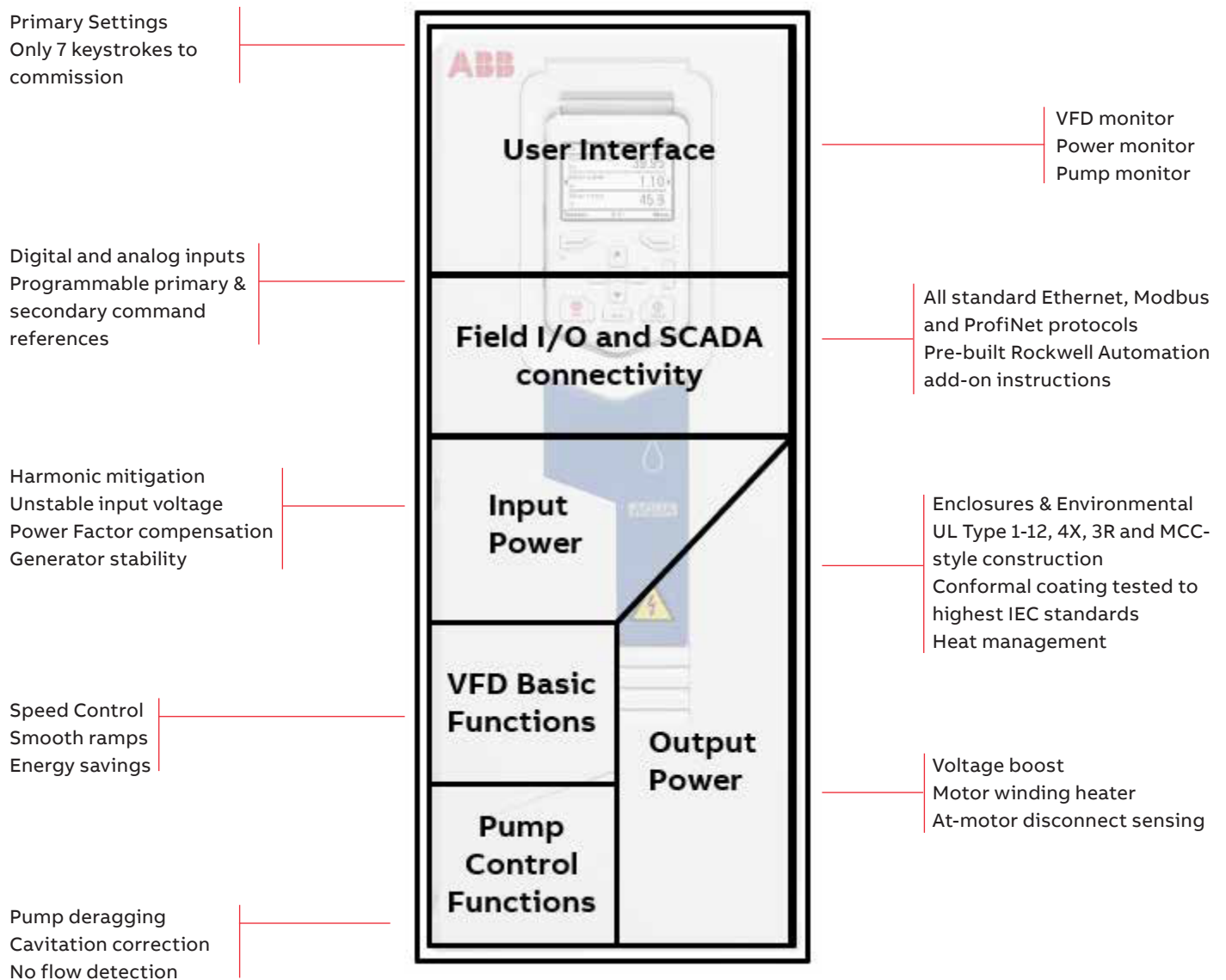
The drives support Modbus, Modbus-TCP, PROFIBUS, PROFINET and EtherNet/IP for Allen-Bradley Logix PLCs - ensuring compatibility with the most common networks. ABB provides a User Defined Data Type (UDT) and Add-on Instruction (AOI) for Allen-Bradley PLCs.

Enclosures and environmental

Match your installation environment and reduce costs, with indoor & outdoor options and increasing classes of enclosure to protect your drive from water, heat, dust and commonly experienced corrosive gases and chemicals. Fuse/disconnect options further savings for stand alone needs.

Output power

Protect your drive and motor while saving external equipment costs with built-in motor winding heater feature, at-motor disconnect sensing and the Ultra-Low Harmonic variant voltage boost to motor when utility supply power is low.



BUILT-IN PUMP APPLICATION SOFTWARE

The built-in pump application software in the ACQ580 drives is designed to enhance the reliability and durability of your water and wastewater applications. The software features protect pumps and blowers, optimizing performance while increasing process efficiency.



Cavitation detection and control

Cavitation can occur when the pressure on a pump's inlet suddenly drops, causing vapor bubbles. When these bubbles collapse, they can be destructive to the pump's impeller. Extend the pump's lifetime and secure your processes by detecting and controlling cavitation, ensuring optimal impeller condition without the need for external sensors/additional hardware.



Pump protection

This feature ensures that pumps operate within their allowable operating region. The maximum pressure protections help protect both the pump and the system in the event of a blocked pipe. If a pipe ruptures, the minimum pressure protection triggers an alarm or fault and can be programmed to run at a preset speed to prevent dirty water from entering the pipeline.



Pump cleaning and deragging

Achieve savings, maintain efficiency, and prevent unplanned downtime by keeping pump impellers clean. The drive uses a sequence of aggressive ramps between configurable pump speeds to remove rags and debris from the impeller.



Comm fail functionality

Ensures continuous operation without interruption, by automatically changing the drive control signal source to the drives' internal PID controller if SCADA communication is lost. When communication recovers, the SCADA system resumes control.



Pipe flush

Variable flows in pumping systems can increase the risk of sedimentation in pipes. The pump clean function, can run the pump at a higher speed to flush the pipe and reduce the buildup of sedimentation.



Multi-pump control (Lead-Lag/Duplex) or Intelligent Pump Control (IPC)

Ensures stable and uninterrupted operation with multi-pump controls, by optimizing the speed and number of pumps required when demand flow or pressure is variable. Up to 8 parallel pumps can be controlled at the same time. This drive feature ensures continuous operation for multiple pumps even if one or more pumps fail or requires maintenance, by balancing operating time between all pumps in the system.



Dry pump/dry run protection

Rotating impellers need fluid to maintain cooling and prevent damage from overheating. This feature detects a dry pump by using the underload curve, low level mechanical switch, or pressure sensors to generate a warning or fault.

**Motor disconnect detection**

Protect the drive output by detecting when the motor disconnect is open, or if the motor is disconnected, thereby eliminating the need for additional contacts to be hard-wired back to the drive.

**Soft pipe filling**

Manages pipe pressure by gently filling the pipeline. This helps avoid sudden pressure peaks and reduces the risk of water hammer and unintended pipe stress, which can damage or reduce the service life of pipes and pumping systems.

**Motor pre-heat**

Prolongs motor life by preventing condensation in motor windings where motors are subject to wide range of ambient temperatures, eliminating the need for costly factory installed motor winding heaters.

**Quick ramps**

Submersible pumps need to start quickly to lubricate their bearings. Quick ramps allows your pump to reach minimum speed quickly, to extend pump life, preventing unplanned downtime.

**Sensorless flow calculation**

When flow data (non-revenue/non-billing) is required, this feature can back up existing meters or provide flow data without the need for costly external meters and associated wiring.

**PI autotune**

Speed process control set up and efficiency by using an automatic routine that steps the motor speed, learns the process characteristics, and calculates the optimal process gains for the active PI control loop.

GENERAL SOFTWARE FEATURES OF THE DRIVE

Startup assistant allows first-time users to quickly customize the drive, out of the box, according to their needs. This is complemented by a built-in help function to make parameter-by-parameter setting easy.

Motor control in scalar and vector control modes. They support a wide range of motors including induction, permanent magnet and synchronous reluctance motors.

The energy optimizer feature optimizes the motor flux so that total energy consumption is reduced when the drive operates below the nominal load. The total efficiency can be improved by 1...20% depending on load torque and speed.

Configurable motor features to monitor, protect and early warn against problems in the motor, the pump or the process.

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, external communication loss management and many more.

Adjustable ramps can significantly impact water hammer in pumping systems. By controlling the acceleration and deceleration of the pump motor, the ACQ580 can minimize sudden changes in flow, which cause water hammer.

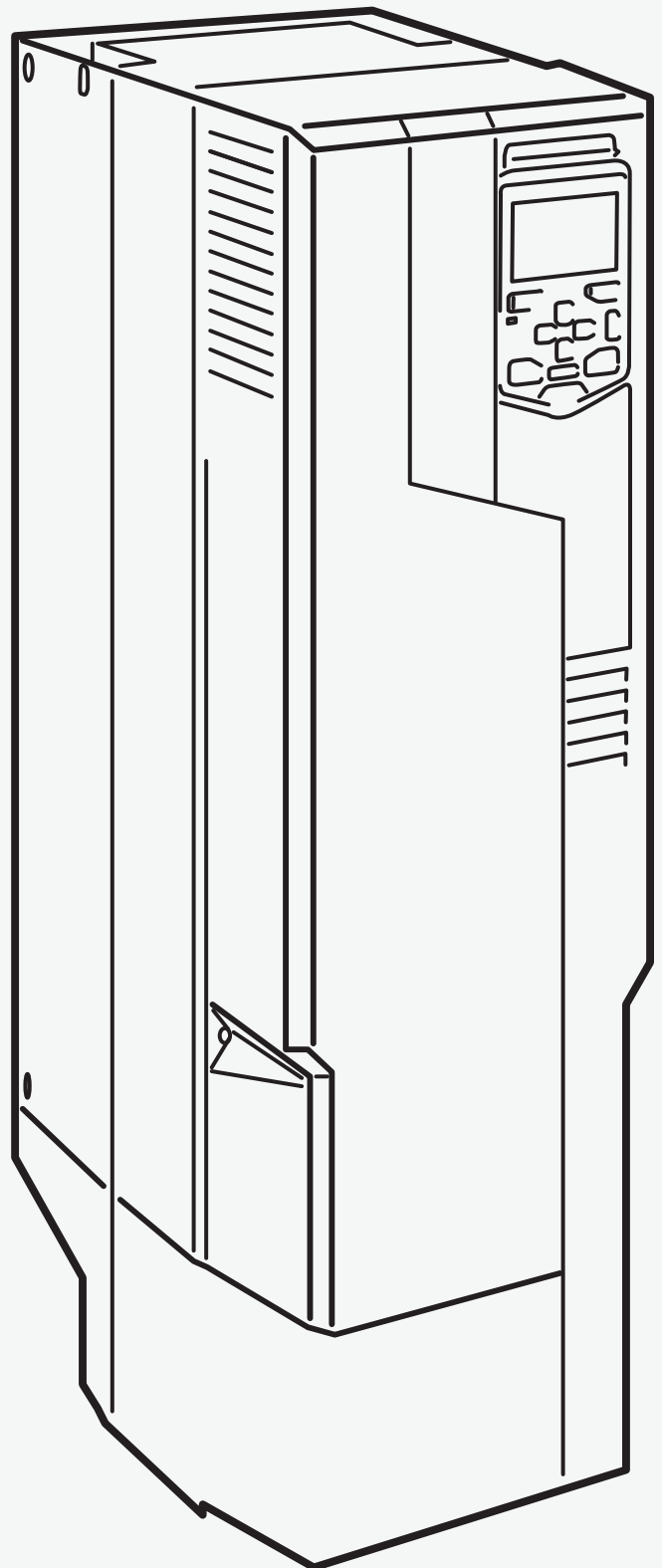
A built-in and stand-alone process PID/loop controller allows you to control the process loop directly from the VFD without an external controller.

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

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

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

The drive reduces motor noise by spreading the switching frequencies over a user-specified range.





EMC - ELECTROMAGNETIC COMPATIBILITY

What is EMC?

EMC stands for electromagnetic compatibility. It is the ability of electrical/electronic equipment to operate without problems in an electromagnetic environment.

Likewise, the equipment must not disturb or interfere with any other product or system in its locality. This is a legal requirement for all equipment taken into service within the European Economic Area (EEA).

Installation environments

A power drive system (PDS) can be connected to either industrial or public power distribution networks. The environment class depends on the way the PDS is connected to power supply.

The **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.

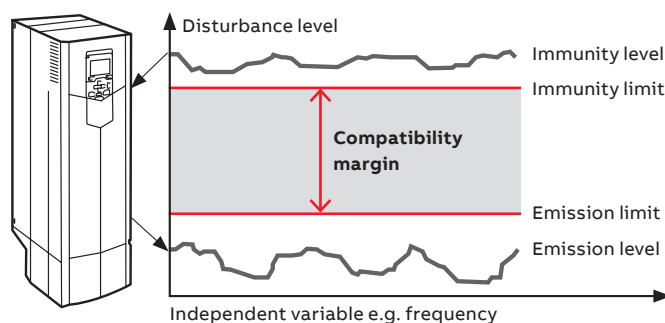
The **2nd environment** includes all establishments directly connected to public low voltage power supply networks.

EMC solutions

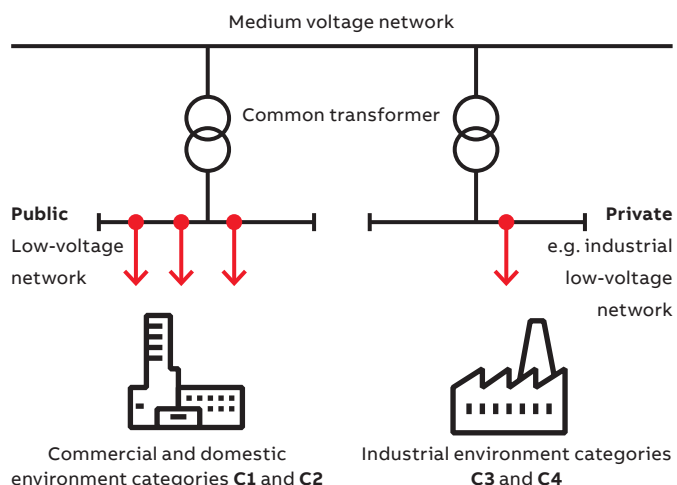
To fulfill the EMC requirements, the drives are equipped with standard or optional RFI filtering for HF disturbances.

- Using ferrite rings in power connection points
- Using an AC or DC choke (while they are meant to protect against harmonics, they reduce HF disturbances as well)
- Using an LCL filter in the case of regenerative drives
- Using a du/dt filter

Immunity and emission compatibility



Installation environments



The product standard EN 61800-3 divides PDSs into four categories according to the intended use

C1 - 1st environment

- Household appliances
- Usually plug connectible to any wall outlet
- Anyone can connect these to the network
- Examples: washing machines, TV sets, computers, microwave ovens, etc.

C2 - 1st environment

- Fixed household and public appliances
- Need to be installed or operated by a professional
- Examples: elevators, rooftop fans, residential booster pumps, gates and barriers, supermarket freezers, etc.

C3 - 2nd environment

- Professional equipment
- Needs to be installed or operated by a professional
- In some rare cases, may also be pluggable
- Examples: any equipment for industrial usage only, such as conveyors, mixers, etc.

C4 - 2nd environment

- Professional equipment
- Needs to be fixed installation and operated by a professional
- Examples: paper machines, rolling mills, etc.



Every ACQ580 drive is equipped with a built-in filter to reduce high-frequency emissions.

EMC product standard (EN 61800-3) category C2 is fulfilled in wall-mounted drives and in cabinet-built drives up to frame size R9. Category C3 is fulfilled in drive modules and cabinet-built drives (frames R10 and R11) with no external filters.

COMPARISON OF EMC STANDARDS

EN 61800-3, product standard	EN 61800-3, product standard	EN 55011, product family standard for industrial, scientific and medical (ISM) equipment	EN 6100-6-4, generic emission standard for industrial environments	EN 61000-6-3, generic emission standard for residential, commercial and light-industrial environments
Category C1	1 st environment, unrestricted distribution	Group 1. Class B	Not applicable	Applicable
Category C2	1 st environment, restricted distribution	Group 1. Class A	Applicable	Not applicable
Category C3	2 nd environment, unrestricted distribution	Group 2. Class A	Not applicable	Not applicable
Category C4	2 nd environment, restricted distribution	Not applicable	Not applicable	Not applicable

EMC COMPLIANCE AND MAXIMUM CABLE LENGTH OF ACQ580-01 UNITS ^{*)}

Type	Voltage	Frame sizes	1 st environment, restricted distribution, C2, grounded network (TN)	2 nd environment, unrestricted distribution, C3, grounded network (TN)
ACQ580-01	380-480 V	R1-R5	Standard device, cable length 100 m	Standard device, cable length 100 m
ACQ580-01	380-480 V	R6-R9	Standard device, cable length 150 m	Standard device, cable length 150 m
ACQ580-04	380-480 V	R10-R11	–	Standard device, cable length 100 m

^{*)} Motor cable operational functionality up to 300 m.

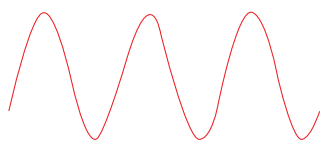
HARMONICS, WHAT ARE THEY?

How to overcome them with the ACQ580 ULH

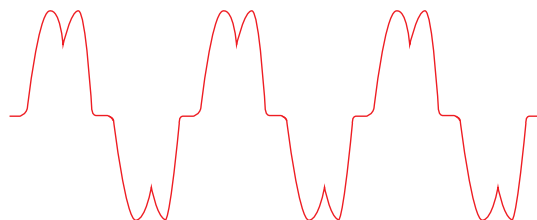
ACQ580 Ultra-Low Harmonic (ULH) drives only generate ~ 2-3% harmonic content, meeting IEEE519 latest edition every time. They are perfectly suited for places that cannot handle high harmonic content in the network.

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.



Problems caused by harmonic distortion

High levels of harmonic distortion in an utility can create a wide range of problems, including:

- Premature failure and reduced lifespan of devices occurs when overheating is present, such as:
 - Overheating of transformers, cables, circuit breakers and fuses
 - Reduced real current-carrying capacity of cable and transformers
 - Overheating of motors that are powered directly across the line or large derating factors to prevent overheating.
- Nuisance trips of breakers and fuses due to the added heat and harmonic loading
- Backup generators laboring, surging and unable to deliver stable power or even shutting down when called upon
- Unstable operation of sensitive electronics that require a pure sinusoidal AC waveform
- Flickering lights
- Equipment tripping or failing with no apparent cause.

All-in-one concept to meet IEEE519

ABB's ULH drives, the problem caused by harmonics are

There are many ways to mitigate harmonics however the ULH avoids the pain of choosing a mitigation strategy by offering a generator friendly solution in one package. The table below compares the THDI of various harmonic mitigation technologies.

	Six-pulse VFD no reactor/ choke	Six-pulse VFD Low DC bus capacitance	Six-pulse VFD + 5% reactor/choke	3-phase ULH VFD Active front end drive ^{*)}
Typical THD _i	90-120%	35-40%	35-45 %	2-3 %
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 water and wastewater applications.	Best harmonic performance of any of the solutions. Easy installation, only 3 wires in and 3 wires out. Ability to boost output voltage during low-line conditions. Unity true power factor.
Cons	High harmonic content, not recommended for installations with higher quantities of drives. Susceptible to poor power quality.	Higher voltage distortion (THD _v), more than the six-pulse VFD with 5% reactor/choke. More susceptible to problems caused by poor power quality. 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 slightly more heat than a standard six-pulse drive with reactor.

^{*)} Valuations are based on ABB low harmonic drives

^{**)} System price considers VFD & installation costs

avoided in the first place. Extremely low harmonic content helps your system meet IEEE519, every time, with no need to add additional harmonic filters or multi-pulse transformers. This leads to significant savings in equipment, installation costs and footprint, cabling and conduit and well as fewer spares parts. Fewer points of failure also has the benefit of an overall reduction in maintenance requirements.

Reliable operation under special conditions

ULH drives ensure that the motor receives the full voltage, even in low-voltage utility conditions or in a fluctuating network. 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 over sizing of drive system components.

Savings in total cost of ownership

Electrical utilities may charge additional penalties for consuming reactive power. The ULH drive has unity true power factor as a result of its low harmonics and no consumption of reactive power. Additionally, the drive is able to compensate the displacement power factor of the network to which it is

connected. This reduces the risk of having additional running costs or buying additional capacitor banks to correct the power factor.

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 compared to other harmonic mitigation solutions, like passive and active filters. System level efficiency is better when there are less components in the network. Also, there is savings in the installation and maintenance costs.

In retrofit projects, the transformer might not be sized to meet the harmonic levels caused by non-linear loads such as standard 6-pulse drives, so there is a risk of overloading the transformer. Thanks to the extremely low harmonic content of ULH drives there is no need to oversize the transformer, switchgear, or cables.

When using backup generator power, the ULH drive does not create harmonic content that would require an oversized alternator. It also prevents unstable operation because the ULH never regenerates power back to the source. ULH never regenerates power back to the source.

	Six-pulse VFD + passive filter	Matrix technology drives	Multi-pulse VFD	Six-pulse VFD + active filter
Typical THD _i	5-10%	5-13 %	12 pulse 10-15% 18 Pulse 5-8% 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. Risk of resonances between the filter capacitors and other capacitors in the system. 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. No under voltage ride-through of power circuitry due to the lack of DC bus.	Very large footprint. Significant number of points of failure. Optimal harmonic performance requires perfectly balanced AC power feed with little background distortion. Complex wiring and special transformer required. Very difficult to retrofit in the field.	Typically the most expensive solution. The filter becomes a single point of failure for harmonic mitigation. A filter failure could result in significant/immediate harmonic related issues within the system. Complex wiring.

POWER QUALITY AND GENERATOR STABILITY



Unseen power quality problems?

Variable Frequency Drives using Active Front End technology (Ultra-Low Harmonic Drives)

- Control line current to near sinusoidal waveform
- Low total distortion of current and voltage
- Meet most stringent standards (IEEE519) at drive terminals
- Not susceptible to unbalanced supply voltages and back-ground voltage distortion
- Unity power factor for stable generator operation
- Does not regenerate into utility or generator power supply

Municipal treatment facilities depend on a stable, uninterrupted power supply to operate reliably, which allows them to effectively serve their communities. These facilities must be impervious to utility power interruptions and poor power quality. They must operate 24 hours a day, 7 days a week, 365 days a year to meet consumer demand. If the facility experiences transient power brownouts or voltage imbalances, treatment quality can be adversely affected, and normal operations can be interrupted.

ABB's ultra-low harmonic (ULH) VFDs provide an industry leading technology that does not create damaging harmonics. The result is a facility that is resilient to electrical disturbances and performs as expected to provide continuous operations with improved energy efficiency.

ABB's ACQ580 ULH drives, specifically designed for municipal applications, also enable water and wastewater facilities to meet the most stringent recommendations of IEEE519, the governing standard for electrical harmonics.

ENCLOSURE RATINGS

The ACQ580-01 drives are available in a variety of enclosure ratings. These drives are all UL Type rated, also commonly known as NEMA ratings. UL Type ratings require more intensive and verified testing than NEMA ratings. While there are more formal definitions available for UL Type / NEMA enclosure ratings, below is a brief description of enclosures type and typical applications.

UL / NEMA Type 1

For indoor use only, in a dry environment that does not expose the VFD to dripping water. Environment should be fairly clean, as the UL Type 1 is not dust proof. This is the a common enclosure style used for indoor WWW installations.

UL / NEMA Type 12

For indoor use only. This enclosure provides a degree of protection against dripping water and circulating dust. Most commonly used in installation locations that are dusty, dirty and damp.

UL / NEMA Type 3R

For outdoor use. This enclosure provides a degree of protection against dirt, rain, sleet and snow. Type 3R is not dust tight. While not required by the UL type/ NEMA definition, ABB includes an enclosure heater inside of all Type 3R packages. The heater reduces the chance for condensation to form inside the enclosure.

UL / NEMA Type 4X

For extreme outdoor use. This enclosure provides protections against driving rain, dirt, ice and snow. Commonly deployed where installation of the drive is required near the motor and or application/ IP69.



COMMON FEATURES

throughout the whole ACQ580 product family

ACQ580 drives have the operation logic, standard features and common options throughout the whole portfolio. Learn it once - use it everywhere.

Standard ACQ580 features

Choke and EMC

- Integrated harmonic mitigation
 - ACQ580-01/-Px; 5% equivalent impedance DC choke
 - ACQ580-04; 3% nominal impedance AC chokes
 - ACQ580-31/-34; THDi of less than 3% at the drive terminal
- Fulfills the EN61000-3-12 standard
- EMC C2 filter for -01 and -31 allows safe installation in first environment
- EMC C3 and common mode filter for -04 and -34 allow safe installation in second environment

Scalar and vector control for process control

- Scalar control for effortless process control
- Vector control for accurate speed and torque control in demanding applications
- Support for induction, permanent magnet and synchronous reluctance motors (SynRM)

Extensive I/O connections

- The ACQ580 features extensive I/O connections for flexible configuration in various applications
- Colored and bigger terminals for easy commissioning and diagnostics

Assistant control panel and primary settings

- The assistant control panel speaks your language
- USB interface for PC and tool connection

Integrated safe torque off (STO)

- Safe torque off for implementing safe machinery
- SIL 3, PL e

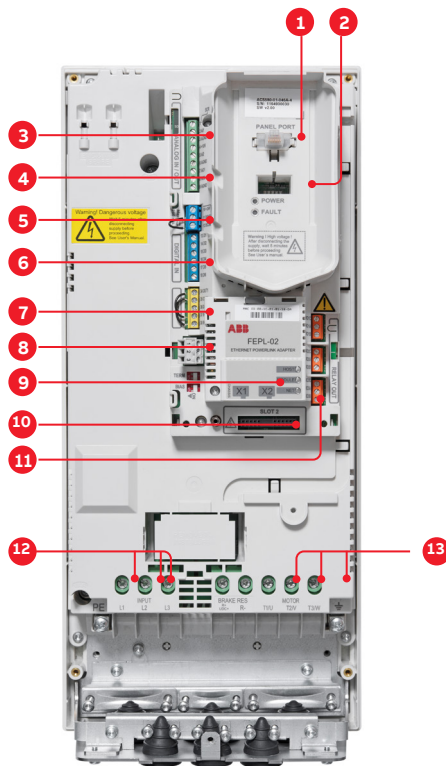


COMPREHENSIVE CONNECTIVITY

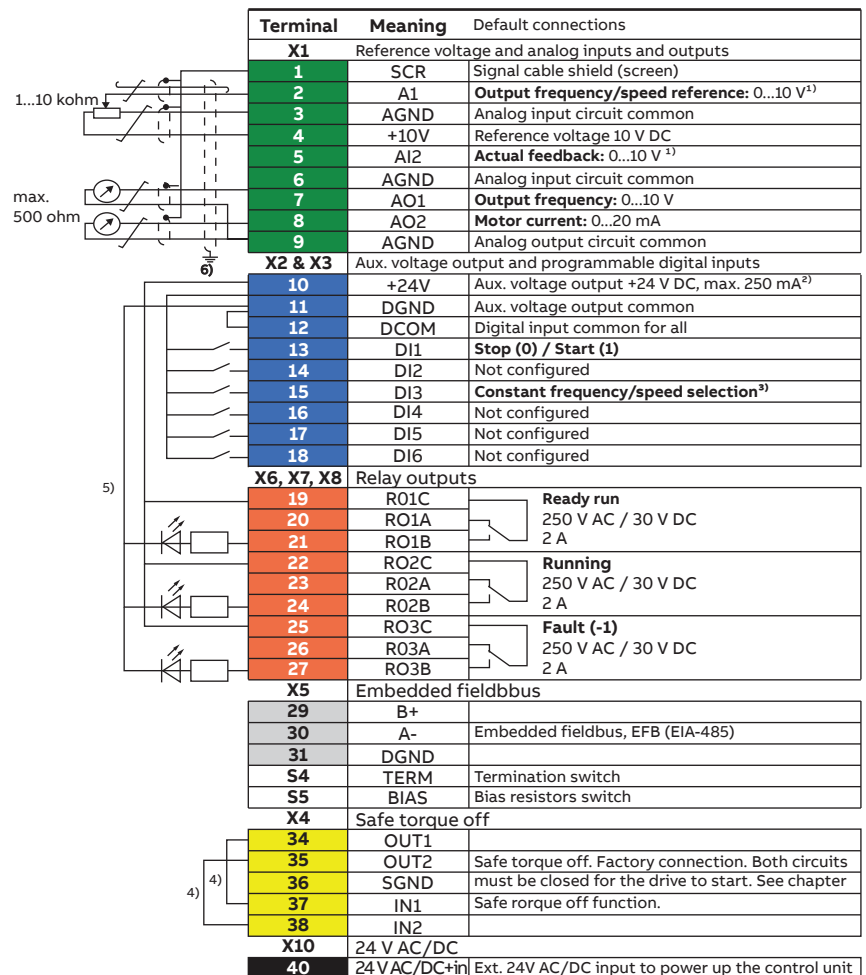
The ACQ580 drives offer a wide range of standard interfaces. In addition, the drive has two option slots that can be used for extensions including fieldbus adapter modules and input/output extension modules.

All signals and functions for each I/O point can be freely configured via drive settings. AI1, AI2 and AO1 can be set individually for either mA or V signals.

Default control connection diagram below:



1. Panel port (PC tools, control panel)
2. ABB drive customizer port for programming the drive without mains with CCA-01 tool
3. Analog inputs (2 × AI)
4. Analog outputs (2 × AO)
5. 24 V AC/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



1) Current [0(4)...20 mA, $R_{in} = 100 \text{ ohm}$] or voltage [0(2)...10 V, $R_{in} > 200 \text{ kohm}$]. Change of setting requires changing the corresponding parameter.

2) Total load capacity of the Auxiliary voltage output +24V (X2;X3) is 6.0 W (250 mA / 24 V) minus the power taken by the option modules installed on the board.

3) In scalar control (default): See Menu - Primary settings - Drive - Constant frequencies or parameter group 28 Frequency reference chain. In vector control: See Menu - Primary setting - Drive - Constant speeds or parameter group 22 Speed reference selection.

4) Connected with jumpers at the factory.

5) Use shielded twisted-pair cables for digital signals.

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

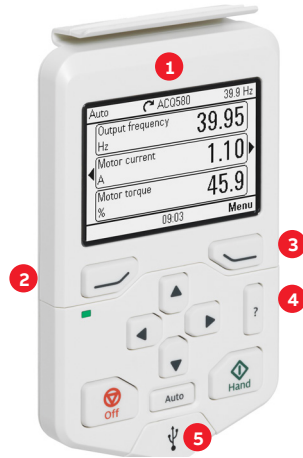
HAND-OFF-AUTO CONTROL PANEL

The control panel features intuitive use and easy navigation.
High resolution display enables visual guidance.

Almost anyone can set up and commission the ACQ580 drive using available control panels. You do not need to know any drive parameters, as the control panel helps you to set up the essential settings quickly and get the drive into action.

Control of multiple drives

One control panel can be connected to several drives simultaneously using the panel network feature. The user can also select the drive to operate in the panel network.



1. With the customizable **Home views**, you can monitor the values that matter most, e.g. speed, torque or motor temperature. Select the signals from a ready-made list or choose user-defined parameters.

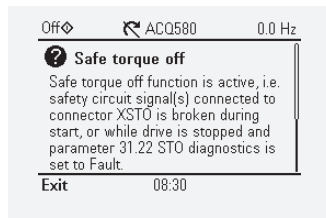
2. **Options** are used to set a reference, change the motor direction, select the drive, edit Home view pages, and see the fault and warning status.

3. All functions of the control panel are accessed through the **main menu**. It is possible to organize parameters in different ways and store essential parameters for different configurations for any specialized application needed.

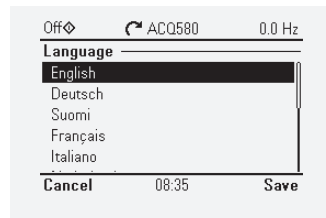
4. The help key provides context-sensitive guidance. Faults or warnings can be resolved quickly since the help key provides troubleshooting instructions.

5. The PC tool can be easily connected to the drive through the **USB connector** on the control panel.

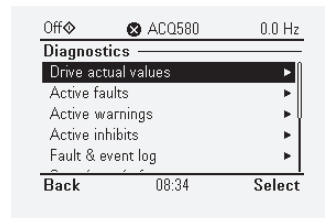
Assistant control panel display



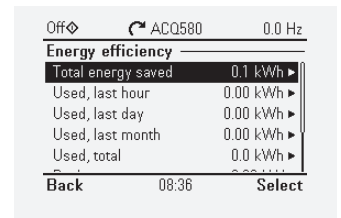
01



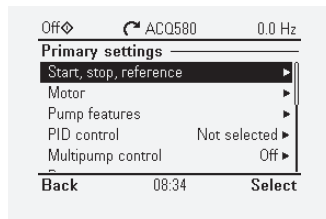
02



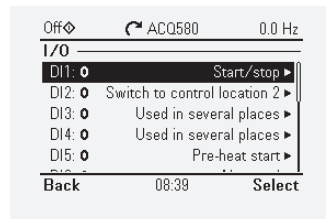
03



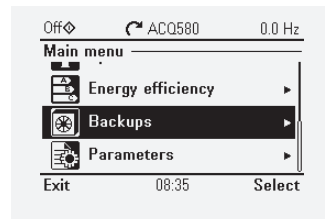
04



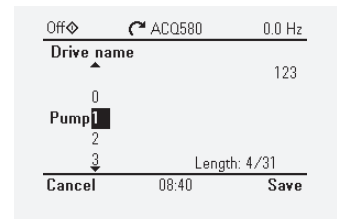
05



06



07



08

01 Help button

- Detailed descriptions related to faults and warnings
- More information about Primary settings options

02 Language options

Access to a selection list that consists of mutually exclusive options such as the language selection list (Access through the main menu).

03 Diagnostics

- Diagnostic information, such as faults and warnings
- Helps to resolve potential problems
- Helps to make sure that the drive setup is functioning correctly

04 Energy efficiency

View and configure parameters related to energy savings, such as kWh counters.

05 Primary settings for ACQ580

With the primary settings you can set motor values, commission multi-pump, set level control, set soft pipe filling etc. pumping features. When using Primary settings, there is no need to browse the parameters.

06 I/O Menu

- Access to each terminal name, number and electrical status
- Possibility to force inputs and outputs
- Access to sub-menus that provides further information on the menu item and allow to make changes to the I/O connections

07 Backups

Possibility to save parameter settings in the control panel memory and restore parameter settings from a backup to the drive.

08 Text editor

Add information, customize text and label the drive.

PROTECTING VFDS

from corrosion in challenging environments

New corrosion standards offer a more user-friendly and unambiguous method for defining environmental classes in different applications.

Many current claims about resistance (for example a 3C3 coating) are based on an obsolete IEC standard, IEC60721-3-3:2002, which is difficult to test to.

None of the corrosion standards define drive lifetime in a given environment. Based on the new corrosion standard IEC60721-3-3:2019 as well as the ASTM B845-97 accelerated testing, ABB has cooperated with the Lappeenranta-Lahti University of Technology to create a test for VFD reliability in corrosive environments that complies with today's standards.

ACQ580 drives* are supplied with conformally coated printed circuit boards (PCBs) to provide protection against these corrosive chemical and gases:

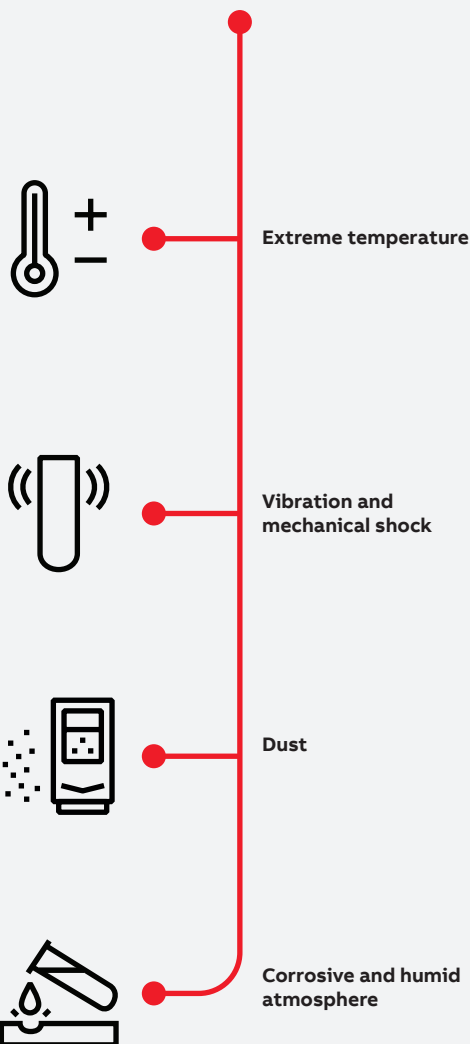
- Ammonia (NH₃)
- Chlorine (Cl₂)
- Nitrogen Dioxide (NO₂)
- Hydrogen Sulfide (H₂S)
- Sulfur Dioxide (SO₂) gases

At a concentration level of:

- C4 (IEC60721-3-3 edition 3 / ISO 9223)
- 3C3 (IEC60721-3-3 edition 2)
- G3/GX up to 2300 Å /30d corrosivity (ANSI-ISA 71.04)

IEC60721-3-3:2019 Classes	ANSI/ISA-71.04-2013 Classes	ABB Drive solution
C3	G2	Type Open, Type 1
C4	G3/GX up to 2300 Å /30d corrosivity (ANSI-ISA 71.04)	Type 12 and Type 4X

What affects drive reliability



COMPLETE OFFERING

Wall-mounted drives to cabinet installations

No matter the frame size or power range, all ACQ580 drives bring you ease of use, scalability and quality.

ACQ580-01 The wall-mounted drive

The wall-mounted drives are available range from 1 to 150 Hp at 208/230V, 1 to 350 Hp at 480V, and 2 to 250 Hp at 575V. Drives are available as standard with protection class UL (NEMA) Type 1 & 12 / IP21 & IP55 with plus code +B056. Side-by-side mounting, flange mounting and horizontal mounting configurations are all available.

ACQ580-01 UL Type 4X wall-mounted drive (+B066)

The wall-mounted UL Type 4X drives are available from 1 to 20 Hp at 208/230V, 1 to 30 Hp at 480V, and 2 to 30Hp at 575V. Designed for operation in environments where rain, heat, snow, cold, or dust are experienced, allowing safe, convenient and easy installation close to the motor. An optional fused disconnect is available.

ACQ580-04 Drive modules for cabinet installations

The ACQ580 drive modules are optimal for system integrators, cabinet builders or OEMs who want to optimize the cabinet design in the 400 to 700 hp range at 480V, but do not want to compromise the easy installation, commissioning and maintenance. Available UL (NEMA) Type Open / IP00.

ACQ580-PC/PD packaged drives with disconnect means

The ACQ580 drive with integrated disconnect is a robust, rugged and compact package that enables mounting within line of site of equipment as well as an additional means for lockout tagout. It is available with either a disconnect switch (-PD) or circuit breaker (-PC) as the input disconnect means. Both include fuses and are available in power ranges from 1 to 100 Hp at 208/230V, 1 to 200 Hp at 480V and 2 to 150 Hp at 575V. They are available in UL (NEMA) Type 1 / IP21, UL (NEMA) Type 12 / IP55 (with +B056 plus code) and UL (NEMA) Type 3R (with +B058 plus code).

—
01 ACQ580
Product Family



ACQ580-OP Performance package

The ACQ580-OP...+C260 performance package features an ACQ580 variable frequency drive (VFD) integrated into a robust UL Type (NEMA) 1/12 enclosure. Designed with a comprehensive array of versatile options tailored for water and wastewater applications.

ACQ580-31 Ultra-low harmonic drives for wall-mounting

The ULH variant drives produces even below 3% THDi, helping to keep network clean, stable and IEEE519 compliant while eliminating the need for installing external filters or multi-pulse transformers. The ULH drives for wall-mounting are available from 5 to 75 Hp at 240V and 5 to 150 Hp at 480V and protection classes UL (NEMA) Type 1 & 12 / IP21 & IP55.

ACQ580-34 Ultra-low harmonic drives for cabinet installation

The ULH module is optimal for tailored cabinet design and is available from 200 to 400 hp at 480V and protection classes UL (NEMA) Type Open / IP00.

ACQ580-3P Performance package

Features an ACQ580 ULH variable frequency drive (VFD) integrated into a robust UL Type (NEMA) 1/12 enclosure. Designed with a comprehensive array of versatile options tailored for water and wastewater applications.

ACQ580-01

ACQ580-01

The wall-mounted drive



Take advantage of flexible, cabinet-free installation

Save space and reduce overall costs

Maintain productivity in harsh conditions

Minimize downtime and optimize pump operation

The ACQ580 can be installed in normal equipment rooms, or even dusty and wet environments, thanks to the drive's compact wall mountable construction in both UL (NEMA) Type 1 & 12 / IP21 & IP55 configuration that share the same footprint. The robust and protective design ensures that no

additional enclosures or components, such as filters and fans, are needed. The drives provide smaller capital expenses by avoiding or advancing maintenance of external components, which in turn improves the reliability of the drive and the process.

High protection for operation in harsh environments

The wall-mounted UL (NEMA) Type 12 / IP55 drive is designed for applications exposed to dust, moisture and other harsh environments. It is similar in size to the compact UL (NEMA) Type 1 / IP21 drives, which provides significant savings in space, maintenance, engineering, material costs, as well as in setup and commissioning time.

Extreme Protection for operation in extreme environments

Designed for operation in environments where rain, heat, snow, cold, or dust are experienced, the ACQ580-01 UL Type 4X/IP69 Drive is fully sealed and weather tight ensuring protection against external elements allowing safe, convenient and easy installation close to the motor. The drive can also withstand directed spray and is corrosion-resistant to the same standard as a stainless-steel enclosure. Further reduce site installation costs by mounting the Drive close to your application.



Option code	Description
+B056	IP55/UL type 12 Unit
+B066	IP69/UL Type 4x Unit

ORDERING INFORMATION

How do I build an ordering code?

A	C	Q	5	8	0	-	0	1	-					-		+			
PRODUCT SERIES			CONSTRUCTION				SIZE						VOLTAGE		OPTIONS				

-	0	1
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CONSTRUCTION

01 = Wall-mounted, UL (NEMA) Type 1 / IP21, hand-off-auto assistant control panel, conduit box, quick start guide

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SIZE

(Output current rating, see rating for details)

Frame size									
Voltage	R1	R2	R3	R4	R5	R6	R7	R8	R9
208 V	04A6	024A	046A	075A	088A	143A	169A	273A	343A
	06A6	031A	059A		090A		211A		396A
	07A5				114A				
	10A6								
	017A								
460 V	02A1	014A	027A	052A	078A	124A	156A	240A	302A
	03A0	023A	034A	065A	096A		180A	260A	361A
	03A5		044A	077A					414A
	04A8								
	07A6								
575 V	012A								
	---	02A7	022A	---	041A	---	099A	144A	192A
		03A9	027A		052A		125A		242A
		06A1	032A		062A				271A
		09A0			077A				
		011A							
	017A								

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VOLTAGE RATING

2 = Power ratings are valid at nominal voltage 208/230V

4 = Power ratings are valid at nominal voltage 460V

6 = Power ratings are valid at nominal voltage 575V

**OPTION CODES**

Letter code followed by 3 digit number (see option code pages for details)

Enclosure	
B056	UL Type 12 (IP55)
Control Panel Options - 1 Option available (ACH-AP-H ships as Standard)	
STD	Hand-Off- Auto Control Panel - Standard Delivery
O3400	No control panel
J424	Blank control panel cover (No Control Panel Delivered)
J425	Local-Remote - Logic Assistant Control panel
J429	Blue Tooth - Control panel - Hand-Off- Auto
Fieldbus - 1 slot available for fieldbus adapters	
K451	DeviceNet adapter
K454	PROFIBUS-DP adapter
K458	Modbus/ RTU adapter
K475	Ethernet adapter (EIP,Modbus/TCP,PROFINET, 2-port)
K490	Ethernet/IP Adapter, 2 Port
K491	Modbus/ TCP Adapter, 2 Port
K492	Profinet IO Adapter, 2 Port
Input/output options - 1 slots available for I/O options	
L501	External 24 V AC and DC (2 x RO and 1 x DO)
L512	115/230 V digital input (6 x DI and 2 x RO)
L523	External 24 V and isolated PTC interface
L525	Analog signal extension (3 x AI and 2 x AO)
Manufacturing options	
P918	Assembled in the USA (R1-R3 Frames ONLY)

Ratings, types and voltages

ACQ580-01, wall-mounted drives 1ph 240V

1-PHASE U1 = 240V. POWER RATINGS ARE VALID AT NOMINAL OUTPUT VOLTAGE UN = 230 V 60 HZ

Type Code	Nominal Ratings ⁽¹⁾⁽²⁾		Frame Size	UL Type 1 IP21 Dimensions				UL Type 12 IP55 Dimensions (+B056) ⁽³⁾			
	I _N	P _N		Height (H) Type 1	Width (W) Type 1	Depth (D) Type 1	Weight Type 1	Height (H) Type 12	Width (W) Type 12	Depth (D) Type 12	Weight Type 12
	A	Hp		in	in	in	lb	in	in	in	lb
ACQ580-01-04A6-2	2.2	0.5	R1	14.69	4.82	8.78	11	17.78	5.09	9.17	11
ACQ580-01-04A6-2+P918	2.2	0.50	R1	14.69	4.82	8.78	11	17.78	5.09	9.17	11
ACQ580-01-06A6-2	3.2	0.75	R1	14.69	4.82	8.78	11	17.78	5.09	9.17	11
ACQ580-01-06A6-2+P918	3.2	0.75	R1	14.69	4.82	8.78	11	17.78	5.09	9.17	11
ACQ580-01-07A5-2	4.2	1	R1	14.69	4.82	8.78	11	17.78	5.09	9.17	11
ACQ580-01-07A5-2+P918	4.2	1	R1	14.69	4.82	8.78	11	17.78	5.09	9.17	11
ACQ580-01-10A6-2	6.0	1.5	R1	14.69	4.82	8.78	11	17.78	5.09	9.17	11
ACQ580-01-10A6-2+P918	6.0	1.5	R1	14.69	4.82	8.78	11	17.78	5.09	9.17	11
ACQ580-01-017A-2	6.8	2	R1	14.69	4.82	8.78	11	17.78	5.09	9.17	11
ACQ580-01-017A-2+P918	6.8	2	R1	14.69	4.82	8.78	11	17.78	5.09	9.17	11
ACQ580-01-024A-2	9.6	3	R2	18.62	4.86	9.00	15	21.49	5.10	9.40	15
ACQ580-01-024A-2+P918	9.6	3	R2	18.62	4.86	9.00	15	21.49	5.10	9.40	15
ACQ580-01-031A-2	15.2	5	R2	18.62	4.86	9.00	15	21.49	5.10	9.40	15
ACQ580-01-031A-2+P918	15.2	5	R2	18.62	4.86	9.00	15	21.49	5.10	9.40	15
ACQ580-01-046A-2	22	7.5	R3	19.29	7.99	9.01	26	20.93	8.16	9.32	29
ACQ580-01-046A-2+P918	22	7.5	R3	19.29	7.99	9.01	26	20.93	8.16	9.32	29
ACQ580-01-059A-2	28	10	R3	19.29	7.99	9.01	26	20.93	8.16	9.32	29
ACQ580-01-059A-2+P918	28	10	R3	19.29	7.99	9.01	26	20.93	8.16	9.32	29
ACQ580-01-075A-2	28	10	R4	25.04	7.99	10.13	42	27.03	8.59	10.44	45
ACQ580-01-088A-2	42	15	R5	28.83	7.99	11.60	63	32.01	8.59	12.59	64
ACQ580-01-090A-2	45	15	R4	25.04	7.99	10.13	42	27.03	8.59	10.44	45
ACQ580-01-114A-2	54	20	R5	28.83	7.99	11.60	63	32.01	8.59	12.59	64
ACQ580-01-143A-2	68	25	R6	28.60	9.92	14.53	94	34.81	11.46	16.40	95
ACQ580-01-169A-2	80	30	R7	34.67	11.18	14.58	120	40.86	12.76	16.30	124
ACQ580-01-211A-2	104	40	R7	34.67	11.18	14.58	120	40.86	12.76	16.30	124
ACQ580-01-273A-2	130	50	R8	38.01	11.81	15.47	153	44.23	13.80	17.80	170
ACQ580-01-343A-2	154	60	R9	37.60	14.96	16.46	214	46.75	16.95	18.78	228
ACQ580-01-396A-2	192	75	R9	37.60	14.96	16.46	214	46.75	16.95	18.78	228

Notes:

1) Nominal Rated output current available continuously without overloadability.

I_N Nominal output current. Maximum continuous rms output current allowed (no overload).

P_N Nominal power of the drive. Typical motor power (no overload). The horsepower ratings apply to most NEMA 4-pole motors.

2) Ratings apply up to ambient temperature of 40°C (104°F). Derating for higher altitudes, ambient temperatures, or switching frequencies, see the ACQ580-01 Drives Hardware Manual, document code: 3AXD50000044862.

3) Type 12 dimensions include hood dimensions

1-PHASE U1 = 240V. POWER RATINGS ARE VALID AT NOMINAL OUTPUT VOLTAGE UN = 230 V 60 HZ

Type Code	US Government Compliance			Cooling Air Flow 200 to 240 V units				Noise	Recommended UL Input current Protection fuses			
	IIJA/ BABA (1)	BAA (2)	TAA (3)	Heat dissipation ⁽⁴⁾		Air flow		Max. noise level ⁽⁵⁾	In	Voltage rating	Bussmann type ⁽⁶⁾⁽⁷⁾	UL class
				W	BTU/ Hr	m3/h	CFM	dBA	A	V		
ACQ580-01-04A6-2	N	N	N	50	171	43	25	59	15	600	CTK-R-15, JKS-15, DFJ-15, FCF15RN or JJS-15	CC, CF, J or T
ACQ580-01-04A6-2+P918	Y	Y	Y	50	171	43	25	59	15	600	CTK-R-15, JKS-15, DFJ-15, FCF15RN or JJS-15	CC, CF, J or T
ACQ580-01-06A6-2	N	N	N	69	235	43	25	59	15	600	CTK-R-15, JKS-15, DFJ-15, FCF15RN or JJS-15	CC, CF, J or T
ACQ580-01-06A6-2+P918	Y	Y	Y	69	235	43	25	59	15	600	CTK-R-15, JKS-15, DFJ-15, FCF15RN or JJS-15	CC, CF, J or T
ACQ580-01-07A5-2	N	N	N	79	270	43	25	59	15	600	CTK-R-15, JKS-15, DFJ-15, FCF15RN or JJS-15	CC, CF, J or T
ACQ580-01-07A5-2+P918	Y	Y	Y	79	270	43	25	59	15	600	CTK-R-15, JKS-15, DFJ-15, FCF15RN or JJS-15	CC, CF, J or T
ACQ580-01-10A6-2	N	N	N	120	409	43	25	59	15	600	CTK-R-15, JKS-15, DFJ-15, FCF15RN or JJS-15	CC, CF, J or T
ACQ580-01-10A6-2+P918	Y	Y	Y	120	409	43	25	59	15	600	CTK-R-15, JKS-15, DFJ-15, FCF15RN or JJS-15	CC, CF, J or T
ACQ580-01-017A-2	N	N	N	203	693	43	25	59	30	600	CTK-R-30, JKS-30, DFJ-30, FCF30RN or JJS-30	CC, CF, J or T
ACQ580-01-017A-2+P918	Y	Y	Y	203	693	43	25	59	30	600	CTK-R-30, JKS-30, DFJ-30, FCF30RN or JJS-30	CC, CF, J or T
ACQ580-01-024A-2	N	N	N	247	843	101	59	64	40	600	JSK-40, DFJ-40, FCF40RN or JJS-40	CF, J or T
ACQ580-01-024A-2+P918	Y	Y	Y	247	843	101	59	64	40	600	JSK-40, DFJ-40, FCF40RN or JJS-40	CF, J or T
ACQ580-01-031A-2	N	N	N	348	1187	101	59	64	40	600	JSK-40, DFJ-40, FCF40RN or JJS-40	CF, J or T
ACQ580-01-031A-2+P918	Y	Y	Y	348	1187	101	59	64	40	600	JSK-40, DFJ-40, FCF40RN or JJS-40	CF, J or T
ACQ580-01-046A-2	N	N	N	518	1767	179	105	76	80	600	JSK-80, DFJ-80, FCF80RN or JJS-80	CF, J or T
ACQ580-01-046A-2+P918	Y	Y	Y	518	1767	179	105	76	80	600	JSK-80, DFJ-80, FCF80RN or JJS-80	CF, J or T
ACQ580-01-059A-2	N	N	N	762	2600	179	105	76	80	600	JSK-80, DFJ-80, FCF80RN or JJS-80	CF, J or T
ACQ580-01-059A-2+P918	Y	Y	Y	762	2600	179	105	76	80	600	JSK-80, DFJ-80, FCF80RN or JJS-80	CF, J or T
ACQ580-01-075A-2	Y	Y	Y	809	2760	288	170	69	100	600	JSK-100, DFJ-100, FCF100RN or JJS-100	CF, J or T
ACQ580-01-088A-2	Y	Y	Y	861	2938	139	82	63	150	600	JSK-150, DFJ-150 or JJS-150	J or T
ACQ580-01-090A-2	Y	Y	Y	918	3132	159	94	70	150	600	JSK-150, DFJ-150 or JJS-150	J or T
ACQ580-01-114A-2	Y	Y	Y	1268	4327	139	82	63	150	600	JSK-150, DFJ-150 or JJS-150	J or T
ACQ580-01-143A-2	Y	Y	Y	1916	6538	435	256	67	200	600	JKS-200, DFJ-200 OT JJS-200	J or T
ACQ580-01-169A-2	Y	Y	Y	1965	6705	450	265	67	250	600	JKS-250, DFJ-250 OT JJS-250	J or T
ACQ580-01-211A-2	Y	Y	Y	2809	9585	450	265	67	300	600	JKS-300, DFJ-300 OT JJS-300	J or T
ACQ580-01-273A-2	Y	Y	Y	3518	12004	550	324	65	400	600	JKS-400, DFJ-300 OT JJS-400	J or T
ACQ580-01-343A-2	Y	Y	Y	2547	8691	1150	677	68	500	600	JKS-500, DFJ-500 or JJS-500	J or T
ACQ580-01-396A-2	Y	Y	Y	3060	10441	1150	677	68	600	600	JKS-600, DFJ-600 or JJS-600	J or T

Notes:

- 1) The drive types listed as IIJA/BABA are Manufactured in the U.S and the cost of the components manufactured in the U.S. are greater than 55% of the total component cost.
- 2) The drive types listed as BAA are manufactured in the USA and deemed Commercially Available Off-the-Shelf (COTS) items that are NOT predominately iron, and steel products as defined under Federal Acquisition Regulation (FAR) 2.101.
- 3) The drive types listed as TAA are Manufactured in the USA or other designated country allowed under TAA. All ABB Variable Frequency Drives listed in this statement have been determined TAA compliant. This statement applies only to VFDs and Cabinets with the 10-digit SN starting with 1xxxxxxx or 2xxxxxxx.
- 4) Heat dissipation value is a reference for cabinet thermal design. Typical drive losses when it operates at 90% of the motor nominal frequency and 100% of the drive nominal output current.
- 5) The maximum noise level is at full fan speed. When the drive is not operating at full load and at maximum ambient temperature the noise level is lower
- 6) ABB does not require Bussmann brand fuses. Fuses which meet the appropriate UL class type, current rating, and are rated at 600V, 200 kA may be used. ABB recommends fast acting class T or faster fuses in the USA.
- 7) Most drives built in 2020 or earlier can only be protected with Class T (JJS) fuses. See 3AXD50000645015 Branch Circuit Protection for ABB Drives for additional information.

Ratings, types and voltages

ACQ580-01, wall-mounted drives 3ph 240V

3-PHASE $U_L = 208$ TO 240V. POWER RATINGS ARE VALID AT NOMINAL OUTPUT VOLTAGE $U_N = 208/230$ V 60 HZ

Type Code ⁽³⁾	Light-Duty Ratings ⁽¹⁾⁽⁴⁾		Heavy Duty Output Ratings ⁽²⁾⁽⁴⁾		Frame Size	UL Type 1 IP21 Dimensions				UL Type 12 IP55 Dimensions (+B056) ⁽³⁾			
	I _{LD}	P _{LD}	I _{HD}	P _{HD}		Height (H) Type 1	Width (W) Type 1	Depth (D) Type 1	Weight Type 1	Height (H) Type 12	Width (W) Type 12	Depth (D) Type 12	Weight Type 12
A	Hp	A	Hp	in	in	in	lb	in	in	in	lb		
ACQ580-01-04A6-2	4.6	1	3.5	0.75	R1	14.69	4.82	8.78	11	17.78	5.09	9.17	11
ACQ580-01-04A6-2+P918	4.6	1	3.5	0.75	R1	14.69	4.82	8.78	11	17.78	5.09	9.17	11
ACQ580-01-06A6-2	6.6	1.5	4.6	1	R1	14.69	4.82	8.78	11	17.78	5.09	9.17	11
ACQ580-01-06A6-2+P918	6.6	1.5	4.6	1	R1	14.69	4.82	8.78	11	17.78	5.09	9.17	11
ACQ580-01-07A5-2	7.5	2	6.6	1.5	R1	14.69	4.82	8.78	11	17.78	5.09	9.17	11
ACQ580-01-07A5-2+P918	7.5	2	6.6	1.5	R1	14.69	4.82	8.78	11	17.78	5.09	9.17	11
ACQ580-01-10A6-2	10.6	3	7.5	2	R1	14.69	4.82	8.78	11	17.78	5.09	9.17	11
ACQ580-01-10A6-2+P918	10.6	3	7.5	2	R1	14.69	4.82	8.78	11	17.78	5.09	9.17	11
ACQ580-01-017A-2	16.7	5	10.6	3	R1	14.69	4.82	8.78	11	17.78	5.09	9.17	11
ACQ580-01-017A-2+P918	16.7	5	10.6	3	R1	14.69	4.82	8.78	11	17.78	5.09	9.17	11
ACQ580-01-024A-2	24.2	7.5	16.7	5	R2	18.62	4.86	9.00	15	21.49	5.10	9.40	15
ACQ580-01-024A-2+P918	24.2	7.5	16.7	5	R2	18.62	4.86	9.00	15	21.49	5.10	9.40	15
ACQ580-01-031A-2	30.8	10	24.2	7.5	R2	18.62	4.86	9.00	15	21.49	5.10	9.40	15
ACQ580-01-031A-2+P918	30.8	10	24.2	7.5	R2	18.62	4.86	9.00	15	21.49	5.10	9.40	15
ACQ580-01-046A-2	46.2	15	30.8	10	R3	19.29	7.99	9.01	26	20.93	8.16	9.32	29
ACQ580-01-046A-2+P918	46.2	15	30.8	10	R3	19.29	7.99	9.01	26	20.93	8.16	9.32	29
ACQ580-01-059A-2	59.4	20	46.2	15	R3	19.29	7.99	9.01	26	20.93	8.16	9.32	29
ACQ580-01-059A-2+P918	59.4	20	46.2	15	R3	19.29	7.99	9.01	26	20.93	8.16	9.32	29
ACQ580-01-075A-2	74.8	25	59.4	20	R4	25.04	7.99	10.13	42	27.03	8.59	10.44	45
ACQ580-01-088A-2	88	30	74.8	25	R5	28.83	7.99	11.60	63	32.01	8.59	12.59	64
ACQ580-01-090A-2	90	30	74.8	25	R4	25.04	7.99	10.13	42	27.03	8.59	10.44	45
ACQ580-01-114A-2	114	40	88	30	R5	28.83	7.99	11.60	63	32.01	8.59	12.59	64
ACQ580-01-143A-2	143	50	114	40	R6	28.60	9.92	14.53	94	34.81	11.46	16.40	95
ACQ580-01-169A-2	169	60	143	50	R7	34.67	11.18	14.58	120	40.86	12.76	16.30	124
ACQ580-01-211A-2	211	75	169	60	R7	34.67	11.18	14.58	120	40.86	12.76	16.30	124
ACQ580-01-273A-2	273	100	211	75	R8	38.01	11.81	15.47	153	44.23	13.80	17.80	170
ACQ580-01-343A-2	343	125	273	100	R9	37.60	14.96	16.46	214	46.75	16.95	18.78	228
ACQ580-01-396A-2	396	150	343*	125	R9	37.60	14.96	16.46	214	46.75	16.95	18.78	228

Notes:

1) Nominal Rated output current available continuously without overloadability.

I_{LD} Continuous rms output current allowing 110% overload for 1 minute every 10 minutes

P_{LD} Typical motor power in light-duty use (110% overload). The horsepower (hp) ratings apply to most NEMA 4-pole motors.

2) Heavy duty is 150% Overload for 1 Minute

I_{HD} Continuous rms output current allowing 150% overload for 1 minute every 10 minutes

P_{HD} Typical motor power in heavy-duty use (150% overload).

3) Type 12 dimensions include hood dimensions

4) Ratings apply up to ambient temperature of 40°C (104°F). Derating for higher altitudes, ambient temperatures, or switching frequencies, see the ACQ580-01 Drives Hardware Manual, document code: 3AXD50000044862.

3-PHASE $U_L = 208$ TO $240V$. POWER RATINGS ARE VALID AT NOMINAL OUTPUT VOLTAGE $U_N = 208/230 V$ 60 HZ

Type Code	US Government Compliance			Cooling Air Flow 200 to 240 V units				Noise		Recommended UL Input current Protection fuses			
	IIJA/ BABA ⁽¹⁾	BAA ⁽²⁾	TAA ⁽³⁾	Heat dissipation ⁽⁴⁾		Air flow		Max. noise level ⁽⁵⁾	In	Voltage rating	Bussmann type ⁽⁶⁾⁽⁷⁾		UL class
				W	BTU/ Hr	m3/h	CFM						
ACQ580-01-04A6-2	N	N	N	50	171	43	25	59	15	600	CTK-R-15, JKS-15, DFJ-15, FCF15RN or JJS-15		CC, CF, J or T
ACQ580-01-04A6-2+P918	Y	Y	Y	50	171	43	25	59	15	600	CTK-R-15, JKS-15, DFJ-15, FCF15RN or JJS-15		CC, CF, J or T
ACQ580-01-06A6-2	N	N	N	69	235	43	25	59	15	600	CTK-R-15, JKS-15, DFJ-15, FCF15RN or JJS-15		CC, CF, J or T
ACQ580-01-06A6-2+P918	Y	Y	Y	69	235	43	25	59	15	600	CTK-R-15, JKS-15, DFJ-15, FCF15RN or JJS-15		CC, CF, J or T
ACQ580-01-07A5-2	N	N	N	79	270	43	25	59	15	600	CTK-R-15, JKS-15, DFJ-15, FCF15RN or JJS-15		CC, CF, J or T
ACQ580-01-07A5-2+P918	Y	Y	Y	79	270	43	25	59	15	600	CTK-R-15, JKS-15, DFJ-15, FCF15RN or JJS-15		CC, CF, J or T
ACQ580-01-10A6-2	N	N	N	120	409	43	25	59	15	600	CTK-R-15, JKS-15, DFJ-15, FCF15RN or JJS-15		CC, CF, J or T
ACQ580-01-10A6-2+P918	Y	Y	Y	120	409	43	25	59	15	600	CTK-R-15, JKS-15, DFJ-15, FCF15RN or JJS-15		CC, CF, J or T
ACQ580-01-017A-2	N	N	N	203	693	43	25	59	30	600	CTK-R-30, JKS-30, DFJ-30, FCF30RN or JJS-30		CC, CF, J or T
ACQ580-01-017A-2+P918	Y	Y	Y	203	693	43	25	59	30	600	CTK-R-30, JKS-30, DFJ-30, FCF30RN or JJS-30		CC, CF, J or T
ACQ580-01-024A-2	N	N	N	247	843	101	59	64	40	600	JSK-40, DFJ-40, FCF40RN or JJS-40		CF, J or T
ACQ580-01-024A-2+P918	Y	Y	Y	247	843	101	59	64	40	600	JSK-40, DFJ-40, FCF40RN or JJS-40		CF, J or T
ACQ580-01-031A-2	N	N	N	348	1187	101	59	64	40	600	JSK-40, DFJ-40, FCF40RN or JJS-40		CF, J or T
ACQ580-01-031A-2+P918	Y	Y	Y	348	1187	101	59	64	40	600	JSK-40, DFJ-40, FCF40RN or JJS-40		CF, J or T
ACQ580-01-046A-2	N	N	N	518	1767	179	105	76	80	600	JSK-80, DFJ-80, FCF80RN or JJS-80		CF, J or T
ACQ580-01-046A-2+P918	Y	Y	Y	518	1767	179	105	76	80	600	JSK-80, DFJ-80, FCF80RN or JJS-80		CF, J or T
ACQ580-01-059A-2	N	N	N	762	2600	179	105	76	80	600	JSK-80, DFJ-80, FCF80RN or JJS-80		CF, J or T
ACQ580-01-059A-2+P918	Y	Y	Y	762	2600	179	105	76	80	600	JSK-80, DFJ-80, FCF80RN or JJS-80		CF, J or T
ACQ580-01-075A-2	Y	Y	Y	809	2760	288	170	69	100	600	JSK-100, DFJ-100, FCF100RN or JJS-100		CF, J or T
ACQ580-01-088A-2	Y	Y	Y	861	2938	139	82	63	150	600	JSK-150, DFJ-150 or JJS-150		J or T
ACQ580-01-090A-2	Y	Y	Y	918	3132	159	94	70	150	600	JSK-150, DFJ-150 or JJS-150		J or T
ACQ580-01-114A-2	Y	Y	Y	1268	4327	139	82	63	150	600	JSK-150, DFJ-150 or JJS-150		J or T
ACQ580-01-143A-2	Y	Y	Y	1916	6538	435	256	67	200	600	JKS-200, DFJ-200 OT JJS-200		J or T
ACQ580-01-169A-2	Y	Y	Y	1965	6705	450	265	67	250	600	JKS-250, DFJ-250 OT JJS-250		J or T
ACQ580-01-211A-2	Y	Y	Y	2809	9585	450	265	67	300	600	JKS-300, DFJ-300 OT JJS-300		J or T
ACQ580-01-273A-2	Y	Y	Y	3518	12004	550	324	65	400	600	JKS-400, DFJ-300 OT JJS-400		J or T
ACQ580-01-343A-2	Y	Y	Y	2547	8691	1150	677	68	500	600	JKS-500, DFJ-500 or JJS-500		J or T
ACQ580-01-396A-2	Y	Y	Y	3060	10441	1150	677	68	600	600	JKS-600, DFJ-600 or JJS-600		J or T

Notes:

- 1) The drive types listed as IIJA/BABA are Manufactured in the U.S and the cost of the components manufactured in the U.S. are greater than 55% of the total component cost.
- 2) The drive types listed as BAA are manufactured in the USA and deemed Commercially Available Off-the-Shelf (COTS) items that are NOT predominately iron, and steel products as defined under Federal Acquisition Regulation (FAR) 2.101.
- 3) The drive types listed as TAA are Manufactured in the USA or other designated country allowed under TAA. All ABB Variable Frequency Drives listed in this statement have been determined TAA compliant. This statement applies only to VFDs and Cabinets with the 10-digit SN starting with 1xxxxxxx or 2xxxxxxx.
- 4) Typical drive losses when it operates at 90% of the motor nominal frequency and 100% of the drive nominal output current.
- 5) The maximum noise level is at full fan speed. When the drive is not operating at full load and at maximum ambient temperature the noise level is lower
- 6) ABB does not require Bussmann brand fuses. Fuses which meet the appropriate UL class type, current rating, and are rated at 600V, 200 kA may be used. ABB recommends fast acting class T or faster fuses in the USA.
- 7) Most drives built in 2020 or earlier can only be protected with Class T (JJS) fuses. See 3AXD50000645015 Branch Circuit Protection for ABB Drives for additional information.

Ratings, types and voltages

ACQ580-01, wall-mounted drives 3ph 480V

3-PHASE U1 = 380 TO 480V. POWER RATINGS ARE VALID AT NOMINAL OUTPUT VOLTAGE UN = 460 V 50/60 HZ

Type Code ⁽³⁾	Light-Duty Ratings ⁽¹⁾ ⁽⁴⁾		Heavy Duty Output Ratings ⁽²⁾⁽⁴⁾		Frame Size	UL Type 1 IP21 Dimensions				UL Type 12 IP55 Dimensions (+B056) ⁽³⁾			
	I _{LD}	P _{LD}	I _{HD}	P _{HD}		Height (H) Type 1	Width (W) Type 1	Depth (D) Type 1	Weight Type 1	Height (H) Type 12	Width (W) Type 12	Depth (D) Type 12	Weight Type 12
	A	Hp	A	Hp		in	in	in	lb	in	in	in	lb
ACQ580-01-02A1-4	2.1	1	1.6	0.75	R1	14.69	4.82	8.78	11	17.78	5.09	9.17	11
ACQ580-01-02A1-4+P918	2.1	1	1.6	0.75	R1	14.69	4.82	8.78	11	17.78	5.09	9.17	11
ACQ580-01-03A0-4	3.0	1.5	2.1	1	R1	14.69	4.82	8.78	11	17.78	5.09	9.17	11
ACQ580-01-03A0-4+P918	3.0	1.5	2.1	1	R1	14.69	4.82	8.78	11	17.78	5.09	9.17	11
ACQ580-01-03A5-4	3.5	2	3.0	1.5	R1	14.69	4.82	8.78	11	17.78	5.09	9.17	11
ACQ580-01-03A5-4+P918	3.5	2	3.0	1.5	R1	14.69	4.82	8.78	11	17.78	5.09	9.17	11
ACQ580-01-04A8-4	4.8	3	3.4	2	R1	14.69	4.82	8.78	11	17.78	5.09	9.17	11
ACQ580-01-04A8-4+P918	4.8	3	3.4	2	R1	14.69	4.82	8.78	11	17.78	5.09	9.17	11
ACQ580-01-7A6-4	7.6	5	4.8	3	R1	14.69	4.82	8.78	11	17.78	5.09	9.17	11
ACQ580-01-7A6-4+P918	7.6	5	4.8	3	R1	14.69	4.82	8.78	11	17.78	5.09	9.17	11
ACQ580-01-012A-4	12.0	7.5	7.6	5	R1	14.69	4.82	8.78	11	17.78	5.09	9.17	11
ACQ580-01-012A-4+P918	12.0	7.5	7.6	5	R1	14.69	4.82	8.78	11	17.78	5.09	9.17	11
ACQ580-01-014A-4	14.0	10.0	11.0	7.5	R2	18.62	4.86	9.00	15	21.49	5.10	9.40	15
ACQ580-01-014A-4+P918	14.0	10.0	11.0	7.5	R2	18.62	4.86	9.00	15	21.49	5.10	9.40	15
ACQ580-01-023A-4	23.0	15	14.0	10.0	R2	18.62	4.86	9.00	15	21.49	5.10	9.40	15
ACQ580-01-023A-4+P918	23.0	15	14.0	10.0	R2	18.62	4.86	9.00	15	21.49	5.10	9.40	15
ACQ580-01-027A-4	27.0	20	21.0	15	R3	19.29	7.99	9.01	26	20.93	8.16	9.32	29
ACQ580-01-027A-4+P918	27.0	20	21.0	15	R3	19.29	7.99	9.01	26	20.93	8.16	9.32	29
ACQ580-01-034A-4	34.0	25	27.0	20	R3	19.29	7.99	9.01	26	20.93	8.16	9.32	29
ACQ580-01-034A-4+P918	34.0	25	27.0	20	R3	19.29	7.99	9.01	26	20.93	8.16	9.32	29
ACQ580-01-044A-4	44.0	30	34.0	25	R3	19.29	7.99	9.01	26	20.93	8.16	9.32	29
ACQ580-01-044A-4+P918	44.0	30	34.0	25	R3	19.29	7.99	9.01	26	20.93	8.16	9.32	29
ACQ580-01-052A-4	52.0	40	40.0	30	R4	25.04	7.99	10.13	42	27.03	8.59	10.44	45
ACQ580-01-052A-4	52.0	40	40.0	30	R4 v2	25.04	7.99	10.13	42	27.03	8.59	10.44	45
ACQ580-01-065A-4	65.0	50	52.0	40	R4	25.04	7.99	10.13	42	27.03	8.59	10.44	45
ACQ580-01-065A-4	65.0	50	52.0	40	R4 v2	25.04	7.99	10.13	42	27.03	8.59	10.44	45
ACQ580-01-077A-4	77.0	60	65.0	50	R4 v2	25.04	7.99	10.13	42	27.03	8.59	10.44	45
ACQ580-01-078A-4	78	60	65.0	50	R5	28.83	7.99	11.60	63	32.01	8.59	12.59	64
ACQ580-01-096A-4	96	75	77	60	R5	28.83	7.99	11.60	63	32.01	8.59	12.59	64
ACQ580-01-124A-4	124	100	96	75	R6	28.60	9.92	14.53	94	34.81	11.46	16.40	95
ACQ580-01-156A-4	156	125	124	100	R7	34.67	11.18	14.58	120	40.86	12.76	16.30	124
ACQ580-01-180A-4	180	150	156	125	R7	34.67	11.18	14.58	120	40.86	12.76	16.30	124
ACQ580-01-240A-4	240	200	180	150	R8	38.01	11.81	15.47	153	44.23	13.80	17.80	170
ACQ580-01-260A-4	260	200	240	150	R8	38.01	11.81	15.47	153	44.23	13.80	17.80	170
ACQ580-01-302A-4	302	250	260	200	R9	37.60	14.96	16.46	214	46.75	16.95	18.78	228
ACQ580-01-361A-4	361	300	302	250	R9	37.60	14.96	16.46	214	46.75	16.95	18.78	228
ACQ580-01-414A-4	414	350	361	300	R9	37.60	14.96	16.46	214	46.75	16.95	18.78	228

Notes:

1) Nominal Rated output current available continuously without overloadability.

I_{LD} Continuous rms output current allowing 110% overload for 1 minute every 10 minutes

P_{LD} Typical motor power in light-duty use (110% overload). The horsepower (hp) ratings apply to most NEMA 4-pole motors.

2) Heavy duty is 150% Overload for 1 Minute

I_{HD} Continuous rms output current allowing 150% overload for 1 minute every 10 minutes

P_{HD} Typical motor power in heavy-duty use (150% overload).

3) Type 12 dimensions include hood dimensions

4) Ratings apply up to ambient temperature of 40°C (104°F). Derating for higher altitudes, ambient temperatures, or switching frequencies, see the ACQ580-01 Drives Hardware Manual, document code: 3AXD50000044862.

3-PHASE $U_L = 380$ TO 480 V. POWER RATINGS ARE VALID AT NOMINAL OUTPUT VOLTAGE $U_N = 460$ V 50/60 HZ

Type Code	US Govern- ment Compliance			Cooling Air Flow 200 to 240 V units				Noise	Recommended UL Input current Protection fuses				
	IIDA/ BABA (1)	BAA (2)	TAA (3)	Heat dissipation ⁽⁴⁾		Air flow		Max. noise level ⁽⁵⁾ dBA	In A	Voltage rating V	Bussmann type ⁽⁶⁾⁽⁷⁾	UL class	
				W	BTU/ Hr	m3/h	CFM						
ACQ580-01-02A1-4	N	N	N	37	126	43	25	59	15	600	CTK-R-15, JSK-15, DFJ-15, FCF15RN or JJS-15	CC, CF, J or T	
ACQ580-01-02A1-4+P918	Y	Y	Y	37	126	43	25	59	15	600	CTK-R-15, JSK-15, DFJ-15, FCF15RN or JJS-15	CC, CF, J or T	
ACQ580-01-03A0-4	N	N	N	47	160	43	25	59	15	600	CTK-R-15, JSK-15, DFJ-15, FCF15RN or JJS-15	CC, CF, J or T	
ACQ580-01-03A0-4+P918	Y	Y	Y	47	160	43	25	59	15	600	CTK-R-15, JSK-15, DFJ-15, FCF15RN or JJS-15	CC, CF, J or T	
ACQ580-01-03A5-4	N	N	N	52	177	43	25	59	15	600	CTK-R-15, JSK-15, DFJ-15, FCF15RN or JJS-15	CC, CF, J or T	
ACQ580-01-03A5-4+P918	Y	Y	Y	52	177	43	25	59	15	600	CTK-R-15, JSK-15, DFJ-15, FCF15RN or JJS-15	CC, CF, J or T	
ACQ580-01-04A8-4	N	N	N	71	242	43	25	59	15	600	CTK-R-15, JSK-15, DFJ-15, FCF15RN or JJS-15	CC, CF, J or T	
ACQ580-01-04A8-4+P918	Y	Y	Y	71	242	43	25	59	15	600	CTK-R-15, JSK-15, DFJ-15, FCF15RN or JJS-15	CC, CF, J or T	
ACQ580-01-7A6-4	N	N	N	103	351	43	25	59	15	600	CTK-R-15, JSK-15, DFJ-15, FCF15RN or JJS-15	CC, CF, J or T	
ACQ580-01-7A6-4+P918	Y	Y	Y	103	351	43	25	59	15	600	CTK-R-15, JSK-15, DFJ-15, FCF15RN or JJS-15	CC, CF, J or T	
ACQ580-01-012A-4	N	N	N	200	682	43	25	59	15	600	CTK-R-15, JSK-15, DFJ-15, FCF15RN or JJS-15	CC, CF, J or T	
ACQ580-01-012A-4+P918	Y	Y	Y	200	682	43	25	59	15	600	CTK-R-15, JSK-15, DFJ-15, FCF15RN or JJS-15	CC, CF, J or T	
ACQ580-01-014A-4	N	N	N	238	812	101	59	64	30	600	CTK-R-30, JKS-30, DFJ-30, FCF30RN or JJS-30	CC, CF, J or T	
ACQ580-01-014A-4+P918	Y	Y	Y	238	812	101	59	64	30	600	CTK-R-30, JKS-30, DFJ-30, FCF30RN or JJS-30	CC, CF, J or T	
ACQ580-01-023A-4	N	N	N	342	1167	101	59	64	30	600	CTK-R-30, JKS-30, DFJ-30, FCF30RN or JJS-30	CC, CF, J or T	
ACQ580-01-023A-4+P918	Y	Y	Y	342	1167	101	59	64	30	600	CTK-R-30, JKS-30, DFJ-30, FCF30RN or JJS-30	CC, CF, J or T	
ACQ580-01-027A-4	N	N	N	386	1317	179	105	76	40	600	JKS-40, DFJ-40, FCF40RN or JJS-40	CF, J or T	
ACQ580-01-027A-4+P918	Y	Y	Y	386	1317	179	105	76	40	600	JKS-40, DFJ-40, FCF40RN or JJS-40	CF, J or T	
ACQ580-01-034A-4	N	N	N	446	1522	179	105	76	60	600	JKS-60, DFJ-60, FCF60RN or JJS-60	CF, J or T	
ACQ580-01-034A-4+P918	Y	Y	Y	446	1522	179	105	76	60	600	JKS-60, DFJ-60, FCF60RN or JJS-60	CF, J or T	
ACQ580-01-044A-4	N	N	N	656	2238	179	105	76	60	600	JKS-60, DFJ-60, FCF60RN or JJS-60	CF, J or T	
ACQ580-01-044A-4+P918	Y	Y	Y	656	2238	179	105	76	60	600	JKS-60, DFJ-60, FCF60RN or JJS-60	CF, J or T	
ACQ580-01-052A-4	Y	Y	Y	671	2290	134	79	69	80	600	JKS-80, DFJ-80, FCF80RN or JJS-80	CF, J or T	
ACQ580-01-052A-4	Y	Y	Y	640	2184	150	88	70	80	600	JKS-80, DFJ-80, FCF80RN or JJS-80	CF, J or T	
ACQ580-01-065A-4	Y	Y	Y	719	2453	134	79	69	100	600	JKS-100, DFJ-100, FCF100RN or JJS-100	CF, J or T	
ACQ580-01-065A-4	Y	Y	Y	760	2593	150	88	70	100	600	JKS-100, DFJ-100, FCF100RN or JJS-100	CF, J or T	
ACQ580-01-077A-4	Y	Y	Y	1047	3573	159	94	70	100	600	JKS-100, DFJ-100 or JJS-100	J or T	
ACQ580-01-078A-4	Y	Y	Y	941	3211	139	82	63	110	600	JKS-110, DFJ-110 or JJS-110	J or T	
ACQ580-01-096A-4	Y	Y	Y	1127	3845	139	82	63	150	600	JKS-150, DFJ-150 or JJS-150	J or T	
ACQ580-01-124A-4	Y	Y	Y	1563	5333	435	256	67	200	600	JKS-200, DFJ-200 or JJS-200	J or T	
ACQ580-01-156A-4	Y	Y	Y	1815	6193	450	265	67	225	600	JKS-225, DFJ-225 or JJS-225	J or T	
ACQ580-01-180A-4	Y	Y	Y	2285	7797	450	265	67	300	600	JKS-300, DFJ-300 or JJS-300	J or T	
ACQ580-01-240A-4	Y	Y	Y	3039	10369	550	324	65	350	600	JKS-350, DFJ-350 or JJS-350	J or T	
ACQ580-01-260A-4	Y	Y	Y	3398	11594	550	324	65	400	600	JKS-400, DFJ-400 or JJS-400	J or T	
ACQ580-01-302A-4	Y	Y	Y	3253	11100	1150	677	68	500	600	JKS-500, DFJ-500 or JJS-500	J or T****	
ACQ580-01-361A-4	Y	Y	Y	4836	16501	1150	677	68	500	600	JKS-500, DFJ-500 or JJS-500	J or T****	
ACQ580-01-414A-4	Y	Y	Y	5691	19418	1150	677	68	600	600	JKS-600, DFJ-600 or JJS-600	J or T****	

1) The drive types listed as IIDA/BABA are Manufactured in the U.S and the cost of the components manufactured in the U.S. are greater than 55% of the total component cost.

2) The drive types listed as BAA are manufactured in the USA and deemed Commercially Available Off-the-Shelf (COTS) items that are NOT predominately iron, and steel products as defined under Federal Acquisition Regulation (FAR) 2.101.

3) The drive types listed as TAA are Manufactured in the USA or other designated country allowed under TAA. All ABB Variable Frequency Drives listed in this statement have been determined TAA compliant. This statement applies only to VFDs and Cabinets with the 10-digit SN starting with 1xxxxxxx or 2xxxxxxx.

4) Typical drive losses when it operates at 90% of the motor nominal frequency and 100% of the drive nominal output current.

5) The maximum noise level is at full fan speed. When the drive is not operating at full load and at maximum ambient temperature the noise level is lower

6) ABB does not require Bussmann brand fuses. Fuses which meet the appropriate UL class type, current rating, and are rated at 600V, 200 kA may be used. ABB recommends fast acting class T or faster fuses in the USA.

7) Most drives built in 2020 or earlier can only be protected with Class T (JJS) fuses. See 3AXD50000645015 Branch Circuit Protection for ABB Drives for additional information.

Ratings, types and voltages

ACQ580-01, wall-mounted drives 3ph 575V

3-PHASE U1 = 500 TO 600V. POWER RATINGS ARE VALID AT NOMINAL OUTPUT VOLTAGE UN = 575 V 50/60 HZ

Type Code ⁽³⁾	Light-Duty Ratings ⁽¹⁾⁽⁴⁾		Heavy Duty Output Ratings ⁽²⁾⁽⁴⁾		Frame Size	UL Type 1 IP21 Dimensions				UL Type 12 IP55 Dimensions (+B056) ⁽³⁾			
	I _{LD}	P _{LD}	I _{HD}	P _{HD}		Height (H) Type 1	Width (W) Type 1	Depth (D) Type 1	Weight Type 1	Height (H) Type 12	Width (W) Type 12	Depth (D) Type 12	Weight Type 12
	A	Hp	A	Hp		in	in	in	lb	in	in	in	lb
ACQ580-01-02A7-6	2.7	2	2.4	1.5	R2	18.62	4.86	9.00	15	21.49	5.10	9.40	15
ACQ580-01-03A9-6	3.9	3	2.7	2	R2	18.62	4.86	9.00	15	21.49	5.10	9.40	15
ACQ580-01-06A1-6	6.1	5	3.9	3	R2	18.62	4.86	9.00	15	21.49	5.10	9.40	15
ACQ580-01-09A0-6	9	7.5	6.1	5	R2	18.62	4.86	9.00	15	21.49	5.10	9.40	15
ACQ580-01-011A-6	11	10	9	7.5	R2	18.62	4.86	9.00	15	21.49	5.10	9.40	15
ACQ580-01-017A-6	17	15	11	10	R2	18.62	4.86	9.00	15	21.49	5.10	9.40	15
ACQ580-01-022A-6	22	20	17	15	R3	19.29	7.99	9.01	26	20.93	8.16	9.32	29
ACQ580-01-027A-6	27	25	22	20	R3	19.29	7.99	9.01	26	20.93	8.16	9.32	29
ACQ580-01-032A-6	32	30	27	25	R3	19.29	7.99	9.01	26	20.93	8.16	9.32	29
ACQ580-01-041A-6	41	40	32	30	R5	28.83	7.99	11.60	63	32.01	8.59	12.59	64
ACQ580-01-052A-6	52	50	41	40	R5	28.83	7.99	11.60	63	32.01	8.59	12.59	64
ACQ580-01-062A-6	62	60	52	50	R5	28.83	7.99	11.60	63	32.01	8.59	12.59	64
ACQ580-01-077A-6	77	75	62	60	R5	28.83	7.99	11.60	63	32.01	8.59	12.59	64
ACQ580-01-099A-6	99	100	77	75	R7	34.67	11.18	14.58	120	40.86	12.76	16.30	124
ACQ580-01-125A-6	125	125	99	100	R7	34.67	11.18	14.58	120	40.86	12.76	16.30	124
ACQ580-01-144A-6	144	150	125	125	R8	38.01	11.81	15.47	153	44.23	13.80	17.80	170
ACQ580-01-192A-6	192	200	144	150	R9	37.60	14.96	16.46	214	46.75	16.95	18.78	228
ACQ580-01-242A-6	242	250	192	200	R9	37.60	14.96	16.46	214	46.75	16.95	18.78	228
ACQ580-01-271A-6	271	250	242	200	R9	37.60	14.96	16.46	214	46.75	16.95	18.78	228

Notes:

1) Nominal Rated output current available continuously without overloadability.

I_{LD} Continuous rms output current allowing 110% overload for 1 minute every 10 minutes

P_{LD} Typical motor power in light-duty use (110% overload). The horsepower (hp) ratings apply to most NEMA 4-pole motors.

2) Heavy duty is 150% Overload for 1 Minute

I_{HD} Continuous rms output current allowing 150% overload for 1 minute every 10 minutes

P_{HD} Typical motor power in heavy-duty use (150% overload).

3) Type 12 dimensions include hood dimensions

4) Ratings apply up to ambient temperature of 40°C (104°F). Derating for higher altitudes, ambient temperatures, or switching frequencies, see the ACQ580-01 Drives Hardware Manual, document code: 3AXD50000044862.

3-PHASE UL = 500 TO 600V. POWER RATINGS ARE VALID AT NOMINAL OUTPUT VOLTAGE UN = 575 V 50/60 HZ

Type Code	US Government Compliance			Cooling Air Flow 200 to 240 V units				Noise	Recommended UL Input current Protection fuses			
	IJA/ BABA ⁽¹⁾	BAA ⁽²⁾	TAA ⁽³⁾	Heat dissipation ⁽⁴⁾		Air flow		Max. noise level ⁽⁵⁾	I _N	Voltage rating	Bussmann type ⁽⁶⁾⁽⁷⁾	UL class
				W	BTU/ Hr	m3/h	CFM	dBA	A	V		
ACQ580-01-02A7-6	N	N	N	66	225	101	59	64	15	600	KTK-R-15, JKS-15, DFJ-15, FCF15RN or JJS-15	CC, CF, J or T
ACQ580-01-03A9-6	N	N	N	84	287	101	59	64	15	600	KTK-R-15, JKS-15, DFJ-15, FCF15RN or JJS-15	CC, CF, J or T
ACQ580-01-06A1-6	N	N	N	133	454	101	59	64	15	600	KTK-R-15, JKS-15, DFJ-15, FCF15RN or JJS-15	CC, CF, J or T
ACQ580-01-09A0-6	N	N	N	174	594	101	59	64	15	600	KTK-R-15, JKS-15, DFJ-15, FCF15RN or JJS-15	CC, CF, J or T
ACQ580-01-011A-6	N	N	N	228	778	101	59	64	15	600	KTK-R-15, JKS-15, DFJ-15, FCF15RN or JJS-15	CC, CF, J or T
ACQ580-01-017A-6	N	N	N	322	1099	101	59	64	30	600	KTK-R-30, JKS-30, DFJ-30, FCF30RN or JJS-30	CC, CF, J or T
ACQ580-01-022A-6	N	N	N	430	1467	179	105	75	40	600	JKS-40, DFJ-40, FCF40RN or JJS-40	CF, J or T
ACQ580-01-027A-6	N	N	N	524	1788	179	105	75	40	600	JKS-40, DFJ-40, FCF40RN or JJS-40	CF, J or T
ACQ580-01-032A-6	N	N	N	619	2112	179	105	75	40	600	JKS-40, DFJ-40, FCF40RN or JJS-40	CF, J or T
ACQ580-01-041A-6	Y	Y	Y	835	2849	139	82	63	100	600	JKS-100, DFJ-100 or JJS-100	J or T
ACQ580-01-052A-6	Y	Y	Y	1024	3494	139	82	63	100	600	JKS-100, DFJ-100 or JJS-100	J or T
ACQ580-01-062A-6	Y	Y	Y	1240	4231	139	82	63	100	600	JKS-100, DFJ-100 or JJS-100	J or T
ACQ580-01-077A-6	Y	Y	Y	1510	5152	139	82	63	100	600	JKS-100, DFJ-100 or JJS-100	J or T
ACQ580-01-099A-6	Y	Y	Y	2061	7032	450	265	67	150	600	JKS-150, DFJ-150 or JJS-150	J or T
ACQ580-01-125A-6	Y	Y	Y	2466	8414	450	265	67	200	600	JKS-200, DFJ-200 or JJS-200	J or T
ACQ580-01-144A-6	Y	Y	Y	3006	10257	550	324	65	250	600	JKS-250, DFJ-250 or JJS-250	J or T
ACQ580-01-192A-6	Y	Y	Y	4086	13942	1150	677	68	300	600	JKS-300, DFJ-300 or JJS-300	J or T
ACQ580-01-242A-6	Y	Y	Y	4896	16706	1150	677	68	400	600	JKS-400, DFJ-400 or JJS-400	J or T
ACQ580-01-271A-6	Y	Y	Y	4896	16706	1150	677	68	400	600	JKS-400, DFJ-400 or JJS-400	J or T

1) The drive types listed as IJA/BABA are Manufactured in the U.S and the cost of the components manufactured in the U.S. are greater than 55% of the total component cost.

2) The drive types listed as BAA are manufactured in the USA and deemed Commercially Available Off-the-Shelf (COTS) items that are NOT predominately iron, and steel products as defined under Federal Acquisition Regulation (FAR) 2.101,

3) The drive types listed as TAA are Manufactured in the USA or other designated country allowed under TAA. All ABB Variable Frequency Drives listed in this statement have been determined TAA compliant. This statement applies only to VFDs and Cabinets with the 10-digit SN starting with 1xxxxxxx or 2xxxxxxx.

4) Typical drive losses when it operates at 90% of the motor nominal frequency and 100% of the drive nominal output current.

5) The maximum noise level is at full fan speed. When the drive is not operating at full load and at maximum ambient temperature the noise level is lower

6) ABB does not require Bussmann brand fuses. Fuses which meet the appropriate UL class type, current rating, and are rated at 600V, 200 kA may be used. ABB recommends fast acting class T or faster fuses in the USA.

7) Most drives built in 2020 or earlier can only be protected with Class T (JJS) fuses. See 3AXD50000645015 Branch Circuit Protection for ABB Drives for additional information.

Technical specifications

ACQ580-01

Supply connection	
Voltage and power range	
Input voltage (U1)	
ACQ580-01-xxxA-2	208-240V
ACQ580-01-xxxA-4	440-480V
ACQ580-01-xxxA-6	525-600V
Input voltage tolerance	10% / -15%
Line Limitations	Max ±3% of nominal phase to phase input voltage
Power Factor (cos φ) at nominal load	0.98
Input Impedance	5% equivalent impedance
Efficiency at rated power	98%
Power Loss	Approximately 2-3% of rated power
Motor connection	
Supported motor control	Scalar and vector
Supported motor types	Asynchronous motor, permanent magnet motor (vector), SynRM (vector), PMaSynRm (vector)
Voltage	3-phase, from 0 to supply voltage
Frequency	0 to 598 Hz
Short Term Overload Capacity Variable Torque	110% for 1 min/10 min
Peak Overload Capacity Variable Torque	1.35 for 2 seconds (2 sec / 1 minute)
Switching Frequency	2 - 12 kHz
	Automatic fold back in case of overload
Acceleration / Deceleration Time	0 to 1800 s
Short Circuit Current Rating	100 kAIC (UL) with fusing
External power supply	
R1-R5: Optional Card	1.04 A at 24VAC/DC ±10%/25W
R6-R9: Standard	1.50 A at 24VAC/DC ±10%/36 W
Safety	
Safe Torque Off (STO)	
STO Standard Input	17...30 VDC, 55mA
Degree of Protection	
Degree of protection (IEC/EN 60529)	
ACQ580-01	IP21, IP55, IP69
Enclosure types (UL 61800-5-1)	
ACQ580-01	UL (NEMA) Type 1, 12

Inputs and Outputs	
2 analog inputs	Selection of Current/Voltage input mode is user programmable
Voltage reference	0 (2) to 10 V, Rin > 200 kΩ
Current reference	0 (4) to 20 mA, Rin = 100 kΩ
Potentiometer reference value	10 V ±1% max. 20 mA
2 analog outputs	AO1 is user programmable, for current or voltage. AO2 current
Voltage reference	0 to 10 V, Rload: > 100 kΩ
Current reference	0 to 20 mA, Rload: < 500 Ω
Applicable potentiometer	1 kΩ to 10 kΩ
Internal auxiliary voltage	20 V DC ±10%, max. 250mA
Accuracy	±1% full scale range at 25°C (77°F)
Output updating time	2 ms
6 digital inputs	12 to 24 V DC, 10 to 24 V AC, connectivity of PTC sensors supported by a single digital input. PNP or NPN connection (5 DIs with NPN connection). Programmable
Input Updating Time	2 ms
3 relay outputs	Maximum switching voltage 250 V AC / 30 V DC. Maximum continuous current 2 A rms. Programmable, Form C
Contact material	Silver Tin Oxide (AgSnO2)
PTC, PT100 and PT1000	Any of the analog inputs, or digital input 6, are configurable for PTC with up to 6 sensors.
Adjustable filters on analog inputs and outputs	
All control inputs isolated from ground and power	
Available options	
Fieldbus Adapter Modules	EtherNet/IP, Modbus TCP, Profibus DP, PROFINET, DeviceNet
External 24 V AC/DC and digital I/O extension (2xR0 and 1xDO) (CMOD-01)	
Additional 115/230 V Digital input (6xDI and 2xRO) (CHDI-01)	
Additional analog I/O extension (3xAI bipolar and 2xAO unipolar) (CAIO-01)	
Operation, Programming and Diagnostic Tool	Drive Composer Pro / Entry
Cold configuration tool	(CCA-01)
Keypad; Standard	Hand / Off / Auto
Keypad; Optional	Bluetooth

Technical specifications

ACQ580-01

Operation	
Air Temperature	-15 to +40 °C (5 to 104 °F), 50 °C (122 °F) available with derate 0 to -15 °C (32 to 5 °F) No Frost Allowed, Output derated above +40 °C (104 °F)
Installation site altitude	0 to 1000m (3281 ft) above sea level Output derated above 1000m (3281 ft) up to 4000m (13123 ft)
Relative Humidity	5 to 99% No condensation allowed. Maximum relative humidity is 60% in the presence of corrosive gasses
Atmospheric pressure	70 to 106 kPa (10.2 to 15.4 PSI) 0.7 to 1.05 atmospheres
Vibration	Risk category IV Certified (IBC 2018)
Environmental protections	Note: Conformal coated PCBs
Chemical Gasses	C4 (IEC60721-3-3 edition 3 / ISO 9223) 3C3 (IEC60721-3-3 edition 2) G3/GX up to 2300 Å /30d corrosivity (ANSI-ISA 71.04)
Solid Particles	IEC 60721-3-1:2018. Class 3S2 No conductive dust allowed
Pollution degree (IEC/EN 61800-5-1)	Pollution degree 2
Product compliance	
Standards and directives	
Low Voltage Directive 2006/95/EC	
EMC Directive 2004/108/EC	
60721-3-3: 2002	
60721-3-1: 1997	
Quality assurance system ISO 9001 and Environmental system ISO 14001	
UL, cUL, CSA and EAC approvals	
Galvanic isolation according to PELV	
RoHS2 (Restriction of Hazardous Substances)	
En 61800-5-1: 2007: IEC/EN 6100-3-12;	
EN 61800-3: 2017 + A1: 2012 Category	
C2 (1st environment restricted distribution)	
Safe torque off (EN 61800-5-12)	
Seismic (IBC, OSHPD)	
Eco-design regulations EU 2019/1781	
EMC (According to EN61800-3)	C2 (1st environment, restricted distribution)

Storage (in protective shipping package)	
Air Temperature	-40 to +70 °C (-40 to +158 °F)
Relative Humidity	Less than 95% No condensation allowed. Maximum relative humidity is 60% in the presence of corrosive gasses
Chemical Gasses	IEC 60721-3-1:2018 Class 1C2
Solid Particles	IEC 60721-3-2:2018. Class 1S2
Atmospheric pressure	70 to 106 kPa, 0.7 to 1.05 atmospheres
Vibration (ISTA); R1...R4	
Vibration (ISTA); R5...R9	
Vibration (ISTA); R10...R11	In accordance with ISTA 1A In accordance with ISTA 3E Max 1mm (0.04 in) (5...13.2 Hz), max 7 m/s ² (23 fts/s ²) (13.2...100 Hz) sinusoidal
Transportation (in protective shipping package)	
Air temperature	-40 to +70 °C (-40 to +158 °F)
Relative Humidity	Less than 95% No condensation allowed. Maximum relative humidity is 60% in the presence of corrosive gasses
Chemical Gasses	IEC 60721-3-1:2018. Class 2C2
Solid Particles	IEC 60721-3-2:2018. Class 2S2
Shock / Drop (ISTA); R1...R4	In accordance with ISTA 1A
Shock / Drop (ISTA); R5...R9	In accordance with ISTA 3E
Shock / Drop (ISTA); R10...R11	With packing max 100 m/s ² (330 ft/s ²), 11ms
Vibration (ISTA); R1...R4	In accordance with ISTA 1A
Vibration (STA); R5...R9	In accordance with ISTA 3E
Vibration (ISTA); R10...R11	Max 3.5mm (0.14 in) (2...9 Hz), max 15m/s ² (49 ft/s ²) (9...200 Hz) sinusoidal

ACQ580-01 TYPE 4X

ACQ580-01 TYPE 4X/IP69

The wall-mounted drive



- Fully sealed and weather tight ensuring protection against external elements.
- Withstands directed spray and is corrosion-resistant to the same standard as a stainless-steel enclosure
- UV resistant, optional sun shade.
- Tested against exposure to corrosive agents such as salt spray, ammonia and chlorine, algaecides, and microbicides.

Extreme Protection for operation in extreme environments

Designed for operation in environments where rain, heat, snow, cold, or dust are experienced, the ACQ580-01 UL Type 4X/IP69 Drive is fully sealed and weather tight ensuring protection against external elements allowing safe, convenient and easy installation close to the motor. The drive can also withstand directed spray and is corrosion resistant to the same standard as a stainless-steel enclosure.

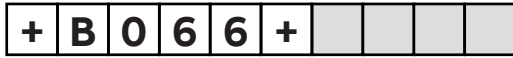
Further reduce site installation costs by mounting the Drive close to your application, removing the need for an out of sight disconnect switch.

An optional fused disconnect simplifies installation. This robust UL98 disconnect eliminates the need for branch circuit fuses while maintaining 100 kA SCCR.

Option code	Description
+B066	IP69/UL Type 4x Unit

How do I build an ordering code?

6 = Power ratings are valid at nominal voltage 575V

**OPTION CODES**

Letter code followed by 3 digit number

Enclosure	
B066	UL (NEMA) Type 4X (IP69)
C135+P940	Flange Mount (Field Installed) + Standard Drive excluding cable box and Front cover
C193	Sun Shield Kit
H358	Cable Box No holes (Replaces standard cable box)
Control Panel Options - 1 Option available (ACH-AP-H ships as Standard)	
STD	Blue Tooth - Control panel - Hand-Off- Auto
OJ400	No control panel
J405	Assistant control Panel (Replaces Bluetooth control Panel)
Input Protection	
F254	Disconnect and Fuses
Fieldbus - 1 slot available for fieldbus adapters	
K451	DeviceNet adapter
K454	PROFIBUS-DP adapter
K458	Modbus/ RTU adapter
K475	Ethernet adapter (EIP,Modbus/TCP,PROFINET, 2-port)
K490	Ethernet/IP Adapter, 2 Port
K491	Modbus/ TCP Adapter, 2 Port
K492	Profinet IO Adapter, 2 Port
Input/output options - 1 slots available for I/O options	
L501	External 24 V AC and DC (2 x RO and 1 x DO)
L512	115/230 V digital input (6 x DI and 2 x RO)
L523	External 24 V and isolated PTC interface
L525	Analog signal extension (3 x AI and 2 x AO)
Manufacturing options	
P918	Assembled in the USA (R1-R3 Frames ONLY)

Ratings, type and voltages

ACQ580-01 Type 4X/IP69 wall-mounted drives 1 ph/3ph 240V

1-PHASE U₁ = 240V. POWER RATINGS ARE VALID AT NOMINAL OUTPUT VOLTAGE U_N = 230 V 60 HZ

Type Code ⁽²⁾	Nominal Ratings ⁽¹⁾⁽³⁾		Frame Size	UL Type 4X IP69 Dimensions				UL Type 4X IP69 Dimensions with Sun Shield			
	I _N	P _N		Height (H)	Width (W)	Depth (D)	Weight	Height (H)	Width (W)	Depth (D)	Weight
	A	Hp		in	in	in	lb	in	in	in	lb
ACQ580-01-04A6-2+B066	2.2	0.5	R1	20.55	8.19	9.79	26	24.35	11.98	16.00	33
ACQ580-01-06A6-2+B066	3.2	0.75	R1	20.55	8.19	9.79	26	24.35	11.98	16.00	33
ACQ580-01-07A5-2+B066	4.2	1.0	R1	20.55	8.19	9.79	26	24.35	11.98	16.00	33
ACQ580-01-10A6-2+B066	6.0	1.5	R1	20.55	8.19	9.79	26	24.35	11.98	16.00	33
ACQ580-01-017A-2+B066	6.8	2	R1	20.55	8.19	9.79	26	24.35	11.98	16.00	33
ACQ580-01-024A-2+B066	9.6	3	R2	23.86	8.19	10.22	32	27.66	11.98	16.00	39
ACQ580-01-031A-2+B066	15.2	5	R2	23.86	8.19	10.22	32	27.66	11.98	16.00	39
ACQ580-01-046A-2+B066	22.0	7.5	R3	25.47	10.91	10.25	58	29.27	15.60	16.40	76
ACQ580-01-059A-2+B066	28.0	10	R3	25.47	10.91	10.25	58	29.27	15.60	16.40	76

Notes:

1) Nominal Rated output current available continuously without overloadability.

I_N Nominal output current. Maximum continuous rms output current allowed (no overload).

P_N Nominal power of the drive. Typical motor power (no overload). The horsepower ratings apply to most NEMA 4-pole motors.

2) Bluetooth control Panel Standard with NEMA 4X. Use +F254 for Disconnect with Fuses Option

3) Ratings apply up to ambient temperature of 40°C (104°F). Derating for higher altitudes, ambient temperatures, or switching frequencies, see the ACQ580-01 Drives Hardware Manual, document code: 3AXD50000044862.

3-PHASE U₁ = 208 TO 240V. POWER RATINGS ARE VALID AT NOMINAL OUTPUT VOLTAGE U_N = 208/230 V 60 HZ

Type Code ⁽³⁾	Light-Duty Ratings ⁽¹⁾⁽⁴⁾		Heavy Duty Output Ratings ⁽²⁾⁽⁴⁾		Frame Size	UL Type 4X IP69 Dimensions				UL Type 4X IP69 Dimensions with Sun Shield	
	I _{LD}	P _{LD}	I _{HD}	P _{HD}		Height (H)	Width (W)	Depth (D)	Weight	Height (H)	Width (W)
	A	Hp	A	Hp		in	in	in	lb	in	in
ACQ580-01-04A6-2+B066	4.6	1.0	3.5	0.75	R1	20.55	8.19	9.79	26	24.35	11.98
ACQ580-01-06A6-2+B066	6.6	1.5	4.6	1.0	R1	20.55	8.19	9.79	26	24.35	11.98
ACQ580-01-07A5-2+B066	7.5	2.0	6.6	1.5	R1	20.55	8.19	9.79	26	24.35	11.98
ACQ580-01-10A6-2+B066	10.6	3.0	7.5	2	R1	20.55	8.19	9.79	26	24.35	11.98
ACQ580-01-017A-2+B066	16.7	5	10.6	3.0	R1	20.55	8.19	9.79	26	24.35	11.98
ACQ580-01-024A-2+B066	24.2	7.5	16.7	5.0	R2	23.86	8.19	10.22	32	27.66	11.98
ACQ580-01-031A-2+B066	30.8	10	24.2	7.5	R2	23.86	8.19	10.22	32	27.66	11.98
ACQ580-01-046A-2+B066	46.2	15.0	30.8	10	R3	25.47	10.91	10.25	58	29.27	15.60
ACQ580-01-059A-2+B066	59.4	20	46.2	15	R3	25.47	10.91	10.25	58	29.27	15.60

Notes:

1) Nominal Rated output current available continuously without overloadability.

I_{LD} Continuous rms output current allowing 110% overload for 1 minute every 10 minutes

P_{LD} Typical motor power in light-duty use (110% overload). The horsepower (hp) ratings apply to most NEMA 4-pole motors.

2) Heavy duty is 150% Overload for 1 Minute

I_{HD} Continuous rms output current allowing 150% overload for 1 minute every 10 minutes

P_{HD} Typical motor power in heavy-duty use (150% overload).

3) Bluetooth control Panel Standard with NEMA 4X. Use +F254 for Disconnect with Fuses Option

4) Ratings apply up to ambient temperature of 40°C (104°F). Derating for higher altitudes, ambient temperatures, or switching frequencies, see the ACQ580-01 Drives Hardware Manual, document code: 3AXD50000044862.

1-PHASE U₁ = 240V. POWER RATINGS ARE VALID AT NOMINAL OUTPUT VOLTAGE U_N = 230 V 60 HZ

Type Code	US Government Compliance			Cooling Air Flow 200 to 240 V units				Noise
	IIJA/ BABA (1)	BAA (2)	TAA (3)	Heat dissipation ⁽⁴⁾		Air flow		Max. noise level ⁽⁵⁾
				W	BTU/ Hr	m3/h	CFM	dBA
ACQ580-01-04A6-2+B066	N	Y	Y	50	171	43	25	59
ACQ580-01-06A6-2+B066	N	Y	Y	69	235	43	25	59
ACQ580-01-07A5-2+B066	N	Y	Y	79	270	43	25	59
ACQ580-01-10A6-2+B066	N	Y	Y	120	409	43	25	59
ACQ580-01-017A-2+B066	N	Y	Y	203	693	43	25	59
ACQ580-01-024A-2+B066	N	Y	Y	247	843	179	105	64
ACQ580-01-031A-2+B066	N	Y	Y	348	1187	179	105	64
ACQ580-01-046A-2+B066	N	Y	Y	518	1767	179	105	76
ACQ580-01-059A-2+B066	N	Y	Y	762	2600	179	105	76

Notes:

- 1) The drive types listed as IIJA/BABA are Manufactured in the U.S and the cost of the components manufactured in the U.S. are greater than 55% of the total component cost.
- 2) The drive types listed as BAA are manufactured in the USA and deemed Commercially Available Off-the-Shelf (COTS) items that are NOT predominately iron, and steel products as defined under Federal Acquisition Regulation (FAR) 2.101,
- 3) The drive types listed as TAA are Manufactured in the USA or other designated country allowed under TAA. All ABB Variable Frequency Drives listed in this statement have been determined TAA compliant. This statement applies only to VFDs and Cabinets with the 10-digit SN starting with 1xxxxxxx or 2xxxxxxx.
- 4) Typical drive losses when it operates at 90% of the motor nominal frequency and 100% of the drive nominal output current. When disconnect and fuse option (+F254) is included, add 8 W (27 BTU/h) for R1; 11 W (38 BTU/h) for R2; 24 W (82 BTU/h) for R3
- 5) The maximum noise level is at full fan speed. When the drive is not operating at full load and at maximum ambient temperature the noise level is lower
- 6) ABB does not require Bussmann brand fuses. Fuses which meet the appropriate UL class type, current rating, and are rated at 600V, 200 kA may be used. ABB recommends fast acting class T or faster fuses in the USA.
- 7) Most drives built in 2020 or earlier can only be protected with Class T (JIS) fuses. See 3AXD50000645015 Branch Circuit Protection for ABB Drives for additional information.
- 8) No branch circuit protection is required external to the VFD that includes the disconnect and fuse option (+F254)

3-PHASE U₁ = 208 TO 240V. POWER RATINGS ARE VALID AT NOMINAL OUTPUT VOLTAGE U_N = 208/230**V 60 HZ**

Type Code	US Government Compliance			Cooling Air Flow 200 to 240 V units				Noise
	IIJA/ BABA (1)	BAA (2)	TAA (3)	Heat dissipation ⁽⁴⁾		Air flow		Max. noise level ⁽⁵⁾
				W	BTU/ Hr	m3/h	CFM	dBA
ACQ580-01-04A6-2+B066	N	Y	Y	50	171	43	25	59
ACQ580-01-06A6-2+B066	N	Y	Y	69	235	43	25	59
ACQ580-01-07A5-2+B066	N	Y	Y	79	270	43	25	59
ACQ580-01-10A6-2+B066	N	Y	Y	120	409	43	25	59
ACQ580-01-017A-2+B066	N	Y	Y	203	693	43	25	59
ACQ580-01-024A-2+B066	N	Y	Y	247	843	179	105	64
ACQ580-01-031A-2+B066	N	Y	Y	348	1187	179	105	64
ACQ580-01-046A-2+B066	N	Y	Y	518	1767	179	105	76
ACQ580-01-059A-2+B066	N	Y	Y	762	2600	179	105	76

Notes:

- 1) The drive types listed as IIJA/BABA are Manufactured in the U.S and the cost of the components manufactured in the U.S. are greater than 55% of the total component cost.
- 2) The drive types listed as BAA are manufactured in the USA and deemed Commercially Available Off-the-Shelf (COTS) items that are NOT predominately iron, and steel products as defined under Federal Acquisition Regulation (FAR) 2.101,
- 3) The drive types listed as TAA are Manufactured in the USA or other designated country allowed under TAA. All ABB Variable Frequency Drives listed in this statement have been determined TAA compliant. This statement applies only to VFDs and Cabinets with the 10-digit SN starting with 1xxxxxxx or 2xxxxxxx.
- 4) Typical drive losses when it operates at 90% of the motor nominal frequency and 100% of the drive nominal output current. When disconnect and fuse option (+F254) is included, add 8 W (27 BTU/h) for R1; 11 W (38 BTU/h) for R2; 24 W (82 BTU/h) for R3
- 5) The maximum noise level is at full fan speed. When the drive is not operating at full load and at maximum ambient temperature the noise level is lower
- 6) ABB does not require Bussmann brand fuses. Fuses which meet the appropriate UL class type, current rating, and are rated at 600V, 200 kA may be used. ABB recommends fast acting class T or faster fuses in the USA.
- 7) Most drives built in 2020 or earlier can only be protected with Class T (JIS) fuses. See 3AXD50000645015 Branch Circuit Protection for ABB Drives for additional information.
- 8) No branch circuit protection is required external to the VFD that includes the disconnect and fuse option (+F254)

Ratings, type and voltages

ACQ580-01 Type 4X/IP69 wall-mounted drives 3ph 480V

3-PHASE U₁ = 380 TO 480V. POWER RATINGS ARE VALID AT NOMINAL OUTPUT VOLTAGE U_N = 460 V
50/60 HZ

Type Code ⁽³⁾	Light-Duty Ratings ⁽¹⁾⁽⁴⁾		Heavy Duty Output Ratings ⁽²⁾⁽⁴⁾		Frame Size	UL Type 4X IP69 Dimensions				UL Type 4X IP69 Dimensions with Sun Shield	
	I _{LD}	P _{LD}	I _{HD}	P _{HD}		Height (H)	Width (W)	Depth (D)	Weight	Height (H)	Width (W)
	Type 4X	Type 4X	Type 4X	Type 4X		Type 4X	Type 4X	Type 4X	Type 4X	Type 4X	Type 4X
	A	Hp	A	Hp		in	in	in	lb	in	in
ACQ580-01-02A1-4+B066	2.1	1.0	1.6	0.75	R1	20.55	8.19	9.79	26	24.35	11.98
ACQ580-01-03A0-4+B066	3	1.5	2.1	1	R1	20.55	8.19	9.79	26	24.35	11.98
ACQ580-01-03A5-4+B066	3.5	2.0	3	1.5	R1	20.55	8.19	9.79	26	24.35	11.98
ACQ580-01-04A8-4+B066	4.8	3.0	3.4	2	R1	20.55	8.19	9.79	26	24.35	11.98
ACQ580-01-07A6-4+B066	7.6	5	4.8	3	R1	20.55	8.19	9.79	26	24.35	11.98
ACQ580-01-012A-4+B066	12	7.5	7.6	5	R1	20.55	8.19	9.79	26	24.35	11.98
ACQ580-01-014A-4+B066	14	10	11	7.5	R2	23.86	8.19	10.22	32	27.66	11.98
ACQ580-01-023A-4+B066	23	15.0	14	10	R2	23.86	8.19	10.22	32	27.66	11.98
ACQ580-01-027A-4+B066	27	20	21	15	R3	25.47	10.91	10.25	58	29.27	15.60
ACQ580-01-034A-4+B066	34	25	27	20	R3	25.47	10.91	10.25	58	29.27	15.60
ACQ580-01-044A-4+B066	44	30	34	25	R3	25.47	10.91	10.25	58	29.27	15.60

Notes:

1) Nominal Rated output current available continuously without overloadability.

I_{LD} Continuous rms output current allowing 110% overload for 1 minute every 10 minutes

P_{LD} Typical motor power in light-duty use (110% overload). The horsepower (hp) ratings apply to most NEMA 4-pole motors.

2) Heavy duty is 150% Overload for 1 Minute

I_{HD} Continuous rms output current allowing 150% overload for 1 minute every 10 minutes

P_{HD} Typical motor power in heavy-duty use (150% overload).

3) Bluetooth control Panel Standard with NEMA 4X. Use +F254 for Disconnect with Fuses Option

4) Ratings apply up to ambient temperature of 40°C (104°F). Derating for higher altitudes, ambient temperatures, or switching frequencies, see the ACQ580-01 Drives Hardware Manual, document code: 3AXD50000044862.

3-PHASE U1 = 380 TO 480V. POWER RATINGS ARE VALID AT NOMINAL OUTPUT VOLTAGE UN = 460 V 50/60 HZ

Type Code	US Government Compliance			Cooling Air Flow 440 to 480 V units				Noise
	IIJA/ BABA (1)	BAA (2)	TAA (3)	Heat dissipation ⁽⁴⁾		Air flow		Max. noise level ⁽⁵⁾
				W	BTU/ Hr	m3/h	CFM	
ACQ580-01-02A1-4+B066	N	Y	Y	37	126	43	25	59
ACQ580-01-03A0-4+B066	N	Y	Y	47	160	43	25	59
ACQ580-01-03A5-4+B066	N	Y	Y	52	177	43	25	59
ACQ580-01-04A8-4+B066	N	Y	Y	71	242	43	25	59
ACQ580-01-07A6-4+B066	N	Y	Y	103	351	43	25	59
ACQ580-01-012A-4+B066	N	Y	Y	200	682	43	25	59
ACQ580-01-014A-4+B066	N	Y	Y	238	812	179	105	64
ACQ580-01-023A-4+B066	N	Y	Y	342	1167	179	105	64
ACQ580-01-027A-4+B066	N	Y	Y	386	1317	179	105	76
ACQ580-01-034A-4+B066	N	Y	Y	446	1522	179	105	76
ACQ580-01-044A-4+B066	N	Y	Y	656	2238	179	105	76

Notes:

- 1)** The drive types listed as IIJA/BABA are Manufactured in the U.S and the cost of the components manufactured in the U.S. are greater than 55% of the total component cost.
- 2)** The drive types listed as BAA are manufactured in the USA and deemed Commercially Available Off-the-Shelf (COTS) items that are NOT predominately iron, and steel products as defined under Federal Acquisition Regulation (FAR) 2.101.
- 3)** The drive types listed as TAA are Manufactured in the USA or other designated country allowed under TAA. All ABB Variable Frequency Drives listed in this statement have been determined TAA compliant. This statement applies only to VFDs and Cabinets with the 10-digit SN starting with 1xxxxxxx or 2xxxxxxx.
- 4)** Typical drive losses when it operates at 90% of the motor nominal frequency and 100% of the drive nominal output current.
- 5)** The maximum noise level is at full fan speed. When the drive is not operating at full load and at maximum ambient temperature the noise level is lower
- 6)** ABB does not require Bussmann brand fuses. Fuses which meet the appropriate UL class type, current rating, and are rated at 600V, 200 kA may be used. ABB recommends fast acting class T or faster fuses in the USA.
- 7)** Most drives built in 2020 or earlier can only be protected with Class T (JIS) fuses. See 3AXD50000645015 Branch Circuit Protection for ABB Drives for additional information.
- 8)** No branch circuit protection is required external to the VFD that includes the disconnect and fuse option (+F254)

Ratings, type and voltages

ACQ580-01 Type 4X/IP69 wall-mounted drives 3ph 575V

3-PHASE U_L = 500 TO 600V. POWER RATINGS ARE VALID AT NOMINAL OUTPUT VOLTAGE U_N = 575 V
50/60 HZ

Type Code ⁽³⁾	Light-Duty Ratings ⁽¹⁾⁽⁴⁾		Heavy Duty Output Ratings ⁽²⁾⁽⁴⁾		Frame Size	UL Type 4X IP69 Dimensions				UL Type 4X IP69 Dimensions with Sun Shield	
	I _{LD}	P _{LD}	I _{HD}	P _{HD}		Height (H)	Width (W)	Depth (D)	Weight	Height (H)	Width (W)
	Type 4X	Type 4X	Type 4X	Type 4X		Type 4X	Type 4X	Type 4X	Type 4X	Type 4X	Type 4X
	A	Hp	A	Hp		in	in	in	lb	in	in
ACQ580-01-02A7-6+B066	2.7	2	2.4	1.5	R2	23.86	8.19	10.22	32	27.66	11.98
ACQ580-01-03A9-6+B066	3.9	3	2.7	2	R2	23.86	8.19	10.22	32	27.66	11.98
ACQ580-01-06A1-6+B066	6.1	5	3.9	3	R2	23.86	8.19	10.22	32	27.66	11.98
ACQ580-01-09A0-6+B066	9	7.5	6.1	5	R2	23.86	8.19	10.22	32	27.66	11.98
ACQ580-01-011A-6+B066	11	10	9	7.5	R2	23.86	8.19	10.22	32	27.66	11.98
ACQ580-01-017A-6+B066	17	15	11	10	R2	23.86	8.19	10.22	32	27.66	11.98
ACQ580-01-022A-6+B066	22	20	17	15	R3	25.47	10.91	10.25	58	29.27	15.60
ACQ580-01-027A-6+B066	27	25	22	20	R3	25.47	10.91	10.25	58	29.27	15.60
ACQ580-01-032A-6+B066	32	30	27	25	R3	25.47	10.91	10.25	58	29.27	15.60

Notes:

1) Nominal Rated output current available continuously without overloadability.

I_{LD} Continuous rms output current allowing 110% overload for 1 minute every 10 minutes

P_{LD} Typical motor power in light-duty use (110% overload). The horsepower (hp) ratings apply to most NEMA 4-pole motors.

2) Heavy duty is 150% Overload for 1 Minute

I_{HD} Continuous rms output current allowing 150% overload for 1 minute every 10 minutes

P_{HD} Typical motor power in heavy-duty use (150% overload).

3) Bluetooth control Panel Standard with NEMA 4X. Use +F254 for Disconnect with Fuses Option

4) Ratings apply up to ambient temperature of 40°C (104°F). Derating for higher altitudes, ambient temperatures, or switching frequencies, see the ACQ580-01 Drives Hardware Manual, document code: 3AXD50000044862.

**3-PHASE U1 = 500 TO 600V. POWER RATINGS ARE VALID AT NOMINAL OUTPUT VOLTAGE UN = 575 V
50/60 HZ**

Type Code	US Government Compliance			Cooling Air Flow 525 to 600 V units				Noise
	IIJA/ BABA (1)	BAA (2)	TAA (3)	Heat dissipation ⁽⁴⁾		Air flow		Max. noise level ⁽⁵⁾
				W	BTU/ Hr	m3/h	CFM	
ACQ580-01-02A7-6+B066	N	Y	Y	66	225	179	105	64
ACQ580-01-03A9-6+B066	N	Y	Y	84	287	179	105	64
ACQ580-01-06A1-6+B066	N	Y	Y	133	454	179	105	64
ACQ580-01-09A0-6+B066	N	Y	Y	174	594	179	105	64
ACQ580-01-011A-6+B066	N	Y	Y	228	778	179	105	64
ACQ580-01-017A-6+B066	N	Y	Y	322	1099	179	105	64
ACQ580-01-022A-6+B066	N	Y	Y	430	1467	179	105	64
ACQ580-01-027A-6+B066	N	Y	Y	524	1788	179	105	64
ACQ580-01-032A-6+B066	N	Y	Y	619	2112	179	105	64

Notes:

- 1) The drive types listed as IIJA/BABA are Manufactured in the U.S and the cost of the components manufactured in the U.S. are greater than 55% of the total component cost.
- 2) The drive types listed as BAA are manufactured in the USA and deemed Commercially Available Off-the-Shelf (COTS) items that are NOT predominately iron, and steel products as defined under Federal Acquisition Regulation (FAR) 2.101,
- 3) The drive types listed as TAA are Manufactured in the USA or other designated country allowed under TAA. All ABB Variable Frequency Drives listed in this statement have been determined TAA compliant. This statement applies only to VFDs and Cabinets with the 10-digit SN starting with 1xxxxxxx or 2xxxxxxx.
- 4) Typical drive losses when it operates at 90% of the motor nominal frequency and 100% of the drive nominal output current. When disconnect and fuse option (+F254) is included, add 8 W (27 BTU/h) for R1; 11 W (38 BTU/h) for R2; 24 W (82 BTU/h) for R3
- 5) The maximum noise level is at full fan speed. When the drive is not operating at full load and at maximum ambient temperature the noise level is lower
- 6) ABB does not require Bussmann brand fuses. Fuses which meet the appropriate UL class type, current rating, and are rated at 600V, 200 kA may be used. ABB recommends fast acting class T or faster fuses in the USA.
- 7) Most drives built in 2020 or earlier can only be protected with Class T (JJS) fuses. See 3AXD50000645015 Branch Circuit Protection for ABB Drives for additional information.
- 8) No branch circuit protection is required external to the VFD that includes the disconnect and fuse option (+F254)

Technical specifications

ACQ580-01 Type 4X/IP69

Supply connection	
Voltage and power range	
Input voltage (U1)	
ACQ580-01-xxxA-2	240 V 1-phase input, 3-phase output
ACQ580-01-xxxA-2	208-240 V 3-phase input, 3-phase output
ACQ580-01-xxxA-4	440-480 V 3-phase input, 3-phase output
ACQ580-01-xxxA-6	525-600 V 3-phase input, 3-phase output
Input voltage tolerance	10% / -15%
Line Limitations	Max $\pm 3\%$ of nominal phase to phase input voltage
Power Factor (cos Φ) at nominal load	0.98
Efficiency at rated power	98%
Power Loss	Approximately 2-3% of rated power
Motor connection	
Supported motor control	Scalar and vector
Supported motor types	Asynchronous motor, permanent magnet motor (vector), SynRM (vector)
Voltage	3-phase, from 0 to supply voltage
Frequency	0 to 500 Hz
Short Term Overload Capacity	110% for 1 min/10min
Variable Torque	
Peak Overload Capacity	1.35 for 2 second
Variable Torque	(2 sec / 1 minute)
Switching Frequency	2, 4, 8 or 12 kHz (Up to 150 Hp); 1 or 4 kHz (Over 150 Hp), Automatic fold back in case of overload
Acceleration/Deceleration Time	0 to 1800 s
Short Circuit Current Rating	100 kAIC (UL) with fusing
External power supply	
R6-R11: Standard	1.50 A at 24 V AC/DC $\pm 10\%$ / 36W
R1-R5: Optional card	1.04 A at 24 V AC/DC $\pm 10\%$ / 25W
Safety	
Safe Torque Off (STO)	
STO Standard Input	17...30 VDC, 55mA
Degree of Protection	
Degree of protection (IEC/EN 60529)	
ACQ580-01	IP69
Enclosure types (UL 508C/61800-5-1)	
ACQ580-01	UL (NEMA) Type 4X
Inputs and outputs	
2 analog inputs	Selection of Current/Voltage input mode is user programmable.
Voltage reference	0 (2) to 10 V, $R_{in} > 200 \text{ k}\Omega$
Current reference	0 (4) to 20 mA, $R_{in} = 100 \Omega$
Potentiometer reference value	10 V $\pm 1\%$ max. 20 mA
2 analog outputs	AO1 is user programmable, for current or voltage. AO2 current
Voltage reference	0 to 10 V, $R_{load} > 100 \text{ k}\Omega$
Current reference	0 to 20 mA, $R_{load} < 500 \Omega$
Applicable potentiometer	1 k Ω to 10 k Ω
Internal auxiliary voltage	24 V DC $\pm 10\%$, max. 250 mA
Accuracy	$\pm 1\%$ full scale range at 25°C (77°F)
Output updating time	2 ms
6 digital inputs	12 to 24 V DC, 10 to 24 V AC, Connectivity of PTC sensors supported by a single digital input. PNP or NPN connection (5 DIs with NPN connection). Programmable
Input Updating Time	2 ms
3 relay outputs	Maximum switching voltage 250 V AC/30 V DC. Maximum continuous current 2 A rms. Programmable, Form C
Contact material	Silver Tin Oxide (AgSnO ₂)
PTC, PT100 and PT1000	Any of the analog inputs, or digital input 6, are configurable for PTC with up to 6 sensors.
Adjustable filters on analog inputs and outputs	
All control inputs isolated from ground and power	
Operation	
Air Temperature	-15 to +40°C (5 to 104°F) 50°C (122°F) available with derate 0 to -15 °C (32 to 5 °F) No Frost Allowed Output derated above +40°C (104°F)
Installation site Altitude	0 to 1000 m (3281 ft) above sea level Output derated above 1000m (3281 ft) up to 4000m (13123ft)
Relative Humidity	5 to 95% No condensation allowed Maximum relative humidity is 60% in the presence of corrosive gasses
Atmospheric pressure	70 to 106 kPa (10.2 to 15.4 PSI) 0.7 to 1.05 atmospheres
Vibration	Risk category IV Certified (IBC 2018)

Technical specifications

ACQ580-01 Type 4X/IP69

Environmental protections	
Chemical Gasses	IEC 60721-3-3. Class 3C2 as standard and 3C3/C4 as option
Note: Conformal coated PCBs	
Solid Particles	IEC 60721-3-3. Class 3S2 No conductive dust allowed
Pollution degree (IEC/EN 61800-5-1)	Pollution degree 2
Product Compliance	
Standards and directives	
Low Voltage Directive 2006/95/EC	
EMC Directive 2004/108/EC	
60721-3-3: 2002	
60721-3-1:1997	
Quality assurance system ISO 9001 and	
Environmental system ISO 14001	
UL, cUL, CSA and EAC approvals	
Galvanic isolation according to PELV	
RoHS2 (Restriction of Hazardous Substances)	
EN 61800-5-1: 2007; IEC/EN 61000-3-12;	
EN 61800-3: 2017 + A1: 2012 Category C2	
(1st environment restricted distribution);	
Safe torque off (EN 61800-5-2)	
Seismic (IBC, OSHPD)	
Eco-design regulations EU 2019/1781	
EMC (According to EN61800-3)	C2 (1st environment, restricted distribution)
Available Options	
External 24V AC/DC and digital I/O extension (2xRO and 1xDO) (CMOD-01)	
Additional 115/230 V Digital input (6xDI and 2xRO) (CHDI-01)	
Additional analog I/O extension (3xAI bipolar and 2xAO unipolar) (CAIO-01)	
Fieldbus Adapter Modules	EtherNet/IP, Modbus TCP, PROFIBUS-DP, PROFINET, DeviceNet
Operation, Programming and Diagnostic Tool	Drive Composer Pro / Entry
Cold configuration tool (CCA-01)	
Keypad	
Standard	Hand/Off/Auto
Optional	Bluetooth
Storage (in Protective Shipping Package)	
Air Temperature	-40 to +70°C (-40 to +158°F)
Relative Humidity	Less than 95% No condensation allowed Maximum relative humidity is 60% in the presence of corrosive gasses
Chemical Gasses	IEC 60721-3-1. Class 1C2
Solid Particles	IEC 60721-3-1. Class 1S2
Atmospheric pressure	70 to 106 kPa 0.7 to 1.05 atmospheres
Vibration (ISTA) R1....R3	In accordance with ISTA 1A In accordance with ISTA 3E Max. 1 mm (0.04 in) (5...13.2 Hz), max. 7 m/s ² (23 fts/s ²)(13.2...100 Hz) sinusoidal

Transportation (in Protective Shipping Package)	
Air Temperature	-40° to 70°C (-40° to 158°F)
Relative Humidity	Less than 95% No condensation allowed Maximum relative humidity is 60% in the presence of corrosive gasses
Atmospheric Pressure	60 to 106 kPa (8.7 to 15.4 PSI) 0.6 to 1.05 atmospheres
Chemical Gasses	IEC 60721-3-2. Class 2C2
Solid Particles	IEC 60721-3-2. Class 2S2
Shock/ Drop (ISTA) R1....R3	In accordance with ISTA 1A In accordance with ISTA 3E With packing max. 100 m/s ² (330 ft/s ²), 11 ms
Vibration (ISTA) R1....R3	In accordance with ISTA 1A In accordance with ISTA 3E Max. 3.5 mm (0.14 in) (2...9 Hz), max. 15 m/s ² (49 ft/s ²) (9...200 Hz) sinusoidal

ACQ580-04

ACQ580-04

Drive modules for cabinet installations



- Compact drive module for cabinet mounting
- Save floor space and easy to maintain and service
- High power in compact size
- Easy installation and commissioning with pedestal on wheels and ramp

ACQ580 drive modules have been optimized for assembly into cabinets to ensure high quality and compact installation at minimal cost.

The module variant is UL (NEMA) Type Open / IP00 as standard, but has optional finger shrouds available. For optimized cabinet usage, features include power input connections on the top of the module and power output on the bottom.

How do I build an ordering code?

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04 = Drive Module, UL (NEMA) Type Open / IP00, Hand-off-auto assistant control panel, Common mode filter, EMC filter, DC connection bus bars, full size output terminals, DPMP-07-Q control panel holder, US quick start guide
US standard build Includes ACQ580-04-xxxx-4+E200+E208+H356+P906 (Common Mode Filter, DC connection bus bars, full size output terminals, DP- MP-07-Q control panel holder, Standard ACH-AP-H control panel, and EMC filter for grounded systems). Control section delivered loose for remote mounting.

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(Output current rating, see rating for details)

[illegible]

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4 = Power ratings are valid at nominal voltage 460V

**OPTION CODES**

Letter code followed by 3 digit number

Enclosure	
B051	Finger safe terminals
Cabling	
H356	DC cable connection busbars - Standard
H370	Full-size input terminals
0H354	Remove mounting pedestal (requires removal of installation ramp (0P919))
0H371	Remove full size output cable connection terminals
0P919	Remove installation ramp (requires removal of pedestal (0H354))
Filters	
E200	EMC/RFI-filters, 2nd Environment, Unrestricted (Earthed Network) - Standard
E208	Common mode filter -Standard
Control Panel Options	
STD	Hand-Off- Auto Control Panel - Standard Delivery
J424	Blank control panel cover (No Control Panel Delivered)
J425	Local-Remote - Logic Assistant Control panel
J429	Blue Tooth - Control panel - Hand-Off- Auto
Fieldbus - 1 slots available for Field Bus options	
K451	DeviceNet adapter
K454	PROFIBUS-DP adapter
K458	Modbus/ RTU adapter
K475	Ethernet adapter (EIP,Modbus/TCP,PROFINET, 2-port)
K490	Ethernet/IP Adapter, 2 Port
K491	Modbus/ TCP Adapter, 2 Port
K492	Profinet IO Adapter, 2 Port
Input/output - 1 slots available for I/O options	
L501	External 24 V AC and DC (2 x RO and 1 x DO)
L512	115/230 V digital input (6 x DI and 2 x RO)
L523	External 24 V and isolated PTC interface
L525	Analog signal extension (3 x AI and 2 x AO)

Ratings, type and voltages

ACQ580-04, drive modules 3ph 480V

3-PHASE U₁ = 380 TO 480V. POWER RATINGS ARE VALID AT NOMINAL OUTPUT VOLTAGE U_N = 460 V
50/60 HZ

Type Code ⁽⁴⁾	Light-Duty Ratings ⁽¹⁾⁽³⁾		Heavy Duty Output Ratings ⁽²⁾⁽³⁾		Frame Size	UL Type Open IP00 Dimensions			
	I _{LD}	P _{LD}	I _{HD}	P _{HD}		Height (H)	Width (W)	Depth (D)	Weight
	A	Hp	A	Hp		in	in	in	lb
ACQ580-04-505A-4	483	400	361	300	R10	57.55	13.78	20.81	357
ACQ580-04-585A-4	573	450	414	350	R10	57.55	13.78	20.81	357
ACQ580-04-650A-4	623	500	477	400	R10	57.55	13.78	20.81	357
ACQ580-04-725A-4	705	600	566	450	R11	65.43	13.78	20.81	441
ACQ580-04-820A-4	807	700	625	500	R11	65.43	13.78	20.81	441
ACQ580-04-880A-4	807	700	625	500	R11	65.43	13.78	20.81	441

Notes:

1) Nominal Rated output current available continuously without overloadability.

I_{LD} Continuous rms output current allowing 110% overload for 1 minute every 10 minutes

P_{LD} Typical motor power in light-duty use (110% overload). The horsepower (hp) ratings apply to most NEMA 4-pole motors.

2) Heavy duty is 150% Overload for 1 Minute

I_{HD} Continuous rms output current allowing 150% overload for 1 minute every 10 minutes

P_{HD} Typical motor power in heavy-duty use (150% overload).

3) Ratings apply up to ambient temperature of 40°C (104°F). Derating for higher altitudes, ambient temperatures, or switching frequencies, see the ACQ580-04 Drive Modules Hardware Manual, document code: 3AXD50000048677.

4) ACQ580-04 comes standard with: Common Mode Filter, DC connection bus bars, full size output terminals, DP- MP-07-Q control panel holder, Standard ACH-AP-H control panel, and EMC filter for grounded systems. Control section delivered loose for remote mounting.

3-PHASE U1 = 380 TO 480V. POWER RATINGS ARE VALID AT NOMINAL OUTPUT VOLTAGE UN = 460 V 50/60 HZ

Type Code	US Government Compliance			Cooling Air Flow 200 to 240 V units				Noise	Recommended UL Input current Protection fuses			
	IIJA/ BABA ⁽¹⁾	BAA ⁽²⁾	TAA ⁽³⁾	Heat dissipation ⁽⁴⁾		Air flow		Max. noise level ⁽⁵⁾	IN	Voltage rating	Busmann type ⁽⁶⁾⁽⁷⁾	UL class
				W	BTU/ Hr	m3/h	CFM	dBA	A	V		
ACQ580-04-505A-4	N	N	Y	6492	22152	1200	707	72	483	600	JJS-600	T
ACQ580-04-585A-4	N	N	Y	6840	23339	1200	707	72	573	600	A4BY800	L
ACQ580-04-650A-4	N	N	Y	8046	27454	1200	707	72	623	600	A4BY800	L
ACQ580-04-725A-4	N	N	Y	8108	27666	1200	707	72	705	600	A4BY1000	L
ACQ580-04-820A-4	N	N	Y	9652	32934	1200	707	72	807	600	A4BY1000	L
ACQ580-04-880A-4	N	N	Y	10887	37148	1420	848	71	807	600	A4BY1000	L

Notes:

- 1) The drive types listed as IIJA/BABA are Manufactured in the U.S and the cost of the components manufactured in the U.S. are greater than 55% of the total component cost.
- 2) The drive types listed as BAA are manufactured in the USA and deemed Commercially Available Off-the-Shelf (COTS) items that are NOT predominately iron, and steel products as defined under Federal Acquisition Regulation (FAR) 2.101,
- 3) The drive types listed as TAA are Manufactured in the USA or other designated country allowed under TAA. All ABB Variable Frequency Drives listed in this statement have been determined TAA compliant. This statement applies only to VFDs and Cabinets with the 10-digit SN starting with 1xxxxxxx or 2xxxxxxx.
- 4) Typical drive losses when it operates at 90% of the motor nominal frequency and 100% of the drive nominal output current.
- 5) The maximum noise level is at full fan speed. When the drive is not operating at full load and at maximum ambient temperature the noise level is lower
- 6) ABB does not require Busmann brand fuses. Fuses which meet the appropriate UL class type, current rating, and are rated at 600V, 200 kA may be used. ABB recommends fast acting class T or faster fuses in the USA.
- 7) Most drives built in 2020 or earlier can only be protected with Class T (JJS) fuses. See 3AXD50000645015 Branch Circuit Protection for ABB Drives for additional information.

Technical specifications

ACQ580-04

Supply connection	
Voltage and power range	
Input voltage (U1)	
ACQ580-04-xxxA-4	440-480V
Input voltage tolerance	10% / -15%
Line Limitations	Max $\pm 3\%$ of nominal phase to phase input voltage
Power Factor ($\cos \phi$) at nominal load	0.98
Input Impedance	5% equivalent impedance
Efficiency at rated power	98%
Power Loss	Approximately 2-3% of rated power
Motor connection	
Supported motor control	Scalar and vector
Supported motor types	Asynchronous motor, permanent magnet motor (vector), SynRM (vector), PMaSynRm (vector)
Voltage	3-phase, from 0 to supply voltage
Frequency	0 to 598 Hz
Short Term Overload Capacity Variable Torque	110% for 1 min/10 min
Peak Overload Capacity Variable Torque	1.35 for 2 seconds (2 sec / 1 minute)
Switching Frequency	2 - 12 kHz
	Automatic fold back in case of overload
Acceleration / Deceleration Time	0 to 1800 s
Short Circuit Current Rating	100 kAIC (UL) with fusing
External power supply	
R1-R5: Optional Card	1.04 A at 24VAC/DC $\pm 10\%$ /25W
R6-R9: Standard	1.50 A at 24VAC/DC $\pm 10\%$ /36 W
Safety	
Safe Torque Off (STO)	
STO Standard Input	17...30 VDC, 55mA
Degree of Protection	
Degree of protection (IEC/EN 60529)	
ACQ580-04	IP00
Enclosure types (UL 61800-5-1)	
ACQ580-04	UL Type Open

Inputs and Outputs	
2 analog inputs	Selection of Current/Voltage input mode is user programmable
Voltage reference	0 (2) to 10 V, $R_{in} > 200 \text{ k}\Omega$
Current reference	0 (4) to 20 mA, $R_{in} = 100 \text{ k}\Omega$
Potentiometer reference value	10 V $\pm 1\%$ max. 20 mA
2 analog outputs	AO1 is user programmable, for current or voltage. AO2 current
Voltage reference	0 to 10 V, $R_{load} > 100 \text{ k}\Omega$
Current reference	0 to 20 mA, $R_{load} < 500 \Omega$
Applicable potentiometer	1 k Ω to 10 k Ω
Internal auxiliary voltage	20 V DC $\pm 10\%$, max. 250mA
Accuracy	$\pm 1\%$ full scale range at 25°C (77°F)
Output updating time	2 ms
6 digital inputs	12 to 24 V DC, 10 to 24 V AC, connectivity of PTC sensors supported by a single digital input. PNP or NPN connection (5 DIs with NPN connection). Programmable
Input Updating Time	2 ms
3 relay outputs	Maximum switching voltage 250 V AC / 30 V DC. Maximum continuous current 2 A rms. Programmable, Form C
Contact material	Silver Tin Oxide (AgSnO2)
PTC, PT100 and PT1000	Any of the analog inputs, or digital input 6, are configurable for PTC with up to 6 sensors.
Adjustable filters on analog inputs and outputs	
All control inputs isolated from ground and power	
Available options	
Fieldbus Adapter Modules	EtherNet/IP, Modbus TCP, Profibus DP, PROFINET, DeviceNet
External 24 V AC/DC and digital I/O extension (2xR0 and 1xDO) (CMOD-01)	
Additional 115/230 V Digital input (6xDI and 2xRO) (CHDI-01)	
Additional analog I/O extension (3xAI bipolar and 2xAO unipolar) (CAIO-01)	
Operation, Programming and Diagnostic Tool	Drive Composer Pro / Entry
Cold configuration tool	(CCA-01)
Keypad; Standard	Hand / Off / Auto
Keypad; Optional	Bluetooth

Technical specifications

ACQ580-04

Operation	
Air Temperature	-15 to +40 °C (5 to 104 °F), 50 °C (122 °F) available with derate 0 to -15 °C (32 to 5 °F) No Frost Allowed, Output derated above +40 °C (104 °F)
Installation site altitude	0 to 1000m (3281 ft) above sea level Output derated above 1000m (3281 ft) up to 4000m (13123 ft)
Relative Humidity	5 to 99% No condensation allowed. Maximum relative humidity is 60% in the presence of corrosive gasses
Atmospheric pressure	70 to 106 kPa (10.2 to 15.4 PSI) 0.7 to 1.05 atmospheres
Vibration	Risk category IV Certified (IBC 2018)
Environmental protections	Note: Conformal coated PCBs
Chemical Gasses	C4 (IEC60721-3-3 edition 3 / ISO 9223) 3C3 (IEC60721-3-3 edition 2) G3/GX up to 2300 Å /30d corrosivity (ANSI-ISA 71.04)
Solid Particles	IEC 60721-3-1:2018. Class 3S2 No conductive dust allowed
Pollution degree (IEC/EN 61800-5-1)	Pollution degree 2
Product compliance	
Standards and directives	
Low Voltage Directive 2006/95/EC	
EMC Directive 2004/108/EC	
60721-3-3: 2002	
60721-3-1: 1997	
Quality assurance system ISO 9001 and Environmental system ISO 14001	
UL, cUL, CSA and EAC approvals	
Galvanic isolation according to PELV	
RoHS2 (Restriction of Hazardous Substances)	
En 61800-5-1: 2007: IEC/EN 6100-3-12;	
EN 61800-3: 2017 + A1: 2012 Category	
C2 (1st environment restricted distribution)	
Safe torque off (EN 61800-5-12)	
Seismic (IBC, OSHPD)	
Eco-design regulations EU 2019/1781	
EMC (According to EN61800-3)	C2 (1st environment, restricted distribution)

Storage (in protective shipping package)	
Air Temperature	-40 to +70 °C (-40 to +158 °F)
Relative Humidity	Less than 95% No condensation allowed. Maximum relative humidity is 60% in the presence of corrosive gasses
Chemical Gasses	IEC 60721-3-1:2018 Class 1C2
Solid Particles	IEC 60721-3-2:2018. Class 1S2
Atmospheric pressure	70 to 106 kPa, 0.7 to 1.05 atmospheres
Vibration (ISTA); R1...R4	
Vibration (ISTA); R5...R9	
Vibration (ISTA); R10...R11	In accordance with ISTA 1A In accordance with ISTA 3E Max 1mm (0.04 in) (5...13.2 Hz), max 7 m/s ² (23 fts/s ²) (13.2...100 Hz) sinusoidal
Transportation (in protective shipping package)	
Air temperature	-40 to +70 °C (-40 to +158 °F)
Relative Humidity	Less than 95% No condensation allowed. Maximum relative humidity is 60% in the presence of corrosive gasses
Chemical Gasses	IEC 60721-3-1:2018. Class 2C2
Solid Particles	IEC 60721-3-2:2018. Class 2S2
Shock / Drop (ISTA); R1...R4	In accordance with ISTA 1A
Shock / Drop (ISTA); R5...R9	In accordance with ISTA 3E
Shock / Drop (ISTA); R10...R11	With packing max 100 m/s ² (330 ft/s ²), 11ms
Vibration (ISTA); R1...R4	In accordance with ISTA 1A
Vibration (STA); R5...R9	In accordance with ISTA 3E
Vibration (ISTA); R10...R11	Max 3.5mm (0.14 in) (2...9 Hz), max 15m/s ² (49 ft/s ²) (9...200 Hz) sinusoidal

ACQ580-PC/PD

ACQ580-PC/PD

Packaged drives with disconnect means



Available in multiple enclosure classes; UL (NEMA) Type 1, 12 & 3R

Input disconnect and fast acting fuses included

Line of sight mounting with an additional lockout tagout means

Compact design for easy installation and maintenance

This robust, rugged, and compact wall mounted package enables mounting within line of site of equipment. Indoor rated, UL (NEMA) Type 1 / IP21 and UL (NEMA) Type 12 / IP55 units are available from 1-100Hp at 3ph 240V, 1-200Hp at 3ph 480V and 2-150Hp at 575V 3ph.

For outdoor applications, UL (NEMA) Type 3R packaged drive units are available from 1 to 75 HP at 230V, 1 to 75 at 460V, and 2 to 30 HP at 575V. Construction is sheet steel with a tough powder coat paint finish for corrosion resistance.

The ACQ580 packaged drive is offered with either an input circuit breaker (ACQ580-PC) or a disconnect switch (ACQ580-PD). Both feature padlockable disconnect switches, input fuses, electronic motor overload protection, a door-mounted control panel with graphical display for local control, provisions for external control connections, and communications capability.

With a compact design and built-in essential features, this drive allows for simple and quick installation, commissioning and use.

Option code	Description	Available frames
+B056	UL (NEMA) Type 12 / IP55	All
+B058	UL (NEMA) Type 3R	R1 - R4

How do I build an ordering code?

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PD = Packaged drive, Non-Fused Disconnect Switch, with Fuses, UL (NEMA) Type 1, Hand-Off-Auto control panel. Bottom Entry/Exit. US Quick Start Guide.

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(Output current rating, see rating for details)

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6 = Power ratings are valid at nominal voltage 575V

**OPTION CODES**

Letter code followed by 3 digit number

Enclosure	
B056	UL (NEMA) Type 12 (IP55)
B058	UL (NEMA) 3R (R1-R4 Frames ONLY)
Control Panel Options - 1 Option available (ACH-AP-H ships as Standard)	
STD	Hand-Off- Auto Control Panel - Standard Delivery
OJ400	No control panel (R1-R4 Frames in UL Type 1 and UL Type 12 ONLY)
J424	Blank control panel cover (No Control Panel Delivered) (R1-R4 Frames in UL Type 1 and UL Type 12 ONLY)
J425	Local-Remote - Logic Assistant Control panel
J429	Blue Tooth - Control panel - Hand-Off- Auto
Fieldbus - 1 slot available for fieldbus adapters	
K451	DeviceNet adapter
K454	PROFIBUS-DP adapter
K458	Modbus/ RTU adapter
K475	Ethernet adapter (EIP,Modbus/TCP,PROFINET, 2-port)
K490	Ethernet/IP Adapter, 2 Port
K491	Modbus/ TCP Adapter, 2 Port
K492	Profinet IO Adapter, 2 Port
Input/output - 1 slots available for I/O options	
L501	External 24 V AC and DC (2 x RO and 1 x DO)
L512	115/230 V digital input (6 x DI and 2 x RO)
L523	External 24 V and isolated PTC interface
L525	Analog signal extension (3 x AI and 2 x AO)

Ratings, type and voltages

ACQ580-PC/PD, packaged drive with disconnect, 3ph 240V

3-PHASE U₁ = 208 TO 240V. POWER RATINGS ARE VALID AT NOMINAL OUTPUT VOLTAGE U_N = 208/230 V 60 HZ

Type Code ⁽³⁾	Light-Duty Ratings ⁽¹⁾⁽⁴⁾		Frame Size	UL Type 1 IP21 Dimensions					UL Type 12 IP54 Dimensions +B056					UL Type 3R Dimensions +B058				
	I _{LD}	P _{LD}		Drawing Ref.	Height (H)	Width (W)	Depth (D)	Weight Type 1	Drawing Ref.	Height (H)	Width (W)	Depth (D)	Weight Type 12	Drawing Ref.	Height (H)	Width (W)	Depth (D)	Weight Type 3R
					Type 1	Type 1	Type 1	Type 12		Type 12	Type 12	Type 3R	Type 3R		Type 3R			
					A	Hp	in	in		in	lb	in	in		in	lb	in	in
ACQ580-Px-04A6-2	4.6	1	R1	Px1-1	24.60	6.42	12.42	18.00	Px12-1	26.50	6.50	12.40	19	PxB3R-1	33.35	17.70	14.00	77
ACQ580-Px-06A6-2	6.6	1.5	R1	Px1-1	24.60	6.42	12.42	18.00	Px12-1	26.50	6.50	12.40	19	PxB3R-1	33.35	17.70	14.00	77
ACQ580-Px-07A5-2	7.5	2	R1	Px1-1	24.60	6.42	12.42	18.00	Px12-1	26.50	6.50	12.40	19	PxB3R-1	33.35	17.70	14.00	77
ACQ580-Px-10A6-2	10.6	3	R1	Px1-1	24.60	6.42	12.42	18.00	Px12-1	26.50	6.50	12.40	19	PxB3R-1	33.35	17.70	14.00	77
ACQ580-Px-017A-2	16.7	5	R1	Px1-1	24.60	6.42	12.42	18.00	Px12-1	26.50	6.50	12.40	19	PxB3R-1	33.35	17.70	14.00	77
ACQ580-Px-024A-2	24.2	7.5	R2	Px1-2	28.53	6.42	12.63	22.00	Px12-2	30.22	6.50	12.64	22	PxB3R-1	33.35	17.70	14.00	77
ACQ580-Px-031A-2	30.8	10	R2	Px1-2	28.53	6.42	12.63	22.00	Px12-2	30.22	6.50	12.64	22	PxB3R-1	33.35	17.70	14.00	77
ACQ580-Px-046A-2	46.2	15	R3	Px1-3	34.86	8.39	13.22	39.00	Px12-3	36.51	8.39	13.22	39	PxB3R-2	40.69	20.71	15.41	176
ACQ580-Px-059A-2	59.4	20	R3	Px1-3	34.86	8.39	13.22	39.00	Px12-3	36.51	8.39	13.22	39	PxB3R-2	40.69	20.71	15.41	176
ACQ580-Px-075A-2	74.8	25	R4	Px1-4	40.61	8.39	14.26	67.00	Px12-4	42.54	8.39	14.26	67	PxB3R-2	40.69	20.71	15.41	176
ACQ580-Px-088A-2	88.0	30	R5	PxB1-3	47.72	28.24	19.04	359	PxB12-3	54.18	28.24	19.04	359	N/A	N/A	N/A	N/A	N/A
ACQ580-Px-090A-2	90	30	R4	PxB1-3	47.72	28.24	19.04	339	PxB12-3	54.18	28.24	19.04	339	N/A	N/A	N/A	N/A	N/A
ACQ580-Px-114A-2	114.0	40	R5	PxB1-3	47.72	28.24	19.04	359	PxB12-3	54.18	28.24	19.04	359	N/A	N/A	N/A	N/A	N/A
ACQ580-Px-143A-2	143.0	50	R6	PxB1-3	47.72	28.24	19.04	359	PxB12-3	54.18	28.24	19.04	359	N/A	N/A	N/A	N/A	N/A
ACQ580-Px-169A-2	169.0	60	R7	PxB1-3	47.72	28.24	19.04	359	PxB12-3	54.18	28.24	19.04	359	N/A	N/A	N/A	N/A	N/A
ACQ580-Px-211A-2	211.0	75	R7	PxB1-3	47.72	28.24	19.04	359	PxB12-3	54.18	28.24	19.04	359	N/A	N/A	N/A	N/A	N/A
ACQ580-Px-273A-2	273.0	100	R8	PxB1-3	47.72	28.24	19.04	359	PxB12-3	54.18	28.24	19.04	359	N/A	N/A	N/A	N/A	N/A

Notes:

1) Nominal Rated output current available continuously without overloadability.

I_{LD} Continuous rms output current allowing 110% overload for 1 minute every 10 minutes

P_{LD} Typical motor power in light-duty use (110% overload). The horsepower (hp) ratings apply to most NEMA 4-pole motors.

2) Heavy duty is 150% Overload for 1 Minute

I_{HD} Continuous rms output current allowing 150% overload for 1 minute every 10 minutes

P_{HD} Typical motor power in heavy-duty use (150% overload).

3) When creating a type code for these packages, the -Px is replaced by -PC (with circuit breaker) or -PD (with disconnect switch)

4) Ratings apply up to ambient temperature of 40°C (104°F). Derating for higher altitudes, ambient temperatures, or switching frequencies, see the ACQ580-01 Drives Hardware Manual, document code: 3AXD50000044862.

3-phase U₁ = 380 to 480V. Power ratings are valid at nominal output voltage U_N = 460 V 50/60 Hz

3-PHASE U1 = 380 TO 480V. POWER RATINGS ARE VALID AT NOMINAL OUTPUT VOLTAGE UN = 460 V 50/60 HZ

Type Code	US Government Compliance			Cooling Air Flow 200 to 240 V units				Noise		Internal Drive Fuse Ratings		
	IIJA/ BABA (1)	BAA (2)	TAA (3)	PC Heat dissipation ⁽⁴⁾		PD Heat dissipation ⁽⁴⁾		Air flow		Max. noise level ⁽⁵⁾	Fuse Current Rating	UL class ⁽⁶⁾⁽⁷⁾
				W	BTU/ Hr	W	BTU/ Hr	m3/h	CFM			
ACQ580-Px-04A6-2	N	Y	Y	53	181	49	168	43	26	59	15	CC
ACQ580-Px-06A6-2	N	Y	Y	64	219	60	205	43	26	59	15	CC
ACQ580-Px-07A5-2	N	Y	Y	75	256	71	243	43	26	59	15	CC
ACQ580-Px-10A6-2	N	Y	Y	96	328	93	318	43	26	59	15	CC
ACQ580-Px-017A-2	N	Y	Y	146	499	141	482	43	26	59	30	CC
ACQ580-Px-024A-2	N	Y	Y	192	656	186	635	100	60	64	30	CC
ACQ580-Px-031A-2	N	Y	Y	247	843	245	836	100	60	64	40	T
ACQ580-Px-046A-2	N	Y	Y	353	1205	352	1202	178	105	76	80	T
ACQ580-Px-059A-2	N	Y	Y	472	1611	468	1596	178	105	76	80	T
ACQ580-Px-075A-2	Y	Y	Y	574	1959	570	1945	289	171	69	100	T
ACQ580-Px-088A-2	Y	Y	Y	672	2293	676	2307	139	83	63	110	T
ACQ580-Px-090A-2	Y	Y	Y	729	2487	733	2501	289	171	69	110	T
ACQ580-Px-114A-2	Y	Y	Y	906	3092	899	3068	139	83	63	150	T
ACQ580-Px-143A-2	Y	Y	Y	1117	3812	1103	3764	435	257	67	200	T
ACQ580-Px-169A-2	Y	Y	Y	1350	4607	1320	4504	450	266	67	250	T
ACQ580-Px-211A-2	Y	Y	Y	1672	5705	1672	5705	450	266	67	300	T
ACQ580-Px-273A-2	Y	Y	Y	2227	7599	2227	7599	1150	677	65	350	T

Notes:

1) The drive types listed as IIJA/BABA are Manufactured in the U.S and the cost of the components manufactured in the U.S. are greater than 55% of the total component cost.

2) The drive types listed as BAA are manufactured in the USA and deemed Commercially Available Off-the-Shelf (COTS) items that are NOT predominately iron, and steel products as defined under Federal Acquisition Regulation (FAR) 2.101,

3) The drive types listed as TAA are Manufactured in the USA or other designated country allowed under TAA. All ABB Variable Frequency Drives listed in this statement have been determined TAA compliant. This statement applies only to VFDs and Cabinets with the 10-digit SN starting with 1xxxxxxxx or 2xxxxxxxx.

4) Typical drive losses when it operates at 90% of the motor nominal frequency and 100% of the drive nominal output current.

5) The maximum noise level is at full fan speed. When the drive is not operating at full load and at maximum ambient temperature the noise level is lower

6) ABB does not require Bussmann brand fuses. Fuses which meet the appropriate UL class type, current rating, and are rated at 600V, 200 kA may be used. ABB recommends fast acting class T or faster fuses in the USA.

7) Most drives built in 2020 or earlier can only be protected with Class T (JJS) fuses. See 3AXD50000645015 Branch Circuit Protection for ABB Drives for additional information.

Ratings, type and voltages

ACQ580-PC/PD, packaged drive with disconnect, 3ph 480V

Type Code	Light-Duty Ratings (1)(4)		Frame Size	UL Type 1 IP21 Dimensions					UL Type 12 IP54 Dimensions +B056					UL Type 3R Dimensions +B058				
	I _{LD}	P _{LD}		Drawing Reference	Height (H)	Width (W)	Depth (D)	Weight Type 1	Drawing Reference	Height (H)	Width (W)	Depth (D)	Weight Type 12	Drawing Reference	Height (H)	Width (W)	Depth (D)	Weight Type 3R
					Type 1	Type 1	Type 1	Type 12		Type 12	Type 12	Type 3R	Type 3R		Type 3R			
					in	in	in	lb		in	in	in	lb		in	in	in	lb
ACQ580-Px-02A1-4	2.1	1	R1	Px1-1	24.60	6.42	12.42	18.00	Px12-1	26.50	6.50	12.40	19	PxB3R-1	33.35	17.70	14.00	77
ACQ580-Px-03A0-4	3	1.5	R1	Px1-1	24.60	6.42	12.42	18.00	Px12-1	26.50	6.50	12.40	19	PxB3R-1	33.35	17.70	14.00	77
ACQ580-Px-03A5-4	3.5	2	R1	Px1-1	24.60	6.42	12.42	18.00	Px12-1	26.50	6.50	12.40	19	PxB3R-1	33.35	17.70	14.00	77
ACQ580-Px-04A8-4	4.8	3	R1	Px1-1	24.60	6.42	12.42	18.00	Px12-1	26.50	6.50	12.40	19	PxB3R-1	33.35	17.70	14.00	77
ACQ580-Px-07A6-4	7.6	5	R1	Px1-1	24.60	6.42	12.42	18.00	Px12-1	26.50	6.50	12.40	19	PxB3R-1	33.35	17.70	14.00	77
ACQ580-Px-012A-4	12	7.5	R1	Px1-1	24.60	6.42	12.42	18.00	Px12-1	26.50	6.50	12.40	19	PxB3R-1	33.35	17.70	14.00	77
ACQ580-Px-014A-4	14	10	R2	Px1-2	28.53	6.42	12.63	22.00	Px12-2	30.22	6.50	12.64	22	PxB3R-1	33.35	17.70	14.00	77
ACQ580-Px-023A-4	23	15	R2	Px1-2	28.53	6.42	12.63	22.00	Px12-2	30.22	6.50	12.64	22	PxB3R-1	33.35	17.70	14.00	77
ACQ580-Px-027A-4	27	20	R3	Px1-3	34.86	8.39	13.22	39.00	Px12-3	36.51	8.39	13.22	39	PxB3R-2	40.69	20.71	15.41	176
ACQ580-Px-034A-4	34	25	R3	Px1-3	34.86	8.39	13.22	39.00	Px12-3	36.51	8.39	13.22	39	PxB3R-2	40.69	20.71	15.41	176
ACQ580-Px-044A-4	44	30	R3	Px1-3	34.86	8.39	13.22	39.00	Px12-3	36.51	8.39	13.22	39	PxB3R-2	40.69	20.71	15.41	176
ACQ580-Px-052A-4	52	40	R4	Px1-4	40.61	8.39	14.26	67.00	Px12-4	42.54	8.39	14.26	67	PxB3R-2	40.69	20.71	15.41	176
ACQ580-Px-065A-4	65	50	R4	Px1-4	40.61	8.39	14.26	67.00	Px12-4	42.54	8.39	14.26	67	PxB3R-2	40.69	20.71	15.41	176
ACQ580-Px-077A-4	77	60	R4	Px1-4	40.61	8.39	14.26	67.00	Px12-4	42.54	8.39	14.26	67	PxB3R-2	40.69	20.71	15.41	176
ACQ580-Px-096A-4	96	75	R5	PxB1-3	47.72	28.24	19.04	359	PxB12-3	54.18	28.24	19.04	359	N/A	N/A	N/A	N/A	N/A
ACQ580-Px-124A-4	124	100	R6	PxB1-3	47.72	28.24	19.04	359	PxB12-3	54.18	28.24	19.04	359	N/A	N/A	N/A	N/A	N/A
ACQ580-Px-156A-4	156	125	R7	PxB1-3	47.72	28.24	19.04	359	PxB12-3	54.18	28.24	19.04	359	N/A	N/A	N/A	N/A	N/A
ACQ580-Px-180A-4	180	150	R7	PxB1-3	47.72	28.24	19.04	359	PxB12-3	54.18	28.24	19.04	359	N/A	N/A	N/A	N/A	N/A
ACQ580-Px-240A-4	240	200	R8	PxB1-3	47.72	28.24	19.04	359	PxB12-3	54.18	28.24	19.04	359	N/A	N/A	N/A	N/A	N/A

Notes:

1) Nominal Rated output current available continuously without overloadability.

I_{LD} Continuous rms output current allowing 110% overload for 1 minute every 10 minutes

P_{LD} Typical motor power in light-duty use (110% overload). The horsepower (hp) ratings apply to most NEMA 4-pole motors.

2) Heavy duty is 150% Overload for 1 Minute

I_{HD} Continuous rms output current allowing 150% overload for 1 minute every 10 minutes

P_{HD} Typical motor power in heavy-duty use (150% overload).

3) When creating a type code for these packages, the -Px is replaced by -PC (with circuit breaker) or -PD (with disconnect switch)

4) Ratings apply up to ambient temperature of 40°C (104°F). Derating for higher altitudes, ambient temperatures, or switching frequencies, see the ACQ580-01 Drives Hardware Manual, document code: 3AXD50000044862.

3-phase U1 = 500 to 600V. Power ratings are valid at nominal output voltage UN = 575 V 50/60 Hz

3-phase U1 = 380 to 480V. Power ratings are valid at nominal output voltage UN = 460 V 50/60 Hz

	I1JA/ BABA (1)	BAA (2)	TAA (3)	PC Heat dissipation (4)		PD Heat dissipation (4)		Air flow		Max. noise level (5)	Fuse Current Rating	UL class (6)(7)
				W	BTU/ Hr	W	BTU/ Hr	m3/h	CFM	dBA	A	
ACQ580-Px-02A1-4	N	N	N	53	181	49	168	43	26	55	15	CC
ACQ580-Px-03A0-4	N	N	N	63	215	59	202	43	26	55	15	CC
ACQ580-Px-03A5-4	N	N	N	74	253	70	239	43	26	55	15	CC
ACQ580-Px-04A8-4	N	N	N	93	318	89	304	43	26	55	15	CC
ACQ580-Px-07A6-4	N	N	N	116	396	112	383	43	26	55	15	CC
ACQ580-Px-012A-4	N	N	N	186	635	183	625	43	26	55	15	CC
ACQ580-Px-014A-4	N	N	N	239	816	235	802	100	60	66	30	CC
ACQ580-Px-023A-4	N	N	N	340	1161	334	1140	100	60	66	30	CC
ACQ580-Px-027A-4	N	N	N	449	1532	443	1512	178	105	70	40	T
ACQ580-Px-034A-4	N	N	N	545	1860	541	1846	178	105	70	60	T
ACQ580-Px-044A-4	N	N	N	648	2211	638	2177	178	105	70	60	T
ACQ580-Px-052A-4	Y	Y	Y	877	2993	873	2979	43	26	69	80	T
ACQ580-Px-065A-4	Y	Y	Y	1073	3662	1065	3634	134	80	69	90	T
ACQ580-Px-077A-4	Y	Y	Y	1291	4405	1286	4388	134	80	63	100	T
ACQ580-Px-096A-4	Y	Y	Y	1560	5323	1564	5337	139	83	63	150	T
ACQ580-Px-124A-4	Y	Y	Y	1535	5238	1534	5235	435	257	67	200	T
ACQ580-Px-156A-4	Y	Y	Y	2051	6999	2045	6978	450	266	67	225	T
ACQ580-Px-180A-4	Y	Y	Y	2447	8350	2417	8247	450	266	67	300	T
ACQ580-Px-240A-4	Y	Y	Y	3486	11895	3486	11895	550	324	65	350	T

Notes:

1) The drive types listed as I1JA/BABA are Manufactured in the U.S and the cost of the components manufactured in the U.S. are greater than 55% of the total component cost.

2) The drive types listed as BAA are manufactured in the USA and deemed Commercially Available Off-the-Shelf (COTS) items that are NOT predominately iron, and steel products as defined under Federal Acquisition Regulation (FAR) 2.101,

3) The drive types listed as TAA are Manufactured in the USA or other designated country allowed under TAA. All ABB Variable Frequency Drives listed in this statement have been determined TAA compliant. This statement applies only to VFDs and Cabinets with the 10-digit SN starting with 1xxxxxxx or 2xxxxxxx.

4) Typical drive losses when it operates at 90% of the motor nominal frequency and 100% of the drive nominal output current.

5) The maximum noise level is at full fan speed. When the drive is not operating at full load and at maximum ambient temperature the noise level is lower

6) ABB does not require Bussmann brand fuses. Fuses which meet the appropriate UL class type, current rating, and are rated at 600V, 200 kA may be used. ABB recommends fast acting class T or faster fuses in the USA.

7) Most drives built in 2020 or earlier can only be protected with Class T (JJS) fuses. See 3AXD50000645015 Branch Circuit Protection for ABB Drives for additional information.

3-phase U1 = 500 to 600V. Power ratings are valid at nominal output voltage UN = 575 V 50/60 Hz

Ratings, type and voltages

ACQ580-PC/PD, packaged drive with disconnect, 3ph 575V

Type Code	Light-Duty Ratings (1)(4)		Frame Size	UL Type 1 IP21 Dimensions				UL Type 12 IP54 Dimensions +B056					UL Type 3R Dimensions +B058					
	I _{LD}	P _{LD}		Drawing Reference	Height (H)	Width (W)	Depth (D)	Weight Type 1	Drawing Reference	Height (H)	Width (W)	Depth (D)	Weight Type 12	Drawing Reference	Height (H)	Width (W)	Depth (D)	Weight Type 3R
					Type 1	Type 1	Type 1	lb		Type 12	Type 12	Type 12	lb		Type 3R	Type 3R	Type 3R	lb
	A	Hp			in	in	in	lb		in	in	in	lb		in	in	in	lb
ACQ580-Px-02A7-6	2.7	2	R2	Px1-2	28.53	6.42	12.63	22.00	Px12-2	30.22	6.50	12.64	22	PxB3R-1	33.35	17.70	14.00	77
ACQ580-Px-03A9-6	3.9	3	R2	Px1-2	28.53	6.42	12.63	22.00	Px12-2	30.22	6.50	12.64	22	PxB3R-1	33.35	17.70	14.00	77
ACQ580-Px-06A1-6	6.1	5	R2	Px1-2	28.53	6.42	12.63	22.00	Px12-2	30.22	6.50	12.64	22	PxB3R-1	33.35	17.70	14.00	77
ACQ580-Px-09A0-6	9	7.5	R2	Px1-2	28.53	6.42	12.63	22.00	Px12-2	30.22	6.50	12.64	22	PxB3R-1	33.35	17.70	14.00	77
ACQ580-Px-011A-6	11	10	R2	Px1-2	28.53	6.42	12.63	22.00	Px12-2	30.22	6.50	12.64	22	PxB3R-1	33.35	17.70	14.00	77
ACQ580-Px-017A-6	17	15	R2	Px1-2	28.53	6.42	12.63	22.00	Px12-2	30.22	6.50	12.64	22	PxB3R-1	33.35	17.70	14.00	77
ACQ580-Px-022A-6	22	20	R3	Px1-3	34.86	8.39	13.22	39.00	Px12-3	36.51	8.39	13.22	39	PxB3R-2	40.69	20.71	15.41	176
ACQ580-Px-027A-6	27	25	R3	Px1-3	34.86	8.39	13.22	39.00	Px12-3	36.51	8.39	13.22	39	PxB3R-2	40.69	20.71	15.41	176
ACQ580-Px-032A-6	32	30	R3	Px1-3	34.86	8.39	13.22	39.00	Px12-3	36.51	8.39	13.22	39	PxB3R-2	40.69	20.71	15.41	176
ACQ580-Px-041A-6*	41	40	R5	PxB1-3	47.72	28.24	19.04	359	PxB12-3	54.18	28.24	19.04	359	N/A	N/A	N/A	N/A	N/A
ACQ580-Px-052A-6*	52	50	R5	PxB1-3	47.72	28.24	19.04	359	PxB12-3	54.18	28.24	19.04	359	N/A	N/A	N/A	N/A	N/A
ACQ580-Px-062A-6*	62	60	R5	PxB1-3	47.72	28.24	19.04	359	PxB12-3	54.18	28.24	19.04	359	N/A	N/A	N/A	N/A	N/A
ACQ580-Px-077A-6*	77	75	R5	PxB1-3	47.72	28.24	19.04	359	PxB12-3	54.18	28.24	19.04	359	N/A	N/A	N/A	N/A	N/A
ACQ580-Px-099A-6*	99	100	R7	PxB1-3	47.72	28.24	19.04	359	PxB12-3	54.18	28.24	19.04	359	N/A	N/A	N/A	N/A	N/A
ACQ580-Px-125A-6*	125	125	R7	PxB1-3	47.72	28.24	19.04	359	PxB12-3	54.18	28.24	19.04	359	N/A	N/A	N/A	N/A	N/A
ACQ580-Px-144A-6*	144	150	R8	PxB1-3	47.72	28.24	19.04	359	PxB12-3	54.18	28.24	19.04	359	N/A	N/A	N/A	N/A	N/A

Notes:

1) Nominal Rated output current available continuously without overloadability.

I_{LD} Continuous rms output current allowing 110% overload for 1 minute every 10 minutes

P_{LD} Typical motor power in light-duty use (110% overload). The horsepower (hp) ratings apply to most NEMA 4-pole motors.

2) Heavy duty is 150% Overload for 1 Minute

I_{HD} Continuous rms output current allowing 150% overload for 1 minute every 10 minutes

P_{HD} Typical motor power in heavy-duty use (150% overload).

3) When creating a type code for these packages, the -Px is replaced by -PC (with circuit breaker) or -PD (with disconnect switch)

4) Ratings apply up to ambient temperature of 40°C (104°F). Derating for higher altitudes, ambient temperatures, or switching frequencies, see the ACQ580-01 Drives Hardware Manual, document code: 3AXD50000044862.

Type Code	US Government Compliance			Cooling Air Flow 200 to 240 V units						Noise	Internal Drive Fuse Ratings	
	IIJA/ BABA (1)	BAA (2)	TAA (3)	PC Heat dissipation (4)		PD Heat dissipation (4)		Air flow		Max. noise level (5)	Fuse Current Rating	UL class (6)(7)
				W	BTU/ Hr	W	BTU/ Hr	m3/h	CFM			
ACQ580-Px-02A7-6	N	N	N	73	250	70	239	100	60	64	15	CC
ACQ580-Px-03A9-6	N	N	N	91	311	88	301	100	60	64	15	CC
ACQ580-Px-06A1-6	N	N	N	141	482	137	468	100	60	64	15	CC
ACQ580-Px-09A0-6	N	N	N	182	621	179	611	100	60	64	15	CC
ACQ580-Px-011A-6	N	N	N	237	809	234	799	100	60	64	30	CC
ACQ580-Px-017A-6	N	N	N	335	1144	330	1126	43	26	64	30	CC
ACQ580-Px-022A-6	N	N	N	444	1515	438	1495	178	105	75	40	T
ACQ580-Px-027A-6	N	N	N	542	1850	536	1829	178	105	75	40	T
ACQ580-Px-032A-6	N	N	N	639	2181	633	2160	178	105	75	40	T
ACQ580-Px-041A-6*	Y	Y	Y	866	2955	867	2959	139	83	63	50	T
ACQ580-Px-052A-6*	Y	Y	Y	1059	3614	1058	3610	139	83	63	80	T
ACQ580-Px-062A-6*	Y	Y	Y	1281	4371	1291	4405	139	83	63	80	T
ACQ580-Px-077A-6*	Y	Y	Y	1556	5310	1563	5333	139	83	63	100	T
ACQ580-Px-099A-6*	Y	Y	Y	2113	7210	2117	7224	450	266	67	150	T
ACQ580-Px-125A-6*	Y	Y	Y	2530	8633	2530	8633	450	266	67	175	T
ACQ580-Px-144A-6*	Y	Y	Y	3081	10513	3074	10489	551	324	65	200	T

Notes:

1) The drive types listed as IIJA/BABA are Manufactured in the U.S and the cost of the components manufactured in the U.S. are greater than 55% of the total component cost.

2) The drive types listed as BAA are manufactured in the USA and deemed Commercially Available Off-the-Shelf (COTS) items that are NOT predominately iron, and steel products as defined under Federal Acquisition Regulation (FAR) 2.101.

3) The drive types listed as TAA are Manufactured in the USA or other designated country allowed under TAA. All ABB Variable Frequency Drives listed in this statement have been determined TAA compliant. This statement applies only to VFDs and Cabinets with the 10-digit SN starting with 1xxxxxxx or 2xxxxxxx.

4) Typical drive losses when it operates at 90% of the motor nominal frequency and 100% of the drive nominal output current.

5) The maximum noise level is at full fan speed. When the drive is not operating at full load and at maximum ambient temperature the noise level is lower

6) ABB does not require Bussmann brand fuses. Fuses which meet the appropriate UL class type, current rating, and are rated at 600V, 200 kA may be used. ABB recommends fast acting class T or faster fuses in the USA.

7) Most drives built in 2020 or earlier can only be protected with Class T (JJS) fuses. See 3AXD50000645015 Branch Circuit Protection for ABB Drives for additional information.

Technical specifications

ACQ580-PC/PD, packaged drive with disconnect

Enclosure Compliance			
ACQ580-Px	UL508A		
Supply connection			
Voltage and power range			
Input voltage (U1)			
ACQ580-Px-xxxA-2	208-240 V		
ACQ580-Px-xxxA-4	440-480 V		
ACQ580-Px-xxxA-6	525-600 V		
Input voltage tolerance	10% / -15%		
Line Limitations	Max ±3% of nominal phase to phase input voltage		
Power Factor (cos Φ) at nominal load			
ACQ580-Px	0.98		
Input Impedance	5% equivalent impedance		
Efficiency at rated power	98%		
ACQ580-Px	Approximately 2-3% of rated power		
Power Loss			
Short Circuit Current Rating			
	240V	480V	600V
-PC	100 kAIC	100 kAIC	≤60Hp: 25 kAIC ≥75Hp: 10 kAIC
-PD	100 kAIC	100 kAIC	100 kAIC
Motor connection and control			
Supported motor control		Scalar and vector	
Supported motor types		Asynchronous motor, permanent magnet motor (vector), SynRM (vector) PMSynRm (vector)	
Voltage		3-phase, from 0 to supply voltage	
Frequency		0 to 598 Hz	
Short Term Overload Capacity Variable Torque		110% for 1 min/10min	
Peak Overload Capacity Variable Torque		1.35 for 2 second (2 sec / 1 minute)	
Switching Frequency		2 - 12 kHz Automatic fold back in case of overload	
Acceleration/Deceleration Time		0 to 1800 s	
External power supply			
ACQ580-Px, R1-R4: Optional card		1.0 A at 24 V AC/DC ±10% / 25W	
Safety			
Safe Torque Off (STO)			
STO Standard Input		17...30 VDC, 55mA	
Degree of Protection			
ACQ580-Px		IP21, IP55	
Enclosure types (UL 508A)		UL (NEMA) Type 1, 12 and 3R	
ACQ580-Px			

Inputs and outputs ACQ580-Px	
2 analog inputs	Selection of Current/Voltage input mode is user programmable.
Voltage reference	0 (2) to 10 V, Rin > 200 kΩ
Current reference	0 (4) to 20 mA, Rin = 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 reference	0 to 10 V, Rload: > 100 kΩ
Current reference	0 to 20 mA, Rload: < 500 Ω
Applicable potentiometer	1 kΩ to 10 kΩ
Internal auxiliary voltage	24 V DC ±10%, max. 250 mA
Accuracy	+/- 1% full scale range at 25°C (77°F)
Output updating time	2 ms
6 digital inputs	12 to 24 V DC, 10 to 24 V AC, Connectivity of PTC sensors supported by a single digital input. PNP or NPN connection (5 DIs with NPN connection). Programmable
Input Updating Time	2 ms
3 relay outputs	Maximum switching voltage 250 V AC/30 V DC. Maximum continuous current 2 A rms. Programmable, Form C
Contact material	Silver Tin Oxide (AgSnO2)
PTC, PT100 and PT1000	Any of the analog inputs, or digital input 6, are configurable for PTC with up to 6 sensors.
Adjustable filters on analog inputs and outputs	
All control inputs isolated from ground and power	
Available options	
External 24V AC/DC and digital I/O extension (2xRO and 1xDO) (CMOD-01)	
Additional 115/230 V Digital input (6xDI and 2xRO) (CHDI-01)	
Fieldbus Adapter Modules	EtherNet/IP, Modbus TCP, PROFIBUS-DP, PROFINET, DeviceNet
Operation, Programming and Diagnostic Tool	Drive Composer Pro / Entry
Cold configuration tool (CCA-01)	
Keypad	
Standard	Hand/Off/Auto
Optional	Bluetooth

Product Compliance	
Standards and directives	
UL508A	
Low Voltage Directive 2014/35/EU	
EMC Directive 2014/35/EU	
IEC 60721-3-3: 2002	
IEC 60721-3-1:1997	
IEC 60721-3-2:1997	
Quality assurance system ISO 9001 and	
Environmental system ISO 14001	
UL, cUL, CSA (C22.2 NO 274) and EAC approvals	
Galvanic isolation according to PELV	
RoHS2 Directive 2011/65/EU (Restriction of Hazardous Substances)	
Safe torque off (EN 61800-5-2: 2016)	
Seismic Risk category IV Certified (IBC 2018)	
EMC (according to EN61800-3)	Class C2 (1st environment, restricted distribution)
Operation	
Air Temperature	-15 to +40 °C (5 to 104 °F) 0 to -15 °C (32 to 5 °F) No Frost Allowed Output derated above +40°C (104°F)
Installation site Altitude	0 to 1000 m (3281 ft) above sea level
Relative Humidity	5 to 95% No condensation allowed Maximum relative humidity is 60% in the presence of corrosive gasses
Atmospheric pressure	70 to 106 kPa (10.2 to 15.4 PSI) 0.7 to 1.05 atmospheres
Vibration	Risk category IV Certified (IBC2 018)
Environmental protections ACQ580-Px	
Chemical Gasses	Chemical Gasses C4 (IEC60721-3-3 edition 3 / ISO 9223) 3C3 (IEC60721-3-3 edition 2) G3/GX up to 2300 Å /30d corrosivity (ANSI-ISA 71.04)
Solid Particles	Class 3S2 No conductive dust allowed
Pollution degree (IEC/EN 61800-5-1)	Pollution degree 2

Storage (in Protective Shipping Package)	
Air Temperature	-40 to +70°C (-40 to +158°F)
Relative Humidity	Less than 95% No condensation allowed Maximum relative humidity is 60% in the presence of corrosive gasses
Chemical Gasses	Class 1C2
Solid Particles	Class 1S2 Contact ABB regarding Class 1S3
Atmospheric pressure	70 to 106 kPa 0.7 to 1.05 atmospheres
Vibration (ISTA) R1....R4	In accordance with ISTA 3B
Transportation (in Protective Shipping Package)	
Air Temperature	-40 to 70°C (-40 to 158°F)
Relative Humidity	Less than 95% No condensation allowed Maximum relative humidity is 60% in the presence of corrosive gasses
Atmospheric Pressure	60 to 106 kPa (8.7 to 15.4 PSI) 0.6 to 1.05 atmospheres
Free Fall	
R1	76 cm (30 in)
R2	61 cm (24 in)
R3	46 cm (18 in)
R4	31 cm (12 in)
Chemical Gasses	Class 2C2
Solid Particles	Class 2S2
Shock/ Drop (ISTA) R1....R4	In accordance with ISTA 3B
Vibration (ISTA) R1....R4	In accordance with ISTA 3B

ACQ580-OP

ACQ580-OP

ACQ580 performance package



The ACQ580-OP...+C260 is the latest addition to the ABB drives for water and wastewater portfolio.

The performance package features an ACQ580 ULH variable frequency drive (VFD) integrated into a robust UL Type (NEMA) 1/12 enclosure.

Designed with a comprehensive array of versatile options tailored for water and wastewater applications.

Designed to meet your requirements

Type 1/12 enclosed ACQ580 VFD for indoor use:

- Designed to exceed both UL Type 1 and Type 12 requirements in the same enclosure
- Fans and filters as standard
- Minimal clearance required side-side & back-back
- Multiple cable entry/exit options available for convenient connections
- Circuit breaker as standard
- 65 kAIC SCCR package
- 5% equivalent impedance without line reactor
- 22mm pilot devices as standard
- Hand-Off-Auto control panel

WWW industry configurable options available including

- Fusible Disconnect Increases SCCR to 100 kA
- Surge protection
- Input reactor
- Dv/dt filter
- Cabinet heater
- 30mm push to test LED pilot devices
- Speed potentiometer, start/stop pushbuttons, Emergency stop, etc.
- Elapsed time meter
- Bluetooth control panel

How do I build an ordering code?

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STANDARD CONFIGURATION

Designed for W/WW UL (NEMA) Type 12 with fans and filters

Includes: circuit breaker 65kAIC

Rotary disconnect handle

Wire markers

White labels with black letters when pilot devices are ordered

R10 and R11 come standard with common mode filter

Customer I/O terminal blocks for I/O connections (run permissives, remote run input, VFD running relay, VFD fault relay, remote E-stop)

Additional 10 inch of DIN rail for customer connections

R1 - R5 frame wall mounts bottom cable entry and exit

R6 - R11 frame field configurable for top and bottom motor cable exit

R6 - R7 frame field configurable for top and bottom supply cable entry

R8 - R11 frame units are standard with top supply cable entry

(Need to be specified for bottom supply cable entry with added +H350 option code)

**OPTION CODES**

Letter code followed by 3 digit number

Enclosure	
STD	UL (NEMA) Type 12 with Fans and Filters
C114	Optional foot kit for wall mount enclosures (Future Not available at this time)
H350	Bottom Cable Supply Entry (only required for R8 and R11)
H351	Top Cable Supply Entry (only required for R8 and R11)
Input Power Options (Select only 1)	
STD	6 Pulse ACQ580-01 With Built-In 5% Equivalent Impedance
E213	3% Input Line Reactor
Output Power Options (Select only 1)	
E205	dv/dt Filter
Input Protection	
STD	Circuit Breaker with Fuses 65kAIC SCCR - Rotary Handle (All Ratings)
F254	Fusible Disconnect with Fuses 100kAIC SCCR - Rotary Handle (R1-R9 Frame Only)
Lightning Protection	
F262	TVSS Surge Arrestor (Medium energy)
Time Meter	
G393	Elapsed Time Meter (ETM)
ACQ580-OP Pilot Devices (Pick Either ALL 22mm or ALL 30mm)	
Pilot Devices cannot be mixed and match between 22 and 30 mm	
White labels with black letters when pilot devices are ordered	
22 MM Pilot Devices	
G331	E-stop push button on door (22mm)
G302	Hand - Off - Auto switch (22mm)
G303	Speed potentiometer (22mm)
G401	Start/Stop push buttons (22mm)
G404	Reset button Blue (22mm)
G327	Ready pilot light White (22mm)
G328	Run pilot light Green (22mm)
G329	Fault pilot light Red (22mm)
G403	Power On pilot light White (22mm)
30 MM Pilot Devices	
G465	E-stop push button on door (30mm)
G458	Hand - Off - Auto switch (30mm)
G459	Speed potentiometer (30mm)
G460	Start/Stop push buttons (30mm)
G461	Reset button Blue (30mm)
G462	Ready pilot light LED Push to Test (PTT) WHITE (30mm)
G463	Run pilot light LED Push to Test (PTT) GREEN (30mm)
G464	Fault pilot light LED Push to Test (PTT) RED (30mm)
G466	Power On pilot light LED Push to Test (PTT) WHITE (30mm)
G468	Pump Protection Relay (customer supplied) for leak detection and motor high temperature (30mm)
G470	Motor High Temperature Indicator circuit (30mm)
Other Enclosure Options	
G300	Cabinet heater
Control Panel Options - 1 Option available (ACH-AP-H ships as Standard)	
STD	Hand-Off- Auto Control Panel - Standard Delivery
J429	Bluetooth - Control panel - Hand-Off- Auto
Fieldbus - 1 slot available for fieldbus adapters	
K451	DeviceNet adapter
K454	PROFIBUS-DP adapter
K458	Modbus/ RTU adapter
K475	Ethernet adapter (EIP,Modbus/TCP,PROFINET, 2-port)
K490	Ethernet/IP Adapter, 2 Port
K491	Modbus/ TCP Adapter, 2 Port
K492	Profinet IO Adapter, 2 Port
Input/output - 1 slots available for I/O options	
L501	External 24 V AC and DC (2 x RO and 1 x DO)
L512	115/230 V digital input (6 x DI and 2 x RO)
L523	External 24 V and isolated PTC interface
L525	Analog signal extension (3 x AI and 2 x AO)

Ratings, types and voltages

ACQ580-0P

3-phase U1 = 380 to 480V. Power ratings are valid at nominal output voltage UN = 460 V 50/60 Hz

Type Code	Light-Duty Ratings ⁽¹⁾⁽³⁾		Heavy Duty Output Ratings ⁽²⁾⁽³⁾		Frame Size	Drawing Reference	UL Type 12 IP54 Dimensions (+C260)			
	I _{LD}	P _{LD}	I _{HD}	P _{HD}			Height (H) Type 12	Width (W) Type 12	Depth (D) Type 12	Weight Type 12
	A	Hp	A	Hp			in	in	in	lb
ACQ580-0P-02A1-4+C260	2.1	1	1.6	0.75	R1	Wall	48.00	20.50	21.20	256
ACQ580-0P-03A0-4+C260	3.0	1.5	2.1	1	R1	Wall	48.00	20.50	21.20	256
ACQ580-0P-03A5-4+C260	3.5	2	3.0	1.5	R1	Wall	48.00	20.50	21.20	256
ACQ580-0P-04A8-4+C260	4.8	3	3.5	2	R1	Wall	48.00	20.50	21.20	256
ACQ580-0P-07A6-4+C260	7.6	5	4.8	3	R1	Wall	48.00	20.50	21.20	256
ACQ580-0P-012A-4+C260	12	7.5	7.6	5	R1	Wall	48.00	20.50	21.20	256
ACQ580-0P-014A-4+C260	14	10	12	7.5	R2	Wall	48.00	20.50	21.20	256
ACQ580-0P-023A-4+C260	23	15	14	10	R2	Wall	48.00	20.50	21.20	256
ACQ580-0P-027A-4+C260	27	20	23	15	R3	Wall	48.00	20.50	21.20	256
ACQ580-0P-034A-4+C260	34	25	27	20	R3	Wall	48.00	20.50	21.20	256
ACQ580-0P-044A-4+C260	44	30	34	25	R3	Wall	48.00	20.50	21.20	256
ACQ580-0P-052A-4+C260	52	40	44	30	R4	Wall	48.00	20.50	21.20	256
ACQ580-0P-065A-4+C260	65	50	52	40	R4	Wall	48.00	20.50	21.20	256
ACQ580-0P-077A-4+C260	77	60	65	50	R4	Wall	48.00	20.50	21.20	256
ACQ580-0P-096A-4+C260	96	75	77	60	R5	Wall	48.00	20.50	21.20	256
ACQ580-0P-124A-4+C260	124	100	96	75	R6	Floor	81.00	15.80	25.60	428
ACQ580-0P-156A-4+C260	156	125	124	100	R7	Floor	81.00	15.80	25.60	428
ACQ580-0P-180A-4+C260	180	150	156	125	R7	Floor	81.00	15.80	25.60	428
ACQ580-0P-240A-4+C260	240	200	180	150	R8	Floor	83.00	24.00	25.60	710
ACQ580-0P-260A-4+C260	260	200	240	150	R8	Floor	83.00	24.00	25.60	710
ACQ580-0P-302A-4+C260	302	250	260	200	R9	Floor	83.00	24.00	25.60	710
ACQ580-0P-361A-4+C260	361	300	302	250	R9	Floor	83.00	24.00	25.60	710
ACQ580-0P-414A-4+C260	414	350	361	300	R9	Floor	83.00	24.00	25.60	710
ACQ580-0P-454A-4+C260	454	350	414	300	R9	Floor	83.00	24.00	25.60	710
ACQ580-0P-505A-4+C260	483	400	361	350	R10	Floor	83.00	31.60	25.60	1026
ACQ580-0P-585A-4+C260	573	450	414	400	R10	Floor	83.00	31.60	25.60	1026
ACQ580-0P-650A-4+C260	623	500	477	450	R10	Floor	83.00	31.60	25.60	1026
ACQ580-0P-725A-4+C260	705	600	566	500	R11	Floor	90.90	31.60	25.60	1222
ACQ580-0P-820A-4+C260	807	700	625	600	R11	Floor	90.90	31.60	25.60	1222
ACQ580-0P-880A-4+C260	807	700	625	600	R11	Floor	90.90	31.60	25.60	1222

Notes:

1) Nominal Rated output current available continuously without overloadability.

ILD Continuous rms output current allowing 110% overload for 1 minute every 10 minutes

PLD Typical motor power in light-duty use (110% overload). The horsepower (hp) ratings apply to most NEMA 4-pole motors.

2) Heavy duty is 150% Overload for 1 Minute

IHD Continuous rms output current allowing 150% overload for 1 minute every 10 minutes

PHD Typical motor power in heavy-duty use (150% overload).

3) Ratings apply up to ambient temperature of 40°C (104°F). Derating for higher altitudes, ambient temperatures, or switching frequencies, see the ACQ580-01 Drives Hardware Manual, document code: 3AXD50000044862.

**3-phase U1 = 380 to 480V. Power ratings are valid at nominal output voltage UN = 460 V
50/60 Hz**

Type Code	US Government Compliance		
	IIJA/ BABA ⁽¹⁾	BAA ⁽²⁾	TAA ⁽³⁾
ACQ580-0P-02A1-4+C260	Y	Y	Y
ACQ580-0P-03A0-4+C260	Y	Y	Y
ACQ580-0P-03A5-4+C260	Y	Y	Y
ACQ580-0P-04A8-4+C260	Y	Y	Y
ACQ580-0P-07A6-4+C260	Y	Y	Y
ACQ580-0P-012A-4+C260	Y	Y	Y
ACQ580-0P-014A-4+C260	Y	Y	Y
ACQ580-0P-023A-4+C260	Y	Y	Y
ACQ580-0P-027A-4+C260	Y	Y	Y
ACQ580-0P-034A-4+C260	Y	Y	Y
ACQ580-0P-044A-4+C260	Y	Y	Y
ACQ580-0P-052A-4+C260	Y	Y	Y
ACQ580-0P-065A-4+C260	Y	Y	Y
ACQ580-0P-077A-4+C260	Y	Y	Y
ACQ580-0P-096A-4+C260	Y	Y	Y
ACQ580-0P-124A-4+C260	Y	Y	Y
ACQ580-0P-156A-4+C260	Y	Y	Y
ACQ580-0P-180A-4+C260	Y	Y	Y
ACQ580-0P-240A-4+C260	Y	Y	Y
ACQ580-0P-260A-4+C260	Y	Y	Y
ACQ580-0P-302A-4+C260	Y	Y	Y
ACQ580-0P-361A-4+C260	Y	Y	Y
ACQ580-0P-414A-4+C260	Y	Y	Y
ACQ580-0P-454A-4+C260	Y	Y	Y
ACQ580-0P-505A-4+C260	Y	Y	Y
ACQ580-0P-585A-4+C260	Y	Y	Y
ACQ580-0P-650A-4+C260	Y	Y	Y
ACQ580-0P-725A-4+C260	Y	Y	Y
ACQ580-0P-820A-4+C260	Y	Y	Y
ACQ580-0P-880A-4+C260	Y	Y	Y

Notes:

- 1) The drive types listed as IIJA/BABA are Manufactured in the U.S and the cost of the components manufactured in the U.S. are greater than 55% of the total component cost.
- 2) The drive types listed as BAA are manufactured in the USA and deemed Commercially Available Off-the-Shelf (COTS) items that are NOT predominately iron, and steel products as defined under Federal Acquisition Regulation (FAR) 2.101.
- 3) The drive types listed as TAA are Manufactured in the USA or other designated country allowed under TAA. All ABB Variable Frequency Drives listed in this statement have been determined TAA compliant. This statement applies only to VFDs and Cabinets with the 10-digit SN starting with 1xxxxxxx or 2xxxxxxx.
- 4) Typical drive losses when it operates at 90% of the motor nominal frequency and 100% of the drive nominal output current.
- 5) The maximum noise level is at full fan speed. When the drive is not operating at full load and at maximum ambient temperature the noise level is lower
- 6) ABB does not require Bussmann brand fuses. Fuses which meet the appropriate UL class type, current rating, and are rated at 600V, 200 kA may be used. ABB recommends fast acting class T or faster fuses in the USA.
- 7) Most drives built in 2020 or earlier can only be protected with Class T (JJS) fuses. See 3AXD50000645015 Branch Circuit Protection for ABB Drives for additional information.

Technical specifications

ACQ580-0P

Enclosure Compliance	
ACQ580-0P	UL508A
Supply connection	
Voltage and power range	
Input voltage (U1)	440-480 V
ACQ580-0P-xxxA-4	440-480 V
Input voltage tolerance	10% / -15%
Line Limitations	Max ±3% of nominal phase to phase input voltage
Power Factor (cos Φ) at nominal load	
ACQ580-01	0.98
Input Impedance	5% equivalent impedance
Efficiency at rated power	98%
ACQ580-01	
Power Loss	Approximately 2-3% of rated power
Short Circuit Current Rating	
Circuit Breaker	65 kAIC SCCR (With Standard Circuit Breaker)
Fused Disconnect	100 kAIC SCCR (With optional Fused Disconnect)
Motor connection and control	
Supported motor control	Scalar and vector
Supported motor types	Asynchronous motor, permanent magnet motor (vector), SynRM (vector)
	PMaSynRm (vector)
Voltage	3-phase, from 0 to supply voltage
Frequency	0 to 598 Hz
Short Term Overload Capacity Variable Torque	110% for 1 min/10min
Peak Overload Capacity	1.35 for 2 second
Variable Torque	(2 sec / 1 minute)
Switching Frequency	2 - 12 kHz
	Automatic fold back in case of overload
Acceleration/Deceleration Time	0 to 1800 s
Safety	
Safe Torque Off (STO)	
STO Standard Input	17...30 VDC, 55mA
Degree of Protection	
Enclosure types (UL 508A)	UL (NEMA) Type 1/12
Inputs and outputs	
1 ACQ580-01/04	

2 analog inputs	Selection of Current/Voltage input mode is user programmable.
Voltage reference	0 (2) to 10 V, Rin > 200 kΩ
Current reference	0 (4) to 20 mA, Rin = 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 reference	0 to 10 V, Rload: > 100 kΩ
Current reference	0 to 20 mA, Rload: < 500 Ω
Applicable potentiometer	1 kΩ to 10 kΩ
Internal auxiliary voltage	24 V DC ±10%, max. 250 mA
Accuracy	+/- 1% full scale range at 25°C (77°F)
Output updating time	2 ms
6 digital inputs	12 to 24 V DC, 10 to 24 V AC, Connectivity of PTC sensors supported by a single digital input. PNP or NPN connection (5 DIs with NPN connection). Programmable
Input Updating Time	2 ms
3 relay outputs	Maximum switching voltage 250 V AC/30 V DC. Maximum continuous current 2 A rms. Programmable, Form C
Contact material	Silver Tin Oxide (AgSnO2)
PTC, PT100 and PT1000	Any of the analog inputs, or digital input 6, are configurable for PTC with up to 6 sensors.
Adjustable filters on analog inputs and outputs	
All control inputs isolated from ground and power	

Product Compliance	
Standards and directives	
UL508A	
Quality assurance system ISO 9001 and	
Environmental system ISO 14001	
Galvanic isolation according to PELV	
RoHS2 Directive 2011/65/EU (Restriction of Hazardous Substances)	
Safe torque off (EN 61800-5-2: 2016)	
BABA, BAA (IIJA) and IRA compliant	
Operation	
Air Temperature	-15 to +40 °C (5 to 104 °F) 0 to -15 °C (32 to 5 °F) No Frost Allowed Output derated above +40°C (104°F)
Installation site Altitude	0 to 1000 m (3281 ft) above sea level
Relative Humidity	5 to 95% No condensation allowed Maximum relative humidity is 60% in the presence of corrosive gasses
Atmospheric pressure	70 to 106 kPa (10.2 to 15.4 PSI) 0.7 to 1.05 atmospheres
Environmental protections (ACQ580)	
Chemical Gasses	Chemical Gasses C4 (IEC60721-3-3 edition 3 / ISO 9223) 3C3 (IEC60721-3-3 edition 2) G3/GX up to 2300 Å /30d corrosivity (ANSI-ISA 71.04)
Solid Particles	Class 3S2 No conductive dust allowed
Pollution degree (IEC/EN 61800-5-1)	Pollution degree 2
Storage (in Protective Shipping Package)	
Air Temperature	-40 to +70°C (-40 to +158°F)
Relative Humidity	Less than 95% No condensation allowed Maximum relative humidity is 60% in the presence of corrosive gasses
Atmospheric pressure	70 to 106 kPa 0.7 to 1.05 atmospheres
Transportation (in Protective Shipping Package)	
Air Temperature	-40 to 70 °C (-40 to 158 °F)
Relative Humidity	Less than 95% No condensation allowed Maximum relative humidity is 60% in the presence of corrosive gasses
Atmospheric Pressure	60 to 106 kPa (8.7 to 15.4 PSI) 0.6 to 1.05 atmospheres

ACQ580-31

ACQ580-31

Ultra-Low Harmonic (ULH) drive for wall-mounting



Full water functionality and clean supply (THDi less than 3%)

Effortlessly meets harmonic standards and specifications

No need to oversize transformers, switchgear or cables

Simple to install – three wires in, three wires out. No external hardware required

The wall-mountable ultra-low harmonic drives are available in three compact frame sizes, with a power range of 5 to 75 Hp at 240V, and 5 to 150 Hp at 480V.

The drive has full water specific functionality and harmonic content even less than 3%. It helps keep the supply clean and meet standards and requirements, like IEEE519, effortlessly. Everything comes as one package – the drive is easy to install and requires no external hardware.

ACQ580 Ultra-low harmonic drive can be installed in wet and dusty environments, with a robust UL (NEMA) Type 12 / IP55 rating available when ordered with a +B056 plus code. A flange mounting kit option allows optimal cooling or space saving in compact cabinets.

ORDERING INFORMATION

How do I build an ordering code?

A	C	Q	5	8	0	-	3	1	-					-		+				
PRODUCT SERIES			CONSTRUCTION			SIZE						VOLTAGE			OPTIONS					

-	3	1
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CONSTRUCTION
Ultra-low Harmonic, Wall-mount UL (NEMA) Type 1 / IP21, Hand-off-auto assistant control panel, conduit box,common mode filter, US Quick start guide.

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SIZE
(Output current rating, see rating for details)

Frame size									
Voltage	R1	R2	R3	R4	R5	R6	R7	R8	R9
208 V	---	---	017A 024A	---	---	031A 046A 059A 075A 088A	---	114A 143A 169A 211A	---
460 V	---	---	07A6 012A 014A 023A	---	---	027A 034A 044A 052A 065A 077A	---	096A 124A 156A 180A	---
575 V	---	---	---	---	---	---	---	---	---

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VOLTAGE RATING
2 = Power ratings are valid at nominal voltage 208/230V
4 = Power ratings are valid at nominal voltage 460V
6 = Power ratings are valid at nominal voltage 575V

**OPTION CODES**

Letter code followed by 3 digit number

Enclosure	
B056	UL Type 12 (IP55)
Control Panel Options - 1 Option available (ACH-AP-H ships as Standard)	
STD	Hand-Off- Auto Control Panel - Standard Delivery
0J400	No control panel
J424	Blank control panel cover (No Control Panel Delivered)
J425	Local-Remote - Logic Assistant Control panel
J429	Blue Tooth - Control panel - Hand-Off- Auto
Fieldbus - 1 slot available for fieldbus adapters	
K451	DeviceNet adapter
K454	PROFIBUS-DP adapter
K458	Modbus/ RTU adapter
K475	Ethernet adapter (EIP,Modbus/TCP,PROFINET, 2-port)
K490	Ethernet/IP Adapter, 2 Port
K491	Modbus/ TCP Adapter, 2 Port
K492	Profinet IO Adapter, 2 Port
Input/output options - 1 slots available for I/O options	
L501	External 24 V AC and DC (2 x RO and 1 x DO)
L512	115/230 V digital input (6 x DI and 2 x RO)
L523	External 24 V and isolated PTC interface
L525	Analog signal extension (3 x AI and 2 x AO)

Ratings, types and voltages

ACQ580-31, ultra-low harmonic drives 3ph 240V

3-PHASE U₁ = 208 TO 240V. POWER RATINGS ARE VALID AT NOMINAL OUTPUT VOLTAGE U_N = 208/230 V 60 HZ

Type Code (3)	Light-Duty Ratings (1)(4)		Heavy Duty Output Ratings (2)(4)		Frame Size	UL Type 1 IP21 Dimensions				UL Type 12 IP55 Dimensions (+B056)(3)			
	I _{LD}	P _{LD}	I _{HD}	P _{HD}		Height (H)	Width (W)	Depth (D)	Weight Type 1	Height (H)	Width (W)	Depth (D)	Weight Type 12
						Type 1	Type 1	Type 1		Type 12	Type 12	Type 12	
	A	Hp	A	Hp		in	in	in	lb	in	in	in	lb
ACQ580-31-017A-2	16.7	5	10.6	3	R3	19.49	8.07	13.74	47	19.49	8.07	14.17	52
ACQ580-31-024A-2	24.2	7.5	16.7	5	R3	19.49	8.07	13.74	47	19.49	8.07	14.17	52
ACQ580-31-031A-2	30.8	10	24.2	7.5	R6	30.35	9.92	15.44	135	36.56	11.46	17.65	129
ACQ580-31-046A-2	46.2	15	30.8	10	R6	30.35	9.92	15.44	135	36.56	11.46	17.65	129
ACQ580-31-059A-2	59.4	20	46.2	15	R6	30.35	9.92	15.44	135	36.56	11.46	17.65	129
ACQ580-31-075A-2	74.8	25	59.4	20	R6	30.35	9.92	15.44	135	36.56	11.46	17.65	129
ACQ580-31-088A-2	88	30	74.8	25	R6	30.35	9.92	15.44	135	36.56	11.46	17.65	129
ACQ580-31-114A-2	114	40	88	30	R8	38.01	11.81	17.23	247	44.22	13.00	19.53	260
ACQ580-31-143A-2	143	50	114	40	R8	38.01	11.81	17.23	247	44.22	13.00	19.53	260
ACQ580-31-169A-2	169	60	143	50	R8	38.01	11.81	17.23	247	44.22	13.00	19.53	260
ACQ580-31-211A-2	211	75	169	60	R8	38.01	11.81	17.23	247	44.22	13.00	19.53	260

Notes:

1) Nominal Rated output current available continuously without overloadability.

I_{LD} Continuous rms output current allowing 110% overload for 1 minute every 10 minutes

P_{LD} Typical motor power in light-duty use (110% overload). The horsepower (hp) ratings apply to most NEMA 4-pole motors.

2) Heavy duty is 150% Overload for 1 Minute

I_{HD} Continuous rms output current allowing 150% overload for 1 minute every 10 minutes

P_{HD} Typical motor power in heavy-duty use (150% overload).

3) Type 12 dimensions include hood dimensions

4) Ratings apply up to ambient temperature of 40°C (104°F). Derating for higher altitudes, ambient temperatures, or switching frequencies, see the ACQ580-31 Drives Hardware Manual, document code: 3AXD50000045935.

3-PHASE U1 = 208 TO 240V. POWER RATINGS ARE VALID AT NOMINAL OUTPUT VOLTAGE UN = 208/230 V 60 HZ

Type Code	US Government Compliance			Cooling Air Flow 200 to 240 V units				Noise	Recommended UL Input current Protection fuses (6)			
	IIJA/ BABA (1)	BAA (2)	TAA (3)	Heat dissipation(4)	Air flow			Max. noise level(5)	I _N	Voltage rating	Bussmann type (7)(10)	UL class(8)(9)
					W	BTU/ Hr	m3/h					
ACQ580-31-017A-2	N	N	Y	364	1242	361	212	57	14	600	JJS-25	T
ACQ580-31-024A-2	N	N	Y	677	2310	361	212	57	20	600	JJS-35	T
ACQ580-31-031A-2	Y	Y	Y	553	1887	550	324	71	28	600	JJS-40	T
ACQ580-31-046A-2	Y	Y	Y	1025	3497	550	324	71	40	600	JJS-60	T
ACQ580-31-059A-2	Y	Y	Y	933	3184	550	324	71	53	600	JJS-80	T
ACQ580-31-075A-2	Y	Y	Y	1341	4576	550	324	71	66	600	JJS-90	T
ACQ580-31-088A-2	Y	Y	Y	1756	5992	550	324	71	76	600	JJS-110	T
ACQ580-31-114A-2	Y	Y	Y	1642	5603	860/913 (2)	506/537 (2)	68	98	600	JJS-150	T
ACQ580-31-143A-2	Y	Y	Y	2349	8015	860/913 (2)	506/537 (2)	68	128	600	JJS-200	T
ACQ580-31-169A-2	Y	Y	Y	2761	9421	860/913 (2)	506/537 (2)	68	152	600	JJS-225	T
ACQ580-31-211A-2	Y	Y	Y	3474	11854	860/913 (2)	506/537 (2)	68	188	600	JJS-300	T

Notes:

- 1) The drive types listed as IIJA/BABA are Manufactured in the U.S and the cost of the components manufactured in the U.S. are greater than 55% of the total component cost.
- 2) The drive types listed as BAA are manufactured in the USA and deemed Commercially Available Off-the-Shelf (COTS) items that are NOT predominately iron, and steel products as defined under Federal Acquisition Regulation (FAR) 2.101.
- 3) The drive types listed as TAA are Manufactured in the USA or other designated country allowed under TAA. All ABB Variable Frequency Drives listed in this statement have been determined TAA compliant. This statement applies only to VFDs and Cabinets with the 10-digit SN starting with 1xxxxxxxxx or 2xxxxxxxxx.
- 4) Typical drive losses when it operates at 90% of the motor nominal frequency and 100% of the drive nominal output current.
- 5) The maximum noise level is at full fan speed. When the drive is not operating at full load and at maximum ambient temperature the noise level is lower
- 6) Fuses are not included but required. The UL listed fuses recommended by ABB are the required branch circuit protection per NEC. Circuit breakers are also acceptable as branch circuit protection, see the Hardware Manual or manual supplement Branch Circuit Protection for ABB Drives (3AXD50000645015)
- 7) ABB does not require Bussmann brand fuses. Fuses which meet the appropriate UL class type, current rating, and are rated at 600V, 200 kA may be used. ABB recommends fast acting class T or faster fuses in the USA.
- 8) Most drives built in 2020 or earlier can only be protected with Class T (JJS) fuses.
- 9) Recommended size or smaller UL listed 248 fast acting, time delay, or high speed fuses must be used to maintain the UL listing of the drive. Additional protection can be used. Refer to local codes and regulations. A fuse of a different class can be used at the high fault rating where the I_{peak} and I_{zt} of the new fuse is not greater than that of the specified fuse.
- 10) UL listed 248 fast acting, time delay, or high speed fuses from other manufacturers can be used if they meet the same class and rating requirements specified in the rules above.

Ratings, types and voltages

ACQ580-31, ultra-low harmonic drives 3ph 480V

3-PHASE U_L = 380 TO 480V. POWER RATINGS ARE VALID AT NOMINAL OUTPUT VOLTAGE U_N = 460 V 50/60 HZ

Type Code (3)	Light-Duty Ratings (1)(4)		Heavy Duty Output Ratings (2)(4)		Frame Size	UL Type 1 IP21 Dimensions				UL Type 12 IP55 Dimensions (+B056)(3)			
	I _{LD}	P _{LD}	I _{HD}	P _{HD}		Height (H) Type 1	Width (W) Type 1	Depth (D) Type 1	Weight Type 1	Height (H) Type 12	Width (W) Type 12	Depth (D) Type 12	Weight Type 12
	A	Hp	A	Hp		in	in	in	lb	in	in	in	lb
ACQ580-31-07A6-4	7.6	5	5.2	3	R3	19.49	8.07	13.74	47	19.49	8.07	14.17	52
ACQ580-31-012A-4	12.0	7.5	7.6	5	R3	19.49	8.07	13.74	47	19.49	8.07	14.17	52
ACQ580-31-014A-4	14.0	10	12.0	7.5	R3	19.49	8.07	13.74	47	19.49	8.07	14.17	52
ACQ580-31-023A-4	23.0	15	14.0	10	R3	19.49	8.07	13.74	47	19.49	8.07	14.17	52
ACQ580-31-027A-4	27.0	20	23.0	15	R6	30.35	9.92	15.44	135	30.35	9.92	17.65	139
ACQ580-31-034A-4	34.0	25	27.0	20	R6	30.35	9.92	15.44	135	30.35	9.92	17.65	139
ACQ580-31-044A-4	44.0	30	34.0	25	R6	30.35	9.92	15.44	135	30.35	9.92	17.65	139
ACQ580-31-052A-4	52.0	40	44.0	30	R6	30.35	9.92	15.44	135	30.35	9.92	17.65	139
ACQ580-31-065A-4	65.0	50	52.0	40	R6	30.35	9.92	15.44	135	30.35	9.92	17.65	139
ACQ580-31-077A-4	77.0	60	65.0	50	R6	30.35	9.92	15.44	135	30.35	9.92	17.65	139
ACQ580-31-096A-4	96.0	75	77.0	60	R8	38.01	11.81	17.24	260	38.00	11.81	19.53	273
ACQ580-31-124A-4	124.0	100	96.0	75	R8	38.01	11.81	17.24	260	38.00	11.81	19.53	273
ACQ580-31-156A-4	156.0	125	124.0	100	R8	38.01	11.81	17.24	260	38.00	11.81	19.53	273
ACQ580-31-180A-4	180.0	150	156.0	125	R8	38.01	11.81	17.24	260	38.00	11.81	19.53	273

Notes:

1) Nominal Rated output current available continuously without overloadability.

ILD Continuous rms output current allowing 110% overload for 1 minute every 10 minutes

PLD Typical motor power in light-duty use (110% overload). The horsepower (hp) ratings apply to most NEMA 4-pole motors.

2) Heavy duty is 150% Overload for 1 Minute

IHD Continuous rms output current allowing 150% overload for 1 minute every 10 minutes

PHD Typical motor power in heavy-duty use (150% overload).

3) Type 12 dimensions include hood dimensions

4) Ratings apply up to ambient temperature of 40 °C (104 °F). Derating for higher altitudes, ambient temperatures, or switching frequencies, see the ACQ580-31 Drives Hardware Manual, document code: 3AXD50000045935.

3-PHASE U1 = 380 TO 480V. POWER RATINGS ARE VALID AT NOMINAL OUTPUT VOLTAGE UN = 460 V 50/60 HZ

Type Code	US Government Compliance			Cooling Air Flow 200 to 240 V units				Noise	Recommended UL Input current Protection fuses (6)				
	IIJA/ BABA (1)	BAA (2)	TAA (3)	Heat dissipation(4)		Air flow		Max. noise level(5)	I _N	Voltage rating	Bussmann type (7)	UL Class (8)(9)(10)	
				W	BTU/ Hr	m3/h	CFM	dBA	A	V			
ACQ580-31-07A6-4	N	N	Y	223	761	361	212	57	7	600	JJS-15	T	
ACQ580-31-012A-4	N	N	Y	442	1508	361	212	57	9	600	JJS-20	T	
ACQ580-31-014A-4	N	N	Y	366	1249	361	212	57	12	600	JJS-25	T	
ACQ580-31-023A-4	N	N	Y	765	2610	361	212	57	17	600	JJS-35	T	
ACQ580-31-027A-4	Y	Y	Y	545	1860	550	324	71	24	600	JJS-40	T	
ACQ580-31-034A-4	Y	Y	Y	761	2597	550	324	71	29	600	JJS-50	T	
ACQ580-31-044A-4	Y	Y	Y	1146	3910	550	324	71	34	600	JJS-60	T	
ACQ580-31-052A-4	Y	?	Y	887	3027	550	324	71	44	600	JJS-80	T	
ACQ580-31-065A-4	Y	?	Y	1250	4265	550	324	71	54	600	JJS-90	T	
ACQ580-31-077A-4	Y	?	Y	1668	5691	550	324	71	66	600	JJS-110	T	
ACQ580-31-096A-4	Y	Y	Y	1499	5115	860/913 (2)	506/537 (2)	68	82	600	JJS-150	T	
ACQ580-31-124A-4	Y	Y	Y	2197	7496	860/913 (2)	506/537 (2)	68	111	600	JJS-200	T	
ACQ580-31-156A-4	Y	?	Y	2857	9748	860/913 (2)	506/537 (2)	68	134	600	JJS-225	T	
ACQ580-31-180A-4	Y	Y	Y	3146	10735	860/913 (2)	506/537 (2)	68	163	600	JJS-300	T	

Notes:

- 1) The drive types listed as IIJA/BABA are Manufactured in the U.S and the cost of the components manufactured in the U.S. are greater than 55% of the total component cost.
- 2) The drive types listed as BAA are manufactured in the USA and deemed Commercially Available Off-the-Shelf (COTS) items that are NOT predominately iron, and steel products as defined under Federal Acquisition Regulation (FAR) 2.101,
- 3) The drive types listed as TAA are Manufactured in the USA or other designated country allowed under TAA. All ABB Variable Frequency Drives listed in this statement have been determined TAA compliant. This statement applies only to VFDs and Cabinets with the 10-digit SN starting with 1xxxxxxx or 2xxxxxxx.
- 4) Typical drive losses when it operates at 90% of the motor nominal frequency and 100% of the drive nominal output current.
- 5) The maximum noise level is at full fan speed. When the drive is not operating at full load and at maximum ambient temperature the noise level is lower
- 6) Fuses are not included but required. The UL listed fuses recommended by ABB are the required branch circuit protection per NEC. Circuit breakers are also acceptable as branch circuit protection, see the Hardware Manual or manual supplement Branch Circuit Protection for ABB Drives (3AXD50000645015)
- 7) ABB does not require Bussmann brand fuses. Fuses which meet the appropriate UL class type, current rating, and are rated at 600V, 200 kA may be used. ABB recommends fast acting class T or faster fuses in the USA.
- 8) Most drives built in 2020 or earlier can only be protected with Class T (JJS) fuses.
- 9) Recommended size or smaller UL listed 248 fast acting, time delay, or high speed fuses must be used to maintain the UL listing of the drive. Additional protection can be used. Refer to local codes and regulations. A fuse of a different class can be used at the high fault rating where the I_{peak} and I_{zt} of the new fuse is not greater than that of the specified fuse.
- 10) UL listed 248 fast acting, time delay, or high speed fuses from other manufacturers can be used if they meet the same class and rating requirements specified in the rules above.

Technical specifications

ACQ580-31 ultra-low harmonic

Supply connection	
Voltage and power range	
Input voltage (U1)	
ACQ580-31-xxxA-2	208-240VAC 3-Phase Input, 3 Phase Output
ACQ580-31-xxxA-4	440-480VAC 3-Phase Input, 3 Phase Output
Input voltage tolerance	10% / -15%
Line Limitations	Max $\pm 3\%$ of nominal phase to phase input voltage
Power Factor (cos Φ) at nominal load	1.0
Efficiency at rated power	98%
Power Loss	Approximately 2-3% of rated power
Motor connection	
Supported motor control	Scalar and vector
Supported motor types	Asynchronous motor, permanent magnet motor (vector), SynRM (vector)
Voltage	3-phase, from 0 to supply voltage
Frequency	0 to 500 Hz
Short Term Overload Capacity Variable Torque	110% for 1 min/10min
Peak Overload Capacity Variable Torque	1.35 for 2 second (2 sec / 1 minute)
Switching Frequency	2, 4, 8 or 12 kHz (Up to 150 Hp); 1 or 4 kHz (Over 150 Hp), Automatic fold back in case of overload
Acceleration/Deceleration Time	0 to 1800 s
Short Circuit Current Rating	100 kAIC (UL) with fusing
External power supply	
ACQ580-31, R3 Optional card	1.04 A at 24 V AC/DC $\pm 10\%$ / 25W
ACQ580-31, R6,R8: Standard	1.50 A at 24 V AC/DC $\pm 10\%$ / 36W
ACQ580-34, R11 Standard	1.50 A at 24 V AC/DC $\pm 10\%$ / 36W
Safety	
Safe Torque Off (STO)	
STO Standard Input	17...30 VDC, 55mA
Degree of Protection	
Degree of protection (IEC/EN 60529)	
ACQ580-31	IP21, IP55
Enclosure types (UL 508C/61800-5-1)	
ACQ580-31	UL (NEMA) Type 1 & 12

Inputs and outputs	
2 analog inputs	Selection of Current/Voltage input mode is user programmable.
Voltage reference	0 (2) to 10 V, Rin > 200 k Ω
Current reference	0 (4) to 20 mA, Rin = 100 Ω
Potentiometer reference value	10 V $\pm 1\%$ max. 20 mA
2 analog outputs	AO1 is user programmable, for current or voltage. AO2 current
Voltage reference	0 to 10 V, Rload: > 100 k Ω
Current reference	0 to 20 mA, Rload: < 500 Ω
Applicable potentiometer	1 k Ω to 10 k Ω
Internal auxiliary voltage	24 V DC $\pm 10\%$, max. 250 mA
Accuracy	$\pm 1\%$ full scale range at 25°C (77°F)
Output updating time	2 ms
6 digital inputs	12 to 24 V DC, 10 to 24 V AC, Connectivity of PTC sensors supported by a single digital input. PNP or NPN connection (5 DIs with NPN connection). Programmable
Input Updating Time	2 ms
3 relay outputs	Maximum switching voltage 250 V AC/30 V DC. Maximum continuous current 2 A rms. Programmable, Form C
Contact material	Silver Tin Oxide (AgSnO2)
PTC, PT100 and PT1000	Any of the analog inputs, or digital input 6, are configurable for PTC with up to 6 sensors.
Adjustable filters on analog inputs and outputs	
All control inputs isolated from ground and power	
Operation	
Air Temperature	-15 to +40°C (5 to 104°F) 50°C (122°F) available with derate 0 to -15 °C (32 to 5°F) No Frost Allowed Output derated above +40°C (104°F)
Installation site Altitude	0 to 1000 m (3281 ft) above sea level Output derated above 1000m (3281 ft) up to 4000m (13123ft)
Relative Humidity	5 to 95% No condensation allowed Maximum relative humidity is 60% in the presence of corrosive gasses
Atmospheric pressure	70 to 106 kPa (10.2 to 15.4 PSI) 0.7 to 1.05 atmospheres
Vibration	Risk category IV Certified (IBC 2018)

Technical specifications

ACQ580-31 ultra-low harmonic

Environmental protections	
Chemical Gasses	IEC 60721-3-3. Class 3C2 as standard and 3C3/C4 as option Note: Conformal coated PCBs
Solid Particles	IEC 60721-3-3. Class 3S2 No conductive dust allowed
Pollution degree (IEC/EN 61800-5-1)	Pollution degree 2
Product Compliance	
Standards and directives	
AMD1:2016 (excludes ACQ580-31, 200V)	
Low Voltage Directive 2014/35/EU, EN 61800-5-1:2007	
EMC Directive 2014/30/EU, EN 61800-3:2004 +A1:2012	
EMC Directive 2004/108/EC	
60721-3-3: 2002	
60721-3-1:1997	
EN 61800-5-1: 2007; IEC/EN 61000-3-12;	ACQ580-31 class C2, (1st environment restricted distribution)
EN61800-3: 2017 + A1: 2012 Category C2 (1st environment restricted distribution);	Frames R1 to R9 (up to 350HP) designed to comply with EMC category C2 requirements as standard. Frames R11 (up to 400 HP) comply with category C3 with standard pre-configured built-in filter.
Quality assurance system ISO 9001 and	
Environmental system ISO 14001	
UL, cUL, CSA, CE, and EAC approvals	
Galvanic isolation according to PELV	
RoHS2 (Restriction of Hazardous Substances)	
EN 61800-5-1: 2007; IEC/EN 61000-3-12;	
EN 61800-3: 2017 + A1: 2012 Category C2 (1st environment restricted distribution);	
Safe torque off (EN 61800-5-2)	
Seismic (IBC, OSHPD) (ACQ580-31 Only)	
EMC (according to EN61800-3)	Class C2 (1st environment, restricted distribution)
Harmonics compliance	
ACQ580-31/34 with active front-end helps system to comply with the recommendations of IEEEEE519 and G5/4 requirements.	
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	
Available Options	
External 24V AC/DC and digital I/O extension (2xRO and 1xDO) (CMOD-01)	
Additional 115/230 V Digital input (6xDI and 2xRO) (CHDI-01)	
Additional analog I/O extension (3xAI bipolar and 2xAO unipolar) (CAIO-01)	
Fieldbus Adapter Modules	EtherNet/IP, Modbus TCP, PROFIBUSDP, PROFINET, DeviceNet
Operation, Programming and Diagnostic Tool	Drive Composer Pro / Entry
Cold configuration tool (CCA-01)	
Keypad	
Standard	Hand/Off/Auto
Optional	Bluetooth

Storage (in Protective Shipping Package)	
Air Temperature	-40 to +70°C (-40 to +158°F)
Relative Humidity	Less than 95% No condensation allowed Maximum relative humidity is 60% in the presence of corrosive gasses
Chemical Gasses	IEC 60721-3-1. Class 1C2
Solid Particles	IEC 60721-3-1. Class 1S2 Contact ABB regarding Class 1S3
Atmospheric pressure	70 to 106 kPa 0.7 to 1.05 atmospheres
Vibration (ISTA) R3 R6,R8	In accordance with ISTA 1A In accordance with ISTA 3E Max. 1 mm (0.04 in) (5...13.2 Hz), max. 7 m/s2 (23 ft/s2) (13.2...100 Hz) sinusoidal
Transportation (in Protective Shipping Package)	
Air Temperature	-40° to 70°C (-40° to 158°F)
Relative Humidity	Less than 95% No condensation allowed Maximum relative humidity is 60% in the presence of corrosive gasses
Atmospheric Pressure	60 to 106 kPa (8.7 to 15.4 PSI) 0.6 to 1.05 atmospheres
Chemical Gasses	IEC 60721-3-2. Class 2C2
Solid Particles	IEC 60721-3-2. Class 2S2
Shock/ Drop (ISTA) R3 R6,R8	In accordance with ISTA 1A In accordance with ISTA 3E With packing max. 100 m/s2 (330 ft/s2), 11 ms
Vibration (ISTA) R3 R6,R8	In accordance with ISTA 1A In accordance with ISTA 3E Max. 3.5 mm (0.14 in) (2.999 Hz), max. 15 m/s2 (49 ft/s2) (9...200 Hz) sinusoidal

ACQ580-34

ACQ580-34

Ultra-Low Harmonic (ULH) drives for cabinet installation



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

ACQ580 ultra-low harmonic drive modules have been optimized for assembly into cabinets to ensure high quality and compact installation at minimal cost. The drive module is available from 200 to 400 Hp at 480V. 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 UL (NEMA) Type Open / IP00 as standard, but has optional finger shrouds available.

ORDERING INFORMATION

How do I build an ordering code?

A	C	Q	5	8	0	-	3	4	-					-	4	+				
PRODUCT SERIES						CONSTRUCTION				SIZE				VOLTAGE		OPTIONS				

-	3	4
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CONSTRUCTION
Drive Module, UL (NEMA) Type Open / IP00, Hand-off-auto assistant control panel, Common mode filter, EMC filter, DC connection bus bars, full size output terminals, control panel holder, US quick start guide.
US standard build Includes ACQ580-34-xxxx-4+E208+E210+J400+J410 (common mode filter, EMC filter, ACH-AP-H control panel and control panel holder. Control section is mounted to power section.)

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SIZE
(Output current rating, see rating for details)

Frame size											
Voltage	R1	R2	R3	R4	R5	R6	R7	R8	R9	R10	R11
208 V	---	---	---	---	---	---	---	---	---	---	---
460 V	---	---	---	---	---	---	---	---	---	---	240A 302A 361A 414A 477A
575 V	---	---	---	---	---	---	---	---	---	---	---

-	4
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VOLTAGE RATING
4 = Power ratings are valid at nominal voltage 460V

**OPTION CODES**

Letter code followed by 3 digit number

Enclosure	
B051	Finger safe terminals
Cabling	
H370	Full-size input terminals
0H354	Remove mounting pedestal (requires removal of installation ramp (0P919))
0H371	Remove full size output cable connection terminals
0P919	Remove installation ramp (requires removal of pedestal (0H354))
Filters	
E208	Common mode filter -Standard
E210	EMC/RFI-filters, 2nd Environment, Unrestricted (Earthed/Unearthed Network) Standard
Control Panel Options	
STD	Hand-Off- Auto Control Panel - Standard Delivery
0J400	No control panel
J424	Blank control panel cover (No Control Panel Delivered)
J425	Local-Remote - Logic Assistant Control panel
J429	Blue Tooth - Control panel - Hand-Off- Auto
Fieldbus - 1 slots available for Field Bus options	
K451	DeviceNet adapter
K454	PROFIBUS-DP adapter
K458	Modbus/ RTU adapter
K475	Ethernet adapter (EIP,Modbus/TCP,PROFINET, 2-port)
K490	Ethernet/IP Adapter, 2 Port
K491	Modbus/ TCP Adapter, 2 Port
K492	Profinet IO Adapter, 2 Port
Input/output - 1 slots available for I/O options	
L501	External 24 V AC and DC (2 x RO and 1 x DO)
L512	115/230 V digital input (6 x DI and 2 x RO)
L523	External 24 V and isolated PTC interface
L525	Analog signal extension (3 x AI and 2 x AO)

Ratings, types and voltages

ACQ580-34, ultra-low harmonic drive modules 3ph 480V

3-PHASE U₁ = 380 TO 480V. POWER RATINGS ARE VALID AT NOMINAL OUTPUT VOLTAGE U_N = 460 V 50/60 HZ

Type Code ⁽⁴⁾	Light-Duty Ratings ⁽¹⁾⁽³⁾		Heavy Duty Output Ratings ⁽²⁾⁽³⁾		Frame Size	UL Type Open IP00 Dimensions			
	I _{LD}	P _{LD}	I _{HD}	P _{HD}		Height (H)	Width (W)	Depth (D)	Weight
	A	Hp	A	Hp		in	in	in	lb
ACQ580-34-240A-4	240	200	180	150	R11	67.93	25.50	20.00	959
ACQ580-34-302A-4	302	250	240	200	R11	67.93	25.50	20.00	959
ACQ580-34-361A-4	361	300	302	250	R11	67.93	25.50	20.00	959
ACQ580-34-414A-4	414	350	361	300	R11	67.93	25.50	20.00	959
ACQ580-34-477A-4	477	400	414	350	R11	67.93	25.50	20.00	959

Notes:

1) Nominal Rated output current available continuously without overloadability.

ILD Continuous rms output current allowing 110% overload for 1 minute every 10 minutes

PLD Typical motor power in light-duty use (110% overload). The horsepower (hp) ratings apply to most NEMA 4-pole motors.

2) Heavy duty is 150% Overload for 1 Minute

IHD Continuous rms output current allowing 150% overload for 1 minute every 10 minutes

PHD Typical motor power in heavy-duty use (150% overload).

3) Ratings apply up to ambient temperature of 40°C (104°F). Derating for higher altitudes, ambient temperatures, or switching frequencies, see the ACQ580-31 Drives Hardware Manual, document code: 3AXD50000420025.

4) ACQ580-34 comes standard with common mode filter, EMC filter, ACH-AP-H control panel and control panel holder. Control section is mounted to power section.

Ratings, types and voltages

ACQ580-34, ultra-low harmonic drive modules 3ph 480V

3-PHASE U1 = 380 TO 480V. POWER RATINGS ARE VALID AT NOMINAL OUTPUT VOLTAGE UN = 460 V 50/60 HZ

Type Code	US Government Compliance			Cooling Air Flow 200 to 240 V units				Noise	Recommended UL Input current Protection fuses (6)			
	IIJA/ BABA ⁽¹⁾	BAA ⁽²⁾	TAA ⁽³⁾	Heat dissipation ⁽⁴⁾		Air flow		Max. noise level ⁽⁵⁾	I _N	Voltage rating	Bussmann type ⁽⁷⁾	UL Class ⁽⁸⁾⁽⁹⁾⁽¹⁰⁾
				W	BTU/Hr	m3/h	CFM					
ACQ580-34-240A-4	N	N	Y	5280	18016	2100	1236	72	209	690	170M5608	Class aR
ACQ580-34-302A-4	N	N	Y	6525	22264	2100	1236	72	258	690	170M5610	Class aR
ACQ580-34-361A-4	N	N	Y	7830	26717	2100	1236	72	307	690	170M6610	Class aR
ACQ580-34-414A-4	N	N	Y	9135	31170	2100	1236	72	363	690	170M6611	Class aR
ACQ580-34-477A-4	N	N	Y	10440	35623	2100	1236	72	414	690	170M6612	Class aR

Notes:

1) The drive types listed as IIJA/BABA are Manufactured in the U.S and the cost of the components manufactured in the U.S. are greater than 55% of the total component cost.

2) The drive types listed as BAA are manufactured in the USA and deemed Commercially Available Off-the-Shelf (COTS) items that are NOT predominately iron, and steel products as defined under Federal Acquisition Regulation (FAR) 2.101,

3) The drive types listed as TAA are Manufactured in the USA or other designated country allowed under TAA. All ABB Variable Frequency Drives listed in this statement have been determined TAA compliant. This statement applies only to VFDs and Cabinets with the 10-digit SN starting with 1xxxxxxx or 2xxxxxxx.

4) Typical drive losses when it operates at 90% of the motor nominal frequency and 100% of the drive nominal output current.

5) The maximum noise level is at full fan speed. When the drive is not operating at full load and at maximum ambient temperature the noise level is lower

6) Fuses are not included but required. The UL listed fuses recommended by ABB are the required branch circuit protection per NEC. Circuit breakers are also acceptable as branch circuit protection, see the Hardware Manual or manual supplement Branch Circuit Protection for ABB Drives (3AXD50000645015)

7) ABB does not require Bussmann brand fuses. Fuses which meet the appropriate UL class type, current rating, and are rated at 600V, 200 kA may be used. ABB recommends fast acting class T or faster fuses in the USA.

8) Most drives built in 2020 or earlier can only be protected with Class T (JJS) fuses.

9) Recommended size or smaller UL listed 248 fast acting, time delay, or high speed fuses must be used to maintain the UL listing of the drive. Additional protection can be used. Refer to local codes and regulations. A fuse of a different class can be used at the high fault rating where the I_{peak} and I_{2t} of the new fuse is not greater than that of the specified fuse.

10) UL listed 248 fast acting, time delay, or high speed fuses from other manufacturers can be used if they meet the same class and rating requirements specified in the rules above.

Technical specifications

ACQ580-34 ultra-low harmonic

Supply connection	
Voltage and power range	
Input voltage (U1)	
ACQ580-34-xxxA-4	440-480VAC 3-Phase Input, 3 Phase Output
Input voltage tolerance	10% / -15%
Line Limitations	Max ±3% of nominal phase to phase input voltage
Power Factor (cos Φ) at nominal load	1.0
Efficiency at rated power	98%
Power Loss	Approximately 2-3% of rated power
Motor connection	
Supported motor control	Scalar and vector
Supported motor types	Asynchronous motor, permanent magnet motor (vector), SynRM (vector)
Voltage	3-phase, from 0 to supply voltage
Frequency	0 to 500 Hz
Short Term Overload Capacity Variable Torque	110% for 1 min/10min
Peak Overload Capacity Variable Torque	1.35 for 2 second (2 sec / 1 minute)
Switching Frequency	2, 4, 8 or 12 kHz (Up to 150 Hp); 1 or 4 kHz (Over 150 Hp), Automatic fold back in case of overload
Acceleration/Deceleration Time	0 to 1800 s
Short Circuit Current Rating	100 kAIC (UL) with fusing
External power supply	
ACQ580-34, R11 Standard	1.50 A at 24 V AC/DC ±10% / 36W
Safety	
Safe Torque Off (STO)	
STO Standard Input	17...30 VDC, 55mA
Degree of Protection	
Degree of protection (IEC/EN 60529)	
ACQ580-34	IP00
Enclosure types (UL 508C/61800-5-1)	
ACQ580-34	UL Type Open

Inputs and outputs	
2 analog inputs	Selection of Current/Voltage input mode is user programmable.
Voltage reference	0 (2) to 10 V, Rin > 200 kΩ
Current reference	0 (4) to 20 mA, Rin = 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 reference	0 to 10 V, Rload: > 100 kΩ
Current reference	0 to 20 mA, Rload: < 500 Ω
Applicable potentiometer	1 kΩ to 10 kΩ
Internal auxiliary voltage	24 V DC ±10%, max. 250 mA
Accuracy	+/- 1% full scale range at 25°C (77°F)
Output updating time	2 ms
6 digital inputs	12 to 24 V DC, 10 to 24 V AC, Connectivity of PTC sensors supported by a single digital input. PNP or NPN connection (5 DIs with NPN connection). Programmable
Input Updating Time	2 ms
3 relay outputs	Maximum switching voltage 250 V AC/30 V DC. Maximum continuous current 2 A rms. Programmable, Form C
Contact material	Silver Tin Oxide (AgSnO2)
PTC, PT100 and PT1000	Any of the analog inputs, or digital input 6, are configurable for PTC with up to 6 sensors.
Adjustable filters on analog inputs and outputs	
All control inputs isolated from ground and power	
Operation	
Air Temperature	-15 to +40°C (5 to 104°F) 50°C (122°F) available with derate 0 to -15 °C (32 to 5°F) No Frost Allowed Output derated above +40°C (104°F)
Installation site Altitude	0 to 1000 m (3281 ft) above sea level Output derated above 1000m (3281 ft) up to 4000m (13123ft)
Relative Humidity	5 to 95% No condensation allowed Maximum relative humidity is 60% in the presence of corrosive gasses
Atmospheric pressure	70 to 106 kPa (10.2 to 15.4 PSI) 0.7 to 1.05 atmospheres
Vibration	Risk category IV Certified (IBC 2018)
Environmental protections	
Chemical Gasses	IEC 60721-3-3. Class 3C2 as standard and 3C3/C4 as option Note: Conformal coated PCBs
Solid Particles	IEC 60721-3-3. Class 3S2 No conductive dust allowed
Pollution degree (IEC/EN 61800-5-1)	Pollution degree 2

Technical specifications

ACQ580-34 ultra-low harmonic

Product Compliance	
Standards and directives	
AMD1:2016 (excludes ACQ580-31, 200V)	
Low Voltage Directive 2014/35/EU, EN 61800-5-1:2007	
EMC Directive 2014/30/EU, EN 61800-3:2004 +A1:2012	
EMC Directive 2004/108/EC	
60721-3-3: 2002	
60721-3-1:1997	
EN 61800-5-1: 2007; IEC/EN 61000-3-12;	ACQ580-31 class C2, (1st environment restricted distribution)
EN61800-3: 2017 + A1: 2012 Category C2	Frames R1 to R9 (up to 350HP) designed to comply with EMC category C2 requirements as standard.
(1st environment restricted distribution);	Frames R11 (up to 400 HP) comply with category C3 with standard pre-configured built-in filter.
Quality assurance system ISO 9001 and	
Environmental system ISO 14001	
UL, cUL, CSA, CE, and EAC approvals	
Galvanic isolation according to PELV	
RoHS2 (Restriction of Hazardous Substances)	
EN 61800-5-1: 2007; IEC/EN 61000-3-12;	
EN 61800-3: 2017 + A1: 2012 Category C2	
(1st environment restricted distribution);	
Safe torque off (EN 61800-5-2)	
Seismic (IBC, OSHPD) (ACQ580-31 Only)	
EMC (according to EN61800-3) Class C2 (1st environment, restricted distribution)	
Harmonics compliance	
ACQ580-31/34 with active front-end helps system to comply with the recommendations of IEEE519 and G5/4 requirements.	
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	
Available Options	
External 24V AC/DC and digital I/O extension (2xRO and 1xDO) (CMOD-01)	
Additional 115/230 V Digital input (6xDI and 2xRO) (CHDI-01)	
Additional analog I/O extension (3xAI bipolar and 2xAO unipolar) (CAIO-01)	
Fieldbus Adapter Modules	EtherNet/IP, Modbus TCP, PROFIBUSDP, PROFINET, DeviceNet
Operation, Programming and Diagnostic Tool	Drive Composer Pro / Entry
Cold configuration tool (CCA-01)	
Keypad	
Standard	Hand/Off/Auto
Optional	Bluetooth

Storage (in Protective Shipping Package)	
Air Temperature	-40 to +70°C (-40 to +158°F)
Relative Humidity	Less than 95%
	No condensation allowed
	Maximum relative humidity is 60% in the presence of corrosive gasses
Chemical Gasses	IEC 60721-3-1. Class 1C2
Solid Particles	IEC 60721-3-1. Class 1S2
	Contact ABB regarding Class 1S3
Atmospheric pressure	70 to 106 kPa
	0.7 to 1.05 atmospheres
Vibration (ISTA) R11	In accordance with ISTA 1A In accordance with ISTA 3E Max. 1 mm (0.04 in) (5...13.2 Hz), max. 7 m/s ² (23 ft/s ²) (13.2...100 Hz) sinusoidal
Transportation (in Protective Shipping Package)	
Air Temperature	-40° to 70°C (-40° to 158°F)
Relative Humidity	Less than 95%
	No condensation allowed
	Maximum relative humidity is 60% in the presence of corrosive gasses
Atmospheric Pressure	60 to 106 kPa (8.7 to 15.4 PSI)
	0.6 to 1.05 atmospheres
Chemical Gasses	IEC 60721-3-2. Class 2C2
Solid Particles	IEC 60721-3-2. Class 2S2
Shock/ Drop (ISTA) R11	In accordance with ISTA 1A In accordance with ISTA 3E With packing max. 100 m/s ² (330 ft/s ²), 11 ms
Vibration (ISTA) R11	In accordance with ISTA 1A In accordance with ISTA 3E Max. 3.5 mm (0.14 in) (2.999 Hz), max. 15 m/s ² (49 ft/s ²) (9...200 Hz) sinusoidal

ACQ580-3P

ACQ580-3P

Ultra Low Harmonic (ULH) Performance Package VFD Solutions



The ACQ580-3P...+C260 is the latest addition to the ABB drives designed specifically for the water and wastewater industry.

The performance package features an ACQ580 ULH variable frequency drive (VFD) integrated into a robust UL Type (NEMA) 1/12 enclosure.

Designed with a comprehensive array of versatile options tailored for your applications.

Designed to meet your requirements

Type 1/12 enclosed ACQ580 VFD for indoor use:

- Designed to exceed both UL Type 1 and Type 12 requirements in the same enclosure
- Fans and filters as standard
- Minimal clearance required side-side & back-back
- Multiple cable entry/exit options available for convenient connections
- Circuit breaker as standard
- 65 kAIC SCCR package

WWW industry configurable options available including

- Fusible disconnect increases SCCR to 100 kAIC
- Surge protection
- Dv/dt filter
- Cabinet heater
- 30mm push to test LED pilot devices
- Speed potentiometer, start/stop pushbuttons, Emergency stop, etc.
- Elapsed time meter
- Bluetooth control panel

ORDERING INFORMATION

How do I build an ordering code?

A	C	Q	5	8	0	-	3	P	-					-	4	+	C	2	6	0	+				
PRODUCT SERIES						CONSTRUCTION			SIZE		VOLTAGE					STANDARD CONFIGURATION					OPTIONS				

- 3 P

CONSTRUCTION

US Packaged Drive Product

-

SIZE

(Output current rating, see rating for details)

Frame size											
Voltage	R1	R2	R3	R4	R5	R6	R7	R8	R9	R10	R11
230 V	---	---	---	---	---	---	---	---	---	---	---
460 V	---	---	07A6	---	---	027A	---	096A	---	---	240A
	---	---	012A	---	---	033A	---	124A	---	---	302A
	---	---	014A	---	---	044A	---	156A	---	---	361A
	---	---	023A	---	---	052A	---	180A	---	---	414A
	---	---	---	---	---	065A	---	---	---	---	477A
	---	---	---	---	---	077A	---	---	---	---	---
575 V	---	---	---	---	---	---	---	---	---	---	---

- 4

VOLTAGE RATING

4 = Power ratings are valid at nominal voltage 460V

+ C 2 6 0

STANDARD CONFIGURATION

Designed for W/WW UL (NEMA) Type 12 with fans and filters

Includes: circuit breaker 65kAIC

Rotary disconnect handle

Wire markers

White labels with black letters when pilot devices are ordered

R11 come standard with common mode filter

Customer I/O terminal blocks for I/O connections (run permissives, remote run input, VFD running relay, VFD fault relay, remote E-stop)

R3 frame wall mounts bottom cable entry and exit

R6 - R11 frame field configurable for top and bottom motor cable exit

R6 frame field configurable for top and bottom supply cable entry

R8 - R11 frame units are standard with top supply cable entry.

(Need to be specified for bottom supply cable entry with added +H350 option code)

**OPTION CODES**

Letter code followed by 3 digit number

Enclosure	
STD	UL (NEMA) Type 12 with Fans and Filters
STD	Top Cable Supply Entry (for R6 and R11)
C114	Optional foot kit for wall mount enclosures
H350	Bottom Cable Supply Entry (Optional for R8 to R11)
Input Power Options	
STD	ULH ACQ580-31/34 with THDi of less than 3%
Output Power Options	
E205	dv/dt filter
Input Protection	
STD	Circuit Breaker with Fuses 65kAIC SCCR - Rotary Handle (All Ratings)
F253	Disconnect with Fuses 100kAIC SCCR - Rotary Handle (R11 frame only)
F254	Fused Disconnect with Fuses 100kAIC SCCR - Rotary Handle (R3, R6, R8 only)
Lightning Protection	
F262	TVSS Surge Arrestor (Medium energy)
Time Meter	
G393	Elapsed Time Meter (ETM)
ACQ580-3P Pilot Devices (Pick Either ALL 22mm or ALL 30mm)	
Pilot Devices cannot be mixed and match between 22 and 30 mm	
White labels with black letters when pilot devices are ordered)	
22 MM Pilot Devices	
G331	E-stop push button on door (22mm)
G302	Hand - Off - Auto switch (22mm)
G303	Speed potentiometer (22mm)
G401	Start/Stop push buttons (22mm)
G404	Reset button Blue (22mm)
G327	Ready pilot light White (22mm)
G328	Run pilot light Green (22mm)
G329	Fault pilot light Red (22mm)
G403	Power On pilot light White (22mm)
30 MM Pilot Devices	
G465	E-stop push button on door (30mm)
G458	Hand - Off - Auto switch (30mm)
G459	Speed potentiometer (30mm)
G460	Start/Stop push buttons (30mm)
G461	Reset button Blue (30mm)
G462	Ready pilot light LED Push to Test (PTT) WHITE (30mm)
G463	Run pilot light LED Push to Test (PTT) GREEN (30mm)
G464	Fault pilot light LED Push to Test (PTT) RED (30mm)
G466	Power On pilot light LED Push to Test (PTT) WHITE (30mm)
G468	Pump Protection Relay (customer supplied) for leak detection and motor high temperature (30mm)
G470	Motor High Temperature Indicator circuit (30mm)
Other Enclosure Options	
G300	Cabinet heater
Control Panel Options - 1 Option available (ACH-AP-H ships as Standard)	
STD	Hand-Off- Auto Control Panel - Standard Delivery
J429	Bluetooth - Control panel - Hand-Off- Auto
Fieldbus - 1 slot available for fieldbus adapters	
K451	DeviceNet adapter
K454	PROFIBUS-DP adapter
K458	Modbus/ RTU adapter
K475	Ethernet adapter (EIP,Modbus/TCP,PROFINET, 2-port)
K490	Ethernet/IP Adapter, 2 Port
K491	Modbus/ TCP Adapter, 2 Port
K492	Profinet IO Adapter, 2 Port
Input/output - 1 slots available for I/O options	
L501	External 24 V AC and DC (2 x RO and 1 x DO)
L512	115/230 V digital input (6 x DI and 2 x RO)
L523	External 24 V and isolated PTC interface
L525	Analog signal extension (3 x AI and 2 x AO)

Ratings, types and voltages

ACQ580-3P

3-phase U1 = 380 to 480V. Power ratings are valid at nominal output voltage UN = 460 V
50/60 Hz

Type Code	Light-Duty Ratings ⁽¹⁾⁽³⁾		Heavy Duty Output Ratings ⁽²⁾⁽³⁾		Frame Size	Drawing Reference	UL Type 12 IP54 Dimensions (+C260)			
	I _{LD}	P _{LD}	I _{HD}	P _{HD}			Height (H) Type 12	Width (W) Type 12	Depth (D) Type 12	Weight Type 12
	A	Hp	A	Hp			in	in	in	lb
ACQ580-3P-07A6-4+C260	7.6	5	5.2	3	R3	Wall	48.0	20.5	21.2	256
ACQ580-3P-012A-4+C260	12	7.5	7.6	5	R3	Wall	48.0	20.5	21.2	256
ACQ580-3P-014A-4+C260	14	10	12	7.5	R3	Wall	48.0	20.5	21.2	256
ACQ580-3P-023A-4+C260	23	15	14	10	R3	Wall	48.0	20.5	21.2	256
ACQ580-3P-027A-4+C260	27	20	23	15	R6	Floor 1	81.0	15.8	25.6	428
ACQ580-3P-034A-4+C260	34	25	27	20	R6	Floor 1	81.0	15.8	25.6	428
ACQ580-3P-044A-4+C260	44	30	34	25	R6	Floor 1	81.0	15.8	25.6	428
ACQ580-3P-052A-4+C260	52	40	44	30	R6	Floor 1	81.0	15.8	25.6	428
ACQ580-3P-065A-4+C260	65	50	52	40	R6	Floor 1	81.0	15.8	25.6	428
ACQ580-3P-077A-4+C260	77	60	65	50	R6	Floor 2	81.0	15.8	25.6	428
ACQ580-3P-096A-4+C260	96	75	77	60	R8	Floor 2	83.0	24.0	25.6	710
ACQ580-3P-124A-4+C260	124	100	96	75	R8	Floor 2	83.0	24.0	25.6	710
ACQ580-3P-156A-4+C260	156	125	124	100	R8	Floor 2	83.0	24.0	25.6	710
ACQ580-3P-180A-4+C260	180	150	156	125	R8	Floor 2	83.0	24.0	25.6	710
ACQ580-3P-240A-4+C260	240	200	180	150	R11	Floor 3	90.9	39.4	25.6	1395
ACQ580-3P-302A-4+C260	302	250	240	200	R11	Floor 3	90.9	39.4	25.6	1395
ACQ580-3P-361A-4+C260	361	300	302	250	R11	Floor 3	90.9	39.4	25.6	1395
ACQ580-3P-414A-4+C260	414	350	361	300	R11	Floor 3	90.9	39.4	25.6	1395
ACQ580-3P-477A-4+C260	477	400	414	350	R11	Floor 3	90.9	39.4	25.6	1395

Notes:

1) Nominal Rated output current available continuously without overloadability.

ILD Continuous rms output current allowing 110% overload for 1 minute every 10 minutes

PLD Typical motor power in light-duty use (110% overload). The horsepower (hp) ratings apply to most NEMA 4-pole motors.

2) Heavy duty is 150% Overload for 1 Minute

IHD Continuous rms output current allowing 150% overload for 1 minute every 10 minutes

PHD Typical motor power in heavy-duty use (150% overload).

3) Ratings apply up to ambient temperature of 40°C (104°F). Derating for higher altitudes, ambient temperatures, or switching frequencies, see the ACQ580-01 Drives Hardware Manual, document code: 3AXD50000044862.

**3-phase U1 = 380 to 480V. Power ratings are valid at nominal output voltage UN = 460 V
50/60 Hz**

Type Code	US Government Compliance		
	IIJA/ BABA ⁽¹⁾	BAA ⁽²⁾	TAA ⁽³⁾
ACQ580-3P-07A6-4+C260	N	Y	Y
ACQ580-3P-012A-4+C260	N	Y	Y
ACQ580-3P-014A-4+C260	N	Y	Y
ACQ580-3P-023A-4+C260	N	Y	Y
ACQ580-3P-027A-4+C260	Y	Y	Y
ACQ580-3P-034A-4+C260	Y	Y	Y
ACQ580-3P-044A-4+C260	Y	Y	Y
ACQ580-3P-052A-4+C260	Y	Y	Y
ACQ580-3P-065A-4+C260	Y	Y	Y
ACQ580-3P-077A-4+C260	Y	Y	Y
ACQ580-3P-096A-4+C260	Y	Y	Y
ACQ580-3P-124A-4+C260	Y	Y	Y
ACQ580-3P-156A-4+C260	Y	Y	Y
ACQ580-3P-180A-4+C260	Y	Y	Y
ACQ580-3P-240A-4+C260	Y	Y	Y
ACQ580-3P-302A-4+C260	Y	Y	Y
ACQ580-3P-361A-4+C260	Y	Y	Y
ACQ580-3P-414A-4+C260	Y	Y	Y
ACQ580-3P-477A-4+C260	Y	Y	Y

Notes:

- 1) The drive types listed as IIJA/BABA are Manufactured in the U.S and the cost of the components manufactured in the U.S. are greater than 55% of the total component cost.
- 2) The drive types listed as BAA are manufactured in the USA and deemed Commercially Available Off-the-Shelf (COTS) items that are NOT predominately iron, and steel products as defined under Federal Acquisition Regulation (FAR) 2.101,
- 3) The drive types listed as TAA are Manufactured in the USA or other designated country allowed under TAA. All ABB Variable Frequency Drives listed in this statement have been determined TAA compliant. This statement applies only to VFDs and Cabinets with the 10-digit SN starting with 1xxxxxxx or 2xxxxxxx.

Technical specifications

ACQ580-3P

Enclosure Compliance	
ACQ580-3P	UL508A
Supply connection	
Voltage and power range	
Input voltage (U1)	440-480 V
ACQ580-3P-xxxA-4	
Input voltage tolerance	10% / -15%
Line Limitations	Max ±3% of nominal phase to phase input voltage
Power Factor (cos Φ) at nominal load	
ACQ580-31/-34	1.0
Efficiency at rated power	98%
ACQ580-31/-34	
Short Circuit Current Rating	65 kAIC SCCR (With Standard Circuit Breaker)
Fused Disconnect	Fusible Disconnected Increases SCCR to 100 kAIC
Motor connection and control	
Supported motor control	Scalar and vector
Supported motor types	Asynchronous motor, permanent magnet motor (vector), SynRM (vector), PMaSynRm (vector)
Voltage	3-phase, from 0 to supply voltage
Frequency	0 to 598 Hz
Short Term Overload Capacity Variable Torque	110% for 1 min/10min
Peak Overload Capacity Variable Torque	1.35 for 2 second (2 sec / 1 minute)
Switching Frequency	2 - 12 kHz Automatic fold back in case of overload
Acceleration/Deceleration Time	0 to 1800 s
Safety	
Safe Torque Off (STO)	
STO Standard Input	17...30 VDC, 55mA
Degree of Protection	
Enclosure types (UL 508A)	UL (NEMA) Type 1/12

Inputs and outputs1 ACQ580-31/34	
2 analog inputs	Selection of Current/Voltage input mode is user programmable.
Voltage reference	0 (2) to 10 V, Rin > 200 kΩ
Current reference	0 (4) to 20 mA, Rin = 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 reference	0 to 10 V, Rload: > 100 kΩ
Current reference	0 to 20 mA, Rload: < 500 Ω
Applicable potentiometer	1 kΩ to 10 kΩ
Internal auxiliary voltage	24 V DC ±10%, max. 250 mA
Accuracy	+/- 1% full scale range at 25°C (77°F)
Output updating time	2 ms
6 digital inputs	12 to 24 V DC, 10 to 24 V AC, Connectivity of PTC sensors supported by a single digital input. PNP or NPN connection (5 DIs with NPN connection). Programmable
Input Updating Time	2 ms
3 relay outputs	Maximum switching voltage 250 V AC/30 V DC. Maximum continuous current 2 A rms. Programmable, Form C
Contact material	Silver Tin Oxide (AgSnO2)
PTC, PT100 and PT1000	Any of the analog inputs, or digital input 6, are configurable for PTC with up to 6 sensors.
Adjustable filters on analog inputs and outputs	
All control inputs isolated from ground and power	
1 ACQ580-31/34 Inputs/Outputs may be in use by pilot devices	

Product Compliance	
Standards and directives	
UL508A	
Quality assurance system ISO 9001 and	
Environmental system ISO 14001	
Galvanic isolation according to PELV	
RoHS2 Directive 2011/65/EU (Restriction of Hazardous Substances)	
Safe torque off (EN 61800-5-2: 2016)	
BABA, BAA (IIJA) and IRA compliant (Not BABA for ACQ580-3P wall mount units)	
Operation	
Air Temperature	-15 to +40 °C (5 to 104 °F) 0 to -15 °C (32 to 5 °F) No Frost Allowed Output derated above +40°C (104°F)
Installation site Altitude	0 to 1000 m (3281 ft) above sea level
Relative Humidity	5 to 95% No condensation allowed Maximum relative humidity is 60% in the presence of corrosive gasses
Atmospheric pressure	70 to 106 kPa (10.2 to 15.4 PSI) 0.7 to 1.05 atmospheres
Environmental protections (ACQ580)	
Chemical Gasses	Chemical Gasses C4 (IEC60721-3-3 edition 3 / ISO 9223) 3C3 (IEC60721-3-3 edition 2) G3/GX up to 2300 Å /30d corrosivity (ANSI-ISA 71.04)
Solid Particles	Class 3S2 No conductive dust allowed
Pollution degree (IEC/EN 61800-5-1)	Pollution degree 2
Storage (in Protective Shipping Package)	
Air Temperature	-40 to +70°C (-40 to +158°F)
Relative Humidity	Less than 95% No condensation allowed Maximum relative humidity is 60% in the presence of corrosive gasses
Atmospheric pressure	70 to 106 kPa 0.7 to 1.05 atmospheres
Transportation (in Protective Shipping Package)	
Air Temperature	-40 to 70 °C (-40 to 158 °F)
Relative Humidity	Less than 95% No condensation allowed Maximum relative humidity is 60% in the presence of corrosive gasses
Atmospheric Pressure	60 to 106 kPa (8.7 to 15.4 PSI) 0.6 to 1.05 atmospheres

ACQ580 CUSTOM PACKAGED DRIVES

ACQ580 CUSTOM PACKAGED DRIVES

Designed to meet your requirements



Choose the enclosure type and style that is needed for the project

Built to UL508A

Wide selection of optional features designed specifically for water and wastewater applications

Due to the project and specified nature of the water and wastewater industry, ABB frequently provides custom drive packages built around any wall-mounted drive or drive module in the ACQ580 lineup. We have a dedicated custom quotations and project team that will assist in preparing bids and following a project through to completion. Speak with your local sales contact for more information.

With custom packaged drives, the feature possibility is near endless. Some popular options include:

- Output line reactors or dV/dt filters
- Pilot lights and push buttons (available in 22mm and 30mm push-to-test designs)
- Speed potentiometers and hand-off-auto selector switches
- Metering options
- Surge suppressors
- Control transformers
- Cabinet lighting
- Thermostats and temperature function devices
- Softstart and traditional bypass configurations

ACCESSORIES AND OPTIONS

CONTROL PANEL OPTIONS AND MOUNTING KITS

The standard delivery of the ACQ580 includes the assistant control panel, but it can be replaced by other control panels.



Hand-Off-Auto control panel, ACH-AP-H
ACH-AP-H is included in the delivery. USB connection as standard.



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. Together users can, for example, commission and monitor the drive remotely.



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.



Panel bus adapter, CDPI-01
The panel bus adapter is an ideal choice if there is a need to control multiple drives with a single control panel. The panel bus adapter also offers simplicity for cabinet installations because it can be used with a door mounted control panel to operate the drive easily and safely.



Blank control panel, CDUM-01
The blank control panel can be used for covering the control panel slot if no control panel or panel bus adapter is needed.



Control panel door 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. It is suitable for mounting on UL (NEMA) Type 3R, 4 or 4X rated enclosures made with UV resistant materials.



Water control panel door mounting kit DPMP-06-EXT-Q
This kit allows remote mounting of the control panel on a larger enclosure or remotely. The kit contains one DPMP-06 (door mounting platform), one CDPI-01 (panel bus adapter) and a 3m connection cable. The platform is Water branded.



Water control panel door mounting kit DPMP-07-Q
This kit allows remote mounting of the control panel on a larger enclosure or remotely for ACQ580-04 modules. The kit contains one DPMP-07 and a 3m connection cable. The platform is Water branded.



Water control panel door mounting kit for indoor UL (NEMA) Type 4X installation DPMP-08-EXT-Q
This control panel holder kit is IP69k rated for use with UL (NEMA) type 4X rated enclosures. It is NSF169 rated for splash zones, washdown duty and chemical resistance. It is not UV resistant. The kit contains one DPMP-08 (door mounting platform), one ECPI-01 (panel bus adapter) and a 3m connection cable. The platform is Water branded.



Control panel mounting platform, DPMP-01
This mounting platform is for surface mountings. This also requires CDPI-01 (panel bus adapter) and a control panel (assistant, basic, Bluetooth or industrial).



Door mounting kit, DPMP-EXT
The door mounting kit is ideal for cabinet installations. A kit for one drive includes one DPMP-02 (control panel mounting platform) and one CDPI-01 (blank control panel cover with RJ-45 connector).

DOOR MOUNTING AND DAISY CHAINING

Improve safety and leverage the full potential of the ACQ580 control panel options with a door mounting kit and 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 behind the closed door. Up to 32 drives can be connected to one control panel for even

easier and quicker operation. When daisy chaining the drives, you need only one assistant control panel.

The rest of the drives can be equipped with panel bus adapters.

Cabinet door

Water cabinet mounting panel kit, DPMP-06-EXT-Q

The kit contains one DPMP-06 (door mounting platform), one CDPI-01 (panel bus adapter) and a 3m connection cable.

Assistant control panel

The assistant control panel is delivered as standard with the ACQ580 drives. Also a Bluetooth or industrial control panel can be used.

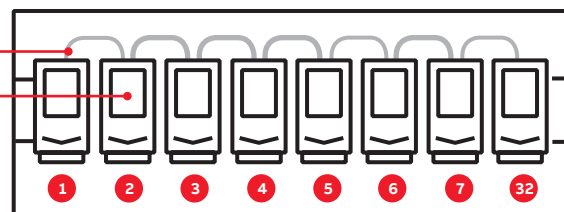
RJ-45 cable for daisy chaining drives

Panel bus adapter, CDPI-01

The panel bus adapter can be ordered with a plus code +J424 or with an MRP code 3AXD50000009843 as a loose option.



Cabinet, outside



Cabinet, inside

Control panel options

The ACH-AP-H Hand-Off-Auto control panel is included as standard in the delivery.

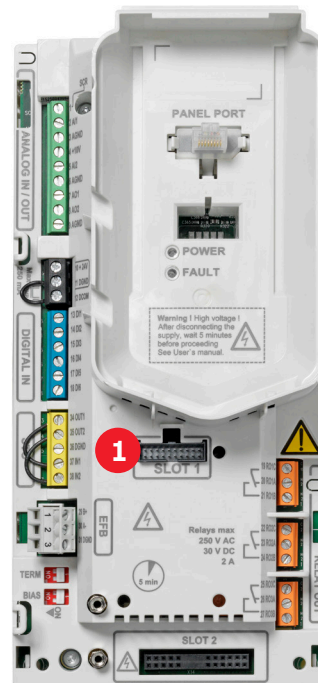
If no code is mentioned in the ACQ580 order, the assistant control panel is automatically added to the delivery. It can be replaced by one of the other +Jxxx options listed below.

Option code	Description	Type designation
	The Hand-Off-Auto control panel as standard in the delivery	ACH-AP-H
+J429	Control panel with Bluetooth interface	ACH-AP-W
+J425	Assistant Control panel with local/remote -logic	ACS-AP-I
+J424	Blank control panel cover (no control panel delivered)	CDUM-01
3AXD50000004419	Panel bus adapter	CDPI-01
3AUA0000108878	Control panel mounting platform (flush mounted, requires panel bus adapter)	DPMP-01
3AXD50000217717	Control panel door mounting kit (Outdoor UL/NEMA 3R, 4 and 4X (IP66), requires panel bus adapter)	DPMP-04
3AXD50000240319	Control panel door mounting kit (Outdoor UL/NEMA 3R, 4 and 4X (IP66), requires panel bus adapter) For AQ580-04 only.	DPMP-05
3AXD50000010763	Control Panel door mounting kit (Contains DPMP-02 & CDPI-01)	DPMP-EXT
3AXD50000361649	Water control panel door mounting kit (Contains DPMP-06 and CDPI-01)	DPMP-06-EXT-Q
3AXD50000371051	Water control panel door mounting kit (Contains DPMP-06 and CDPI-01) For ACQ580-04 only.	DPMP-07-Q
3AXD50000854912	Water control panel door mounting kit (Indoor UL/NEMA 4X/NSF169 washdown (IP69k), contains DPMP-08 and CDPI-01)	DPMP-08-EXT-Q

COMMUNICATION MODULES

Fieldbus adapter modules

The ACQ580 comes with Modbus RTU fieldbus interface as standard, and it is also compatible with a wide range of additional fieldbus protocols. Fieldbus communication reduces wiring costs compared to traditional hardwired input/output connections. The fieldbus options can be installed into slot one (1).



FIELDBUS OPTIONS



Plus code	Fieldbus protocol	Adapter
+K451	DeviceNet™	FDNA-01
+K454	PROFIBUS DP. DPV0/DPV1	FPBA-01
+K458	Modbus RTU	FSCA-01
+K475	Two port Ethernet (Ethernet/IP, Modbus/TCP, PROFINET)	FENA-21
+K490	Two port Ethernet/IP	FEIP-21
+K491	Two port Modbus/TCP	FMBT-21
+K492	Two port PROFINET IO	FPNO-21

FIELDBUS PROTOCOLS

EMBEDDED FIELDBUS INTERFACE

Fieldbus protocol	Features	Connector type	
 (RTU)	The embedded interface acts as a Modbus/RTU server with support for ABB drives profiles	Screw terminal	As standard

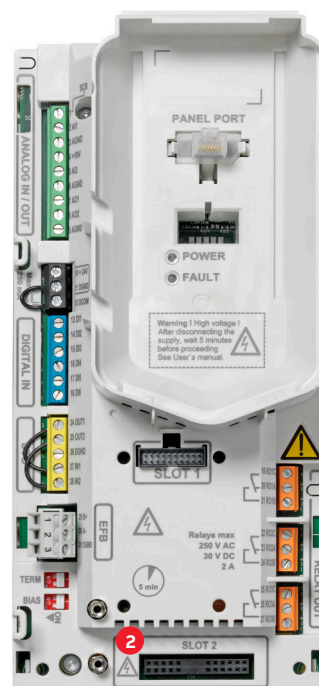
THE F-SERIES FIELDBUS ADAPTER MODULES

Fieldbus protocols	Features	Connector type	Typecode /+Code
	- The interface module acts as an EtherNet/IP™ server with support for ODVA AC/DC drive and ABB drive profiles - Supports both explicit messaging where each attribute of a class is set individually, and implicit messaging using input and output instances - Support device-level ring (DLR) - Has 2 RJ45 connections with an integrated switch - Has Add-On Instructions available	2 x RJ45	FEIP-21 +K490
	- PROFINET® IO is an open standard for Industrial Ethernet - Used from process automation to motion control, as well as for functional-safety solutions - Supports PROFIdrive and ABB drive profiles - Has 2 RJ45 connections with an integrated switch - S2 System redundancy - Supports ring topology with Media Redundancy Protocol (MRP) - Supports PROFI-safe with optional FSPS-21	2 x RJ45	FPNO-21 +K492
	- DeviceNet™ offers robust, efficient data handling since it is based on a Produce/Consume model - Uses CAN (Controller Area Network) as the backbone technology and defines an application layer to cover a range of device profiles - Supports ODVA AC/DC drive and ABB drives profiles	Screw terminal	FDNA-01 +K451
 (TCP)	- The interface module acts as a Modbus® TCP server with support for ABB drive profiles - Common read/write single and multiple register function codes are supported - Has 2 RJ45 connections with an integrated switch	2 x RJ45	FMBT-21 +K491
	Common read/write single and multiple register function codes are supported	Screw terminal	FSCA-01 +K458
	- PROFIBUS® DP is the most widely used industrial network - ABB drives support PROFIBUS DP-V0 and DP-V1 - Supports PROFIdrive and ABB drives profiles	D-SUB 9	FPBA-01 +K454
  (TCP)	- Supports the Ethernet IP, Modbus/TCP, and ProfiNet IO communication protocols 10 Mbit/s and 100 Mbit/s data transfer rates - automatically detects the data transfer rate used in the network. - Has 2 RJ45 connections - Twisted pair as the physical media in either a star or daisy chain topology. - The module's minimum RPI is 1 ms.	2 x RJ45	FENA-21 +K475

CONNECTIVITY MODULES

Input/output extension modules

Standard input and output can be extended by using optional analog and digital input/output extension modules. The modules are easily installed in the extension slot two (2) located on the drive.



OPTIONS

Plus code	Description	Type designation
+L501	External 24 V AC and DC 2 x RO and 1 x DO	CMOD-01
+L523	External 24 V and isolated PTC interface	CMOD-02
+L512	115/230 V digital input 6 x DI and 2 x RO	CHDI-01
+L525	Analog signal extension 3 x AI and 2 x AO	CAIO-01

CMOD-01



CMOD-02



CHDI-01



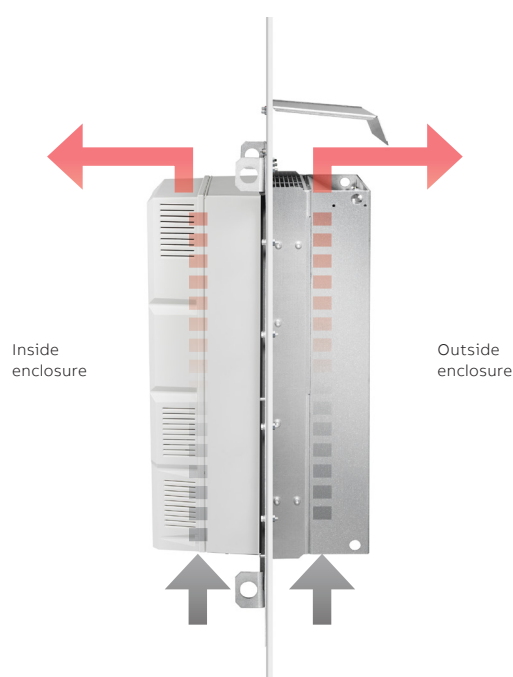
CAIO-01



ACQ580 Standard	Option modules			
	CMOD-01	CMOD-02	CHDI-01	CAIO-01
Digital Inputs	6			
Digital outputs	0	1		
Analog Inputs	2			3
Analog outputs	2			2
Relays	3	2	2	
External 24V*	1	1		
PTC input		1		
120/230V DI			6	

*24 VDC/AC external input to keep control unit powered when main power is removed from the drive by keeping keypad, controls, and communications powered up

FLANGE MOUNTING



The ACQ580 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. This mounting method minimizes the needs for cabinet cooling and decreases the installation cost.

The flange mounting option is only compatible with the standard UL (NEMA) Type 1 / IP21 units. It maintains the UL (NEMA) Type 12 / IP55 protection class on the backside of the drive, while the front side of the drive maintaining UL (NEMA) Type Open / IP20. The option is available as a loose item.

ACQ580-01

Ordering code	Description
FMK-A/B-R1 580	R1 Frame Flange mounting kit
FMK-A/B-R2 580	R2 Frame Flange mounting kit
FMK-A/B-R3 580	R3 Frame Flange mounting kit
FMK-A/B-R4 580	R4 Frame Flange mounting kit
FMK-A/B-R5 580	R5 Frame Flange mounting kit
FMK-A/B-R6 580/880	R6 Frame Flange mounting kit
FMK-A/B-R7 580/880	R7 Frame Flange mounting kit
FMK-A/B-R8 580/880	R8 Frame Flange mounting kit
FMK-A/B-R9 580/880	R9 Frame Flange mounting kit

A separate flange mounting kit is available for the UL Type 4X.

ACQ580-01...+B066

Ordering code	Description
FMK-C-R1 580 4X IP69	Flange mounting kit R1 Frame
FMK-C-R2 580 4X IP69	Flange mounting kit R2 Frame
FMK-C-R3 580 4X IP69	Flange mounting kit R3 Frame

ACQ580-31

Ordering code	Description
FMK-R3-580-31/880-X1	R3 Frame Flange Mounting Kit for ACQ580-31 UL Type 1 Drives
FMK-R6-580-31/880-X1	R6 Frame Flange Mounting Kit for ACQ580-31 UL Type 1 Drives
FMK-R8-580-31/880-X1	R8 Frame Flange Mounting Kit for ACQ580-31 UL Type 1 Drives

TOOLS

For configuration, monitoring and process tuning

ACQ580 has various tools to simplify the commissioning, operation and monitoring of the drive.



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 ACQ580. The power is supplied by a PC USB port.



Connection with cable

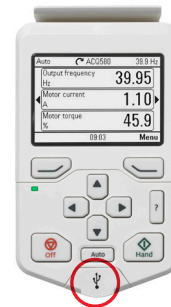
Using the BCBL-01 cable, the PC can be connected directly to the RJ-45 panel port on the ACQ580 drive.



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 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.

Description	Type designation
PC cable, USB to RJ45	BCBL-01
Cold configurator adapter, packed kit	CCA-01
Drive Composer pro PC tool (single user license)	DCPT-01

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

DRIVETUNE MOBILE

User-friendly experience with Bluetooth connectivity



- Startup, commission and tune your drive and application with full parameter access

- Optimize performance via drive troubleshooting features

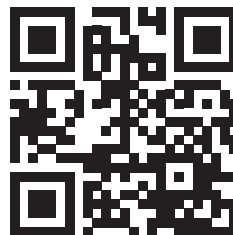
- Create and share backups and support packages

- Keep track of drives installed base

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.

Download Drivetune



Drivetune for commissioning and managing drives

CHOOSE THE RIGHT MOTOR FOR YOUR APPLICATION

ABB's line of Baldor-Reliance pump motors serve customer needs from commercial swimming pools to very demanding water / wastewater and petrochemical applications. The motors are available locally in a variety of enclosures and ratings. These motors are designed to the same reliable industrial standards that ABB customers have come to expect.



Jet pump

1/3 - 3Hp (.25-2.2kW) Used for commercial and industrial pumping applications. All come with corrosion resistant stainless shaft.



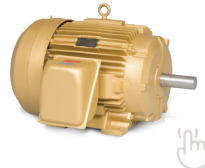
EC Titanium™

1-20Hp (.75-15kW)
Highly efficient variable speed AC motor available in the market today. Available as integrated motor-drive package or stand-alone design. (IP54)



Closed-coupled motors

1-75Hp (.75-56kW) For commercial and industrial pump applications requiring JM, JP and West Coast Fit.



General purpose

1/12-250Hp (.06-186kW)
Designed for use in a wide variety of industrial applications, these motors are durable and reliable. (IP44)



Inverter-Duty close coupled pump

1-50Hp (.75-37kW) Internal AEGIS bearing protection ring used for bearing current mitigation ideal for variable speed pumping applications.



Severe Duty XT

1-300Hp (.75-22kW)
Versatile motor with severe duty features - this motor is ideal for wastewater applications. (IP54)



P-based vertical solid shaft pump

3-75Hp (2.2-56kW)
Severe duty construction for harsh environment. Normal, medium and high thrust applications. (IP55)



Close coupled pump washdown

25-75Hp (19-56kW)
IP55 totally enclosed pump ideal for wet and corrosive environments. (IP55)



Submersible motors

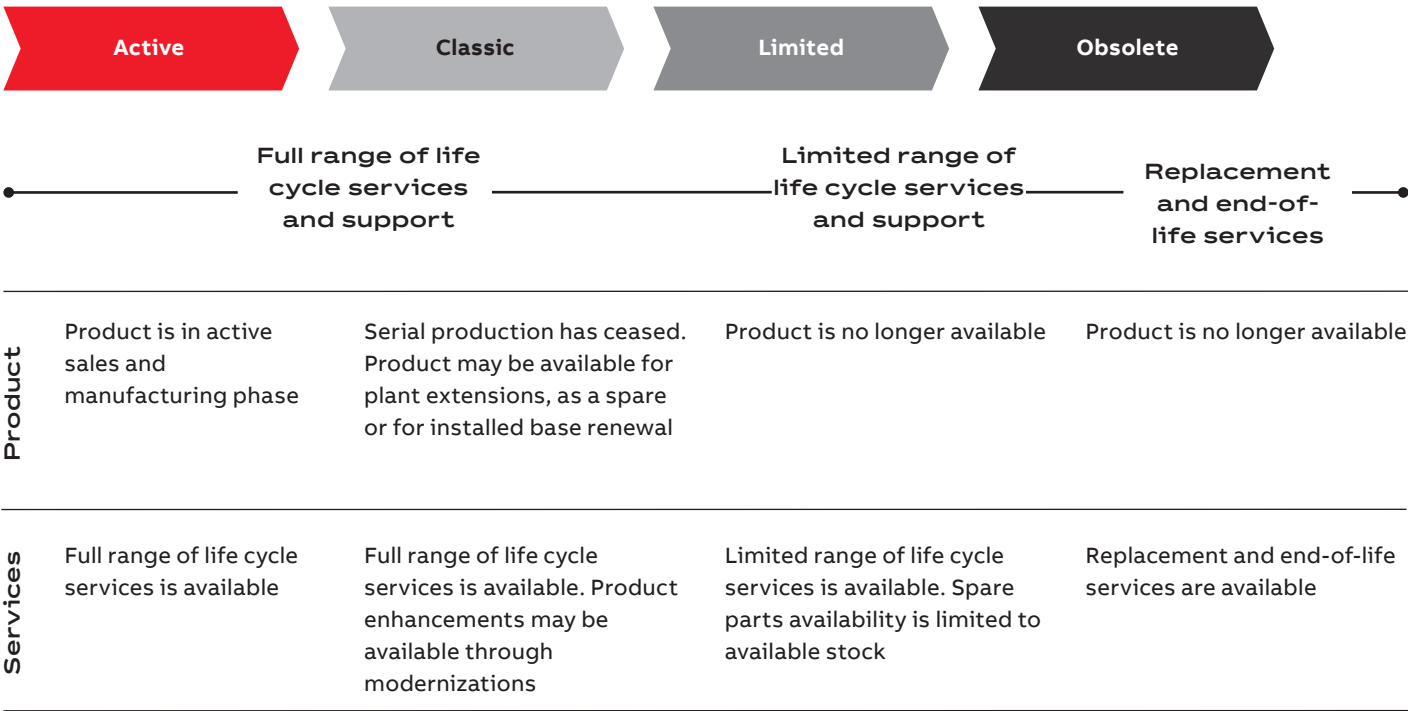
1-100Hp (.75-75kW)
Ideal for slurry pumps and wet pit applications, this motor can be submerged for continuous duty in water or sewage. (IP68)

ABB DRIVES LIFE CYCLE MANAGEMENT

A life time of peak performance

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

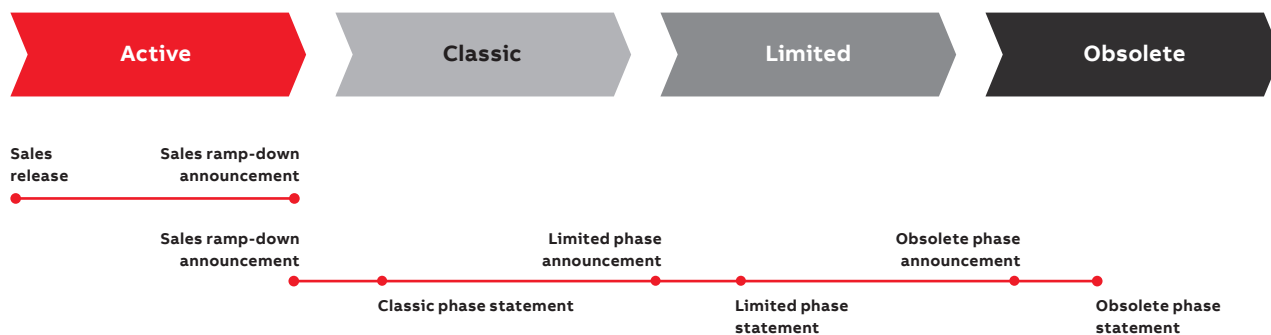
Now it's easy for you to see the exact service and maintenance available for your drives.



Keeping you informed throughout the life cycle

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

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



Sales release

Details about product portfolio and release schedule.

Sales ramp down announcement

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

Life cycle phase change announcement

Early information about the upcoming life cycle phase change and affects on the service availability. Informed well in advance, minimum six months prior to the change.

Life cycle phase statement

Information about the current life cycle status, product and services availability and recommended actions. Plan for the next life cycle phase transition.

SERVICES

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.

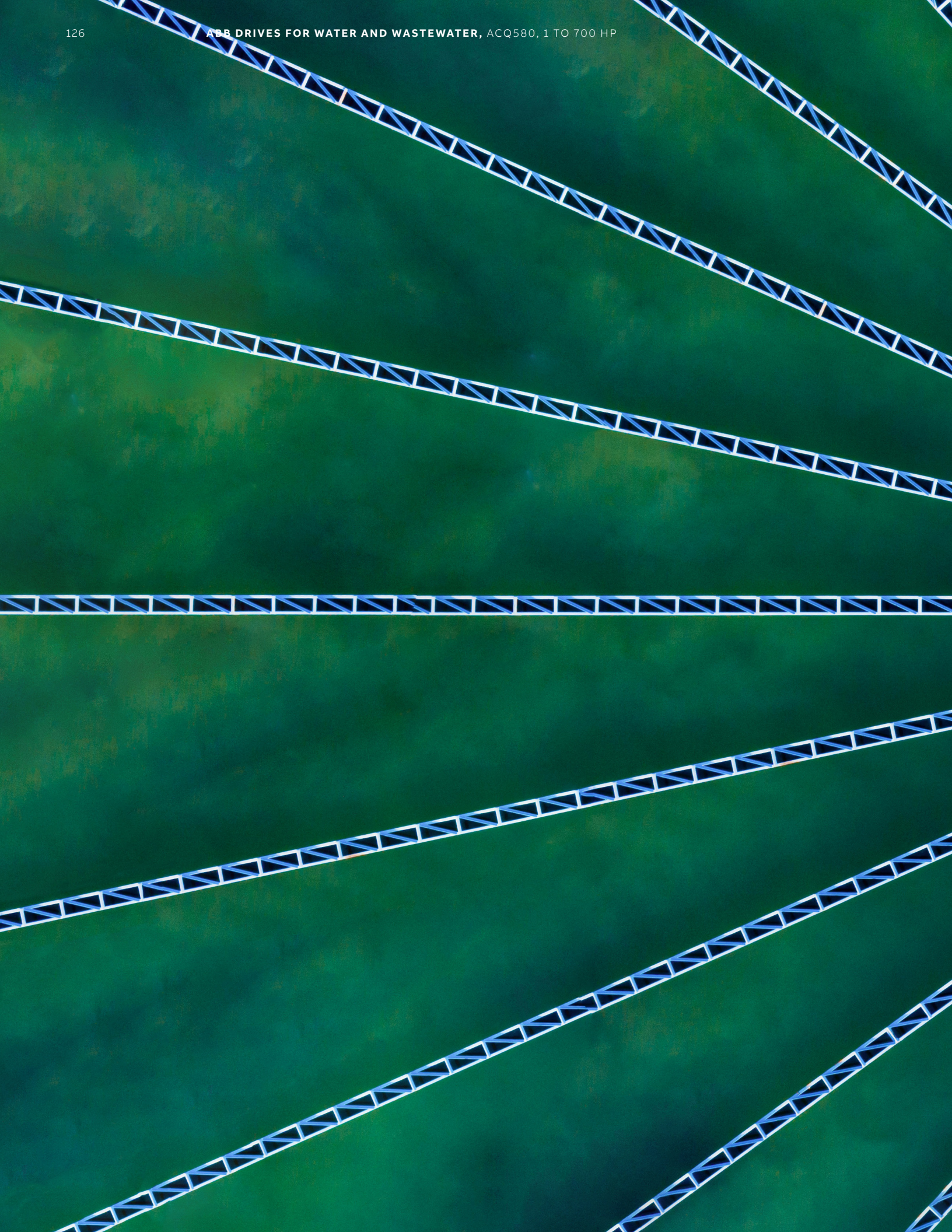
Digitalization enables new smart and secured ways to prevent unexpected downtime while optimizing the operation and maintenance of your assets. We securely connect and monitor your motors, drives or your entire powertrain to our easy to use cloud service solutions. Connecting your applications also gives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

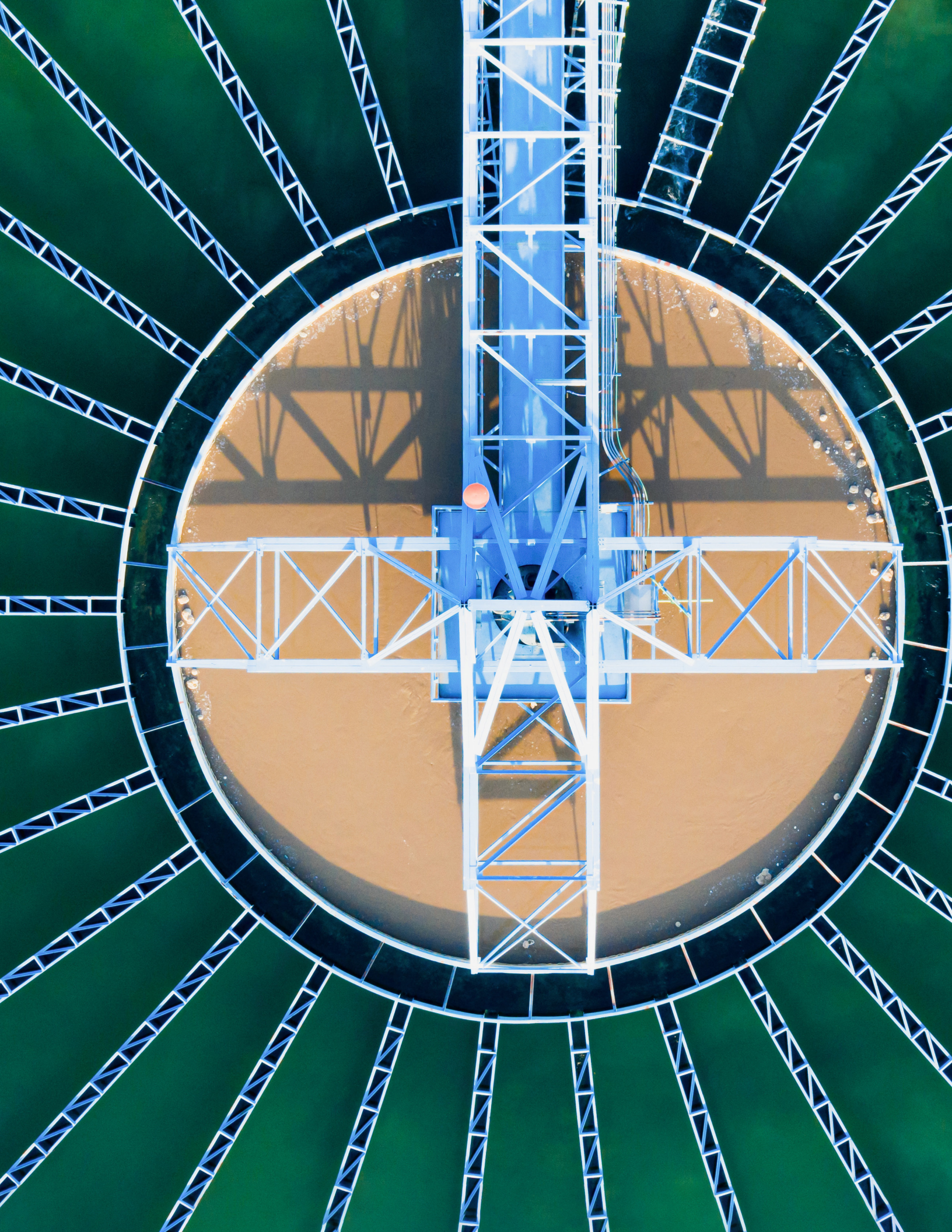
We quickly respond to your service needs. Together with our partners, local field service experts, and service workshop

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.









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

new.abb.com/drives

new.abb.com/drives/drivespartners

new.abb.com/motors-generators

Online manuals for wall-mounted ACQ580-01 drives



Online manuals for ACQ580-04 drive modules



Online manuals for wall-mounted ACQ580-31 ultra-low harmonic drives



Online manuals for ACQ580-34 ultra-low harmonic drive modules

