



PE® Power Electronics® International, Inc.

American Made Quality and Reliability since 1969



Micro-Speed®
Ultra Series™

3 PHASE AC VARIABLE SPEED DRIVE

MICRO-SPEED® Multi-Vector® MV-ULTRA™ & MX-ULTRA™



DESIGNED FOR HOIST AND CRANE MODERNIZATION, NEW CRANE APPLICATIONS, CONVEYORS, PUMPS, FANS, AND OTHER HIGH-RELIABILITY INDUSTRIAL PROJECTS

THE LATEST IN VARIABLE SPEED DRIVE TECHNOLOGY

ULTRA™ SERIES VFDS 1-600 HP & 1200 HP WITH PE® SMART-SET™

About the Ultra Series™: Multi-Vector® & MX™

Designed and manufactured in the United States for the crane, lifting, hoisting industries, and many other industrial applications. The Ultra™ series is the latest brand of proven variable frequency drives from Power Electronics® International, Inc.® The line combines our highly reliable power sections and instant Gang-Set® programming of the Micro-Speed® line with the latest in easy-to-use web-based programming and communications.

Amazing New Features

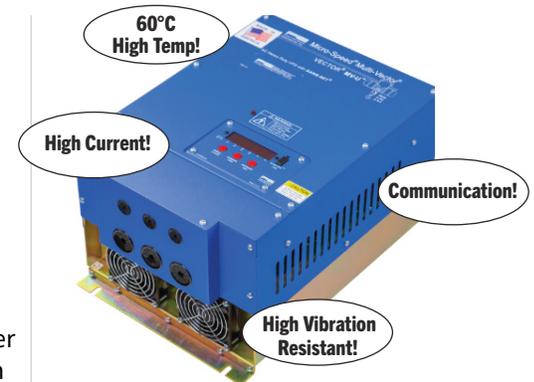
- **PE® Smart-Set™:** Upload/download settings with a flashdrive
- **PE® S.A.M.™ Swing Amplitude Manager™:** Onboard anti-sway control option unlockable via code provided by PE® after purchase.
- **Ethernet, EtherNet/IP™ & Modbus TCP/IP:** Native to drive. No cards to add! Other protocol gateways are available.

Models

- **Micro-Speed® Multi-Vector® Ultra™:** The MV-Ultra™ is a closed-loop vector drive generally used for hoists without a mechanical load brake and for travel motions requiring precise speed control of up to 6000:1. Uses encoder feedback for vector motor control, hoist safety routines, and precise speed control.
- **Micro-Speed® MX-Ultra™:** Open-loop VFD used for travel motions. Built on the industry-proven platform of the Micro-Speed® Multi-Vector® series. The MX-Ultra™ is used for horizontal applications and hoists with an internal mechanical load brake or a self-locking worm gear design. The MX-Ultra™ runs the same advanced programming as the MV-Ultra™, but without encoder feedback.

Size	Length (in)	Width (in)	Depth (in)	Weight (lbs)
a2	9	6	5.63	6.5
a2d	9	6	6.63	7
b	12	8	6.75	15
b NEMA 1	13.3	8	6.75	15
d3	14	12.31	9.63	35
d3 NEMA 1	15.1	12.31	9.63	35
d2	18	12.31	9.63	45
e2	23	16.31	11.25	95
f2	27	20.31	11.19	115
g	36	24.31	14.69	295
h	47.75	40.41	17.69	650
j	51.75	48.39	17.69	900

Ultra Series™ Footprint & Weight Chart (see website for dimension drawings)



Service Classes

- All CMAA Class A-F
- AISE TR6 Class 1 to 4
- ASME HST-4 H1 to H5
- HMI H1 to H5
- Standard duty cycle through heaviest application

Certification

- ETL/cETL listed up to 50 Hp (60-600 Hp pending)

Up-Grade-Path™ Philosophy

- We engineer all our equipment for quick and easy upgrade or future replacement in the field
- This philosophy includes equipment sizes, electrical connections and software settings
- Past and present methods of programming are subsets of future drive models
- Years from now, you can be confident that your company, equipment, investment, and technicians won't be left behind!

Meets FAR Buy American Act (BAA) USC41



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MULTI-VECTOR® ULTRA™ & MX-ULTRA™ SPECIFICATIONS

High Surge Power	Up to 300% of rated load (FLA). Best in Class!
AC Voltages	208-230, 385-415, 460 ±10%; 240, 480 +10% or -15%; 575 +10% or -15%.
Horsepower (1-600)	PE® Power-Pairing™ available with MV-U™ up to 2 x 600 Hp = 1200 Hp.
Frequency Input	50 or 60 Hz ±10% nominal (others available).
Dynamic Brake Circuit	All drives have internal dynamic braking transistors included. Internal resistors are included in select MX-U™ models.
Control Type	Fully digital sine-wave PWM. Proprietary PE® Powerboost™ hoist vector motor algorithms.
Output Hz	Up to 120 Hz standard (others on request).
Anti-Sway Control (Unlockable Option)	Eliminate sway on hoists with PE® S.A.M.™ Swing Amplitude Manager™ . Onboard crane anti-sway control options both with and without rope length feedback.
Speed Range	Advanced Micro-Positioning™ up to 6000:1 available on MV-U™ and up to 40:1 on MX-U™ .
Motor Tuning	PE® Quick-Tune™ : No need for motor/hoist decoupling. Saves time and money. Simply run unloaded hoist up, and the drive sets itself!
Speed Controls	Up to seven distinct adjustable speeds and infinitely variable control. Set speeds from 0 to 120 Hz (extended Hz version available). By using the two and three position infinitely variable speed control setting the machine operator can select any intermediate speed between high and low speeds. Use any two or three position pushbutton station or radio/IR control. Set parameters via three button standard display or webpage access. PE® Gang-Set® programming allows for the instant setting of different crane/hoist types. All parameters are adjustable. Use PE® PLC Page-Swap™ to switch settings dynamically, even while the drive is running (PE® Exclusive!).
Setting Method	Set parameters via three button standard display or webpage access. PE® Gang-Set® programming allows for the instant setting of different crane/hoist types. All parameters are adjustable. Use PE® PLC Page-Swap™ to switch settings dynamically, even while the drive is running (PE® Exclusive!).
PLC Communication	Isolated Ethernet, EtherNet/IP™, and Modbus TCP/IP. PROFINET and other protocol gateways are available.
Upload/Download	PE® Smart-Set™ flashdrive. Upload/download settings quickly. View on internal webpage via ethernet port. No software required.
Encoder Inputs	Optically isolated quadrature encoder inputs with miswiring and bad encoder checking.
Dedicated Brake Relay Output	Redundant high-reliability multi-relay (wired in series) brake output with control current sensing to control external brake contactors. Best in Class!
Programmable Relay	Includes two programmable high-reliability Form C auxiliary relays.
Analog I/O	Two Inputs: 0-10 VDC, 0-5 VDC, or 0-20 mA (requires 250 ohm resistor) Two Outputs: +10 to -10 VDC
Power Supply	Onboard power supplies for encoder (12 VDC) plus analog inputs (10 VDC) or miscellaneous control (24 VDC).
Accel/Decel Times	9+ adjustable parameters and profiles settable between 0.1 to 60 seconds.
Braking Torque	175% standard. Higher options available. Best in Industry!
Overload Capacity	175% for up to 5 minutes.* (Highest in Industry!).
Motor Overload	Thermal inputs, electromechanical overload input, and internal programmable I²T.
Circuit Protection	Ground fault
Voltage Protection	Overvoltage and undervoltage bus trips.
DC Bus Indicator	Indicator LED on until DC Bus voltage drops below 50 VDC.
Conformal Coating	Safeguard unit from corrosive gases, liquids, and excessive moisture (optional).
Enclosure	Powder coated steel (not plastic) for increased EMI protection and high resistance to atypical shock and vibration.
Vibration Resistance	PC boards and components secured with high-reliability connectors. All parts designed for some atypical vibration resistance. PE® Exclusive!
Temperature	Ambient: 14°F to +140°F (-10°C to +60°C) standard. Best in Class! 50% higher temp rating than other brands. Includes large surface area heatsinks for highest in class MTBF (Mean Time Between Failures). Storage: From -4°F to +158°F (-20°C to +70°C)
Humidity	Non-condensing
Elevation	Add sufficient cooling (or derate) for higher than 4000 feet (1220 meters).
* May need to derate temperature specification Specifications Subject to Change without Notice.	

MULTI-VECTOR® ULTRA™ & MX-ULTRA™ MODELS

208 - 230 VAC (50/60 Hz)

Model		FLA		Hp	kW	Size
MV-U™*	MX-U™*	Max	Min			
MMV123U	MMX123U**	4.3	1.9	1	0.75	a2
MMV223U	MMX223U**	8.6	3.9	2	1.5	a2
MMV323U	MMX323U**	10	5	3	2.2	a2
MMV523U	MMX523U**	16.5	6.5	5	4	a2d
MMV723U	MMX723U	24	10	7.5	5.5	b
MMV1023U	MMX1023U	32	13	10	7.5	b
MMV1523U	MMX1523U	48	19	15	11	d3
MMV2023U	MMX2023U	56	26	20	15	d3
MMV2523U	MMX2523U	68	32	25	18.5	e2
MMV3023U	MMX3023U	95	38	30	22	e2
MMV4023U	MMX4023U	119	52	40	30	f2
MMV5023U	MMX5023U	141	65	50	37	f2
MMV6023U	MMX6023U	166	75	60	45	g
MMV7523U	MMX7523U	215	97	75	55	g
MMV10023U	MMX10023U	255	115	100	75	h
MMV12523U	MMX12523U	320	144	125	90	h
MMV15023U	MMX15023U	375	168	150	110	h

*Add H to end for PE® Preset™ Hoist Model ** Internal Regen Resistors Built-in

460 VAC (50/60 Hz)

Model		FLA		Hp	kW	Size
MV-U™*	MX-U™*	Max	Min			
MMV146U	MMX146U**	2.4	1.1	1	0.75	a2
MMV246U	MMX246U**	4	1.8	2	1.5	a2
MMV346U	MMX346U**	5.6	3.2	3	2.2	a2
MMV546U	MMX546U**	9	3.2	5	4	a2
MMV746U	MMX746U	12.5	5	7.5	5.5	b
MMV1046U	MMX1046U	16.5	6.5	10	7.5	b
MMV1546U	MMX1546U	24	10	15	11	d3
MMV2046U	MMX2046U	29	13	20	15	d3
MMV2546U	MMX2546U	35	16	25	18.5	d2
MMV3046U	MMX3046U	45	19	30	22	d2
MMV4046U	MMX4046U	56	26	40	30	e2
MMV5046U	MMX5046U	68	32	50	37	e2
MMV6046U	MMX6046U	82	38	60	45	e2
MMV7546U	MMX7546U	100	48	75	55	f2
MMV10046U	MMX10046U	131	65	100	75	f2
MMV12546U	MMX12546U	166	75	125	90	g
MMV15046U	MMX15046U	196	88	150	110	g
MMV20046U	MMX20046U	250	112	200	150	h
MMV25046U	MMX25046U	315	142	250	185	h
MMV30046U	MMX30046U	355	160	300	220	h
MMV35046U	MMX35046U	450	202	350	260	h
MMV40046U	MMX40046U	495	223	400	300	h
MMV50046U	MMX50046U	620	279	500	375	j
MMV60046U	MMX60046U	720	324	600	450	j

*Add H to end for PE® Preset™ Hoist Model ** Internal Regen Resistors Built-in

MULTI-VECTOR® ULTRA™ & MX-ULTRA™ MODELS

575 VAC(50/60 Hz)

Model		FLA		Hp	kW	Size
MV-U™*	MX-U™*	Max	Min			
MMV157U	MMX157U**	1.8	0.9	1	0.75	a2
MMV257U	MMX257U**	3.2	1.5	2	1.5	a2
MMV357U	MMX357U**	4.7	3.2	3	2.2	a2
MMV557U	MMX557U**	7.2	3.2	5	4	a2
MMV757U	MMX757U	9.7	5	7.5	5.5	b
MMV1057U	MMX1057U	13	6.5	10	7.5	b
MMV1557U	MMX1557U	19	10	15	11	d3
MMV2057U	MMX2057U	23	13	20	15	d2
MMV2557U	MMX2557U	28	16	25	18.5	d2
MMV3057U	MMX3057U	36	18	30	22	d2
MMV4057U	MMX4057U	45	22	40	30	e2
MMV5057U	MMX5057U	55	27	50	37	e2
MMV6057U	MMX6057U	64	32	60	45	e2
MMV7557U	MMX7557U	78	38	75	55	f2
MMV10057U	MMX10057U	102	46	100	75	f2
MMV12557U	MMX12557U	133	60	125	90	g
MMV15057U	MMX15057U	157	71	150	110	g
MMV20057U	MMX20057U	200	90	200	150	h
MMV25057U	MMX25057U	248	112	250	185	h
MMV30057U	MMX30057U	285	128	300	220	h

*Add H to end for PE® Preset™ Hoist Model **Internal Regen Resistors Built-in

How Our Model Numbers Work

Ex: MMV4046UH

Micro-Speed® Multi-Vector® + 40 Hp + 460 V + Ultra™ + Hoist + 115 V control input (standard)

Ex: MMX1046U-24

Micro-Speed® MX™ +10 Hp + 460 V + Ultra™ + 24 V control input

Important

- 380-400 V models also available
- Regenerative braking transistors are built into all models. No need to add an extra circuit. Only use appropriate regenerative resistor available through Power Electronics® International, Inc.®
- **PE®-Preset™**: Order drives preset for hoist or travel motion allowing fast installation and safety

Applications

- **Micro-Speed® MV™** for non-mechanical load brake style hoists, also for inclined systems or special requirement horizontal motion & other applications requiring encoder feedback. All other industrial precision applications.
- Use **Micro-Speed® MX™** for travel motion and mechanical load brake hoists, pumps, fans, crushers, and special applications.
- See **CX™** & **MSM™** series for miscellaneous applications and standard overhead cranes.

MORE ABOUT PE®

Our Company

Dedicated to Quality, Safety, and Reliability

Power Electronics® International, Inc.® began in Chicago, Illinois in 1969 with designing VFDs and cycloconverters. Later, PE® became one of the early pioneers of solid-state AC motor soft-start controls and crane/hoist variable speed equipment. Unlike other brands, all PE® equipment is designed, engineered, and manufactured in our centrally located production facility near Chicago, Illinois, not far from O'Hare International Airport.

Today PE® manufactures Micro-Speed® VFDs, Smooth-Move® reduced torque control units, and custom control panels for all industries. Find PE® products in overhead cranes, hoists, trolleys, bridges, dams, pumps, fans, monorails, conveyors, and other industrial applications. Over the years, PE® has gathered a team of electronic and mechanical engineers and physicists to fulfill all your project requirements.

Since 1969, PE® has maintained the highest product quality and reliability standards set by our founder, Victor J. Habisohn.

Our Founder

Victor J. Habisohn (1931-2013)

US Navy Veteran and former electronic engineer who ran the NASA sponsored, Apollo spacecraft electronic central timing system project. It was an essential part of the Apollo Command Module and Lunar Module which landed on the moon in 1969. The design of the Central Timing Equipment was so robust that it survived splashdown and subsequently reutilized on other Apollo missions. Victor's high-reliability design for the spacecraft used the first integrated circuits ever developed which paved the way for modern miniaturized computers and electronics.

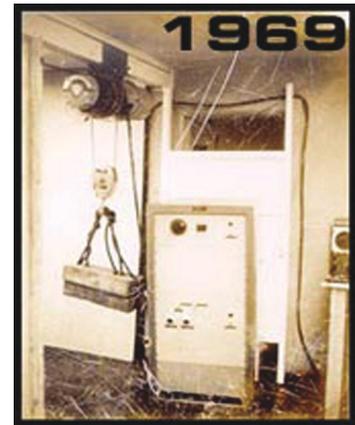
Victor applied the concept of robust electronics for reliability and safety to all PE® drives and equipment. PE® products are at their core, built to last. With high temperature hardened circuitry and high vibration resistant all American steel frames. Power Electronics® International, Inc.® continues Victor's legacy of robust, highly reliable, and easy-to-use electrical equipment.

Find PE® Equipment in...

- Overhead Crane & Hoist
- Bridge & Trolley
- Monorails
- Conveyors
- Elevators
- Automation
- Controls & Control Panels
- Fans & Pumps
- Dams & Bridges
- Food Handling
- All Industries and Applications

Join Our Many Satisfied Customers

- General Electric Co.
- NASA
- Tesla, Inc.
- US Navy
- US Army
- US Airforce
- ArcelorMittal
- Georgia-Pacific, LLC.
- Nucor Steel
- Boeing Aircraft
- TimkenSteel Corp.
- US Army Corps of Engineers
- Kimberly-Clark Corp.
- Lockheed Martin Corp.
- SeaWorld
- Duke Energy Corp.
- Alcoa Corporation
- Ford Motor Company
- General Motors
- Sikorsky Aircraft
- Deere & Company
- Chrysler Corp.
- Georgia Aquarium
- US Steel Corp.
- Kruger, Inc.
- And Many More!



First VFD for hoists in 1969!



Victor J. Habisohn pictured with the first prototype of the Central Timing Equipment used on all Apollo missions including the moon landing.

