INTELLIGENT PUMP DESIGN

Yaskawa’s family of IQpump® drives offers a wide variety of package options and the most advanced comprehensive pump and motor protection in the industry, while still maintaining ease of setup and diagnostics designed for pump operators and service technicians. Our integrated pump specific software allows for a wide range of pumping applications from constant pressure, flow, geothermal, multiple pump booster systems to wet well lift stations and many others. Designed with the user in mind, IQpump drives use intuitive pump related terminology, with simple process control selection of engineering units such as PSI, GPM, feet, meters, degrees, inches of mercury, and many other units.

IQpump drives are designed with the user in mind. Our goal is to ensure that the pump is operating at the best efficiency point (BEP), saving energy and decreasing life-cycle costs.

Yaskawa understands that many light commercial, industrial, agricultural, and groundwater well systems are looking for a more cost-effective simplex and multiplex constant pressure pump control solution without sacrificing what they have come to enjoy from Yaskawa.

IQpump Micro offers many of the same comprehensive software features and control along with the same programming interface as IQpump1000, but in a package that saves cost.

IQpump1000 is your total pumping solution for whatever your system demands, while maintaining the simple pump terminology programming customers have come to expect.

IQPUMP MICRO
1-5HP 200-240V 1-Phase Input
1-25HP 380-480V 3-Phase Input

IQPUMP1000
3/4-175 HP 200-240V 3-Phase Input
1-1000 HP 380-480V 3-Phase Input
2-250 HP 500-600V 3-Phase Input

IMPROVED PROCESS CONTROL AND SYSTEM RELIABILITY
By matching pump output flow or pressure directly to the process requirements, applications can be fine tuned more rapidly by IQpump drives than by other control forms. Any reduction in speed achieved by using IQpump drives has major benefits in reducing pump wear, particularly in bearings and seals.

REDUCE TOTAL SYSTEM COST
IQpump drives lower system cost by eliminating sensors, jockey pumps, and restriction valves, as well as reducing pressure tank sizing.

ENERGY SAVINGS
Depending on the application, IQpump drives reduce the demand for energy 20% to 50% by adjusting pump speed to match a lower flow/pressure.

EASE OF INSTALLATION AND SET UP
IQpump drives use pump terminology on all setup parameters and monitors. Application presets apply most of the parameters for you. Also included is a “Pump Quick Setup” and “Modified Constants” menu.

ELIMINATE COMPLEX CONTROL PANELS
IQpump drive installation eliminates many electro-mechanical controls. This reduces maintenance requirements.

COOLER RUNNING PUMP MOTOR
Soft starts eliminate high inrush current, dramatically increasing winding insulation life.

PC Support Tools:
DRIVE WIZARD IQPUMP
Provides users a startup wizard, parameter management tools, drive status monitoring and trending.

UTILITY HARMONICS ESTIMATOR
Estimation of harmonics contribution back to main power source.

ENERGY SAVINGS PREDICTOR
Analysis of energy savings with carbon footprint calculation.

APPLICATION SIMULATOR SOFTWARE
Allows for the user to program multiple pump applications and then simulate operation without the need for a drive.
YASKAWA ADVANTAGE

The difference that matters

Yaskawa continually trains its people, partners and end-users. It designs products to specifically prevent defects. It qualifies product through arduous and varied testing processes. This is all part of the way we differentiate ourselves from the competition.

TECHNICAL TRAINING
Both standard and customized courses are available with hands-on activities and demonstrations. Instruction is offered at Yaskawa locations, as well as during traveling road shows. This is supplemented by live web classes and e-Learning modules / videos to provide the right level of training to fit your needs. Trainers are degreed engineers with extensive industry experience.

DEFECT PREVENTION
Yaskawa manufacturing processes are designed to prevent defects. Production associates have paperless on-line resources at their workstations, providing highly detailed and up-to-date work instructions for every process step. Practice mechanisms are available in the Kaizen center for them to improve their assembly skills. Complex assemblies are made simple with the use of animations and video. These processes enable us to approach our ultimate goal of zero-defect manufacturing.

PRODUCT QUALIFICATION/TESTING
No other manufacturer puts its products through as many tests, or as arduous a testing process, as Yaskawa. All printed circuit boards are functionally tested while under power. All Yaskawa products are 100% tested under full current. Yaskawa conducts its own product qualification testing in its ISO certified test lab. Products are tested not only under normal spec conditions, but also for the following:

- Extreme Temperature/Humidity
- Vibration
- Package Drop
- Input Voltage Tolerance
- Noise Immunity
- Electrical Insulation Stress
- Under/Over Voltage Protection
- Momentary Power Loss
- Output Short Circuit Protection
- Overload Protection
- Ground Fault Protection
- Washdown Test
- Input/Output Phase Loss Test
- Power ON/OFF and Start-Up Iterations

Environmental Considerations:
Yaskawa maintains a corporate commitment to sustainability goals with an emphasis on the following environmental guidelines:

- RoHS
  - Restriction of Hazardous Substances

- Leadership in Energy and Environmental Design

- EPA Program to Promote Superior Energy Efficiency

- Energy Efficiency with Reduction of Carbon Footprint

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  - Yaskawa maintains a corporate commitment to sustainability goals with an emphasis on the following environmental guidelines:
    - RoHS
      - Restriction of Hazardous Substances
    - Leadership in Energy and Environmental Design
    - EPA Program to Promote Superior Energy Efficiency
    - Energy Efficiency with Reduction of Carbon Footprint
Yaskawa offers quick lead time on cost-effective iQpump drive standard packages. You can also get standard packages configured to meet your custom requirements.

**NEMA 1 PACKAGES FOR iQPUMP1000**
Yaskawa offers a standard NEMA 1 (UL Type 1) package for iQpump1000 drives and configured units. All units are UL rated, with the configured packages built to UL 508A (Industrial Control Panel) standards. Installation, setup, service and quick delivery have all been considered in these package designs.

**NEMA 12 PACKAGES FOR iQPUMP1000**
iQpump1000 configured packages are available with a NEMA 12 (UL Type 12) enclosure option. Fans, when required, are provided with Type 12 rated filters to maintain a Type 12 rating on the enclosure. Standard construction features include:
- 12-Gauge Steel
- Padlock Hasp
- Whole Door Gasket
- Integral ¼ Turn Door Latches
- Brass Hinges
- UV/Type 3R Keypad Membrane
- Lifting Eyes
- Sun Reflective White Powder Coat Paint
- Stainless Steel Hardware

**NEMA 3R PACKAGES FOR iQPUMP1000 AND iQPUMP MICRO**
iQpump1000 and iQpump Micro configured packages are also offered with a NEMA 3R (UL Type 3R) enclosure option. This enclosure can be installed in direct sunlight without the need for additional cooling or sunshade protection. Standard construction features include:
- 12-Gauge Steel
- Padlock Hasp
- Whole Door Gasket
- Integral ¼ Turn Door Latches
- Brass Hinges
- UV/Type 3R Keypad Membrane
- Lifting Eyes
- Sun Reflective White Powder Coat Paint
- Stainless Steel Hardware

**FULLY-ENGINEERED PACKAGES FOR iQPUMP1000**
Both end users and OEM customers have come to rely on our custom product engineering capabilities. These products are based off of our standard configurations, but can evolve into a totally customized package. Engineered packages include:
- Redundant Drive Packages
- 12- or 18-Pulse Configurations
- Soft Start Bypass Packages
- Integrated Trap Filter Packages
- Multiple Motor Configurations

Engineered packages can be provided as NEMA 1, 12 or 3R. They are supported with custom engineered drawings and documentation.
PUMP SPECIFIC HAND-OFF-AUTO (H-O-A) OPERATOR
What makes iQpump drives the industry standard is the simplicity of the operator keypad messages that are formatted in pump terminology. This informs the user about the status of the system operation along with alarms or specific pump algorithm functions that are being initiated.

REAL-TIME CLOCK
iQpump drives are supported with a real-time clock that will log the last 10 fault events with a date and time stamp to provide the pump service technicians with real data for troubleshooting. This feature also enables the user to set calendar run and stop configurations, allowing the system to avoid high utility kW rates during peak operation hours.

PRE-PROGRAMMED APPLICATION MACROS
Pre-programmed application presets reduce start-up time significantly. Users enter simple motor and application information within the pump quick setup menu for each of the application macros.

Application macros:
- Constant Pressure
- Pump Down Level Control
- General Purpose Mode
- Submersible Motor, General Purpose, Operator Control
- Geothermal Control*
- Vertical Turbine Pump Pressure Control (VTC*)
- Pivot Panel VTC*
- Advanced Constant Pressure*

*Not Supported with iQpump Micro
SIMPLEX PUMP FEATURES

Investing made easy

The most common applications are simplex (single pump) constant pressure and pump down level control. iQpump drives are an easy investment choice with preset application macros, dedicated pump control features and pump system protection.

SLEEP MODE MINIMUM FLOW PROTECTION
Protects and shuts down the pump at low speeds or in low flow conditions.

NO FLOW / DEADHEAD PROTECTION
Detects changes in pressure and flow when the system has been closed off via mechanical valves or restrictions. If a system is not protected from this condition, the water within the pump can vaporize, building up excessive heat that can damage the pump and the discharge piping.

SUBMERSIBLE MOTOR THRUST BEARING CONTROL
Protects the bearings of submersible pump motors by ensuring proper start-up speeds and times.

AUTOMATIC SYSTEM RESTART
Programmable timers allow iQpump drives to automatically restart the system in Auto Mode for faults relating to brown outs, loss of power and pump specific faults.

LOSS OF PRIME (LOP) / PUMP DRY-RUN PROTECTION
Loss of prime protection is a feature protecting the pump and motor from damage caused by running the pump without water. If a pump were to lose prime and continue to operate without water moving through the pump, the pump would develop heat which would eventually damage the pump seal, motor, pipe manifold and related components.

LOW- AND HIGH-PRESSURE FEEDBACK DETECTION
iQpump drives continuously monitor the system feedback device to provide a warning alarm or fault based on the programmed level.

IMPELLER ANTI-JAM AUTOMATIC CONTROL
Provides a method for the iQpump drive to detect high current and attempt to expel corrosion or solids which are impeding the pump impeller. The system will perform a quick reversal attempt to dislodge a jam.

POWER LOSS UTILITY START DELAY TIMER
Used in conjunction with “Automatic Restart”, a programmable timer will delay starting to allow for multiple pumps to sequence start on loss of power. This function ensures that the power system is not stressed when utility power has returned and the pump system is automatically restarted.

SLEEP BOOST
Intended for use with a pressure tank, the iQpump drive boosts the set pressure prior to shutdown, extending the pump’s sleep time, reducing cycling and saving energy.

PRE-CHARGE CONTROL (CONTROLLED PIPE FILL)
This programmable feature eliminates water hammer and extends system life by gradually filling a pipeline before normal full pressure and flow operation. Pump motor speed can be controlled with a system timer, level or pressure control device to indicate when normal operation may begin.

CONSTANT PRESSURE WITH WELL DRAW DOWN CONTROL*
This function allows the iQpump drive to control constant pressure when there is adequate water in the well, while monitoring a second down hole transducer for water level. If the water level drops below user settings, the iQpump drive reduces pump speed to maximize well output. The system will return automatically to normal operation when well water is recharged to an adequate level.

SECONDARY TRANSDUCER BACKUP*
This option used for Simplex control allows for a secondary backup transducer to be automatically used if the main transducer has failed. The keypad text message will alert what feedback transducer is being used.

* Not Supported with iQpump Micro
Typical Multiplex Keypad Messages

The iQpump LCD keypad (recommended option on iQpump Micro) will provide the user with all the necessary system status operation and pump fault messages to ensure that service operators can efficiently monitor and diagnose any condition.

IQPUMP DRIVE IS IN OFF MODE (STOPPED) AND HAS NOT BEEN GIVEN AN AUTO RUN COMMAND. DRIVE IS TAKEN OUT OF THE RUNNING QUEUE.

IQPUMP DRIVE IS IN AUTO MODE AND WAITING FOR A RUN COMMAND FROM THE NETWORK.

IQPUMP DRIVE IS IN AUTO MODE AND IS THE LEAD PUMP.

IQPUMP DRIVE IS IN AUTO MODE AND WHEN A NEW LEAD PUMP IS STAGED, THE LAG PUMP WILL BE LOCKED AT A FIXED SPEED.

When ultimate pump control flexibility matters

iQpump drives have enhanced software not available in standard variable frequency drives, allowing for multiple drives to operate as a coordinated system. This allows pump system engineers the ability to add more modular pump systems together (Duplex, Triplex, etc.) to meet customer specifications and minimize cost by eliminating external control via PLCs and HMIs.

APPLICATION NOTES:
- Automatically alternates all pumps with a system programmable timer to provide even mechanical pump wear.
- Configurable transducer feedback settings to provide redundant backup, if failure occurs.
- With the use of an optional suction transducer, all iQpump drives will monitor inlet pressure with programmable PSI settings for faults, alarms and station controlled shutdown.
- Digital switch inputs for Low Suction / Low City Pressure / Low Water in Break Tank can be configured with a selectable keypad message to match application. With the use of an optional flow input, all iQpump drives can be configured to control staging and de-staging of lag pumps on GPM.

PUMP ALTERNATION
From duplex to quadplex systems, the pumps will be exercised evenly to ensure that they receive equal run times, thereby increasing the life cycle of the pumps and motors.

PUMP AND DRIVE REDUNDANCY
If a drive or pump fails during operation, or is taken out of service for maintenance, the remaining pumps continue to operate. The other drives on the network will automatically recognize when the drive and pump are restored to active healthy status and put them back into the pump rotation.

TRANSUDER FEEDBACK REDUNDANCY
Systems can be configured using multiple transducers on the discharge allowing for redundancy. A minimum of one transducer is required for system operation.

JOCKEY PUMP CONTROL
Pressure booster systems that use a jockey pump to maintain minimum water flow with larger secondary booster pumps for peak demand require the jockey pump to always be defined as the lead pump. The larger booster pumps will alternate based on time or run cycle for even pump wear.

LAG PUMP LEAD SPEED FOLLOWER MODE
When enabled, all lag iQpump drives will follow the main output speed (Hz or RPM) of the lead iQpump drives, thereby allowing all lead and lag pumps to run at the same speed for better system efficiency.

PUMP STAGE AND DE-STAGE
System dynamics and pump curves will determine the best method of pump staging and de-staging. The user can select a variety of methods such as: pump output speed, pressure differential to setpoint, combination of output speed and differential pressure and flow rate using an in-line flow meter.

IQPUMP 1000 & MICRO

Product Features:
- Pump Alternation by means of run time hours or actual date and time
- Ability to change parameters system wide by means of programming one drive
- Pump and Drive Redundancy
- Transducer Feedback Redundancy
- Pump Run Priority Selection
- Jockey Pump Control
- Pump Stage and De-Stage
- Lag Pump Lead Speed Follower Mode

Flow Feedback (Optional)
Pressure Feedback
Minimum of a One Transducer Required For System Operation

Up to 8 pumps for iQpump1000
Up to 4 pumps for iQpump Micro

Pressure Transducer
Gauge
Discharge
Suction Pressure Feedback (Optional)
Flow Feedback (Optional)

RS485 Onboard Communication

Up to 8 pumps for iQpump1000
Up to 4 pumps for iQpump Micro

Pressure Transducer

3-Phase Power Input

When ultimate pump control flexibility matters

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CONSTANT SPEED LAG PUMP MULTIPLEXING

Enabling multiple large vertical turbine pumps

Many agricultural farms use multiple large vertical turbine pumps to provide pressurized water to large pivot irrigation systems. Applying a VFD to each of the booster pumps on these systems may not be practical. However, an iQpump drive, using its on-board digital outputs, can control up to 5 lag pump starters from a single VFD to maintain pressure by staging and de-staging the lag pumps.

APPLICATION NOTES:

- Automatically starts and stops up to 5 lag pumps based on the system demand, and will automatically stage and de-stage the booster pumps.
- Alternation of lag pumps to provide even wear.
- Allows a single lag pump to be selected during Pre-Charge (Pipe Fill) to reduce fill rate time.
- For large water consumers, acre-feet can be selected for water accumulation units.
- When the discharge pressure exceeds a high level setting, all running lag pumps will be quickly de-staged to prevent unsafe high pressure conditions.
- When using Pre-Charge, Lag Pump Staging and De-Staging functions, the drive's keypad will provide a message of time remaining before pre-charge is finished and/or time remaining before lag pumps are to stage and de-stage.

INLET SUCTION CONTROL
When installed with an inlet suction transducer, the iQpump drive monitors suction pressure drop to a programmed pressure setpoint. It seamlessly switches over to control suction pressure, so the system runs efficiently. If the inlet pressure returns to the suction pressure setpoint, the iQpump drive will switch back to controlling outlet pressure. A suction pressure alarm/fault detection is available, if the suction pressure drops below the Low Suction Pressure Detection Level for more than the Low Suction Pressure Detection Time.

SPEED REDUCTION “GO TO SPEED” AFTER LAG PUMP STAGING
Forces the lead iQpump drive, when in VTC mode, to operate at a lower fixed speed for a specified amount of time whenever a lag pump is staged on. This dampens the shock loading of a lag pump starting across the line to the system.

SETPOINT BOOST AFTER DE-STAGING
Automatically boosts the auto setpoint pressure to a new specified incremental amount for a programmable time whenever a pump is de-staged. This allows the lead iQpump drive, when in VTC mode, to accelerate more quickly to lessen the pressure drop on the system of a lag pump that is being de-staged.

LOW FLOW AND HIGH FLOW (GPM) PROTECTION
iQpump drives continuously monitor the system flow signal feedback to provide a warning alarm or fault based on the programmed level.

FLOW METER DATA LOGGING
Through a secondary analog or pulse train input, a flow sensor can be connected inline with the pump system back to the iQpump drive to read and accumulate total system flow to report to authorities. The system can be configured to detect “No Flow” and switch to “Sleep” on low demand.

HARD CURRENT LIMIT
As the pump impeller wears over time, it changes the efficiency of the pump. In order to maintain a constant pressure or flow the pump speed will increase, resulting in greater motor current. This can cause the drive to trip on nuisance motor overload (OL).

BACK SPIN TIMER
After “Stop” or “Hand” command, the iQpump drive will not restart until the timer expires, allowing the water column to flow back down the well.
Making the most of single-phase

Single-phase motor control is limited and challenging. Yaskawa makes the complicated simple combining the latest in power conversion technology with the straightforward iQpump drives.

Yaskawa’s industry leading Single Phase Converter (SPC) cleanly converts single-phase AC power to DC power for Yaskawa variable frequency drives. The SPC marries Yaskawa reliability and drive technology with motor control solutions for businesses in remote areas.

The SPC eliminates the need to oversize variable frequency drives for single-phase applications while reducing distortion to less than 10% iTHD. With lower input harmonics and near unity power factor, the SPC also eliminates the need to significantly oversize transformers in single-phase applications, reducing overall installation costs.

Converting Single-Phase to Three-Phase Power

| 230 to 240V and 460 to 480V Single-Phase Power Supply | Single Phase Converter | iQpump1000 | Three Phase Motor | Choke |

SYSTEM ADVANTAGES
1. Less than 10% iTHD reduces installation costs
2. Eliminates the need for drive oversizing
3. Three-phase motors are more efficient and less expensive than single-phase motors
4. No rotating parts needed for phase conversion
5. UL listed.

PUMP FAULT AND ALARMS
iQpump drives provide a comprehensive set of pump related alarms and faults. Faults are displayed on the keypad in clear text to eliminate confusion (the following is just a sample):
- Over Cycling
- Set Point Not Met
- Transducer Feedback Lost (Broken Pipe Detection)
- No Flow
- Over Torque
- Low and High Feedback Detection
- Pumping Over Cycle Protection
- Loss of Prime/Dry Run
- Pump Cavitation Protection

MOTOR PROTECTION
- Output Phase Loss
- Motor Over Temperature
- Hard Current Limit
- Ground Fault
- Broken Shaft
- Motor Overload
- Minimum Speed

IQPUMP DRIVE PROTECTION
- Over / Under Voltage
- Short Circuit
- Input Phase Loss
- Over Temperature
- Phase Imbalance
- Heatsink Fan Failure
# Hardware Comparison

## Features IQPump1000 IQPump Micro

<table>
<thead>
<tr>
<th>Feature</th>
<th>IQPump1000</th>
<th>IQPump Micro</th>
</tr>
</thead>
<tbody>
<tr>
<td>Voltage / HP Range</td>
<td>1 - 175HP 200 - 240V 3-Phase</td>
<td>1 - 5HP 200 - 240V 1-Phase</td>
</tr>
<tr>
<td></td>
<td>1 - 500HP 380 - 480V 3-Phase</td>
<td>1 - 25HP 200 - 240V 3-Phase</td>
</tr>
<tr>
<td></td>
<td>2 - 250HP 500 - 600V 3-Phase</td>
<td>1 - 25HP 380 - 480V 3-Phase</td>
</tr>
<tr>
<td>Real Time Clock</td>
<td>Standard (Mounted on Drive)</td>
<td>With Optional Remote H-O-A Operator Installed</td>
</tr>
<tr>
<td>H-O-A Operator</td>
<td>Standard (Mounted on Drive)</td>
<td>Option (Externally Mounted)</td>
</tr>
<tr>
<td>Transducer Power Supply</td>
<td>24V @ 150mA</td>
<td>24V @ 30mA</td>
</tr>
<tr>
<td>Analog Inputs</td>
<td>Qty 3 - Programmable 0-10VDC or 4-20mA</td>
<td>Qty 1 - Non-Programmable 0-10VDC</td>
</tr>
<tr>
<td>Analog Outputs</td>
<td>Qty 2 - Programmable 0-10VDC or 4-20mA</td>
<td>Qty 1 - Programmable 0-10VDC or 4-20mA</td>
</tr>
<tr>
<td>Digital Inputs</td>
<td>Qty 1 - Form C Fault Relay (Non-Programmable)</td>
<td>Qty 1 - Form C Fault Relay Programmable</td>
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<tr>
<td>Pulse Input</td>
<td>Not Used</td>
<td>Not Used</td>
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<tr>
<td>Expansion I/O Adapters</td>
<td>2 Additional Programmable Analog Outputs</td>
<td>Not Available</td>
</tr>
<tr>
<td>Standard Communications</td>
<td>RS-485/422</td>
<td>RS-485/422</td>
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<tr>
<td>Communications Network Options</td>
<td>Ethernet/IP</td>
<td>DeviceNet</td>
</tr>
<tr>
<td></td>
<td>Modbus TCP/IP</td>
<td>MetaSys</td>
</tr>
<tr>
<td></td>
<td>PROFIBUS-DP</td>
<td>Apogee</td>
</tr>
<tr>
<td></td>
<td>PROFINET</td>
<td>BACnet</td>
</tr>
</tbody>
</table>

## Software Comparison

### Features

<table>
<thead>
<tr>
<th>Feature</th>
<th>IQPump1000</th>
<th>IQPump Micro</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pump Control Configurations (P1-01 Group):</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Simplex</td>
<td>✗</td>
<td>✗</td>
</tr>
<tr>
<td>Start Level / Drawdown</td>
<td>✗</td>
<td>✗</td>
</tr>
<tr>
<td>Submersible Motor General Purpose Mode Using Digital Operator</td>
<td>✗</td>
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<tr>
<td>Geothermal Mode</td>
<td>✗</td>
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<tr>
<td>VTC (Vertical Turbine) Pressure Control with Lag Pump Multiplexing</td>
<td>✗</td>
<td>✗</td>
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<tr>
<td>Advanced Pressure Control</td>
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<td>✗</td>
</tr>
<tr>
<td>Pre-Charge / Controlled Pipe Fill</td>
<td>✗</td>
<td>✗</td>
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<tr>
<td>Inlet Suction Pressure Control</td>
<td>✗</td>
<td>✗</td>
</tr>
<tr>
<td>Measuring Water Well Drawdown via transducer with GOTO speeds</td>
<td>✗</td>
<td>✗</td>
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<tr>
<td>Pulse Input for Flow Meter Control and Water Usage Data Logging</td>
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<td>✗</td>
</tr>
<tr>
<td>Pump Back Spin Timer</td>
<td>✗</td>
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<tr>
<td>Single Phase Lost Speed Fastback Protection</td>
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<td>✗</td>
</tr>
<tr>
<td>Multisine Drive to Drive Pump Setup and Adjustments</td>
<td>✗</td>
<td>✗</td>
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<tr>
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<td>Multisine Drive to Drive Pump Setup and Adjustments</td>
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<tr>
<td>Inlet Surge Pressure Control via Transducer Feedback</td>
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<tr>
<td>Real Time Clock Sequence Drive On/Off Run Timers</td>
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<tr>
<td>Secondary Transducer Input for Redundancy in Simplex and Multiplex Mode</td>
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</tr>
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</table>

= Not Supported  ✓ = Supported
## Models & Specifications

### 240V - Dedicated Single-Phase Models

<table>
<thead>
<tr>
<th>Model Number</th>
<th>Max Capacity (HP)</th>
<th>Rated Current (A)</th>
<th>Height</th>
<th>Width</th>
<th>Depth</th>
<th>NEMA 1 (CIMR-PWBV-XXXX-FAA)</th>
<th>NEMA-4X (CIMR-PWBV-XXXX-GAA)</th>
</tr>
</thead>
<tbody>
<tr>
<td>CIMR-PW2V0006</td>
<td>1</td>
<td>6.0</td>
<td>6.6</td>
<td>6.4</td>
<td>7.12</td>
<td>12.04</td>
<td>7.39</td>
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<tr>
<td>CIMR-PW2V0010</td>
<td>3</td>
<td>9.6</td>
<td>9.8</td>
<td>7.12</td>
<td>12.04</td>
<td>7.39</td>
<td>0.25</td>
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<td>CIMR-PW2V0012</td>
<td>5</td>
<td>12.0</td>
<td>6.0</td>
<td>5.91</td>
<td>7.08</td>
<td>12.04</td>
<td>7.39</td>
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<tr>
<td>CIMR-PW2V0018</td>
<td>7.5</td>
<td>17.5</td>
<td>6.0</td>
<td>6.0</td>
<td>7.10</td>
<td>Not Available</td>
<td></td>
</tr>
</tbody>
</table>

### 240V - Three-Phase Models

| Model Number | 3-Phase, 240V | Without Additional | With Additional | Dimensions [in.]
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### 480V - Three-Phase Models

| Model Number | 480V, 3-Phase, 480V | Without Additional | With Additional | Dimensions [in.]
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### 480V - Three-Phase Models

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### 480V - Three-Phase Models

| Model Number | Single-Phase, 480V | Without Additional | With Additional | Dimensions [in.]
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### 480V - Three-Phase Models

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### 480V - Three-Phase Models

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### Notes

- Reference User Manual for proper drive sizing when using service factors larger than 1.15.
- When two or more drives in the same voltage class have the same power rating any drive with that rating can be selected.
## MODELS & SPECIFICATIONS

### 480V - Three-Phase Models

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<thead>
<tr>
<th>Model Number</th>
<th>Rated Output (HP)</th>
<th>Max Capacity (HP)</th>
<th>Without Additional Input Reactor</th>
<th>With Additional Input Reactor</th>
<th>Max Capacity (HP)</th>
<th>Height</th>
<th>Width</th>
<th>Depth</th>
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### 600V - Three-Phase Models

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<th>Max Capacity (HP)</th>
<th>Height</th>
<th>Width</th>
<th>Depth</th>
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**NOTES:**
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Yaskawa is the leading global manufacturer of inverter drives, servo drives, machine controllers, medium voltage inverters and industrial robots. Our standard products, as well as tailor-made solutions, are well known and have a high reputation for outstanding quality and reliability.

YASKAWA