

Inverters RV

Quick Link

A036

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 (² t).
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-through	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 ² max.; 20 to 50 Hz, 2 m/s ² 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	3G3RV-P10ST8-E
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

Terms and Conditions of Sale

1. **Offer; Acceptance.** These terms and conditions (these "Terms") are deemed part of all quotes, agreements, purchase orders, acknowledgments, price lists, catalogs, manuals, brochures and other documents, whether electronic or in writing, relating to the sale of products or services (collectively, the "Products") by Omron Electronics LLC and its subsidiary companies ("Omron"). Omron objects to any terms or conditions proposed in Buyer's purchase order or other documents which are inconsistent with, or in addition to, these Terms.
2. **Prices; Payment Terms.** All prices stated are current, subject to change without notice by Omron. Omron reserves the right to increase or decrease prices on any unshipped portions of outstanding orders. Payments for Products are due net 30 days unless otherwise stated in the invoice.
3. **Discounts.** Cash discounts, if any, will apply only on the net amount of invoices sent to Buyer after deducting transportation charges, taxes and duties, and will be allowed only if (i) the invoice is paid according to Omron's payment terms and (ii) Buyer has no past due amounts.
4. **Interest.** Omron, at its option, may charge Buyer 1-1/2% interest per month or the maximum legal rate, whichever is less, on any balance not paid within the stated terms.
5. **Orders.** Omron will accept no order less than \$200 net billing.
6. **Governmental Approvals.** Buyer shall be responsible for, and shall bear all costs involved in, obtaining any government approvals required for the importation or sale of the Products.
7. **Taxes.** All taxes, duties and other governmental charges (other than general real property and income taxes), including any interest or penalties thereon, imposed directly or indirectly on Omron or required to be collected directly or indirectly by Omron for the manufacture, production, sale, delivery, importation, consumption or use of the Products sold hereunder (including customs duties and sales, excise, use, turnover and license taxes) shall be charged to and remitted by Buyer to Omron.
8. **Financial.** If the financial position of Buyer at any time becomes unsatisfactory to Omron, Omron reserves the right to stop shipments or require satisfactory security or payment in advance. If Buyer fails to make payment or otherwise comply with these Terms or any related agreement, Omron may (without liability and in addition to other remedies) cancel any unshipped portion of Products sold hereunder and stop any Products in transit until Buyer pays all amounts, including amounts payable hereunder, whether or not then due, which are owing to it by Buyer. Buyer shall in any event remain liable for all unpaid accounts.
9. **Cancellation; Etc.** Orders are not subject to rescheduling or cancellation unless Buyer indemnifies Omron against all related costs or expenses.
10. **Force Majeure.** Omron shall not be liable for any delay or failure in delivery resulting from causes beyond its control, including earthquakes, fires, floods, strikes or other labor disputes, shortage of labor or materials, accidents to machinery, acts of sabotage, riots, delay in or lack of transportation or the requirements of any government authority.
11. **Shipping; Delivery.** Unless otherwise expressly agreed in writing by Omron:
 - a. Shipments shall be by a carrier selected by Omron; Omron will not drop ship except in "break down" situations.
 - b. Such carrier shall act as the agent of Buyer and delivery to such carrier shall constitute delivery to Buyer;
 - c. All sales and shipments of Products shall be FOB shipping point (unless otherwise stated in writing by Omron), at which point title and risk of loss shall pass from Omron to Buyer; provided that Omron shall retain a security interest in the Products until the full purchase price is paid;
 - d. Delivery and shipping dates are estimates only; and
 - e. Omron will package Products as it deems proper for protection against normal handling and extra charges apply to special conditions.
12. **Claims.** Any claim by Buyer against Omron for shortage or damage to the Products occurring before delivery to the carrier must be presented in writing to Omron within 30 days of receipt of shipment and include the original transportation bill signed by the carrier noting that the carrier received the Products from Omron in the condition claimed.
13. **Warranties.** (a) **Exclusive Warranty.** Omron's exclusive warranty is that the Products will be free from defects in materials and workmanship for a period of twelve months from the date of sale by Omron (or such other period expressed in writing by Omron). Omron disclaims all other warranties, express or implied. (b) **Limitations.** OMRON MAKES NO WARRANTY OR REPRESENTATION, EXPRESS OR IMPLIED, ABOUT NON-INFRINGEMENT, MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE OF THE PRODUCTS. BUYER ACKNOWLEDGES THAT IT ALONE HAS DETERMINED THAT THE PRODUCTS WILL SUITABLY MEET THE REQUIREMENTS OF THEIR INTENDED USE. Omron further disclaims all warranties and responsibility of any type for claims or expenses based on infringement by the Products or otherwise of any intellectual property right. (c) **Buyer Remedy.** Omron's sole obligation hereunder shall be, at Omron's election, to (i) replace (in the form originally shipped with Buyer responsible for labor charges for removal or replacement thereof) the non-complying Product, (ii) repair the non-complying Product, or (iii) repay or credit Buyer an amount equal to the purchase price of the non-complying Product; provided that in no event shall Omron be responsible for warranty, repair, indemnity or any other claims or expenses regarding the Products unless Omron's analysis confirms that the Products were properly handled, stored, installed and maintained and not subject to contamination, abuse, misuse or inappropriate modification. Return of any Products by Buyer must be approved in writing by Omron before shipment. Omron Companies shall not be liable for the suitability or unsuitability or the results from the use of Products in combination with any electrical or electronic components, circuits, system assemblies or any other materials or substances or environments. Any advice, recommendations or information given orally or in writing, are not to be construed as an amendment or addition to the above warranty. See <http://oeweb.omron.com> or contact your Omron representative for published information.
14. **Limitation on Liability; Etc.** OMRON COMPANIES SHALL NOT BE LIABLE FOR SPECIAL, INDIRECT, INCIDENTAL, OR CONSEQUENTIAL DAMAGES, LOSS OF PROFITS OR PRODUCTION OR COMMERCIAL LOSS IN ANY WAY CONNECTED WITH THE PRODUCTS, WHETHER SUCH CLAIM IS BASED IN CONTRACT, WARRANTY, NEGLIGENCE OR STRICT LIABILITY. Further, in no event shall liability of Omron Companies exceed the individual price of the Product on which liability is asserted.
15. **Indemnities.** Buyer shall indemnify and hold harmless Omron Companies and their employees from and against all liabilities, losses, claims, costs and expenses (including attorney's fees and expenses) related to any claim, investigation, litigation or proceeding (whether or not Omron is a party) which arises or is alleged to arise from Buyer's acts or omissions under these Terms or in any way with respect to the Products. Without limiting the foregoing, Buyer (at its own expense) shall indemnify and hold harmless Omron and defend or settle any action brought against such Companies to the extent based on a claim that any Product made to Buyer specifications infringed intellectual property rights of another party.
16. **Property; Confidentiality.** Any intellectual property in the Products is the exclusive property of Omron Companies and Buyer shall not attempt to duplicate it in any way without the written permission of Omron. Notwithstanding any charges to Buyer for engineering or tooling, all engineering and tooling shall remain the exclusive property of Omron. All information and materials supplied by Omron to Buyer relating to the Products are confidential and proprietary, and Buyer shall limit distribution thereof to its trusted employees and strictly prevent disclosure to any third party.
17. **Export Controls.** Buyer shall comply with all applicable laws, regulations and licenses regarding (i) export of products or information; (ii) sale of products to "forbidden" or other proscribed persons; and (iii) disclosure to non-citizens of regulated technology or information.
18. **Miscellaneous.** (a) **Waiver.** No failure or delay by Omron in exercising any right and no course of dealing between Buyer and Omron shall operate as a waiver of rights by Omron. (b) **Assignment.** Buyer may not assign its rights hereunder without Omron's written consent. (c) **Law.** These Terms are governed by the law of the jurisdiction of the home office of the Omron company from which Buyer is purchasing the Products (without regard to conflict of law principles). (d) **Amendment.** These Terms constitute the entire agreement between Buyer and Omron relating to the Products, and no provision may be changed or waived unless in writing signed by the parties. (e) **Severability.** If any provision hereof is rendered ineffective or invalid, such provision shall not invalidate any other provision. (f) **Setoff.** Buyer shall have no right to set off any amounts against the amount owing in respect of this invoice. (g) **Definitions.** As used herein, "including" means "including without limitation"; and "Omron Companies" (or similar words) mean Omron Corporation and any direct or indirect subsidiary or affiliate thereof.

Certain Precautions on Specifications and Use

1. **Suitability of Use.** Omron Companies shall not be responsible for conformity with any standards, codes or regulations which apply to the combination of the Product in the Buyer's application or use of the Product. At Buyer's request, Omron will provide applicable third party certification documents identifying ratings and limitations of use which apply to the Product. This information by itself is not sufficient for a complete determination of the suitability of the Product in combination with the end product, machine, system, or other application or use. Buyer shall be solely responsible for determining appropriateness of the particular Product with respect to Buyer's application, product or system. Buyer shall take application responsibility in all cases but the following is a non-exhaustive list of applications for which particular attention must be given:
 - (i) Outdoor use, uses involving potential chemical contamination or electrical interference, or conditions or uses not described in this document.
 - (ii) Use in consumer products or any use in significant quantities.
 - (iii) Energy control systems, combustion systems, railroad systems, aviation systems, medical equipment, amusement machines, vehicles, safety equipment, and installations subject to separate industry or government regulations.
 - (iv) Systems, machines and equipment that could present a risk to life or property. Please know and observe all prohibitions of use applicable to this Product.
 NEVER USE THE PRODUCT FOR AN APPLICATION INVOLVING SERIOUS RISK TO LIFE OR PROPERTY OR IN LARGE QUANTITIES WITHOUT ENSURING THAT THE SYSTEM AS A WHOLE HAS BEEN DESIGNED TO ADDRESS THE RISKS, AND THAT THE OMRON'S PRODUCT IS PROPERLY RATED AND INSTALLED FOR THE INTENDED USE WITHIN THE OVERALL EQUIPMENT OR SYSTEM.
2. **Programmable Products.** Omron Companies shall not be responsible for the user's programming of a programmable Product, or any consequence thereof.
3. **Performance Data.** Data presented in Omron Company websites, catalogs and other materials is provided as a guide for the user in determining suitability and does not constitute a warranty. It may represent the result of Omron's test conditions, and the user must correlate it to actual application requirements. Actual performance is subject to the Omron's Warranty and Limitations of Liability.
4. **Change in Specifications.** Product specifications and accessories may be changed at any time based on improvements and other reasons. It is our practice to change part numbers when published ratings or features are changed, or when significant construction changes are made. However, some specifications of the Product may be changed without any notice. When in doubt, special part numbers may be assigned to fix or establish key specifications for your application. Please consult with your Omron's representative at any time to confirm actual specifications of purchased Product.
5. **Errors and Omissions.** Information presented by Omron Companies has been checked and is believed to be accurate; however, no responsibility is assumed for clerical, typographical or proofreading errors or omissions.

Complete "Terms and Conditions of Sale" for product purchase and use are on Omron's website at www.omron.com/oei – under the "About Us" tab, in the Legal Matters section.

ALL DIMENSIONS SHOWN ARE IN MILLIMETERS.

To convert millimeters into inches, multiply by 0.03937. To convert grams into ounces, multiply by 0.03527.

OMRON[®]**OMRON ELECTRONICS LLC**

One Commerce Drive
Schaumburg, IL 60173

847-843-7900

For US technical support or other inquiries:

800-556-6766**OMRON CANADA, INC.**

885 Milner Avenue
Toronto, Ontario M1B 5V8

416-286-6465**OMRON ON-LINE**

Global - <http://www.omron.com>
USA - <http://www.omron.com/oei>
Canada - <http://www.omron.ca>