Inverters
3G3MV

Quick Link
A032

Versatile Compact Inverter Offers Loop Vector and V/Hz Control

- Intuitive digital operator controls all parameter selections and settings
- Quick Start LEDs for fast setup and troubleshooting
- Standard PID control
- Modbus serial communications standard
- DeviceNet communications unit (optional) allows remote monitoring of Run/Stop status and operating conditions, and making changes to set values
- Fine-tune speed using the potentiometer on the digital operator
- User-selectable open loop vector and V/Hz control methods
- NEMA 4X models meet requirements for tough washdown and dust-tight environments
- NEMA 1 models available
- Compact size: Single phase, 230 VAC: 148 H x 170 W x 180 D mm max.
  - Three-phase, 230 VAC: 260 H x 180 W x 170 D mm max.
  - Three-phase, 460 VAC: 260 H x 180 W x 170 D mm max.
- Integrate a full-featured PLC into 3G3MV inverters with 6 input/4 output points, encoder input, interrupt inputs and pulse outputs; dual port RAM for 200 transfers per second; eliminates point-to-point wiring

Specifications

General Specifications

Power supply		
Rated input voltage & frequency	3-phase, 200 to 230 V, 50/60 Hz Single-phase, 200 to 240 V, 50/60 Hz	3-phase, 380 to 460 V, 50/60 Hz
Allowable voltage fluctuation	-15% to +10%	
Allowable frequency fluctuation	±5%	
Control characteristics		
Control method	Sine wave PWM (V/f control or voltage vector control, selectable); possible to program any V/f pattern	
Frequency control range	0.1 to 400 Hz	
Frequency accuracy (temperature change)	Digital reference: ±0.01%, 14 to 122°F (-10 to +50°C) Analog reference: ±0.5%, 59 to 95°F (25±10°C)	
Frequency setting resolution	Digital reference: 0.1 Hz (less than 100 Hz)/0.1 Hz (100 Hz or more) Analog reference: (0:06/60 Hz) equivalent to 1/1000 of max. output frequency	
Output frequency resolution	0.01 Hz	
Overload capacity	150% rated output current for one minute	
Frequency setting signal	0 to 10 VDC (20 kΩ), 4 to 20 mA (250 Ω), 0 to 20 mA (250 Ω) pulse train input, frequency setting potentiometer (Selectable)	
Accel/Decel	0.01 to 6000 seconds (accel/decel time are independently programmed 2 types)	
Braking torque	Short-term average deceleration torque: 0.1, 0.25 kW (0.13 HP, 0.25 HP): 150%; 0.55, 1.1 kW): (0.5 HP, 1 HP): 100% 1.5 kW (2 HP): 50%; 2.2 kW (3 HP) or more: 20% Continuous regenerative torque: Approx. 20% (150% with optional braking resistor, braking transistor built-in)	

General Specifications (Continued)

Protective functions		
Motor overload protection	UL-recognized electronic thermal overload relay	
Instantaneous overcurrent	Motor coasts to a stop at approximately 250% inverter rated current	
Overload	Motor coasts to a stop after one minute at 150% rated output current	
Overvoltage	Motor coasts to a stop if DC bus voltage exceeds 410 V	Motor coasts to a stop if DC bus voltage exceeds 820 V
Undervoltage	Stops when DC bus voltage is approximately 200 V or less (approx. 160 V or less for single-phase series)	Stops when DC bus voltage is approximately 400 V or less
Momentary power loss	Stops if power loss is 15 ms or more. By setting inverter, operation can be continued if power is restored within approximately 0.5 s	
Cooling method	Cooling fan is provided for the following models: 200 V, 0.75 kW or larger inverters (3-phase) 200 V, 1.5 kW or larger inverters (single-phase) Others models are self-cooling	
Cooling fin overheat	Protected by electronic circuit	
Cooling fan fault	Protected by electronic circuit (fan lock detection)	
Stall prevention	Individual levels during acceleration/running, enable/disable provided during coast to a stop	
Ground fault	Protected by electronic circuit (overcurrent level)	
Power charge indication	ON until the DC bus voltage becomes 50 V or less. RUN lamp stays ON or digital operator LED stays ON.	
Environmental conditions		
Enclosure rating	Enclosed wall mounted NEMA 1	
Location	Indoor (free from corrosive gases and dust)	
Ambient temperature	Enclosed wall mounted NEMA 1: 14 to 105° F (-10 to +40°C), not frozen	
Storage temperature	-4 to 140°F (-20 to 60°C)	
Humidity	95% RH or less (Non-condensing)	
Elevation	1,000 m (3,281 feet) or below	
Wiring distance	328 ft (100 m) or less between inverter and motor	
Vibration	9.8 m/s^2 (1G) less than 20 Hz, up to 2 m/s^2 (0.2G) at 20 to 50 Hz	
Other functions		
Multi-function inputs	Seven of the following input signals are selectable: Forward/reverse run (3-wire sequence), fault reset, external fault (NO/NC contact input), multi-step speed operation, Jog command, accel/decel time select, external base block (NO/NC contact input), speed search command, UP/DOWN command, accel/decel hold command, LOCAL/REMOTE selection, communication/control circuit terminal selection, emergency stop fault, emergency stop alarm, self test, PID control cancel, PID integral reset/hold	
Multi-function outputs	Following output signals are selectable (1 NO/NC contact output, 2 photo-coupler outputs): Fault, running, zero speed, at frequency, frequency detection (output frequency = or = set value), during overtorque detection, during undervoltage detection, minor error, during baseblock, operation mode, inverter run ready, during fault retry, during UV, during speed search, data output through communication, PID feedback loss detection	
Standard functions	Voltage vector control, full-range automatic torque boost, slip compensation, DC injection braking current/time at start/stop frequency reference bias/gain, MEMOBUS communications (RS-485/422, max. 19.2 K bps), PID control, energy-saving control, parameter copy, frequency reference with built-in potentiometer	

Inverter PLC Specifications

Model	**3G3MV-P10CDT3-E**	**3G3MV-P10CDT-E**
Type	Full feature PLC installs on face of 3G3MV inverters with 1/4 to 10 HP rating	
I/O points	6 input points (bi-directional input at 5 kHz; unidirectional input at 20 kHz) 4 output points (1 relay, 3 NPN transistor); I/O can be set for interrupt inputs (50 μs response) or pulse outputs	
Clock/calendar	Yes	No
Encoder interface	Yes	Yes
Connectivity	Direct HMI connection Peripheral port Serial ports: RS-232C, RS-422/485	Direct HMI connection Peripheral port RS-232C serial port
Memory backup	Flash memory and battery	Flash memory and capacitor
Dimensions	128 H x 68 W x 38.1 D mm	
Software	CX-Programmer included in CX-One	

Ordering Information

MV Inverter

Description	Enclosure	Rating			Model	
		HP	Voltage	Phase	NEMA 1 enclosure	NEMA 4X enclosure
Compact inverter with open loop vector and V/Hz control methods	NEMA 1 and NEMA 4X models available	1/8	230	1	**3G3MV-CB001**	—
		1/4	230	1	**3G3MV-CB002**	—
		3/4	230	1	**3G3MV-CB004**	—
		1	230	1	**3G3MV-CB007**	—
		2	230	1	**3G3MV-CB015**	—
		3	230	1	**3G3MV-CB022**	—
		5	230	1	**3G3MV-CB037**	—
		1/8	230	3	**3G3MV-C2001**	—
		1/4	230	3	**3G3MV-C2002**	**V7CU-20P2-N4**
		3/4	230	3	**3G3MV-C2004**	**V7CU-20P4-N4**
		1	230	3	**3G3MV-C2007**	**V7CU-20P7-N4**
		2	230	3	**3G3MV-C2015**	**V7CU-21P5-N4**
		3	230	3	**3G3MV-C2022**	**V7CU-22P2-N4**
		5	230	3	**3G3MV-C2037**	**V7CU-23P7-N4**
		7 1/2	230	3	**3G3MV-C2055**	**V7CU-25P5-N4**
		10	230	3	**3G3MV-C2075**	**V7CU-27P5-N4**
		1/2	460	3	**3G3MV-C4002**	**V7CU-40P2-N4**
		1	460	3	**3G3MV-C4004**	**V7CU-40P4-N4**
		2	460	3	**3G3MV-C4007**	**V7CU-40P7-N4**
		3	460	3	**3G3MV-C4015**	**V7CU-41P5-N4**
		3 1/2	460	3	**3G3MV-C4022**	**V7CU-42P2-N4**
		5	460	3	**3G3MV-C4037**	**V7CU-43P7-N4**
		10	460	3	**3G3MV-C4055**	**V7CU-45P5-N4**
		12 1/2	460	3	**3G3MV-C4075**	**V7CU-47P5-N4**

Accessories

Item	Description		Model
Inverter PLC	Advanced PLC with 6 inputs/4 outputs; built-in real-time clock/calendar and encoder interface; RS-422/485 and RS-232C serial communications		**3G3MV-P10CDT3-E**
	Standard PLC with 6 inputs/4outputs, encoder interface and RS-232C serial communications		**3G3MV-P10CDT-E**
DeviceNet unit	DeviceNet slave unit; permits a PLC to monitor Run/Stop and operating conditions and make changes in set values. Remote I/O and message communications can be used simultaneously between the PLC and 3G3MV inverter.		**3G3MV-PDRT2**
DIN rail mounting bracket	Single-phase, 230 VAC	3G3MV-□B001/-□B002/-□B004	**3G3IV-PEZZ08122A**
		3G3MV-□B007/-□B015	**3G3IV-PEZZ08122B**
		3G3MV-□B022	**3G3IV-PEZZ08122C**
		3G3MV-□B037	**3G3IV-PEZZ08122D**
	3-phase, 230 VAC	3G3MV-□2001/-□2002/-□2004/-□2007	**3G3IV-PEZZ08122A**
		3G3MV-□2015/-□2022	**3G3IV-PEZZ08122B**
		3G3MV-□2037	**3G3IV-PEZZ08122C**
	3-phase, 460 VAC	3G3MV-□4002/-□4004/-□4007/-□4015/-□4022	**3G3IV-PEZZ08122B**
		3G3MV-□4037	**3G3IV-PEZZ08122C**

Support Software and Programming Devices

Item	Description	Model
CX-Drive	Windows®-based programming software for setup; uploads and downloads parameters and monitoring	**Included in CX-ONE**
CX-Programmer	Sets up and monitors PLC operations	**Included in CX-ONE**

Manuals

Item	Description	Model
User's manual	3G3MV Series Multi-function Compact Inverter User Manual	**I527-E3-2**
DeviceNet unit	3G3MV-PDRT2 DeviceNet Communications Unit Operation Manual	**I539-E1-2**

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