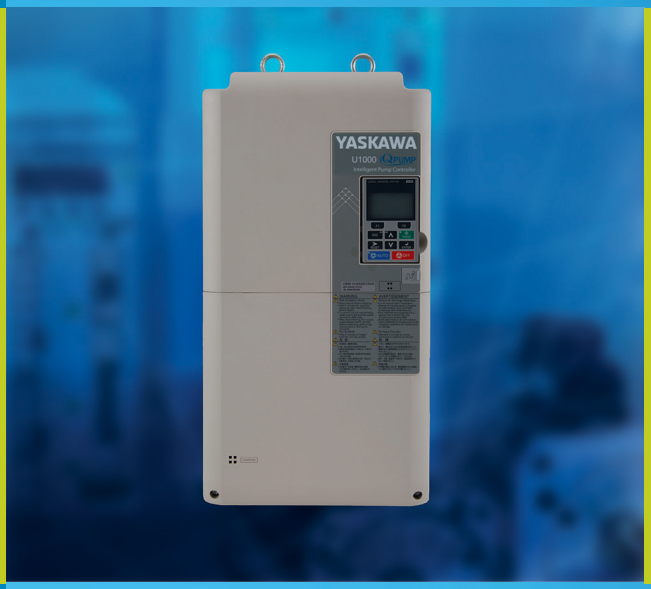
U1000 iQpump Drive

240 V Class: 10 to 100 HP ND
480 V Class: 7.5 to 350 HP ND



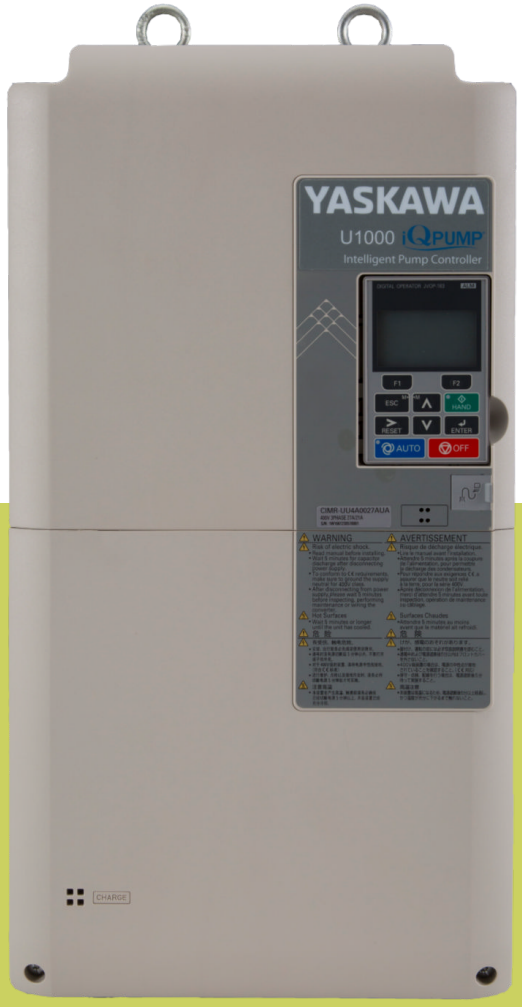
YASKAWA

Catalog

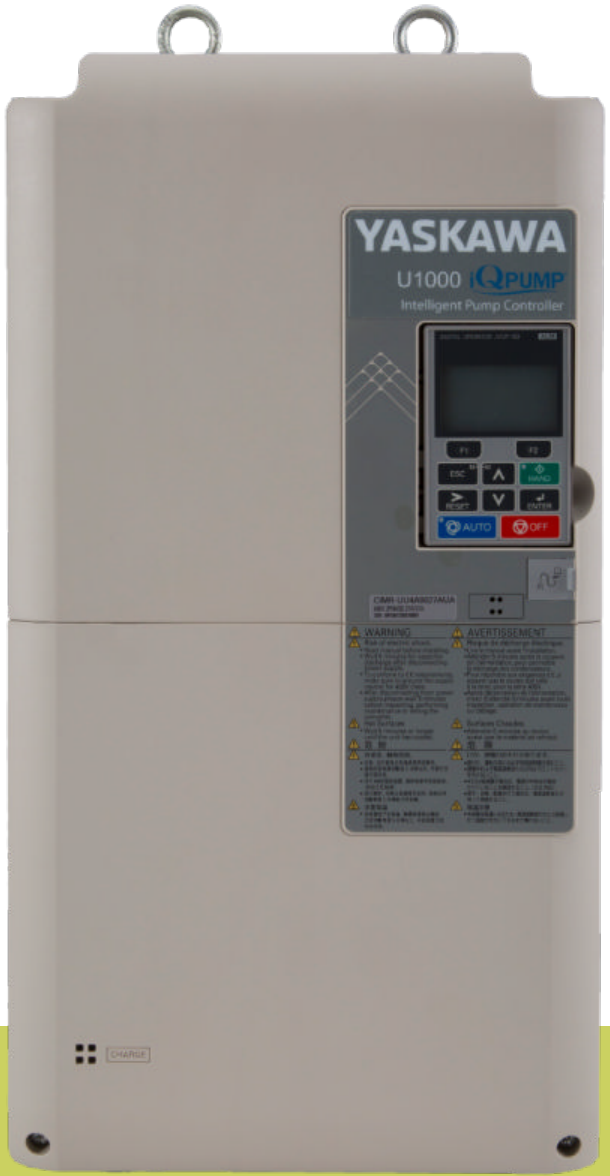
The U1000 iQpump Drive

The U1000 iQpump Drive is a compact, total all-in-one solution for ultra low harmonic pump control, and is the ultimate choice for power quality and energy savings.

Additionally, the U1000 iQpump Drive delivers high flexibility and motor control performance to meet a wide variety of application requirements.



Contents



Preface

This price book may describe trademarked equipment, which is the property of other companies. These trademarks are the property of the registered owner companies and may include the following:

DeviceNet™, trademark of ODVA.

PROFIBUS®, trademark of PROFIBUS International.

Modbus®, trademark of Schneider Automation, Inc.

U1000 iQpump Drive Model Selection 200 to 240 V

Rated Input Voltage	Rated Output Amps *2 *3	Nominal HP *1	Standard Enclosure Model Number CIMR-UW2A□□□□□□□□
200 to 240 V 3-Phase	28	10	0028AUA
	42	15	0042AUA
	54	20	0054AUA
	68	25	0068AUA
	81	30	0081AUA
	104	40	0104AUA
	130	50	0130AUA
	154	60	0154AUA
	192	75	0192AUA
	248	100	0248AUA

*1. Horsepower rating is based on standard NEMA B, 4-pole motor design as represented in NEC table 430.150 Full-Load Current, Three-Phase Alternating Current Motors at 240 volts.

*2. The rated output current of the drive should be equal to or greater than the motor rated current.

*3. Current derating is required to raise the carrier frequency. Carrier frequency is set to 4 kHz.

U1000 iQpump Drive Model Selection 380 to 480 V

Rated Input Voltage	Rated Output Amps *2 *3	Nominal HP *1	Standard Enclosure Model Number CIMR-UW4A□□□□□□□□
380 to 480 V 3-Phase	11	7.5	0011AUA
	14	10	0014AUA
	21	15	0021AUA
	27	20	0027AUA
	34	25	0034AUA
	40	30	0040AUA
	52	40	0052AUA
	65	50	0065AUA
	77	60	0077AUA
	96	75	0096AUA
	124	100	0124AUA
	156	125	0156AUA
	180	150	0180AUA
	216	175	0216AUA
	240	200	0240AUA
	302	250	0302AUA
	361	300	0361AUA
	414	350	0414AUA

*1. Horsepower rating is based on standard NEMA B, 4-pole motor design as represented in NEC table 430.150 Full-Load Current, Three-Phase Alternating Current Motors at 480 volts.

*2. The rated output current of the drive should be equal to or greater than the motor rated current.

*3. Current derating is required to raise the carrier frequency. Carrier frequency is set to 4 kHz.

End Cap Kits, NEMA 1

This option consists of a top and bottom cover to convert a protected IP00/Open Type drive to a IP20/NEMA 1, UL Type 1 enclosed unit. This option DOES NOT provide additional space for mounting auxiliary components (i.e., circuit breaker, input fuses, reactor, etc.).

Rated Input Voltage	Drive Model Number CIMR-UW2A□□□□□□□□	Part Number
200 to 240 V 3-Phase	0028AUA	EZZ022745A
	0042AUA 0054AUA 0068AUA 0081AUA	EZZ022745B
	0104AUA 0130AUA	EZZ022745C
	0154AUA 0192AUA	EZZ022745D
	0248AUA	EZZ022745E
Rated Input Voltage	**Drive Model Number CIMR-UW4A□□□□□□□□**	**Part Number**
380 to 480 V 3-Phase	0011AUA 0014AUA 0021AUA 0027AUA 0034AUA	EZZ022745A
	0040AUA 0052AUA 0065AUA 0077AUA	EZZ022745B
	0096AUA 0124AUA	EZZ022745C
	0156AUA 0180AUA	EZZ022745D
	0216AUA 0240AUA	EZZ022745E
	0302AUA 0361AUA 0414AUA	EZZ022745F

External Heatsink Kits NEMA1

External Heatsink Kit: Allows drives to be mounted with the drive's heatsink external (NEMA 1 backside) to the enclosure. Option kit for customer mounting. Larger standard drives include brackets.

Rated Input Voltage	Drive Model Number CIMR-UW2A□□□□□□□□	Part Number
200 to 240 V 3-Phase	0028AUA	UUX001072
	0042AUA 0054AUA 0068AUA 0081AUA	UUX001073
	0104AUA 0130AUA	UUX001074
	0154AUA 0192AUA	UUX001075
	0248AUA	*1
Rated Input Voltage	**Drive Model Number CIMR-UW4A□□□□□□□□**	**Part Number**
380 to 480 V 3-Phase	0011AUA 0014AUA 0021AUA 0027AUA 0034AUA	UUX001072
	0040AUA 0052AUA 0065AUA 0077AUA	UUX001073
	0096AUA 0124AUA	UUX001074
	0156AUA 0180AUA	UUX001075
	0216AUA 0240AUA 0302AUA 0361AUA	*1

*1 Required brackets are included with the drive.

Control and Communication Options

These cards, cables, and devices add control functionality to the standard drive. Items are shipped loose, unmounted.

Model No.	Option Name	Description
AO-A3	Analog Output	This option provides 2 signals for remote metering of any two of the drive's "U1" parameters. These are in addition to the two standard analog outputs. Signal levels (individually selectable): • 0 to ±10 Vdc (20k Ohm, 11 Bit + Sign) Output voltage resolution is 1/2048. Mounts at option connector CN5-A, CN5-B, or CN5-C.
DO-A3	Digital Output (8 Channel)	This option provides 8 additional digital outputs for use in monitoring the status outputs of the drive. Signal levels: • 2 channels, Form A, 250 Vac, 30 Vdc, 1A • 6 channels, PHC, 48 Vdc, 50 mA, Shared Common Mounts at option connector CN5-A, CN5-B, or CN5-C.

Digital Operator and Software

Model No.	Option Name	Description
UOP000016 (JVOP-183)	Digital Operator (LCD)	This option is the standard digital operator found on the drive and NEMA 1 and NEMA 12 packages. This option is only needed if the original digital operator is lost or damaged. Features include: • LCD digital operator display, 5 lines x 16 characters, backlit • 7 languages • Copy function Mounts to RJ-45 keypad port.
UOP000023 (JVOP-183R)	Digital Operator (LCD)	This operator is the standard digital operator on all NEMA 3R enclosure doors. This option is only needed if the original keypad is lost or damaged. Features include: • LCD digital operator display, 5 lines x 16 characters, backlit • 7 languages • Copy function
UCV00849–0102	Keypad Cover	This kit allows for the mounting of a hinged lockable cover, which protects the door-mounted digital keypad. This kit can be used on all NEMA 3R type enclosures. Shipped loose for customer installation.  Note: Padlock not included.

Digital Operator and Software (continued)

Model No.	Option Name	Description
UWR0051	Digital Operator Cable, Remote (1 meter)	These cables are used to connect the Remote Digital Operator (JVOP-18☐). They are available in one (1) or three (3) meter lengths.
UWR0052	Digital Operator Cable, Remote (3 meter)	
UUX000526 (Blank Membrane)	Digital Operator Kits NEMA Type 3R/4X	This option is used to extend an LCD or LED Digital Remote Operator to the wall of a separately specified, oversized UL Type 3R, 4, 4X, or 12 enclosure (IPX6 environment). Item includes a faceplate bezel with digital operator brackets and membrane to cover the operator cutout in the enclosure door, a 3-foot cable, a 10-foot cable, and a 1:1 template for cutting the necessary cutouts in the enclosure. Keypad can be removed after kit installation. Designed for use with **1000 series Digital Remote Operators (sold separately)**. Connects to RJ-45 port and mounts to enclosure wall.
UUX000527 (Yaskawa Logo Membrane)		
UUX000922	Keypad Adapter Kit	This kit can be used when an iQpump1000 keypad is replacing a keypad used with P7-based iQpump drives. This kit will allow enclosure door mounted keypad to be upgraded from P7 style to the iQpump1000 style digital keypad.
SW.DW.60	DriveWizard® iQpump Software	This optional software package allows upload and download of parameters via PC for data storage and for programming multiple drives. The software also includes graphing and monitoring tools. It is a Windows-based program designed to make startup, commissioning, and troubleshooting the drive as simple as possible. Refer to our website at **www.yaskawa.com** to download the software, and for more information, including minimum system requirements and cable information to interface a PC to the drive.
UWR00468-2	PC Interface Cable	This 6-foot cable interconnects the drive keypad port to the 9-pin communication port on a PC. This cable is used in conjunction with DriveWizard® iQpump Software.
UWR-00638	USB Interface Cable	This 10-foot male USB-A to male USB-B cable provides a USB-to-USB connection from PC to the drive.

Support Tools

Model No.	Option Name	Description
JVOP-181	USB Copy Unit (Y-Stick)	This option allows the drive to connect to the USB port on a PC. It can read, copy and verify drive parameter settings from one drive to another like drive. The unit plugs into the RJ-45 port on the front of the digital operator. Refer to our website at www.yaskawa.com to download the software.
SW.CU.01	CopyUnitManager Software for USB Copy Unit (Y-Stick)	This option allows the user to transfer and save parameter files from the Copy Unit (JVOP-181), sold separately, to a PC and vice versa. Refer to our website at www.yaskawa.com to download the software.

Network Communications

Model No.	Option Name	Description
SI-EM3	Modbus TCP/IP	This option complies with the Modbus TCP/IP protocol specification. This allows for Modbus communication over 10/100 Mbps Ethernet networks. This option has the ability to configure the IP Address from a user-specified IP address, from a DHCP host, or from a BootP host. All parameters, diagnostics, and operational commands are accessible via Modbus TCP/IP. This option supports up to 10 simultaneous PLC/PC connections. Mounts at option connector CN5-A.
SI-EM3D	Modbus TCP/IP – Dual Port	This option complies with the Modbus TCP/IP protocol specification. This allows for Modbus communication over 10/100 Mbps Ethernet networks. The dual port hardware provides the user the choice of wiring in a star, line or ring configuration. For a ring configuration, rapid spanning tree protocol (RSTP) is available on this option card. This option has the ability to configure the IP Address from a user specified IP address, from a DHCP host, or from a BootP host. All parameters, diagnostics and operational commands are accessible via Modbus TCP/IP. Auto-tuning the motor is also possible through this option using the DriveWizard PC program. This option supports up to 10 simultaneous PLC/PC connections. Mounts at option connector CN5-A.
SI-EN3	EtherNet/IP	This option complies with the EtherNet/IP protocol specification, and allows for communication over 10/100 Mbps Ethernet networks. This option has the ability to configure the IP Address from a user specified IP address, from a DHCP host, or from a BootP host. The IP address can be set from the drive keypad or from the network. All parameters, diagnostics, and operational commands are accessible via EtherNet/IP. The web interface allows management of diagnostic information through a standard web browser. The embedded web pages include the main page, drive status page, network monitor page, and documentation page. Mounts at option connector CN5-A.
SI-EN3D	EtherNet/IP – Dual Port	This option complies with the EtherNet/IP protocol specification. This allows for communication over 10/100 Mbps Ethernet networks. The dual port hardware provides the user the choice of wiring in a star, line or ring configuration. For a ring configuration, device level ring (DLR) is available on this option card. This option has the ability to configure the IP Address from a user specified IP address, from a DHCP host, or from a BootP host. All parameters, diagnostics and operational commands are accessible via EtherNet/IP. Auto-tuning the motor is also possible through this option using the DriveWizard PC program. Mounts at option connector CN5-A.
SI-EP3	PROFINET	This option complies to PROFINET I/O device and PROFIDrive profile specifications. It provides connection to a PROFINET network and facilitates the exchange of data via a simple, networking solution that reduces the cost and time to wire and install factory automation devices, while providing interchangeability of like components from multiple vendors. This interface is PROFINET Conformance Class A certified, and makes it possible to perform the following from a PROFINET master device: • Operate the drive • Monitor the operation status of the drive • Change parameter settings. Mounts at option connector CN5-A.
SI-N3	DeviceNet™ With ADR	This option complies with all pertinent aspects of the ODVA (Open DeviceNet Vendor Association) specification and AC drive profile. All parameters, diagnostics, and operational commands are accessible via DeviceNet. Automatic Device Replacement (ADR) is supported in this DeviceNet option, including the functions of Auto Baud Rate sensing and Faulted Node Recovery (using Group 4 messaging). Each DeviceNet network supports up to 63 drives. Controllers are available from many PLC and/or PC suppliers. The board mounts integrally in the drive and provides a DeviceNet standard open tap connector. The option is configured using parameters within the drive, which allows for easy configuration eliminating the use of hardware switches. Status LEDs are viewable through the front cover and a monitor has been added to allow for improved diagnostics. Mounts at option connector CN5-A.
SI-P3	PROFIBUS-DP	This option complies with the PROFIBUS-DP protocol specification. All parameters, diagnostics and operational commands are accessible via PROFIBUS. The option board provides a 9-pin (F) type D-Sub connector for easily connecting to a standard PROFIBUS style, shielded twisted-pair cable. Each PROFIBUS network supports up to 126 nodes. This option supports all of the PROFIBUS data rates from 9.6 Kbps to 12 Mbps. Up to 32 bytes of input data and 32 bytes of output data are provided per message transaction. Sync and Freeze modes are supported for groups. PROFIBUS-DP-V1 support (cyclic and acyclic data exchange). Configurable PPO read and write parameters. The option is configured using parameters within the drive, which allows for easy configuration eliminating the use of hardware switches. Status LEDs are viewable through the front cover, and a monitor has been added to allow for improved diagnostics. Option is backwards compatible with the previous generation option cards. Mounts at option connector CN5-A.

U1000 iQpump Configured NEMA 3R (Q1E3)

7.5 to 350 HP

The configured package provides a U1000 iQpump drive containing pump application-specific software macros, a real time clock, and Hand/Off/Auto LCD keypad with an input disconnect switch and space for several power options inside a NEMA 3R enclosure. The drive incorporates matrix technology to directly convert input AC voltage to output AC voltage.

Model Number Configuration (Q1E3)

Step 1. Complete the Base Number for the voltage and current rating.

Step 2. Add the Option Code letter for each required option. If an option is not wanted, no character is inserted in that position.

Step 3. Find the list price for the Base Number selected by using the iQpump1000 Price Book (PB.iQpump.02). Add the list price of each selected option to the base price.

BASE NUMBER	OPTIONS		
	POWER	CONTROL	SPECIAL
Q 1 E 3 B 040	P_____	T_____	S_____

U1000 iQpump Configured

Enclosure	
3	NEMA 3R

Voltage	
D	240 V
B	480 V

Curren t
NEC Rated Amps (1.6 - 302) Example: 040 = 40 Amps

(S) Options	
P	OV Shunt Trip

(T) Control & Communication Options		
D	EtherNet/IP	Choose Any, All or None
Y	Hand/Off/Auto Switch	
Z	Speed Pot	
M	Keypad Viewing Window	

(P) Power Options		
K	Output Reactor 5%	Choose One or None
8	Motor Terminals	
C	Circuit Breaker 65K	Choose One or None
3	Space Heater	Choose One or None
4	50°C Ambient	Choose One or None
7	Raycap Suppressor	Choose One or None
9	480V Y Raycap Suppressor	

Options (Q1E3)

Power Options

Output Reactor	(K)	No form of output impedance is normally required. A 5% load reactor, option (K), is available if additional output impedance is desired (usually for long lead-lengths or noise reduction).
Motor Terminals	(8)	Allows for lug free installation of motor wires to minimize installation time and cost.
Circuit Breaker 65 kAIC	(C)	Lockable input Circuit Breaker (65 kAIC panel rating).
Space Heater	(3)	This option helps reduce condensation.
50 °C Ambient	(4)	This option will allow the enclosure to be operated in ambient temperature of 50 °C (122 °F). The standard basic design is rated for 40 °C ambient.
Raycap Surge Suppressor	(7)	This option provides a high degree of protection from transient surges coming through the power line cables. Lightning strikes are the most common form of surges.
480V Y Raycap Suppressor	(9)	This option provides a high degree of protection from power line transient surges. Lightning strikes are the most common form of surges. This option is designed specifically for 480V Y transformer secondary power to the U1000 iQpump Drive package. **Note:** 75 HP and smaller units will be limited to 42 kAIC SCCR when this option is included.

Options (Q1E3)

Control Options

EtherNet/IP SI-EN3	(D)	This option allows the drive to communicate on an Ethernet (Modbus TCP) network. EtherNet/IP, option (D), requires the addition of an optional board.
Hand/Off/Auto	(Y)	The drive's digital operator is always brought out to the front of the Configured panel, so it is available for speed control – this is the standard configuration. A door-mounted Hand/Off/Auto Switch is available when option (Y) is specified.
Speed Pot	(Z)	The drive's digital operator is always brought out to the front of the Configured panel, so it is available for speed control – this is the standard configuration. A door-mounted speed potentiometer is available for manual speed control with option (Z).
Keypad Viewing Window	(M)	The digital drive keypad is mounted on the outside of the NEMA 3R enclosure door. This option provides a viewing window that is hinged and lockable.

Special Options

ov Shunt Trip	(P)	The Overvoltage (ov) Shunt Trip option detects high supply voltage conditions and automatically trips the main circuit breaker. The high AIC circuit breaker option (PC) must be included in the price and model number when including the ov Shunt Trip option.

NEMA 3R Configured Enclosure Options

Freestanding Leg Kit NEMA 3R	UUX001158	**12 in. Leg Kit:** This option allows the NEMA 3R wall-mount enclosures to be mounted on legs so that the control can be freestanding and off the ground. Either kit can be used on any of the wall-mount enclosures. Floor-mount enclosures come standard with freestanding legs.
	UUX001159	**30 in. Leg Kit:** This option allows the NEMA 3R wall-mount enclosures to be mounted on legs so that the control can be freestanding and off the ground. Either kit can be used on any of the wall-mount enclosures. Floor-mount enclosures come standard with freestanding legs.

Models and Power Options (Q1E3)

240 V Models and Power Options

Rated Input Voltage	Rated Output Current (Amps)	Nominal HP *1	NEMA 3R Q1E3
240 V 3-Phase	28	10	A028
	42	15	A042
	54	20	A054
	68	25	A068
	81	30	A081
	104	40	A104
	130	50	A130
	154	60	A154
	192	75	A192
	248	100	A248

*1. Horsepower rating is based on standard NEMA B, 4-pole motor design as represented in NEC table 430.150 Full-Load Current, Three-Phase Alternating Current Motors at 240 volts

480 V Models and Power Options

Rated Input Voltage	Rated Output Current (Amps)	Nominal HP *1	NEMA 3R Configured Q1E3
480 V 3-Phase	11	7.5	B011
	14	10	B014
	21	15	B021
	27	20	B027
	34	25	B034
	40	30	B040
	52	40	B052
	65	50	B065
	77	60	B077
	96	75	B096
	124	100	B124
	156	125	B156
	180	150	B180
	240	200	B240
	302	250	B302
	361	300	B361
	414	350	B414

*1. Horsepower rating is based on standard NEMA B, 4-pole motor design as represented in NEC table 430.150 Full-Load Current, Three-Phase Alternating Current Motors at 480 volts.

Dimensions and Data

Refer to the U1000 iQpump Drive product page on www.yaskawa.com for dimension, weight, and schematic diagrams.

For configured package dimensions and weights, refer to these documents:

PD.iQpump.10 for 240 V models

PD.iQpump.11 for 480 V models

Technical Training

In today's world of global competition, it is impossible for a company to survive without "state-of-the-art" technically trained associates and customers. Yaskawa Technical Training Services (TTS) is comprised of engineers who are specialists in their field.

Yaskawa America has three training facilities in the United States. The primary training facility is in Yaskawa America's North American Headquarters in Waukegan, Illinois (45 miles north of Chicago, 50 miles south of Milwaukee). This facility has six training rooms; two lecture halls, two training rooms and two training labs.

Besides the possibility of attending training classes in Waukegan and Los Angeles, Yaskawa America can also bring training to the customer. On-site classes are available in two varieties. The first is to duplicate the official training classes at the customer's location. Full functioning demo units, data projector, computer and documentation can be shipped to recreate the official class on-site. The second variety is road show training. Road show training is a one-day training class that is specifically tailored to the students' needs and questions. Only basic demos are used and the topics covered in class are generated by the students in attendance.

The Yaskawa Virtual Training Room is another training option. All you need is an Internet connection and a telephone. This is a live, interactive training class, which gives you the ability to talk to the instructor as well as other students. The Internet connection allows us to show slides and demonstrate software packages. The telephone is for the audio portion of the training class. Web classes can be found on the Yaskawa formal training schedule and can also be done on-demand, per the time and preference of the customer.

To enroll, contact Technical Training Services.

Phone: 1-800-YASKAWA (1-800-927-5292), then dial 2 for "Drives" and 4 for "Training"

Phone: 1-800-YASKAWA (1-800-927-5292), then dial 2 for "Drives" and 4 for "Training"

E-mail: **training@yaskawa.com**

Check out the latest class schedule and cut sheets at www.yaskawa.com

YASKAWA

Yaskawa America, Inc.
Drives & Motion Division

2121 Norman Drive South
Waukegan, IL 60085
1-800-YASKAWA (927-5292) • Local: 847-887-7000 • Fax: 1-847-887-7310

www.yaskawa.com

Document : CA.iQpump.02 – Rev: 21-07 July 2021 • © 2017~2021