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A PWM Inverter for General Purpose Applications up to 25HP

The GP2000 is a fully digital, microprocessor-based PWM AC drive which offers “full spectrum switching” to eliminate annoying PWM acoustic motor noise. The 16-bit microprocessor allows repeatability of settings, zero drift, high noise immunity, and enhanced diagnostics. In addition, the regulator utilizes Large Scale Integration (LSI) and surface mount technology for increased reliability and compactness.

The GP2000 is ideally suited for a broad range of applications which require adjustable speed control of motors, including:

- fans
- material handling
- mixers
- blowers
- agitators
- pumps



Standard Features

- A limited range of available ratings:
  - 1-25 HP at 460 VAC
  - 10-25 HP at 575 VAC
- NEMA 1 enclosure.
- Full digital PWM operation using VLSI and surface mount technology for increased reliability and compact design.
- 16-bit micro-processor allows repeatability of settings, zero drift, high noise immunity, reduced susceptibility to EMI and enhanced diagnostics.
- All programmable settings (min. speed, max. speed, volts/Hz, etc.) are held in non-volatile memory and are not affected by power outages.
- High operating efficiency (98% at 1 HP).
- Constant input power factor throughout the entire speed range.
- Start/Stop with coast-to-rest or ramp-to-rest on stop.
- 20:1 speed range (3-60 Hz) adjustable to 400 Hz.
- Slip compensation circuit to hold motor speed to 1% speed regulation regardless of no load to full load fluctuations.
- Line dip ride through.
- Standard keypad functions:
  - Speed selection
  - Start/Stop
  - Forward/Reverse
  - Auto/Manual
  - Run/Jog
  - Keypad controller parameter inputs
  - LED display of volts, amperes, frequency or RPM.
- Electronic reversing from any speed.
- 0 to 20mA, 4-20mA, 0-10 VDC and frequency pulse isolated or non-isolated input signal capability.
- Multiple selectable V/Hz curves for constant torque and variable torque applications.
- Adjustable auto restart (number of restart attempts and time interval between resets are selectable). Controller provides a real time display of time delay between IET and restart.
- Three selectable preset speeds.
- Three frequency avoidance settings with adjustable frequency avoidance band-width.
- 50 to 150% current limit adjustment.
- 57 programmable parameters with password
- Adjustable DC braking selectable amplitude and duration.
- Auto and manual torque boost.

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Custom Classics

More Standard Features

- Adjustable electronic motor overload which is UL/CSA listed and meets NEC/CEC requirements.
- Line-to-line and line-to-ground output short circuit protection - running and starting.
- Digital display for following fault conditions:
  - Overcurrent acceleration
  - Overcurrent deceleration
  - Overcurrent line-to-ground
  - Overcurrent line-to-line
  - CPU memory fault
  - Low DC bus voltage
  - High DC bus voltage
  - Fan Fault
  - Overload
  - Function loss
  - Line dip
- Compact controller size with pre-engineered options.

Available Options

GP2000 has several pre-engineered option kits and modifications to help meet your particular application requirements. Here is a partial list of the more popular options:

Remote Meter Interface Card - This kit provides the capability to drive the optional remote digital display of volts, amps, frequency and fault indication. Isolated 0-10 VDC output signals proportional to frequency, voltage, current and two auxiliary contacts which are software configurable are included. Also, included is a dry contact closure for drive run indication.

Main Input Disconnect - Provides padlockable disconnect of incoming power.

Expanded Cabinet Kit - The expanded cabinet kit is available for 1/4-20 HP drives and provides convenient mounting for pre-engineered kits such as output contactors, main input disconnect, magnetic bypass, and motor overloads.

Class J Input Line Fuses - This kit provides additional protection of the GP2000 controller.

RPM AC Blower Protection - This kit provides three input line fuses mounted internal to the expanded cabinet. This is used when an RPM AC motor with a blower is ordered to provide electrical protection to the blower.

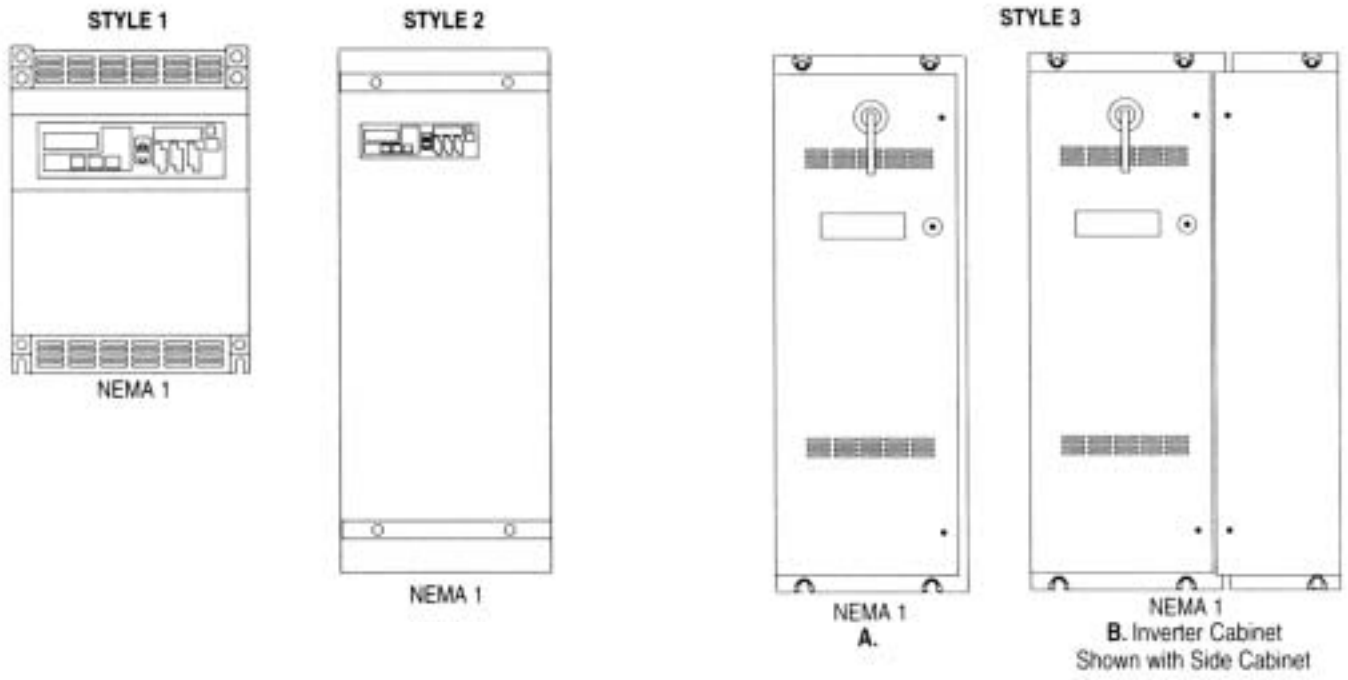
Rail Interface Card Kit - This kit provides a communication link to the Reliance AutoMate 20, 30, or 40 controller as well as the AutoMax / DCS industrial controller, without any additional I/O interface to the GP2000.



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Standard Enclosures



NEMA1

HP	VAC	Style	Dimensions (in./mm)			Weight (lb/kg)
			Width	Height	Depth	
.25-10	460	1	9.8/249	15.8/401	7.9/201	26/11.8
15-20	460	1	11/279	19.7/500	10.9/277	55/25
25-50(1)	460	2	15.9/404	35/889	14.2/361	175/79.4
50-125(1)	460	3A	17/432	48/1220	16.4/417	325/148
3-10	575	1	9.8/249	15.8/401	7.9/201	26/11.8
15-20	575	1	11/279	19.7/500	10.9/277	55/25
30-50(1)	575	2	15.9/404	35/889	14.2/361	175/79.4
50-100	575	3A	17/432	48/1220	16.4/417	325/148

(1) Variable torque rating on 50 HP 460/575V and 125 HP 460V.

Expanded Cabinet (1EX4000) Enclosures

HP	VAC	Style	Dimensions (in./mm)			Weight (lb/kg)
			Width	Height	Depth	
.25-20	460	2	17.2/437	31/787	14.1/358	140/63.6
1-20	575					

Inverter Cabinet and Bypass Option

HP	VAC	Style	Dimensions (in./mm)			Weight (lb/kg)
			Width	Height	Depth	
50-125	460	3B	27/686	48/1220	16.4/417	485/220
50-100	575	3B	27/686	48/1220	16.4/417	485/220

Application Data

Pulse Width Modulation (PWM)..... Sine Wave
Service Factor..... 1.0
Displacement Power Factor..... 0.96
Long Term Frequency Stability:
With Digital Keypad..... 0.01% of base speed
With Optional Analog Speed Pot..... 0.05% of base speed
Linearity (Speed Reference to Output Frequency)..... +/-10

Controller Ratings

Controller Model Number	Nominal Horsepower Range	Controller 3-Phase Input Volts	Controller Input KVA	Max. Input Amps	Max. Motor Sine Wave Amps(1)	Max. Controller Output Amps
2GU41001	1/4 - 1	460	2.0	2.5	1.9	2.1
2GU41015	15	460	20.2	25.4	19.0	21.0
2GU41020	20	460	26.1	32.7	24.5	27.0
2GU41025	25	460	29.5	37.0	30.6	34.0

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GP2000 AC Drives

Controller Model Number	Nominal Horsepower Range	Controller 3-Phase Input Volts	Controller Input KVA	Max. Input Amps	Max. Motor Sine Wave Amps(1)	Max. Controller Output Amps
2GU51010	7 1/2 to 10	575	14.4	14.5	11.0	12.0
2GU51020	15 to 20	575	27.8	27.9	21.0	23.0

(1) To obtain motor nameplate HP, the controller's sine wave output ampere rating should be equal to or greater than the motor nameplate current. If the motor nameplate amperes are higher than the controller sine wave rating, the motor HP should be derated by the ratio of the controller sine wave ampere rating to the motor nameplate current. Refer to "Single-Motor Applications" and "Multi-Motor Applications" in instruction manuals for more details.
(2) Ambient Temperature Range of cabinet rated to 55 degree C.

Service Conditions

Elevation..... to 3300 ft (1000 meters)
Ambient Temperature Range:
Cabinet.....-10˚C to 40˚C (14˚F to 104˚F)
Chassis.....-10˚C to 40˚C (14˚F to 104˚F)
Atmosphere .....Non-Condensing Relative Humidity 5 to 95%
AC Line Voltage Variation..... +/-10%
AC Line Frequency Variation.....50Hz (2 Hz or 60Hz (2 Hz
Storage Temperature.....-40˚C to 65˚C (-40˚F to 149˚F)

Instruction Manuals

1/4 - 10 HP (230 V),
1/4 - 20 HP (460 & 575 V).....D2-3166-8
15-20 HP (230 V),
25-40 HP (460 & 575 V).....D2-3182-4
50 HP Variable Torque (460 & 575 V).....D2-3201-3
25-50 HP (230 V),
50-100 HP (460 & 575 V).....D2-3217-2
50 HP (208 V), 125 HP (460 & 575 V).....D2-3266-1

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Controller Model Numbers

Motor HP	Motor KW	380 VAC 3-Phase	415 VAC 3-Phase	460 VAC 3-Phase(D)	575 VAC 3-Phase(E)
1/4 - 1	.75	(D)	(D)	2GU41001	-
5	3.7	(D)	(D)	N/A	2GU51005
7.5	5.6	(D)	(D)	N/A	-
10	7.4	(D)	(D)	N/A	2GU51010
15	11	(D)	(D)	2GU41015	-
20	15	(D)	(D)	2GU41020	2GU51020
25	18.5			2GU41025	-

(A) In order to obtain motor nameplate horsepower, the controller's sine wave output ampere rating should be equal to or greater than the motor nameplate current. If the motor nameplate amperes are higher than the controller sine wave rating, the motor HP should be derated by the ratio of the controller sine wave ampere rating to the motor nameplate current.
(B) NEMA 1 control can be converted to chassis by removing the top cover.
(C) Single-phase is available by derating a 7-1/2 HP or less three-phase controller. Price according to the three-phase controller being used.
(D) 460 VAC controls 1 thru 20 HP can also be operated on 380 VAC, 400 VAC, 415 VAC or 440 VAC (±10%) 50 or 60 Hz, however, the motor must be designed for these voltages.
(E) 575 VAC controls 5 thru 20 HP can also be operated on 475 VAC, 500 VAC, 550 VAC (±10%), 50 or 60 Hz, however the motor must also be designed for these voltages.

Options
Main Input Disconnect Kit

HP/Volts	Interrupt Capacity Sym. Amps @ 460 VAC	Main Input Disconnect Kit Model Number	Expanded Cabinet Required 1EX4000
1/4 - 20/ 460 VAC	65000	2CB4020	Yes(1)
3 – 20/ 575 VAC	65000	2CB4020	Yes(1)
25 – 40/ 460 VAC	65000	2CB4050	No(1)
25 – 50/ 575 VAC	65000	2CB4050	No(1)
50-125/ 460 VAC	65000	1CB4100	No(1)
50-100/ 575 VAC	65000	1CB4100	No(1)

(1) Refer to page CC1-12 for information about cabinet space available for control modifications and kits

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Input Line Fuses

Provide additional protection of the AC controller. Available as a Factory Installed option only.

Volts	HP	Fuse	Model Number	List	Expanded Cabinet Required 1EX4000
460 575	1	5A	2FU4001	(2)	Yes(1)
460 575	2	6A	2FU4002	(2)	Yes(1)
460 575	3	8A	2FU4003	(2)	Yes(1)
460 575	5	15A	2FU4005	(2)	Yes(1)
460 575	7.5	17 ƒA	2FU4007	(2)	Yes(1)
460 575	10	25A	2FU4010	(2)	Yes(1)
460 575	15	35A	2FU4015	(2)	Yes(1)
460 575	20	40A	2FU4020	(2)	Yes(1)
460 575	25-40	90A	2FU4050	(2)	No(1)
460 575	50-125	175-200A	2FU4100	(2)	No(1)

RPM AC Blower Fuse Kit

Provides three input line fuses mounted internal to the cabinet. This is used when an RPM AC Motor with a blower is ordered.

Controller HP	Model Number	Factory Installed List	Expanded Cabinet Required 1EX4000
1/4-20 460 VAC	1BM4000	(2)	Yes(1)
25-40 460 VAC	1BM4000	(2)	No(1)
50-125 460 VAC	1BM4000	(2)	No(1)

(2) Refer to numeric Section 1 for Pricing

Remote Meter Interface Kit

Provides the capability to drive the optional remote digital display of volts, amps, frequency and fault indication. Provides isolated 0-10 VDC output signals proportional to frequency, voltage, and current for driving analog meters and/or feedbacks to a PLC. Two auxiliary contacts which are software configurable for up to 10 different functions; and dry contact closure for drive run indication. This card cannot be used if the Rail Interface Card 1SC4000 is being used. (1)

Model 1MI4000

(1) Refer to page CC1-12 for information about cabinet space available for control modifications and kits.

Control Signal Buffer Kit

Provides higher signal power (40 mA @ 24 VDC) for customer interlocks that cannot operate reliably with the 2 mA @ 24 VDC standard signal power output from the controller. The option is for single drive applications only; multiple drive applications require individual control signal buffer for each controller. The control signal buffers for each controller. The control signal buffer card is provided in an enclosure for separate mounting. The buffer card is standard in the Expanded Cabinet (1EX4000) and in the 15-50 HP (230 VAC) and 25-125 HP (460 and 575 VAC) Controllers. (1)

1SB4000 Kit

(1) Refer to page CC1-12 for information about cabinet space available for control modifications and kits.

115 Volt Control Interface

This option consists of a printed circuit board which converts customer supplied 115 VAC signals (such as start, stop, run, jog, forward, reverse and function loss) to 24 VDC for operating a GP2000 controller(1). 115 VAC start-stop is standard on 50-125 HP(460 and 575 VAC) or 25-50 HP (230 VDC) controllers. This option mounts in the same space as the 1SB4000 signal buffer card.

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Output Feedback Card

Provides a 4-20 mA output signal proportional to either speed or load. This option requires the remote meter interface card (1MI4000). A price addition must be made for the meter interface card. Factory installed only.

HP	Voltage	More Cabinet Space Required	Expanded Cabinet 1EX4000 List	Side Cabinet 2KU4100 List
1/4 - 20	460	Yes(1)	Y	N
25-40	460	No(1)	N	N
50-125	460	Yes(1)	N	Y
3-20	575	Yes(1)	Y	N
25-40	575	No(1)	N	N
50-125	575	Yes(1)	N	Y

Rail Interface Card

Provides a high-speed (400KB), multi-drop, serial communication link between GP2000 drives and AutoMate 20, 30, 40 or AutoMax industrial controllers. This kit allows connection of a GP2000 drive directly to I/O Ports on the AutoMate. Alternatively, the Remote I/O network of the host AutoMate or AutoMax can control multiple GP2000 drives at distances up to 6,000 feet. Use of the Rail Interface Card allows control and monitoring of a GP2000 with no additional control wiring (only a hard-wired Emergency Stop circuit and power input and output wiring are necessary). Programming in the AutoMate or AutoMax controllers to support the GP2000 is the same for standard Remote I/O. No special protocols or drivers are required. The 1SC4000 kit includes a 10' pre-terminated cable for plug-in connection between an I/O port on the host controller and the Rail Interface Card. The 1SC4000 kit mounts within the GP2000 and can only be used with a 20HP and smaller (460 or 575 V) and 10HP and smaller (230 V) GPI2 or V3 (version B or later) regulator.

Note: The Remote Meter Interface Kit (1MI4000) cannot be mounted inside the drive when the Rail Interface Card is used.

Model 1SC4000

Remote Digital Meter Kit

Displays frequency (Hz), voltage, current, and indication of an IET Trip. The meter is provided in an enclosure which is designed for panel mounting (not for wall mounting). A remote meter interface M/N 1MI4000 is required to use this meter kit.

Model 3DM4000 (230V Input Power)
Model 3DM5000 (115V Input Power)

Remote Operator Station

Will allow the control to be operated remotely. A Speed Potentiometer is provided for speed control. Selector switches are also provided for Run, Jog, Forward, Reverse, Stop, Auto and Manual. Programming must still be done locally. This remote station is designed for mounting into a user's Control Panel (not for wall mounting).

Model 1RS3000

Pressure-To-Electrical Transducer

Converts a 3-15 psi pneumatic process signal into an electrical signal which the drive is designed to follow. An unmounted Auto-Manual switch is provided.

HP Rating	Model Number	Expanded Cabinet Required 1EX4000
1/4-20	1PE4020	Yes(1)
25-40	1PE4050	No(1)
50-125	1PE4100	Yes(1)

Expanded Cabinet Kit

Provides the additional cabinet space required to add options to the 1/4-20HP (460 and 575 VAC) or 1/4-10HP (230VAC) GP2000 series drive. The cabinet provides space to mount a GP2000 chassis unit in the cabinet along with additional items such as manual magnetic bypass, output contactors, main input disconnect, P to E transducer, RPM-AC blower protection, and motor overload. Some options cannot be mounted in the Expanded Cabinet Kit at the same time. The expanded cabinet includes a cabinet, fused control transformer (to power other GP2000 options) signal buffer card and input line reactor. (1)

Model 1EX4000

Side Cabinet

Enclosure provides additional cabinet space (for 50-125 HP (460 and 575 VAC) or 25-50HP (230 VAC) GP2000 controls only) for mounting options such as magnetic contactor bypass, motor overloads and an input line reactor(1). Other options can also be substituted for these. The enclosure has a hinged door and is designed to bolt to the right side of the main control cabinet.

Model 2KU4100

(1) Refer to page CC1-12 for information about cabinet space available for control modifications and kits.

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Top Hat Cabinet

Enclosure provides space for mounting up to (9) 22mm size pilot devices (such as pushbuttons, selector switches and potentiometers) and 2 relays. (1) This 9" high cabinet mounts on the top of either the Expanded Cabinet (1EX4000) or the 25-40HP (460 VAC and 575 VAC) or 15-20HP (230 VAC) controllers. (it cannot be added to the top of the 50-125HP (460 VAC and 575 VAC) or 25-50HP (230 VAC) controllers.)

Factory Installed Only

(1) refer to page CC1-12 for information about cabinet space available for control modifications and kits.

Line Reactors

Are used to provide additional impedance in the AC line. They are an alternative to using isolation transformers for adding impedance provided the line reactors are supplied in NEMA 1 enclosures designed for separate mounting.

Note: Line reactors are standard in the Expanded Cabinet (1EX4000), in the 25-40HP (460 VAC) or 15-20HP (230 VAC) controller, and with the bypass option for 50-100HP (460 and 575 VACC) or 25-50HP (230 VAC) controllers.

Line reactors for 50-100HP (460 and 575 V) or 25-50HP (230 VAC) controllers without bypass can be added to the side cabinet. The line reactor option includes an Input Disconnect (ID) and an input fuse block panel. (Fuses are not provided as standard. A price addition must be made if fuses are required.) The line reactor is mounted and wired to the input of the GP2000. A price addition must be made for the side cabinet 2KU4100.

Model 1LR4100 (Factory Installed Only)
Line reactor/input fuse option for 125HP (460V) controllers consists of an input line reactor, fuse block panel and three 250 amp type J input fuses. This option requires extra cabinet space. A price addition must be made for the side cabinet 2KU4100.

Model 1LF4125 (Factory Installed Only)

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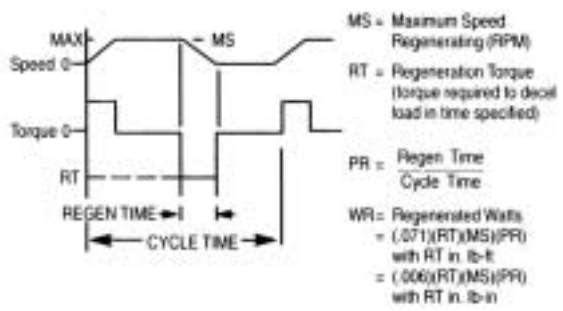
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Snubber Resistor Braking Kit

Provides rapid deceleration of the drive motor by dissipating the power regenerated by the motor through a set of resistors. The snubber braking resistors are sized to provide the watt dissipating capability required for the duty cycle of the application. Size the snubber kits by using the formula shown. Kits consist of a control module and a set of snubber resistors mounted in a NEMA 1 enclosure.

Stylee	Enclosure Dimensions (in./mm)		
	Height	Width	Depth
B	18.2 / 476	9.5 / 241	8.5 / 216
C	18.2 / 476	11.5 / 292	10.5 / 267

Sizing Snubber Resistors for Repetitive Cycle



Controller	Model #	Cabinet Style	Resistance Value	Continuous Watt Dissipation	Instantaneous Watt Dissipation	Max Cont Duty Cycle %t
1HP 460 VAC	2SR40400	B	120	400	4000	0-50
2 HP 460 VAC	2SR40400	B	120	400	4000	0-30
	2SR40600	B	75	600	6000	31-50
3 HP 460 VAC	2SR40400	B	120	400	4000	0-20
	2SR40600	B	75	600	6000	21-30
	2SR41200	B	40	1200	12000	31-50
5HP 460 VAC	2SR40400	B	75	600	6000	0-20
	2SR41200	B	40	1200	12000	21-40
	2SR41800	C	25	1800	18000	41-50
7ƒHP 460 VAC	2SR41200	B	40	1200	12000	0-30
	2SR41800	C	25	1800	18000	31-50
10HP 460 VAC	2SR41200	B	40	1200	12000	0-20
	2SR41800	C	25	1800	18000	21-40
	(1)	-	-	-	-	41-50
15HP 460 VAC	2SR41800	C	25	1800	18000	0-20
	(1)	-	-	-	-	21-50
20HP 460 VAC	2SR41800	C	25	1800	18000	0-20
	(1)	-	-	-	-	21-50
5HP 575 VAC	2SR50600	B	105	600	6000	0-20
	2SR51200	B	52	1200	12000	21-40
	2SR51800	C	35	1800	18000	41-50
10HP 575 VAC	2SR51200	B	52	1200	12000	0-20
	2SR51800	C	35	1800	18000	21-40
	(1)	-	-	-	-	41-50
20HP 575 VAC	2SR51800	C	35	1800	18000	0-20
	(1)	-	-	-	-	21-50

(1) A regenerative braking module should be used for greater duty cycles and for higher horsepower applications.

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Line Regeneration Module

This modular system will return the energy produced by an AC motor, during decelerating or overhauling conditions, back to the input power line. Excessive regenerative energy back to the input power line, the module provides a more efficient and economical means of operation, as compared to a typical snubber resistor system. These modules are amp rated and available 8 amps to 45 amps, 230 VAC and 460 VAC. All modules are provided in NEMA 12 enclosures. Dimensions are 17.5” (445 mm) Height x 16.2” (412 mm) Width x 8.3” (211 mm) Depth.

Regen. Module Model Number	Rating	Voltage
1RG42008	8 amps	460
1RG42015	15 amps	460
1RG42025	25 amps	460
1RG42045	45 amps	460

Note: the formulas only apply when sizing the regeneration for stopping conditions. If continuous regeneration is required, contact Reliance for assistance.

Snubber Transistor Braking Kit

This is the control only portion of a snubber braking kit. When connected to the DC bus of a PWM control, the braking module will activate as the bus exceeds a preset level and will send the excess energy to a snubber resistor network. Snubber resistors are separate and not included. This open controller measures 15” (381mm) Height x 6” (152mm) Width x 6.50” (165mm) Depth, and requires mounting in an enclosure.

Voltage	Brake Control Model #	Transistor Amps RMS Rating	Minimum Resistance (Ohms)
460	2ST40027	27	25
575	2ST50023	23	35

Reference Trim Pot

Provides the ability to trim an input process signal.(1)

Model 1TP3000

Complete Magnetic Bypass

Provides a means to run the motor directly on line power by effectively bypassing the variable speed controller. This option consists of two magnetic contactors, a motor overload (OL) for protection of the motor in the bypass mode, and also a separate input disconnect (ID) so the variable speed controller only may be serviced while the motor is running in the bypass mode. A Main Input Disconnect (MID) may also be added so that all power may be turned off to the entire panel. Use the Main Input Disconnect price for the MID option.

Use the equations below to size regeneration modules. First establish the torque required to decelerate or stop a rotating object:

$$T = \frac{(WK^2)\Delta N}{308t}$$

T = Torque required (lb-ft)
ΔN = Change in speed (rpm)
t = Time to decelerate load (sec)
WK^2 = Total inertia load to be decelerated (lb-ft)

Calculate the horsepower at maximum speed.

$$P = \frac{TN}{5250}$$

P = Power (HP)
T = Torque (lb-ft) (calculated above)
N = Maximum shaft speed (rpm)

Determine the DC Bus current rating required for the regeneration module.

IDC =P(1.2) for 460 VAC Drives
IDC =P(2.4) for 230 VAC Drives
IDC =Regen. Amps
P =Power (HP) (Calculated above)

Output Contactor

Provides positive disconnect between the GP2000 Controller and the motor. The output contactor kit requires the use of a remote Meter Interface (1MI4000) which is included with this kit.

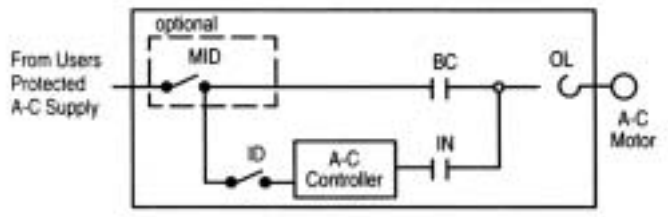
Control HP	Model Number	Extra Cabinet Space Required
1/4-20 (460V)	1CN4020	Yes(1)
3-20 (575V)		
25-40 (460V)	1CN4020	No(1)
25-40 (575V)		
50-100 (460 & 575V)	1CN4100	Yes(1)
125 (460 V)	1CN4125	Yes(1)

(1) Refer to Page CC1-12 for information about cabinet space available for kits.

Note: 50-125HP (460 & 575 VAC) bypass includes input line fuses, Input Disconnect (ID), Main Input Disconnect (MID), two magnetic contactors, a Motor Overload (OL) and an input line reactor. The side cabinet is also required but is not included in the bypass adder.

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Motor Overload Kit

The GP2000 controller has a standard electronic thermal overload relay which is UL approved and designed to protect one AC motor from extended overload operation. Multiple motor applications require individual overload relays for each of the motors in the system to comply with electrical codes. Order one of these kits for each motor. Specify motor HP's. This motor overload relay is suitable for operation down to one-half base speed of the motor. It may not protect the motor when operating below one-half base speed of the motor. It may not protect the motor when operating below one-half base speed because, at lower speeds, motor damage can be caused by factors other than overloads. For maximum motor protection under these conditions, the use of thermal protection embedded in the motor windings is recommended. Cabinet size may be affected by adding two or more of these kits.(1)

1-20HP (460/575V)	1ML4020	Yes(1)
25-40HP (460/575V)	1ML4050	No(1)
50-60 HP (575V)	1ML5060	Yes(1)
50-60 HP (460V) 75HP (575V)	1ML4060	Yes(1)
75HP (460V) 100HP (575V)	1ML4075	Yes(1)
100HP (460V)	1ML4100	Yes(1)
125HP (460V)	1ML4125	Yes(1)

Controller HP	Extra Cabinet Space Required
1-10 (460V)	Yes(1)
15-20 (460V)	Yes(1)
25-40 (460V)	No(1)
50-100 (460V)	Yes(1)
125 (460V)	Yes(1)
5-20 (575V)	Yes(1)
25-40 (575V)	No(1)
50-125 (575V)	Yes(1)

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Multiple Modifications/Cabinet Space Information Table

The Standard GP2000 controller can accommodate various kits/modifications. The table below will help in determining which modifications will fit together in the same enclosure at the same time. Contact Reliance Electric if it appears more space is required.

Controller Rating	Standard NEMA 1 Enclosure	Expanded Cabinet		
		Without Bypass	With Bypass	Top Hat with or Without Bypass
1-20 HP (460 VAC) 1-20 HP (575 VAC)	Meter Interface Card (1) Or Rail Interface Card(1) Reference Trim Pot	Meter Interface Card(1) or Rail Interface Card(1) Input Fuses Main Input Disconnect P to E Transducer 115V Control 2nd Motor Overload Output Contactor(1) or 4-20 mA Output Prop. to Frequency(1) Input Line Reactor	Meter Interface Card(1) or Rail Interface Card(1) Input Fuses Main Input Disconnect P to E Transducer Contactor Bypass Two Pilot Devices Input Line Reactor	Elapsed Time Meter Two Pilot Devices Auto Bypass(1) or 4-20 mA output Prop. To Frequency(1)

Controller Rating	Standard NEMA 1 Enclosure		
	Without Bypass	With Bypass	Top Hat with or Without Bypass
25-40 HP (460 VAC) 25-40 HP (575 VAC)	Meter Interface Card(1) or Rail Interface Card(1) Input Fuses Main Input Disconnect P to E Transducer 115V Control 2nd Motor Overload Output Contactor(1) or 4-20 mA Output Prop. to Frequency(1) Input Line Reactor Reference Trim Pot	Meter Interface Card(1) or Rail Interface Card(1) Input Fuses Main Input Disconnect P to E Transducer Contactor Bypass Two Pilot Devices Input Line Reactor	Elapsed Time meter Two Pilot Devices Auto Bypass(1) or 4-20 mA output Prop. to Frequency(1)

Controller Rating	Additional Modifications in Side Cabinet		
	Standard NEMA 1 Enclosure	Without Bypass	With Bypass
50-125 HP (460 VAC) 50-100 HP (575 VAC)	Meter Interface Card(1) or Rail Interface Card(1) Input Fuses Inverter Disconnect P to E Transducer 4-20 mA Output Prop. to Frequency(1) Two Pilot Devices Elapsed Time Meter 115V Control (Start/Stop) Three Control Relays Reference Trim Pot	Output Contactor Overload Relay 2nd Overload Relay Two Pilot Devices Input Line Reactor	Contactor Bypass (Including Auto Bypass) Motor Overload Main Input Disconnect Two Pilot Devices Input Line Reactor

(1) Must Be either one kit or the other – cannot be both. Select one.

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Kits - GP2000 PWM Controllers 230, 460 or 575 Volt, Three-phase Input/Output

HP	Voltage	Model Number	Fuse Kit DC Bus Fuse Control Transformer Fuse Quantity 1 each		Power Module Kit Diode Cube (Qty. 1) Transistor Module (See footnote 2)		Regulator Card Kit Regulator Board Power Supply & Base Driver Card, Keypad Quantity 1 each	
			Kit Number	List	Kit Number	List	Kit Number	List
1	460	2GU41001	K-679-AC	(3)	K-685-AC	(3)	K-690-AB	(3)
15	460	2GU41015	K-679-AE	(3)	K-685-AG	(3)	K-690-AB	(3)
20	460	2GU41020	K-679-AE	(3)	K-685-AH	(3)	K-690-AB	(3)
25	460	2GU41025	K-679-AL	(3)	K-685-AN	(3)	K-690-AG	(3)
3-5	575	2GU51005	K-679-AF	(3)	K-685-AS	(3)	K-690-AC	(3)
10	575	2GU51010	K-679-AF	(3)	K-685-AJ	(3)	K-690-AC	(3)
15-20	575	2GU51020	K-679-AG	(3)	K-685-AJ	(3)	K-690-AC	(3)

(1) For Kits 1-5 HP (230 VAC), recommend replacing complete controller or purchasing a spare.
(2)15 & 20 HP (230 VAC), 30-50 HP (460 VAC) and 20 HP (575 VAC) Power Module Kits contain Qty. 2 Transistor Modules.
25 HP (460 VAC) Power Module Kit contains Qty. 3 Transistor Modules. All other horsepowers contain Qty. 1 Transistor Module
(3) Refer to Numeric Section 1 for Pricing.

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