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
- IP 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 1/IP20
  - 75 to 400 HP: NEMA 1/IP20 IEC
    0.75 to 43 Amp: IP20 IEC
- Inverter Type:
  - PWM with IGBTs
- 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: 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

Introduction
AC Drives
Analog DC Drives
Digital DC Drives
Options & Accessories
Product Demonstrations and Training

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 (64, 512, 1024, 2048 & 4096) in Vector Mode
Jog Speed Programmable with its 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 multi-drive 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 Protection "Lock Out"
PI Outer loop 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
User selected scaling of LED display for values other than frequency or rpm
Auto Speed Hold for Vector Mode operation to minimize deceleration to stop and for cycling stop-start applications
"Sleep" mode with external out

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 numbers 1 HP thru 150 HP): 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

RELIANCE ELECTRIC

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

Product Features:

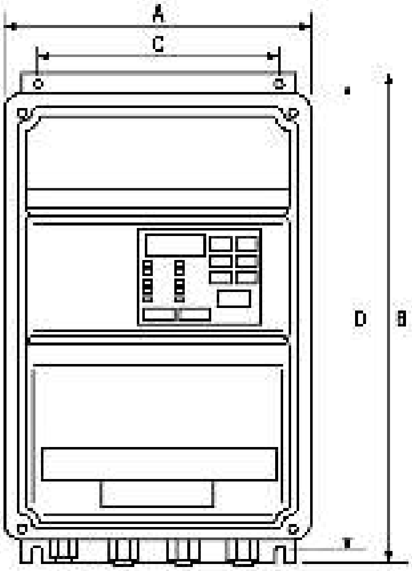
- NEMA 1,12 or 4X/IP20, 52 & 54 enclosures simplify stand alone applications
- General Purpose (Scalar V/HZ) Mode, 100% Continuous Motor Capacity
- In Vector (SVC or FVC) Mode, 150% Overload Capacity for 1 minute
- Full Power Rating from 2 kHz through 8 kHz Carrier Frequency Operation
- Removable cover 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					
P.048 = U-H	P.048 = UEC	Max. Continuous Output 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 ([illegible])	1 (1.4)	[illegible]	[illegible]	* 1V2160	$1,431	* 1V2460 (2)	$1,463
2 (2.3)	2 (2.3)	8.5	5.5	* 2V2160	1,495	* 2V2460 (2)	1,524
3 (3.4)	3 (3.4)	[illegible]	[illegible]	* 3V2160	1,663	* 3V2460 (2)	1,696
5 (5.6)	5 (5.6)	21	21	* 5V2160	1,808	* 5V2460 (2)	1,853
7-1/2 (7.4)	7-1/2 (7.4)	26.3	26.3	* 7V2160	1,966	* 7V2460	2,065
10 (9.7)	10 (9.7)	35	35	* 10V2160	2,083	* 10V2260	2,189
15 (14.7)	15 (14.7)	53.8	53.8	* 15V2160	3,445	* 15V2260	3,461
20 (19.2)	20 (19.2)	59.6	59.6	* 20V2160	4,267	* 20V2260	4,289

(1) [illegible]

[illegible]

(2) [illegible]



230 V Dimensions: 1 HP to 20 HP

Model Number	A	B	C	D	Depth	Weight
1V2160 1V2460 2V2160 2V2460 3V2160 3V2460 5V2160 5V2460	8.75 (222.3)	11.06 (280.7)	7.6 ([illegible])	10.01 (254.3)	7.87 ([illegible])	[illegible] (6.4)
7V2160 7V2460 10V2160 10V2260	11.05 ([illegible])	12.62 (320.2)	9.76 (247.9)	12.17 ([illegible])	7.87 ([illegible])	20 (9.1)
15V2160 15V2260 20V2160 20V2260	11.34 (288)	18.31 (465)	8.78 (223)	17.4 (442)	9.37 (238)	35 (15.9)

inches [mm]

pounds [kg]

* [illegible]

RELIANCE ELECTRIC

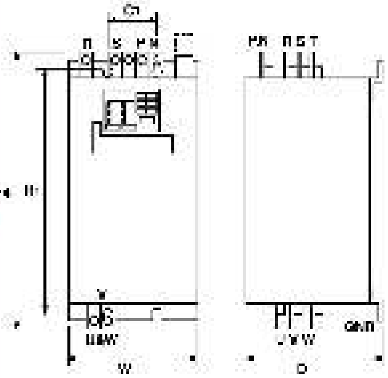
200-230 VAC, 50/60 HZ INPUT; RATINGS 30 HP THROUGH 100 HP

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

HP (kW) Rating/Pat Parameter "P.040"						Drive Selection 200-230 VAC, 3-Phase, 50/60 Hz GV3000/SE							
P.048 = U-H			P.048 = UEC			Continuous Output Amps/Motor Current						Model Number[1]	List
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)	30 (22)	25 (19)	30 (22)	30 (22)	25 (19)	110	110	94	110	110	94	30V2060	$8,470
40 (37)	40 (37)	30 (22)	40 (37)	40 (37)	30 (22)	135	135	108	135	135	108	40V2060	8,952
50 (41)	50 (41)	40 (33)	50 (41)	50 (41)	40 (33)	160	160	120	160	160	120	50V2060	10,031
60 (53)	60 (53)	50 (43)	60 (53)	60 (53)	50 (43)	195	195	156	195	195	156	60V2060	11,048
75 (67)	75 (67)	60 (54)	75 (67)	75 (67)	60 (54)	240	240	196	240	240	196	75V2060	12,943
100 (75)	100 (75)	75 (60)	100 (75)	100 (75)	75 (60)	275	275	220	275	275	220	100V2060	14,005

(1) [illegible]

(2) [illegible]



230 V Dimensions: 30 HP to 100 HP

Physical Dimensions - IP00 Power Module						
HP	D1	H1	H4	W	D	Weight
30	3.9 (100)	21.4 (544)	23.9 (606)	9.3 (235)	13.3 (334)	75 (34)
40	3.9 (100)	21.4 (544)	23.9 (606)	9.3 (235)	13.3 (334)	75 (34)
50	3.9 (100)	21.4 (544)	23.9 (606)	9.3 (235)	13.3 (334)	75 (34)
60	7.9 (200)	28.1 (714)	26.1 (776)	9.6 (245)	14.4 (366)	97 (44)
75	7.9 (200)	28.1 (714)	26.1 (776)	9.6 (245)	14.4 (366)	97 (44)
100	7.9 (200)	28.1 (714)	26.1 (776)	9.6 (245)	14.4 (366)	97 (44)

Inches (mm)
Pounds (kg)

DISCOUNT US-1AC

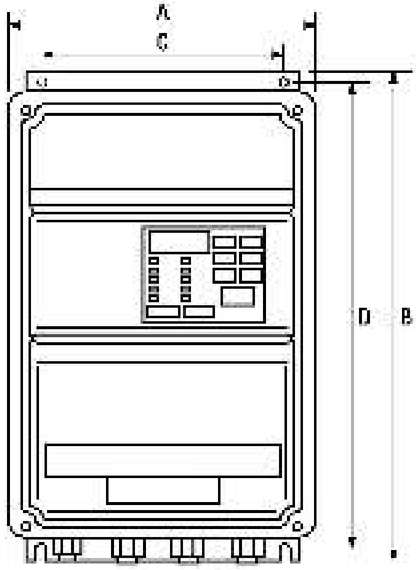
380-460 VAC, 50/60 HZ, INPUT; RATINGS 1 HP THROUGH 60 HP

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 = II-H	P.048 = LIFC	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	$1,285	✱ 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 (7.5)	10 (7.5)	14.2	14.2	✱ 10V4160	2,867	✱ 10V4260	2,897
15 (11.8)	15 (11.3)	21	21	✱ 15V4160	3,641	✱ 15V4260	3,662
20 (14.9)	20 (14.9)	27	27	✱ 20V4160	4,330	✱ 20V4260	4,376
25 (18.6)(3)	20 (14.9)(3)	33.4(3)	27(3)	✱ 25G4160(3)	4,701	✱ 25G4260(3)	4,740
25 (18.6)	25 (18.6)	34.3	34.3	✱ 25V4160	6,238	✱ 25V4260	6,304
30 (22.1)	30 (22.1)	40	40	✱ 30V4160	7,722	✱ 30V4260	7,003
40 (29.8)	40 (29.8)	54	54	✱ 40V4160	8,682	✱ 40V4260	8,787
50 (37.1)	50 (37.1)	67	67	✱ 50V4160	9,249	✱ 50V4260	9,340
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 85%.
(2) Enclosure carries NEMA 12/4X (IP52/54) rating for both Dust-Tight and Washdown application requirements.
(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, 2V4160, 3V4160, 5V4160	1V4460, 2V4460, 3V4460, 5V4460	8.75 (222.3)	11.05 (280.7)	7.8 (198.1)	10.0 (254.0)	7.87 (199.9)	14 lb (6.4) kg
7V4160, 10V4160	7V4260, 10V4260	11.05 (280.7)	13.32 (338.2)	9.75 (247.6)	12.17 (309.1)	7.87 (199.9)	20 lb ([illegible]) kg
15V4160, 20V4160, 25G4160	15V4260, 20V4260, 25G4260	11.34 (288.0)	18.23 (463.0)	8.75 (222.3)	17.4 (442.0)	9.37 (238.0)	35 lb (15.9) kg
25V4160, 30V4160, 40V4160	25V4260, 30V4260, 40V4260	14.8 (376.0)	23.82 (605.0)	12.13 (308.0)	22.23 (565.2)	13.78 (350.0)	52 lb (23.6) kg
50V4160, 60G4160	50V4260, 60G4260	14.8 (376.0)	23.82 (605.0)	12.13 (308.0)	22.23 (565.2)	13.78 (350.0)	57 lb (25.9) kg

inches (mm)
pounds (kg)

® Reliance Electric Co.

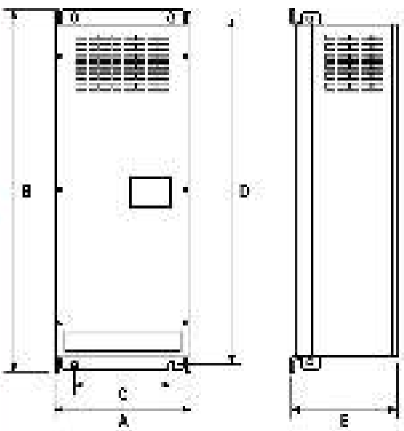
DISCOUNT VS-1AC

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) of 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						Model Number	List
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 (26)	45 (27)	50 (27)	40 (30)	30 (22)	90	72	54	70	56	4	☀ 50R4160	$14,363
75 (45)	60 (26)	45 (27)	50 (27)	40 (30)	30 (22)	90	72	54	70	56	4	50T4160(2)	(Discontinued)(4)
100 (35)	80 (44)	60 (35)	75 (40)	60 (35)	45 (27)	116	93	70	93	71	53	☀ 75R4160	14,363
100 (35)	80 (44)	60 (35)	75 (40)	60 (35)	45 (27)	116	93	70	93	71	53	☀ 75T4160(2)	17,595
150 (110)	120 (88)	90 (65)	125 (75)	100 (60)	75 (40)	210	158	126	152	122	[illegible]	☀ 125R4160(3)	25,871

(1) Based on NEMA Design B motor [illegible] ratings only. [illegible] must be considered to properly size the [illegible] HP & kW ratings are based upon 460V and 400V input respectively. kW ratings are based upon [illegible] power factor of 80%.
(2) Model numbers 50T4160 and 75T4160 include built-in RFI filter to meet CE Conducted Standards.
(3) Drive model number 125R4160 and RFI filter model number [illegible] must both be installed inside a larger common enclosure to meet CE Conducted 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 75R4160 75T4160	16.6 (421)	34.35 (873)	14.17 (360)	33.46 (850)	12.65 (321)	154 (70)
125R4160	19.3 (490)	57.06 (1449)	12.99 (330)	55.67 (1414)	12.97 (329)	211 (96)

Inches (mm)
pounds (kg)

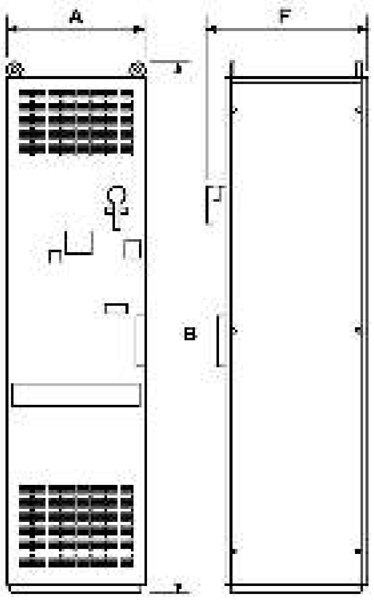
380-460 VAC, 50/60 HZ INPUT; RATINGS 200 HP THROUGH 400 HP

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 ([illegible])	200 (135)	200 ([illegible])	200 (135)	240	240	240	240	⊕ 200V4160	-	$27,954
									⊕ 200V4160DS	30,504
250 (167)	250 (167)	250 (167)	250 (167)	302	302	302	302	⊕ 250V4160	-	30,900
									⊕ 250V4160DS	33,250
300 (200)	300 (200)	300 (200)	300 (200)	361	361	361	361	⊕ 300V4160	-	36,868
									⊕ 300V4160DS	39,493
350 (223)	350 (223)	350 (223)	350 (223)	414	414	414	414	⊕ 350V4160	-	38,961
									⊕ 350V4160DS	41,386
400 (264)	400 (264)	400 (264)	400 (264)	477	477	477	477 (2)	⊕ 400V4160	-	42,853
								-	⊕ 400V4160DS	44,878

(1) Based upon NEMA Design B 4-pole 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 85%.
(2) Indicates rated current ... 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	F	Weight
200V4160	200V4160DS	20.0 (510)	90.6 (2300)	-	-	23.6 (600)	650 (295.5)
250V4160	250V4160DS						
300V4160	300V4160DS						
350V4160	350V4160DS						
400V4160	400V4160DS						

inches (mm)
pounds (kg)

⊕ Normally stocked item

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

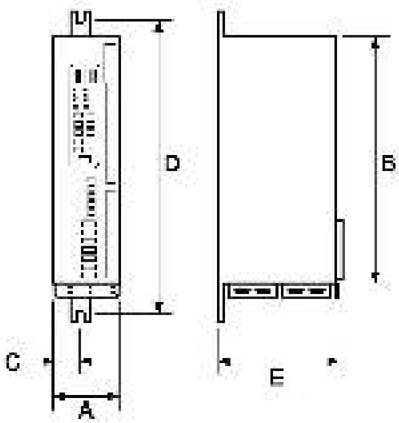
Drive Selection w/o Built-in CE Filters
380-460 VAC, 3-Phase, 50/60 Hz GV3000/SE

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	3.1	3.1	2.1	◆ 31ER4060	896.01.11	AC003	$1,570
3.8	3.8	2.8	3.1	3.1	2.6	◆ 38ER4060	896.02.11	AC004	1,681
5.5	5.5	5.5	5.2	5.5	3.5	◆ 55ER4060	896.03.11	AC005	1,728
8.5	8.5	5.5	6.7	6.7	5	◆ 85ER4060	896.05.11	AC008	1,781
12.6	12	8.5	9.2	9.2	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	13.5	22	22	15	◆ 300ER4060	896.09.11	AC030	3,614
43	31	22	32	22	15	◆ 430ER4060	896.11.12	AC044	3,997

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	2.0	3.1	3.1	2.1	31ET4060	896.01.31	AC003	$1,892
3.8	3.8	2.8	3.1	3.1	2.6	◆ 38ET4060	896.02.31	AC004	1,935
5.5	5.5	5.5	5.2	5.2	3.5	55ET4060	896.03.31	AC005	1,966
8.5	5.5	5.5	6.7	6.7	5	◆ 85ET4060	896.05.31	AC008	2,009
12.6	12	9.5	9.2	9.2	8	126ET4060	896.06.31	AC012	2,320
15	12	9.5	11	11	8	◆ 150ET4060	896.07.31	AC015	2,806
24	16.5	12.6	16.5	15	11	240ET4060	896.08.31	AC024	3,400
30	24	13.5	22	22	15	◆ 300ET4060	896.09.31	AC030	4,335
43	31	22	32	22	15	430ET4060	896.11.32	AC044	4,710

(1) For snubber brake resistor sizing, refer to page D-84.
(2) Model numbers 31ET4060 thru 430ET4060 include a built-in RFI filter to meet CE Compliance Standards.



Bookshelf Drive Dimensions

Unit Type	Physical Dimensions in mm					Weight
A	B	C	D	E		
AC003	95	378	35	422	200	5.5 kg
AC004	95	378	35	422	200	5.5 kg
AC005	95	378	35	422	200	5.5 kg
AC008	95	378	35	422	200	5.5 kg
AC012	95	378	35	422	200	5.5 kg
AC015	95	378	35	422	200	5.5 kg
AC024	185	374	61	422	200	10.0 kg
AC030	185	374	61	422	200	10.0 kg
AC044	214	374	152	422	200	13.5 kg

◆ Normally carried in stock.

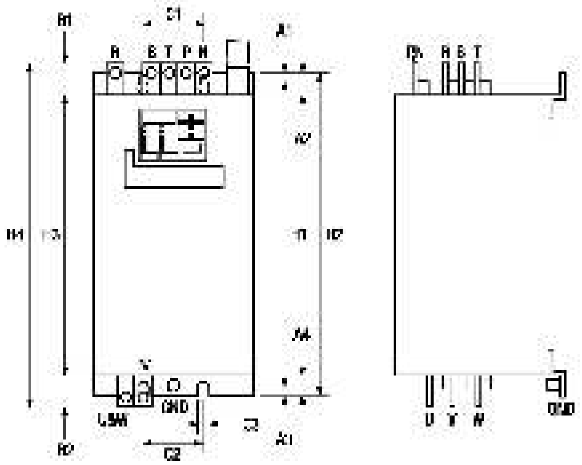
380-460 VAC, 50/60 HZ INPUT; RATINGS 30 HP THROUGH 200 HP

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] in Parameter "P.048"						Drive Selection 380-460 VAC, 3-Phase, 50/60 Hz GV3000/SE							
P.048 = H-H			P.048 = UEC			Continuous Output Amps/Motor Current						Model Number®	List
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	$6,660
40 (29.8)	40 (29.8)	30 (22.1)	40 (29.8)	40 (29.8)	30 (22.1)	54	54	43	54	54	43	✲ 40V4060	7,238
50 (37.1)	50 (37.1)	40 (29.8)	50 (37.1)	50 (37.1)	40 (29.8)	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 (56)	75 (56)	60 (44)	75 (56)	75 (56)	60 (44)	100	100	80	100	100	80	✲ 75V4060	12,100
100 (75)	100 (75)	75 (56)	100 (75)	100 (75)	75 (56)	140	140	112	140	140	112	✲ 100V4060	12,461
125 (94)	125 (94)	100 (75)	125 (94)	125 (94)	100 (75)	170	170	136	170	170	136	✲ 125V4060	14,202
150 (111)	150 (111)	125 (93)	150 (111)	150 (111)	125 (93)	200	200	160	200	200	160	✲ 150V4060	17,688
200 (150)	200 (150)	150 (111)	200 (150)	200 (150)	150 (111)	240	240	192	240	240	192	✲ 200V4060	19,152

(1) Based upon NEMA Design B four-pole motor ratings only. Actual motor 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 input respectively. kW ratings are based upon an assumed motor power factor of 85%.
(2) An input reactance of 3% is required for this to meet these ratings at 2 kHz and 4 kHz. Use either an isolation transformer or a line reactor when the input reactance 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-60.



460 V Dimensions: 30 HP to 200 HP

HP	H1	H2	H3	H4	Width	Depth	Weight
30-40	17.7 (450)	18.5 (470)	16.1 (410)	15.8 (402)	8.2 (207)	13.9 (354)	51 (23)
50-60	21.4 (544)	20.6 (524)	19.8 (504)	23.9 (608)	8.1 (205)	13.9 (354)	66 (30)
75-100	25 (634)	23.7 (604)	23.4 (594)	27.4 (696)	8.1 (205)	13.9 (354)	77 (35)
125	28 (714)	28.5 (724)	26.5 (674)	30.6 (776)	9.6 (245)	14.4 (366)	97 (35)
150-200	34.4 (873)	36 (914)	30.5 (774)	34.1 (862)	11.1 (28.1)	14.4 (366)	121 (55)

Inches (mm)
pounds (kg)

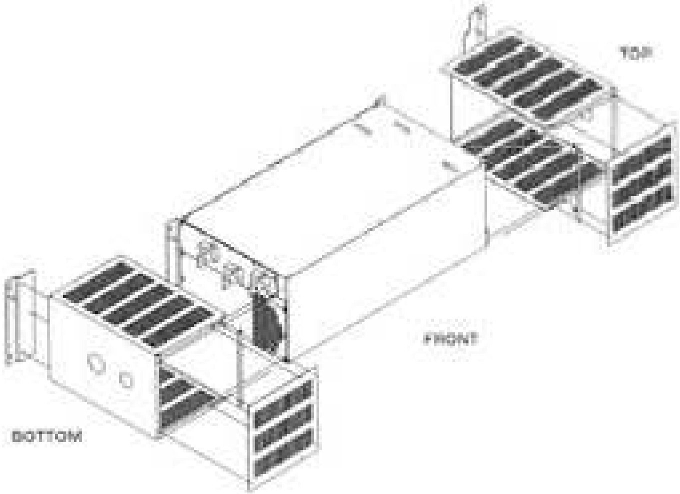
HP	A1	A2	A3	A4	B1	B2	C1	C2	C3	D
75-100	0.4 (10)	1.2 (30)	0.4 (10)	1.2 (30)	2 (51)	2 (51)	3.9 (100)	3.9 (100)	0.35 (9)	0.25 (7)
125	0.4 (10)	1.2 (30)	0.4 (10)	1.2 (30)	2 (51)	2 (51)	7.9 (200)	7.9 (200)	0.35 (9)	0.25 (7)
150-200	0.6 (14)	2.8 (70)	1 (25)	2.8 (70)	1.8 (46)	1.8 (46)	8.5 (216)	8.5 (216)	0.51 (13)	0.51 (11)

Inches (mm)

® Rockwell Automation Inc.

DISCOUNT VS-1AC

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

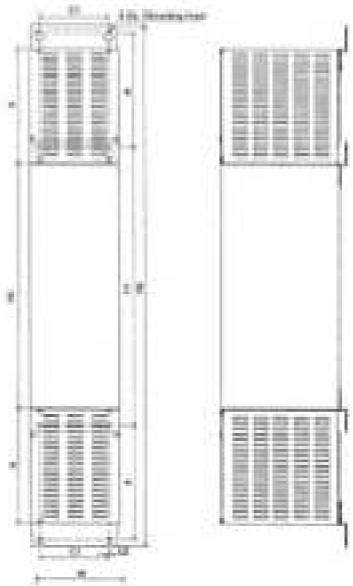


Includes top covers, bottom covers, and mounting brackets required for converting the IP00 Power Module GV3000/SE to a NEMA 1 wall-mountable drive.

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-[illegible]

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	L2	d	
2CK4100	75V4060 100V4060	[illegible] (21.98)	1074 (42.25)	594 (23.39)	234 (9.21)	[illegible] (11.02)	[illegible] (5.27)	100 (3.94)	9 (0.35)	9 (0.35)	7.2 (16)
2CK4125	125V4060	[illegible] (25.11)	1204 (47.40)	674 (26.54)	244 (9.61)	[illegible]	[illegible]	200 (7.87)	9 (0.35)	9 (0.35)	8.4 (19)
2CK4200	150V4060 200V4060	875 (34.45)	[illegible] (65.49)	774 (30.47)	280 (11.02)	370 (14.57)	362 (14.25)	216 (8.50)	13 (0.51)	13 (0.51)	12.5 (28)

[illegible]

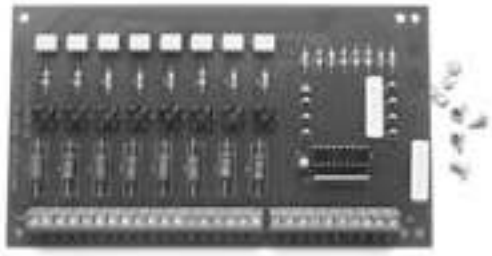
GV3000/SE Options

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 ..... S830 List



115 VAC Interface Board

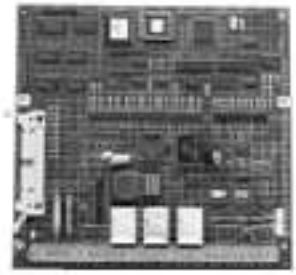
Super RMI Board - I/O Expansion

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 Book-half drives)
Model Number: ✱ 2SI3000E ..... $575 List

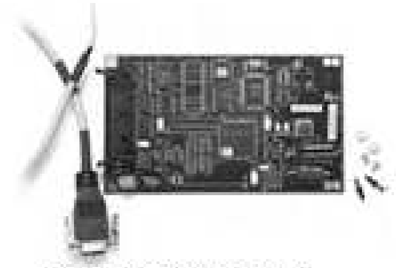
✱ Normally stocked item

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

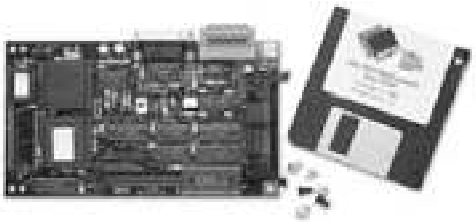
Available as a loose kit only. Please note that this card mounts inside the GV3000/SE.(1)

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

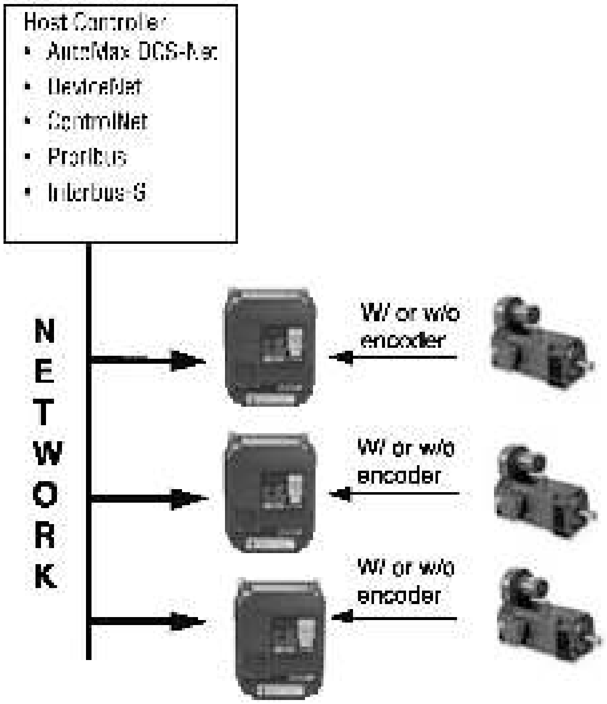
Available as a Loose Kit only. The kit contains (1) Network Option Board, (1) 3.5" Floppy Disk containing an EDS file, (1) manual and (1 set of 4) mounting screws. Please note that this card mounts inside the GV3000/SE.(1)

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



(1) No other I/O card or Network card will be usable with this option card installed.
⊕ Normally carried in stock.

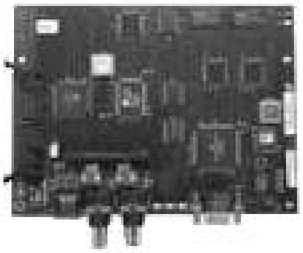
DISCOUNT US-1AC

RELIANCE ELECTRIC

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..S860 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..S1050 List

(1) No other I/O card or Network card will be usable with this option card installed.
∗ Normally carried in stock.

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.

Operator Interface Module Display

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

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	$165
		75	⊕ 2TC3075	310
16 Pin MS	Tamagawa, HA Series	25	⊕ 2TC4025	185
		75	⊕ 2TC4075	345
Cable only (MS connector not included)	Dynapar H20, Tamagawa HA, Lakeshore	100	⊕ 2TC4100	345
		300	⊕ 2TC4300	810

RELIANCE ELECTRIC

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:

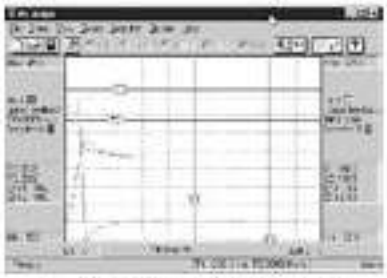
  Speed Reference (scalable)
  Motor Speed
  Motor Current
  Motor Volts
  Motor Torque (%)
  Output Power (kW)
- Configured Displays are
  - Speed Reference
  - Local/Terminal/Serial/Network
  - Auto/Manual Mode
  - Fwd/Rev Direction
- Operational Keys Displayed
  - Run, Jog, Stop and Reset
- Fault/Alarm Log: allows fault and alarm history for diagnosis of operation
- PC Scope feature: allows monitoring and trace of top 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 register.

- 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

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)

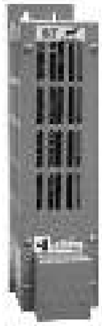
GV3000/SE Bookshelf Model Number	Maximum Drive Input Voltage	Turn-on Voltage (1)	Turn-off Voltage (1)	Maximum Braking Current	Resistor Minimum Ohms	Braking Power Continuous	Braking Power @ 25% Duty Cycle
31ER/31ET4060	460	750	720	6 Amps	125	4500 W	4500 W
38ER/38ET4060	460	750	720	6 Amps	125	4500 W	4500 W
65ER/65ET4060	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
480ER/480ET4060	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 in 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 65ER/65ET4060 85ER/85ET4060	1	6%	* M3575RH1M	4 x 12.75 x 8.7	746	50	730	1	595
	1	20%	* M3575RH1MF	4 x 12.75 x 8.7	746	150	730	1	634
	2	6%	* M3575RH2M	4 x 12.75 x 8.7	1492	100	360	2	736
	2	20%	* M3575RH2MF	4 x 12.75 x 8.7	1492	300	360	2	806
	3	6%	* M3575RH3M	4 x 12.75 x 8.7	2238	150	260	3	783
	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	600	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	1,122
126ER/126ET4060 150ER/150ET4060	8	6%	* M3575RH8B	4 x 17.75 x 8.7	5000	300	90	8	973
	8	20%	* M3575RH8BF	4 x 17.75 x 8.7	5000	1200	90	8	1,138
	9	6%	* M3575RH9M	10 x 12.75 x 8.7	6714	450	57	9	1,128
	9	20%	* M3575RH9MF	10 x 12.75 x 8.7	6714	1350	57	9	1,301
240ER/240ET4060	11	6%	* M3575RH11B	7 x 17.75 x 8.2	9000	400	50	11	1,128
	11	20%	* M3575RH11BF	7 x 17.75 x 8.2	9000	1600	50	11	1,416
300ER/300ET4060	16	6%	* M3575RH16B	7 x 17.75 x 8.2	12000	600	45	16	1,148
	16	20%	* M3575RH16BF	7 x 17.75 x 8.2	12000	2400	45	16	1,442
480ER/480ET4060	24	6%	* M3575RH24B	10 x 17.75 x 8.7	18000	900	30	24	1,257
	24	20%	* M3575RH24BF	10 x 17.75 x 8.7	18000	3600	30	24	1,575

* Normally stocked item.

DISCOUNT VS-1AC

RELIANCE ELECTRIC

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	2,070
	M3575TL150	150	2.5	B5	3,692
460	M3575TH15	15	50	M3	1,339
	M3575TH30	30	25	M3	1,571
	M3575TH75	75	10	M4	1,884
	M3575TH125	125	6	B5	2,879
	M3575TH150	150	5	B5	3,692
	M3575TH200	200	3.5	B7	4,120
	M3575TH300	300	2.5	B7	4,479
	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	5.70
M4	Wall	4.00	12.75	5.70
M7	Wall	7.00	12.75	5.70
M10	Wall	10.00	12.75	5.70
B4	Wall	4.00	17.75	5.00
B5	Wall	5.35	17.75	5.00
B7	Wall	7.00	17.75	5.00
B10	Wall	10.00	17.75	5.00
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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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.

Braking HP	Duty Cycle	Snubber Resistor Module Model Number	Use with Transistor Module Model Number	Cabinet Style	Braking Watts Peak	Braking Watts Cont.	Load Ohms	Amp Rating	List (1)
230 V Snubber Resistor Kits									
1	5%	M3575RL1M	M3575TL15	M4	242	50	57	2	$680
1	20%	M3575RL1MF	M3575TL15	M4	242	150	100	2	831
2	5%	M3575RL2M	M3575TL15	M4	492	100	96	4	736
2	20%	M3575RL2MF	M3575TL15	M4	1492	300	95	4	880
3	5%	M3575RL3M	M3575TL15	M4	2233	150	63	6	788
3	5%	M3575RL3B	M3575TL15	B4	333	100	75	6	721
3	20%	M3575RL3MF	M3575TL15	M4	2411	450	63	6	807
3	20%	M3575RL3BF	M3575TL15	B4	1333	400	75	6	876
4	5%	M3575RL4M	M3575TL30	M7	2391	200	46	8	855
4	20%	M3575RL4MF	M3575TL15	M7	2444	600	46	8	1025
5	5%	M3575RL5B	M3575TL30	B4	3070	200	38	10	788
5	20%	M3575RL5BF	M3575TL30	B4	3373	600	38	10	897
6	5%	M3575RL6M	M3575TL30	M7	4475	300	32	12	968
6	20%	M3575RL6MF	M3575TL30	M7	4473	900	32	12	1,120
8	5%	M3575RL8B	M3575TL30	B4	5000	300	25	15	918
8	20%	M3575RL8BF	M3575TL30	B4	5063	900	25	15	980
9	5%	M3575RL9M	M3575TL30	M10	6714	450	21	18	1,123
9	20%	M3575RL9MF	M3575TL30	M10	6714	1350	21	18	1,398
11	5%	M3575RL11B	M3575TL30	B7	7357	400	19	22	922
11	20%	M3575RL11BF	M3575TL30	B7	7357	1800	19	22	1,158
15	5%	M3575RL15B	M3575TL60	B7	11530	600	13	31	1,051
15	20%	M3575RL15BF	M3575TL60	B7	11530	2100	13	31	1,232
24	5%	M3575RL24B	M3575TL60	B10	16004	900	8	47	1,262
24	20%	M3575RL24BF	M3575TL60	B10	16004	3600	8	47	1,571
460 V Snubber Resistor Kits									
1	5%	M3575RH1M	M3575TH15	M4	242	50	250	1	$645
1	20%	M3575RH1MF	M3575TH15	M4	242	150	250	1	884
2	5%	M3575RH2M	M3575TH15	M4	492	100	250	2	736
2	20%	M3575RH2MF	M3575TH15	M4	1492	300	100	2	888
3	5%	M3575RH3M	M3575TH15	M4	2233	150	250	3	788
3	20%	M3575RH3MF	M3575TH15	M4	2411	450	177	3	892
4	5%	M3575RH4M	M3575TH15	M7	2384	200	125	4	855
4	20%	M3575RH4MF	M3575TH15	M7	2444	600	125	4	1025
5	5%	M3575RH5B	M3575TH15	B4	4000	200	150	5	865
5	20%	M3575RH5BF	M3575TH15	B4	4000	600	100	5	1006
6	5%	M3575RH6M	M3575TH15	M7	4475	300	111	6	850
6	20%	M3575RH6MF	M3575TH15	M7	4475	900	111	6	1,123
8	5%	M3575RH8B	M3575TH15	B4	6000	300	90	8	973
8	20%	M3575RH8BF	M3575TH15	B4	6000	1400	90	8	1,038
9	5%	M3575RH9M	M3575TH15	M10	6714	450	81	9	1,129
9	20%	M3575RH9MF	M3575TH15	M10	6714	1350	81	9	1,391
11	5%	M3575RH11B	M3575TH15	B7	8000	400	60	11	1,024
11	20%	M3575RH11BF	M3575TH15	B7	8000	1800	60	11	1,416
15	5%	M3575RH15B	M3575TH30	B7	12000	600	45	15	1,140
15	20%	M3575RH15BF	M3575TH30	B7	11000	2100	45	15	1,412
24	5%	M3575RH24B	M3575TH30	B10	15000	900	30	24	1,267
24	20%	M3575RH24BF	M3575TH30	B10	15000	3600	30	24	1,576
27	5%	M3575RH27B	M3575TH30	B10	21600	1200	26.7	27	1,428
27	20%	M3575RH27BF	M3575TH30	B10	21600	4000	26.7	27	1,700
33	5%	M3575RH33B	M3575TH75	B10	27100	1465	22.5	33	1,718
33	20%	M3575RH33BF	M3575TH75	B10	26000	4620	22.5	33	1,888
50	20%	M3575RH50B1F	M3575TH75	G1	40000	8000	14	53	5,351
100	20%	M3575RH100B2F	M3575TH125	G2	80000	15000	7	106	6,083
150	20%	M3575RH150B3F	M3575TH200	G3	120000	24000	5	120	9,991

(1) List price is for the resistor module only.
⊕ Normally carried in stock.

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-xx.

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	C	30	400	4,000	50%	$2,508
2 HP, 230 V	⊗ 2SR20400	B	30	400	4,000	50%	2,508
	⊗ 2SR20600	C	20	600	6,000	50%	2,627
3 HP, 230 V	⊗ 2SR20400	B	30	400	4,000	20%	2,508
	⊗ 2SR20600	C	20	600	6,000	30%	2,627
	⊗ 2SR21200	B	10	1,200	12,000	50%	2,925
5 HP, 230 V	⊗ 2SR20600	B	20	600	6,000	20%	2,627
	⊗ 2SR21200	B	10	1,200	12,000	50%	2,925
	⊗ 2SR21800	C	5	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	5	1,800	18,000	50%	3,744
10 HP, 230 V	⊗ 2SR21200	B	10	1,200	12,000	20%	2,925
	⊗ 2SR21800	C	5	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%	3,145
5 HP, 460 V	⊗ 2SR40600	B	75	600	6,000	20%	2,833
	⊗ 2SR41200	B	40	1,200	12,000	30%	3,145
	⊗ 2SR41800	C	25	1,800	18,000	50%	3,956
7 1/2 HP, 460 V	⊗ 2SR41200	B	40	1,200	12,000	30%	3,145
	⊗ 2SR41800	C	25	1,800	18,000	50%	3,956
10 HP, 460 V	⊗ 2SR41200	B	40	1,200	12,000	20%	3,145
	⊗ 2SR41800	C	25	1,800	18,000	40%	3,956
15 HP, 460 V	⊗ 2SR41800	C	25	1,800	18,000	20%	3,956
20 HP, 460 V	⊗ 2SR41800	C	25	1,800	18,000	20%	3,956
5 HP, 575 V	⊗ 2SR51200	B	52	1,200	12,000	40%	3,579
10 HP, 575 V	⊗ 2SR51200	C	52	1,200	12,000	20%	3,579

⊗ Normally stocked item.

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 or manual 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 M3452H15087 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	25T2003	No longer available, see page D-66 for alternate selections					
	25T2004	No longer available, see page D-66 for alternate selections					
460	25T4003	No longer available, see page D-66 for alternate selections					
	25T4007	No longer available, see page D-66 for alternate selections					
	25T4075	No longer available, use M3452H7587					
	M3452H10087	75	9	Continuous	Yes	B7	2,380
	25T4125	No longer available, use M3452H15087					
	25T4150	No longer available, use M3452H15087					
	M3452H15087	150	5	Continuous	Yes	B7	4,272
	25T4200	No longer available, use M3452H20K2					
	M3452H20K2	200	3.3	Continuous	Yes	K2	4,746
	25T4300	No longer available, use M3452H30K2					
	M3452H30K2	300	2.5	Continuous	Yes	K2	5,128
	M3452H60K6	600	.25	60 Seconds	Yes	K6	6,606

[1] See page D-68 for Cabinet Dimensions

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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 - 10		See page D-36 for transistor and resistor selection			
460 Volt Drive Snubber Resistor Sizing					
1.5 - 10		See page D-36 for transistor and resistor selection			
40-60	20%	M3452H7587	6	50	9
	40%	M3452H7587	6	20	37
	100%	M3452H7587	6	12	45
75-100	20%	M3452H7587	6	35	15
	40%	M3452H7587	6	12	45
	100%	M3452H15087	5	7	75
125-200	20%	M3452H15087	5	17	30
	40%	M3452H15087	5	6	90
	100%	M3452H20K2	3.3	4	90
250	20%	M3452H7587	6	11	37
	40%	M3452H15087	5	7	75
	60%	M3452H15087	5	6	112
	80%	M3452H20K2	3.3	4	90
	100%	M3452H30K2	2.5	3	187
300	20%	M3452H7587	6	17	45
	40%	M3452H15087	5	8.5	90
	60%	M3452H15087	5	6.5	112
	80%	M3452H20K2	3.3	4	135
	100%	M3452H30K2	2.5	3	225
400	20%	M3452H7587	6	11	52
	40%	M3452H15087	5	8.5	104
	60%	M3452H20K2	3.3	4	157
	80%	M3452H30K2	2.5	3	203
450	20%	M3452H15087	5	9	90
	75%	M3452H30K2	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.

Adjustments include:

- Voltage Trip
- 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.

AC Line Volts	Module Model Number	RMS DC Amps	w/o Fan Option 45 sec. KW	w/o Fan Option Cont. KW	w/Fan Cont. KW	List
230V	✻ 1RG22010	10	5	2	5	$5,356
	✻ 1RG22020	20	7	4	7	5,499
	✻ 1RG22030	30	10	4	10	5,511
	✻ 1RG22045	45	15	4	12.5	7,210
460V	✻ 1RG42010	10	7	4	7	5,974
	✻ 1RG42020	20	14	4	12.5	6,541
	✻ 1RG42030	30	20	4	12.5	7,272
	✻ 1RG42045	45	30	4	12.5	9,476
	✻ 1RG42060	60	[illegible]	37.5	fan std.	13,081
	✻ 1RG42090	90	[illegible]	37.5	fan std.	16,296

Line Regeneration Module

	Regeneration Module Dimensions Amp Rating	Height	Width	Depth	Weight
w/o Fan Option	10, 20, 30, 45	17.5 (444)	16.2 (411)	8.3 (211)	45 (20)
w/Fan Option	10, 20, 30, 45	17.5 (444)	18.5 (470)	8.3 (211)	58 (26)
	60, 90	20 (508)	25 (635)	10.4 (264)	115 (52)

Inches (mm)
pounds (kg)

Fan Kit for Regeneration Modules

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

Model Number: ✻ 1RG10000 .... $474 List

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.

EN50081-1 Electromagnetic compatibility - generic standard. Part 1: residential, commercial, and light industry.

EN50082-2 Electromagnetic compatibility - generic immunity. Part 2: Industrial Environment.

Compliance Requirements

Compliance is maintained by fitting the GV3000/SE with a Reliance Electric Mains Filter 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 3V4160 5V4160	★2DF4283	mounts under drive chassis	$680
7V4160 10V4160	★2DF1281	mounts under drive chassis	785
15V4160 20V4160 25B4160	★2DF4285	mounts under drive chassis	2000
25V4160 30V4160 40V4160 50V4160 60G4160	★2DF1286(1)(2)	mounts under drive chassis(1)	1,805
50R4160 75U4160	use 75T4160	N/A	–
75T4160	Standard	mounted internal	
75V4080 100V4080	(2)	(2)	(2)
125T4160	★2DF4125	mounts remote	6,930
125V4080 150V4080 200V4080	(2)	(2)	(2)
200V4160 250V4160 300V4160 350V4160 400V4160	(2)	(2)	(2)

Technical Data for GV3000/SE Mains Filter

Filter Model Number	Dimensions Height	Width	Depth	Watt Loss	Amps Cont.
2DF4283	15.2 (387)	8.5 (217)	2 (50)	45	22
2DF1281	17.3 (440)	10.7 (272)	2 (50)	45	22
2DF4285	26.5 (673)	10.7 (272)	3.6 (91.5)	45	22
2DF1286	37.7 (958)	14.4 (365.5)	3.6 (91.5)	75	100
2DF4125	26.3 (670)	12.6 (320)	6.3 (160)	77	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 numbers 25V4160 thru 60G4160 only) to comply with CE requirements.

(2) Consult factory for assistance.

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 75 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 filter 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		500	500	500
15 to 20		500	500	500
25 to 30		500	500	500
40 to 100		500	500	500
125 to 150		500	500	500
200 to 400		1000	1000	1000
1 to 2	4.5% impedance line reactor	1000	1000	1000
3 to 5		1000	1000	1000
7.5 to 10		1000	1000	1000
15 to 20		1000	1000	1000
25 to 30		1000	1000	1000
40 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	460 Volt 5% Reactor	GV3000/SE HP Rating	460 Volt 5% Reactor
1	RL-00202	60	RL-03003
2	RL-00402	60	RL-03003
3	RL-00702	75	RL-10003
5	RL-01002	100	RL-13003
7.5	RL-01702	125	RL-16003
10	RL-02202	150	RL-19003
15	RL-03502	200	RL-25003
20	RL-04502	250	RL-32003
25	RL-05502	300	RL-40003
30	RL-06502	350	RL-46003
40	RL-09502	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 #E59184) and CSA certified (CSA File #LR29753). They are available from MTE Corporation.