

PRODUCT DATA SHEET

ABB irrigation drive package

ACQ580 3R Ultra-Low Harmonic irrigation drives, 40 to 150 hp



Easy-to-use drives that deliver unity power factor with 3% or less THID to help your system meet IEE519 and provide reliable pump control are vital to the health of your crops and your bottom line. ABB drives help you protect your investment by safeguarding your system and enabling it to run efficiently to provide the value and dependability you demand.

There's no need to mitigate harmonics if you barely create them to begin with. It's not a problem with ABB Ultra-Low Harmonic (ULH) drives.

Rugged reliability for remote areas

It's critical to your livelihood to have water when and where you need it and to meet regulatory requirements. That's why it's imperative to use equipment that can meet low harmonic standards, has been through rigorous factory testing and can stand up to the elements. ABB's outdoor NEMA/UL Type 3R rated enclosure eliminates the need for solar shielding, includes a thermostatically controlled heater to protect against condensation and a surge suppressor to defend against transient lightning strikes. A totally enclosed control area maintains a clean environment for the drive and low voltage control components to safeguard them from particles and ensure reliability.

Requirement ready

ABB Ultra-Low Harmonic irrigation drives deliver solutions for the challenges rural users routinely face while also helping your system meet stringent requirements like IEEE519. They are Service Entrance rated and equipped with built-in circuit breakers.

Protecting your crops

In the event of a pump system failure, minimizing downtime is imperative. ABB manufactures drives in the U.S., stocks them locally for efficient delivery and provides 24/7 technical support – because protecting your investment is our priority, too. When the drive is commissioned by an ABB Certified Start Up technician, you also benefit from an extend drive warranty.

Easy, efficient, and pump-prepared

ACQ580 ULH variable frequency drives bring the quality, reliability, ease of use, and energy savings you expect from ABB. Farmer First software simplifies start-up and make our drives more approachable, whether it's through an optional Bluetoothenabled keypad or any of the major communication protocols. Easy connectivity and diagnostics are at your fingertips. The ACQ580 ULH also contains built-in, irrigation specific pump features that ensure optimal operation of your pumping system.

- Incorporated EMC C2 filter allows first environment installation
- Meets the most stringent recommendations of IEEE519 at the drive terminals
- Does not require external harmonics mitigation devices
- Motor and PID primary settings for simple system set-up
- Pressure and flow control for easy, optimized pump control
- Irrigation-specific software features:
- First start assistants
- Pump supervision and protection functions
- Multiple ramp sets for submersible/turbine or booster pump control
- Motor heating mode to prevent motor condensation
- Process PID controller (two different primary settings), external PID controller and PID sleep / boost to ensure reliable output and balance

Standard Product Highlights

- Outdoor rated, NEMA/UL Type 3R certified enclosure
- Outdoor protection against falling rain, sleet, snow and external ice formation
- Farmer First irrigation-specific software, first start assistant and primary setting menu
- Built-in circuit breakers
- · Separate drive/control and cooling/ air flow sections enhance reliability
- Units are stocked at ABB
- 65 kAIC SCCR rated
- · Service Entrance rated for three phase four wire system
- Ambient temperature -20 to 40°C with heater, to 50°C with derate
- ABB ACQ580 irrigation drive with hand-off-auto keypad
- Pad-lockable disconnect and enclosure doors
- Surge/lightning protection
- Condensation heater
- Wall mounting
- Designed and assembled to UL508A

Additional Options

- Hand/Off/Auto selector switch
- Speed potentiometer
- Upgraded control power transformer with an extra 100 VA for customer use
- 12" floor mounting kit*
- · Additional control panel options; including Bluetooth-enabled*
- Connectivity option for any major protocol*
- I/O extension modules*

*Field installed item.

Ratings

| Type code UL Type 3R (NEMA 3R) | Normal Ratings | | Weight |
|-----------------------------------|----------------------|-----------------------|--------|
| | I _{Ld} A | Р _{LD} НР | lb |
| | | | |
| ACQ580-3P-052A-4+C192+F289 | 52 | 40 | 528 |

| ACQ580-3P-065A-4+C192+F289 | 65 | 50 | 528 |
|----------------------------|-----|-----|-----|
| ACQ580-3P-077A-4+C192+F289 | 77 | 60 | 528 |
| ACQ580-3P-096A-4+C192+F289 | 96 | 75 | 640 |
| ACQ580-3P-124A-4+C192+F289 | 124 | 100 | 640 |
| ACQ580-3P-156A-4+C192+F289 | 156 | 125 | 640 |
| ACQ580-3P-180A-4+C192+F289 | 180 | 150 | 640 |

Ratings apply at an ambient temperature of 40°C (104°F)

To achieve the rated motor power given in the table, the rated current of the drive must be

higher than or equal to the rated motor current.

I, D Continuous rms output current allowing 10% overload for 1 minute every 10 minutes.

P₁₀ Typical motor power in light-overload for 1 minute every 10 minutes.

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

solutions.abb/us-drives

Harmonic Distortion

How do you meet IEEE 519?

Methods of managing harmonic distortion

Active front end (ULH drive) Typical input current distortion 3 - 5 %

Multi-pulse

Typical input

6 pulse rectifier,

passive filter

Typical input

current

5 - 15 %

35 - 45 %

reduction

current

distortion

80 - 120%

Typical input

distortion

rectifiers

current

distortion 5 - 10 %



- Ultra-Low Harmonic drive (ULH) 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 background voltage distortion

18-pulse drive

- Three rectifiers mean more parts and increased complexity
- Better harmonic performance than lower multi-pulse configurations
- Sensitive to network voltage imbalances

6-pulse drives with passive filter

- Increases size and heat dissipation
- Harmonic performance is load-dependent
- Leading power factor can affect generator performance

6-pulse drive with reactors

6 pulse rectifier, input reactor Typical input current distortion



Reactors may be located on the AC line or a DC link choke in the drive May cause generator instability

6-pulse drive

- No harmonic reduction (e.g., line reactors, DC link choke or passive filter)
- Least expensive and simplest drive configuration
- Uses more current
- Causes generator instability

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