

YASKAWA

MV1000 NEMA 3R

MEDIUM VOLTAGE AC DRIVE



EXTENDING THE RANGE



Tested to withstand extreme outdoor conditions, from the heat and dust of the arid desert to the bitter cold of the tundra (-45°C to +50°C), the MV1000 NEMA 3R is available in an extended range of 500 to 6,000 HP models.

INSTALLATION FRIENDLY

- Exceeds IEEE 519 harmonic distortion requirements
- 17-level motor waveform suitable for standard motors

HIGH PERFORMANCE

- Open Loop Vector (OLV) or Closed Loop Vector (CLV) for control of the most difficult loads

USER FRIENDLY

- Intuitive operation and maintenance
- Utilizes the same tools as Yaskawa's series low voltage drives

END USER BENEFITS

1. Pre-commissioned system with integrated cooling.
2. Single source solution streamlines supply chain.
3. Scalable deployment of product to site.
4. Remote preventative maintenance monitoring.
5. 200,000 hour design life
6. Fast start-up.
7. Pre-engineered solution (electrical, mechanical).
8. No special shipping permit required.
9. No building permit required (state/provincial level).

TESTED TOUGH

Yaskawa builds upon its proven track record for quality, performance and reliability of medium voltage drives with the MV1000 NEMA 3R, our outdoor-rated version of the MV1000.

Reduce Capex and Opex
Fastest System Delivery



OPTIMAL PACKAGING DESIGN

Meets the Demands of Field Conditions

Input Switchgear

- Non-load break switch
- E-Rated current limiting fuses
- Vacuum contactor for load interruption
- All UL / CSA rated components
- Viewing window

Heat Exchangers

- Fully sealed
- Air to air heat transfer
- High efficiency
- Easy to maintain

Space for Options

- Sync. transfer reactor
- Sine wave filter
- Output transformer



500HP to 2,000 HP

Transformer Section

- 36-pulse patented design
- Galvanic isolation
- Double insulated windings
- Winding temperature monitoring and protection
- 5% taps
- Surge protected primary

Control Section

- Easy access to most control devices
- Control wiring interface
- Main processor
- Digital input/outputs
- Isolated analog inputs/outputs
- Fan control/monitoring boards

Power Cell Section

- Six cells, two per phase
- Fuse protection on each cell
- Control and monitoring via single fiber optic cable per cell
- IGBT temperature monitors
- Easy cell replacement in 15 minutes

Thermal Management System (2,500HP and Above)

- Control the internal temperature of the enclosure
- Eco-Friendly, no refrigerant required
- Internal heaters to avoid condensation
- Wide range of operation (-45°C to +50°C)
- User friendly controls
- Local and remote control
- Alarm and fault logging



2,500HP to 6,000 HP

Input Switchgear

- Load break switch
- High capacity circuit breaker
- Integral protection relay
- Surge protection
- Local and/or remote control

Transformer

- 36-pulse patented design
- Galvanic isolation
- Double insulated windings
- Temperature monitor/protection
- 5% taps

Power Cells

- Six cells, two per phase
- Fast fuse protection on each cell
- Control and monitoring via single fiber optic cable per cell
- IGBT temperature monitors
- Easy cell replacement

INDUSTRIES SERVED



Oil / Gas

- Midstream Compressors & Pumps
- Oil Field Water Injection Pumps
- High Efficiency Fracking Pumps
- Electrical Submersible Pumps
- SSP/ HSP pumps
- Gas Injection

Mining

- Slurry Pumps
- Ventilation Fans
- Conveyors
- Crushers
- Dryer Fans

Cement

- Conveyors
- Fans
- Rotary Kilns
- Pumps
- Crushers

Chemical & Petrochemical

- Pumps
- Compressors
- Extruders
- Fans

CIMR-MV2 U D 6 D A 125 O D A I B

Product Type Drive		Input Switchgear A : None B : with input switchgear
Product Series MV1000 Series		Control Voltage Class I : Internal PT
Region Code U : U.S.A.		Environmental Spec. A : Standard
Input Voltage A : 2.4 kV D : 4.16 kV F : 6.6 kV J : 13.8 kV K : 12.4 kV L : 13.2 kV W : 480 V	Note: Other input voltages available up to 15 kV. Please consult Yaskawa.	Enclosure Type OD : Outdoor Rated
Input Frequency 6 : 60 Hz		
Output Voltage Class A : 2 kV Class D : 4 kV Class F : 6 kV Class	Note: All input voltages are not necessarily compatible with all output voltage classes.	
Custom Specification A : Standard A B : Standard B		

Output Current			
2.4 kV Units		4.16 kV Units	
No.	Current (HP)	No.	Current (HP)
102	102A (450)	064	64A (500)
135	135A (600)	102	102A (800)
220	220A (1000)	125	125A (1000)
330	330A (1500)	190	190A (1500)
440	440A (2000)	250	250A (2000)
		315	315A (2500)
		375	375A (3000)
		440	440A (3500)
		505	505A (4000)
		575	575A (4500)
		625	625A (5000)
		700	700A (5500)
		800	800A (6000)

COMMON SPECIFICATIONS

Item	Specifications
Control Characteristics	Control Methods: V/f Control (V/f), Open Loop Vector Control (OLV), Closed Loop Vector Control (CLV) Frequency Control Range: 0.01 to 120 Hz Frequency Accuracy (Temperature Fluctuation): Digital input: within ±0.01% of the max output frequency (-10°C to +40°C) Analog input: within ±0.5% of the max output frequency (-10°C ± 40°C) Frequency Setting Resolution: Digital inputs: 0.01 Hz Analog inputs: 1/2048 of the maximum output frequency setting (11 bit plus sign) Output Frequency Resolution: 0.001 Hz Frequency Setting Methods: 0 to +10 V, 4 to 20 mA Starting Torque: V/f: 130% at 3 Hz, OLV: 130% at 0.3 Hz, CLV: 130% at 0 r/min Speed Control Range: V/f: 1:20, OLV: 1:100, CLV: 1:1000 Speed Control Accuracy: V/f: ± 2 to 3%, OLV: ± 0.5%, (25°C ± 10°C), CLV: ± 0.02% (25°C ± 10°C) Speed Response: OLV: 10 Hz, CLV: 50 Hz Accel/Decel Time: 0.0 to 6000.0 s (4 selectable combinations of independent acceleration and deceleration settings)
Protection Function	Motor Protection: Electronic thermal overload relay Momentary Overcurrent Protection: Drive stops when output current exceeds 132% Overload Protection: Drive stops after 60 s at 110% of rated output current Overvoltage Protection: Power Cell VPN > 1035 VDC Undervoltage Protection: Power Cell VPN < 300 VDC Momentary Power Loss Ride-Thru: Resumes operation if power loss is less than 2 s (standard) (UPS Required) Overheat Protection: Power Cell = Thermistor, Transformer = PT100 and Thermal Switch Ground Fault Protection: Electronic circuit protection
Operating Environment	Ambient Temperature: -45°C to +50°C (de-rating may apply above 40°C) Humidity: 95% RH or less (no condensation) Storage Temperature: -20°C to +60°C (short-term temperature during transportation) Altitude: Up to 2000 m without derating, up to 4000 m with output current and voltage derating
Comm. Options	Communications Protocols (Optional): EtherNet/IP, DeviceNet, Modbus TCP/IP, Modbus RTU, PROFIBUS DP, and PROFINET

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Yaskawa is the leading global manufacturer of low and medium voltage variable frequency drives, servo systems, machine controllers 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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Document No. BL.MV1000.03 | 08/25/2023 | © 2019 Yaskawa America, Inc.