



BENSHAW

Applied Motor Controls

AN AMCONEX GROUP COMPANY

Multi-Purpose Medium Voltage VFD



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.

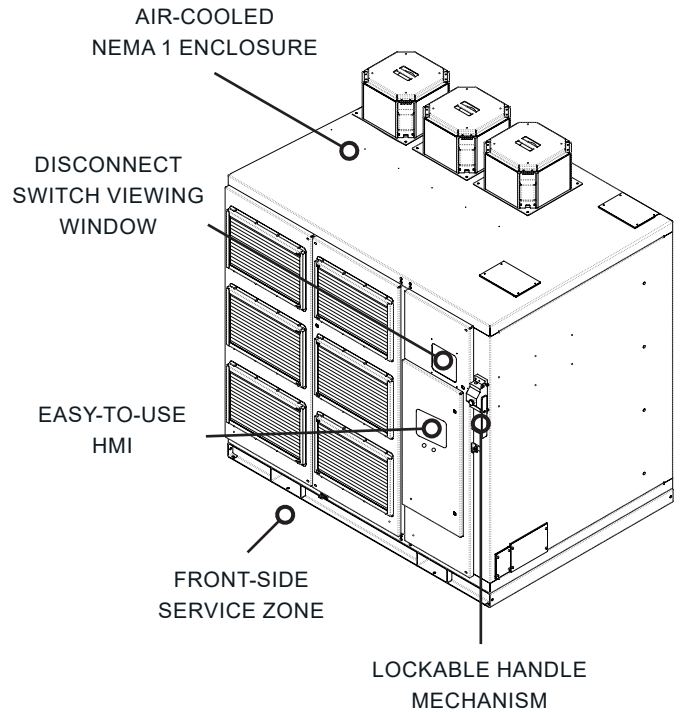
- UL Listed to 205A @ 4160V
- NEMA 1 forced air, front access, welded enclosure
- Fully integrated, packaged VFD:
 - Load break fused disconnect (up to 154A)
 - Inline contactor (up to 154A)
 - Built in dry type transformer
- Door-mounted touch screen HMI
- IEEE 519 compliant, 24 pulse design
- V/Hz, open or closed loop, vector control
- No cable length restrictions
- Standalone or integrated into an MCC (optional)
- Synchronous transfer up to 4 motors (optional)

Rapid | Rugged | Global

MVH2 Series | Multi-Purpose Medium Voltage VFD

KEY FEATURES

- Fully integrated, packaged drive
- 50 kAIC short circuit fault rating
- 60kV BIL
- 400 A load break, 5 kV rated disconnect switch, mechanically interlocked (up to 154A)
- Standalone or integrated into an MCC (future)
- Top or bottom entrance for both incoming and outgoing power
- 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	-	042	-	042	-	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 (up to 154A) / N = No Inline Contactor																						
CF = Fusible Disconnect (up to 154A) / ND = No Disconnect																						
A = Air Cooling / W = Water Cooling																						
Rated Unit Amps rms																						
Output Rated Voltage Vrms 023 = 2300V, 042 = 4160V																						
Input Rated Voltage Vrms 023 = 2300V, 042 = 4160V																						
5 = 50Hz Input Frequency / 6 = 60Hz Input Frequency																						
I = IEC / U = UL																						
A = Asynchronous Motor / S = Synchronous																						
Benshaw MV Drive H2 Product Type																						

MODEL SELECTOR / RATINGS

MODEL NUMBER	APPROX MAX HP*	FLA	DIMENSIONS (IN)**			APPROX WEIGHT (lbs)	LIST PRICE
			H	W	D		
2300V							
MVH2-AU6-023-023-0077A-CF-I-NB-FSO-N1	300	77	91.5	86	60	5200	\$306,596
MVH2-AU6-023-023-0154A-CF-I-NB-FSO-N1	600	154	91.5	86	60	5250	\$327,653
MVH2-AU6-023-023-0205A-ND-N-NB-FSO-N1	900	205	91.5	86	60	8000	\$450,450
4160V							
MVH2-AU6-042-042-0031A-CF-I-NB-FSO-N1	200	31	91.5	86	60	3820	\$277,000
MVH2-AU6-042-042-0040A-CF-I-NB-FSO-N1	300	40	91.5	86	60	4280	\$281,155
MVH2-AU6-042-042-0048A-CF-I-NB-FSO-N1	350	48	91.5	86	60	4740	\$285,372
MVH2-AU6-042-042-0061A-CF-I-NB-FSO-N1	450	61	91.5	86	60	5660	\$289,653
MVH2-AU6-042-042-0077A-CF-I-NB-FSO-N1	600	77	91.5	86	60	6120	\$290,000
MVH2-AU6-042-042-0096A-CF-I-NB-FSO-N1	700	96	91.5	86	60	6580	\$314,178
MVH2-AU6-042-042-0104A-CF-I-NB-FSO-N1	800	104	91.5	86	60	7500	\$317,853
MVH2-AU6-042-042-0115A-CF-I-NB-FSO-N1	850	115	91.5	86	60	7500	\$321,773
MVH2-AU6-042-042-0130A-CF-I-NB-FSO-N1	1000	130	91.5	86	60	7500	\$325,203
MVH2-AU6-042-042-0154A-CF-I-NB-FSO-N1	1200	154	91.5	86	60	7500	\$327,653
MVH2-AU6-042-042-0165A-ND-N-NB-FSO-N1	1250	165	91.5	86	60	8000	\$422,250
MVH2-AU6-042-042-0205A-ND-N-NB-FSO-N1	1500	205	91.5	86	60	8000	\$450,450

Note: 4160V models UL listed. UL testing of 2300V units TBD.

* Approx. Max HP based on a 4-pole motor. Size according to actual motor FLA.

** 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

* 230V power supply provided by others.

TECHNICAL DATA, Continued

FEATURE		SPECIFICATION/RATING
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)	
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
Conformities Standards	Electromagnetic compatibility	IEEE 519-2014
		IEC 61800-3
		UL/cUL (up to 205A) 4160V only. 2300V UL future.
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)
Ratings	Short circuit withstand	50kA @ 4160V
	BIL	60kV
Standard and Approvals	IEC 60038	IEC 61000
	IEC 60050-151, -551	IEC 61800-3
	IEC 60076	IEC 60757
	EC 60721, relevant chapters	IEC 106
	UL 347A	UL 508A

** Future



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