SYSDRIVE
3G3MV AC Inverter

NEW

COMPACT,

GENERAL

PURPOSE

AC INVERTER

FROM OMRON

OMRON®

the problem solvers™

Advanced speed control in a compact package

Omron's new SYSDRIVE 3G3MV Series AC Inverter

Giving you the perfect combination of advanced speed control and customized functionality in an extraordinarily compact housing! This powerful inverter really delivers. Its maximum output frequency of 400Hz makes it ideal for small motor control (1/8 – 5 HP) in a wide variety of applications and is feature-packed with 179 user-configurable parameters that let you customize the inverter's operation to your specific application.

This small but powerful inverter is easy to set up, wire and operate. What's more, the 3G3MV inverter lets you select the control method that best suits your needs – sensorless voltage vector control or standard Volts/Hz. Standard models provide energy saving function and PID control.

SHOWN AT ACTUAL SIZE - 128 mm (5.04 in.)

Compact and Cost Effective

Measuring only 5 inches high, it will fit in the smallest spaces, saving you panel space and size. Easily mount the 3G3MV on a DIN rail using its DIN rail-mounting bracket.

Easy to set up, run and monitor

The simple digital operator controls all function selections and operation. Despite its incredible 179-parameter configurability, all settings are defaulted to typical use settings that let you get up and running quickly. In addition, a convenient analog speed dial lets you easily adjust the exact speed for your application.

Versatile Communications

The 3G3MV inverters support RS-422 and RS-485 communications and can support DeviceNet via an optional communications board.

Multi-Function I/O

Wiring the 3G3MV is simple with easy to use screw terminals that accept 0 -10 V, 4-20 mA or 0 - 20 mA analog signals or pulse train inputs between 0.1 kHz and 33 kHz (scalable). It also offers analog and digital outputs for direct monitoring and control. The multi-function inputs can be set to either PNP or NPN providing flexibility in input signals.

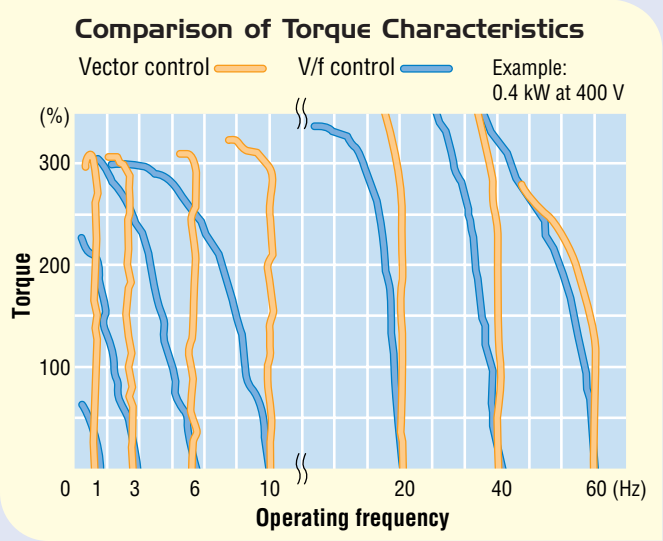
Extensive protective functions

With its built-in stall prevention, ground fault protection and auto recovery functions, you can count on the 3G3MV for reliable operation. The unit also features built-in functions like current limit and UL listed thermal overload protection to prevent damage and downtime while ensuring smooth motor operation.

Global Construction Meets international UL, cUL and CE standards for global application coverage.

Sensorless Vector Control

Choose Volts/Hz for general purpose applications or sensorless Voltage Vector control when high torque output at lows speeds is critical (150% torque at 1 Hz)



Special functions include:

- Programmable soft starts
- Motor slip compensation
- 16 preset speeds
- Full range automatic torque boost
- Speed search
- PID control
- Multi-Function I/O
- Energy saving function
- Stall prevention
- Parameter copy function
- Skip frequencies

The 3G3MV gives you the performance and reliability of larger inverters at a fraction of the size and cost.

Intuitive Digital Operator

From set up to wiring, the SYSDRIVE 3G3MV is designed for simplicity. Its user-friendly digital operator gives you easy access to all 179 of the inverter's user selectable parameters. Additionally, the parameter copy function allows you to set up one inverter, save the parameters to the digital operator's memory and download them into multiple 3G3MV inverters. This function can also be used to verify parameters between the digital operator and an inverter.

4-digit data display shows the drive's operating conditions, parameter values and fault codes. While the default is Hz, the 3G3MV can be scaled to read out in engineering units like RPM.

Quick start LEDs simplify monitoring the inverter's status

FREF - frequency reference can be monitored or set

FOUT - output frequency can be monitored

IOUT - output current can be monitored

MNTR - monitor the status of important settings such as error logs, input & output terminal status, and PID characteristics

F/R - direction of rotation can be selected or viewed

LO/RE - operation from digital operator or set parameters can be selected

PRGM - all accessible parameters can be set or monitored

Face-mounted analog dial provides easy speed control

Operation keys offer simple access to parameters. Increase or decrease parameter numbers, set numbers and multi-function monitor numbers.

Use the digital operator's access control function to protect crucial parameter values

Small in size, not in application

Industry

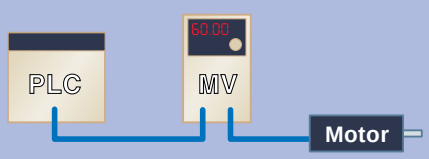
Food/Beverage Processing
HVAC
Machine Tool
Printing
Textiles
Petrochemical processing
General Manufacturing
Material Handling

Applications

Pumps
Fans
Conveyors
Mixers
Hoists
Blowers
Compressors
Packaging

Typical Configurations with Omron PLCs

Micro PLC - CPM1A, CPM2A



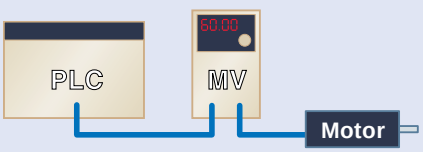
Methods:

A - Pulse: output (CPM1A - 2 kHz, CPM2A - 10 kHz) can be amplified to 33 kHz in 3G3MV Inverter by using scaling function

B - Analog

C - Discrete I/O

Small PLC - CQM1



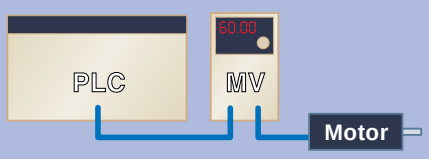
Methods:

A - Pulse: 50 kHz output of CPU43 can be scaled to 33 kHz, the maximum frequency accepted by the 3G3MV

B - Analog

C - Discrete I/O

Medium size PLC - C200Hα, CS1



Methods:

A - Pulse: limited to 33 kHz in 3G3MV

B - Analog

C - Discrete I/O

The 3G3MV inverter can also be used in a stand alone configuration

Voltage Class			230 VAC single- / three-phase							460 VAC three-phase					
Part numbers	MODEL 3G3MV-	Three-phase NEMA-1	C2001	C2002	C2004	C2007	C2015	C2022	C2037	C4002	C4004	C4007	C4015	C4022	C4037
		Three-phase IP-20	A2001	A2002	A2004	A2007	A2015	A2022	A2037	A4002	A4004	A4007	A4015	A4022	A4037
		Single-phase NEMA-1	CB001	CB002	CB004	CB007	CB015	CB022	CB037	–	–	–	–	–	–
		Single-phase IP-20	AB001	AB002	AB004	AB007	AB015	AB022	AB037	–	–	–	–	–	–
Max. Applicable Motor Output*1 HP (kW)			0.13 (0.1)	0.25 (0.2)	0.5/.75 (0.4)	1 (0.75)	2 (1.5)	3 (2.2)	5 (3.7)	(0.5) 0.2	(1) 0.4	(1.5/2) .75	(3) 1.5	(3) 2.2	(5) 3.7
Output Characteristics	Inverter Capacity (kVA)		0.3	0.6	1.1	1.9	3.0	4.2	6.7	0.9	1.4	2.6	3.7	4.2	7.0
	Rated Output Current (A)		0.8	1.6	3	5	8	11	17.5	1.2	1.8	3.4	4.8	5.5	9.2
	Max. Output Voltage (V)		3-phase, 200 to 230 V (proportional to input voltage) Single-phase, 200 to 240 V (proportional to input voltage)							3-phase, 380 to 400 V (proportional to input voltage)					
	Max. Output Frequency (Hz)		400 Hz (Programmable)												
Power Supply	Rated Input Voltage and Frequency		3-phase, 200 to 230 V, 50/60Hz Single-phase, 200 to 240 V, 50/60Hz							3-phase, 380 to 460 V, 50/60Hz					
	Allowable Voltage Fluctuation		-15% to +10%												
	Allowable Frequency Fluctuation		±5%												
Control Characteristics	Control Method		Sine wave PWM (V/f control/voltage vector control selectable)												
	Frequency Control Range		0.1 to 400Hz												
	Frequency Accuracy (Temperature Change)		Digital reference: ±0.01% (-10 to +50˚C) Analog reference: ±0.5% (25±10˚C)												
	Frequency Setting Resolution		Digital reference: 0.01 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 Reference Signal Accel/Decel Time		0 to 10 VDC (20 kW), 4 to 20 mA (250 W), 0 to 20 mA (250 W) pulse train input, frequency setting potentiometer (Selectable) 0.00 to 6000 sec. (accel/decel time are independently programmed 2 types)												
	Braking Torque		Short-term average deceleration torque*2; 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)												
	V/f Characteristics		Possible to program any V/f pattern												
Protective Functions	Motor Overload Protection		Electronic thermal overload relay												
	Instantaneous Overcurrent		Motor coasts to a stop at approx. 250% of inverter rated current												
	Overload		Motor coasts to a stop after 1 minute at 150% of inverter rated output current												
	Overvoltage		Motor coasts to a stop if DC bus voltage exceed 410 V							Motor coasts to a stop if DC bus voltage exceeds 820 V					
	Undervoltage		Stops when DC bus voltage is approx. 200 V or less (approx. 160 V or less for single-phase series)							Stops when DC bus voltage is approx. 400 V or less					
	Momentary Power Loss		Stops for 15ms or more. By setting inverter, operation can be continued if power is restored within approx. 0.5s												
	Cooling Fin Overheat		Protected by electronic circuit												
	Stall Prevention Level		Can be set individually during accel/decel, provided/not provided available during coast to a stop												
	Cooling Fan Fault		Protected by electronic circuit (fan lock detection)												
	Ground Fault		Protected by electronic circuit (overcurrent level)												
	Power Charge Indication		ON until the DC bus voltage becomes 50V or less. RUN lamp stays ON or digital operator LED stays ON.												
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												
Environmental Conditions	Ambient Temperature		Open chassis IP20: -10 to +50˚C (14 to 122˚F) Open chassis IP20 (Top-closed type) and enclosed wall mounted NEMA-1: -10 to +40˚C (14 to 105˚F) (not frozen)												
	Humidity		95% RH or less (non-condensing)												
	Storage Temperature*3		-4 to 140˚F (-20 to +60˚C)												
	Location		Indoor (free from corrosive gases or dust)												
	Elevation		3280 ft (1000 m) or less												
	Vibration		Up to 9.8 m/S2 (1 G) at less than 20 Hz, up to 2 m/S2 (0.2 G) at less than 20 to 50 Hz												
Wiring Distance			328 ft (100 m) or less between Inverter and Motor												
Other Functions	Input Signals	Multi-function Input	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 baseblock (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												
	Output Signals	Multi-function Output	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												

*1: Based on a standard 4-pole motor for max. applicable motor output. Select the inverter model within the allowable motor rated current
*2: Shows deceleration torque for uncoupled motor decelerating from 60 Hz with the shortest possible deceleration time
*3: Temperature during shipping (for short period)

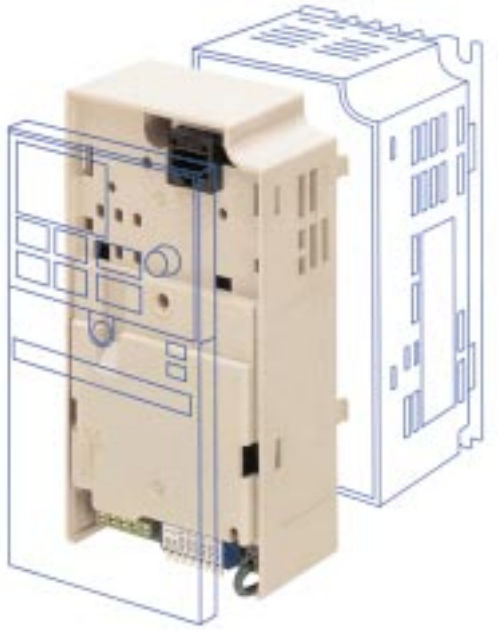
Options

Inverter		DIN Rail Mounting Bracket
3-Phase 230 VAC	3G3MV-☐2001/-☐2002/-☐2004/-☐2007	3G3IV-PEZZ08122A
	3G3MV-☐2015/-☐2022	3G3IV-PEZZ08122B
	3G3MV-☐2037	3G3IV-PEZZ08122C
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 460 VAC	3G3MV-☐4002/-☐4004/-☐4007/-☐4015/-☐4022	3G3IV-PEZZ08122B
	3G3MV-☐4037	3G3IV-PEZZ08122C

Accessories

The 3G3MV-PDRT1-SINV DeviceNet Communications Unit makes it possible for the SYSDRIVE 3G3MV to communicate over DeviceNet. The unit permits a PLC to monitor Run/Stop and operating conditions and make changes in set values. Remote I/O communications and message communications can be used simultaneously between the PLC and 3G3MV inverter.

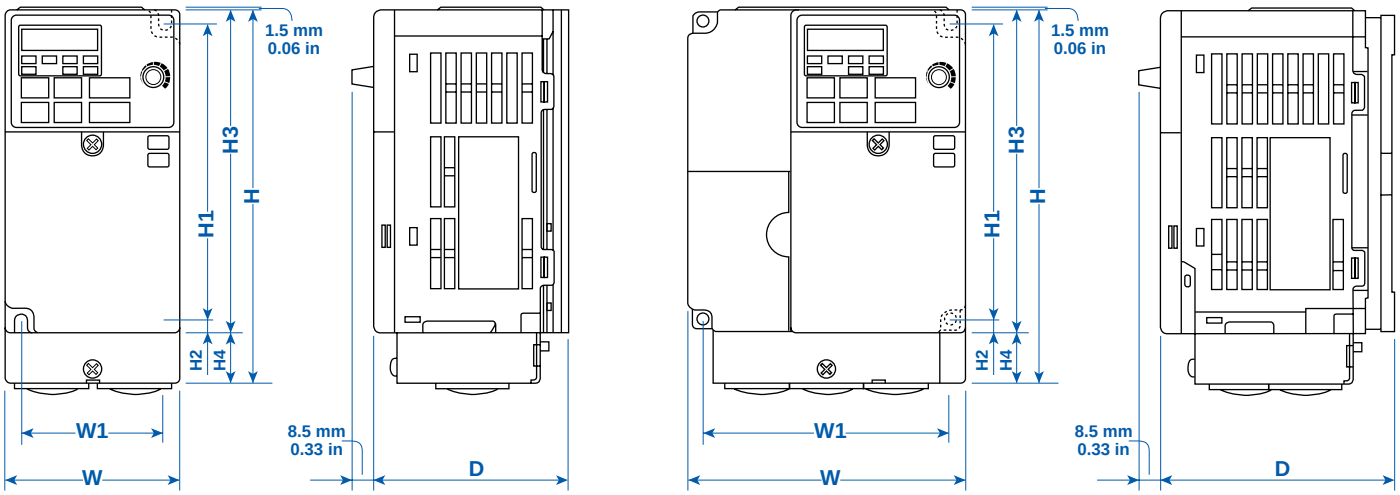
Inverter	DeviceNet Option Unit
ALL MODELS	3G3MV-PDRT1-SINV



Ordering Information

Rated Voltage	Enclosure Type	Rated Output Current (A)	Nominal Horsepower (kW)	Part Number
3-Phase 230 VAC	NEMA-1	.8	.13 (0.1)	3G3MV-C2001
	For Open-Chassis IP-20 Models: replace C with **A** in part number	1.6	.25 (0.2)	3G3MV-C2002
		3.0	.5/.75 (0.4)	3G3MV-C2004
		5.0	1.0 (0.75)	3G3MV-C2007
		8.0	2.0 (1.5)	3G3MV-C2015
		11.0	3.0 (2.2)	3G3MV-C2022
		17.5	5.0 (3.7)	3G3MV-C2037
Single-Phase 230 VAC	NEMA-1	.8	.13 (0.1)	3G3MV-CB001
	For Open-Chassis IP-20 Models: replace C with **A** in part number	1.6	.25 (0.2)	3G3MV-CB002
		3.0	.5/.75 (0.4)	3G3MV-CB004
		5.0	1.0 (0.75)	3G3MV-CB007
		8.0	2.0 (1.5)	3G3MV-CB015
		11.0	3.0 (2.2)	3G3MV-CB022
		17.5	5.0 (3.7)	3G3MV-CB037
3-Phase 460 VAC	NEMA-1	1.2	.5 (0.2)	3G3MV-C4002
	For Open-Chassis IP-20 Models: replace C with **A** in part number	1.8	1.0 (0.4)	3G3MV-C4004
		3.4	1.5/2 (0.75)	3G3MV-C4007
		4.8	3.0 (1.5)	3G3MV-C4015
		5.5	3.0 (2.2)	3G3MV-C4022
		9.2	5.0 (3.7)	3G3MV-C4037

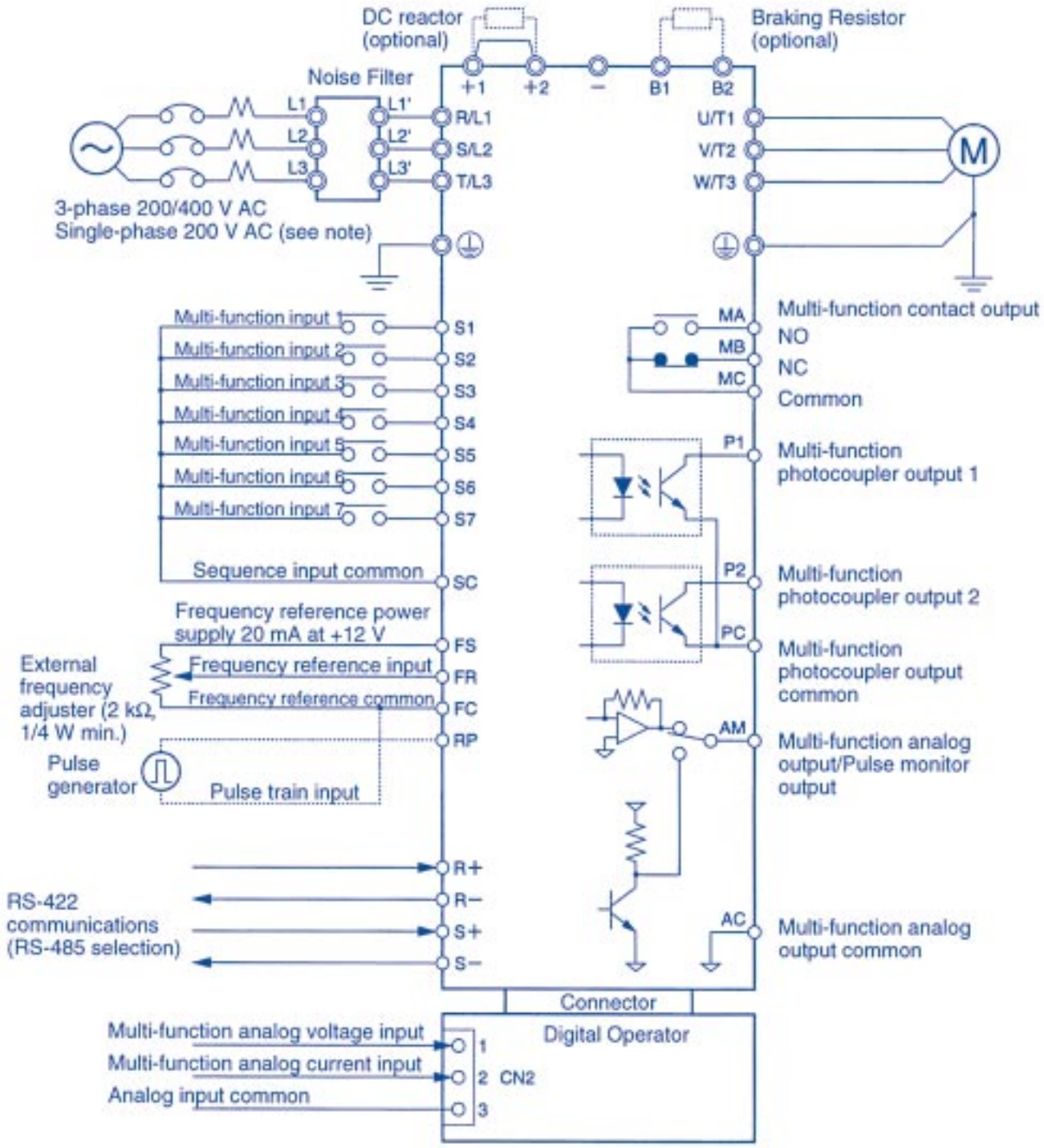
Note: Nominal HP rating based on standard 1800 RPM motor amperage.



• IP-20 model dimensions will vary slightly, please refer to operation manual •

Voltage Class	Model Number		W	H	D	W1	H1	H2	H3	H4
230 VAC 3-Phase	C2001	mm	68	148	76	56	118	5	128	20
		inch	*2.68*	*5.83*	*2.99*	*2.20*	*4.65*	*0.20*	*5.04*	*0.79*
	C2002	mm	68	148	76	56	118	5	128	20
		inch	*2.68*	*5.83*	*2.99*	*2.20*	*4.65*	*0.20*	*5.04*	*0.79*
	C2004	mm	68	148	108	56	118	5	128	20
		inch	*2.68*	*5.83*	*4.25*	*2.20*	*4.65*	*0.20*	*5.04*	*0.79*
	C2007	mm	68	148	128	56	118	5	128	20
		inch	*2.68*	*5.83*	*5.04*	*2.20*	*4.65*	*0.20*	*5.04*	*0.79*
	C2015	mm	108	148	131	96	118	5	128	20
		inch	*4.25*	*5.83*	*5.16*	*3.78*	*4.65*	*0.20*	*5.04*	*0.79*
	C2022	mm	108	148	140	96	118	5	128	20
		inch	*4.25*	*5.83*	*5.51*	*3.78*	*4.65*	*0.20*	*5.04*	*0.79*
	C2037	mm	140	148	143	96	118	5	128	20
		inch	*5.51*	*5.83*	*5.63*	*3.78*	*4.65*	*0.20*	*5.04*	*0.79*
230 VAC Single-Phase	CB001	mm	68	148	76	56	118	5	128	20
		inch	*2.68*	*5.83*	*2.99*	*2.20*	*4.65*	*0.20*	*5.04*	*0.79*
	CB002	mm	68	148	76	56	118	5	128	20
		inch	*2.68*	*5.83*	*2.99*	*2.20*	*4.65*	*0.20*	*5.04*	*0.79*
	CB004	mm	68	148	131	56	118	5	128	20
		inch	*2.68*	*5.83*	*5.16*	*2.20*	*4.65*	*0.20*	*5.04*	*0.79*
	CB007	mm	108	148	140	96	118	5	128	20
		inch	*4.25*	*5.83*	*5.51*	*3.78*	*4.65*	*0.20*	*5.04*	*0.79*
	CB015	mm	108	148	156	96	118	5	128	20
		inch	*4.25*	*5.83*	*6.14*	*3.78*	*4.65*	*0.20*	*5.04*	*0.79*
	CB022	mm	140	148	163	128	118	5	128	20
		inch	*5.51*	*5.83*	*6.42*	*5.04*	*4.65*	*0.20*	*5.04*	*0.79*
	C2037	mm	170	148	180	158	118	5	128	20
		inch	*6.69*	*5.83*	*7.09*	*6.22*	*4.65*	*0.20*	*5.04*	*0.79*
460 VAC 3-Phase	C4002	mm	108	148	92	96	118	5	128	20
		inch	*4.25*	*5.83*	*3.62*	*3.78*	*4.65*	*0.20*	*5.04*	*0.79*
	C4004	mm	108	148	110	96	118	5	128	20
		inch	*4.25*	*5.83*	*4.43*	*3.78*	*4.65*	*0.20*	*5.04*	*0.79*
	C4007	mm	108	148	140	96	118	5	128	20
		inch	*4.25*	*5.83*	*5.51*	*3.78*	*4.65*	*0.20*	*5.04*	*0.79*
	C4015	mm	108	148	156	96	118	5	128	20
		inch	*4.25*	*5.83*	*6.14*	*3.78*	*4.65*	*0.20*	*5.04*	*0.79*
	C4022	mm	108	148	156	96	118	5	128	20
		inch	*4.25*	*5.83*	*6.14*	*3.78*	*4.65*	*0.20*	*5.04*	*0.79*
	C4037	mm	140	148	143	128	118	5	128	20
		inch	*5.51*	*5.83*	*5.63*	*5.04*	*4.65*	*0.20*	*5.04*	*0.79*

Standard Connections



Note: Connect single-phase 230 VAC to terminals R/L1 and S/L2 of the 3G3MV-CB□.

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