# *Description*

**3/4-1000 HP**

**iQp 1000**


The iQpump1000 drive was designed with the pump service operators and pump system owners in mind. iQpump1000 offers ease of setup and comprehensive pump and motor protection features.

The integrated pump-specific software and setup parameters allow the operator to set up specific control values for a wide range of applications. iQpump1000 will automatically adjust pump operating conditions, as the process variables change while still maintaining optimum pump performance and protection.

Most existing systems, which require constant pressure or flow control, are using bypass lines, pressure release values, throttling valves, or impeller trim adjustments. The most efficient method is pump speed control. Pump speed control will reduce energy consumption, while maintaining system optimization.

The iQpump1000 drive can be configured for Simplex, Duplex, Triplex, or up to an eight-pump system. One iQpump1000 drive can be used as a master, which can also control one or two secondary pump motors. The secondary pump motors can be connected using mechanical motor starters, reduced voltage soft starters, or additional iQpump1000 drives. The software is structured in such a way that it only has a few basic pump parameters to be set up to run this application.

The iQpump1000 drive from Yaskawa is available from 3/4 to 1000 horsepower. In addition to Irrigation Pumps in Commercial and Residential applications, the iQpump1000 drive is suitable for a variety of other pumping applications such as Pressure Booster Pumps, Submersible Deep Well Pumps, Storage Tank Level Control, and Metering Pumps.

### Drive Performance Features

- Ratings: 3/4-175 HP, 208 VAC 5-150 HP, 230 / 240 VAC 1-1000 HP, 480 VAC, 1-250 HP, 600 VAC
- Overload capacity: nominal 120% for 60 sec. (150% peak)
- Starting torque: 100% at 3 Hz
- Motor preheat function
- Adjustable accel/decel: 0.1 to 6000 sec.
- Controlled speed range: 40:1
- Critical frequency rejection: 3 selectable, adjustable bands
- Torque-limiting: 30-180%
- Energy Saving control
- Torque boost: full range, auto
- Power loss ride-thru: 2 sec.
- Auto restart after power loss or fault reset, selectable, programmable
- Feedback signal loss detection
- Serial communications loss detection
- “Up/Down” floating point control capability (PI)
- Stationary motor auto-tuning
- Pump Sleep function
- Run-permissive input

### Pump Control Features

- Operator Keypad with intuitive pump language
- Hand-Off-Auto
- Programmable Pump Process Set Point
- Pump Start Level & Start Time
- Sleep Protection
- Simplex, Duplex, & Triplex Control
- Automatic System Restart
- No Flow Detection
- Low and High Feedback set points
- Pre-Charge Low Level Control
- Thrust Bearing Control
- Automatic System Stabilization
- Motor Condensation Pre-Heat Function

### Protective Features

- Current-limited stall prevention
- Heat sink overtemperature, speed fold-back
- Bi-directional start into rotating motor
- Current-limiting DC bus fuse
- Optically-isolated controls
- Short circuit protection: Phase-phase and phase-neutral
- Ground fault protection
- Short circuit withstand rating: 100K RMS
- Electronic motor overload: UL
- Current limit
- Fault display: last 10 faults
- Fault circuit: OC, OV, OT
- Over torque and under torque protection

### Pump Protective Features

- Dry Well
- Air in System
- Blocked Impeller
- Pump Over Cycling
- No Flow Protection
- Loss of Prime
- Transducer Loss
- Over Torque

### Pump Alarms and Messages

- Low Feedback
- High Feedback
- Low Level
- Low Water
- Pump Over Cycling
- No Flow Detection
- Loss of Prime
- Pump Fault
- Motor Thermostat
- Pre-Charge Mode
- Thrust Bearing Active
- Start Mode Active
- Sleep Mode Active

### Service Conditions

- Ambient Temperature:
- -10°C to 40°C (14°F to 104°F) NEMA 1, -10°C to 50°C (14°F to 113°F) protected chassis
- Humidity: 95% RH, non-condensing
- Altitude: 3300 ft; higher by derate
- Input voltage: +10%/-15%
- Input frequency: 50/60 Hz ± 5%
- 3-phase, 3-wire, phase sequence insensitive

### Design Features

- LCD keypad display, 5 lines x 16 characters, backlit, 4 languages, copy function
- Multi-step speed settings: 5 available
- Setpoint (PI) control
- 32-bit microprocessor logic
- Non-volatile memory, program retention
- Displacement power factor: 0.98
- Output frequency: 0.1 to 400 Hz
- Frequency resolution: 0.06 Hz
- Frequency regulation: 0.1%
- Control Terminal Board: Quick disconnect
- Carrier frequency: selectable to 15 kHz
- 3% DC bus reactor: 30-150 HP, 208 VAC; 30-150 HP, 240 VAC; 40-1000 HP, 480 VAC; optional on lower ratings
- 24 VDC control logic, PNP / NPN selectable
- Transmitter/Option power supply
- Input/output terminal status
- Timer function: Elapsed time, Delay on start, Delay on stop
- RS-422/485 port: Modbus protocol
- Volts/hertz ratio: Preset and programmable V/Hz patterns
- Meter Functions: Volt, amp, kilowatt, elapsed run time, speed command
- NEMA 1 or protected chassis
- UL, cUL listed and CE marked; IEC 146;
- MTBF: exceeds 28 years

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Data subject to change without notice
Yaskawa America, Inc.

iQp 1000

# *Description*

## 3/4-1000 HP

**Standard I/O**

- (8) Digital inputs
- (3) Analog inputs
- (1) Pulse input
- (3) Programmable digital outputs
  - (1) Form C relay
  - (2) Form A relays
- (2) Analog outputs
- RS-485 Modbus RTU communication
- Drive fault relay Form C

**Options**

- Remote digital operator kit
- Input and/or output reactor
- Twelve-pulse rectification with input transformer: 30-150 HP at 240 VAC, 40-500 HP at 480 VAC
- Communication Interface: DeviceNet, PROFIBUS, LonWorks, and Ethernet
- RFI/EMI filter / EMC
- Analog outputs: programmable, two, 4-20 mA

**PC Tools**

- DriveWizard iQpump1000 is supplied with a pump controller PC commissioning tool