A reliable system is critical to protecting, supplying and recycling water. The world trusts you to make good decisions and you take that responsibility seriously. We’ll help optimize your system to run efficiently and provide the value and dependability you demand.

Who you choose matters.
Easy low harmonic solution

ABB’s low harmonic drives offer an easy low harmonic solution that is incorporated in the drive. These drives use harmonics mitigation technology that does not require external filters or multi-pulse transformer. The low harmonic drives produce exceptionally low harmonic content in the drive input, with a total current distortion of less than 5.0%. The low harmonic drives thus provide you with a simple, cost efficient solution to meet stringent power quality standards.

Highlights

− Easy solution for minimum harmonic content
− Direct connection to the network
− No complex multi-winding transformer required
− No external filter equipment required
− Exceeds EN 61000-3-12 and IEEE519 requirements
− Genuine unity power factor - no compensation needed
− Voltage range from 208 to 690 V (except ACQ800-37: 380 to 500 V)

Perfect line current - clean network

In a conventional frequency converter with a six-pulse diode bridge as a rectifier, the network side current is not sinusoidal, and has significant harmonic content, especially fifth and seventh harmonics. This is shown by the typical current distortion, which can be 30 – 50% in total. In an ABB low harmonic drive, the use of DTC principles, together with a low pass filter, will suppress the current harmonic content leaving distortion of less than 5%. The resulting clean sinusoidal current will therefore cause little or no distortion on the network voltage waveform.

Wall-mounted low harmonic drive

ACQ800-U31, 7.5 to 125 hp

The ACQ800-U31 is a low harmonic drive in a single, complete wall-mounted package. It has all the important features and options, including EMC filters and I/O extension modules, built inside the drive. It is available with the IP21 protection class.

Cabinet-built low harmonic drive

ACQ800-37, 60 to 550 hp

The ACQ800-37 cabinet-built drive is a low harmonic solution with a wide range of standardized configurations and is available with IP21, IP42 and IP54 protection classes.

Cost savings

We designed our solutions to give you the most flexible motor control performance through two standard modes: Scalar (V/Hz) for typical pumps and Sensorless Vector for the more demanding applications. Through either of these, you will have accurate speed control of any standard induction motor.

Save energy by applying variable electronic speed control to your pumps and pumping systems. These savings can be achieved over bypass or valve-operated flow control, traditional diesel driven systems or across the line operations. The Affinity Laws of physics define the relationship between pumps and the power they require. On centrifugal pump applications, the power requirement of the pump varies by the cube of the speed. Electronically reducing the pump speed by 20% will typically cut energy costs in half.
### Technical data

#### Mains connection

| Voltage and power range | 3-phase, \( U_{2\text{IN}} = 208 \text{ to } 240 \text{ V}, \pm 10\% \), except -37  
| | 3-phase, \( U_{5\text{IN}} = 380 \text{ to } 500 \text{ V}, \pm 10\% \)  
| | 3-phase, \( U_{7\text{IN}} = 525 \text{ to } 690 \text{ V}, \pm 10\% \), except -37  
| | (600 V UL, CSA)  
| Short Circuit Current Rating (SCCR) | ACQ800-U31 = 65ka  
| | ACQ800-37 = 100ka  
| Frequency | 48 to 63 Hz  
| Nominal Impedance | 3% Nominal Impedance  
| Power factor | \( \cos \phi = 1 \) (fundamental)  
| | \( \cos \phi = 0.99 \) (total)  
| Efficiency (at nominal power) | 97%  

#### Motor connection

| Voltage | 3-phase output voltage \( 0\ldots U_{2\text{IN}} / U_{5\text{IN}} / U_{7\text{IN}} \)  
| Frequency | 0...±300 Hz  
| Field weakening point | 8...300 Hz  
| Motor control | ABB's exclusive Direct Torque Control (DTC)  
| Torque control | Torque step rise time  
| Open loop | <5 ms with nominal torque  
| Closed loop | <5 ms with nominal torque  
| Non-linearity: | \( \pm 4\% \) with nominal torque  
| Open loop | \( \pm 1\% \) with nominal torque  
| Closed loop | Static accuracy  
| Speed control | 10% of motor slip  
| Open loop | Dynamic accuracy  
| Closed loop | 0.3...0.4 sec. with 100% torque step  
| Open loop | 0.1...0.2 sec. with 100% torque step  

#### Environmental

| Ambient temperature | -40...+70°C  
| Transport | -40...+70°C  
| Storage | -15...+50°C, no frost allowed  
| Operation | 40...50°C at reduced output current (1% / 1°C)  
| Cooling method | Dry clean air  
| Attitude | 0...1000 m  
| | 1000...4000 m  
| without derating | with derating – (1% / 100 m) (690 V units 1000...2000 m with derating)  
| Relative humidity | 5 to 95%, no condensation allowed  
| Protection class | UL Type 1  
| UL Type 1 filtered | option for -U31,-37  
| UL Type 12 | option for -37  
| Paint color | -37: RAL 7035  
| | -U31: NCS 1502-Y  
| Contamination levels | No conductive dust allowed  
| Storage | IEC60721-3-1, Class 1C2 (chemical gases), Class 1S2 (solid particles)  
| Transportation | IEC60721-3-2, Class 2C2 (chemical gases), Class 2S2 (solid particles)  
| Operation | IEC60721-3-3, Class 3C1/3C2* (chemical gases), Class 3S2 (solid particles)  
| | C = chemically active substances  
| | S = mechanically active substances  

#### Product compliance

- UL & cUL (508A or 508C) and CSA C22.2 No.14-95, C-Tick, GOST R  
- NEC 430.126(A)(2) Motor Overtemperature Protection  
- Quality assurance system ISO 9001 and Environmental system ISO 14001  
- CE (Available)  
- Machinery Directive 98/37/EC  

**EMC (according to EN 61800-3)**

2nd environment, unrestricted distribution category C3 as standard in -37 (frame sizes R7i-nxR8i), option in the others 1st environment, restricted distribution category C2 as option up to 1000 A input current.