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[3G3RV-P10ST8-E](#)

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# Inverters RV



## Flux Vector Inverter for General-Purpose & High-End Applications

- Wide range of sizes available in 230 VAC and 460 VAC, from ½ to 150 HP in 230 VAC and ¼ to 500 HP in 460 VAC. It is UL, cUL and CE compliant
- Volts/Hertz setting for simple applications and open or closed loop vector control for advanced applications satisfy most motor control needs
- Built-in functions like PID parameter calculation, Energy savings, Configurable digital and analog I/O, Over-current tripping protection ensures uninterrupted operation, DC Bus choke above 30 HP, and 12 pulse rectification standard above 50 HP (100 HP at 460 V)
- New static auto-tune function that eliminates the need for motor rotation to determine and set parameters
- High-slip braking function for intermittent braking applications shortens motor stopping time by one-third without using braking resistors
- Broad Network Communications available like a built-in RS-485/422 Modbus communications protocol and made available optional cards for DeviceNet (3G3RV-PDRT2), Modbus Plus (CM071), Ethernet Modbus TCP/IP (CM090), LONWorks (CM048) and Profibus-DP (CM061)



### Canada Only

- High reliability with an MTBF of 28 years
- Easy to maintain and inspect the cooling fan with detachable fan design and life-prolonging automatic fan shutoff; split cover panel allows safe access to control terminals
- Quick inverter setup simplified through a quick program mode and the standard keypad doubles as a copy unit to set multiple drives
- Removable terminal strip eliminates the need to re-wire the drive
- Integrate a PLC into 3G3RV inverters with 6 input/4 output points, clock/calendar and encoder interface built in
- All RV models have a unique, low-carrier PWM control to suppress audible noise

## Specifications

### Inverters

Control characteristics	
Control method	Sine wave PWM; Closed loop flux vector, Open loop vector control, V/f control, V/f with PG control (switched by parameter setting)
Speed control range	100:1 (1000:1 with PG)
Speed control accuracy	±0.2% (25°C ±10°C) (±0.02% with PG)
Speed control response	5 Hz (30 Hz with PG)
Torque characteristics	Heavy duty/CT selected (low carrier, fixed torque applications): 150% /0.5 Hz (Open or closed loop vector control) Normal duty/VT selected (high carrier, variable torque applications): 120%/0.5 Hz
Frequency control range	0.01 to 300 Hz (CT selected.), 0.01 to 400 Hz (VT selected.)
Frequency accuracy (temperature characteristics)	Digital references: ±0.01% (-10°C to +40°C) Analog references: ±0.1% (25°C ±10°C)
Frequency setting resolution	Digital references: 0.01 Hz Analog references: 0.03 Hz/60 Hz (10 bit with sign)
Output frequency resolution	0.001 Hz
Overload capacity and maximum current	Heavy duty/CT selected: 150% of rated output current per minute Normal duty/VT selected: Approximately 110% of rated output current per minute
Frequency setting signal	Voltage input of 0 to ±10 or 0 to 10 (20 kΩ) VDC or current input of 4 to 20 mA
Acceleration/deceleration time	0.01 to 6000.0 s (4 selectable combinations of independent acceleration and deceleration settings)
Braking torque	Approximately 20% (Approximately 125% with Braking Resistor option) (100% + with High Slip Braking)
Main control functions	Auto restart after momentary power loss, speed searches, overtorque detection, torque limits, 16-speed control (maximum), acceleration/deceleration time changes, S-curve acceleration/deceleration, 2-wire or 3-wire sequence, auto-tuning (rotational or stationary), dwell functions, cooling fan ON/OFF control, slip compensation, torque compensation, jump frequencies, upper and lower frequency limits, DC injection braking for starting and stopping, high-slip braking, PID control (with sleep function), energy saving control, RS-485/422A communications (Conforms to Modbus, 19.2 kbps maximum), fault reset, and function copying

Protective functions	
Motor protection	UL recognized protection by electronic thermal overload relay ( <sup>i2t</sup> ).
Overcurrent protection	Instantaneous protection. Stops at approximately 200% of rated output current.
Overload protection	Heavy duty/CT selected (low carrier, fixed torque applications): 150% of rated output current per minute (not for 110 kW) Normal duty/VT selected (high carrier, variable torque applications): Approximately 110% of rated output current per minute
Overvoltage protection	200 Class Inverter: Stops when main-circuit DC voltage is above 410 VDC. 400 Class Inverter: Stops when main-circuit DC voltage is above 820 VDC.
Undervoltage protection	200 Class Inverter: Stops when main-circuit DC voltage is below 190 VDC. 400 Class Inverter: Stops when main-circuit DC voltage is below 380 VDC.
Momentary power loss ride thru	Stops for 15 ms or more. By selecting the momentary power loss method, operation can be continued if power is restored within 2 s.
Cooling fin overheating	Protection by thermistor
Grounding protection	Protection by electronic circuits. (Overcurrent level)
Charge indicator	Lit when the main circuit DC voltage is approximately 50 V or more.
Environmental conditions	
Application site	Indoor (no corrosive gas, dust, etc.)
Ambient operating temperature	-10°C to 40°C (Closed wall-mounted type) / 10°C to 45°C (Open chassis type)
Storage temperature	-20°C to + 60°C (short-term temperature during transportation)
Ambient operating humidity	95% max. (with no condensation)
Altitude	3300 ft (1000 m) max.
Vibration	10 to 20 Hz, 9.8 m/s <sup>2</sup> max.; 20 to 50 Hz, 2 m/s <sup>2</sup> max, oscillation vibration of 20 Hz
Protective enclosure	Enclosed, wall-mounting (NEMA1: Equivalent to IP20) or Mounted in a panel (equivalent to IP00)

## Inverter PLC

Model	<b>3G3RV-P10ST8-E</b>
Type	Embedded board PLC, installs inside 3G3RV inverters
I/O points	6 input points, 4 output points on the PLC board 256 I/O by using CompoBus/S distributed network
Clock/calendar	Yes
Encoder interface	Yes
Connectivity	Peripheral port Serial ports: RS-232C, RS-422/485 CompoBus/S master DeviceNet slave
Software	CX-Programmer included in CX-One

## Ordering Information

### RV Inverter

Description	Enclosure	Rating	Model
Flux vector inverter with selectable constant torque and variable torque	NEMA 1	0.5 HP 3.2 A, 230 VAC	RV-A2004
		1.0 HP 4.1 A, 230 VAC	RV-A2007
		2 HP 7 A, 230 VAC	RV-A2015
		3 HP 9.6 A, 230 VAC	RV-A2022
		5 HP 15 A, 230 VAC	RV-A2037
		7.5 HP 23 A, 230 VAC	RV-A2055
		10 HP 31 A, 230 VAC	RV-A2075
		15 HP 45 A, 230 VAC	RV-A2110
		20 HP 58 A, 230 VAC	RV-A2150
		25 HP 71 A, 230 VAC	RV-A2185
		30 HP 85 A, 230 VAC	RV-A2220
		40 HP 115 A, 230 VAC	RV-A2300
	Open chassis	50 HP 145 A, 230 VAC	RV-B2370
		60 HP 180 A, 230 VAC	RV-B2450
		75 HP 215 A, 230 VAC	RV-B2550
		100 HP 283 A, 230 VAC	RV-B2750
		125 HP 346 A, 230 VAC	RV-B2900
		150 HP 415 A, 230 VAC	RV-B211K

## RV Inverter (Continued)

Description	Enclosure	Rating	Model
Flux vector inverter with selectable constant torque and variable torque (cont'd)	NEMA 1	¾ HP 1.8 A, 460 VAC	RV-A4004
		1 HP 2.1 A, 460 VAC	RV-A4007
		2 HP 3.7 A, 460 VAC	RV-A4015
		3 HP 5.3 A, 460 VAC	RV-A4022
		5 HP 7.6 A, 460 VAC	RV-A4037
		7.5 HP 12.5 A, 460 VAC	RV-A4055
		10 HP 17 A, 460 VAC	RV-A4075
		15 HP 24 A, 460 VAC	RV-A4110
		20 HP 31 A, 460 VAC	RV-A4150
		25 HP 39 A, 460 VAC	RV-A4185
		30 HP 45 A, 460 VAC	RV-A4220
		40 HP 60 A, 460 VAC	RV-A4300
		50 HP 75 A, 460 VAC	RV-A4370
		60 HP 91 A, 460 VAC	RV-A4450
		75 HP 112 A, 460 VAC	RV-A4550
	Open chassis	100 HP 150 A, 460 VAC	RV-B4750
		150 HP 180 A, 460 VAC	RV-B4900
		200 HP 260 A, 460 VAC	RV-B413K
		250 HP 304 A, 460 VAC	RV-B416K
		300 HP 370 A, 460 VAC	RV-B418K
		400 HP 506 A, 460 VAC	RV-B422K
		500 HP 675 A, 460 VAC	RV-B430K

## Accessories

Item	Description	Model
Inverter PLC	Embedded PLC board with 6 inputs/4 outputs; built-in clock/calendar and encoder interface; CompoBus/S master and DeviceNet slave network capabilities	3G3RV-P10ST8-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 3G3RV inverter	3G3RV-PDRT2

## Support Software and Programming Devices

Item	Description	Model
CX-Drive	Windows®-based programming software for sets up Uploads and downloads parameters and monitoring	Included in CX-ONE

## Manuals

Item	Description	Model
User's manual	3G3RV Series Multi-function Compact Inverter User Manual	I540-E3-02
DeviceNet unit	3G3□V-PDRT2 DeviceNet Communications Unit Operation Manual	I539-E1-02

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