

The multi-purpose Industrial AC Drive that solves 90% of all stand-alone and system variable speed motor needs



Whether your applications are simple fans or pumps, or more complex applications such as web processing systems where DC Drive performance or better is required, the GV3000/SE will meet your application needs while providing the convenience of using an AC induction motor. GV3000/SE provides simplicity and broad application flexibility with the performance features you need in a cost effective global design.

STANDARD FEATURES

3 control methods are included as standard:

- General Purpose/Scalar (V/Hz)
- Sensorless Vector Control (SVC)
- Flux Vector Control (FVC)

Each method provides a cost effective means to address the wide range of applications required by today's demanding drives customers. All methods are standard without the need for expensive or complicated option boards.

A simple, yet powerful keypad built into every GV3000/SE allows the bright 7-segment LED display to provide Output Frequency (Hz), RPM, kW, Motor Volts, Motor Current, and % Motor Torque. All of these functions are easily displayed by using the ENTER Key for scrolling.

LED's also identify the drive's status: Running, Remote, Jog, Auto, Forward, Reverse, or Program. The intuitive nature of the drive's keypad makes GV3000/SE the obvious choice for users and OEMs who demand "operator friendly" products.

For added convenience, a remote mounted operator interface (OIM) with text selection in 5 languages is available as well as a CS3000 Windows® based software for those who desire a more powerful interface.

For communications, GV3000/SE networks on several industrial protocols including Reliance Electric's AutoMax®, as well as open architectures such as DeviceNet™, ControlNet™, Profibus™ and Interbus-S™.

- Input Voltages:
 - 200-230 VAC, 50/60 Hz
 - 380-460 VAC, 50/60 Hz
- HP Ratings:
 - 1 HP to 100 HP, 200-230 VAC
 - 1 HP to 400 HP, 380-460 VAC
- Enclosures:
 - 1 to 5 HP: NEMA 1, 12 & 4X/IP20, 52 & 54
 - 7.5 to 60 HP: NEMA 1 & 12/IP20 & 52
 - 30 to 200 HP: NEMA 0/IP00
 - 75 to 400 HP: NEMA 1/IP20 IEC
 - 0.75 to 43 Amp - IP20 IEC
- Inverter Type:
 - PWM with IGBT's
- Switching Frequency:
 - Adjustable from 2, 4 or 8 kHz

- Isolated Analog Inputs (qty. 1):
 - ± 10 VDC, or 4-20 mA
- Analog Output (qty. 1):
 - 0-10 VDC or 4-20 mA
- Isolated digital inputs (qty. 8 std.):
 - Start/Stop, Reset, Fwd/Rev,
 - Run/Jog, Function Loss,
 - Preset Speeds, MOP Speed Operation,
 - Ramp Selection
- Programmable Digital Output Relay (qty. 1 each): Form A (N.O.) and Form B (N.C.)
 - Selectable as IET Fault, drive running or network comm. active
- Dynamic Response with FVC:
 - 100 Rad/Sec (15 Hz) Speed Loop
 - 1,000 Rad/Sec (150 Hz) Torque Loop
- Operating Speed Range:
 - 20:1 V/Hz; 120:1 SVC;
 - 1000:1 FVC
- Steady State Speed Regulation (% Base RPM):
 - V/Hz = 1.0%, 20:1 CT range
 - SVC = 0.5%, 40:1 CT range
 - FVC = 0.01%, 100:1 CT range
- Encoder PPR selection
 - SE, 512, 1024, 2048 & 4096

SPECIFICATIONS

Software Features & Functions

Operation Features
Accel & Decel Ramps w/ S-Curve
Analog I/O with ± 10 VDC or 4-20 mA selection with gain and offset adjustments
Auto Reset with Time and Interval selection
Avoidance Frequencies with 3 Programmable setpoints
Carrier Frequency (IGBT Switching) select 2, 4 or 8 kHz
Control Method selection for V/Hz or Vector Modes
Critical Frequency Avoidance in V/Hz Mode
Current Limit with adjustable settings of 50% to 110% = V/Hz and <150% = Vector
Discrete I/O Programmable and Assignable
Electronic Thermal Overload (NEC/UL approved)
Encoder PPR selection (SE, 512, 1024, 2048 & 4096) in Vector Mode
Jog Speed Programmable with assigned Accel & Decel
Line Dip Ride Through, Programmable time settings of 0.1 to 999.9 sec.=V/Hz; Fixed at 500 ms = Vector
Preset Speed selections 8 standard
Operation Control (by Keypad, Terminal Strip, Serial Port, or optional Communication Boards)
Output Frequency range of 0.5 Hz to 200 Hz in V/Hz; 0 RPM to 2 times Base Speed (SVC Mode); 0 RPM to 4 times Base Speed (FVC Mode)
Overfrequency Limit for overspeed protection
Output Relays (1 std., 3 w/ option card), Programmable and Assignable
Stop Selection for Coast or Ramp to Rest
Torque Boost Voltage, Programmable for <20% of nominal input line voltage
Volts/Hz Select; Linear, Optimized & Squared Curves

Performance Features
Current Compounding for Load Sharing (SVC & FVC)
Dynamic Torque Limit (SVC & FVC)
Inertia Compensation (SVC & FVC)
Speed or Torque Regulation Reference Trim (SVC & FVC)
Slip Compensation/Adjustment (V/Hz & SVC)
Trip-Free Acceleration & Deceleration (V/Hz & Vector)
Trim Speed or Torque references w/ a 20ms update through the optional analog or frequency input
Tuning of Speed & Torque Loop PI Regulators (Vector)

Special Functions
DC Injection Braking with Programmable Time, Frequency & Current settings in V/Hz Mode
Draw Control Gain for ratio control & cascading multidrive applications
Elapsed Time Meter for days of operation
Error Log for Diagnostics maintains last 10 faults
Inverse Analog Reference
MOP (motor operated pot) Function by digital inputs with programmable rates
Motor Overload with motor cooling selection
Password Protectable "Lock-Out"
PI Setpoint Control via the standard analog input with setpoints from digital, analog settings or network speed reference sources.
Edge or Level sense detection for start command
Reverse Disable
Snubber Resistor Braking (Dynamic Braking) Enable
Trip-free Deceleration with rate adaptation for high inertia loads
Universal scaling of LED display for rates other than frequency or rpm
Zero Speed Hold for Vector Mode operation to enhance deceleration to stop and for cycling stop-start applications "Sleep" mode with external pot.

Dimensions & Weights

Note that NEMA 1 and NEMA 12 or 4X/12 enclosed ratings from 1 HP to 60 HP are identical in dimensions and weights when both enclosure types are not shown.

SERVICE CONDITIONS

Elevation: 3300 Ft. (1000 meters)
 Ambient Temp. NEMA Enclosed and IEC Bookshelf: 0°C to 40°C (32°F to 104°F)
 Ambient Temp. Open Chassis (model number's "1V" thru "60G"): 0°C to 50°C (32°F to 122°F)
 Ambient Temp. Power Modules (75V4060 thru 200V4060 and 30V2060 thru 100V2060): 0°C to 55°C (32°F to 131°F)
 Atmosphere: Non-Condensing Relative Humidity <95%
 AC Line Voltage Variation: +10%
 AC Line Frequency: 48 Hz to 62 Hz

INSTRUCTION MANUALS

Hardware Reference, Installation and Troubleshooting:

- 200-230 VAC Drives:
 - Model Number 1V2160-20V2160: D2-3388
 - Model Number 30V2060-100V2060: D2-3417
- 380-460 VAC Drives:
 - Model Number 1V4160-60G4160: D2-3360
 - Model Number 50R4160-125R4160: D2-3360
 - Model Number 75T4160: D2-3360
 - Model Number 30V4060-200V4060: D2-3392
 - Model Number 200V4160-400V4160: D2-3360
 - Model Number 31ER4060-430ER4060: D2-3427
 - Model Number 31ET4060-430ET4060: D2-3427

Software Startup and Reference Manuals:

- 200-230 VAC Drives:
 - Model Number 1V2160-20V2160: D2-3387
 - Model Number 30V2060-100V2060: D2-3416
- 380-460 VAC Drives:
 - Model Number 1V4160-60G4160: D2-3359
 - Model Number 50R4160-125R4160: D2-3359
 - Model Number 75T4160: D2-3359
 - Model Number 30V4060-200V4060: D2-3391
 - Model Number 200V4160-400V4160: D2-3359
 - Model Number 31ER4060-430ER4060: D2-3426
 - Model Number 31ET4060-430ET4060: D2-3426

200-230 VAC, 50/60 HZ INPUT; RATINGS 1 HP THROUGH 20 HP

Product Features:

- NEMA 1, 12 or 4X/IP20, 52 & 54 enclosures simplify stand alone applications
- General Purpose (Scalar V/HZ) Mode, 100% Continuous Motor Capacity
- In Vector (SVC or FVC) Mode, 150% Overload Capacity for 1 minute
- Full Power Rating from 2 kHz through 8 kHz Carrier Frequency Operation
- Removable cover converts to open chassis and allows 50°C ambient operation
- Local operator keypad with LED display is built-in for convenience

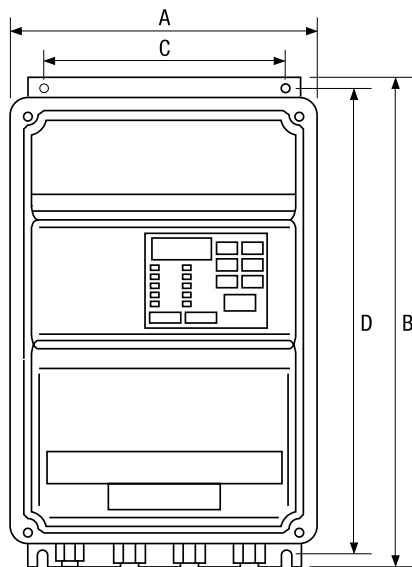


HP (kW) Rating ⁽¹⁾ at Parameter "P.048"		Drive Selection 200-230 VAC, 3-Phase, 50/60 Hz GV3000/SE					
		Max. Continuous Output Amps/Motor Current		NEMA 1/IP20 Enclosed Chassis		NEMA12/IP52 Enclosed Chassis	
P.048 = U-H	P.048 = UEC	V/Hz Mode	Vector Mode	Model Number	List	Model Number	List
1 (1.4)	1 (1.4)	5.1	5.1	* 1V2160	\$1,431	* 1V2460 ⁽²⁾	\$1,463
2 (2.3)	2 (2.3)	8.5	8.5	* 2V2160	1,495	* 2V2460 ⁽²⁾	1,524
3 (3.4)	3 (3.4)	12.3	12.3	* 3V2160	1,553	* 3V2460 ⁽²⁾	1,586
5 (5.8)	5 (5.8)	21	21	* 5V2160	1,606	* 5V2460 ⁽²⁾	1,653
7-1/2 (7.4)	7-1/2 (7.4)	26.9	26.9	* 7V2160	1,956	* 7V2260	2,065
10 (9.7)	10 (9.7)	35	35	* 10V2160	2,083	* 10V2260	2,189
15 (14.7)	15 (14.7)	53.3	53.3	* 15V2160	3,445	* 15V2260	3,461
20 (19.2)	20 (19.2)	69.6	69.6	* 20V2160	4,267	* 20V2260	4,269

(1) Based upon NEMA B induction motor ratings only. Application load and speed requirements must be considered to properly size the motor and drive.

HP and kW ratings are based upon 230 V and 200 V inputs respectively. kW ratings are based upon an assumed motor power factor of 80%.

(2) Enclosure carries NEMA 12/4X (IP52/54) rating for Dusttight and Washdown application environments.



230 V Dimensions: 1 HP to 20 HP

Model Number	A	B	C	D	Depth	Weight
1V2160						
1V2460						
2V2160	8.75	11.05	7.8	10.01	7.87	
2V2460	(222.3)	(280.7)	(198.1)	(254.3)	(199.9)	(6.4)
3V2160						
3V2460						
5V2160						
5V2460						
7V2160						
7V2260	11.05	13.32	9.76	12.17	7.87	20
10V2160	(280.7)	(338.3)	(247.9)	(309.1)	(199.9)	(9.1)
10V2260						
15V2160						
15V2260	11.34	18.23	8.78	17.4	9.37	35
20V2160	(288)	(463)	(223)	(442)	(238)	(15.9)
20V2260						

inches (mm)

pounds (kg)

* Normally carried in stock

DISCOUNT VS-1AC

GV3000/SE AC Drives

200-230 VAC, 50/60 HZ INPUT; RATINGS 30 HP THROUGH 100 HP

Introduction

Product Features:

- NEMA 0/IP00 power module construction for panel mounting
- 55°C ambient
- Exposed line & load stabs for easy access and wiring
- Compact size
- Built-in keypad and RS-232 port



AC Drives

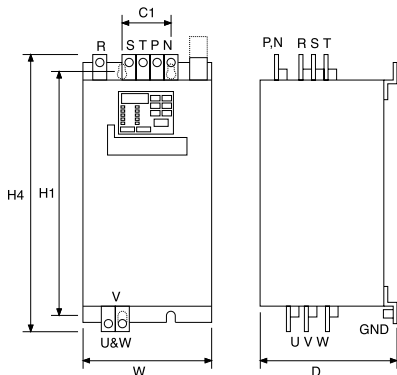
HP (kW) Rating ⁽¹⁾ at Parameter "P.048"						Drive Selection 200-230 VAC, 3-Phase, 50/60 Hz GV3000/SE							Model Number ⁽²⁾	List
P.048 = U-H			P.048 = UEC			Continuous Output Amps/Motor Current								
V/Hz Mode			Vector Mode			V/Hz Mode			Vector Mode					
2 kHz	4 kHz	8 kHz	2 kHz	4 kHz	8 kHz	2 kHz	4 kHz	8 kHz	2 kHz	4 kHz	8 kHz			
30 (29)	30 (29)	25 (23)	30 (29)	30 (29)	25 (23)	105	105	84	105	105	84	* 30V2060	\$8,475	
40 (37)	40 (37)	30 (29)	40 (37)	40 (37)	30 (29)	135	135	108	135	135	108	* 40V2060	8,952	
50 (41)	50 (41)	40 (33)	50 (41)	50 (41)	40 (33)	150	150	120	150	150	120	* 50V2060	10,031	
60 (53)	60 (53)	50 (43)	60 (53)	60 (53)	50 (43)	195	195	156	195	195	156	* 60V2060	11,948	
75 (67)	75 (67)	60 (54)	75 (67)	75 (67)	60 (54)	245	245	196	245	245	196	* 75V2060	12,943	
100 (76)	100 (76)	75 (60)	100 (76)	100 (76)	75 (60)	275	275	220	275	275	220	* 100V2060	14,985	

(1) Based upon NEMA Design B induction motor ratings only. Application load and speed requirements must be considered to properly size the motor and drive. HP and kW ratings are based upon 230 V and 200 V inputs respectively. kW ratings are based upon an assumed motor power factor of 80%.

(2) An input impedance of 3% is required for this full load amp rating at 2 kHz and 4 kHz. Use either an isolation transformer or a line reactor when the input impedance is less than 3%, or derate the 2 kHz and 4 kHz power rating to the 8 kHz rating shown.

Analog DC Drives

Digital DC Drives



230 V Dimensions: 30 HP to 100 HP

HP	Physical Dimensions - IP00 Power Module					
	C1	H1	H4	W	D	Weight
30	3.9	21.4	23.9	9.3	13.6	75
	(100)	(544)	(606)	(235)	(354)	(34)
40	3.9	21.4	23.9	9.3	13.6	75
	(100)	(544)	(606)	(235)	(354)	(34)
50	3.9	21.4	23.9	9.3	13.6	75
	(100)	(544)	(606)	(235)	(354)	(34)
60	7.9	28.1	28.1	9.6	14.4	97
	(200)	(714)	(776)	(245)	(366)	(44)
75	7.9	28.1	28.1	9.6	14.4	97
	(200)	(714)	(776)	(245)	(366)	(44)
100	7.9	28.1	28.1	9.6	14.4	97
	(200)	(714)	(776)	(245)	(366)	(44)

inches (mm)
pounds (kg)

Options & Accessories

* Normally carried in stock

DISCOUNT VS-1AC

Product Demonstrators and Training

GV3000/SE AC Drives

380-460 VAC, 50/60 HZ, INPUT; RATINGS 1 HP THROUGH 60 HP



Product Features:

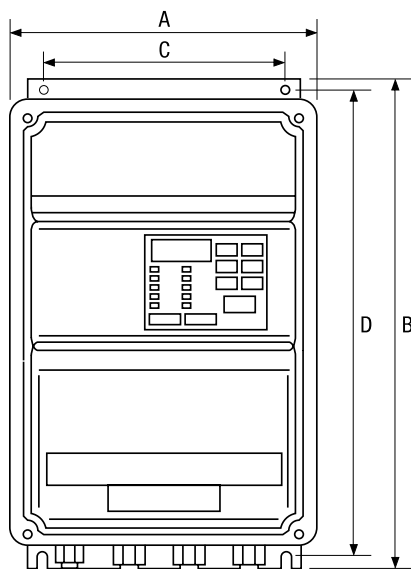
- NEMA 1, 12 or 4X/IP20, 52 & 54 enclosures simplify stand alone applications
- In General Purpose (Scalar V/Hz) Mode, 110% Continuous Motor Overload Capacity
- In Vector (SVC or FVC) Mode, 150% Overload Capacity for 1 minute
- Full Power Rating from 2 kHz through 8 kHz Carrier Frequency Operation
- Removable cover converts to open chassis and allows 50° C ambient operation
- Local operator keypad with LED display is built-in for convenience

HP (kW) Rating ⁽¹⁾ at Parameter "P.048"		Drive Selection 380-460 VAC, 3-Phase, 50/60 Hz GV3000/SE					
P.048 = U-H	P.048 = UEC	Max. Continuous Amps/Motor Current		NEMA 1/IP20 Enclosed Chassis		NEMA 12/IP52 Enclosed Chassis	
V/Hz Mode	Vector Mode	V/Hz Mode	Vector Mode	Model Number	List	Model Number	List
1 (1.1)	1 (1.1)	2.1	2.1	* 1V4160	\$1,295	* 1V4460 ⁽²⁾	\$1,310
2 (1.8)	2 (1.8)	3.4	3.4	* 2V4160	1,400	* 2V4460 ⁽²⁾	1,414
3 (2.9)	3 (2.9)	5.3	5.3	* 3V4160	1,590	* 3V4460 ⁽²⁾	1,607
5 (4.5)	5 (4.5)	8.2	8.2	* 5V4160	2,014	* 5V4460 ⁽²⁾	2,030
7-1/2 (6.1)	7-1/2 (6.1)	11.1	11.1	* 7V4160	2,311	* 7V4260	2,331
10 (7.8)	10 (7.8)	14.2	14.2	* 10V4160	2,867	* 10V4260	2,897
15 (11.6)	15 (11.6)	21	21	* 15V4160	3,641	* 15V4260	3,682
20 (14.9)	20 (14.9)	27	27	* 20V4160	4,330	* 20V4260	4,376
25 (16.8) ⁽³⁾	20 (14.9) ⁽³⁾	30.4 ⁽³⁾	27 ⁽³⁾	* 25G4160 ⁽³⁾	4,701	* 25G4260 ⁽³⁾	4,748
25 (19.1)	25 (19.1)	34.5	34.5	* 25V4160	6,238	* 25V4260	6,304
30 (22.1)	30 (22.1)	40	40	* 30V4160	7,722	* 30V4260	7,803
40 (29.9)	40 (29.9)	54	54	* 40V4160	8,692	* 40V4260	8,787
50 (37.1)	50 (37.1)	67	67	* 50V4160	9,249	* 50V4260	9,348
60 (43.2) ⁽³⁾	50(37.1) ⁽³⁾	78 ⁽³⁾	67 ⁽³⁾	* 60G4160 ⁽³⁾	11,342	* 60G4260 ⁽³⁾	11,455

(1) Based upon NEMA B induction motor ratings only. Application load and speed requirements must be considered to properly size the motor and drive. HP and kW ratings are based upon 460 V and 400 V inputs respectively. kW ratings are based upon an assumed motor Power Factor of 80%.

(2) Enclosure carries NEMA 12/4X (IP52/54) rating for both Dusttight and Washdown application environments.

(3) Derate HP (kW) rating in Vector Mode configuration.



460 V Dimensions: 1 HP to 60 HP

Model Number	A	B	C	D	Depth	Weight
1V4160 1V4460						
2V4160 2V4460	8.75	11.05	7.8	10.01	7.87	14 lb
3V4160 3V4460	(222.3)	(280.7)	(198.1)	(254.3)	(199.9)	(6.4) kg
5V4160 5V4460						
7V4160 7V4260	11.05	13.32	9.76	12.17	7.87	20 lb
10V4160 10V4260	(280.7)	(338.3)	(247.9)	(309.1)	(199.9)	(9.1) kg
15V4160 15V4260						
20V4160 20V4260	11.34	18.23	8.78	17.4	9.37	35 lb
25G4160 25G4260	(288.0)	(463.0)	(223.0)	(442.0)	(238.0)	(15.9) kg
25V4160 25V4260						
30V4160 30V4260	14.8	23.82	12.13	22.25	13.78	52 lb
40V4160 40V4260	(376.0)	(605.0)	(308.0)	(565.2)	(350.0)	(23.6) kg
50V4160 50V4260	14.8	23.82	12.13	22.25	13.78	57 lb
60G4160 60G4260	(376.0)	(605.0)	(308.0)	(565.2)	(350.0)	(25.8) kg

inches (mm)
pounds (kg)

* Normally carried in stock

DISCOUNT VS-1AC

380-460 VAC, 50/60 HZ INPUT; RATINGS 50 HP THROUGH 150 HP

Product Features:

- NEMA 1/IP20 Enclosed Design
- Wall Mount Construction
- 40° C Ambient Enclosed/50° C Open
- CE Filter Options for Europe⁽²⁾⁽³⁾
- Enclosed Line & Load Terminations
- Built-in Keypad and RS-232 Port



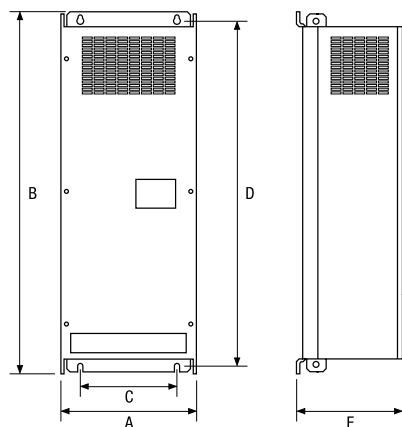
HP (kW) Rating ⁽¹⁾ at Parameter "P.048"						Drive Selection 380-460 VAC, 3-Phase, 50/60 Hz GV3000/SE							Model Number	List
P.048 = U-H			P.048 = UEC			Maximum Continuous Output Amps/Motor Current								
V/Hz Mode			Vector Mode			V/Hz Mode			Vector Mode					
2 kHz	4 kHz	8 kHz	2 kHz	4 kHz	8 kHz	2 kHz	4 kHz	8 kHz	2 kHz	4 kHz	8 kHz			
75 (45)	60 (36)	45 (27)	50 (37)	40 (30)	30 (22)	90	72	54	70	56	41	* 50R4160	\$14,363	
75 (45)	60 (36)	45 (27)	50 (37)	40 (30)	30 (22)	90	72	54	70	56	41	50T4160 ⁽²⁾	(Discontinued) ⁽⁴⁾	
100 (55)	80 (44)	60 (33)	75 (45)	60 (36)	45 (27)	116	93	70	89	71	53	* 75R4160	14,363	
100 (55)	80 (44)	60 (33)	75 (45)	60 (36)	45 (27)	116	93	70	89	71	53	* 75T4160 ⁽²⁾	17,596	
150 (110)	120 (88)	90 (66)	125 (75)	100 (60)	75 (45)	210	168	126	152	122	91	* 125R4160 ⁽³⁾	26,871	

(1) Based upon NEMA Design B induction motor ratings only. Application load and speed requirements must be considered to properly size the motor and drive. HP & kW ratings are based upon 460V and 400V inputs respectively. kW ratings are based upon an assumed motor power factor of 80%.

(2) Model numbers 50T4160 and 75T4160 include a built-in RFI Filter to meet CE Component Standards.

(3) Drive model number 125R4160 and RFI Filter model number 2DF4125 must both be installed into a larger, common enclosure to meet CE Component Standards.

(4) Use 75T4160.



460 V Dimensions: Model Number 50R4160 to 125R4160 and 50T4160 to 75T4160

Model Number	A	B	C	D	E	Weight
50R4160						
50T4160	16.6	34.65	14.17	33.46	12.68	154
75R4160	(421)	(880)	(360)	(850)	(322)	(70)
75T4160						
125R4160	18.3	57.36	12.99	55.66	13.97	211
	(465)	(1457)	(330)	(1414)	(355)	(96)

inches (mm)

pounds (kg)

* Normally carried in stock

DISCOUNT VS-1AC

GV3000/SE AC Drives

380-460 VAC, 50/60 HZ INPUT; RATINGS 200 HP THROUGH 400 HP



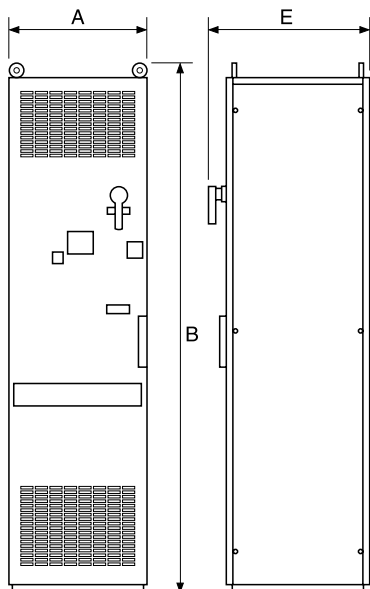
Product Features:

- NEMA 1/IP20 Floor Standing Enclosure with forced ventilation and door mounted filter
- In General Purpose (Scalar V/Hz) Mode, 110% Continuous Overload Capacity
- In Vector (SVC or FVC) Mode, 150% Overload Capacity for 1 minute
- Local operator keypad with LED display is built-in for convenience
- Input Disconnect (optional) built-in
- Input Line Fuses are built-in as standard for input short circuit protection

HP (kW) Rating ⁽¹⁾ at Parameter "P.048"				Drive Selection 380-460 VAC, 3-Phase, 50/60 Hz GV3000/SE						
P.048 = U-H		P.048 = UEC		Maximum Continuous Output Amps/Motor Current				Floor Standing NEMA 1 Enclosure Force Ventilated w/Filter		
V/Hz Mode		Vector Mode		V/Hz Mode		Vector Mode		Without Built-in Disconnect Model Number	With Built-in Disconnect Model Number	List
2 kHz	4 kHz	2 kHz	4 kHz	2 kHz	4 kHz	2 kHz	4 kHz			
200 (133)	200 (133)	200 (133)	200 (133)	240	240	240	240	* 200V4160 -	- * 200V4160DS	\$27,950 30,500
250 (167)	250 (167)	250 (167)	250 (167)	302	302	302	302	* 250V4160 -	- * 250V4160DS	30,900 33,250
300 (200)	300 (200)	300 (200)	300 (200)	361	361	361	361	* 300V4160 -	- * 300V4160DS	36,668 39,493
350 (229)	350 (229)	350 (229)	350 (229)	414	414	414	414	* 350V4160 -	- * 350V4160DS	38,561 41,386
400 (264)	400 (264)	400 (264)	400 (264)	477	477	477	477 ⁽²⁾	* 400V4160 -	- * 400V4160DS	42,053 44,878

(1) Based upon NEMA Design B induction motor ratings only. Application load and speed requirements must be considered to properly size the motor and drive. HP and kW ratings are based upon 460 V and 400 V inputs respectively. kW ratings are based upon an assumed motor power factor of 80%.

(2) Indicates derated operation at 4 kHz to 110% Overload Only. 200 HP to 400 HP GV3000/SE drives are selectable for either 2 or 4 kHz switching frequencies.



460 V Dimensions: 200 HP to 400 HP

Model Number	A	B	C	D	E	Weight
200V4160 200V4160DS						
250V4160 250V4160DS						
300V4160 300V4160DS	23.6 (600)	86.6 (2200)	-	-	23.6 (600)	850 (382.5)
350V4160 350V4160DS						
400V4160 400V4160DS						

inches (mm)

pounds (kg)

* Normally carried in stock

DISCOUNT VS-1AC

GV3000/SE AC Drives

380-460 VAC, 50/60 HZ INPUT; RATINGS 3.1 AMPS THROUGH 43.0 AMPS



Product Features:

- IP20 IEC Bookshelf construction for panel mounting
- 7th IGBT built-in for Snubber Resistor Braking⁽¹⁾
- 40° C ambient
- Front access control terminals for easy access and wiring
- Compact size for zero side clearance mounting

Introduction

AC Drives

Analog DC Drives

Digital DC Drives

Options & Accessories

Product Demonstrators and Training

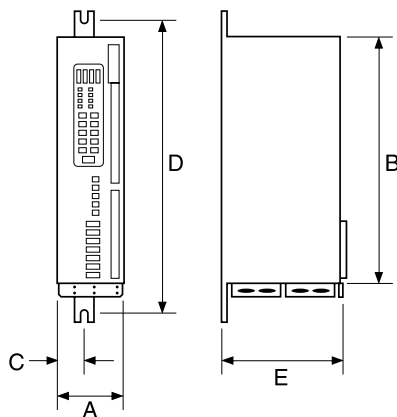
Drive Selection w/o Built-in CE Filters 380-460 VAC, 3-Phase, 50/60 Hz GV3000/SE									
Continuous Output Amps/Motor Current						N. American Model & Order Number	European Stock Number	Unit Type	List
V/Hz Mode			Vector Mode						
2 kHz	4 kHz	8 kHz	2 kHz	4 kHz	8 kHz				
3.1	3.1	2.8	2.1	2.1	2.1	* 31ER4060	896.01.11	AC003	\$1,670
3.8	3.8	2.8	3.1	3.1	2.8	* 38ER4060	896.02.11	AC004	1,691
5.5	5.5	5.5	3.8	3.8	3.8	* 55ER4060	896.03.11	AC005	1,728
8.5	8.5	5.5	6.7	6.7	5	* 85ER4060	896.05.11	AC008	1,791
12.6	12	8.5	9.3	9.3	8	* 126ER4060	896.06.11	AC012	1,942
15	12	8.5	11	11	8	* 150ER4060	896.07.11	AC015	2,340
24	16.5	12.6	16.5	15	11	* 240ER4060	896.08.11	AC024	2,883
30	24	16.5	22	22	15	* 300ER4060	896.09.11	AC030	3,614
43	31	22	32	22	15	* 430ER4060	896.11.12	AC044	3,927

Drive Selection w/ Built-in CE Filters(2) 380-460 VAC, 3-Phase, 50/60 Hz GV3000/SE									
Continuous Output Amps/Motor Current						N. American Model & Order Number	European Stock Number	Unit Type	List
V/Hz Mode			Vector Mode						
2 kHz	4 kHz	8 kHz	2 kHz	4 kHz	8 kHz				
3.1	3.1	2.8	2.1	2.1	2.1	* 31ET4060	896.01.31	AC003	\$1,892
3.8	3.8	2.8	3.1	3.1	2.8	* 38ET4060	896.02.31	AC004	1,935
5.5	5.5	5.5	3.8	3.8	3.8	* 55ET4060	896.03.31	AC005	1,966
8.5	8.5	5.5	6.7	6.7	5	* 85ET4060	896.05.31	AC008	2,009
12.6	12	8.5	9.3	9.3	8	* 126ET4060	896.06.31	AC012	2,330
15	12	8.5	11	11	8	* 150ET4060	896.07.31	AC015	2,806
24	16.5	12.6	16.5	15	11	* 240ET4060	896.08.31	AC024	3,460
30	24	16.5	22	22	15	* 300ET4060	896.09.31	AC030	4,335
43	31	22	32	22	15	* 430ET4060	896.11.32	AC044	4,715

(1) For snubber brake resistor sizing refer to page D-64.

(2) Model numbers 31ET4060 thru 430ET4060 include a built-in RFI filter to meet CE Component Standard.

Bookshelf Drive Dimensions



Unit Type	Physical Dimensions in mm					Weight
	A	B	C	D	E	
AC003	95	378	38	422	200	5.5 kg
AC004	95	378	38	422	200	5.5 kg
AC005	95	378	38	422	200	5.5 kg
AC008	95	378	38	422	200	5.5 kg
AC012	95	378	38	422	200	5.5 kg
AC015	95	378	38	422	200	5.5 kg
AC024	195	374	61	422	200	10.0 kg
AC030	195	374	61	422	200	10.0 kg
AC044	214	374	150	422	200	16.5 kg

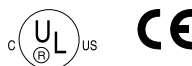
* Normally carried in stock

GV3000/SE AC Drives

380-460 VAC, 50/60 HZ INPUT; RATINGS 30 HP THROUGH 200 HP

Product Features:

- NEMA 0/IP00 power module construction for panel mounting
- Optional NEMA 1 conversion kit ⁽³⁾
- 55° C ambient
- Exposed line & load stabs for easy access and wiring
- Compact size
- Built-in keypad and RS-232 port



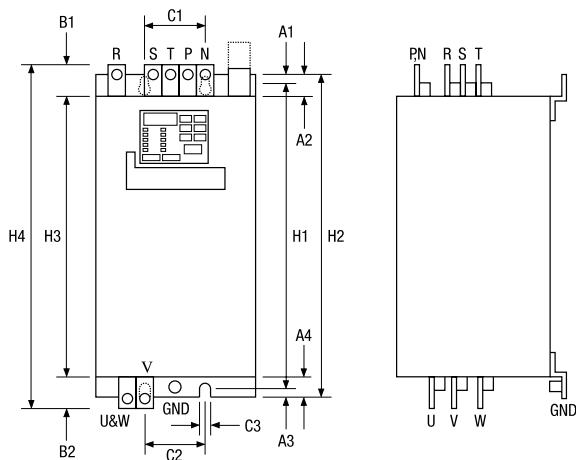
HP (kW) Rating ⁽¹⁾ At Parameter "P.048"						Drive Selection 380-460 VAC, 3-Phase, 50/60 Hz GV3000/SE							Model Number ⁽²⁾	List
P.048 = U-H			P.048 = UEC			Continuous Output Amps/Motor Current								
V/Hz Mode			Vector Mode			V/Hz Mode			Vector Mode					
2 kHz	4 kHz	8 kHz	2 kHz	4 kHz	8 kHz	2 kHz	4 kHz	8 kHz	2 kHz	4 kHz	8 kHz			
30 (22.1)	30 (22.1)	25 (19.1)	30 (22.1)	30 (22.1)	25 (19.1)	40	40	32	40	40	32	* 30V4060	\$6,550	
40 (29.9)	40 (29.9)	30 (22.1)	40 (29.9)	40 (29.9)	30 (22.1)	54	54	43	54	54	43	* 40V4060	7,238	
50 (37.1)	50 (37.1)	40 (29.9)	50 (37.1)	50 (37.1)	40 (29.9)	67	67	53	67	67	53	* 50V4060	8,160	
60 (44)	60 (44)	50 (37.1)	60 (44)	60 (44)	50 (37.1)	78	78	62	78	78	62	* 60V4060	9,437	
75 (55)	75 (55)	60 (44)	75 (55)	75 (55)	60 (44)	100	100	80	100	100	80	* 75V4060	12,100	
100 (77)	100 (77)	75 (62)	100 (77)	100 (77)	75 (62)	140	140	112	140	140	112	* 100V4060	12,481	
125 (94)	125 (94)	100 (75)	125 (94)	125 (94)	100 (75)	170	170	136	170	170	136	* 125V4060	14,369	
150 (111)	150 (111)	125 (88)	150 (111)	150 (111)	125 (88)	200	200	160	200	200	160	* 150V4060	17,698	
200 (133)	200 (133)	150 (106)	200 (133)	200 (133)	150 (106)	240	240	192	240	240	192	* 200V4060	18,152	

(1) Based upon NEMA Design B induction motor ratings only. Application load and speed requirements must be considered to properly size the motor and drive. HP and kW ratings are based upon 460 V and 400 V inputs respectively. kW ratings are based upon an assumed motor power factor of 80%.

(2) An input impedance of 3% is required for this full load amp rating at 2 kHz and 4 kHz. Use either an isolation transformer or a line reactor when the input impedance is less than 3%, or derate the 2 kHz and 4 kHz power rating to the 8 kHz rating shown.

(3) Optional NEMA 1 conversion kit available - refer to page D-58.

460 V Dimensions: 30 HP to 200 HP



HP	H1	H2	H3	H4	Width	Depth	Weight
30-40	17.7 (450)	18.5 (470)	16.2 (410)	18.9 (480)	8.2 (207)	13.6 (354)	51 (23)
50-60	21.4 (544)	22.2 (564)	19.8 (504)	23.9 (606)	9.3 (235)	13.6 (354)	66 (30)
75-100	25 (634)	25.7 (654)	23.4 (594)	27.4 (696)	9.3 (235)	13.6 (354)	77 (35)
125	28.1 (714)	28.9 (734)	26.5 (674)	30.6 (776)	9.6 (245)	14.4 (366)	99 (35)
150-200	34.4 (875)	36 (914)	30.5 (774)	34.1 (866)	11.1 (28.1)	14.4 (366)	121 (55)

inches (mm)
pounds (kg)

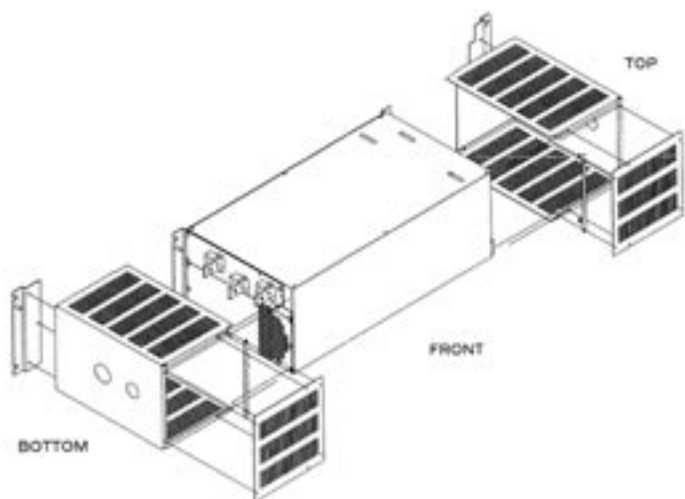
HP	A1	A2	A3	A4	B1	B2	C1	C2	C3	d
75-100	0.4 (10)	1.2 (30)	0.4 (10)	1.2 (30)	2 (51)	2 (51)	3.9 (100)	3.9 (100)	0.35 (9)	0.35 (9)
125	0.4 (10)	1.2 (30)	0.4 (10)	1.2 (30)	2 (51)	2 (51)	7.9 (200)	7.9 (200)	0.35 (9)	0.35 (9)
150-200	0.6 (14)	2.8 (70)	1 (25)	2.8 (70)	1.8 (46)	1.8 (46)	8.5 (216)	8.5 (216)	0.51 (13)	0.51 (11)

inches (mm)

* Normally carried in stock

DISCOUNT VS-1AC

NEMA 1 CONVERSION KITS FOR 75-200 HP 460V IP00 GV3000/SE

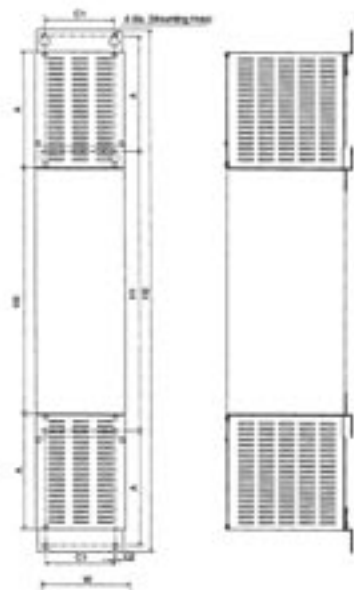


Includes top covers, bottom covers, and mounting brackets required for converting the IP00 Power Module GV3000/SE to a NEMA 1, wall-mountable drive.

NEMA 1 Kit Model Number ⁽¹⁾	For GV3000/SE Drive Model Number(s)	List
* 2CK4100	75V4060 and 100V4060	\$650
* 2CK4125	125V4060	710
* 2CK4200	150V4060 and 200V4060	760

(1) Kit Installation Instruction Manual D2-3450

Note: The drive must be a mechanical rev. 0.7 or higher version to accept this kit. The outside carton and the drive (near the nameplate) will have a label showing the rev. number as well the statement "Suitable for NEMA 1 type". NEMA 1 kits cannot be used with older rev. GV3000/SE drives. NEMA 1 conversion kits are not available for 230 V, 30-100 HP or 460 V, 30-60 HP drives.



Model Number of NEMA Type 1 Kit	Applicable GV3000/SE Drive	Dimensions millimeters (inches)									Weight
		H1	H2	H3	W	D	A	C1	C2	d	
2CK4100	75V4060	634	1074	594	234	356	210	100	9	9	7.2
	100V4060	(24.96)	(42.28)	(23.39)	(9.21)	(14.02)	(8.27)	(3.94)	(0.35)	(0.35)	(16)
2CK4125	125V4060	714	1204	674	244	368	235	200	9	9	8.4
		(28.11)	(47.40)	(26.54)	(9.61)	(14.49)	(9.25)	(7.87)	(0.35)	(0.35)	(19)
2CK4200	150V4060	875	1638	774	280	370	362	216	13	13	12.8
	200V4060	(34.45)	(64.49)	(30.47)	(11.02)	(14.57)	(14.25)	(8.50)	(0.51)	(0.51)	(28)

inches (mm)
kg (lbs)

* Normally carried in stock

DISCOUNT VS-1AC

GV3000/SE Options

I/O EXPANSION

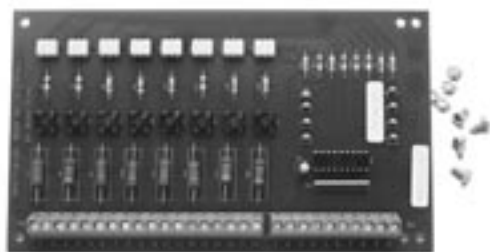
115 VAC Control Interface Board

115 VAC control power to 24 VDC logic. Start, Stop, Jog, Forward, Reverse & Function Loss.

Available as a loose kit only. Please note that this board normally mounts inside the GV3000/SE. This board may also be remote/panel mounted when other I/O boards or network boards are used.

Instruction Manual No.: D2-3376

Model Number: *2LB3000\$830 List



115 VAC Interface Board

Super RMI Board - I/O Expansion

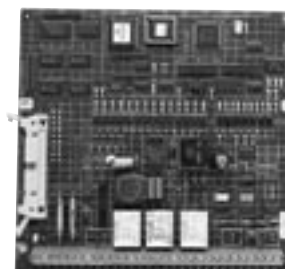
The Super RMI (Remote Meter Interface) Board provides additional Discrete and Analog Inputs & Outputs along with added functionality for application flexibility of the GV3000/SE AC Drive.

Added Inputs (Isolated): (4) Programmable Digital Inputs, (1) Programmable Analog Input - 0/4-20 mA or 0-10 VDC, and (1) Frequency Input

Added Outputs: (4) Programmable Digital Outputs, (1) Programmable Analog Output, 0/4-20 mA or 0-10 VDC, (2) Programmable Analog Outputs - 0-10 VDC, (2) Programmable N/O Relay Outputs, and (1) Form "C" Fault Relay (1 N/O, 1 N/C)

Added Functionality with Super RMI:

- Up to 8 Preset Speeds
- PI Regulator with Setpoint Control
- Speed or Torque Reference Trim
- Current Limit Adjustment
- Relay Output w/Configurable Indication of:
 - At Speed (i.e.: speed reached)
 - Run Condition (i.e.: drive enabled)
 - Torque Setpoint (i.e.: torque proving)



Super Remote Meter Interface (RMI) Board

This board can be mounted inside every GV3000/SE. Hardware provided: (4 mounting screws) and a multi-pin connector.

Available as a Loose Kit only. Please note that no other I/O Cards or Network Cards will be usable with this option installed.

Instruction Manual No.: D2-3341

Super RMI Board (for NEMA and IP00 Power Modules)

Model Number: *2SI3000\$575 List

Super RMI Board (for Bookshelf drives)

Model Number: *2SI3000E\$575 List

* Normally carried in stock

DISCOUNT VS-1AC

NETWORK COMMUNICATIONS

AutoMax™ Network Board

Provides the necessary interface when a GV3000/SE must communicate on a Reliance Electric AutoMax DCS Network. Configurable and Tunable Parameters are accessible with 100 msec. scan times. Control and Reference Functions for speed and torque commands are accessible with 5 msec. scan times.



AutoMax Network Board

Available as a loose kit only. Please note that this card mounts inside the GV3000/SE.⁽¹⁾

Instruction Manual No.: D2-3308

Model Number: * 2AX3000.....\$530 List

DeviceNet™ Network Board

For simple and robust communications on a CAN based protocol for connection to a host device. DeviceNet provides access to Configurable and Tunable Parameters that are updated every 100 msec, and Control and Reference Functions such as speed or torque commands, are updated every 5 msec. DeviceNet also allows monitoring and data logging for operation diagnostics or trending needs.



DeviceNet Network Board

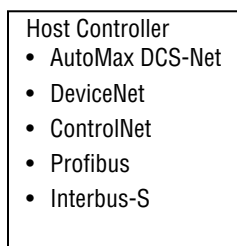
Available as a Loose Kit only. The kit contains (1) Network Option Board, (1) 3.5" Floppy Disk containing an EDS file, (1) manual and (1) set of 4) mounting screws. Please note that this card mounts inside the GV3000/SE.⁽¹⁾

Instruction Manual: HE-HGV3DN

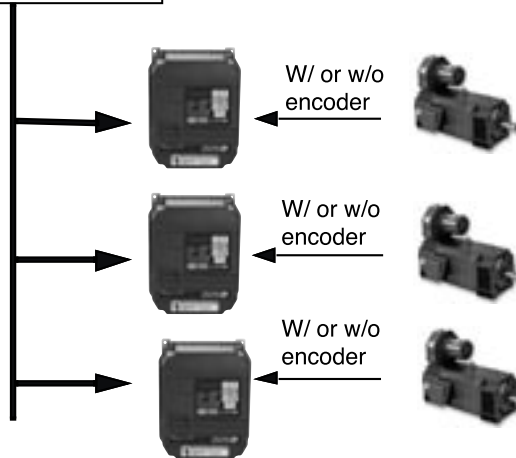
Model Number: * 2DV3000.....\$950 List

Network Applications

- Extrusion Systems
- Material Handling
 - Conveyor sections
 - Hoist & Trolley
 - Transfer lines
- Process Control
 - Flow & Pressure
 - Metering
 - Mixing
- Web Processing
 - Cascade/Draw/Ratio
 - Dancer & Tension
 - Follower & Helper
 - Load Sharing
 - Unwind & Rewind



NETWORK



⁽¹⁾ No other I/O card or Network card will be usable with this option card installed

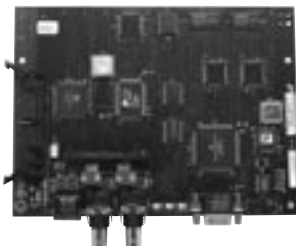
* Normally carried in stock

DISCOUNT VS-1AC

ControlNet™ (Version 1.5) Network Board

The ControlNet Network Board mounts in a GV3000/SE drive, allowing it to communicate over the open ControlNet network. ControlNet is a highly deterministic and repeatable control layer network. It provides real-time high speed transport of time-critical I/O data and messaging data, all on one link. ControlNet is ideal for complex control systems that require synchronized and coordinated real-time performance.

ControlNet provides high speed updates to all scheduled reference and control data. It also provides access to all drive parameters through unscheduled traffic.



ControlNet Network Board

The board allows parameter configuration and tuning and has redundant A and B ports for critical applications.

Available as a loose kit only. This card mounts inside the GV3000/SE.⁽¹⁾

Instruction Manual No. D2-3390

Model Number: * 2CN3000.....\$880 List

Interbus-S™ Network Board

The Interbus-S Network Card allows the GV3000/SE to communicate over the Interbus-S network. This card allows the GV3000/SE to be controlled and monitored over the network.

Available as a loose kit only. This card mounts inside the GV3000/SE.⁽¹⁾

Instruction Manual No.: 49 1333

Model Number: * 2NB3000.....\$880 List

Profibus™ Network Board

The Profibus Network Board allows the GV3000/SE to communicate over the Profibus network. This card allows the GV3000/SE to be controlled and monitored over the network.

Available as a loose kit only. This card mounts inside the GV3000/SE.⁽¹⁾

Instruction Manual No.: 49 1355

Model Number: * 2PB3000.....\$1050 List

⁽¹⁾ No other I/O card or Network card will be usable with this option card installed

* Normally carried in stock

DISCOUNT VS-1AC

OPERATOR INTERFACE & VECTOR DUTY ENCODER FEEDBACK CABLES

Operator Interface Module (OIM)

To allow remote keypad operation, or when parameter text display is desired, the OIM provides a user-friendly LCD display and additional features. Communication between the drive and OIM Module is performed serially over RS-232. A dedicated connector just above the 9-pin D-shell connector on the drive provides the OIM connection. Note that only one device may be connected at one time to either of these RS-232 port connections.

Operation features:

- NEMA 12 rated when installed on an enclosure door or remote station.
- 5 Languages to choose from:
English, German, Spanish, Italian & French
- Quick Start Menu for fast setup
- Monitor Mode or Program Mode Selection
 - Display 2, 4 or 6 values at one time
 - Text displays Programming Functions
- Help features simplify setup programming

Hardware included:

- OIM Display & Keypad Assembly
- 5 Meter Serial Cable
- Gasket
- 2 Mounting Screws and Hex Nuts
- Bezel



Operator Interface (OIM) Module



Operator Interface Module Display

Available as a loose kit only. Please note that local mounting onto the drive chassis is not possible except on 200 HP to 400 HP enclosures. When installed, the standard drive keypad remains on the drive and remains operational as the LOCAL control.

Instruction Manual No.: D2-3342

Model Number: * 2RK3000.....\$470 List

Encoder Feedback Cables

For flux vector operation, these cable kits simplify the installation process.

Connector Type	Encoder Mfr. & Series	Cable Length	Cable Model Number	List
10 Pin MS	Dynapar, H20 Series	25	* 2TC3025	\$185
		75	* 2TC3075	310
16 Pin MS	Tamagawa, FA Series	25	* 2TC4025	195
		75	* 2TC4075	345
Cable only (MS connector not included)	Dynapar H20, Tamagawa FA, Lakeshore	100	* 2TC4100	345
		300	* 2TC4300	810

* Normally carried in stock

SOFTWARE PROGRAMMING & RS-232 CABLES

CS3000 Control & Configuration Software

This is a Windows based software package which allows drive control and configuration via the standard 9-pin D-Shell RS-232 port. The user is allowed to create, store, upload, download, monitor, control and/or compare parameter values in a user-friendly environment. CS3000 runs under Windows 3.1/9x/NT/2000.

Configuration and operation of the drive from a PC provides the flexibility and power desired by today's sophisticated users and OEMs alike.

- Compare: allows quick verification of any changed parameters. Differences are displayed on the PC and may be printed.
- Edit: allows programming via PC.
- Download/Upload
- Drive Control:
 - Monitors 6 display values:
 - Speed Reference (scalable)
 - Motor Speed
 - Motor Current
 - Motor Volts
 - Motor Torque (%)
 - Output Power (kW)
- Configured Displays are:
 - Speed Reference
 - Local/Terminal/Serial/Network
 - Auto/Manual Mode
 - Fwd/Rev Direction
- Operational Keys Displayed:
 - Run, Jog, Stop and Reset
- Fault/Alarm Log: allows fault and alarm history for diagnosis of operation.
- PC Scope feature: allows monitoring and trace of two drive parameters for diagnostics and tuning of the drive. Captured data can also be saved as an ASCII text file or can be compared to previous traces.⁽¹⁾

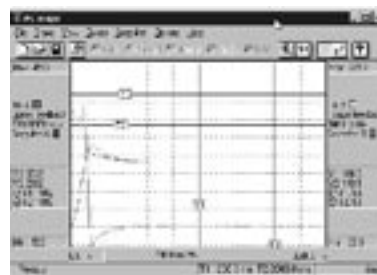
(1) Requires version 6.0 or higher regulator.

- Vector Drive Tuning: allows the user (for GV3000/SE in Vector Mode only) to fine tune the torque/flux loop gains and the speed loop gains to the application.

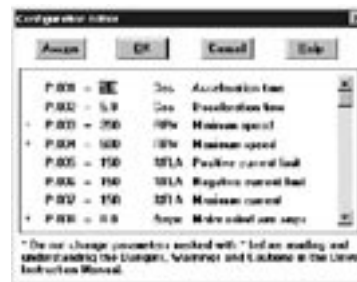
Provided on a 3.5" diskette with manual. Note that this software is also compatible with Reliance Electric FlexPak 3000 DC drives and LiquiFlo AC drives.

Instruction Manual No.: D2-3348

Model Number: * 2CS3000\$350 List



PC Scope Screen From CS3000



Configuration Editor Screen From CS3000

CS3000 RS-232 Computer Cable

The 9-pin to 9-pin D-shell connectors on this cable allow connection between a laptop or notebook-style PC and the GV3000/SE RS-232 port. This is a standard industrial RS-232 cable. 10 ft. length.

Model Number: * 2CA3000\$120 List

AutoMax RS-232 Adapter Cable

The 25-pin to 9-pin D-shell connections on this cable adapt from the standard AutoMax cable (Model Number 61C127) with a 25-pin connection to the GV3000/SE 9-pin RS-232 port.

Model Number: * 2CA3001\$120 List

* Normally carried in stock

DISCOUNT VS-1AC

BRAKING, LOOSE SNUBBER RESISTOR KITS FOR GV3000/SE BOOKSHELF

Resistor Sizing Data for GV3000/SE Bookshelf Drives with Built-in Braking Transistor (Maximum Braking Power and Permitted Braking Resistors)

GV3000/SE Bookshelf Model Number	Maximum Drive Input Voltage	Turn-on Voltage ⁽¹⁾	Turn-off Voltage ⁽¹⁾	Maximum Braking Current	Resistor Minimum Ohms	Braking Power Continuous	Braking Power @ 25% Duty Cycle
31ER/31ET4060	460	750	720	6 Amps	125	4500 W	4500 W
38ER/38ET4060	460	750	720	6 Amps	125	4500 W	4500 W
55ER/55ET4060	460	750	720	6 Amps	125	4500 W	4500 W
85ER/85ET4060	460	750	720	6 Amps	125	4500 W	4500 W
126ER/126ET4060	460	750	720	10 Amps	75	7500 W	7500 W
150ER/150ET4060	460	750	720	10 Amps	75	7500 W	7500 W
240ER/240ET4060	460	750	720	15 Amps	50	11000 W	11000 W
300ER/300ET4060	460	750	720	20 Amps	37.5	15000 W	15000 W
430ER/430ET4060	460	750	720	30 Amps	25	22000 W	22000 W

(1) The Turn-on and Turn-off voltages will be proportional to the incoming line power to the GV3000/SE.

Use the pre-packaged Snubber Resistor Braking Kits in the table below or contact a local snubber resistor supply house for alternate size loose resistors for panel mounting.

Snubber Resistor Kit Sizing for GV3000/SE Bookshelf

Snubber Resistor Kits can be connected to the GV3000/SE Bookshelf drive's built-in braking transistor for dissipation of regenerative energy as heat. By selecting the proper resistor, the user can optimize the braking performance of the drive package.

Note: Resistor maximum "On" rating is 60 seconds.



**Model Number M3575RH8B
Snubber Resistor Kit**

GV3000/SE Bookshelf Model Number	Braking HP	Braking Duty Cycle	Snubber Resistor Module Model Number	Cabinet Dimen. (inches) (inches) W x H x D	Peak Braking Watts	Continuous Braking Watts	Resistor Load Ohms	Amp Rating	List
31ER/31ET4060 38ER/38ET4060 55ER/55ET4060 85ER/85ET4060	1	6%	* M3575RH1M	4 x 12.75 x 8.7	746	50	780	1	\$695
	1	20%	* M3575RH1MF	4 x 12.75 x 8.7	746	150	780	1	834
	2	6%	* M3575RH2M	4 x 12.75 x 8.7	1492	100	390	2	736
	2	20%	* M3575RH2MF	4 x 12.75 x 8.7	1492	300	390	2	886
	3	6%	* M3575RH3M	4 x 12.75 x 8.7	2238	150	260	3	788
	3	20%	* M3575RH3MF	4 x 12.75 x 8.7	2238	450	260	3	942
	4	6%	* M3575RH4M	7 x 12.75 x 8.7	2984	200	195	4	855
	4	20%	* M3575RH4MF	7 x 12.75 x 8.7	2984	600	195	4	1,025
	5	6%	* M3575RH5B	4 x 17.75 x 8.7	4000	200	150	5	865
	5	20%	* M3575RH5BF	4 x 17.75 x 8.7	4000	800	150	5	1,056
	6	6%	* M3575RH6M	7 x 12.75 x 8.7	4476	300	130	6	958
	6	20%	* M3575RH6MF	7 x 12.75 x 8.7	4476	900	130	6	1,123
	8	6%	* M3575RH8B	4 x 17.75 x 8.7	6000	300	90	8	973
	126ER/126ET4060 150ER/150ET4060	8	20%	* M3575RH8BF	4 x 17.75 x 8.7	6000	1200	90	8
240ER/240ET4060	9	6%	* M3575RH9M	10 x 12.75 x 8.7	6714	450	87	9	1,128
	9	20%	* M3575RH9MF	10 x 12.75 x 8.7	6714	1350	87	9	1,391
300ER/300ET4060	11	6%	* M3575RH11B	7 x 17.75 x 9.2	8000	400	60	11	1,128
	11	20%	* M3575RH11BF	7 x 17.75 x 9.2	8000	1600	60	11	1,416
430ER/430ET4060	16	6%	* M3575RH16B	7 x 17.75 x 9.2	12000	600	45	16	1,148
	16	20%	* M3575RH16BF	7 x 17.75 x 9.2	12000	2400	45	16	1,442
430ER/430ET4060	24	6%	* M3575RH24B	10 x 17.75 x 9.7	18000	900	30	24	1,257
	24	20%	* M3575RH24BF	10 x 17.75 x 9.7	18000	3600	30	24	1,576

* Normally carried in stock

DISCOUNT VS-1AC

BRAKING, LOOSE SNUBBER TRANSISTOR KITS & SNUBBER RESISTOR KITS

Snubber Transistor Braking Kits - Transistor Only, Protected Enclosure (IP20) Type

For deceleration of high inertia loads as well as for correction of speed command overshoot, Snubber Transistor Braking Kits provide the circuitry needed to connect to the DC bus and to a matched resistor package for regulation of regenerative energy.

These snubber transistor circuits are packaged in wall mountable, protected enclosures with IP20 type connections.

Note: Maximum "On" rating is 60 seconds with a 20% duty cycle.

AC Line Voltage	Snubber Model Number	Amps DC Max	Minimum Load Ohms	Cabinet Style	List
230	M3575TL15	15	25	M3	\$1,339
	M3575TL30	30	12.5	M3	1,571
	M3575TL60	60	6.25	M4	1,854
	M3575TL125	125	3	B5	2,870
	M3575TL150	150	2.5	B5	3,692
460	M3575TH15	15	50	M3	1,339
	M3575TH30	30	25	M3	1,571
	M3575TH75	75	10	M4	1,854
	M3575TH125	125	6	B5	2,879
	M3575TH150	150	5	B5	3,682
	M3575TH200	200	3.8	B7	4,120
	M3575TH300	300	2.5	B7	4,429
	M3575TH600	600	1.25	B7	6,086



Model Number M3575TH30 Snubber Transistor Kit and Model Number M3575RH8B Snubber Resistor Kit

Cabinet Style	Enclosed Dimensions - Inches			
	Style	Width	Height	Depth
M3	Wall	3.00	12.75	8.70
M4	Wall	4.00	12.75	8.70
M7	Wall	7.00	12.75	8.70
M10	Wall	10.00	12.75	8.70
B4	Wall	4.00	17.75	8.00
B5	Wall	5.65	17.75	8.00
B7	Wall	7.00	17.75	8.00
B10	Wall	10.00	17.75	8.00
B10D	Wall	10.00	17.75	11.70
G1	Floor	25.00	38.00	22.00
G2	Floor	25.00	47.00	22.00
G3	Floor	25.00	56.00	22.00

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(1) List price is for the resistor module only

* Normally carried in stock

Snubber Resistor Kits - Resistor Only, Protected Enclosure (IP20) Type

Snubber Transistor Kits require a resistor for dissipation of regenerative energy as heat. By selecting the proper resistor, the user can optimize the braking performance.

Note: Maximum "On" rating is 60 seconds.

230 V Snubber Resistor Kits									
Braking HP	Duty Cycle	Snubber Resistor Module Model Number	Use with Transistor Module Model Number	Cabinet Style	Braking Watts		Load Ohms	Amp Rating	List ⁽¹⁾
					Peak	Cont.			
1	6%	M3575RL1M	M3575TL15	M4	746	50	190	2	\$690
1	20%	M3575RL1MF	M3575TL15	M4	746	150	190	2	834
2	6%	M3575RL2M	M3575TL15	M4	1492	100	95	4	736
2	20%	M3575RL2MF	M3575TL15	M4	1492	300	95	4	886
3	6%	M3575RL3M	M3575TL15	M4	2238	150	63	6	788
3	6%	M3575RL3B	M3575TL15	B4	1989	100	75	5	721
3	20%	M3575RL3MF	M3575TL15	M4	2238	450	63	6	937
3	20%	M3575RL3BF	M3575TL15	B4	1989	400	75	5	876
4	6%	M3575RL4M	M3575TL15	M7	2984	200	48	8	855
4	20%	M3575RL4MF	M3575TL15	M7	2984	600	48	8	1025
5	6%	M3575RL5B	M3575TL15	B4	3979	200	38	10	783
5	20%	M3575RL5BF	M3575TL15	B4	3979	800	38	10	932
6	6%	M3575RL6M	M3575TL15	M7	4476	300	32	12	958
6	20%	M3575RL6MF	M3575TL15	M7	4476	900	32	12	1,128
8	6%	M3575RL8B	M3575TL15	B4	5968	300	25	15	819
8	20%	M3575RL8BF	M3575TL15	B4	5968	1200	25	15	989
9	6%	M3575RL9M	M3575TL30	M10	6714	450	21	18	1,123
9	20%	M3575RL9MF	M3575TL30	M10	6714	1350	21	18	1,396
11	6%	M3575RL11B	M3575TL30	B7	7957	400	19	20	922
11	20%	M3575RL11BF	M3575TL30	B7	7957	1600	19	20	1,159
16	6%	M3575RL16B	M3575TL60	B7	11936	600	13	31	1,051
16	20%	M3575RL16BF	M3575TL60	B7	11936	2400	13	31	1,282
24	6%	M3575RL24B	M3575TL60	B10	17904	900	8	47	1,262
24	20%	M3575RL24BF	M3575TL60	B10	17904	3600	8	47	1,571
460V Snubber Resistor Kits									
1	6%	M3575RH1M	M3575TH15	M4	746	50	780	1	\$695
1	20%	M3575RH1MF	M3575TH15	M4	746	150	780	1	834
2	6%	M3575RH2M	M3575TH15	M4	1492	100	390	2	736
2	20%	M3575RH2MF	M3575TH15	M4	1492	300	390	2	886
3	6%	M3575RH3M	M3575TH15	M4	2238	150	260	3	788
3	20%	M3575RH3MF	M3575TH15	M4	2238	450	260	3	942
4	6%	M3575RH4M	M3575TH15	M7	2984	200	195	4	855
4	20%	M3575RH4MF	M3575TH15	M7	2984	600	195	4	1025
5	6%	M3575RH5B	M3575TH15	B4	4000	200	150	5	865
5	20%	M3575RH5BF	M3575TH15	B4	4000	800	150	5	1056
6	6%	M3575RH6M	M3575TH15	M7	4476	300	130	6	958
6	20%	M3575RH6MF	M3575TH15	M7	4476	900	130	6	1,123
8	6%	M3575RH8B	M3575TH15	B4	6000	300	90	8	973
8	20%	M3575RH8BF	M3575TH15	B4	6000	1200	90	8	1,138
9	6%	M3575RH9M	M3575TH15	M10	6714	450	87	9	1,128
9	20%	M3575RH9MF	M3575TH15	M10	6714	1350	87	9	1,391
11	6%	M3575RH11B	M3575TH15	B7	8000	400	60	11	1,128
11	20%	M3575RH11BF	M3575TH15	B7	8000	1600	60	11	1,416
16	6%	M3575RH16B	M3575TH30	B7	12000	600	45	16	1,148
16	20%	M3575RH16BF	M3575TH30	B7	12000	2400	45	16	1,442
24	6%	M3575RH24B	M3575TH30	B10	18000	900	30	24	1,257
24	20%	M3575RH24BF	M3575TH30	B10	18000	3600	30	24	1,576
27	6%	M3575RH27B	M3575TH30	B10	21800	1200	25.7	27	1,426
27	20%	M3575RH27BF	M3575TH30	B10	21800	4000	25.7	27	1,700
33	6%	M3575RH33B	M3575TH75	B10D	25000	1475	22.5	32	1,718
33	20%	M3575RH33BF	M3575TH75	B10D	25000	4920	22.5	32	1,868
50	20%	M3575RH50G1F	M3575TH75	G1	40000	8000	14	53	5,361
100	20%	M3575RH100G2F	M3575TH125	G2	80000	16000	7	106	6,983
150	20%	M3575RH150G3F	M3575TH200	G3	120000	24000	5	159	9,991

DISCOUNT VS-1AC

BRAKING, PRE-PACKAGED SNUBBER TRANSISTOR/RESISTOR KITS

Complete Snubber Transistor Resistor Brake Kits NEMA 1 Enclosed



For Deceleration of High Inertia Loads as well as for correction of speed command overshoot. Snubber Resistor Kits dissipate excess DC Bus energy into heat, thereby allowing quick step change commands in both acceleration and deceleration.

Snubber Resistor Kits include both the transistor circuitry and resistor elements in a wall mountable open ventilated enclosure.

Note: Maximum "On" rating is 60 seconds.

For sizing instructions, refer to the calculations on page D-xvi.

Snubber Resistor Module

Style	Enclosed Dimensions		
	Height	Width	Depth
B	18.2 (476)	9.5 (241)	8.5 (216)
C	18.2 (476)	11.5 (292)	10.5 (267)

inches (mm)

Drive Rating	Snubber Model Number	Cabinet Style	Resistance Value	Cont. Watt Dissipation	Instant. Watt Dissipation	Continuous Duty Cycle	List
1 HP, 230 V	* 2SR20400	B	30	400	4,000	50%	\$2,508
2 HP, 230 V	* 2SR20400	B	30	400	4,000	30%	2,508
	* 2SR20600	B	20	600	6,000	50%	2,627
3 HP, 230 V	* 2SR20400	B	30	400	4,000	20%	2,508
	* 2SR20600	B	20	600	6,000	30%	2,627
	* 2SR21200	B	10	1,200	12,000	50%	2,925
	* 2SR20600	B	20	600	6,000	20%	2,627
5 HP, 230 V	* 2SR21200	B	10	1,200	12,000	30%	2,925
	* 2SR21800	C	6	1,800	18,000	50%	3,744
7-1/2 HP, 230 V	* 2SR21200	B	10	1,200	12,000	30%	2,925
	* 2SR21800	C	6	1,800	18,000	50%	3,744
10 HP, 230 V	* 2SR21200	B	10	1,200	12,000	20%	2,925
	* 2SR21800	C	6	1,800	18,000	40%	3,744
1 HP, 460 V	* 2SR40400	B	120	400	4,000	50%	2,699
2 HP, 460 V	* 2SR40400	B	120	400	4,000	30%	2,699
	* 2SR40600	B	75	600	6,000	50%	2,833
3 HP, 460 V	* 2SR40400	B	120	400	4,000	20%	2,699
	* 2SR40600	B	75	600	6,000	30%	2,833
	* 2SR41200	B	40	1,200	12,000	50%	3,105
5 HP, 460 V	* 2SR40600	B	75	600	6,000	20%	2,833
	* 2SR41200	B	40	1,200	12,000	30%	3,105
7-1/2 HP, 460 V	* 2SR41800	C	25	1,800	18,000	50%	3,966
	* 2SR41200	B	40	1,200	12,000	30%	3,105
10 HP, 460 V	* 2SR41800	C	25	1,800	18,000	40%	3,966
	* 2SR41200	B	40	1,200	12,000	20%	3,105
15 HP, 460 V	* 2SR41800	C	25	1,800	18,000	20%	3,966
20 HP, 460 V	* 2SR41800	C	25	1,800	18,000	20%	3,966
5 HP, 575 V	* 2SR51200	B	52	1,200	12,000	40%	3,579
10 HP, 575 V	* 2SR51200	B	52	1,200	12,000	20%	3,579

* Normally carried in stock

DISCOUNT VS-1AC

BRAKING, LOOSE SNUBBER TRANSISTOR KITS & RESISTOR INFORMATION

Snubber Transistor Braking Kits - Transistor Only, Enclosed Chassis

For deceleration of high inertia loads as well as for correction of speed command overshoot, Snubber Transistor Braking Kits provide the circuitry needed to connect the drive's DC bus to a matched resistor package for regulation of regenerative energy.



Model Number M3452H150B7 Snubber Transistor Kit

These snubber transistor circuits are designed to be utilized in engineered applications. Matching the appropriate resistor package then allows the user to optimize the braking capacity of the snubber based on peak and continuous loads. Be sure to follow the minimum resistance values provided in the table. Using resistances lower than the published data will result in excess current being allowed through the circuit and damaging the snubber transistor.

AC Line Voltage	Snubber Model Number	Max Amps DC	Min. Ohms	Max. On Time	UL Listed	Cabinet Style ⁽¹⁾	List	
230	2ST20019	No longer available, see page D-66 for alternate selections						
	2ST20054	No longer available, see page D-66 for alternate selections						
	2ST40009	No longer available, see page D-66 for alternate selections						
	2ST40027	No longer available, see page D-66 for alternate selections						
	2ST40075	No longer available, use M3452H75B7						
	M3452H75B7	75	6	Continuous	Yes	B7	3,380	
460	2ST40125	No longer available, use M3452H150B7						
	2ST40150	No longer available, use M3452H150B7						
	M3452H150B7	150	5	Continuous	Yes	B7	4,272	
	2ST40200	No longer available, use M3452H200K6						
	M3452H200K6	200	3.8	Continuous	Yes	K6	4,748	
	2ST40300	No longer available, use M3452H300K6						
M3452H300K6	300	2.5	Continuous	Yes	K6	5,126		
M3452H600K6	600	1.25	60 Seconds	Yes	K6	6,606		

(1) See page D-64 for Cabinet Dimensions

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* Normally carried in stock

Snubber Resistor Selection Information - For use with the Snubber Transistor Kits

Snubber Transistor Kits require a resistor for dissipation of regenerative energy as heat. By selecting the proper resistor, the user can optimize the braking performance of the drive system. The following table provides resistor sizing information based on application horsepower and duty cycle. Resistors must be purchased from the selection on page D-65 or from a local resistor supply house.

HP	Duty	Snubber Transistor Model Number	Resistor Min. Ohms	Resistor Max. Ohms	Approx. Resistor KW
230 Volt Drive Snubber Resistor Sizing					
1-5					
7-1/2 - 10		See page D-66 for transistor and resistor selection			
15-20					
460 Volt Drive Snubber Resistor Sizing					
1-5					
7-1/2 - 10		See page D-66 for transistor and resistor selection			
15-30					
40-60	20%	M3452H75B7	6	58	9
	60%	M3452H75B7	6	20	27
	100%	M3452H75B7	6	12	45
75-100	20%	M3452H75B7	6	35	15
	60%	M3452H75B7	6	12	45
	100%	M3452H150B7	5	7	75
125-200	20%	M3452H150B7	5	17	30
	60%	M3452H150B7	5	6	90
	100%	M3452H200K6	3.8	4	150
250	20%	M3452H75B7	6	14	37
	40%	M3452H150B7	5	7	75
	60%	M3452H150B7	5	6	112
	80%	M3452H200K6	3.8	4	150
300	100%	M3452H300K6	2.5	3	187
	20%	M3452H75B7	6	12	45
	40%	M3452H150B7	5	6.5	90
	50%	M3452H150B7	5	5.5	112
350	60%	M3452H200K6	3.8	4	135
	100%	M3452H300K6	2.5	3	224
	20%	M3452H75B7	6	11	52
	40%	M3452H150B7	5	5.5	104
400	60%	M3452H300K6	2.5	4	157
	80%	M3452H300K6	2.5	3	208
	20%	M3452H150B7	5	9	60
	75%	M3452H300K6	2.5	3	225

BRAKING, LINE REGENERATION

Line Regeneration Modules

As in snubber braking, Line Regeneration modules allow for the dissipation of high DC bus voltages to provide braking of high inertia loads at the motor. In this case however, energy is supplied back to the incoming power line. The benefit of line regeneration is the elimination of the braking resistors and the heat they develop, as well as recovering the energy to reduce power consumption. Fuses come as standard on both the 3-phase AC input connections, as well as DC connections.



Line Regeneration Module

Adjustments include:

- Voltage Dip
- Bus Limit
- Overload Limit

Protection features include:

- AC Line Phase Loss
- AC Line Undervoltage
- Current Limit
- DC Bus Overload
- Thermal Overload

For instructions on sizing, see page D-xvi.

	Regeneration Module Dimensions				Weight
	Amp Rating	Height	Width	Depth	
w/o Fan Option	10, 20, 30, 45	17.5 (444)	16.2 (411)	8.3 (211)	45 (99)
w/Fan Option	10, 20, 30, 45	17.5 (444)	18.5 (470)	8.3 (211)	53 (117)
	60, 90	26 (660)	23 (584)	10.4 (264)	115 (254)

inches (mm)

pounds (kg)

AC Line Volts	Module Model Number	RMS DC Amps	w/o Fan Option		w/Fan	List
			45 sec. kW	Cont. kW	Cont. kW	
230V	* 1RG22008	10	3	3	3	\$5,356
	* 1RG22015	20	7	4	7	5,459
	* 1RG22025	30	10	4	10	5,511
	* 1RG22045	45	15	4	12.5	7,210
460V	* 1RG42008	10	7	4	7	5,974
	* 1RG42015	20	14	4	12.5	6,541
	* 1RG42025	30	20	4	12.5	7,272
	* 1RG42045	45	30	4	12.5	9,476
	* 1RG42060	60	41	37.5	fan std.	13,081
	* 1RG42090	90	61	37.5	fan std.	15,296

Fan Kit for Regeneration Modules

Increases the continuous current ratings as shown in the “w/Fan” column above.

Model Number: * 1RG10000\$474 List

* Normally carried in stock

CE COMPLIANCE

Compliance to CE Directives

Compliance to the following European Community standards can be met when the listed options are installed along with the GV3000/SE drive product and while following installation guidelines in the instruction manual.

EN5008-1: Electromagnetic compatibility - generic standard, Part 1: residential, commercial, and light Industry.

EN5008-2: Electromagnetic compatibility - generic immunity, Part 2: Industrial Environment.

Compliance Requirements

Compliance is maintained by fitting the GV3000/SE with a Reliance Electric Mains Filter⁽¹⁾ and following installation guidelines below. Refer also to the drive instruction manual.

- Motor leads must not exceed 250 ft. from the drive
- Motor leads must be 3 conductor plus a ground wire, screened or armored cables, or run in a rigid conductive conduit and electrically connected to both the GV3000/SE and the motor
- Remote operator controls and signal wiring must be either screened or armored cables, or run in a rigid conductive conduit. The operator station must be electrically conductive as well.

Mains Filters

Filter selections vary between GV3000/SE models to best accommodate each frame style available. Refer to the drive model number shown in the table to identify the filter option required to comply with CE(1).

Incoming power is connected to the input of each Mains Filters, with output connections from the filter connected to terminals L1, L2 and L3 of the GV3000/SE.

GV3000/SE Model Number	Mains Filter Model Number	Mounting Configuration	Filter List
1V4160			
2V4160	* 2DF4283	mounts under drive chassis	\$680
3V4160			
5V4160			
7V4160	* 2DF4284	mounts under drive chassis	765
10V4160			
15V4160			
20V4160	* 2DF4285	mounts under drive chassis	2000
25G4160			
25V4160			
30V4160			
40V4160	* 2DF4286 ⁽¹⁾	mounts under drive chassis ⁽¹⁾	1,905
50V4160			
60G4160			
50R4160	use 75T4160	N/A	-
75R4160			-
75T4160	Standard	mounted Internal	-
75V4060	(2)	(2)	(2)
100V4060			
125R4160	* 2DF4125	mounts remote	6,930
125V4060			
150V4060	(2)	(2)	(2)
200V4060			
200V4160			
250V4160			
300V4160	(2)	(2)	(2)
350V4160			
400V4160			

Technical Data for GV3000/SE Mains Filter

Filter Model Number	Dimensions			Watt Loss	Amps Cont.
	Height	Width	Depth		
2DF4283	15.2 (387)	8.5 (217)	2 (53)	45	22
2DF4284	17.3 (440)	10.7 (272)	2 (53)	45	22
2DF4285	22.6 (575)	10.7 (272)	3.6 (91.5)	45	22
2DF4286	37.7 (958)	14.4 (365.5)	3.6 (91.5)	75	100
2DF4125	26.8 (680)	12.6 (320)	6.3 (160)	27	270

inches (mm)

Cover Kit ⁽¹⁾ (For 25-60 HP GV3000/SE)

A non-ventilated cover for GV3000/SE control model numbers 25V4160 through 60G4160. This cover must be used in conjunction with a Mains Filter in order to comply with CE requirements.

Model Number: * 2CK4160.....\$350 List

(1) Cover Kit 2CK4160 must also be used in conjunction with the Mains Filter (For drive model number's 25V4160 thru 60G4160 only) to comply with CE requirements.

(2) Consult factory for assistance.

* Normally carried in stock

RECOMMENDED MOTOR LEAD LENGTHS FOR GV3000/SE DRIVES

To reduce line disturbances and noise, motor lead length should not exceed 75 meters (250 feet) for any non-Reliance Electric motor or any non-inverter duty motor.

When total lead length exceeds 76 meters (250 feet), nuisance trips can occur caused by capacitive current flow to ground. Note that these capacitively-coupled currents should be taken into consideration when working in

areas where drives are running. If the motor lead length must exceed these limits, the addition of output line reactors or other steps must be taken to correct the problem. Refer to the table titled Compatible Reactors below for a list.

For Reliance Electric inverter duty motors, use the recommended lead lengths shown in the table below as a guideline.

Your application may be restricted to a shorter lead length due to:

- the type of wire
- the placement of wire (for example, in conduit or a cable tray)
- the type of line reactor
- the type of motor

Recommended Motor Lead Lengths for Reliance Electric Inverter Duty Motors

GV3000/SE HP Rating	Filter Type	Maximum Lead Length in Feet with 460 VAC Motor			
		Carrier Frequency			
		2 kHz	4 kHz	8 kHz	
1 to 2	None	500	500	500	
3 to 5		500	500	500	
7.5 to 10		750	500	500	
15 to 20		800	500	500	
25 to 60		800	500	500	
75 to 100		800	500	500	
125 to 150		800	500	500	
200 to 400		1000	1000	1000	
1 to 2		A 5% reactor/filter at the drive.	1000	1000	1000
3 to 5			1000	1000	1000
7.5 to 10	1000		1000	1000	
15 to 20	1000		1000	1000	
25 to 60	1000		1000	1000	
75 to 100	1000		1000	1000	
125 to 150	1000		1000	1000	
200 to 400	1000		1000	1000	

GV3000/SE Compatible Reactors

GV3000/SE HP Rating	480 Volt 5% Reactor
1	RL-00202
2	RL-00403
3	RL-00403
5	RL-00803
7.5	RL-01203
10	RL-01803
15	RL-02503
20	RL-03503
25	RL-03503
30	RL-04503
40	RL-05503

GV3000/SE HP Rating	480 Volt 5% Reactor
50	RL-08003
60	RL-08003
75	RL-10003
100	RL-13003
125	RL-16003
150	RL-20003
200	RL-25003
250	RL-32003
300	RL-40003
350	RL-50003
400	RL-50003

Standard reactors can be used on GV3000/SE drives with carrier frequency settings up to 8 kHz.

All reactors listed are UL-recognized (UL-506 File #E53094) and CSA certified (CSA File #LR29753). They are available from MTE Corporation.