



**BENSHAW**  
Applied Motor Controls

## Multi-Purpose Medium Voltage VFD



**MVH2 Series**

### FULL-SIZE PERFORMANCE ... COMPACT DESIGN

Benshaw MVH2 Series Medium Voltage VFDs utilize H-Bridge multi-level and overlapping wave technology for low harmonic content and a nearly perfect sine wave output. The latest in phase-locked loop technology is used to adjust drive output ... providing an ideal solution for soft start, speed control, energy savings and intelligent control of any MV induction or synchronous motor.

Offering the performance of a full-size standard drive in a small footprint layout, MVH2 Series drives are ideal for retrofit projects or any installation with space constraints.

**Rapid | Rugged | Global**

- UL Listed to 1,250HP @ 4,160V
- NEMA 1 forced air, front access, welded enclosure
- Fully integrated, packaged VFD:
  - Load break fused disconnect
  - Inline contactor
  - Built in dry type transformer
- Door-mounted touch screen HMI
- IEEE 519 compliant
- Standalone or integrated into an MCC (optional)
- V/Hz, open or closed loop, vector control
- No cable length restrictions

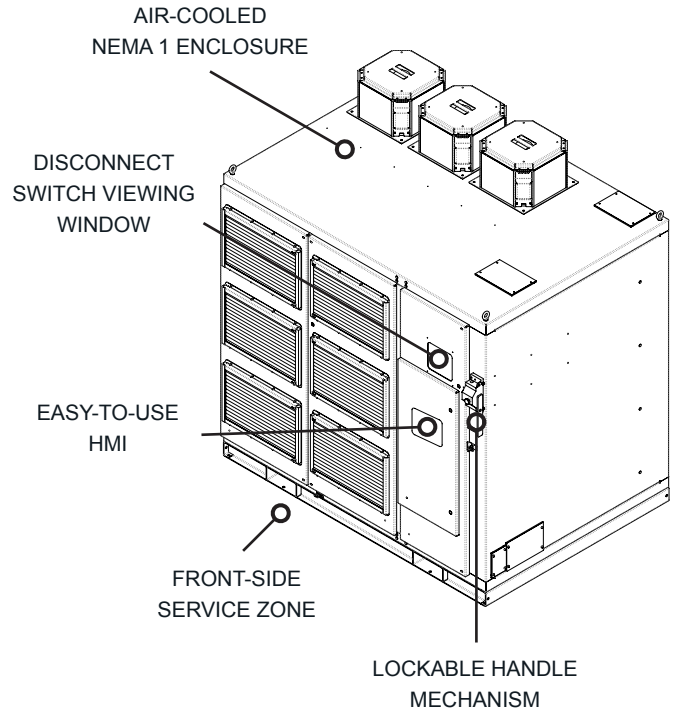
# MVH2 Series | Multi-Purpose Medium Voltage VFD

## KEY FEATURES

- Fully integrated, packaged drive
- 50 KAIC short circuit fault rating
- 400 A load break, 5 kV rated disconnect switch, mechanically interlocked
- Standalone or integrated into an MCC
- Voltage source multi-cell inverter
- Modbus RTU standard, DeviceNet, Profibus, Ethernet optional
- Class H dry type transformer (AI windings) with embedded RTDs

## COMMON APPLICATIONS

- Pumps
- Blowers
- Fans
- Compressors
- Chillers
- Test stands
- Kiln drives
- Conveyors



## PART NUMBER ASSEMBLER

MVH2	-	A	U	6	-	060	-	060	-	0048	A	-	CF	-	I	-	NB	-	FSO	-	N1	N1 = NEMA 1 Enclosure (standard)
																						FSO = Front Service Only / DSO = Double Side Access (e.g. front & rear access)
																						NB = No cell bypass / CB = Cell Bypass / RB = Redundant Cell Bypass
																						I = Inline Contactor / N = No Inline Contactor
																						CF = Fusible Disconnect / ND = No Disconnect
																						A = Air Cooling / W = Water Cooling
																						Rated Power Cell Current Amps rms
																						Output Rated Voltage Vrms
																						Input Rated Voltage Vrms
																						5 = 50Hz Input Frequency / 6 = 60Hz Input Frequency
																						I = IEC / U = UL
																						A = Asynchronous Motor / S = Synchronous
																						Benshaw MV Drive H2 Product Type

# LIST PRICE

MODEL NUMBER	VOLTAGE	APPROX MAX HP	FLA	DIMENSIONS (IN)*			LIST PRICE
				H	W	D	
<b>2300V</b>							
MVH2-AU6-023-023-0086A-CF-I-NB-FSO-N1	2300	350	86	91.5	80	60	\$298,354
MVH2-AU6-023-023-0154A-CF-I-NB-FSO-N1	2300	600	154	91.5	80	60	\$300,000
<b>4160V</b>							
MVH2-AU6-042-042-0052A-CF-I-NB-FSO-N1	4160	400	52	91.5	80	60	\$208,354
MVH2-AU6-042-042-0064A-CF-I-NB-FSO-N1	4160	500	64	91.5	80	60	\$208,889
MVH2-AU6-042-042-0080A-CF-I-NB-FSO-N1	4160	600	80	91.5	80	60	\$211,112
MVH2-AU6-042-042-0099A-CF-I-NB-FSO-N1	4160	700	99	91.5	80	60	\$288,889
MVH2-AU6-042-042-0133A-CF-I-NB-FSO-N1	4160	1000	133	91.5	80	60	\$295,556
MVH2-AU6-042-042-0154A-CF-I-NB-FSO-N1	4160	1250	154	91.5	80	60	\$300,000

**Note:** UL testing of 4160V models in September/October 2022. UL testing of 2300V units TBD.

\* Overall dimensions. Height includes fans.

# TECHNICAL DATA

FEATURE	SPECIFICATION/RATING	
Main Power Supply	Voltage	2300 or 4160V (+ 5%, -20% with output power derating)
	Frequency	50 or 60Hz (+/- 10%)
	Phase Unbalance	Less than 5%
	True Power Factor	> 0.96
Control Power Supply	Voltage	230V single phase
	Frequency	50 or 60Hz
Enclosure	Standard	NEMA 1
Control	Control Type	Sinusoidal multilevel PWM
		Fully digital
	Control Mode	Open and closed loop V/F and vector control
	Switching Mode	Multilevel IGBT
	Frequency Mode	0 ... 80Hz
	Overload Capacity	150% instantaneous 120% for 120 seconds, every 15 minutes
Efficiency	≥ 96%	
Performance	Speed Control	0.1% closed loop, 0.5% open loop
		Resolution: 1 RPM
Control Inputs	Analog	2 x Programmable isolated input: 4-20mA, 2-10V 1 x Excitation feedback 4-20mA, 2-10V
	Digital	14 Isolated inputs: 24Vdc
Control Outputs	Analog	2 Fixed outputs: 4-20mA / 2-10V 2 Programmable outputs: 4-20mA / 2-10V
	Relay	22 Isolated outputs with dry contacts
Communication	Fieldbus Communication	Standard Modbus RTU
		DeviceNet / Profibus / Ethernet IP (optional)
Power Cell Bypass Function (86A and below)	Allows for continued operation with 1 or 2 failed cells	
	Failed cells are bypassed automatically without interruption of equipment process.	
	Failed cells can be replaced quickly due to draw-out construction of power cell.	
	High productivity and low mean time to repair (MTTR)	

Future options: Cell bypass above 86A, horizontal bus, NEMA 3R

## TECHNICAL DATA, Continued

FEATURE	SPECIFICATION/RATING	
Safety	Protections (storage of last 100 faults/alarms with date and time)	DC Link overvoltage
		Drive and transformer overtemperature
		Output overcurrent
		Motor overload
		Output short circuit
		Output ground fault
		Internal fault
		External fault
		Serial communication fault
		Power supply phase loss
		Overvoltage
		Undervoltage
		Over speed
Ambient	Temperature	23°F ... 104°F (-5°C ... -40°C)
	Humidity	< 95% non-condensing
	Altitude	0 ... 5000 ft (above 3300 ft - 1% de-rating for every additional 330 ft)
Finishing	Color	ANSI 61 Gray
		Special paint color optional
Comformities Standards	Electromagnetic Compatibility	IEEE 519-2014
		IEC 61800-3
		UL/cUL (up to 154A)
Flying Start	Starting into spinning motor	
High Performance	Vector control, open & closed loop for superior dynamic speed accuracy & torque control	
Motor and System Protections	Motor Overload	Overvoltage
	Overcurrent	Current limit
	Phase loss	Over temperature
	Ground fault	Cabinet door interlock (optional)
Standards and Approvals	IEC 60038	IEC 61000
	IEC 60050-151, -551	IEC 61800-3
	IEC 60076	IEC 60757
	IEC 60721, relevant chapters	IEC 106
	UL 347A	UL 508A



**Benshaw, Inc.**  
615 Alpha Drive  
Pittsburgh, PA 15238 United States  
Toll Free: 1-800-441-8235  
Phone: 412-968-0100  
Fax: 412-968-5415  
Benshaw.com

**Benshaw Canada Controls, Inc.**  
550 Bright Street East  
Listowel, Ontario N4W 3W3  
Canada