

YASKAWA

LOW HARMONIC DRIVE

U1000 iQPUMP[®]

INTELLIGENT PUMP CONTROL



U1000 iQPUMP

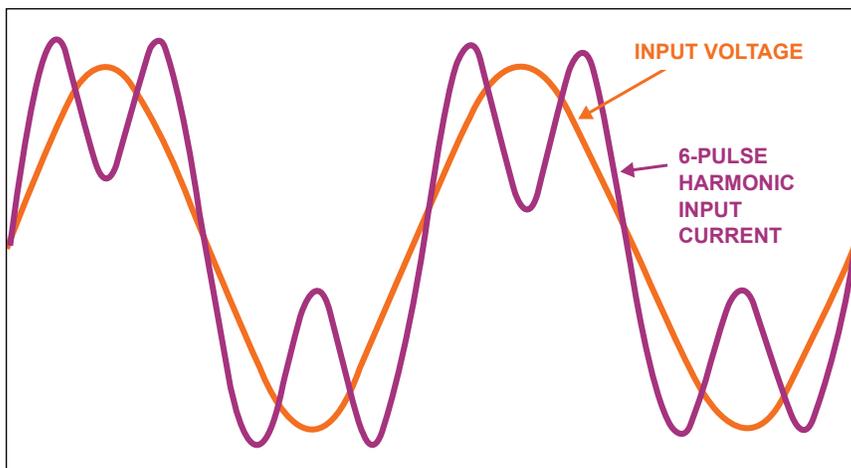
THE NEW U1000 iQPUMP®

Intelligent. Efficient. Compact.

We've combined our award-winning Matrix low harmonic power structure with the industry leading iQpump control for intelligent, efficient and compact water pumping.

The U1000 iQpump provides extremely low harmonic distortion in an innovative, space-saving design. The U1000 iQpump Matrix power structure allows for best-in-class efficiency by eliminating passive power filters and multi-pulse transformers, while exceeding IEEE 519 requirements for power quality.

Our iQpump intelligent pump control enables straight-forward pump setup for any type of pumping application, from centrifugal to turbine and submersible pumps. The U1000 iQpump can easily be configured for pressure, water level and flow control. Also, one drive can control multiple pumps, creating the most cost-effective low-harmonic pumping solutions on the market.



Why are harmonics important?

Harmonics distort the power on power lines. These distortions can affect the electrical system in various ways.

For example, harmonics can overheat power wires and transformers or cause erratic operation of other electrical loads that aren't isolated from the harmonics.

When these situations occur, it opens the door for downtime and expensive repairs.



Compare these benefits

Low Harmonic Comparison

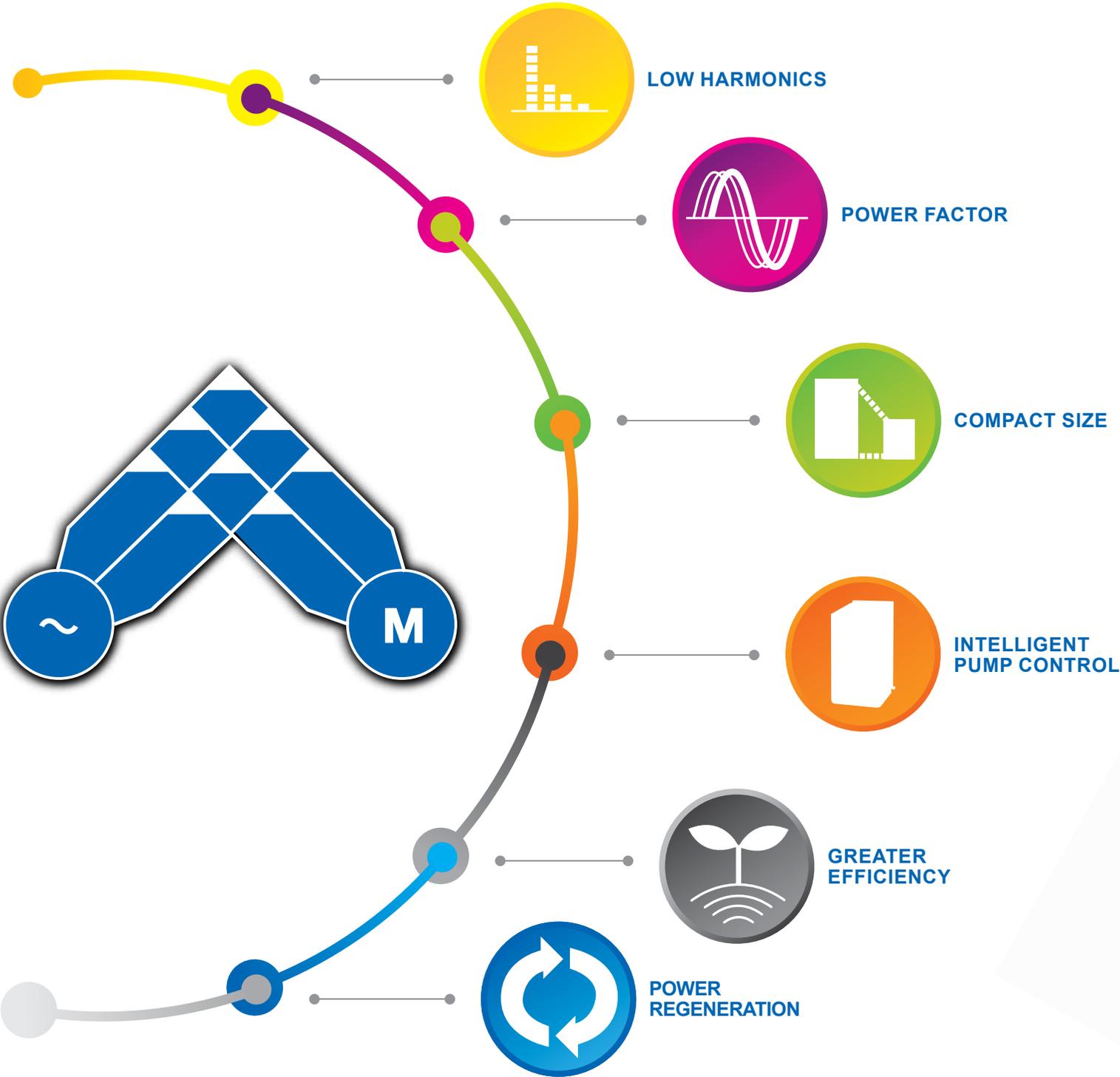
Comparing the many low harmonic solutions on the market today can be a daunting task for the most seasoned experts. Performance and offerings vary depending on manufacturer, power requirements and voltage imbalance. The award winning Matrix power structure, employed by the U1000 iQpump, makes your decision simple. The U1000 iQpump offers best-in-class current distortion, true power factor, simple wiring, energy efficiency and minimal footprint.

	6-Pulse	6-Pulse with Reactor	12-Pulse	Harmonic Filter	U1000 iQpump
Current Distortion	40–100%	33–45%	6–12%	5–12%	3–5%
True Power Factor	.75	.90	.95	.95	.98
Three-In, Three-Out	Yes	Some	Some	Some	Yes
Size	1x	1.5x	3x	2x	1.5x

NOTE: HARMONIC SOLUTION SPECIFICATIONS ARE TYPICALLY EXPECTED VALUES. RESULTS MAY VARY BASED ON APPLICATION AND PRODUCT DESIGN. CONSULT WITH THE EQUIPMENT MANUFACTURER FOR EXPECTED RESULTS.

Key performance indicators

The elegance of the U1000 iQpump is in its simple, direct AC-to-AC power conversion. It offers a multitude of benefits reducing cost of ownership, providing a near unity power factor, increasing energy efficiency, enabling power regeneration and offering compact size compared to other forms of harmonic mitigation.





Energy efficiency

The U1000 iQpump's direct AC-to-AC power conversion is the most efficient IEEE 519-compliant solution on the market to date. The matrix power structure allows the U1000 iQpump to take energy efficiency one step further with Eco Mode. When the motor frequency approaches line frequency, the U1000 iQpump can synchronize the motor to the line frequency, eliminate switching losses and nearly eliminate current distortion.



U1000 iQpump Specifications

The U1000 iQpump provides best-in-class value, combining reliability, performance and ease of use into one package.

Line Voltage	200 to 240VAC 3-phase	380 to 500VAC 3-phase
Power Rating	10 to 100 HP	7.5 to 800 HP
Voltage Tolerance	-15 to +10%	
Line Frequency	50 to 60 Hz	
Frequency Tolerance	±3 Hz (1Hz/100 ms or less)	
Harmonic Distortion	5% or less; IEEE 519 compliant	
Input Power Factor	.98 or more (during rated operation)	
Overload	120% for 60 seconds	
Ambient Operating Temp	14° to 122°F (-10° to 50°C)	
Certifications	UL, RoHS	

UL Type 3R Packages

Yaskawa offers quick lead time on cost-effective UL Type 3R U1000 iQpump packages with a variety of standard options up to 500 HP. You can also get engineered packages to meet your custom requirements.

STANDARD FEATURES

- Door mounted keypad
- Disconnect
- 104°F/40°C maximum ambient temperature
- UL Listed

POWER OPTIONS

- Output reactor - Motor terminal block
- Circuit breaker (Service Entrance Rated)
- RayCap brand surge arrestor
- Space heater
- 122°F/50°C maximum ambient temperature
- Motor power terminal block

CONTROL OPTIONS

- Ethernet IP option card
- 200VA control transformer
- Keypad viewing window
- Door Mounted Hand-Off-Auto Switch
- Door Mounted Speed Pot



U1000 iQpump vs. iQpump 1000

Software Comparison

Features	U1000 iQpump	iQpump 1000
Pump Control Configurations (P1-01 Group):		
Simplex	✓	✓
Simplex with Constant Speed Lag Multiplexing (VTC Mode)	✓	✓
Drive to Drive Multiplexing	✗	Up to 8 Pumps
Pre-Programmed Application Macros (A1-03 Group):		
Constant Pressure	✓	✓
Pump Down Constant Level	✓	✓
General Purpose Mode - External Run and Speed Reference	✓	✓
Submersible Motor General Purpose Mode Using Digital Operator	✓	✓
VTC (Vertical Turbine) Pressure Control with Lag Pump Multiplexing	✓	✓
Geothermal Mode	✗	✓
Pump Specific Software Features:		
Selectable Engineering System Units	✓	✓
Sleep Mode / Minimum Flow	✓	✓
Start Level / Drawdown	✓	✓
Hand Mode Control Operations	✓	✓
Minimum Pump Speed	✓	✓
Transducer Feedback Scaling	✓	✓
No Flow / Deadhead Protection	✓	✓
Submersible Thrust Bearing Control	✓	✓
Automatic Fault Restarts for Drive and Pump Protection	✓	✓
Sleep Boost	✓	✓
Low and High Feedback Detection	✓	✓
Low and High Water Float Inputs	✓	✓
Pump Over Cycle Protection	✓	✓
Impeller Anti-Jam Protection	✓	✓
Loss of Prime (LOP) / Well Dry Run	✓	✓
Automatic Power Loss Utility Start Delay	✓	✓
Broken Pipe Protection	✓	✓
Transducer Feedback Loss	✓	✓
Transducer Feedback Loss with Programmable GOTO speeds	✓	✓
Pre-Charge / Controlled Pipe Fill	✓	✓
Hard Current Limit	✓	✓
Over Torque Detection	✓	✓
Pump Back Spin Timer	✓	✓
Pulse Input for Flow Meter Control and Water Usage Data Logging	✓	✓
Pump De-Scale / De-Ragging	✓	✓
Measuring Water Well Drawdown via Transducer with Constant Discharge Pressure	✓	✓
Inlet Suction Pressure Control via Transducer Feedback	✓	✓
Real Time Clock Sequence Drive On/Off Run Timers	✓	✓
Secondary Transducer Input for Redundancy in Simplex and Multiplex Mode	✓	✓
Single Phase Loss Speed Foldback Protection	✗	✓
Multiplex Drive to Drive Pump Setup and Adjustments	✗	✓

✓ Supported ✗ Not Supported



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.

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