

DRIVES INDEX

How to use this section

This section covers our extensive line of high performance GENESIS and MILLENNIUM Series Brushless DC Drives. Select the proper drive using one of the following procedures.

- If you are already familiar with these drives and the available options, refer to the GENESIS Model Number Codes beginning on page 81, or the MILLENNIUM Model Number Codes beginning on page 95 to verify the coded information.
- If you are not familiar with these drives and the available options refer to the GENESIS general specifications on page 80, the MILLENNIUM general specifications on page 94 and/or the index at the right. Construct a model number after all the technical parameters, including options, are determined.

GENESIS Series Brushless DC Drives

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MILLENNIUM® Series Brushless DC Drives

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GENESIS SERIES BRUSHLESS DC DRIVES

The Genesis Series Brushless DC Drive Family is constructed on a digital platform employing an analog user interface. This interface includes potentiometer adjustable gain, stability, current limit, acceleration, deceleration, jog speed, max speed, and min speed. Run speed is controlled using either an external potentiometer or a digital pulse train input.

With precise speed control and high torque at low speeds, the Genesis Series Drive Family provides servo-like response in a highly efficient and affordable package.

Simple Set-Up

The Genesis Series Brushless DC Drive Family was designed for easy configuration to your application. Set-up is completed in a matter of minutes by adjusting a few potentiometers to tailor the drive performance. The interface is clearly labeled and easily accessed on the speed controller board.

Precision Control

The Genesis Series Drive employs electromechanical Hall Sensor Feedback for motor commutation. Using an analog or digital pulse train speed input, the Hall Sensor Feedback circuitry provides for 0% Speed Regulation with a Constant Torque Speed Range of 100:1 or better.

Low Power Consumption

The Genesis Series Drive has a near unity power factor at all motor speeds and loads. The bottom transistors of the six-transistor power stage are controlled with pulse width modulation. Utilizing this design, the Genesis Series Drive draws only enough input current to provide torque to the motor.

Easy Maintenance

The same Speed Controller Board and Current Controller Board are used in the Genesis Series 1000, 2000, 3000, 3500, and 4000 Drives. These boards are readily accessible, easily connected, and simple to configure. This Family approach to the Genesis Series Drives means smaller spare parts stock and added familiarity with the board-level operations of the drive family.



GENESIS SERIES BRUSHLESS DC DRIVES

FEATURES

Two or four quadrant operation

Input AC line fusing

DC link choke

Separately adjustable min/max speed control, accel/decel time

Adjustable gain, stability, current limit, and jog speed

Bi-directional jog function

Analog speed input 0 to +10 VDC

Electronic gearing

Motor speed frequency output

Analog load output
(optional on some models)

Run relay output
(optional on Model 500)

Fault and zero speed open collector outputs

0% speed regulation

Constant Torque Speed Range (CTSR), 100:1

Standard two year warranty

BENEFITS

Excellent control for both regenerative and non-regenerative applications

Fast acting fusing provides very high interrupting capacity for ground or short circuits within or after the control input

Line transient protection limits the rate of change in the input current

Precise configuration to your application

Precise configuration to your application

Jog function operates in both forward and reverse in accordance with the forward/reverse input

Provides internal supply for analog speed pot operation or accepts 0 to +10 VDC external reference

Provides uni-directional digital follower mode

Open collector frequency output for metering or electronic gearing in a lead/follower system

Analog signal for metering represents 150% of output current or torque

External run contact for customer use: 125 VAC @ 1A or 30 VDC @ 2A

Digital outputs to indicate fault or zero speed conditions

Built in speed feedback/phase lock loop control provides precise speed control

Precise speed and current regulation through the entire motor speed-torque range

Assured quality and reliability

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GENESIS SERIES BRUSHLESS DC DRIVES



FEATURES

MODEL 500-4000

- Two- or four-quadrant operation
- Input AC line fusing
- DC link choke
- Analog speed input, 0 to +10 VDC
- External frequency speed input, 0-14 kHz
- Fault output (open collector)
- Motor speed frequency output
- 0% speed regulation
- 100:1 constant torque speed range

ADDITIONAL FEATURES

MODEL 1000-4000

- Bi-directional jog function
- Zero speed output (open collector)
- Run relay output
- Analog load output

PRODUCT DESCRIPTION

Pacific Scientific's Genesis Series Brushless DC Drives are high performance, closed loop drives designed for application flexibility. They are available as two quadrant, non-regenerative or four quadrant, resistor regenerative drives. Both configurations are offered in open chassis mountable enclosures. The Model 500 is also available in a NEMA 1 enclosure.

The Genesis Series offers slip-less speed control and full torque over its Constant Torque Speed Range of 100:1. This servo-like response makes it a good choice for applications requiring precise speed control and high torque at low speeds, with extremely high efficiency.

The Genesis Series offers such capabilities as analog or digital speed control. It also has several field-installable options that allow simple configuration to your specific applications.

TYPICAL APPLICATIONS

- Test stands
- Extruders
- Electronic line shafting
- Winders
- Pullers
- Wire drawing
- Printing
- Forest Industry machinery
- Tube and rolling mills
- Textile machinery
- Punch presses
- Paper converting

AVAILABLE OPTIONS

- Analog Interface Board
- Auxiliary Feedback Board
- Dancer Interface Board
- DC Relay Module
- Dual Ramp Accel/Decel Board
- Logic Extender Board
- Multiple Preset Speed Board
- Overspeed Board
- PID Board
- Power Supply Board
- Process Interface Board
- Signal Processor Board
- System Interface Board
- Threshold Detector Board
- Torque Controller Board
- BCDMax[®] BCD Speed Reference Input
- DigiMax[®] Digital Speed Reference Controller
- DigiTrak[®] Digital Speed and Load Display

AGENCY APPROVALS



E137798 vol. 3



C22.2 No. 142-M1987

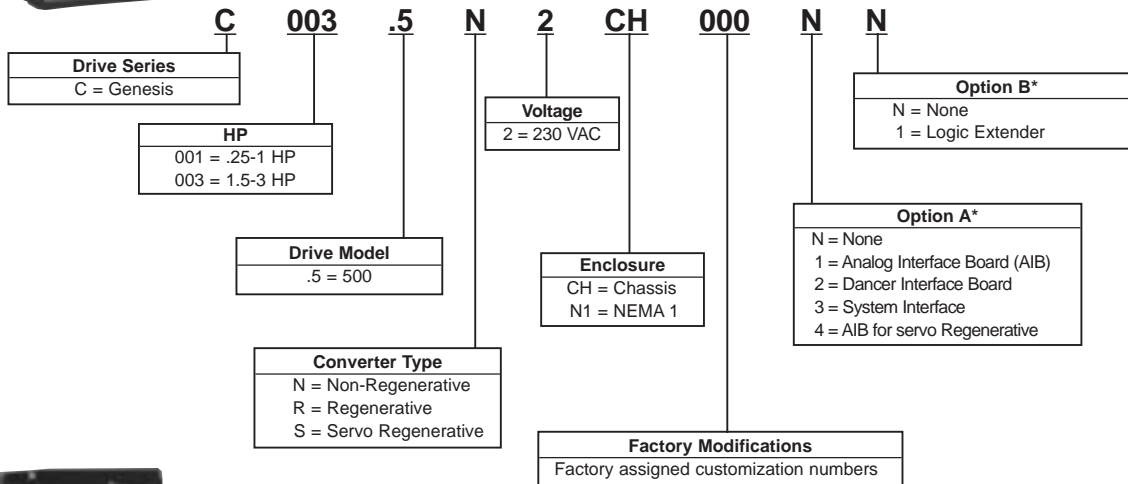
GENESIS SERIES BRUSHLESS DC DRIVES

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GENESIS MODEL 500 DRIVE

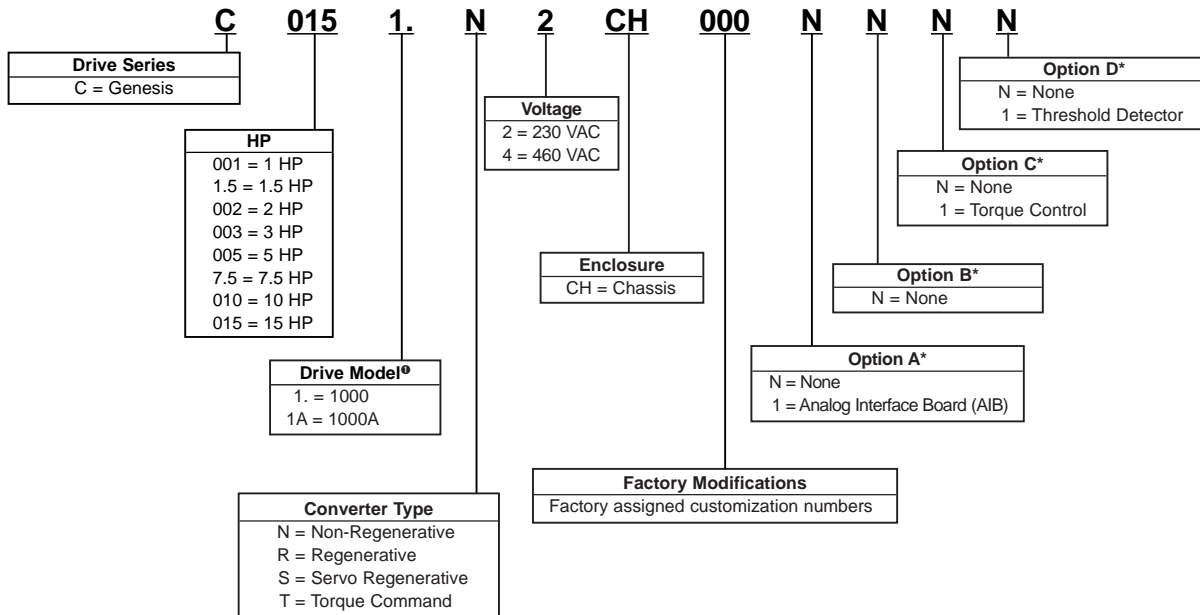


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GENESIS MODEL 1000 DRIVE



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Ⓞ Model 1000 Drive for non-regenerative 1-10 HP only.

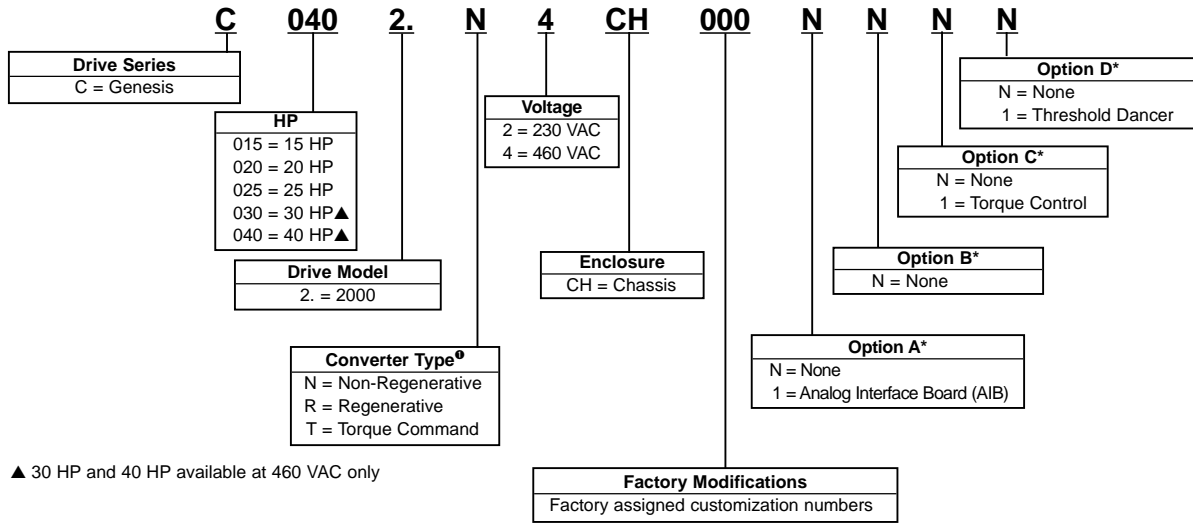
*For option descriptions and pricing refer to page 103.

NOTE: To construct a drive model number select the combination of features required and put all the coded information in the proper sequence. Please account for all entries. The model number shown is an example of a properly specified drive.

GENESIS SERIES BRUSHLESS DC DRIVES



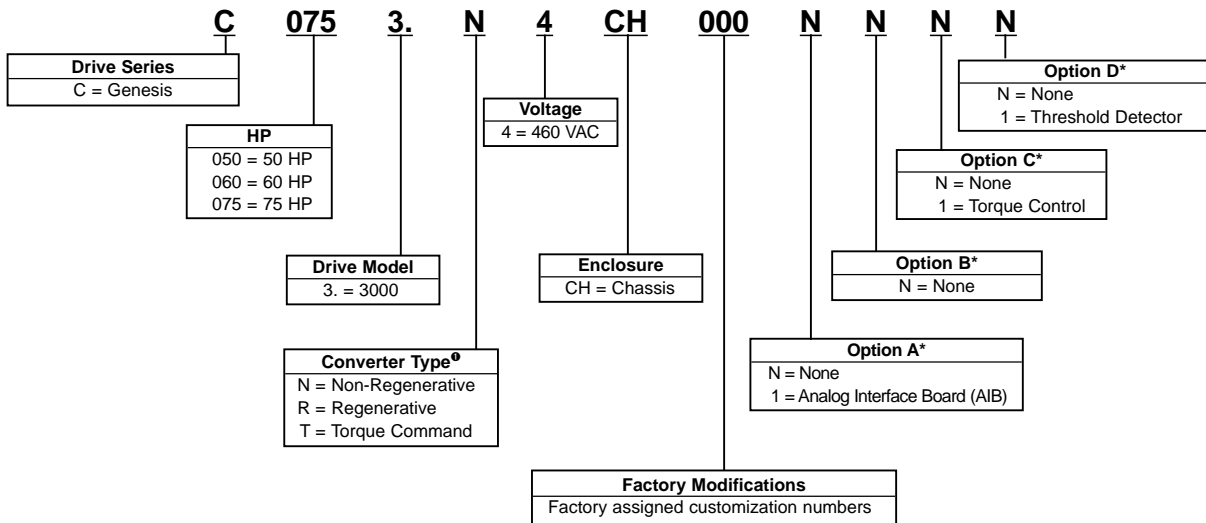
GENESIS MODEL 2000 DRIVE



▲ 30 HP and 40 HP available at 460 VAC only



GENESIS MODEL 3000 DRIVE

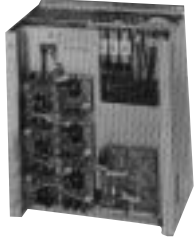


⓪ Regenerative Drives include separate Bus Loader and Resistor Cage. Refer to page 87 for dimensions.

*For option descriptions and pricing refer to page 103.

NOTE: To construct a drive part number select the combination of features required and put all the coded information in the proper sequence. Please account for all entries. The model number shown is an example of a properly specified drive.

GENESIS SERIES BRUSHLESS DC DRIVES



GENESIS MODEL 3500 DRIVE

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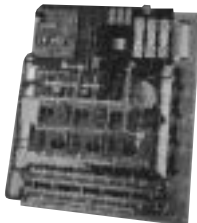
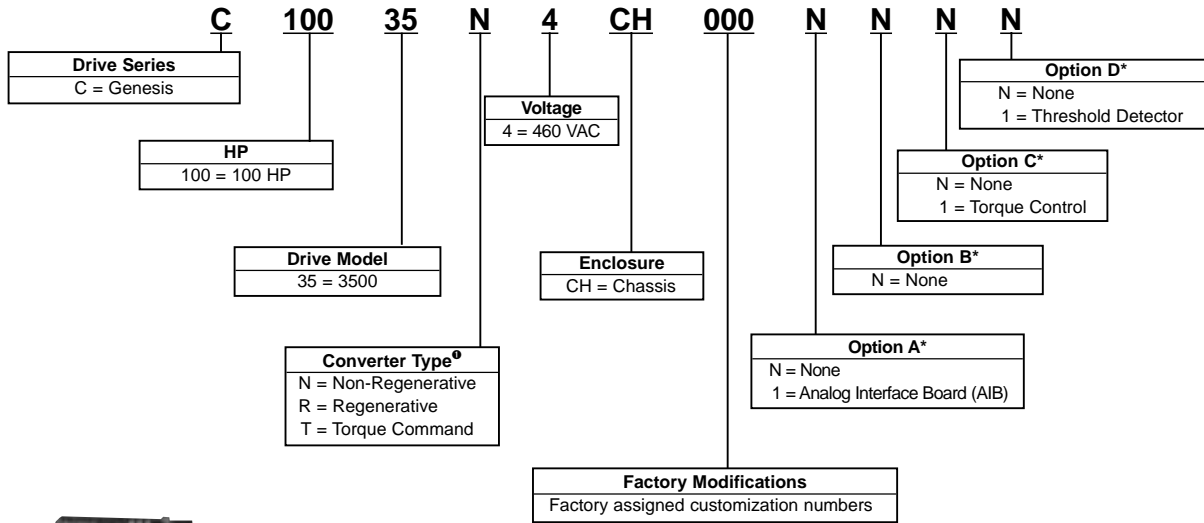
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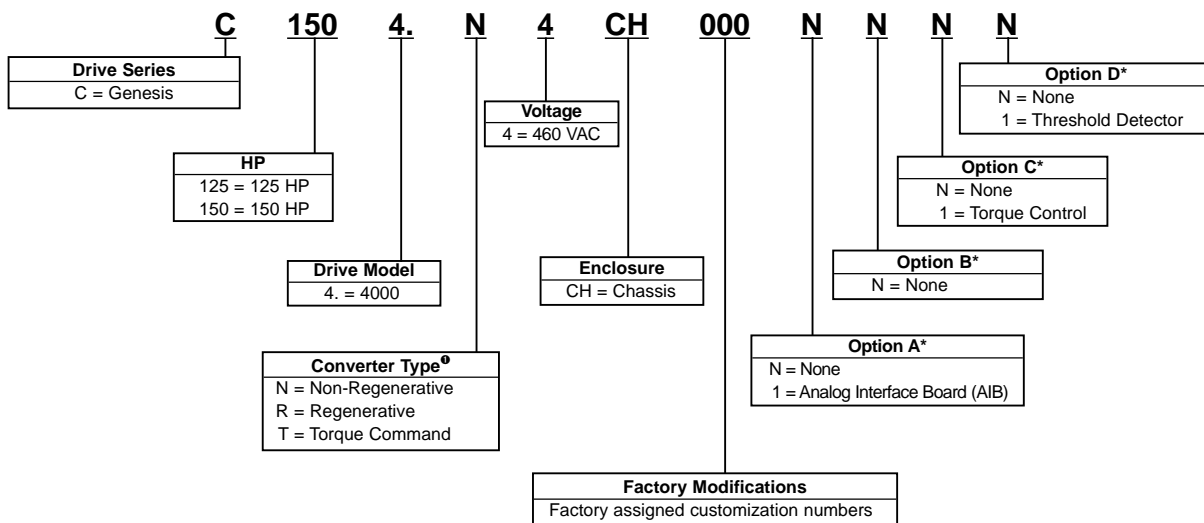
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GENESIS MODEL 4000 DRIVE



⁹ Regenerative Drives include separate Bus Loader and Resistor Cage. Refer to page 87 for dimensions.

*For option descriptions and pricing refer to page 103.

NOTE: To construct a drive part number select the combination of features required and put all the coded information in the proper sequence. Please account for all entries. The model number shown is an example of a properly specified drive.

GENESIS SERIES DRIVES PRICING

Drive/ Voltage	HP	Converter Type	Enclosure	Base Model ^① Number	List Price
					\$
Model 500 230 VAC	.25-1	Non-Regenerative	Chassis	C001.5N2CH000NN	2,225
	.25-1	Regenerative	Chassis	C001.5R2CH000NN	2,695
	.25-1	Servo Regenerative	Chassis	C001.5S2CH000NN	2,895
	.25-1	Non-Regenerative	NEMA 1	C001.5N2N1000NN	2,335
	.25-1	Regenerative	NEMA 1	C001.5R2N1000NN	2,795
	.25-1	Servo Regenerative	NEMA 1	C001.5S2N1000NN	2,995
	1.5-3	Non-Regenerative	Chassis	C003.5N2CH000NN	2,225
	1.5-3	Regenerative*	Chassis	C003.5R2CH000NN	2,695
	1.5-3	Servo Regenerative*	Chassis	C003.5S2CH000NN	2,895
	1.5-3	Non-Regenerative	NEMA 1	C003.5N2N1000NN	2,335
	1.5-3	Regenerative*	NEMA 1	C003.5R2N1000NN	2,795
	1.5-3	Servo Regenerative*	NEMA 1	C003.5S2N1000NN	2,995
Model 1000 230 VAC	1	Non-Regenerative	Chassis	C0011.N2CH000NNNN	2,347
	1.5	Non-Regenerative	Chassis	C1.51.N2CH000NNNN	2,347
	2	Non-Regenerative	Chassis	C0021.N2CH000NNNN	2,347
	3	Non-Regenerative	Chassis	C0031.N2CH000NNNN	2,347
	5	Non-Regenerative	Chassis	C0051.N2CH000NNNN	3,162
	7.5	Non-Regenerative	Chassis	C7.51.N2CH000NNNN	4,017
	10	Non-Regenerative	Chassis	C0101.N2CH000NNNN	4,639
Model 1000 460 VAC	1	Non-Regenerative	Chassis	C0011.N4CH000NNNN	3,162
	1.5	Non-Regenerative	Chassis	C1.51.N4CH000NNNN	3,162
	2	Non-Regenerative	Chassis	C0021.N4CH000NNNN	3,162
	3	Non-Regenerative	Chassis	C0031.N4CH000NNNN	3,162
	5	Non-Regenerative	Chassis	C0051.N4CH000NNNN	3,563
	7.5	Non-Regenerative	Chassis	C7.51.N4CH000NNNN	3,658
	10	Non-Regenerative	Chassis	C0101.N4CH000NNNN	3,658
Model 1000A 230 VAC	1	Regenerative	Chassis	C0011AR2CH000NNNN	3,520
	1	Torque Command	Chassis	C0011AT2CH000NNNN	3,791
	1	Servo Regenerative	Chassis	C0011AS2CH000NNNN	3,900
	1.5	Regenerative	Chassis	C1.51AR2CH000NNNN	3,520
	1.5	Torque Command	Chassis	C1.51AT2CH000NNNN	3,791
	1.5	Servo Regenerative	Chassis	C1.51AS2CH000NNNN	3,900
	2	Regenerative	Chassis	C0021AR2CH000NNNN	3,520
	2	Torque Command	Chassis	C0021AT2CH000NNNN	3,791
	2	Servo Regenerative	Chassis	C0021AS2CH000NNNN	3,900
	3	Regenerative	Chassis	C0031AR2CH000NNNN	3,520
	3	Torque Command	Chassis	C0031AT2CH000NNNN	3,791
	3	Servo Regenerative	Chassis	C0031AS2CH000NNNN	3,900
	5	Regenerative	Chassis	C0051AR2CH000NNNN	4,110
	5	Torque Command	Chassis	C0051AT2CH000NNNN	4,380
	5	Servo Regenerative	Chassis	C0051AS2CH000NNNN	4,490
	7.5	Regenerative	Chassis	C7.51AR2CH000NNNN	5,221
	7.5	Torque Command	Chassis	C7.51AT2CH000NNNN	5,492
	7.5	Servo Regenerative	Chassis	C7.51AS2CH000NNNN	5,601
	10	Regenerative	Chassis	C0101AR2CH000NNNN	6,031
	10	Torque Command	Chassis	C0101AT2CH000NNNN	6,368
10	Servo Regenerative	Chassis	C0101AS2CH000NNNN	6,411	

① To construct a complete model number with available options refer to the Model Number Codes beginning on page 81.

* Externally mounted regenerative resistor

GENESIS SERIES DRIVES PRICING

Drive/ Voltage	HP	Converter Type	Enclosure	Base Model ^① Number	List Price
					\$
Model 1000A 460 VAC	1	Regenerative	Chassis	C0011AR4CH000NNNN	4,335
	1	Torque Command	Chassis	C0011AT4CH000NNNN	4,608
	1	Servo Regenerative	Chassis	C0011AS4CH000NNNN	4,715
	1.5	Regenerative	Chassis	C1.51AR4CH000NNNN	4,335
	1.5	Torque Command	Chassis	C1.51AT4CH000NNNN	4,608
	1.5	Servo Regenerative	Chassis	C1.51AS4CH000NNNN	4,715
	2	Regenerative	Chassis	C0021AR4CH000NNNN	4,335
	2	Torque Command	Chassis	C0021AT4CH000NNNN	4,608
	2	Servo Regenerative	Chassis	C0021AS4CH000NNNN	4,715
	3	Regenerative	Chassis	C0031AR4CH000NNNN	4,335
	3	Torque Command	Chassis	C0031AT4CH000NNNN	4,608
	3	Servo Regenerative	Chassis	C0031AS4CH000NNNN	4,715
	5	Regenerative	Chassis	C0051AR4CH000NNNN	4,631
	5	Torque Command	Chassis	C0051AT4CH000NNNN	4,902
	5	Servo Regenerative	Chassis	C0051AS4CH000NNNN	5,011
	7.5	Regenerative	Chassis	C7.51AR4CH000NNNN	4,755
	7.5	Torque Command	Chassis	C7.51AT4CH000NNNN	5,026
	7.5	Servo Regenerative	Chassis	C7.51AS4CH000NNNN	5,135
	10	Regenerative	Chassis	C0101AR4CH000NNNN	4,755
	10	Torque Command	Chassis	C0101AT4CH000NNNN	5,026
10	Servo Regenerative	Chassis	C0101AS4CH000NNNN	5,135	
15	Non-Regenerative	Chassis	C0151AN4CH000NNNN	4,378	
15	Regenerative	Chassis	C0151AR4CH000NNNN	5,691	
15	Torque Command	Chassis	C0151AT4CH000NNNN	5,961	
Model 2000 230 VAC	15	Non-Regenerative	Chassis	C0152.N2CH000NNNN	6,190
	15	Regenerative	Chassis	C0152.R2CH000NNNN	8,046
	15	Torque Command	Chassis	C0152.T2CH000NNNN	8,501
	20	Non-Regenerative	Chassis	C0202.N2CH000NNNN	9,122
	20	Regenerative	Chassis	C0202.R2CH000NNNN	11,858
	20	Torque Command	Chassis	C0202.T2CH000NNNN	12,305
Model 2000 460 VAC	20	Non-Regenerative	Chassis	C0202.N4CH000NNNN	5,860
	20	Regenerative	Chassis	C0202.R4CH000NNNN	7,618
	20	Torque Command	Chassis	C0202.T4CH000NNNN	7,960
	25	Non-Regenerative	Chassis	C0252.N4CH000NNNN	6,986
	25	Regenerative	Chassis	C0252.R4CH000NNNN	8,388
	25	Torque Command	Chassis	C0252.T4CH000NNNN	8,730
	30	Non-Regenerative	Chassis	C0302.N4CH000NNNN	7,346
	30	Regenerative	Chassis	C0302.R4CH000NNNN	8,748
	30	Torque Command	Chassis	C0302.T4CH000NNNN	9,090
	40	Non-Regenerative	Chassis	C0402.N4CH000NNNN	9,122
	40	Regenerative	Chassis	C0402.R4CH000NNNN	11,858
	40	Torque Command	Chassis	C0402.T4CH000NNNN	12,200

① To construct a complete model number with available options refer to the Model Number Codes beginning on page 81.

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GENESIS SERIES DRIVES PRICING

Drive/ Voltage	HP	Converter Type	Enclosure	Base Model ^① Number	List Price
					\$
Model 3000 460 VAC	50	Non-Regenerative	Chassis	C0503.N4CH000NNNN	10,096
	50	Regenerative	Chassis	C0503.R4CH000NNNN	13,125
	50	Torque Command	Chassis	C0503.T4CH000NNNN	13,461
	60	Non-Regenerative	Chassis	C0603.N4CH000NNNN	11,956
	60	Regenerative	Chassis	C0603.R4CH000NNNN	15,542
	60	Torque Command	Chassis	C0603.T4CH000NNNN	15,878
	75	Non-Regenerative	Chassis	C0753.N4CH000NNNN	13,897
	75	Regenerative	Chassis	C0753.R4CH000NNNN	18,066
	75	Torque Command	Chassis	C0753.T4CH000NNNN	18,402
Model 3500 460 VAC	100	Non-Regenerative	Chassis	C10035N4CH000NNNN	18,722
	100	Regenerative	Chassis	C10035R4CH000NNNN	22,634
	100	Torque Command	Chassis	C10035T4CH000NNNN	22,552
Model 4000 460 VAC	125	Non-Regenerative	Chassis	C1254.N4CH000NNNN	24,422
	125	Regenerative	Chassis	C1254.R4CH000NNNN	29,525
	125	Torque Command	Chassis	C1254.T4CH000NNNN	29,418
	150	Non-Regenerative	Chassis	C1504.N4CH000NNNN	27,136
	150	Regenerative	Chassis	C1504.R4CH000NNNN	32,806
	150	Torque Command	Chassis	C1504.T4CH000NNNN	32,687

① To construct a complete model number with available options refer to the Model Number Codes beginning on page 81.

GENESIS SERIES DIMENSIONS AND WEIGHTS

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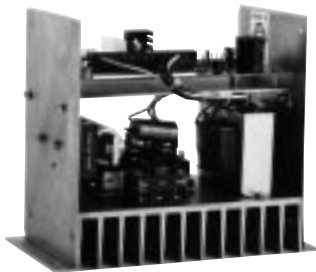
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Drive Model	Height		Width		Depth		Weight	
	inches	cm	inches	cm	inches	cm	lbs.	kg
500 (open chassis)	12.50	31.75	9.13	23.19	4.88	12.40	10	4.3
500 (NEMA 1)	13.00	33.02	9.13	23.19	4.88	12.40	10	4.3
1000	13.00	33.02	9.85	25.02	9.13	23.19	32	14.5
1000A	18.00	45.72	9.85	25.02	9.13	23.19	43	19.5
2000	19.50	49.53	13.75	34.93	13.38	33.99	95	43.1
3000	25.25	64.14	13.75	34.93	13.38	33.99	115	52.2
3500	28.00	71.12	24.13	61.29	14.00	35.56	207	93.9
4000	39.00	99.06	33.00	83.82	13.00	33.02	242	109.8



For Bus Loader diagram and pricing see page 91.

STANDARD BUS LOADERS

Model 500 and Model 1000A regenerative drives less than 10 HP @ 230 VAC and less than 15 HP @ 460 VAC have integral Bus Loaders. All other drives have separately mounted bus loaders. Standard Bus Loaders are specified for 10% duty cycle.

Motor HP	Height		Width		Depth		Weight	
	inches	cm	inches	cm	inches	cm	lbs.	kg
All	8.15	20.70	9.82	24.94	5.07	12.88	10	4.54

STANDARD RESISTOR CAGES

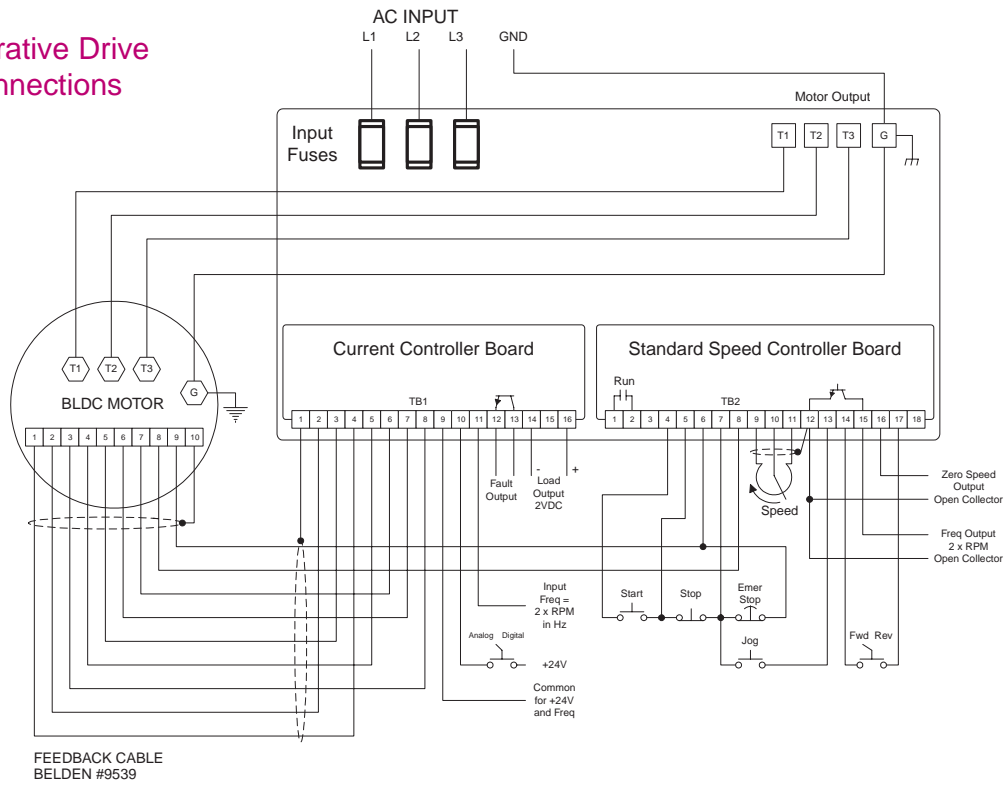
Standard regenerative drives require 1 resistor for each 5 horsepower, except 60 HP @ 460 VAC uses 11 and 75 HP @ 460 VAC uses 12. Standard 460 VAC drives use 70 ohm resistors rated at 375 watts. Standard 230 VAC drives use 25 ohm resistors rated at 375 watts.

Number of Resistors	Height		Width		Depth		Weight	
	inches	cm	inches	cm	inches	cm	lbs.	kg
1-4	5.81	14.76	7.13	18.11	16.36	41.55	24	10.89
5-8	5.81	14.76	11.38	28.91	16.36	41.55	38	17.24
9-12	7.75	19.69	11.38	28.91	16.36	41.55	52	23.59

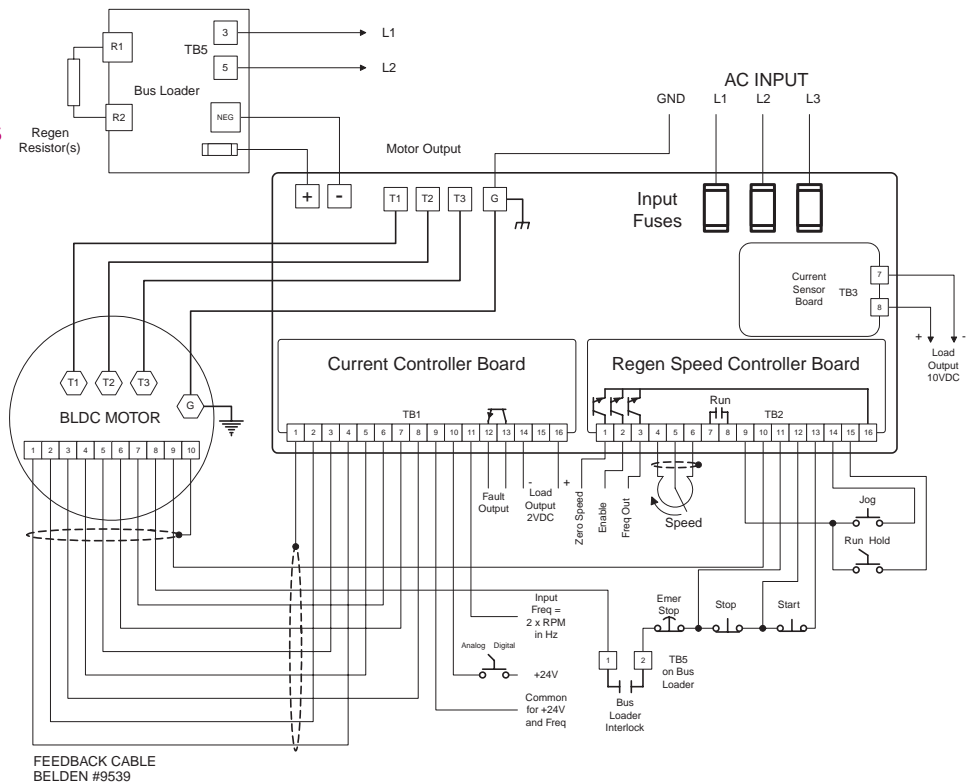
NOTE: All dimensions and weights are approximate.

GENESIS SERIES TYPICAL CONNECTION DIAGRAMS

Non-Regenerative Drive Typical Connections



Regenerative Drive with External Bus Loader Typical Connections



GENESIS SERIES EFFICIENCY RATINGS

Motor HP	Drive Model	Typical ^① Drive Efficiency	Typical Input kVA Per HP	AC Input Line Current amps/line
1	500	92.0	0.98	1.2
1	1000	90.5	0.99	1.2
1.5	500	92.2	0.94	1.8
2	500	92.4	0.92	2.3
2	1000	90.9	0.93	2.3
3	500	92.6	0.90	3.4
3	1000	93.9	0.88	3.4
5	1000	93.9	0.88	5.5
7.5	1000	94.9	0.86	8.1
10	1000	95.9	0.85	10.6
15	1000	96.1	0.84	15.9
20	2000	96.1	0.84	21.1
25	2000	96.2	0.84	26.4
30	2000	96.2	0.84	31.6
40	2000	96.3	0.84	42.1
50	3000	96.3	0.84	52.6
60	3000	96.4	0.84	63.0
75	3000	96.6	0.83	78.6
100	3500	96.7	0.83	104.6
125	4000	96.9	0.83	130.5
150	4000	97.1	0.83	156.2

① Efficiency ratings at motor base speed, full load operation. Actual efficiency may vary.

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GENESIS SERIES TECHNICAL SPECIFICATIONS

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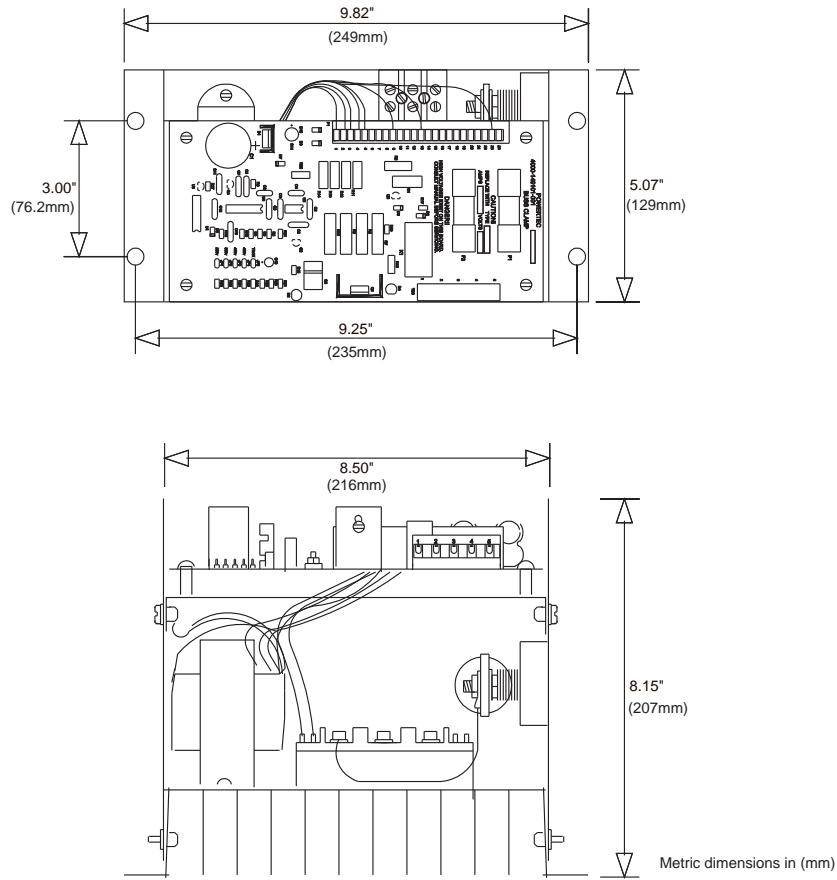
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GENERAL
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DRIVE MODEL	500	1000(A)	2000	3000	3500	4000
SERVICE FACTOR	1.0	1.0	1.0	1.0	1.0	1.0
ALTITUDE	Use above 3300 feet (1000 meters) requires de-rating De-rate at 3% of full rating for each additional 1100 ft. (330 m)					
RELATIVE HUMIDITY	Less than 95%, non-condensing					
AMBIENT TEMPERATURE						
Air Surrounding Chassis Units	32 to 131°F 0 to 55°C	32 to 131°F 0 to 55°C	32 to 131°F 0 to 55°C	32 to 131°F 0 to 55°C	32 to 131°F 0 to 55°C	32 to 131°F 0 to 55°C
Air Surrounding NEMA 1 Enclosures	32 to 104°F 0 to 40°C	NA NA	NA NA	NA NA	NA NA	NA NA
INPUT VOLTAGE						
VAC (3 Phase) (±10%)	115-230 VAC [●]	230, 460 VAC	230, 460 VAC	230, 460 VAC	230, 460 VAC	230, 460 VAC
AC Frequency	50-400 Hz	48-62 Hz	48-62 Hz	48-62 Hz	48-62 Hz	48-62 Hz
DC	180-350 VDC	NA	NA	NA	NA	NA
ACCEL/DECCEL TIME	0.2-60 sec	0.2-30 sec	2-30 sec	2-30 sec	2-30 sec	2-30 sec
ADJUSTABLE CURRENT LIMIT (% rated)						
Motoring	0-150%	0-150%	0-150%	0-150%	0-150%	0-150%
Regenerative (regen drives only)	0-150%	0-150%	0-150%	0-150%	0-150%	0-150%
INPUT REFERENCE						
Analog (bipolar differential input)	0 to ±10 VDC	0 to ±10 VDC	0 to ±10 VDC	0 to ±10 VDC	0 to ±10 VDC	0 to ±10 VDC
Digital (optically isolated square wave)	0-14,000 Hz	0-14,000 Hz	0-14,000 Hz	0-14,000 Hz	0-14,000 Hz	0-14,000 Hz
ANALOG REFERENCE						
Linearity (output speed to input frequency)	±1.0%	±1.0%	±1.0%	±1.0%	±1.0%	±1.0%
Speed Regulation (constant reference)	±0.1%	±0.1%	±0.1%	±0.1%	±0.1%	±0.1%
Speed Drift (referenced to input frequency)	±0.25%	±0.25%	±0.25%	±0.25%	±0.25%	±0.25%
DIGITAL REFERENCE						
Linearity (output speed to input frequency)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Speed Regulation (constant reference)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Speed Drift (referenced to input frequency)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
MAX LOAD (max 1 minute of 10 minutes)	150%	150%	150%	150%	150%	150%
INSTANTANEOUS TRIP (% RMS rating)	250%	300%	300%	300%	300%	300%
POWER LOSS COAST-THROUGH	100 msec	80 msec	80 msec	80 msec	80 msec	80 msec
STABILITY ADJUSTMENT (dynamic range)	20:1	20:1	20:1	20:1	20:1	20:1
GAIN ADJUSTMENT (shaft error angle)	10:1	10:1	10:1	10:1	10:1	10:1
DISPLACEMENT POWER FACTOR	0.955	>0.96	>0.96	>0.96	>0.96	>0.96

● 1 or 3 Phase

GENESIS SERIES BUS LOADERS



A

MOTORS

B

DRIVES

C

PRE-ENGINEERED
DRIVE SYSTEMS

D

GENERAL
INFORMATION

GENESIS SERIES BUS LOADERS

HP	Drive Model	230VAC	List Price	460VAC	List Price
			\$		\$
1/2 to 5	1000	RxxxA21000 [●]	1,304	RxxxA41000 [●]	1,267
7.5	1000	R7.5A21000	1,304	R7.5A41000	1,267
10	1000	R010A21000	1,304	R010A41000	1,267
15	2000	R015A21000	1,680	R015A41000	1,304
20	1000	NA	NA	R020A41000	1,304
20	2000	R0200A1000	1,680	NA	NA
25	2000	NA	NA	R025A41000	1,680
30	2000	NA	NA	R030A41000	1,680
40	2000	NA	NA	R040A41000	1,680
50	3000	NA	NA	R050A41000	1,715
60	3000	NA	NA	R060A41000	1,715
75	3000	NA	NA	R075A41000	1,715
100	3000	NA	NA	R100A41000	1,800

● Complete the part number by entering the HP required. 1/2 HP = 0.5, 1.5 HP = 1.5, etc.
 NOTE: All Bus Loaders are rated for 10% Duty Cycle.