

YASKAWA

GA800 Selection Guide

AC DRIVE FOR INDUSTRIAL APPLICATIONS

IT'S PERSONAL



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Preface

Intended Audience

This book is intended to help easily locate component information for Yaskawa GA800 Drives and optional accessories.

The intended users for this document are Yaskawa sales personnel, distributors, and partners.

This book may describe trademarked equipment, which is the property of other companies. These trademarks are the property of the registered owner companies and may include the following:

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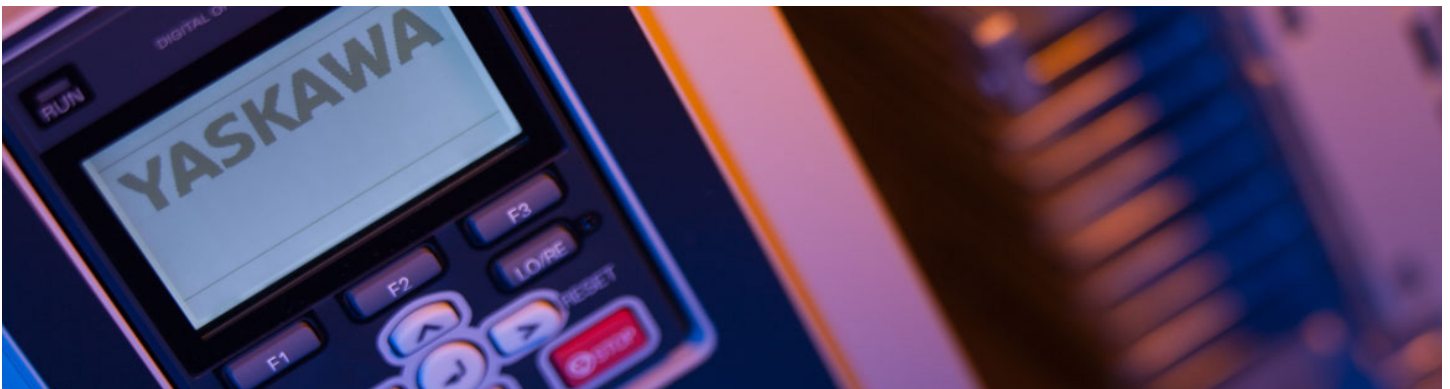
Unless otherwise noted, throughout this document, the term “Type” (when related to enclosure solutions) refers not only to NEMA Type, but also represents UL Listing for the specific Type(s).

Other documents and manuals are available to support special use or installation of products. These documents may be provided with the product or upon request. Contact Yaskawa America, Inc. or visit www.yaskawa.com.

Additional Resources

The Yaskawa.com web site has the most current information for all Yaskawa products. When researching product specifications or features the Yaskawa web site is the best resource to use. Some useful links for the GA800 drive product are listed here and throughout this document:

Resource Links	
GA800 Product Page	Product Instructions
Specifications	Brochure
Price Book	Product Order Page



GA800 Drives



The GA800 drive provides the ultimate combination of power, ease of use, flexibility, and performance. Enjoy effortless setup with a high resolution display or Bluetooth® connection to your mobile device while using Yaskawa's free DriveWizard Mobile. Control your simple or complex applications connected to networks or discrete / analog signals. Combine all this with modern safety features and a variety of environmental solutions, and you will have to look no further than GA800 for all your variable speed needs.

- High resolution multi-language display with Startup Wizards and Data-Logging
- Bluetooth and DriveWizard Mobile for convenient and easy interaction
- DriveWizard Desktop for comprehensive configuration and monitoring
- DriveWorks EZ (embedded function blocks) provides extra flexibility, otherwise accomplished in a separate controller.
- Closed or open loop vector control for outstanding regulation and torque production
- Fast acting motor control functions provide near triplex operation
- Popular network connections provide robust control and monitoring with system controllers
- Embedded Auxiliary Control Power Input (24 V) maximizes production time and efficiency by maintaining network communication while main power is removed.
- Embedded Safe Torque Off minimizes downtime for applications requiring occasional intervention (SIL CL3, PLe, Category 3).
- Integrated DC Reactor (30 HP and larger) improves power quality and compatibility
- Integrated 12 Pulse version provides a cost effective solution for low harmonics.
- Integrated Brake Transistor (up to 125 HP ND) for cost effective heavy braking
- Standard conformal coating and Type 12 versions help resist contamination
- Made with RoHS compliant materials for environmental compliance

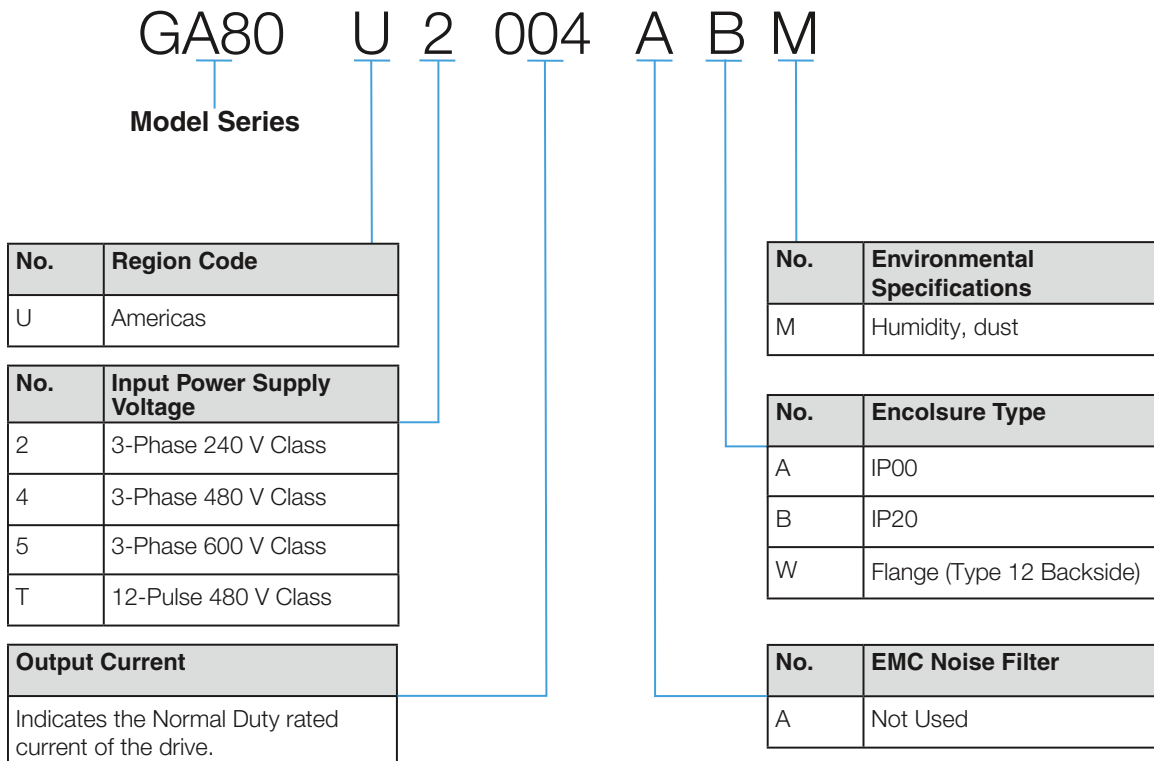
Drive Selection

Standard (IP20) drives are intended for clean environments and can be mounted 3 different ways as follows:

- 1) In a separate enclosure with heatsink internal. Extra mounting brackets are not required.
- 2) In a separate enclosure with heatsink external. Refer to Enclosure Adapters and Kits for drives requiring extra mounting brackets.
- 3) Mounted without an enclosure. Type 1 Adapters must be used when mounting the drive without an enclosure.

The GA800 offers two separate performance ratings; Heavy Duty and Normal Duty. Heavy Duty is capable of creating more powerful torque, while Normal Duty allows the drive to operate a larger motor.

Figure 1: Catalog Code



Additional Information

[GA800 Product Page](#)

Table 1: Three-Phase, 240 Volt IP20 Drives - 1 to 150 HP

Normal Duty Output ¹		Heavy Duty Output ¹		Standard IP20 Drives ²	Flange (Type 12 backside) ³
HP	Amps	HP	Amps	Catalog Code GA80U . .	Catalog Code GA80U . .
1	4.2	0.75	3.5	2004ABM	2004AWM
1.5	6	1	5	2006ABM	2006AWM
2	8	1.5	6.9	2008ABM	2008AWM
3	9.6	2	8	2010ABM	2010AWM
4	12.2	3	11	2012ABM	2012AWM
5	17.5	4	14	2018ABM	2018AWM
7.5	22	5	17.5	2021ABM	2021AWM
10	30	7.5	25	2030ABM	2030AWM
15	42	10	33	2042ABM	2042AWM
20	56	15	47	2056ABM	2056AWM
25	70	20	60	2070ABM	2070AWM
30	82	25	75	2082ABM	2082AWM
40	110	30	88	2110ABM	2110AWM
50	138	40	115	2138ABM	2138AWM
60	169	50	145	2169ABM	2169AWM
75	211	60	180	2211ABM	2211AWM
100	257	75	215	2257ABM	2257AWM
125	313	100	283	2313ABM	2313AWM
150	360	125	346	2360ABM	2360AWM
150	415	150	415	2415ABM	2415AWM

1 Output capacities are for conditions of 3 phase input, DC input, and 12 pulse input. Refer to Drive Derating for single-phase capabilities.

2 Standard (IP20) Drives are intended for clean conditions, and can be mounted three different ways as follows:

- A) In a separate enclosure with heatsink internal (no extra mounting brackets required)
- B) In a separate enclosure with heatsink external. Refer to Enclosure Adapters and Kits for sizes requiring extra mounting brackets.
- C) Without a separate enclosure, all sizes require Type 1 Adapters (refer to Enclosure Adapters and Kits)

3 Flange Drives are intended for mounting inside separate Type 12 enclosures with heatsink external, when the external environment is dirty or dusty (Type 12 backside). No additional adapters required.

Table 2: Three-Phase, 480 Volt IP20 Drives - 1 to 600 HP

Normal Duty Output ¹		Heavy Duty Output ¹		Standard IP20 Drives ²	Flange (Type 12 backside) ³
HP	Amps	HP	Amps	Catalog Code GA80U . .	Catalog Code GA80U . .
1	2.1	0.75	1.8	4002ABM	4002AWM
2	4.1	1.5	3.4	4004ABM	4004AWM
3	5.4	2	4.8	4005ABM	4005AWM
4	7.1	3	5.5	4007ABM	4007AWM
5	8.9	4	7.2	4009ABM	4009AWM
7.5	11.9	5	9.2	4012ABM	4012AWM
10	17.5	7.5	14.8	4018ABM	4018AWM
15	23.4	10	18	4023ABM	4023AWM
20	31	15	24	4031ABM	4031AWM
25	38	20	31	4038ABM	4038AWM
30	44	25	39	4044ABM	4044AWM
40	59.6	30	45	4060ABM	4060AWM
50	74.9	40	60	4075ABM	4075AWM
60	89.2	50	75	4089ABM	4089AWM
75	103	60	91	4103ABM	4103AWM
100	140	75	112	4140ABM	4140AWM
125	168	100	150	4168ABM	4168AWM
150	208	125	180	4208ABM	4208AWM
200	250	150	216	4250ABM	4250AWM
250	302	200	260	4302ABM	4302AWM
300	371	250	304	4371ABM	4371AWM
350	414	300	371	4414ABM	4414AWM
400	477	350	414	4477ABM	4477AWM
450	568	400	477	4568ABM	4568AWM
500	675	450	605	4605ABM	4605AWM
600	720	500	605	4720ABM	4720AWM

¹ Output capacities are for conditions of 3 phase input, DC input, and 12 pulse input. Refer to Drive Derating for single-phase capabilities.

² Standard (IP20) Drives are intended for clean conditions, and can be mounted three different ways as follows:

- A) In a separate enclosure with heatsink internal (no extra mounting brackets required)
- B) In a separate enclosure with heatsink external. Refer to Enclosure Adapters and Kits for sizes requiring extra mounting brackets.
- C) Without a separate enclosure, all sizes require Type 1 Adapters (refer to Enclosure Adapters and Kits)

³ Flange Drives are intended for mounting inside separate Type 12 enclosures with heatsink external, when the external environment is dirty or dusty (Type 12 backside). No additional adapters required.

Table 3: Three-Phase, 12-Pulse, 480 Volt IP00 Drives - 75 to 600 HP

Normal Duty Output ¹		Heavy Duty Output ¹		Standard IP00 Drives ²	Flange (Type 12 backside) ³
HP	Amps	HP	Amps	Catalog Code GA80U . .	Catalog Code GA80U . .
75	103	60	91	T103AAM	T103AWM
100	140	75	112	T140AAM	T140AWM
125	168	100	150	T168AAM	T168AWM
150	208	125	180	T208AAM	T208AWM
200	250	150	216	T250AAM	T250AWM
250	302	200	260	T302AAM	T302AWM
300	371	250	304	T371AAM	T371AWM
350	414	300	371	T414AAM	T414AWM
400	477	350	414	T477AAM	T477AWM
450	568	400	477	T568AAM	T568AWM
500	675	450	605	T605AAM	T605AWM
600	720	500	605	T720AAM	T720AWM

¹ Output capacities are for conditions of 12-Pulse (6-Phase) or 6-Pulse (3-Phase) input.

² Standard (IP00) Drives are intended for clean conditions, and can be mounted two different ways as follows:

A) In a separate enclosure with heatsink internal (no extra mounting brackets required)

B) In a separate enclosure with heatsink external. Refer to Enclosure Adapters and Kits for sizes requiring extra mounting brackets.

³ Flange Drives are intended for mounting inside separate Type 12 enclosures with heatsink external, when the external environment is dirty or dusty (Type 12 backside). No additional adapters required.

Table 4: Three-Phase, 600 Volt IP20 Drives - 400 to 500 HP

Normal Duty Output ¹		Heavy Duty Output ¹		Standard IP20 Drives ²	Flange (Type 12 backside) ³
HP	Amps	HP	Amps	Catalog Code GA80U . .	Catalog Code GA80U . .
300	289	250	242	5289ABM	5289AWM
400	382	350	336	5382ABM	5382AWM
450	412	400	382	5412ABM	5412AWM
500	472	450	412	5472ABM	5472AWM

¹ Output capacities are for conditions of 3 phase input, DC input, and 12 pulse input. Refer to Drive Derating for single-phase capabilities.

² Standard (IP20) Drives are intended for clean conditions, and can be mounted three different ways as follows:

A) In a separate enclosure with heatsink internal (no extra mounting brackets required)

B) In a separate enclosure with heatsink external. Refer to Enclosure Adapters and Kits for sizes requiring extra mounting brackets.

C) Without a separate enclosure, all sizes require Type 1 Adapters (refer to Enclosure Adapters and Kits)

³ Flange Drives are intended for mounting inside separate Type 12 enclosures with heatsink external, when the external environment is dirty or dusty (Type 12 backside). No additional adapters required.

Dimensions

Figure 2: Frames 1 to 3.5

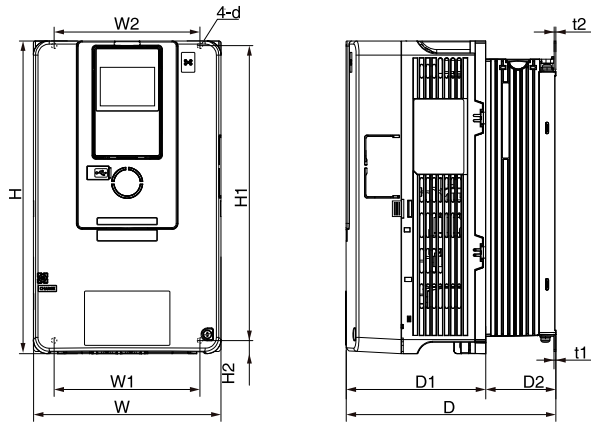
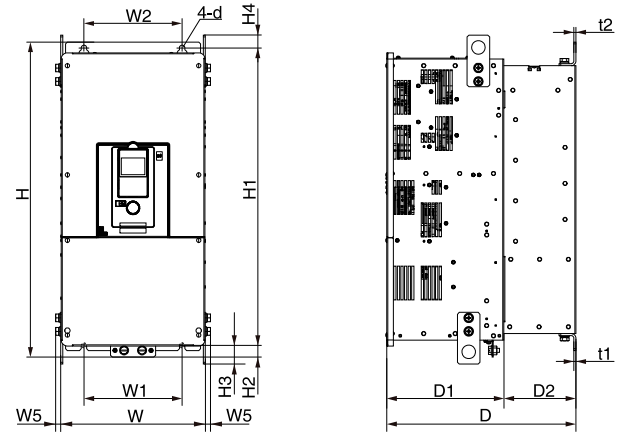


Figure 3: Frames 4 and larger



Additional Information	
Frame 1 - Models 2004 - 2012 4002 - 4005	Frame 1.5 - Models 2018 - 2042, 4007 - 4023
Frame 2 - Models 2056, 4031 - 4038	Frame 3 - Models 2070 - 2082, 4044
Frame 3.5 - Model 4060	Frame 4 - Models 2110, 4075
Frame 6 - Models 2138, 4084 - 4103	Frame 7 - Models 2169 - 2211, 4140 - 4168
Frame 9 - Models 2257 - 2113, 4208 - 4302	Frame 10 - Models 2360 - 2415, 4371 - 4414, 5289
Frame 11 - Models 4477 - 4720, 5382 - 5742	

Table 5: Frame Size and Approximate Dimensions

Power Output (HP)		240 V Models				480 V Models				600 V Models			
Normal Duty (ND)	Heavy Duty (HD)	Catalog Code GA80U	Output Amps		Frame	Catalog Code GA80U	Output Amps		Frame	Catalog Code GA80U	Output Amps		Frame
			ND	HD			ND	HD			ND	HD	
1.0	0.75	2004ABM	4.2	3.5	1	4002ABM	2.1	1.8	1				
1.5	1	2006ABM	6	5	1								
2	1.5	2008ABM	8	6.9	1	4004ABM	4.1	3.4	1				
3	2	2010ABM	9.6	8	1	4005ABM	5.4	4.8	1				
4	3	2012ABM	12.2	11	1	4007ABM	7.1	5.5	1.5				
5	4	2018ABM	17.5	14	1.5	4009ABM	8.9	7.2	1.5				
7.5	5	2021ABM	21	17.5	1.5	4012ABM	11.9	9.2	1.5				
10	7.5	2030ABM	30	25	1.5	4018ABM	17.5	14.8	1.5				
15	10	2042ABM	42	33	1.5	4023ABM	23.4	18	1.5				
20	15	2056ABM	56	47	2	4031ABM	31	24	2				
25	20	2070ABM	70	60	3	4038ABM	38	31	2				
30	25	2082ABM	82	75	3	4044ABM	44	39	3				
40	30	2110ABM	110	88	4	4060ABM	59.6	45	3.5				
50	40	2138ABM	138	115	6	4075ABM	74.9	60	4				
60	50	2169ABM	169	145	7	4089ABM	89.2	75	6				
75	60	2211ABM	211	180	7	4103ABM	103	91	6				
100	75	2257ABM	257	215	9	4140ABM	140	112	7				
125	100	2313ABM	313	283	9	4168ABM	168	150	7				
150	125	2360ABM	360	346	10	4208ABM	208	180	9				
150	150	2415ABM	415	415	10								
200	150					4250ABM	250	216	9				
250	200					4302ABM	302	260	9				
300	250					4371ABM	371	304	10	5289ABM	289	242	10
350	300					4414ABM	414	371	10				
400	350					4477ABM	477	414	11	5382ABM	382	336	11
450	400					4568ABM	568	477	11	5412ABM	412	382	11
500	450					4605ABM	675	605	11	5472ABM	472	412	11
600	500					4720ABM	720	605	11				

Approximate Dimensions in (mm)			
Frame	Height	Width	Depth
1	10.2 (260)	5.51 (140)	6.93 (176)
1.5	10.2 (260)	5.51 (140)	8.31 (211)
2	11.8 (300)	7.09 (180)	7.95 (202)
3	13.8 (350)	8.66 (220)	8.94 (227)
3.5	13.8 (350)	8.66 (220)	9.69 (246)
4	15.7 (400)	9.45 (240)	11.0 (280)
6	17.7 (450)	10.0 (255)	11.0 (280)
7	21.4 (543)	10.4 (264)	13.2 (335)
9	27.6 (700)	12.3 (312)	16.5 (420)
10	31.5 (800)	17.3 (440)	18.6 (472)
11	44.72 (1136)	20.1 (510)	18.9 (480)

Drive Specifications

Item	Specification
Overload Capacity	150 % for 60 seconds. (HD), 110 % for 60 seconds. (ND)
Output Frequency	0 to 590 Hz
Control Methods	Open and Closed Loop Vector, Open and Closed Loop V/f
Motor Types	Induction, Surface Permanent Magnet, Interior Permanent Magnet, Synchronous Reluctance
Input Voltages & Frequency	240V Class: 200V -15% to 240V +10%, 50/60 Hz +/-5%, 480V Class: 380V -15% to 480V +10%, 50/60 Hz +/-5% 600V Class: 480V -10% to 600V +10%, 50/60 Hz +/-5%, All Voltage Classes: Overvoltage Category III
Protective Design Types	IP20 (Type 1 kit available) Flange (Type 12 backside)
Contamination Resistance	Pollution degree 2 or less. Additionally, meets IEC 60721-3-3, Class 3C2 (chemical gases), Class 3S3 (solid particles).
Ambient Operating Temperature	-10 to +50 °C (IP20 and flange types) -10 to +40 °C (with Type1 kit) Up to +60 °C (with derate)
Humidity	95 % Relative Humidity or less in a non-condensing environment
Altitude	Up to 1000 m without derating, up to 4000 m with derating
Vibration	10 Hz to 20 Hz: 1 G (9.8 m/s ² , 32.15 ft/s ²) 20 Hz to 55 Hz: 2004 to 2211, 4002 to 4168: 0.6 G (5.9 m/s ² , 19.36 ft/s ²), 2257 to 2415, 4208 to 4720, 5289 to 5472: 0.2 G (2.0 m/s ² , 6.56 ft/s ²)
Global Certifications	UL, CSA, CE, RCM, RoHS
Functional Safety	Safe Torque Off, SIL3 according to IEC 62061, PLe according to ISO 13849-1 (600 V models pending, consult factory)
Standard I/O	(8) multi-function digital inputs (24 Vdc) (3) multi-function analog inputs (0 +/- 10 Vdc, 4-20 mA) (1) multi-function pulse inputs (2) Safe Torque Off inputs (1) fault relay output (form C) (3) multi-function relay outputs (form A) (2) multi-function analog output (0 +/- 10 Vdc, 4-20 mA) (1) multi-function pulse output
I/O Expansion (optional)	(3) Analog Inputs -10 to +10 V, 13 bit plus sign, 4 to 20 mA (16) Digital Inputs (2) Analog Outputs (-10 to +10 V, 11 bit magnitude) (8) Digital Outputs (6 transistor, 2 relay)
Feedback (optional)	Incremental Absolute (Stegmann, Heidenhain, Resolver)
Network Communication	Standard: Modbus RTU, RS-485, 115 kbps Optional: EtherNet/IP, DeviceNet, Modbus TCP/IP, PROFINET, PROFIBUS-DP
Speed Control Range	1500:1 Closed Loop Vector (IM and PM Motors) 200:1 Open Loop Vector (IM Motors) 100:1 Open Loop Vector (PM Motors)
Speed Control Accuracy	≤0.02 %: Closed Loop Vector; ≤0.2 %: Open Loop Vector
Speed Response	≥50 Hz: Closed Loop Vector (Induction Motors); ≥250 Hz: Closed Loop Vector (PM Motors) ≥20 Hz: Open Loop Vector (Induction Motors); ≥40 Hz: Open Loop Vector (PM Motors)
Function Block Diagrams	Up to 200 connections, 500 μs program scan time

Control and Feedback Options



Control Options - These cards and devices add control functionality to the standard drive. Items are shipped loose, unmounted.

Additional Information	
Network Communications	I/O Adapters
Feedback Encoders	

I/O Adapters

Option	Purpose	Part Number
Analog Input (provides 3 additional inputs)	Provides 3 high resolution (13-bit signed) analog inputs. These inputs are configurable for 0 - 10 Vdc, -10 Vdc to +10 Vdc, or 4 - 20 mA, and can be combined with the drive's standard analog inputs.	AI-A3
Digital Input (provides 16 additional inputs)	Provides an additional 16 digital inputs which can be programmed individually (multi-function) or used as a binary-coded decimal (BCD) speed reference, configurable as 2, 3, or 4 digit BCD.	DI-A3
120 V Digital Interface (converts existing inputs)	Mounts directly to the control terminal block on the drive and allows the use of 120 Vac control logic circuits to produce multi-function control input signals for the drive. Used for digital inputs S1 to S8.	DI-101
Analog Output (provides 2 additional outputs)	Provides 2 signals for remote metering of any two of the drive's "U1" monitors. Additive to the two standard analog outputs. Signal level: 0 to +/- 10 Vdc (20 kOhm).	AO-A3
Digital Output (provides 8 additional outputs)	Provides 8 additional digital outputs for use in monitoring the status outputs of the drive. Signal levels: 6 channels PHC (48 Vdc, 50 mA maximum) and 2 channels of Form A (250 Vac at 1 A or less, 30 Vdc at 1 A or less). Shared Common.	DO-A3

Motor Feedback

Option	Purpose	Part Number
Open Collector	This option provides velocity and direction feedback from an encoder. This is primarily used for motor speed feedback in closed loop flux vector control. A 24 DC buffered output (open collector) is also included. 32 kHz maximum input frequency.	PG-B3
Line Driver	Provides velocity and direction feedback from an encoder. Primarily used for motor speed feedback in closed loop flux vector control. A 5 Vdc buffered output is also included. Signal levels: 5 or 12 Vdc differential line driver with compliments, maximum input frequency of 300 kHz, phases A and B (Z required with some custom software).	PG-X3
Absolute Encoder	This card reads a maximum input frequency from the encoder of 20 kHz. The card allows the user to connect a rotary encoder, either EnDat2.1/01 or EnDat2.2/01 by HEIDENHAIN for motor speed feedback to the drive and take advantage of the Closed Loop Vector for PM Motors control mode.	PG-F3
Resolver	This card reads a maximum input frequency from the encoder of 20 kHz. The card allows the user to connect a rotary encoder, either EnDat2.1/01 or EnDat2.2/01 by HEIDENHAIN for motor speed feedback to the drive and take advantage of the Closed Loop Vector for PM Motors control mode.	PG-RT3

Network Communication Options

These cards, cables, and devices add control functionality to the standard drive. Items are shipped loose and unmounted.

Option	Purpose	Part Number
EtherNet/IP	ODVA compliant option cards to connect to Ethernet/IP.	SI-EN3
EtherNet/IP Dual Port		SI-EN3D
PROFINET	PI compliant option cards to connect to a PROFINET network.	SI-EP3
Modbus TCP	Simple and effective solution to connect the drive to a Modbus TCP/IP network.	SI-EM3
Modbus TCP Dual Port	Simple and effective solution to connect the drive to a Modbus TCP/IP network.	SI-EM3D
EtherCAT	Option cards to turn the drive into an EtherCAT slave on the network.	SI-ES3
DeviceNet	ODVA compliant option cards to connect to a DeviceNet network.	SI-N3
PROFIBUS-DP	PI compliant option cards to connect to a PROFIBUS-DP network.	SI-P3
CANopen	CANopen is a CAN-based communication system.	SI-C3
CC-Link	CC-Link is an open industrial network protocol that enables devices from different manufacturers to communicate.	SI-C3
BACnet MSTP	BACnet is a data communications protocol for Building Automation and Control Networks.	SI-B3
APOGEE/METASYS	APOGEE/METASYS is a multi-protocol card that provides communications between different systems and devices.	SI-J3
LONWORKS	LONWORKS provides building automation communication capabilities.	SI-W3
MECHATROLINK II	Option cards to turn the drive into a M-II node and connect to a high-speed MECHATROLINK-II network.	SI-T3
MECHATROLINK III	Option cards to turn the drive into a M-III node and connect to a high-speed MECHATROLINK-III network.	SI-ET3

Keypads, Accessories, and Cables

Additional Information	
Keypads and Cables	

Table 6: Keypads

Part Number	Description
JVOP-KPLCA04MEB	Standard LCD Local/Remote Keypad (comes standard with GA800)
JVOP-KPLCC04MBB	LCD Keypad with Bluetooth



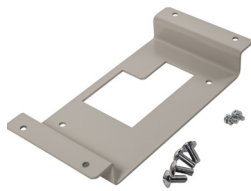
Standard LCD Keypad



LCD Keypad with Bluetooth

Table 7: Remote Mount Adapters

Part Number	Description
900-192-933-001	Type 1 Keypad Panel Mount Kit A (brackets have tapped holes for use with screws)
900-192-933-002	Type 1 Keypad Panel Mount Kit B (brackets have untapped holes for use with panel studs)
900-239-230-001	Type 12/3R Keypad Panel Mount (with embedded studs)
UUX001955	Type 4X Keypad Panel Mount Kit



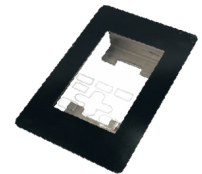
-001 Type 1 Screw Mount



-002 Type 1 Stud Mount



Type 12/3R Mount (with embedded studs)



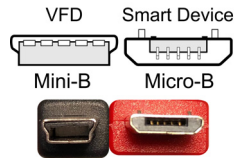
Type 4X Panel Mount

Table 8: Cables

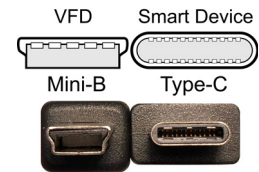
Part Number	Description
UWR0051	Keypad Remote Mount Cable - 1 Meter
UWR0052	Keypad Remote Mount Cable - 3 Meter
UWR01258	USB Cable for PC to Drive Communication - 3 Meter

Table 9: Android Mobile Device Interface Cables (for connecting Android device to USB port on drive)

Part Number	Description
UWR01516-B	USB Mini-B to USB Micro-B. On-The-Go (OTG) compatible, 2-meter length.
UWR01516-C	USB Mini-B to USB Type-C. On-The-Go (OTG) compatible, 2-meter length.



P# UWR01516-B - USB Mini-B to USB Micro-B



P# UWR01516-C - USB Mini-B to USB Type-C

Enclosure Adapters and Kits

These adapters are for mounting the standard IP20 drives directly to a wall, a machine in a clean environment (Type 1), or inside a Type 1 enclosure with external heatsink. The Type 1 Adapters convert an Open Chassis Drive (IP20) to an enclosed wall-mounted drive (Type 1). The A1000 to GA800 adapters allow a GA800 to mount where an A1000 was previously mounted.



Type 1 Adapter



External Heatsink Adapter



A1000 to GA800 Adapters

Additional Information	
Type 1 Adapter Manual	

Table 10: 240 Volt Drive Mounting Adapters

Catalog Code GA80U . .	Type 1 Adapters	Internal Fuses (Bussman FWH Series) for Type 1 Adapters	External Heatsink Adapter	Drive Adapters (A1000 to GA800)
	Part Number	Part Number	Part Number	Part Number
2004ABM	900-192-121-001	Not Available	900-193-209-001	900-195-081-001
2006ABM				
2008ABM				
2010ABM				
2012ABM				
2018ABM				
2021ABM				
2030ABM				
2042ABM				
2056ABM				
2070ABM	900-192-121-002	Not Available	900-193-209-002	900-195-081-002
2082ABM	900-192-121-003		900-193-209-003	Not Available
2110ABM	900-192-121-004		Included as standard (see instructions)	
2138ABM	900-192-121-005			
2169ABM	900-192-121-006			
2211ABM	900-192-121-007			
2257ABM	900-192-121-008			
2313ABM	900-192-121-009			
2360ABM	900-192-121-010			
2415ABM				

Table 11: 480 Volt Drive Mounting Adapters

Catalog Code GA80U . .	Type 1 Adapters ¹	Internal Fuses (Bussman FWH Series) for Type 1 Adapters ²	External Heatsink Adapter	Drive Adapters (A1000 to GA800)									
	Part Number	Part Number	Part Number	Part Number									
4002ABM	900-192-121-001	Not Available	900-193-209-001	900-195-081-001									
4004ABM													
4005ABM													
4007ABM													
4009ABM													
4012ABM													
4018ABM													
4023ABM													
4031ABM	900-192-121-002		Not Available	900-193-209-002	900-195-081-002								
4038ABM	900-192-121-003			Not Available	900-193-209-003	Not Available							
4044ABM													
4060ABM													
4075ABM													
4089ABM													
4103ABM													
4140ABM													
4168ABM													
4208ABM	900-192-121-009	Not Available			Included as standard (see instructions)		Not Available						
4250ABM													
4302ABM													
4371ABM													
4414ABM	UUX001700							Not Available	Included as standard (see instructions)	Not Available			
4477ABM													
4568ABM	UUX001701		Not Available								Included as standard (see instructions)	Not Available	
4605ABM													
4720ABM													
4720ABM													
4414ABM	UUX001701			UFU000047		Included as standard (see instructions)							Not Available
4477ABM													
4568ABM													
4605ABM													
4477ABM	UUX001701			UFU000048									
4568ABM													
4605ABM													
4720ABM													
4477ABM	UUX001701	UFU000049		Included as standard (see instructions)	Not Available								
4568ABM													
4605ABM													
4720ABM													

1. Type 1 Adapters for 4371 and larger are input fuse ready. UL requires Bussman FWH series semiconductor fuses to be installed within the Type 1 Adapter on these models.
2. Fuses sold individually. A quantity of three are required per drive.

Table 12: 600 Volt Drive Mounting Adapters

Catalog Code GA80U . .	Type 1 Adapters ¹	Internal Fuses (Bussman FWP Series) for Type 1 Adapters ²	External Heatsink Adapter	Drive Adapters (A1000 to GA800)
	Part Number	Part Number	Part Number	Part Number
5289ABM	UUX001700	UFU000802	Included as standard (see instructions)	Not Available
5382ABM	UUX001701	UFU000254		
5412ABM		05P00017-0214		
5472ABM				

1. Type 1 Adapters for 5289 and larger are input fuse ready. UL requires Bussman FWP series semiconductor fuses to be installed within the Type 1 Adapter on these models.
2. Fuses sold individually. A quantity of three are required per drive.

Power Options

Power options are add on devices that can be used to help increase power factor, improve harmonics, and dissipate regenerative energy.

Name	Purpose
EMC Input Filter	<ul style="list-style-type: none"> • IP20 rated • UL and cUL approved • Install external EMC filters to the drive input to comply with C2 levels of the EN 61800-3 EMC directive.
DC Bus Reactor	<ul style="list-style-type: none"> • Improves the drive input power factor. • Prevents damage to the drive when the power supply capacity is large. Only use this option when the power supply capacity is more than 600 kVA. • Decreases harmonic current • Improves the power supply total power factor.
AC Reactor	<ul style="list-style-type: none"> • Improves the drive input power factor. • Prevents damage to the drive when the power supply capacity is large. Only use this option when the power supply capacity is more than 600 kVA. • Decreases harmonic current • Improves the power supply total power factor.
3% Braking Resistor	Decreases the regenerative energy of the motor and decrease the deceleration time (Duty cycle of 3% ED). An installation attachment is required.
10% Braking Resistor Unit	Decreases the regenerative energy of the motor and decrease the deceleration time (Duty cycle of 10% ED). The unit contains a thermal overload relay.
Braking Unit	Use with a braking resistor unit to decrease motor deceleration times.
R1000	The R1000 regenerative module is used to divert energy generated by the motor back onto the line for use by other loads. The energy is directed back onto the line by taking DC voltage from the drive running the motor and converting it into a three-phase AC voltage waveform.
Single Phase Converter	The Single Phase Converter is used in single-phase to three-phase conversion applications to eliminate drive derating. The Single Phase Converter significantly reduces stresses on the power grid with near unity power factor and less than 10% iTHD.

Additional Information

[GA800 Power Options](#)

EMC Input Filters



Install external EMC filters to the drive input to comply with C2 levels of the EN 61800-3 EMC directive.

Table 13: 240 Volt EMC Input Filters

Catalog Code GA80U . .	Input EMC Filter	
	Part Number	Figure #
2004 . . .	B84743A0008R176	4
2006 . . .		
2008 . . .	B84743A0017R176	5
2010 . . .		
2012 . . .		
2018 . . .		
2021 . . .	B84743A0033R176	6
2030 . . .	B84743A0044R176	
2042 . . .	B84743A0060R176	7
2056 . . .	B84243A6083Z000	8
2070 . . .	B84243A6120Z000	
2082 . . .		
2110 . . .		
2138 . . .	B84243A6180Z000	
2169 . . .	B84743A0300R176	9
2211 . . .		
2257 . . .	B84743B0410S176	10
2313 . . .		
2360 . . .		
2415 . . .		

Table 14: 480 Volt EMC Input Filters

Catalog Code GA80U . .	Input EMC Filter	
	Part Number	Figure #
4002 . . .	B84743A0008R176	4
4004 . . .		
4005 . . .		
4007 . . .	B84743A0017R176	5
4009 . . .		
4012 . . .		
4018 . . .	B84743A0033R176	6
4023 . . .		
4031 . . .	B84743A0044R176	6
4038 . . .	B84743A0060R176	7
4044 . . .		
4060 . . .		
4075 . . .	B84243A6083Z000	8
4089 . . .	B84243A6120Z000	
4103 . . .	B84243A6180Z000	
4140 . . .		
4168 . . .	B84743A0300R176	9
4208 . . .		
4250 . . .		
4302 . . .	B84743B0410S176	10
4371 . . .		
4414 . . .		
4477 . . .	Consult Factory	-
4568 . . .		
4605 . . .		
4720 . . .		

Input EMC Filter Dimensions

All dimensions are in millimeters (mm).

Figure 4: 8 Amp Filter

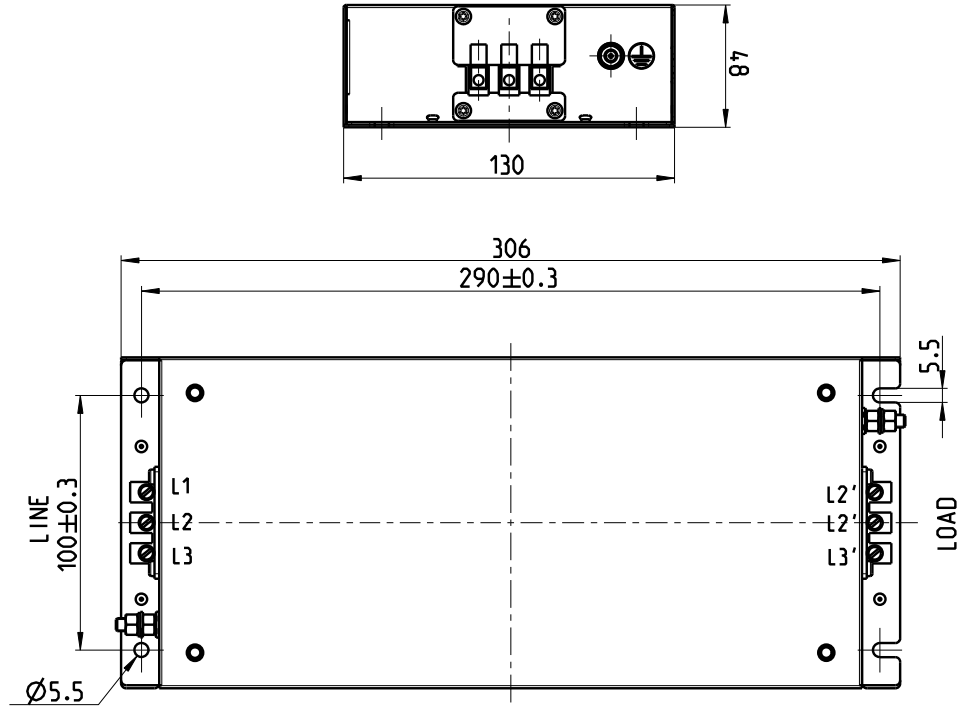


Figure 5: 17 - 33 Amp Filter

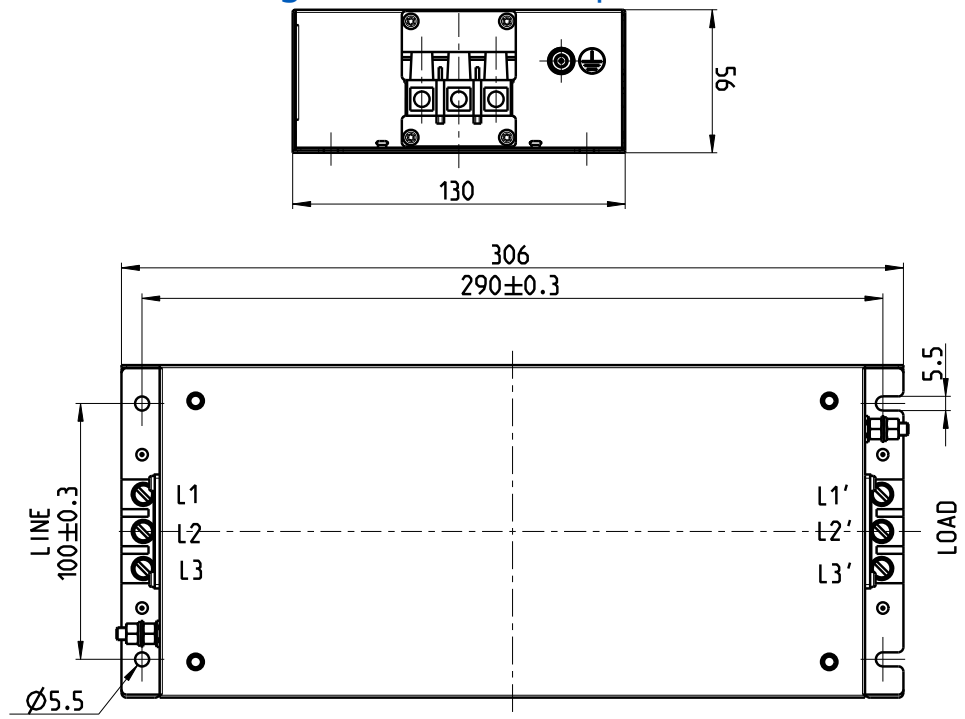


Figure 6: 44 Amp Filter

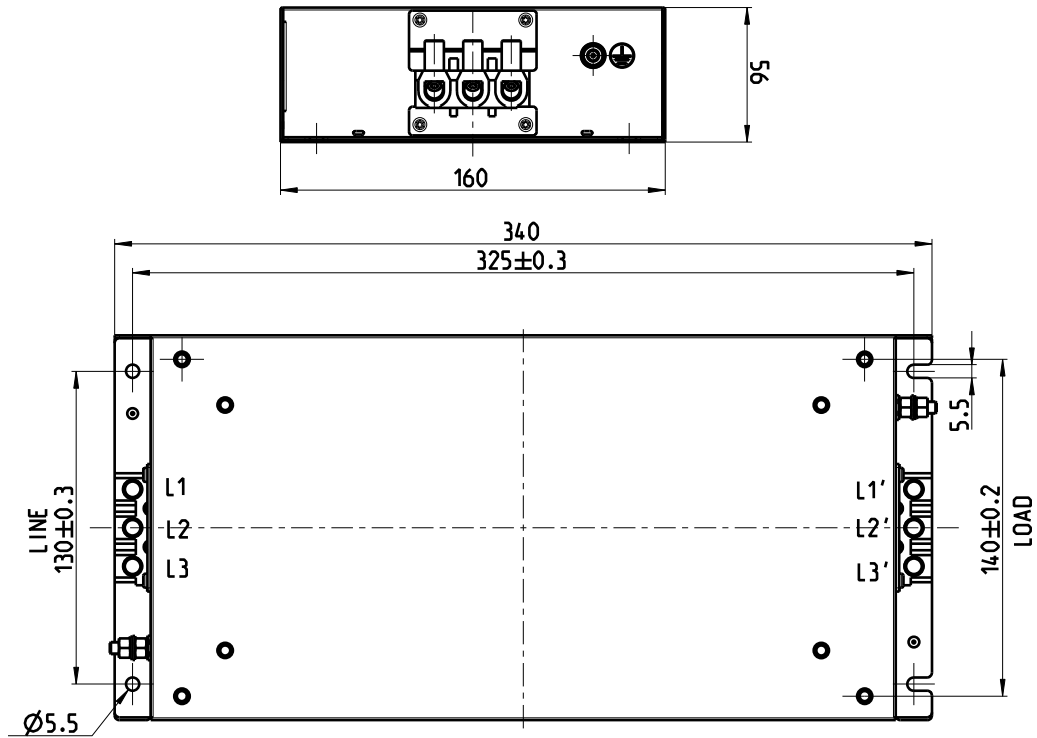


Figure 7: 60 Amp Filter

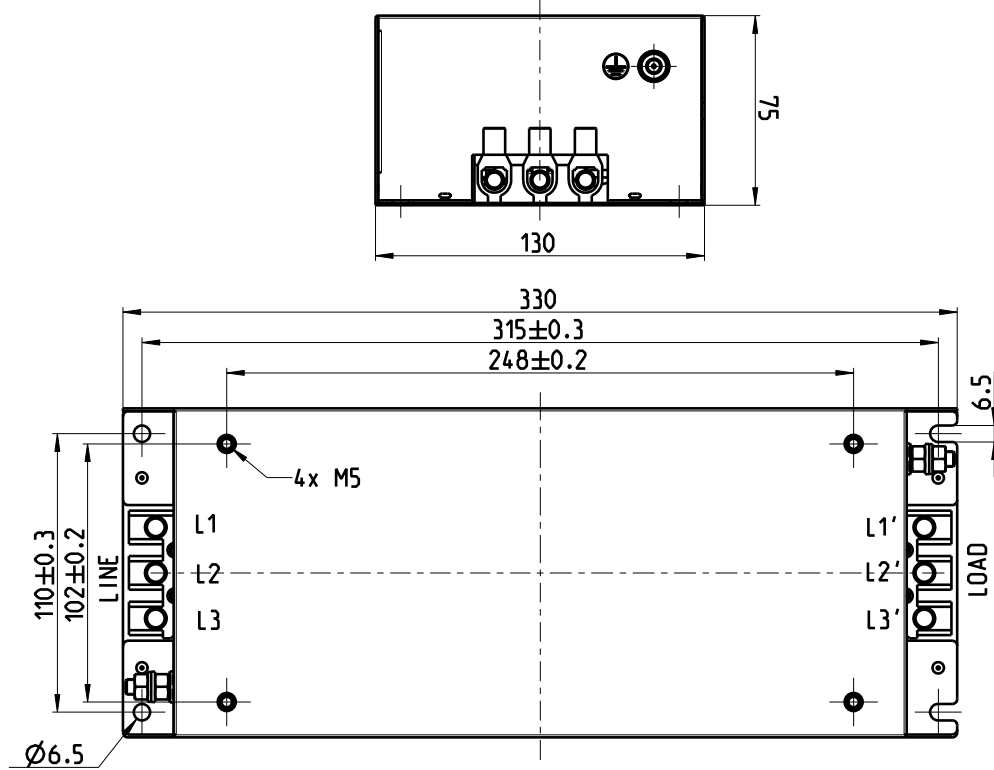
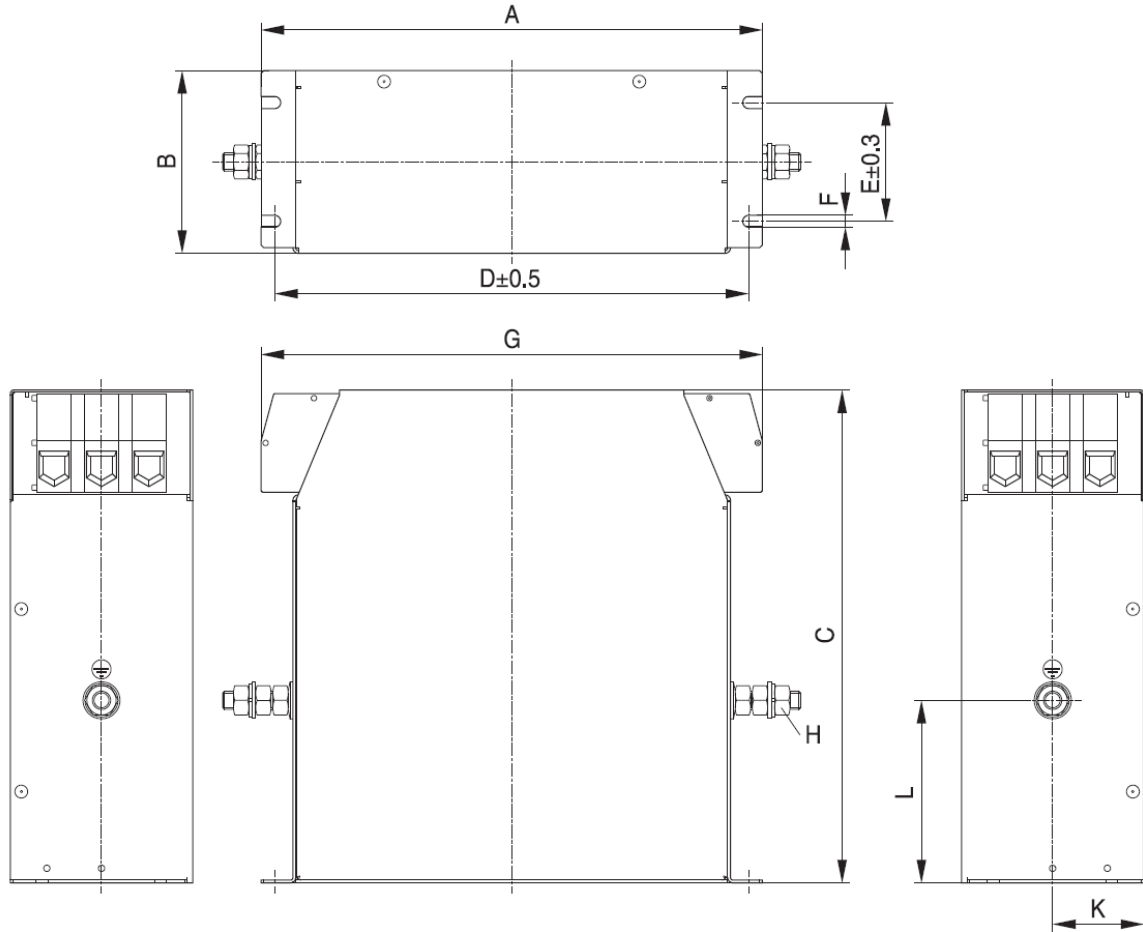


Figure 8: 83 - 180 Amp Filter



Amp Rating	Dimensions (mm)									
	A	B	C	D	E	F	G	H	K	L
83	270	80	185	255	60	6.5	270	M8	40	80
120	270	105	190	255	65	6.5	270	M10	52.5	100
180	380	120	210	365	102	6.5	3.79	M10	60	30

DC Bus Reactors



Use a DC Bus Reactor on the DC bus terminals of a drive to reduce the effect of line-side transients and input current total harmonic distortion (THD). Large HP drives include a 3% bus impedance as standard. The DC bus reactor is available loose in a separate Type 1 enclosure.

Table 15: 240 Volt DC Bus Reactors

HP	Catalog Code GA80U . .		3% DC Bus Reactor				5% DC Bus Reactor			
	Normal Duty	Heavy Duty	Open Type Part Number	Enclosed Type 1 Part Number	Amps	Inductance (mH)	Open Type Part Number	Enclosed Type 1 Part Number	Amps	Inductance (mH)
0.5	2004 . . .	2004 . . .	URX000036	URX000207	2	10	URX000037	URX000217	2	15
0.75	2004 . . .	2004 . . .	05P00608-3007	URX000208	4	5	URX000041	URX000207	4	12
1	2006 . . .	2006 . . .	05P00608-3007	URX000208	4	5	URX000041	URX000207	4	12
1.5	2006 . . .	2008 . . .	05P00620-0110	URX000257	9	3.22	05P00620-0111	URX000208	9	7.5
2	2008 . . .	2010 . . .	05P00620-0110	URX000257	9	3.22	05P00620-0111	URX000208	9	7.5
3	2010 . . .	2012 . . .	URX000371	URX000258	12	2.1	05P00652-0213	URX000209	12	4
4	2012 . . .	2018 . . .	05P00620-0115	URX000259	18	1.375	URX000048	URX000210	18	2.75
5	2018 . . .	2021 . . .	05P00620-0115	URX000259	18	1.375	URX000048	URX000210	18	2.75
7.5	2021 . . .	2030 . . .	URX000051	URX000212	25	1	URX000052	URX000211	25	1.75
10	2030 . . .	2042 . . .	05P00620-0120	URX000261	32	0.85	URX000055	URX000223	32	1.62
15	2042 . . .	2056 . . .	URX000059	URX000262	50	0.625	URX000060	URX000222	50	0.97
20	2056 . . .	2070 . . .	URX000063	URX000264	62	0.35	URX000064	URX000213	62	0.61
25	2070 . . .	2082 . . .	05P00620-0129	URX000214	80	0.31	URX000069	URX000265	80	0.5
30	2082 . . .	-	URX000072	URX000266	92	0.2	URX000073	URX000265	92	0.6
40 to 150	Drive models 2110 through 2415 have built-in DC reactors.									

Table 16: 480 Volt DC Bus Reactors

HP	Catalog Code GA80U . .		3% DC Bus Reactor				5% DC Bus Reactor			
	Normal Duty	Heavy Duty	Open Type Part Number	Enclosed Type 1 Part Number	Amps	Inductance (mH)	Open Type Part Number	Enclosed Type 1 Part Number	Amps	Inductance (mH)
0.5	4002 . . .	4002 . . .	URX000033	URX000215	1	35	URX000034	URX000215	1	60
0.75	4002 . . .	4002 . . .	URX000038	URX000216	2	20	URX000039	URX000215	2	50
1	4002 . . .	4004 . . .	URX000038	URX000216	2	20	URX000039	URX000215	2	50
1.5	4004 . . .	4004 . . .	05P00620-0109	URX000217	4	15	URX000042	URX000216	4	25
2	4004 . . .	4005 . . .	URX000041	URX000207	4	12	URX000042	URX000216	4	25
3	4005 . . .	4007 . . .	URX000044	URX000218	9	11.5	URX000044	URX000218	9	11.5
4	4007 . . .	4009 . . .	URX000044	URX000218	9	11.5	URX000044	URX000218	9	11.5
5	4009 . . .	4012 . . .	05P00620-0111	URX000208	9	7.5	URX000044	URX000218	9	11.5
7.5	4012 . . .	4018 . . .	05P00652-0213	URX000209	12	4	URX000046	URX000219	12	6
10	4018 . . .	4023 . . .	05P00652-0216	URX000220	18	3.75	URX000049	URX000260	18	6
15	4023 . . .	4031 . . .	URX000052	URX000211	25	1.75	URX000054	URX000224	25	4
20	4031 . . .	4038 . . .	URX000055	URX000223	32	1.62	URX000056	URX000221	32	2.68
25	4038 . . .	4044 . . .	URX000057	URX000184	40	1	URX000058	URX000225	40	2.5
30	4044 . . .	-	URX000061	URX000222	50	1.35	URX000062	URX000263	50	2
50 to 600	Drive models 4060 through 4720 have built-in DC reactors.									

Open Type DC Bus Reactor Dimensions

Figure 11:

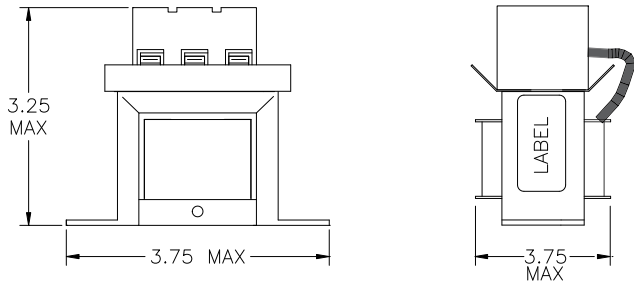


Figure 12:

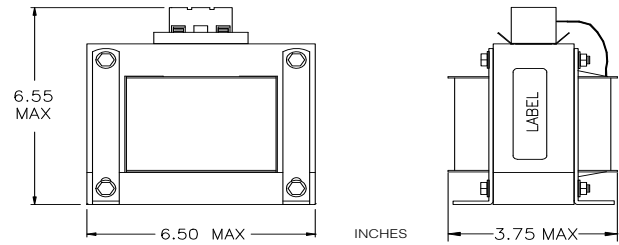


Figure 13:

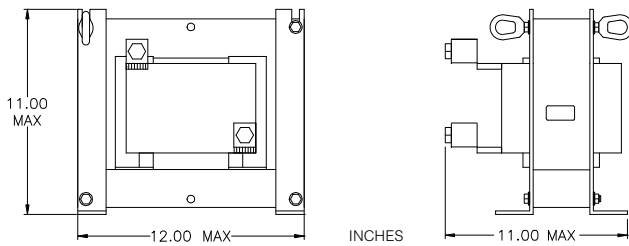
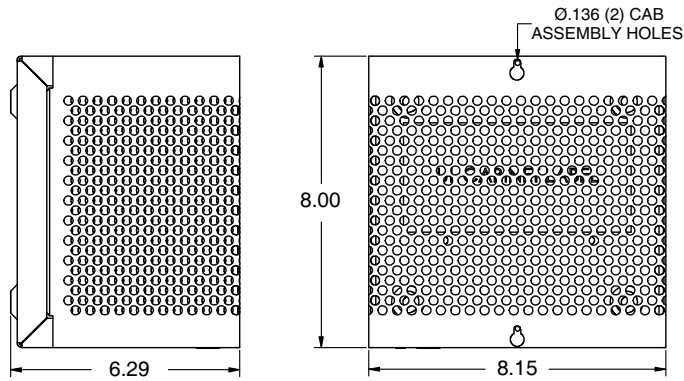


Table 17: Open Type Reactor Dimensions

DC Bus Reactor	Figure	DC Bus Reactor	Figure
05P00608-3007	11	URX000048	12
05P00620-0109	11	URX000049	12
05P00620-0110	11	URX000051	12
05P00620-0111	12	URX000052	12
05P00620-0115	11	URX000054	12
05P00620-0120	11	URX000055	12
05P00620-0129	13	URX000056	12
05P00652-0213	12	URX000057	12
05P00652-0216	12	URX000058	12
URX000033	11	URX000059	12
URX000034	11	URX000060	12
URX000036	11	URX000061	12
URX000037	11	URX000062	13
URX000038	11	URX000063	13
URX000039	11	URX000064	13
URX000041	12	URX000069	13
URX000042	12	URX000072	13
URX000044	12	URX000073	13
URX000046	12	URX000371	12

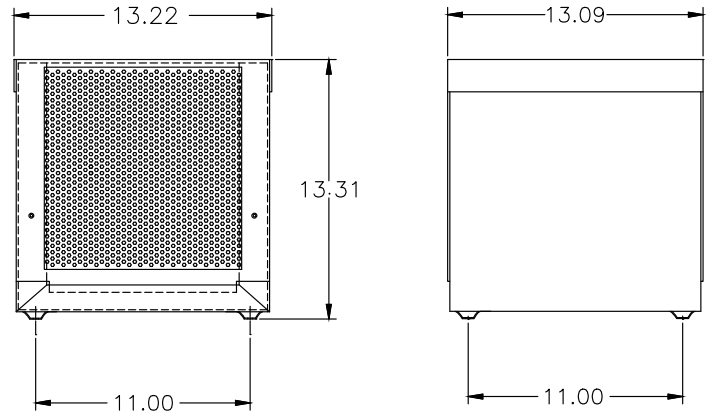
Enclosed DC Reactor Dimensions

Figure 14: CAB-8



UNITS: INCHES

Figure 15: CAB-13V



UNITS: INCHES

Table 18: Enclosed Type Reactor Dimensions

DC Bus Reactor	Figure
URX000207	14
URX000208	
URX000209	
URX000210	
URX000211	
URX000213	15
URX000215	
URX000216	14
URX000217	
URX000218	
URX000219	
URX000221	
URX000222	15
URX000223	
URX000224	
URX000225	
URX000260	
URX000263	
URX000265	

AC Input Reactors



3% and 5% impedance reactors may be used on either the input or output to reduce the effects of line or load side transients on the drive. The reactors listed are available loose or in a separate Type 1 enclosure.

Table 19: 240 Volt AC Input Reactors

HP	Catalog Code GA80U . .		3% Input Reactor				5% Input Reactor			
	Normal Duty	Heavy Duty	Open Type Part Number	Enclosed Type 1 Part Number	Amps	Inductance (mH)	Open Type Part Number	Enclosed Type 1 Part Number	Amps	Inductance (mH)
0.5	2004 . . .	2004 . . .	URX000287	URX000583	1.6	6.9	URX000292	URX000502	2.1	11
0.75	2004 . . .	2004 . . .	URX000295	URX000409	3.4	3.2	URX000296	URX000584	3.4	6.8
1	2006 . . .	2006 . . .	URX000295	URX000409	3.4	3.2	URX000300	URX000503	4.8	4.8
1.5	2006 . . .	2008 . . .	URX000299	URX000410	4.8	2.3	URX000300	URX000503	4.8	4.8
2	2008 . . .	2010 . . .	URX000303	URX000411	7.6	1.5	URX000304	URX000504	7.6	3
3	2010 . . .	2012 . . .	URX000307	URX000413	11	1	URX000308	URX000414	11	2.1
4	2012 . . .	2018 . . .	URX000307	URX000413	11	1	URX000312	URX000416	14	1.6
5	2018 . . .	2021 . . .	URX000311	URX000415	14	0.79	URX000316	URX000419	21	1.1
7.5	2021 . . .	2030 . . .	URX000315	URX000418	21	0.53	URX000320	URX000421	28	.82
10	2030 . . .	2042 . . .	URX000319	URX000420	28	.39	URX000324	URX000423	35	.71
15	2042 . . .	2056 . . .	URX000326	URX000424	46	0.3	URX000330	URX000553	55	0.48
20	2056 . . .	2070 . . .	URX000332	URX000426	65	0.19	URX000333	URX000554	65	0.36
25	2070 . . .	2082 . . .	URX000335	URX000427	83	0.17	URX000336	URX000555	83	0.29
30	2082 . . .	-	URX000338	URX000428	104	0.12	URX000339	URX000556	104	0.23
30	-	2110 . . .	URX000338	URX000428	104	0.12	5% input reactor not recommended for these drive sizes			
40	2110 . . .	2138 . . .	URX000338	URX000428	104	0.12				
50	2138 . . .	2169 . . .	URX000341	URX000429	130	0.095				
60	2169 . . .	2211 . . .	URX000344	URX000430	160	0.08				
75	2211 . . .	2257 . . .	URX000347	URX000431	200	0.06				
100	2257 . . .	2313 . . .	URX000350	URX000432	250	0.05				
125	2313 . . .	2360 . . .	URX000356	URX000434	414	0.033				
150	2360 . . .	2415 . . .	URX000356	URX000434	414	0.033				

Table 20: 480 Volt AC Input Reactors

HP	Catalog Code GA80U . .		3% Input Reactor				5% Input Reactor			
	Normal Duty	Heavy Duty	Open Type Part Number	Enclosed Type 1 Part Number	Amps	Inductance (mH)	Open Type Part Number	Enclosed Type 1 Part Number	Amps	Inductance (mH)
0.5	4002 . . .	4002 . . .	URX000284	URX000585	1.1	21	URX000286	URX000569	1.1	42
0.75	4002 . . .	4002 . . .	URX000288	URX000551	1.6	14	URX000285	URX000570	1.1	33
1	4002 . . .	4004 . . .	URX000292	URX000502	2.1	11	URX000289	URX000571	1.6	23
1.5	4004 . . .	4004 . . .	URX000301	URX000552	4.8	7.7	URX000293	URX000572	2.1	18
2	4004 . . .	4005 . . .	URX000296	URX000584	3.4	6.8	URX000297	URX000573	3.4	11
3	4005 . . .	4007 . . .	URX000300	URX000503	4.8	4.8	URX000301	URX000552	4.8	7.7
4	4007 . . .	4009 . . .	URX000304	URX000504	7.6	3	URX000306	URX000412	7.6	6
5	4009 . . .	4012 . . .	URX000304	URX000504	7.6	3	URX000305	URX000574	7.6	4.8
7.5	4012 . . .	4018 . . .	URX000308	URX000414	11	2.1	URX000309	URX000505	11	3.3
10	4018 . . .	4023 . . .	URX000312	URX000416	14	1.6	URX000313	URX000417	14	2.6
15	4023 . . .	4031 . . .	URX000316	URX000419	21	1.1	URX000317	URX000568	21	1.8
20	4031 . . .	4038 . . .	URX000320	URX000421	28	.82	URX000321	URX000575	28	1.3
25	4038 . . .	4044 . . .	URX000324	URX000423	35	.71	URX000325	URX000576	35	1.2
30	4044 . . .	-	URX000327	URX000425	46	0.55	URX000328	URX000577	46	0.98
30	-	4060 . . .	URX000327	URX000425	46	0.55	5% input reactor not recommended for these drive sizes			
40	4060 . . .	4075 . . .	URX000330	URX000553	55	0.48				
50	4075 . . .	4089 . . .	URX000333	URX000554	65	0.36				
60	4089 . . .	4103 . . .	URX000336	URX000555	83	0.29				
75	4103 . . .	4140 . . .	URX000339	URX000556	104	0.23				
100	4140 . . .	4168 . . .	URX000342	URX000557	130	0.18				
125	4168 . . .	4208 . . .	URX000345	URX000558	160	0.155				
150	4208 . . .	4250 . . .	URX000348	URX000559	200	0.115				
200	4250 . . .	4302 . . .	URX000351	URX000560	250	0.095				
250	4302 . . .	4371 . . .	URX000354	URX000561	322	0.07				
300	4371 . . .	4414 . . .	URX000357	URX000562	414	0.066				
350	4414 . . .	4477 . . .	URX000360	URX000563	515	0.05				
400	4477 . . .	4568 . . .	URX000360	URX000563	515	0.05				
450	4568 . . .	4605 . . .	URX000363	URX000564	600	0.04				
500	4605 . . .	4720 . . .	URX000363	URX000564	600	0.04				
600	4720 . . .	-	URX000366	URX000565	750	0.035				

Table 21: 600 Volt AC Input Reactors

HP	Catalog Code GA80U . .		3% Input Reactor				5% Input Reactor			
	Normal Duty	Heavy Duty	Open Type Part Number	Enclosed Type 1 Part Number	Amps	Inductance (mH)	Open Type Part Number	Enclosed Type 1 Part Number	Amps	Inductance (mH)
250	-	5289 . . .	URX000351	URX000560	250	0.095	5% input reactor not recommended for these drive sizes			
300	5289 . . .	5382 . . .	URX000354	URX000561	322	0.13				
350	5382 . . .	5382 . . .	URX000357	URX000562	414	0.066				
400	5382 . . .	5412 . . .	URX000357	URX000562	414	0.066				
450	5412 . . .	5472 . . .	URX000357	URX000562	414	0.066				
500	5472 . . .	-	URX000360	URX000563	515	0.05				

AC Output Reactors



Table 22: 240 Volt AC Output Reactors

HP	Catalog Code GA80U . .		3% Output Reactor			
	Normal Duty	Heavy Duty	Open Type Part Number	Enclosed Type 1 Part Number	Amps	Inductance (mH)
0.5	2004 . . .	2004 . . .	05P00620-0132	05P00620-0021	4	6.5
0.75	2004 . . .	2004 . . .	05P00620-0017	05P00620-0020	4	3.0
1	2006 . . .	2006 . . .	05P00620-0133	05P00620-0028	8	3.0
1.5	2006 . . .	2008 . . .	05P00620-0133	05P00620-0028	8	3.0
2	2008 . . .	2010 . . .	05P00620-0024	05P00620-0027	8	1.5
3	2010 . . .	2012 . . .	05P00620-0134	05P00620-0032	12	1.25
4	2012 . . .	2018 . . .	05P00620-0134	05P00620-0032	12	1.25
5	2018 . . .	2021 . . .	05P00620-0136	05P00620-0036	18	0.8
7.5	2021 . . .	2030 . . .	URX000083	05P00620-0041	25	0.5
10	2030 . . .	2042 . . .	05P00620-0044	05P00620-0046	35	0.4
15	2042 . . .	2056 . . .	05P00620-0140	05P00620-0050	45	0.3
20	2056 . . .	2070 . . .	05P00620-0143	05P00620-0058	80	0.20
25	2070 . . .	2082 . . .	05P00620-0143	05P00620-0058	80	0.20
30	2082 . . .	2110 . . .	05P00620-0143	05P00620-0058	80	0.20
40	2110 . . .	2138 . . .	URX000085	URX000204	100	0.15
50	2138 . . .	2169 . . .	05P00620-0064	05P00620-0066	130	0.10
60	2169 . . .	2211 . . .	05P00620-0069	URX000206	160	0.075
75	2211 . . .	2257 . . .	05P00620-0075	05P00620-0077	200	0.055
100	2257 . . .	2313 . . .	URX000175	URX000248	250	0.045
125	2313 . . .	2360 . . .	05P00620-0085	URX000249	320	0.040
150	2360 . . .	2415 . . .	URX000181	URX000250	400	0.030
150	2415 . . .	-	URX000181	URX000250	400	0.030

Table 23: 480 Volt AC Output Reactors

HP	Catalog Code GA80U . .		3% Output Reactor			
	Normal Duty	Heavy Duty	Open Type Part Number	Enclosed Type 1 Part Number	Amps	Inductance
0.5	4002 . . .	4002 . . .	05P00620-0014	05P00620-0016	2	20.0
0.75	4002 . . .	4002 . . .	05P00620-0131	05P00620-0015	2	12.0
1	4002 . . .	4004 . . .	05P00620-0131	05P00620-0015	2	12.0
1.5	4004 . . .	4004 . . .	05P00620-0018	05P00620-0022	4	9.0
2	4004 . . .	4005 . . .	05P00620-0132	05P00620-0021	4	6.5
3	4005 . . .	4007 . . .	05P00620-0025	05P00620-0029	8	5.0
4	4007 . . .	4009 . . .	05P00620-0025	05P00620-0029	8	5.0
5	4009 . . .	4012 . . .	05P00620-0133	05P00620-0028	8	3.0
7.5	4012 . . .	4018 . . .	05P00620-0135	05P00620-0033	12	2.5
10	4018 . . .	4023 . . .	05P00620-0137	05P00620-0037	18	1.5
15	4023 . . .	4031 . . .	05P00620-0138	05P00620-0042	25	1.2
20	4031 . . .	4038 . . .	05P00620-0139	05P00620-0047	35	0.8
25	4038 . . .	4044 . . .	05P00620-0139	05P00620-0047	35	0.8
30	4044 . . .	4060 . . .	05P00620-0049	05P00620-0051	45	0.7
40	4060 . . .	4075 . . .	05P00620-0142	05P00620-0055	55	0.50
50	4075 . . .	4089 . . .	05P00620-0144	05P00620-0059	80	0.40
60	4089 . . .	4103 . . .	05P00620-0144	05P00620-0059	80	0.40
75	4103 . . .	4140 . . .	05P00620-0145	05P00620-0062	100	0.30
100	4140 . . .	4168 . . .	05P00620-0013	05P00620-0067	130	0.20
125	4168 . . .	4208 . . .	05P00620-0070	05P00620-0073	160	0.150
150	4208 . . .	4250 . . .	URX000586	05P00620-0078	200	0.110
200	4250 . . .	4302 . . .	URX000176	05P00620-0083	250	0.090
250	4302 . . .	4371 . . .	URX000179	05P00620-0088	320	0.075
300	4371 . . .	4414 . . .	URX000182	05P00620-0092	400	0.060
350	4414 . . .	4477 . . .	05P00620-0094	05P00620-0096	500	0.050
400	4477 . . .	4568 . . .	05P00620-0094	05P00620-0096	500	0.050
450	4568 . . .	4605 . . .	05P00620-0098	05P00620-0100	600	0.040
500	4605 . . .	4720 . . .	05P00620-0098	05P00620-0100	600	0.040
600	4720 . . .	-	05P00620-0102	05P00620-0104	750	0.029

Table 24: 600 Volt AC Output Reactors

HP	Catalog Code GA80U . .		3% Output Reactor			
	Normal Duty	Heavy Duty	Open Type Part Number	Enclosed Type 1 Part Number	Amps	Inductance (mH)
250	-	5289 . . .	URX000176	05P00620-0083	250	0.090
300	5289 . . .	5382 . . .	URX000179	05P00620-0088	320	0.075
350	5382 . . .	5382 . . .	URX000182	05P00620-0092	400	0.06
400	5382 . . .	5412 . . .	URX000182	05P00620-0092	400	0.06
450	5412 . . .	5472 . . .	05P00620-0094	05P00620-0096	500	0.05
500	5472 . . .	-	05P00620-0094	05P00620-0096	500	0.05

AC Open Reactor Dimensions

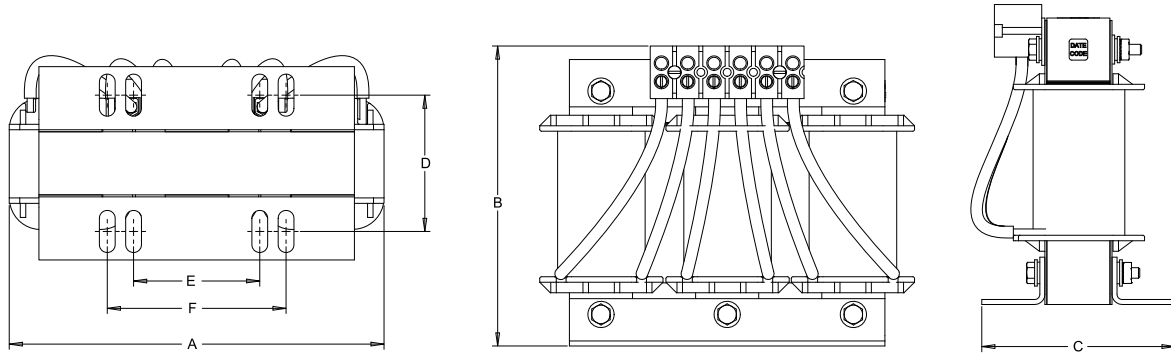


Table 25: AC Open Reactor Dimensions

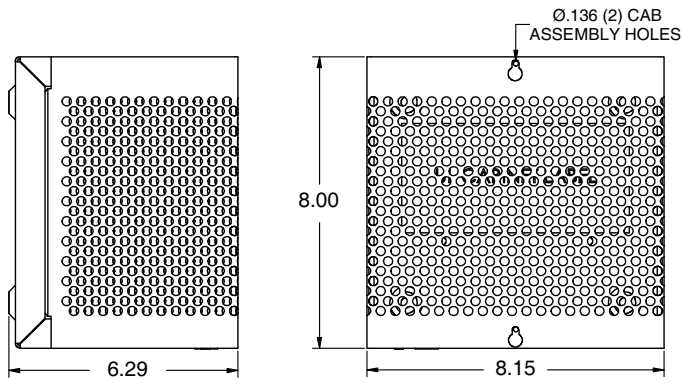
Open Type Reactor Part number	Watt Loss	Dimensions (mm/in)						Weight
		A	B	C	D	E	F	kg/lb
05P00620-0013	180	229/9	183/7.2	172/6.8	93/3.66	92/3.63	-	28/62
05P00620-0014	11.3	112/4.4	104/4.1	71/2.8	50/1.98	37/1.44	-	1.8/4
05P00620-0017	14.5	112/4.4	104/4.1	71/2.8	50/1.98	37/1.44	-	1.8/4
05P00620-0018	20	112/4.4	104/4.1	86/3.4	60/2.35	37/1.44	-	2.3/5
05P00620-0024	19.5	152/6.0	122/4.8	76/3.0	53/2.10	51/2.00	-	3.2/7
05P00620-0025	25.3	152/6.0	122/4.8	86/3.4	67/2.62	51/2.00	-	5.0/11
05P00620-0044	49	183/7.2	147/5.8	102/4.0	66/2.60	76/3.00	-	6.4/14
05P00620-0049	62	229/9.0	188/7.4	119/4.7	80/3.16	76/3.00	-	13/28
05P00620-0064	108	229/9.0	179/7.1	118/4.7	80/3.16	76/3.00	-	13/29
05P00620-0069	116	229/9	183/7.2	172/6.8	80/3.16	92/3.63	-	19/42
05P00620-0070	149	274/10.8	277/8.3	152/6	88/3.47	92/3.63	-	23/51
05P00620-0075	124	229/9	191/7.5	185/7.3	106/4.16	92/3.63	-	22/49
05P00620-0080	154	229/9	191/7.5	229/9	106/4.16	92/3.63	-	31/68
05P00620-0085	224	274.3/10.8	213.4/8.4	200.7/7.9	131/5.2	117/4.6	-	36.3/80
05P00620-0088	224	275/11	214/8.5	201/8	131/5.2	117/4.6	-	36/80
05P00620-0090	333	381/15	286/11.3	292/11.5	172/6.76	117/4.60	-	71/155
05P00620-0094	340	366/14.4	292/11.5	292/11.5	172/6.76	117/4.60	-	82/180
05P00620-0098	414	366/14.4	286/11.3	305/12	203/8.00	117/4.60	-	114/250
05P00620-0102	630	366/14.4	292/11.5	318/12.5	204/8.01	183/7.20	-	141/310
05P00620-0131	7.5	112/4.4	104/4.1	71/2.8	50/1.98	37/1.44	-	1.8/4
05P00620-0132	20	112/4.4	104/4.1	71/2.8	50/1.98	37/1.44	-	1.8/4
05P00620-0133	29	152/6.0	122/4.8	76/3.0	53/2.10	51/2.00	-	3.6/8
05P00620-0134	26	152/6.0	127/5.0	84/3.3	53/2.10	51/2.00	-	4.1/9
05P00620-0135	31	152/6.0	127/5.0	84/3.3	53/2.10	51/2.00	-	4.5/10
05P00620-0136	36	152/6.0	135/5.3	81/3.2	54/2.10	51/2.00	-	4.1/9

Open Type Reactor Part number	Watt Loss	Dimensions (mm/in)						Weight
		A	B	C	D	E	F	kg/lb
05P00620-0137	43	152/6.0	135/5.3	89/3.5	63/2.48	51/2.00	-	5.5/12
05P00620-0138	52	183/7.2	147/5.8	89/3.5	60/2.35	76/3.00	-	6.4/14
05P00620-0139	54	183/7.2	147/5.8	102/4.0	70/2.75	76/3.00	-	7.3/16
05P00620-0140	54	229/9.0	188/7.4	119/4.7	80/3.16	76/3.00	-	10/23
05P00620-0142	67	229/9.0	178/7.0	135/5.3	80/3.16	76/3.00	-	12/27
05P00620-0143	82	229/9	183/7.2	160/6.3	88/3.47	92/3.63	-	20/43
05P00620-0144	86	229/9	183/7.2	165/6.5	88/3.47	92/3.63	-	23/51
05P00620-0145	84	229/9	185/7.3	173/6.8	93/3.66	92/3.63	-	23/51
05P00620-0147	231	274/10.8	216/8.5	229/9	131/5.16	117/4.60	-	48/106
05P00620-0148	264	274/10.8	229/9	254/10	149/5.88	117/4.60	-	57/125
URX000083	48	183/7.2	147/5.8	89/3.5	60/2.35	76/3.00	-	5.0/11
URX000085	94	229/9	185/7.3	165/6.5	88/3.46	92/3.62	-	21/47
URX000175	154	243.8/9.6	177.8/7	205.7/8.1	106/4.2	92/3.63	-	21.3/47
URX000176	231	274.3/10.8	215.9/8.5	193/7.6	131/5.2	117/4.6	-	36.3/80
URX000179	264	274.3/10.8	213.4/8.4	226.1/8.9	149/5.9	117/4.6	-	46.3/102
URX000181	213	280/11	214/8.5	219/8.6	131/5.2	117/4.6	-	38/84
URX000182	571	363.2/14.3	281.9/11.1	238.8/9.4	172/6.8	117/4.6	-	53.5/118
URX000284	7.8	114/4.5	94/3.7	38/1.5	0/0	102/4	-	0.7/1.6
URX000285	10.1	114/4.5	94/3.7	38/1.5	0/0	102/4	-	0.7/1.6
URX000286	11.9	114/4.5	94/3.7	38/1.5	0/0	102/4	-	0.8/1.7
URX000287	6.9	114/4.5	94/3.7	38/1.5	0/0	102/4	-	0.7/1.5
URX000288	10.9	114/4.5	94/3.7	38/1.5	0/0	102/4	-	0.7/1.6
URX000289	15	114/4.5	94/3.7	38/1.5	0/0	102/4	-	0.7/1.6
URX000292	14.3	114/4.5	94/3.7	38/1.5	0/0	102/4	-	0.7/1.6
URX000293	19.6	114/4.5	94/3.7	38/1.5	0/0	102/4	-	0.8/1.7
URX000295	12.3	114/4.5	94/3.7	38/1.5	0/0	102/4	-	0.7/1.6
URX000296	19.6	114/4.5	94/3.7	38/1.5	0/0	102/4	-	0.7/1.6
URX000297	26.5	112/4.4	127/5	71/2.8	51/2	36/1.4	-	1.2/2.7
URX000299	13.8	114/4.5	94/3.7	38/1.5	0/0	102/4	-	0.8/1.7
URX000300	23	114/4.5	94/3.7	38/1.5	0/0	102/4	-	0.8/1.8
URX000301	37.5	112/4.4	127/5	71/2.8	51/2	36/1.4	-	1.3/2.8
URX000303	19.2	114/4.5	94/3.7	38/1.5	0/0	102/4	-	0.8/1.8
URX000304	37.2	112/4.4	127/5	71/2.8	51/2	36/1.4	-	1.3/2.8
URX000305	47.8	112/4.4	127/5	79/3.1	53/2.1	36/1.4	-	1.9/4.1
URX000306	53.8	112/4.4	127/5	79/3.1	53/2.1	36/1.4	-	1.9/4.2
URX000307	26.8	112/4.4	127/5	71/2.8	51/2	36/1.4	-	1.2/2.7
URX000308	40.9	112/4.4	127/5	79/3.1	53/2.1	36/1.4	-	1.9/4.2
URX000309	54.4	112/4.4	127/5	89/3.5	66/2.6	36/1.4	-	2.4/5.3
URX000311	32.7	112/4.4	135/5.3	71/2.8	51/2	36/1.4	-	1.3/2.8
URX000312	48.2	112/4.4	127/5	79/3.1	53/2.1	36/1.4	-	2/4.3

Open Type Reactor Part number	Watt Loss	Dimensions (mm/in)						Weight
		A	B	C	D	E	F	kg/lb
URX000313	60.6	152/6	147/5.8	74/2.9	53/2.1	51/2	-	3.2/7.1
URX000315	38.3	112/4.4	135/5.3	84/3.3	61/2.4	36/1.4	-	1.9/4.2
URX000316	57.4	152/6	155/6.1	74/2.9	0/0	102/4	-	3.3/7.2
URX000317	73.5	152/6	155/6.1	84/3.3	0/0	102/4	-	4.5/10
URX000319	48.2	112/4.4	135/5.3	89/3.5	0/0	102/4	-	2.3/5.1
URX000320	66.8	152/6	155/6.1	84/3.3	0/0	102/4	-	4.3/9.5
URX000321	93.8	152/6	155/6.1	84/3.3	0/0	102/4	-	4.7/10.4
URX000324	102	183/7.2	152/6	95/3.8	0/0	102/4	-	5.9/13
URX000325	121	183/7.2	152/6	109/4.3	0/0	102/4	-	8.2/18
URX000326	77	183/7.2	152/6	95/3.75	0/0	102/4	-	5.9/13
URX000327	99	183/7.2	152/6	109/4.3	0/0	102/4	-	7.7/17
URX000328	179	229/9	211/8.3	122/4.8	0/0	102/4	108/4.26	10.9/24
URX000330	109	229/9	211/8.3	130/5.1	0/0	102/4	-	9.1/20
URX000332	87	183/7.2	152/6	102/4	0/0	102/4	-	8.2/18
URX000333	105	183/7.2	152/6	109/4.3	0/0	102/4	-	43395
URX000335	119	183/7.2	152/6	109/4.3	0/0	102/4	-	8.6/19
URX000336	155	229/9	178/7	165/6.5	0/0	102/4	108/4.26	11.8/26
URX000338	94	183/7.2	152/6	165/6.5	70/2.75	76/3	108/4.26	43395
URX000339	200	229/9	178/7	178/7	82/3.24	76/3	108/4.26	12.7/28
URX000341	132	235/9.25	191/7.5	171/6.75	83/3.25	76/3	108/4.26	11.8/26
URX000342	152	235/9.25	191/7.5	171/6.75	95/3.75	76/3	108/4.26	16.8/37
URX000344	110	235/9.25	191/7.5	171/6.75	95/3.75	76/3	108/4.26	15.4/34
URX000345	195	235/9.25	191/7.5	210/8.25	121/4.75	76/3	108/4.26	22.2/49
URX000347	159	235/9.25	191/7.5	178/7	10/0.375	76/3	108/4.26	15.4/34
URX000348	224	235/9.25	191/7.5	210/8.25	121/4.75	76/3	108/4.26	22.2/49
URX000350	275	235/9.25	191/7.5	191/7.5	95/3.75	76/3	108/4.26	15.9/35
URX000351	284	235/9.25	191/7.5	216/8.5	121/4.75	76/3	108/4.26	24.9/55
URX000354	383	274/10.8	222/8.75	216/8.5	136/5.37	92/3.63	142/5.58	34.5/76
URX000355	494	274/10.8	213/8.4	277/10.9	188/7.4	91/3.6	142/5.6	49/108
URX000356	333	229/9	222/8.75	241/9.5	136/5.37	92/3.63	142/5.58	35.4/78
URX000357	531	229/9	222/8.75	292/11.5	174/6.87	92/3.63	142/5.58	44.4/98
URX000360	496	229/9	222/8.75	305/12	162/6.37	92/3.63	142/5.58	53.5/118
URX000363	747	366/14.4	292/11.5	318/12.5	206/8.12	117/4.6	150/5.9	65.3/144
URX000366	838	366/14.4	292/11.5	318/12.5	194/7.62	117/4.6	183/7.2	81.2/179
URX000586	168	229/9	191/7.5	211/8.3	112/4.41	92/3.63	-	31/67
URX000587	224	274/10.8	229/9	277/8.3	131/5.16	117/4.60	-	50/110
URX000588	231	274/10.8	254/10	254/10.0	131/5.16	117/4.60	-	46/100

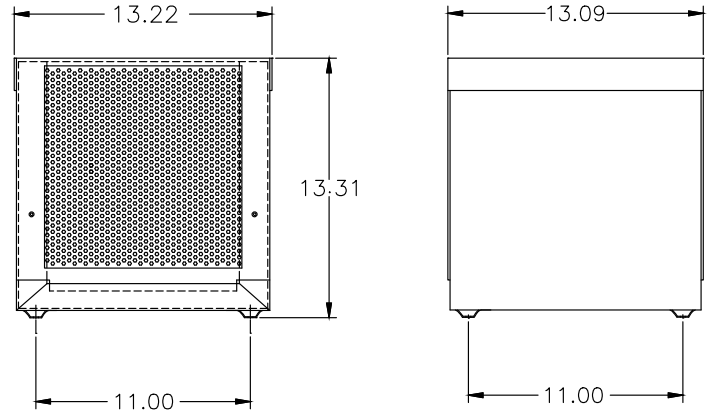
AC Enclosed Reactor Dimensions

Figure 16: CAB-8



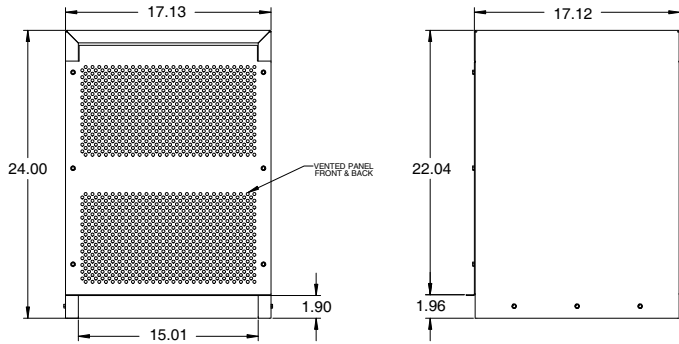
UNITS: INCHES

Figure 17: CAB-13V



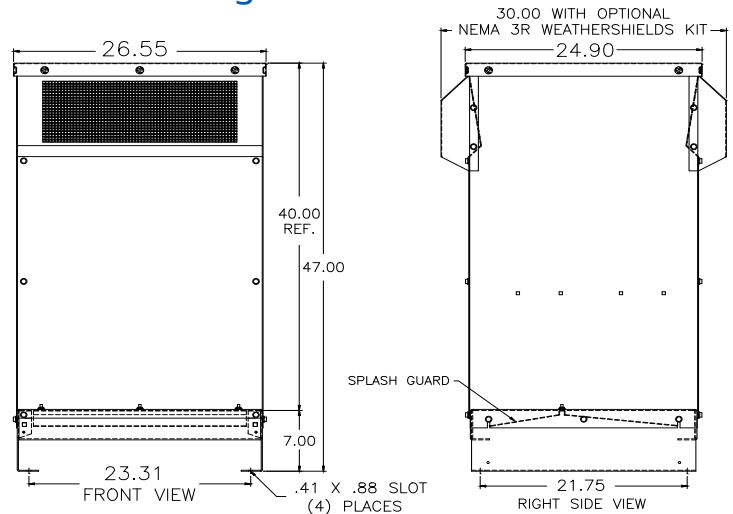
UNITS: INCHES

Figure 18: CAB-17V



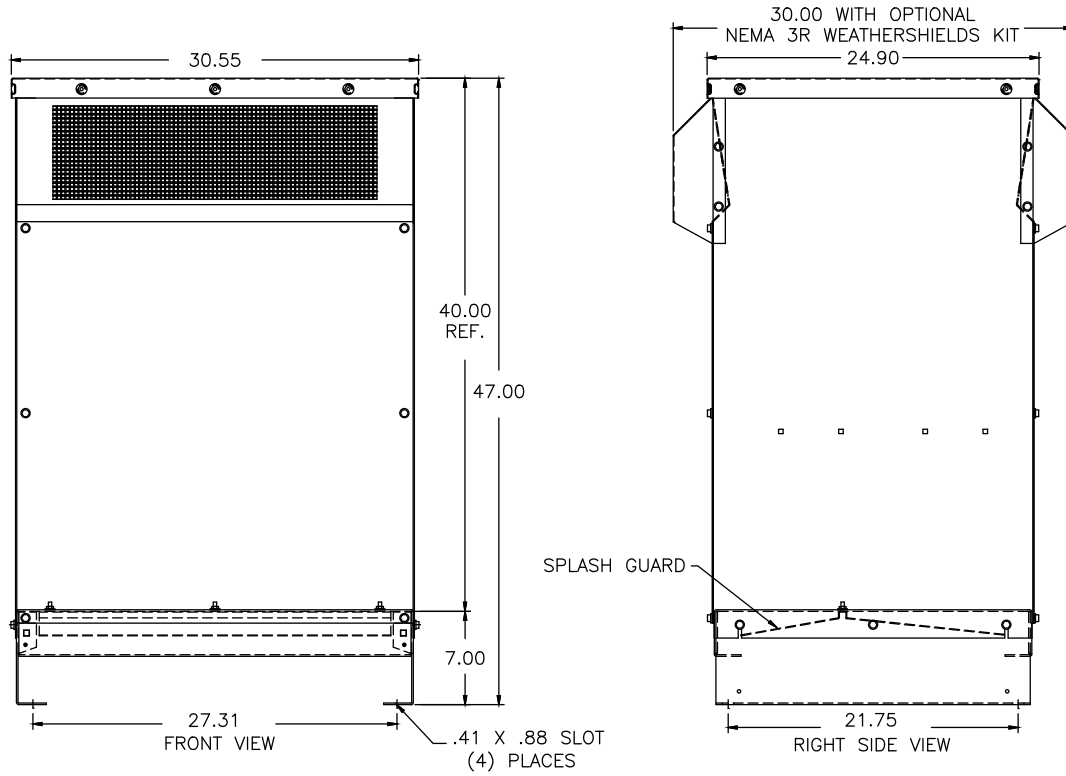
UNITS: INCHES

Figure 19: CAB-26C



UNITS: INCHES

Figure 20: CAB-30B



UNITS: INCHES

Table 26: AC Input/Output Enclosed Reactor Specifications

Enclosed Type 1 Reactor Part number	Cabinet Reference (Figure)	Weight
		kg/lb
05P00620-0015	16	5/11
05P00620-0016		5/11
05P00620-0020		5/11
05P00620-0021		5/11
05P00620-0022		5/12
05P00620-0027		6/14
05P00620-0028		7/15
05P00620-0029		8/18
05P00620-0032		7/16
05P00620-0033		8/17
05P00620-0036		7/16
05P00620-0037		9/19

Enclosed Type 1 Reactor Part number	Cabinet Reference (Figure)	Weight
		kg/lb
05P00620-0041	17	13/23
05P00620-0042		15/32
05P00620-0046		15/32
05P00620-0047		16/34
05P00620-0050		19/41
05P00620-0051		21/46
05P00620-0055		20/45
05P00620-0058		20/43
05P00620-0059		23/51
05P00620-0062		32/51
05P00620-0066		21/47
05P00620-0067		28/61
05P00620-0073		31/68
05P00620-0077		25/56
05P00620-0078		33/72
05P00620-0083		18
05P00620-0088	59/129	
05P00620-0092	66/145	
05P00620-0096	19	119/262
05P00620-0100		145/319
05P00620-0104	20	158/349
URX000204	17	21/47
URX000206		27/59
URX000248		30/65
URX000249	18	49/107
URX000250		50/111
URX000409	16	3.9/8.6
URX000410		3.9/8.7
URX000411	16	4.0/8.8
URX000412		5.1/11.2
URX000413		4.4/9.7
URX000414		5.1/11.2
URX000415		4.4/9.8
URX000416		5.1/11.3
URX000417		6.4/14.1

Enclosed Type 1 Reactor Part number	Cabinet Reference (Figure)	Weight	
		kg/lb	
URX000418	17	10/22.2	
URX000419		11/25.2	
URX000420		10/23.1	
URX000421		12/27.5	
URX000423		14/31	
URX000424		14/31	
URX000425		16/35	
URX000426		16/36	
URX000427		17/37	
URX000428		14/40	
URX000429		20/44	
URX000430		24/52	
URX000431		18	28/61
URX000432			28/62
URX000434	19	101/222	
URX000502	16	3.9/8.6	
URX000503		4.0/8.8	
URX000504		4.4/9.8	
URX000505		5.6/12.3	
URX000551		3.9/8.6	
URX000552		4.4/9.8	
URX000553	17	17/38	
URX000554		18/40	
URX000555		20/44	
URX000556		21/46	
URX000557		25/55	
URX000558		30/67	
URX000559	18	34/76	
URX000560		37/82	
URX000561	19	100/220	
URX000562		110/242	
URX000563		119/262	
URX000564		131/288	
URX000565	19	147/323	
URX000568	17	13/28	

Enclosed Type 1 Reactor Part number	Cabinet Reference (Figure)	Weight
		kg/lb
URX000569	16	3.9/8.7
URX000570		3.9/8.6
URX000571		3.9/8.6
URX000572		3.9/8.7
URX000573		4.4/9.7
URX000574		5/11.1
URX000575	17	13/28.4
URX000576		16/36
URX000577		19/42
URX000583	16	3.9/8.5
URX000584		3.9/8.6
URX000585		3.9/8.6

Dynamic Braking Options



Additional Information	
Braking Resistor Specifications	Braking Resistor Drawings
Braking Connection Diagrams	

10% Dynamic Braking Options

Dynamic Braking Resistor, 10% Duty Cycle - are rated for 10% duty cycle over a 100 second interval. The resistors will achieve a minimum 150% peak braking torque for heavy duty horsepower ratings and a minimum of 100% peak braking power for normal duty horsepower ratings. These resistors are designed for separate panel mounting.

Table 27: 240 Volt 10% Dynamic Braking Options

Normal Duty HP	Heavy Duty HP	Catalog Code GA80U . .	10% Dynamic Braking Option (maximum 10 second on-time)							
			Transistor Module		Resistor		Resistor Specifications			
			Part Number	Quantity	Part Number	Quantity	Resistance	Watts	Enclosure	
0.75	0.75	2004. . .	Built-in			URS000275	1	170	76	GCE1
1.5	1	2006. . .				URS000276	1	125	101	GCE1
2	1.5	2008. . .				URS000277	1	85	151	GCE1
3	2	2010. . .				URS000278	1	63	201	GCE1
4	3	2012. . .				URS000279	1	42	302	GCE1
5	4	2018. . .				URS000368	1	34	373	GCE1
7.5	5	2021. . .				URS000280	1	25	504	GCE2
10	7.5	2030. . .				URS000269	1	19	671	GCE2
15	10	2042. . .				URS000282	1	12.6	1007	GCE3
20	15	2056. . .				URS000369	1	9.2	1492	GCE4
25	20	2070. . .				URS000370	1	6.9	1865	GCE6
30	25	2082. . . ¹				URS000371	1	6.6	2238	GCE6
40	30	2110. . .				URS000372	1	4.6	2984	GCE6
50	40	2138. . . ¹				URS000373	1	4.2	3730	GCE9

Normal Duty HP	Heavy Duty HP	Catalog Code GA80U . .	10% Dynamic Braking Option (maximum 10 second on-time)						
			Transistor Module		Resistor		Resistor Specifications		
			Part Number	Quantity	Part Number	Quantity	Resistance	Watts	Enclosure
60	50	2169. . .	CDBR-21100D	1	URS000100	1	2.1	5,250	GCE9
75	60	2211. . .	CDBR-21100D	1	URS000100	1	2.1	5,250	GCE9
100	75	2257. . .	CDBR-21100D	1	URS000096	1	1.6	6,553	GCE12
125	100	2313. . .	CDBR-21100D	1	URS000096	1	1.6	6,554	GCE12
			CDBR-20220D	1	URS000128	1	6.8	1,740	GCE6
150	125	2360. . .	CDBR-21100D	1	URS000096	1	1.6	6,554	GCE12
			CDBR-20220D	2	URS000129	1	2 x 6.8	2 x 1,740	GCE2
150	150	2415. . .	CDBR-21100D	2	URS000097	1	2 x 1.6	2 x 6,553	GCE24

1. The resistor used for models 2082 & 2138 achieve a minimum of 125% peak braking torque for heavy duty horsepower ratings and a minimum of 100% peak braking power for normal duty horsepower ratings.

Table 28: 480 Volt 10% Dynamic Braking Options

Normal Duty HP	Heavy Duty HP	Catalog Code GA80U . .	10% Dynamic Braking Option (maximum 10 second on-time)						
			Transistor Module		Resistor		Resistor Specifications		
			Part Number	Quantity	Part Number	Quantity	Resistance	Watts	Enclosure
1	0.75	4002. . .	Built-in		URS000374	1	740	76	GCE1
2	1.5	4004. . .		URS000241	1	375	134	GCE1	
3	2	4005. . .		URS000253	1	250	201	GCE1	
4	3	4007. . .		URS000254	1	170	302	GCE1	
5	4	4009. . .		URS000375	1	138	373	GCE1	
7.5	5	4012. . .		URS000255	1	100	504	GCE2	
10	7.5	4018. . .		URS000256	1	67	755	GCE3	
15	10	4023. . .		URS000257	1	50	1,007	GCE3	
20	15	4031. . .		URS000258	1	34	1,511	GCE4	
25	20	4038. . .		URS000259	1	25	1,865	GCE6	
30	25	4044. . .		URS000376	1	22.2	2,238	GCE6	
40	30	4060. . .		URS000377	1	18.5	2,984	GCE8	
50	40	4075. . .		URS000378	1	13.9	3,730	GCE6	
60	50	4089. . .		URS000379	1	11.1	4,476	GCE9	
75	60	4103. . .		URS000380	1	9.2	5,595	GCE12	
100	75	4140. . .		URS000381	1	7.4	7,460	GCE15	
125	100	4168. . .		URS000382	1	5.6	9,325	GCE18	
150	125	4208. . .		CDBR-42200D	1	URS000119	1	4.2	10,500
200	150	4250. . .	CDBR-42200D	1	URS000165	1	3.2	13,107	GCE24

Normal Duty HP	Heavy Duty HP	Catalog Code GA80U ..	10% Dynamic Braking Option (maximum 10 second on-time)						
			Transistor Module		Resistor		Resistor Specifications		
			Part Number	Quantity	Part Number	Quantity	Resistance	Watts	Enclosure
250	200	4302. . .	CDBR-42200D	1	URS000165	1	3.2	13,107	GCE24
			CDBR-40450D	1	URS000142	1	13.6	3,481	GCE6
300	250	4371. . .	CDBR-42200D	1	URS000165	1	3.2	13,107	GCE24
			CDBR-40450D	2	URS000143	1	2 x 13.6	2 x 3481	GCE18
350	300	4414. . .	CDBR-42200D	2	URS000166	1	2 x 3.2	2 x 13,107	ED3
400	350	4477. . .	CDBR-42200D	2	URS000166	1	2 x 3.2	2 x 13,107	ED3
450	400	4568. . .	CDBR-42200D	2	URS000120	1	2 x 4.2	2 x 10,500	ED2
			CDBR-42200D	1	URS000165	1	3.2	13,107	GCE24
500	450	4605. . .	CDBR-42200D	3	URS000167	1	3 x 3.2	3 x 13,107	ED4
600	500	4720. . .	CDBR-42200D	3	URS000167	1	3 x 3.2	3 x 13,107	ED4

Table 29: 600 Volt 10% Dynamic Braking Options

Normal Duty HP	Heavy Duty HP	Catalog Code GA80U ..	10% Dynamic Braking Option (maximum 10 second on-time)						
			Transistor Module		Resistor		Resistor Specifications		
			Part Number	Quantity	Part Number	Quantity	Resistance	Watts	Enclosure
300	250	5289. . .	CDBR-53000D	2	URS000125	2	5.2	14,060	GCE24
350	300	5382. . .	CDBR-53000D	2	URS000125	2	5.2	14,060	GCE24
400	350	5382. . .	CDBR-53000D	2	URS000123	1	2 x 4.2	2 x 17,203	ED2
450	400	5412. . .	CDBR-53000D	2	URS000123	1	2 x 4.2	2 x 17,203	ED2
500	450	5472. . .	CDBR-53000D	2	URS000123	1	2 x 4.2	2 x 17,203	ED2
			CDBR-53000D	1	URS000118	1	2 x 4.2	2 x 5,443	GCE18

3% Dynamic Braking Options

3% Duty cycle resistors are rated for a 3% duty cycle at 100 second intervals.

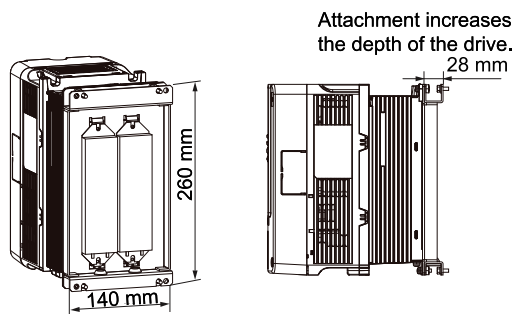
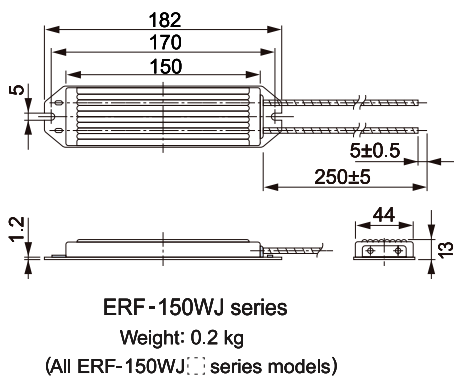


Table 30: 240 Volt 3% Dynamic Braking Options

Normal Duty HP	Heavy Duty HP	Catalog Code GA80U . .	Resistor			
			Part Number	Quantity	Ohms (each)	Watts (each)
1	0.75	2004 . .	R7506	1	300	150
1.5	1	2006 . .	R7505	1	200	150
2	1.5	2008 . .	R7504	1	100	150
3	2	2010 . .	R7504	1	100	150
4	3	2012 . .	R7510	1	62	150
5	4	2018 . .	R7510	1	62	150
7.5	5	2021 . .	R7510	2	62	150

These resistors offer approximately 100% peak braking power.

Table 31: 480 Volt 3% Dynamic Braking Options

Normal Duty HP	Heavy Duty HP	Catalog Code GA80U . .	Resistor			
			Part Number	Quantity	Ohms (each)	Watts (each)
1	0.75	4002 . .	R7508	1	750	150
2	1.5	4004 . .	R7507	1	400	150
3	2	4005 . .	R7505	1	200	150
4	3	4007 . .	R7505	1	200	150
5	4	4009 . .	R7505	1	200	150
7.5	5	4012 . .	R7504	1	100	150

These resistors offer approximately 100% peak braking power.

Table 32: Resistor Mounting Adapter

Part Number	Description
900-192-126-001	Mounting bracket for 3% Dynamic Braking Resistors For use with Drive Models 2004ABM - 2042ABM and 4002ABM - 4023ABM



Resistor Mounting Adapter

Dimension Drawings	
DD.GCE.01	DD.ED.01

Figure 21: ED Type Enclosure

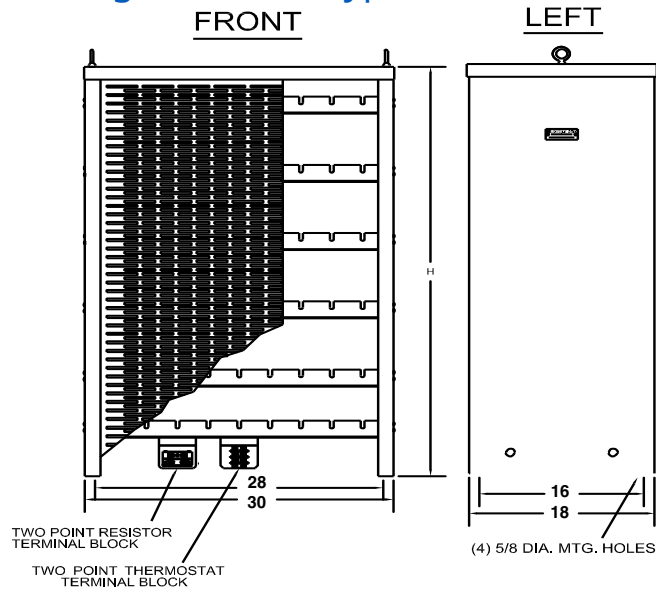


Figure 22: GCE Type Enclosure
FRONT VIEW

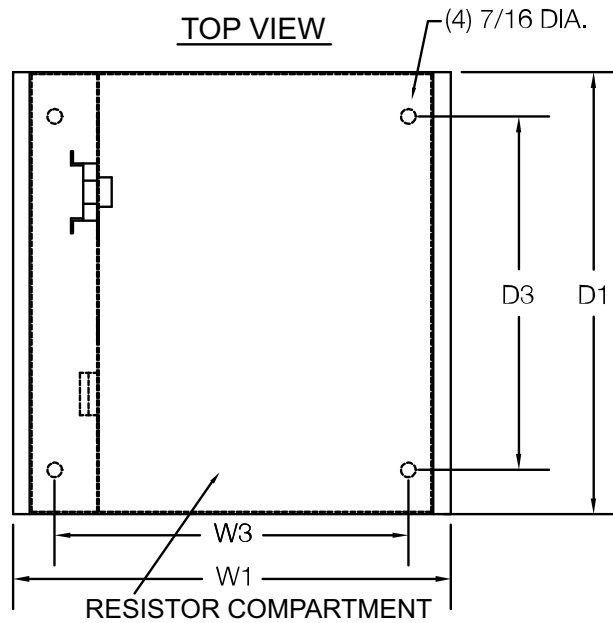
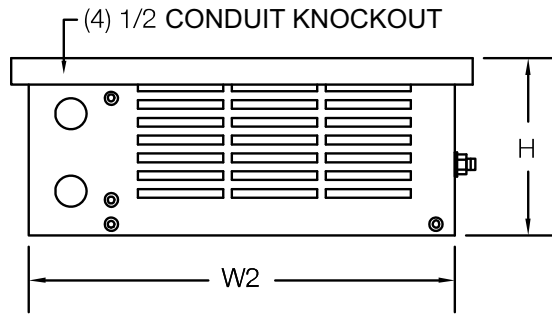


Table 33: ED Type Enclosure Dimensions (Fig. 21)

Model	Dimensions (in)	
	Height	
ED1	10	
ED2	16	
ED3	24	
ED4	32	
ED5	40	
ED6	48	
ED7	56	
ED8	84	
ED9	72	

Table 34: GCE Type Enclosure Dimensions (Fig. 22)

Model	Dimensions (in)						
	W1	W2	W3	D1	D2	D3	H
GCE1	12.5	12	10.5	5.13	5	-	5
GCE2	12.5	12	10.5	7.13	7	4.5	5
GCE3	12.5	12	10.5	10.13	10	7.5	5
GCE4	12.5	12	10.5	13.13	13	10.5	5
GCE5	12.5	12	10.5	16.13	16	13.5	5
GCE6	19.5	19	17.5	10.13	10	7.5	5
GCE8	19.5	19	17.5	13.13	13	10.5	5
GCE9	27	26.5	25	10.13	10	7.5	5
GCE10	19.5	19	17.5	16.13	16	13.5	5
GCE12	27	26.5	25	13.13	13	10.5	5
GCE15	27	26.5	25	10.13	16	13.5	5
GCE18	28.5	28	26.5	10.13	10	7.5	10
GCE24	28.5	28	26.5	13.13	13	10.5	10
GCE30	28.5	28	26.5	16.13	16	13.5	10

Dynamic Braking Transistor Modules

The Dynamic Brake Module is an economical solution for braking applications that do not result in large amounts of annual energy cost. Ratings are available from 22 kW to 220 kW.



Additional Information	
Brake Module Product Page	Brake Module Drawings
Manual	Brochure

Table 35: Brake Modules

Voltage Rating	Model Number	Current Rating (Amps)	Current Rating (Amps Peak) ¹	Power Supply Vdc	Minimum Connectible Resistance (Ohms)	Heat Loss (W)	Enclosure Ratings
240 Vac	CDBR-20220D	20	60	240 to 400 Vdc Peak	6.7	27	IP20
	CDBR-20370D	24	80		5	38	IP20
	CDBR-20550D	40	120		3.8	64	IP00
	CDBR-21100D	80	250		1.6	152	IP00
460 Vac	CDBR-40300D	15	40	460 to 800 Vdc Peak	20	24	IP20
	CDBR-40450D	18	60		13.4	36	IP20
	CDBR-40900D	30	100		8	51	IP00
	CDBR-42200D	80	250		3.2	152	IP00
600 Vac	CDBR-50370D	15	40	607 to 1000 Vdc Peak	23.8	24	IP20
	CDBR-51100D	30	100		9.5	39	IP00
	CDBR-53000D	80	250		3.8	140	IP00

1. Based on 10% duty, maximum 10 seconds.

Table 36: Type 1 Adapters

Voltage Rating	Model Number	Part Number
230 Vac	CDBR-20220D	EZZ022490A
	CDBR-20370D	
	CDBR-20550D	EZZ022490B
	CDBR-21100D	EZZ022490C
460 Vac	CDBR-40300D	EZZ022490A
	CDBR-40450D	
	CDBR-40900D	EZZ022490B
	CDBR-42200D	EZZ022490C
600 Vac	CDBR-50370D	EZZ022490A
	CDBR-51100D	EZZ022490C
	CDBR-53000D	

Figure 23: Open Type Chassis Dimensions

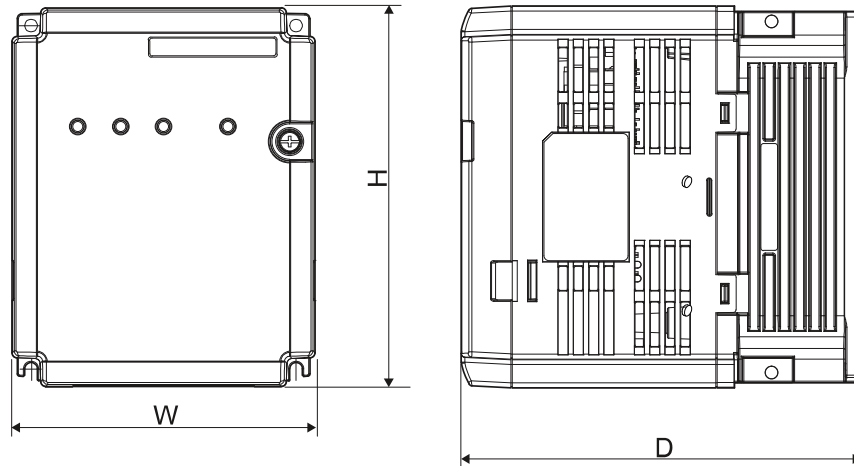


Table 37: Brake Unit (IP20) Dimensions

Model CDBR-	Figure	Dimensions (mm/in)			Weight kg/lb
		W	H	D	
2022D	23	120 /4.72	150/5.91	157/6.18	2/4.4
2037D					
4030D					
4045D					
5037D					

Table 38: Brake Unit (IP00) Dimensions

Model CDBR-	Figure	Dimensions (mm/in)			Weight kg/lb
		W	H	D	
2055D	23	160/6.30	235/9.25	185.9/7.32	5.5/12.13
2110D		175/6.89	294/11.57	200/7.87	7.5/16.53
4090D		160/6.30	235/9.25	185.9/7.32	5.5/12.13
4220D		175/6.89	294/11.57	200/7.87	7.5/16.53
5110D					
5300D					

Figure 24: Type 1 Dimensions

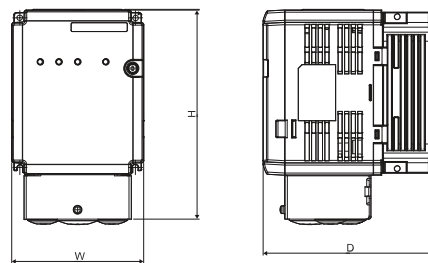


Table 39: Brake Unit (Type 1) Dimensions

Model CDBR-	Figure	Dimensions (mm/in)			Weight kg/lb
		W	H	D	
2022D	24	120/4.72	190/7.48	157/6.18	2.3/5.07
2037D					
2055D		165/6.50	250/9.84	185.9/7.32	5.9/13.01
2110D		180/7.09	367/14.45	200/7.87	8.3/18.30
4030D		120/4.72	190/7.48	157/6.18	2.3/5.07
4045D					
4090D		165/6.50	250/9.84	185.9/7.32	5.9/13.01
4220D		180/7.09	367/14.45	200/7.87	8.3/18.30

R1000 Regenerative Systems



Additional Information		
R1000 Online Resources	Flyer	Manual

- Compatible with all conventional drives having full power access to DC bus
- Rated for 100% power, 25% duty cycle (60 seconds maximum on time), or 80% continuous
- 0.9 Power Factor at full load
- Overload capability of 150% for 30 seconds
- Overcurrent and Overheat Protection

Each R1000 regenerative unit requires the following:

- R1000: The R1000 regenerative module is used to divert energy generated by the motor back onto the line for use by other loads. The energy is directed back onto the line by taking DC voltage from the drive running the motor and converting it into a three phase AC voltage waveform.
- Power Coordination Reactor: The power coordination reactor provides impedance to limit peak current. The power coordination reactor represents minimum impedance required to limit current to levels acceptable to the R1000.
- Fuses and Fuse Holder: Recommended fusing and their corresponding holder(s) is provided for device protection and UL certification.
- Current Suppression Reactor: The current suppression reactor provides impedance to protect the connected drive's input section from peak current that may result from the R1000 IGBT switching section. The current suppression reactor provides isolation from the dv/dt of the R1000 switching section.

Typical Applications

Stopping	Cyclic Loading	Continuous Regeneration
Elevators and Lifts	Presses	Winders
Centrifuges	Dryers	Downhill Conveyors
Saws	Vibratory Equipment	Dynamometers
Large Fans		
Machine Tool Spindles		

Table 40: 240 Volt R1000 Regenerative Systems

Motor Power HP	Catalog Code GA80U . .		R1000 Part Number CIMR-RU_ ^{1 2}	Current Suppression Reactor Part Number	Power Coordination Reactor Part Number	Fuses (Quantity: 3) Part Number	Fuse Holder	
	Normal Duty	Heavy Duty					Part Number	Quantity
5	2012. . .	2018. . .	2A03P5FAA ¹	05P00620-0134	05P00620-0136	FU-002031	FU-002055	1
6	2018. . .	2021. . .	2A0005FAA ¹	URX000083	05P00620-0138	FU-002031	FU-002055	
7.5	2021. . .	2030. . .						
10	2030. . .	2042. . .	2A0007FAA ¹	URX000083	05P00620-0044	FU-002032	FU-002055	3
15	2042. . .	2056. . .	2A0010FAA ¹	05P00620-0044	05P00620-0140	UFU000153	FU-002082	
20	2056. . .	2070. . .	2A0014FAA ¹	05P00620-0141	05P00620-0141	UFU000479	FU-002082	
25	2070. . .	2082. . .	2A0017FAA ¹	05P00620-0143	05P00620-0143	UFU000154	FU-002083	
30	2082. . .	2100. . .	2A0020FAA ¹	URX000085	05P00620-0143	UFU000155	FU-002083	
40	2110. . .	2138. . .	2A 0028FAA ¹	URX000085	05P00620-0013	UFU000156	FU-002083	
50	2138. . .	2169. . .	2A0035AAA ²	05P00620-0064	05P00620-0070	UFU000156	FU-002083	
60	2169. . .	2211. . .	2A0053AAA ²	URX000086	05P00620-0146	UFU000494	FU-002083	
75	2211. . .	2257. . .						
100	2257. . .	2313. . .	2A0073AAA ²	URX000175	URX000175	UFU000375	UFU000378	
125	2313. . .	2360. . .	2A0105AAA ²	URX000178	URX000181	UFU000376	UFU000122	
150	2360. . .	2415. . .						

1. Type 1 / IP20 enclosure is standard for CIMR-RU2A03P5FAA through CIMR-RU2A0028FAA

2. Open-Type / IP00 enclosure is standard for CIMR-RU2A0035AAA through CIMR-RU2A0105AAA

Table 41: 480 Volt R1000 Regenerative Systems

Motor Power HP	Catalog Code GA80U . .		R1000 Part Number CIMR-RU_ ^{1 2}	Current Suppression Reactor Part Number	Power Coordination Reactor Part Number	Fuses (Quantity: 3) Part Number	Fuse Holder	
	Normal Duty	Heavy Duty					Part Number	Quantity
5	4009. . .	4012. . .	4A03P5FAA ¹	05P00620-0025	05P00620-0133	FU-002030	FU-002055	1
7.5	4012. . .	4018. . .	4A0005FAA ¹	05P00620-0133	05P00620-0135	FU-002030	FU-002055	
10	4018. . .	4023. . .	4A0007FAA ¹	05P00620-0135	05P00620-0137	FU-002030	FU-002055	
15	4023. . .	4031. . .	4A0010FAA ¹	05P00620-0137	05P00620-0138	FU-002032	FU-002055	
20	4031. . .	4038. . .	4A0014FAA ¹	URX000083	05P00620-0139	FU-002032	FU-002082	
25	4038. . .	4044. . .	4A0017FAA ¹	05P00620-0044	05P00620-0139	FU-000783	FU-002082	3
30	4044. . .	4060. . .	4A0020FAA ¹	05P00620-0049	05P00620-0049	FU-000783	FU-002082	
40	4060. . .	4075. . .	4A0028FAA ¹	05P00620-0142	05P00620-0142	UFU000480	FU-002082	
50	4075. . .	4089. . .	4A0035AAA ²	05P00620-0144	05P00620-0144	FU-000806	FU-002084	
60	4089. . .	4103. . .	4A0043AAA ²	05P00620-0143	05P00620-0144	FU-000807	FU-002084	
75	4103. . .	4140. . .	4A0053AAA ²	URX000085	05P00620-0145	FU-000809	FU-002084	
100	4140. . .	4168. . .	4A0073AAA ²	05P00620-0064	05P00620-0070	FU-000809	FU-002084	
125	4168. . .	4208. . .	4A0105AAA ²	05P00620-0075	05P00620-0146	UFU000374	UFU000378	3
150	4208. . .	4250. . .						
200	4250. . .	4302. . .	4A0150AAA ²	URX000175	URX000176	UFU000375	UFU000378	
250	4302. . .	4371. . .						
300	4371. . .	4414. . .	4A0210AAA ²	URX000181	URX000182	UFU000376	UFU000122	
350	4414. . .	4477. . .						
400	4477. . .	4568. . .	4A0300AAA ²	URX000088	05P00620-0094	UFU000377	UFU000122	
450	4568. . .	4605. . .						
500	4605. . .	4720. . .						

1. Type 1/ IP20 enclosure is standard for CIMR-RU4A03P5FAA through CIMR-RU4A0028FAA
 2. Open-Type / IP00 enclosure is standard for CIMR-RU4A0035AAA through CIMR-RU4A0300AAA

Table 42: R1000 Reactor Dimensions (Open Type)

Reactor Part Number	Current Rating (A)	Inductance (mH)	Watt Loss	Dimensions					Weight kg/lb
				A	B	C	D	E	
				mm/in	mm/in	mm/in	mm/in	mm/in	
05P00620-0013	130	0.20	180	229/9	183/7.2	172/6.8	93/3.66	92/3.63	28/62
05P00620-0025	8	5.0	25.3	152/6.0	122/4.8	86/3.4	67/2.62	51/2.00	5.0/11
05P00620-0044	35	0.4	49	183/7.2	147/5.8	102/4.0	66/2.60	76/3.00	6.4/14
05P00620-0049	45	0.7	62	229/9.0	188/7.4	119/4.7	80/3.16	76/3.00	13/28
05P00620-0064	130	0.10	108	229/9.0	179/7.1	118/4.7	80/3.16	76/3.00	13/29
05P00620-0070	160	0.150	149	274/10.8	277/8.3	152/6	88/3.47	92/3.63	23/51
05P00620-0075	200	0.055	124	229/9	191/7.5	185/7.3	106/4.16	92/3.63	22/49
05P00620-0094	500	0.050	340	366/14.4	292/11.5	292/11.5	172/6.76	117/4.60	82/180
05P00620-0133	8	3.0	29	152/6.0	122/4.8	76/3.0	53/2.10	51/2.00	3.6/8
05P00620-0134	12	1.25	26	152/6.0	127/5.0	84/3.3	53/2.10	51/2.00	4.1/9
05P00620-0135	12	2.5	31	152/6.0	127/5.0	84/3.3	53/2.10	51/2.00	4.5/10
05P00620-0136	18	0.8	36	152/6.0	135/5.3	81/3.2	54/2.10	51/2.00	4.1/9
05P00620-0137	18	1.5	43	152/6.0	135/5.3	89/3.5	63/2.48	51/2.00	5.5/12
05P00620-0138	25	1.2	52	183/7.2	147/5.8	89/3.5	60/2.35	76/3.00	6.4/14
05P00620-0139	35	0.8	54	183/7.2	147/5.8	102/4.0	70/2.75	76/3.00	7.3/16
05P00620-0140	45	0.3	54	229/9.0	188/7.4	119/4.7	80/3.16	76/3.00	10/23
05P00620-0141	55	0.25	64	229/9.0	185/7.3	135/5.3	80/3.16	76/3.00	11/24
05P00620-0142	55	0.50	67	229/9.0	178/7.0	135/5.3	80/3.16	76/3.00	12/27
05P00620-0143	80	0.20	82	229/9	183/7.2	160/6.3	88/3.47	92/3.63	20/43
05P00620-0144	80	0.40	86	229/9	183/7.2	165/6.5	88/3.47	92/3.63	23/51
05P00620-0145	100	0.30	84	229/9	185/7.3	173/6.8	93/3.66	92/3.63	23/51
05P00620-0146	200	0.110	168	229/9	191/7.5	211/8.3	112/4.41	92/3.63	31/67
URX000083	25	0.5	48	183/7.2	147/5.8	89/3.5	60/2.35	76/3.00	5.0/11
URX000085	100	0.15	94	229/9	185/7.3	165/6.5	88/3.46	92/3.62	21/47
URX000086	160	0.230	138	292/11.5	216/8.5	229/9.0	118/4.66	92/3.63	33/72
URX000088	500	0.025	266	274/10.8	229/9	267/10.5	140/5.50	117/4.60	55/120
URX000175	250	0.045	154	229/9	191/7.5	229/9	106/4.16	92/3.63	31/68
URX000176	250	0.090	231	274/10.8	216/8.5	229/9	131/5.16	117/4.60	48/106
URX000178	320	0.040	224	274/10.8	229/9	277/8.3	131/5.16	117/4.60	50/110
URX000181	400	0.030	231	274/10.8	254/10	254/10.0	131/5.16	117/4.60	46/100
URX000182	400	0.060	333	381/15	286/11.3	292/11.5	172/6.76	117/4.60	71/155

R1000 External Heatsink Kits

External Heatsink Kit: Allows drives to be mounted with the drive’s heatsink external (Type 1 backside) to the enclosure. Option kit for customer mounting. Larger standard drives include brackets.

Table 43: R1000 External Heatsink Kit for Type 1 240 Volt Models

Rated Input Voltage	Drive Model Number CIMR-RU2A . .	Part Number
200 to 240 Volt Three-Phase	03P5	EZZ020800B
	0005	
	0007	
	0010	EZZ020800C
	0014	
	0017	EZZ020800D
	0020	
	0028	
	0035	Required brackets are included with the drive.
	0053	
	0073	
	0105	

Table 44: R1000 External Heatsink Kits for Type 1 for 480 Volt Models

Rated Input Voltage	Drive Model Number CIMR-RU4A . .	Part Number
400 to 480 Volt Three-Phase	03P5	EZZ020800B
	0005	
	0007	
	0010	EZZ020800C
	0014	
	0017	EZZ020800D
	0020	
	0028	
	0035	Required brackets are included with the drive.
	0053	
	0073	
	0105	
	0150	
	0210	
	0300	

Single Phase Converter



Yaskawa’s industry leading Single Phase Converter (SPC) cleanly converts single-phase AC power to DC power for Yaskawa variable frequency drives. The SPC combines Yaskawa reliability and drive technology with motor control solutions for businesses in remote areas. The SPC eliminates the need to oversize variable frequency drives for single-phase applications while reducing distortion to less than 10% iTHD. With lower input harmonics and near unity power factor, the SPC also eliminates the need to significantly oversize transformers in single-phase applications, reducing overall installation costs. The Single Phase Converter addresses these common issues with AC motors powered from single-phase input:

- Limited single-phase motor options.
- Inefficient use of power due to choppy current harmonics.
- Increased maintenance of rotating parts and tuned circuits.

Item	Specification
Power Range	230 Vac: 20 - 60 HP
	460 Vac: 30 - 125 HP
Input Voltage Tolerance	230-240 Vac, Single-Phase
	460-480 Vac, Single-Phase
	Tolerance -5/+10 % ¹
Power Factor	0.99
Ambient Operating Temperature	-10 to 50 °C (14 to 122 °F) Open Chassis
Global Certifications	UL, RoHS
User Interface	4 LED indicators: Power, Ready, Run, Fault

1. -10 % Minimum input voltage for 60 seconds at rated power.

Additional Information	
Single Phase Converter Specifications	Manual
	Drawings

Table 45: Single Phase Converters - 20 to 60 HP

Power Supply	System Kit Number ¹	Rated Power HP ²	Input Current (Amps)	Output Current (Amps)	Height inches (mm)	Width inches (mm)	Depth inches (mm)
230 - 240 Vac	SPBC-240-20HP	20	79	57	15 (381)	10 (254)	10 (254)
	SPBC-240-30HP	30	116	84	15 (381)	10 (254)	10 (254)
	SPBC-240-40HP	40	154	112	17 (432)	12 (305)	10.5 (267)
	SPBC-240-50HP	50	191	109	25 (636)	12.2 (310)	11.4 (290)
	SPBC-240-60HP	60	228	166	25 (636)	12.2 (310)	11.4 (290)
460 - 480 Vac	SPBC-480-30HP	30	58	42	15 (381)	10 (254)	10 (254)
	SPBC-480-40HP	40	77	56	15 (381)	10 (254)	10 (254)
	SPBC-480-50HP	50	96	69	17 (432)	12 (305)	10.5 (267)
	SPBC-480-60HP	60	114	83	17 (432)	12 (305)	10.5 (267)
	SPBC-480-75HP	75	142	103	25 (636)	12.2 (310)	11.4 (290)
	SPBC-480-125HP	125 (93)	234	170	25 (636)	12.2 (310)	14.7 (375)

1. The kit includes open type/protected chassis Single Phase Converter and DC link choke.
2. The larger power Single Phase Converter unit may be used on lower power motors.

Drive Derating

Single-Phase Derating

The GA800 is optimized for use on three-phase power, but may be derated for use in single-phase to three-phase conversion applications. Use the table below to select the appropriate drive model based on the AC line and motor voltage.

Table 46: 240 Volt Single-Phase Drive Derating

Drive Catalog Code GA80U . . . ^{1 2}	No Reactor	With Reactor	AC Input Type		DC Bus Type	
	Drive Output Capacity	Drive Output Capacity	Open	Type 1 Enclosed	Open	Type 1 Enclosed
	HP	HP	Part Number	Part Number	Part Number	Part Number
2004 . . .	1/3	1/2	URX000303	URX000411	URX000043	Not Available
2006 . . .	1/2	3/4	URX000303	URX000411	URX000043	
2008 . . .	3/4	1	URX000307	URX000413	05P00620-0113	URX000435
2010 . . .	1	1.5	URX000316	URX000419	05P00620-0115	URX000259
2012 . . .	1.5	2	URX000315	URX000418	05P00620-0115	URX000259
2018 . . .	2	3	URX000319	URX000420	URX000050	Not available
2021 . . .	2	3	URX000323	URX000422	05P00620-0120	URX000261
2030 . . .	2	5	URX000323	URX000422	05P00620-0120	URX000261
2042 . . .	3	7.5	URX000326	URX000424	05P00620-0123	URX000436
2056 . . .	3	7.5	URX000326	URX000424	URX000059	URX000262
2070 . . .	5	10	URX000332	URX000426	URX000063	URX000264
2082 . . .	7.5	10	URX000338	URX000428	URX000072	URX000266
2110 . . .	10	15	URX000338	URX000428	Drives 2110 and larger include integrated DC bus reactor	
2138 . . .	10	10	URX000338	URX000428		
2169 . . .	15	20	URX000344	URX000430		
2211 . . .	20	25	URX000347	URX000431		
2257 . . .	30	30	Do not use reactor for this rating			
2313 . . .	30	40	URX000353	URX000433		
2360 . . .	40	50	URX000353	URX000433		
2415 . . .	50	60	URX000356	URX000434		

Table 47: 480 Volt Single-Phase Drive Derating

Drive Catalog Code GA80U . . . ^{1 2}	No Reactor	With Reactor	AC Input Type		DC Bus Type	
	Drive Output Capacity	Drive Output Capacity	Open	Type 1 Enclosed	Open	Type 1 Enclosed
	HP	HP	Part Number	Part Number	Part Number	Part Number
4002 . . .	1/3	1/2	URX000295	URX000409	05P00608-3007	Not Available
4004 . . .	3/4	1	URX000303	URX000411	05P00608-3007	
4005 . . .	1	1.5	URX000303	URX000411	05P00608-3007	
4007 . . .	1	2	URX000308	URX000414	05P00652-0213	URX000209
4009 . . .	2	3	URX000312	URX000416	05P00652-0113	URX000435
4012 . . .	2	3	URX000316	URX000419	05P00620-0115	URX000259
4018 . . .	3	5	URX000316	URX000419	URX000052	URX000211
4023 . . .	3	5	URX000316	URX000419	URX000052	URX000211
4031 . . .	3	10	URX000324	URX000423	URX000055	URX000223
4038 . . .	5	10	URX000326	URX000424	05P00620-0123	URX000436
4044 . . .	5	15	URX000330	URX000553	URX000059	URX000262
4060 . . .	10	10	URX000332	URX000426	Drives 4060 and larger include integrated DC bus reactor	
4075 . . .	10	15	URX000333	URX000554		
4089 . . .	15	15	URX000335	URX000427		
4103 . . .	15	15	URX000338	URX000428		
4140 . . .	25	25	URX000341	URX000429		
4168 . . .	25	30	URX000341	URX000429		
4208 . . .	50	50	URX000347	URX000431		
4250 . . .	50	50	URX000350	URX000432		
4302 . . .	50	60	URX000353	URX000433		
4371 . . .	75	75	URX000356	URX000434		
4414 . . .	100	100	URX000356	URX000434		
4477 . . .	125	150	URX000359	URX000566		
4568 . . .	125	150	URX000359	URX000566		
4605 . . .	150	200	URX000365	URX000581		
4720 . . .	150	200	URX000365	URX000581		

1. This information reflects derating of three-phase drives for single-phase input applications. Refer to the Single Phase Converter to select a converter that provides full power (no derating) for some drives when used with single-phase power.
2. Select the partial catalog code from this single-phase table, then refer to the Three-Phase Drive table to select the complete drive catalog code based on enclosure type.

Carrier Frequency Derating

Table 48: 240 Volt Carrier Frequency Derating

Catalog Code GA80U . .	Carrier Frequency Derating (240 V Class) ^{1 2}											
	Heavy Duty Rating Amps						Normal Duty Rating Amps					
	2 kHz	5 kHz	8 kHz	10 kHz	12.5 kHz	15 kHz	2 kHz	5 kHz	8 kHz	10 kHz	12.5 kHz	15 kHz
2004. . .	3.2	3.2	3.2	3.1	2.9	2.78	3.5	3.3	2.9	2.7	2.4	2.1
2006. . .	5	5	5	4.8	4.6	4.3	6	5.6	5	4.6	4.1	3.6
2010. . .	8	8	8	7.4	6.6	5.8	9.6	9	8	7.4	6.6	5.8
2012. . .	11	11	11	10.4	9.6	8.8	12	11.7	11	10.5	9.9	9.3
2018. . .	14	14	14	12.6	10.8	9.1	17.5	16.1	14	12.6	10.8	9.1
2021. . .	17.5	17.5	17.5	16.1	14.3	12.6	21	19.6	17	16.1	14.3	12.5
2030. . .	25	25	25	23	20.5	18	30	28	25	23	20.5	18
2042. . .	33	33	33	29.3	24.8	20.2	42	38.4	33	29.4	24.9	20.4
2056. . .	47	47	47	43.4	38.9	34.4	56	52.4	47	43.4	38.9	34.4
2070. . .	60	60	60	56	51	46	70	66	60	56	51	46
2082. . .	75	75	75	68.6	60.5	53	82	82	75	68.8	61	53.1
2110. . .	88	88	88	80.5	71	62	110	102.7	92	84.3	75.2	66
2138. . .	115	115	115	105.1	92.8	81	138	128.8	115	105.8	94.3	82.8
2169. . .	145	145	125.2	112	-	-	169	152.7	128.3	112	-	-
2211. . .	180	180	155.2	138.6	-	-	211	190.2	158.9	138.1	-	-
2257. . .	215	215	184.8	164.7	-	-	257	230.4	190.5	163.9	-	-
2313. . .	283	283	249	226.4	-	-	313	288.5	251.7	227.1	-	-
2360. . .	346	346	294.3	259.8	-	-	360	330.8	287.6	258.8	-	-
2415. . .	415	415	365.2	332	-	-	-	-	-	-	-	-

1. Applicable Motor Control Methods: GA800 Parameter A1-02 = 0, 1, 2, 3, 4, 5, 7, 8.
2. Refer to the GA800 Technical Manual for AOLV/PM Carrier Frequency Derating information.

Table 49: 480 Volt Carrier Frequency Derating

Catalog Code GA80U . .	Carrier Frequency and Rated Current Derating (480 V Class) ^{1 2}											
	Heavy Duty Rating Amps						Normal Duty Rating Amps					
	2 kHz	5 kHz	8 kHz	10 kHz	12.5 kHz	15 kHz	2 kHz	5 kHz	8 kHz	10 kHz	12.5 kHz	15 kHz
4002. . .	1.8	1.8	1.8	1.6	1.3	1	2.1	2	1.8	1.7	1.5	1.4
4004. . .	3.4	3.4	3.4	2.9	2.3	1.7	4.1	3.8	3.4	3.1	2.8	2.4
4005. . .	4.8	4.8	4.8	4.3	3.7	3	5.4	5.2	4.8	4.6	4.3	3.9
4007. . .	5.5	5.5	5.5	4.9	4.1	3.2	7.1	6.5	5.5	4.8	4	3.2
4009. . .	7.2	7.2	7.2	6.5	5.6	4.8	8.9	8.2	7.2	6.5	5.6	4.8
4012. . .	9.2	9.2	9.2	8.1	6.8	5.4	11.9	10.8	9.2	8.1	6.7	5.4
4018. . .	14.8	14.8	14.8	13.1	11	8.9	17.5	17.3	14.8	13.1	11	8.9
4023. . .	18	18	18	15.9	13.4	10.8	23	21.5	18.3	16.2	13.6	11
4031. . .	24	24	24	21.2	17.7	14.1	31	28.2	24	21.1	17.6	14.1
4038. . .	31	31	31	27.5	23	18.6	38	36.3	31	27.5	23	18.6
4044. . .	39	39	39	34.5	29	23.4	44	43.6	37.5	33.5	28.4	23.4
4060. . .	45	45	45	39.1	31.8	24.4	60	53.7	44.9	39.1	31.7	24
4075. . .	60	60	60	53.1	44.6	36	75	73.8	62.9	55.6	46.5	37
4089. . .	75	75	75	66.4	55.7	45	89	88.8	75.8	67.2	56.4	46
4103. . .	91	91	91	80.6	67.6	54.6	103	103	90.3	80.1	67.3	55
4140. . .	112	112	91.8	78.4	-	-	140	122.8	96.7	79	-	-
4168. . .	150	150	123	105	-	-	168	150.5	124.4	107	-	-
4208. . .	180	180	147.6	126	-	-	208	179.7	137.2	109	-	-
4250. . .	216	216	177.1	151.2	-	-	250	221.8	179.4	151	-	-
4302. . .	260	260	213.2	182	-	-	296	263.4	214.6	182	-	-
4371. . .	304	304	249.3	212.8	-	-	371	327.2	261.6	218	-	-
4414. . .	371	371	304.2	259.7	-	-	389	348	286.3	245	-	-
4477. . .	389	324.8	-	-	-	-	453	349	-	-	-	-
4568. . .	453	378.3	-	-	-	-	568	437	-	-	-	-
4605. . .	605	505.2	-	-	-	-	675	529	-	-	-	-
4720. . .	605	505.2	-	-	-	-	675	529	-	-	-	-

1. Applicable Motor Control Methods: GA800 Parameter A1-02 = 0, 1, 2, 3, 4, 5, 7, 8.
2. Refer to the GA800 Technical Manual for AOLV/PM Carrier Frequency Derating information.

Table 50: 600 Volt Carrier Frequency Derating

Catalog Code GA80U . .	Carrier Frequency and Rated Current Derating (600 V Class)												
	Heavy Duty Rating Amps						Normal Duty Rating Amps						
	2 kHz	5 kHz	8 kHz	10 kHz	12.5 kHz	15 kHz	2 kHz	5 kHz	8 kHz	10 kHz	12.5 kHz	15 kHz	
5289. . .	242	200	N/A				289	226	N/A				
5382...	286						382						
5412...	382	412											
5472...	412	472											

Environmental Derating

The environment where the drive operates affects the drive output capacity. Ambient temperature, operating altitude, and drive configuration are used to determine the derate applied to the drive for safe and reliable operation.

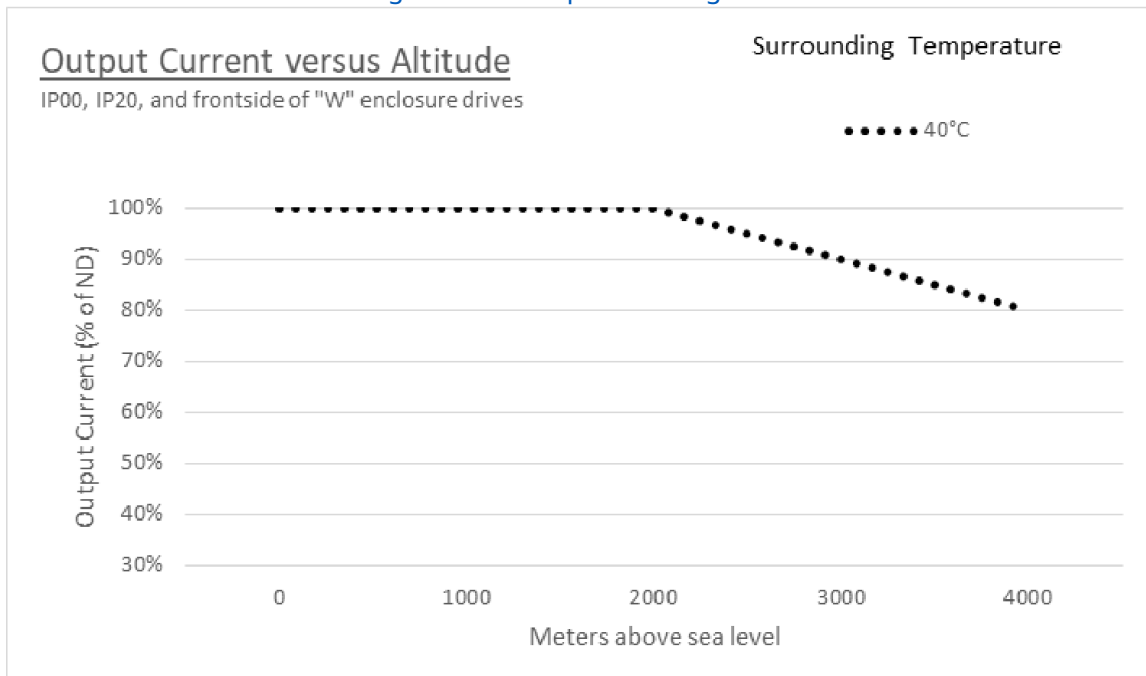
Calculate drive derate based on the thermal environment

- 1) Determine the altitude of the installation.
- 2) Determine the average high ambient temperature of the installation.
- 3) Determine the protection rating of the installation (IP00, UL Type 1, etc.).
- 4) Use the protection rating to select the correct derating chart.
- 5) Determine the derate using the chart.

Example:

The drive installation is at 3000 meters, with an ambient temperature near 40 °C, and the drive configuration is for IP20 protection. Using the chart below and the given environmental conditions, derate the drive to 90 % of the drive's rated output current.

Figure 25: Example Derating Table



As altitude increases, air density decreases, lowering cooling capacity. Figure 26 and 27 provide derating information to protect Yaskawa drives from thermal incidents due ambient temperatures and the reduced cooling capacity of air at higher altitudes.

Figure 26:

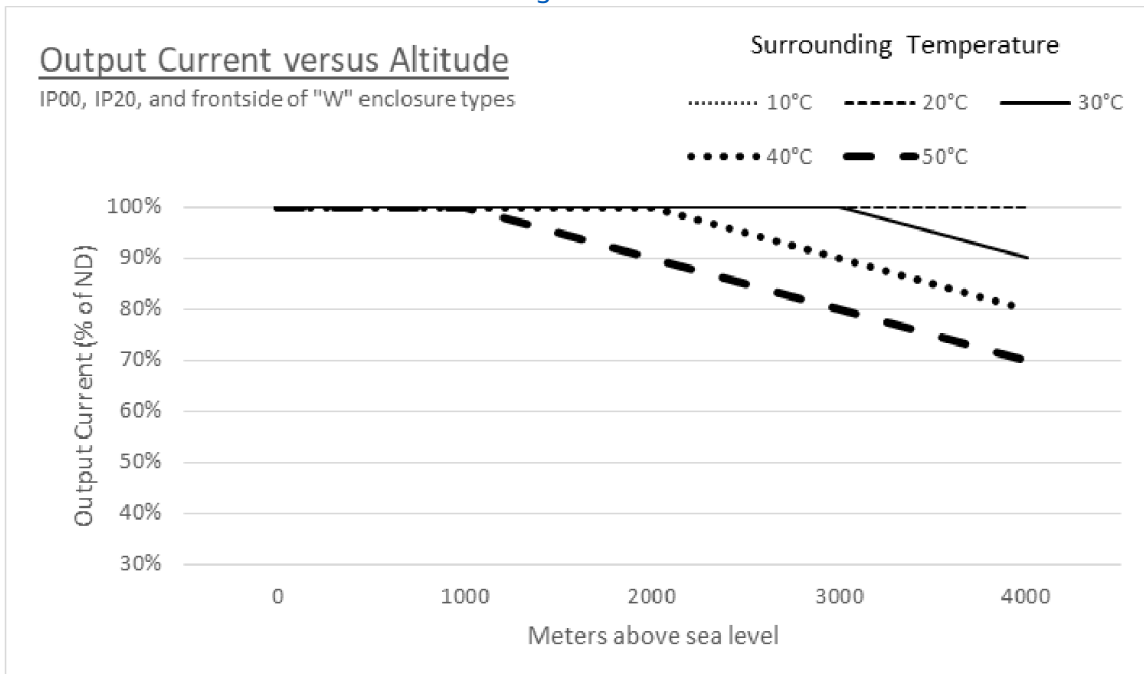
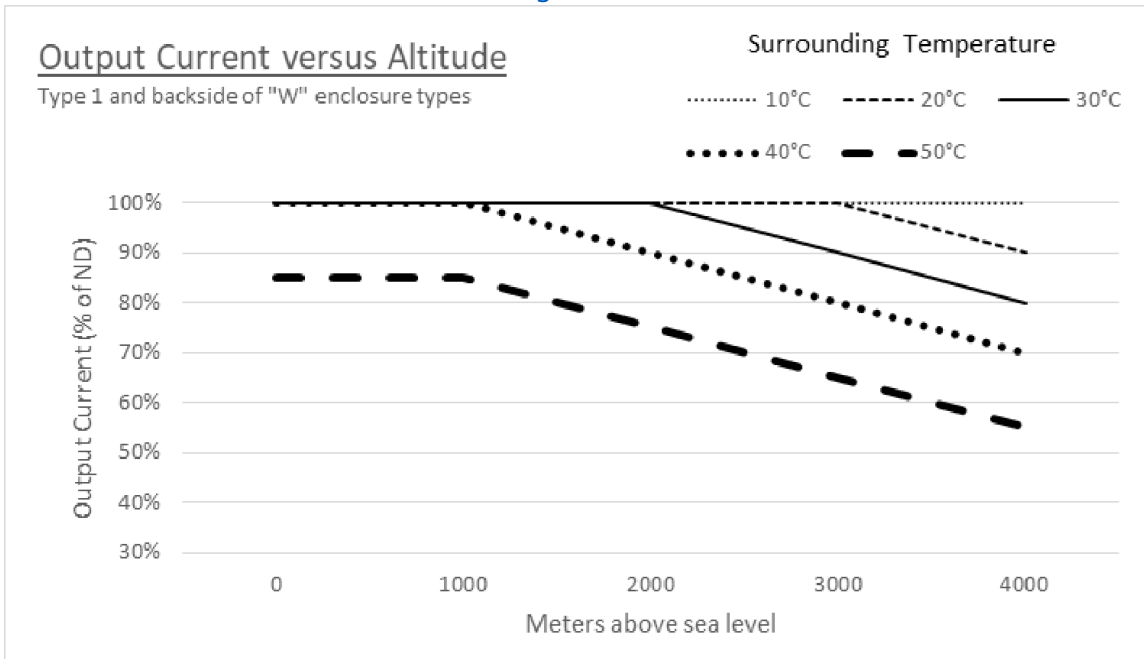


Figure 27:



Voltage Derating Considerations based on Altitude

As altitude increases, air density decreases. According to Paschen's Law, this reduction in air density affects the insulating properties of air against arcing. There are two ways to protect against the reduction in insulation: lower the applied voltage or use a drive with a higher voltage class. This maintains safe operation of the drive installation and equipment. The following are guidelines for operating drives at high altitudes:

- When the installation altitude is 2000 m (6562 ft) or lower, decreasing of the applied voltage is not required regardless of the power supply connection method.
- When the installation altitude is higher than 2000 m, use a neutral grounding system power supply.
- Decreasing applied voltage is not required when the installation altitude is between 2000 m and 4000 m (13123 ft) and the power supply is grounded to a neutral point.
- If the application falls outside of the above conditions, use a higher voltage class drive. For example, a 600 V drive running at 480 V will provide the proper insulation and safety margins.

These guidelines are intended for use with GA800 drives used in Overvoltage Category 3 installations. For installations with conditions other than described, please consult Yaskawa.

Watt Loss

Table 51: 240 Volt Model Watt Loss

Catalog Code GA80U . .	240 V Normal Duty					240 V Heavy Duty				
	Rated Output Current A	Carrier Frequency kHz	Interior Unit Loss W	Cooling Fin Loss W	Total Loss W	Rated Output Current A	Carrier Frequency kHz	Interior Unit Loss W	Cooling Fin Loss W	Total Loss W
2004. . .	4.2	2	35	18	53	3.5	8	35	19	54
2006. . .	6	2	38	25	63	5	8	37	26	63
2008. . .	8	2	42	34	76	6.9	8	40	36	76
2010. . .	9.6	2	49	46	95	8	8	44	43	87
2012. . .	12.2	2	56	62	118	11	8	50	61	111
2018. . .	17.5	2	53	88	141	14	8	47	82	129
2021. . .	21	2	75	125	200	17.5	8	56	105	161
2030. . .	30	2	95	206	301	25	8	74	174	248
2042. . .	42	2	129	227	356	33	8	88	183	271
2056. . .	56	2	149	302	451	47	8	112	267	379
2070. . .	70	2	177	403	580	60	8	145	373	518
2082. . .	82	2	202	467	669	75	8	179	478	657
2110. . .	110	2	192	631	823	88	8	155	563	718
2138. . .	138	2	269	814	1083	115	8	212	680	892
2169. . .	169	2	338	941	1279	145	5	275	820	1095
2211. . .	211	2	384	1131	1515	180	5	314	991	1305
2257. . .	257	2	519	1534	2053	215	5	398	1252	1650
2313. . .	313	2	579	1794	2373	283	5	502	1643	2145
2360. . .	360	2	655	2071	2726	346	5	582	1978	2560
2415. . .	415	2	608	2156	2764	415	5	644	2359	3003

Note: Refer to the GA800 Drive Technical Manual (SIEPC71061737) for detailed Carrier Frequency Watt Loss information.

Table 52: 480 Volt Model Watt Loss

Catalog Code GA80U . .	480 V Normal Duty					480 V Heavy Duty				
	Rated Output Current A	Carrier Frequency kHz	Interior Unit Loss W	Cooling Fin Loss W	Total Loss W	Rated Output Current A	Carrier Frequency kHz	Interior Unit Loss W	Cooling Fin Loss W	Total Loss W
4002. . .	2.1	2	39	16	55	1.8	8	38	15	53
4004. . .	4.1	2	44	33	77	3.4	8	42	28	70
4005. . .	5.4	2	48	31	79	4.8	8	46	37	83
4007. . .	7.1	2	52	44	96	5.5	8	48	45	93
4009. . .	8.9	2	42	58	100	7.2	8	37	63	98
4012. . .	11.9	2	57	84	141	9.2	8	46	82	128
4018. . .	17.5	2	82	144	226	14.8	8	65	140	205
4023. . .	23.4	2	108	185	293	18	8	73	150	223
4031. . .	31	2	138	222	360	24	8	101	211	312
4038. . .	38	2	145	270	415	31	8	119	272	391
4044. . .	44	2	168	335	503	39	8	148	354	502
4060. . .	59.6	2	157	444	601	45	8	126	389	515
4075. . .	74.9	2	185	527	712	60	8	165	527	692
4089. . .	89.2	2	212	665	877	75	8	184	617	801
4103. . .	103	2	264	766	1030	91	8	237	779	1016
4140. . .	140	2	393	1126	1519	112	5	300	956	1256
4168. . .	168	2	574	1348	1922	150	5	486	1274	1760
4208. . .	208	2	493	1465	1958	180	5	446	1432	1878
4250. . .	250	2	686	1738	2424	216	5	558	1464	2022
4302. . .	302	2	817	2257	3074	260	5	692	2061	2753
4371. . .	371	2	1022	2553	3575	304	5	824	2346	3170
4414. . .	414	2	873	2422	3295	371	5	777	2212	2989
4477. . .	477	2	1183	3329	4512	414	2	963	2696	3659
4568. . .	568	2	1429	3989	5418	477	2	1183	3329	4512
4605. . .	675	2	1526	4572	6098	605	2	1328	3995	5323
4720. . .	720	2	1723	5184	6907	605	2	1395	4198	5593

Note: Refer to the GA800 Drive Technical Manual (SIEPC71061737) for detailed Carrier Frequency Watt Loss information.

Table 53: 600 Volt Model Watt Loss

Catalog Code GA80U . .	600 V Normal Duty					600 V Heavy Duty				
	Rated Output Current A	Carrier Frequency kHz	Interior Unit Loss W	Cooling Fin Loss W	Total Loss W	Rated Output Current A	Carrier Frequency kHz	Interior Unit Loss W	Cooling Fin Loss W	Total Loss W
5289	289	2	624	3308	3932	242	2	551	2898	3449
5382	382	2	1106	4511	5617	382	2	964	3912	4876
5412	412	2	1234	4932	6166	412	2	1107	4474	5581
5472	472	2	1705	7289	8994	472	2	1483	6327	7810

Note: Refer to the GA800 600 V Drive Technical Manual (SIEPC7106170V) for detailed Carrier Frequency Watt Loss information.

Drive Short Circuit Protection

Table 54: 240 Volt Model Protection Ratings

Drive Catalog Code GA80U . .	Semiconductor Fuses EATON/Bussmann ¹		Class CC, J, or T Fuses ²		MCCBs (Molded Case Circuit Breakers) or Class RK Fuses ³			
	Part Number	Maximum SCCR (Fuse-Drive Combination)	Maximum Fuse Size (Amps)	Maximum SCCR (Fuse-Drive Combination)	Maximum MCCB Size (Amps)	Maximum RK1 or RK5 Fuse Size (Amps)	Minimum Enclosure Volume (cu in.)	Maximum SCCR (MCCB-Drive or RK Fuse-Drive Combination)
2004. . .	FWH-45B	100 kA	7	100 kA	15	7	4,195	100 kA
2006. . .	FWH-45B	100 kA	10	100 kA	15	10	4,195	100 kA
2008. . .	FWH-45B	100 kA	12	100 kA	15	12	4,195	100 kA
2010. . .	FWH-45B	100 kA	15	100 kA	15	15	4,195	100 kA
2012. . .	FWH-50B or FWH-80B	100 kA	20	100 kA	20	20	4,195	100 kA
2018. . .	FWH-80B or FWH-100B	100 kA	30	100 kA	35	30	4,195	100 kA
2021. . .	FWH-80B or FWH-100B	100 kA	35	100 kA	40	35	4,195	100 kA
2030. . .	FWH-100B or FWH-125B	100 kA	50	100 kA	60	50	4,195	100 kA
2042. . .	FWH-150B	100 kA	70	100 kA	80	70	4,195	100 kA
2056. . .	FWH-200B	100 kA	90	100 kA	110	90	4,195	100 kA
2070. . .	FWH-200B or FWH-225A	100 kA	110	100 kA	125	110	4,195	100 kA
2082. . .	FWH-225A or FWH-250A	100 kA	125	100 kA	150	125	4,195	100 kA
2110. . .	FWH-225A or FWH-250A	100 kA	175	100 kA	200	175	10,121	100 kA
2138. . .	FWH-275A or FWH-300A	100 kA	225	100 kA	250	225	10,121	100 kA
2169. . .	FWH-275A or FWH-350A	100 kA	250	100 kA	300	250	10,121	100 kA
2211. . .	FWH-325A or FWH-450A	100 kA	350	100 kA	400	350	10,121	100 kA
2257. . .	FWH-600A	100 kA	400	100 kA	500	400	14,657	100 kA
2313. . .	FWH-700A or FWH-800A	100 kA	500	100 kA	600	500	14,657	100 kA
2360. . .	FWH-800A or FWH-1000A	100 kA	600	100 kA	700	600	52,800	100 kA
2415. . .	FWH-1000A	100 kA	700	100 kA	800	Not Applicable	52,800	100 kA

1. When semiconductor fuses are used for UL listed drive protection, the drives and fusing must be in the same enclosure. Where multiple semiconductor fuse ratings are listed for a single drive, Yaskawa recommends the larger fuse for cyclical load applications that frequently approach 150% overload. Smaller semiconductor fuses (than what is listed) of the same manufacturer and series are permitted; however, this may cause fuses to clear prematurely.
2. When class CC, J, or T fuses are used for UL listed drive protection, there are no enclosure requirements for 240 V models.
3. When using MCCBs, RK1 fuses, or RK5 fuses as UL listed drive protection, the drives must be mounted in ventilated enclosures according to the minimum enclosure volume specified. When using MCCBs, Yaskawa recommends current limiting type.

Table 55: 480 Volt Model Protection Ratings

Drive Catalog Code GA80U . . .	Semiconductor Fuses EATON/Bussmann ¹		Class CC, J, or T Fuses ²		MCCBs (Molded Case Circuit Breakers) or Class RK Fuses ³			
	Part Number	Maximum SCCR (Fuse-Drive Combination)	Maximum Fuse Size (Amps)	Maximum SCCR (Fuse-Drive Combination)	Maximum MCCB Size (Amps)	Maximum RK1 or RK5 Fuse Size (Amps)	Minimum Enclosure Volume (in ³)	Maximum SCCR (MCCB-Drive or RK Fuse-Drive Combination)
4002. . .	FWH-40B or FWH-50B	100 kA	3.5	100 kA	15	3.5	4,195	100 kA
4004. . .	FWH-50B	100 kA	7	100 kA	15	7	4,195	100 kA
4005. . .	FWH-50B	100 kA	9	100 kA	15	9	4,195	100 kA
4007. . .	FWH-60B	100 kA	12	100 kA	15	12	4,195	100 kA
4009. . .	FWH-60B	100 kA	15	100 kA	15	15	4,195	100 kA
4012. . .	FWH-60B	100 kA	20	100 kA	20	20	4,195	100 kA
4018. . .	FWH-80B	100 kA	30	100 kA	35	30	4,195	100 kA
4023. . .	FWH-90B	100 kA	40	100 kA	45	40	4,195	100 kA
4031. . .	FWH-125B or FWH-150B	100 kA	50	100 kA	60	50	4,195	100 kA
4038. . .	FWH-200B	100 kA	60	100 kA	75	60	4,195	100 kA
4044. . .	FWH-200B	100 kA	70	100 kA	80	70	4,195	100 kA
4060. . .	FWH-225A	100 kA	100	100 kA	110	100	4,195	100 kA
4075. . .	FWH-250A	100 kA	125	100 kA	150	125	10,121	100 kA
4089. . .	FWH-250A or FWH-275A	100 kA	150	100 kA	175	150	10,121	100 kA
4103. . .	FWH-250A or FWH-275A	100 kA	175	100 kA	200	175	10,121	100 kA
4140. . .	FWH-300A	100 kA	225	100 kA	250	225	10,121	100 kA
4168. . .	FWH-325A or FWH-400A	100 kA	250	100 kA	300	250	10,121	100 kA
4208. . .	FWH-500A	100 kA	350	100 kA	400	350	14,657	100 kA
4250. . .	FWH-600A	100 kA	400	100 kA	500	400	14,657	100 kA
4302. . .	FWH-700A	100 kA	500	100 kA	600	500	14,657	100 kA
4371. . .	FWH-800A	100 kA	600	100 kA	700	600	52,800	100 kA
4414. . .	FWH-800A or FWH-1000A	100 kA	700	100 kA	800	Not Applicable	52,800	100 kA
4477. . .	FWH-1000A or FWH-1200A	100 kA	800	100 kA	900		52,800	100 kA
4568. . .	FWH-1000A or FWH-1200A	100 kA	900	100 kA	1000		52,800	100 kA
4605. . .	FWH-1200A or FWH-1400A	100 kA	1000	100 kA	1200		52,800	100 kA
4720. . .	FWH-1200A or FWH-1400A	100 kA	1200	100 kA	1400		52,800	100 kA

1. When semiconductor fuses are used for UL listed drive protection, the drives and fusing must be in the same enclosure. Where multiple semiconductor fuse ratings are listed for a single drive, Yaskawa recommends the larger fuse for cyclical load applications that frequently approach 150% overload. Smaller semiconductor fuses (than what is listed) of the same manufacturer and series are permitted; however, this may cause fuses to clear prematurely.
2. When using class CC, J, or T fuses as UL listed drive protection, models 4371 and larger have the same enclosure requirements as MCCBs.
3. When using MCCBs, RK1 fuses, or RK5 fuses as UL listed drive protection, the drives must be mounted in ventilated enclosures according to the minimum enclosure volume specified. When using MCCBs, Yaskawa recommends current limiting type.

Table 56: 600 Volt Model Protection Ratings

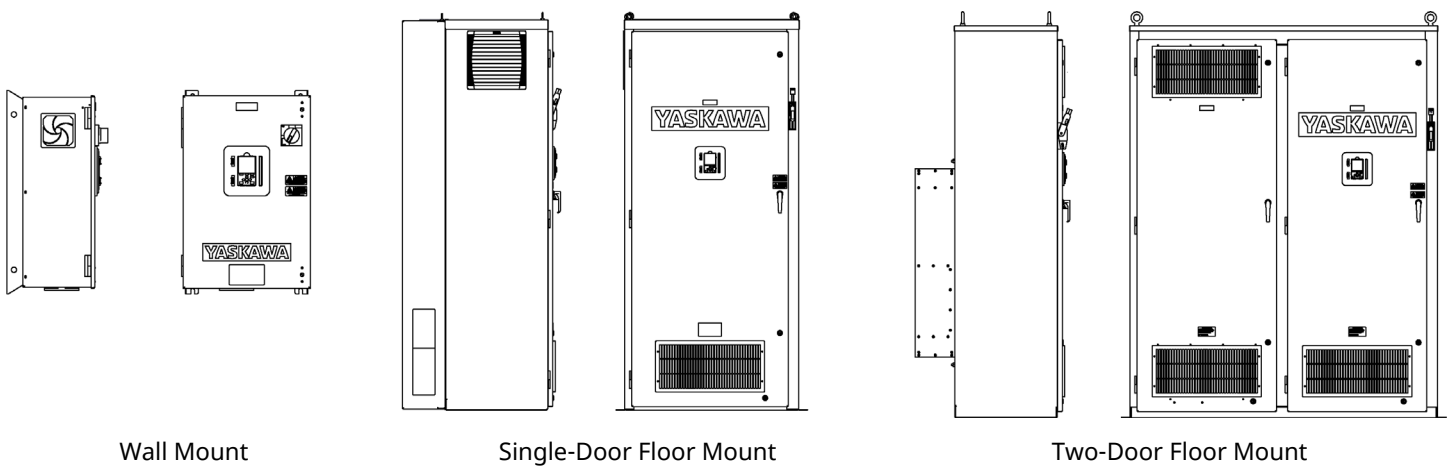
Drive Catalog Code GA80U . .	Semiconductor Fuses ¹		
	Manufacturer	Part Number	Maximum SCCR (Fuse-Drive Combination)
5289 . .	Mersen	A070UD32LI400	100 kA
5382 . .	EATON/Bussmann	FWP-600A	100 kA
5412 . .	EATON/Bussmann	FWP-600A	100 kA
5472 . .	EATON/Bussmann	FWP-700A	100 kA

1. When semiconductor fuses are used for UL listed drive protection, the drives and fusing must be in the same enclosure. Where multiple semiconductor fuse ratings are listed for a single drive, Yaskawa recommends the larger fuse for cyclical load applications that frequently approach 150% overload. Smaller semiconductor fuses (than what is listed) of the same manufacturer and series are permitted; however, this may cause fuses to clear prematurely.

GA800 Configured Package Specifications

1 - 600 HP Type 1, Type 12, & Type 3R GA800 Configured Packages

The GA800 Configured package provides a GA800 Drive in a Type 1, Type 12, or Type 3R industrial enclosure, with space for several commonly used options, such as reactors, RFI filters, circuit breakers, etc. The GA800 configured has been designed for flexibility in providing commonly requested features and options.



Wall Mount

Single-Door Floor Mount

Two-Door Floor Mount

Ratings, Standards, Conditions, & Options

Ratings
1 to 150 HP @ 240 Vac
1 to 600 HP @ 480 Vac
For drive performance features, see SL.GA800.01

Standards and Reliability
UL 508A (Industrial Control Panels)
UL, cUL Listed

Service Conditions
Ambient Temperature: -10 to 40 °C (14 to 104 °F)
Ambient Storage Temperature: -20 to 60 °C (-4 to 140 °F)
Humidity: 0% to 95%, non-condensing
Altitude: to 1000 meters (3300 feet); higher by derating

Configured Options
Feedback Cards
Input and Output Cards
Network Communications
Input Breaker
Input Disconnect
Input Fuses
120 Vac Interfaces
Line/Load Reactors
Input Filter
Bus Reactor (For small HP ratings; see following tables)
Dynamic Braking
Door-mounted Hand/Off/Auto Switch
Door-mounted Speed Pot
Surge Suppressor
Space Heater
Blower Motor Starter

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Model Number Configuring & Pricing

1 - 600 HP Type 1, Type 12, & Type 3R GA800 Configured

Step 1: Find the Base Number for the required enclosure type, voltage, and current rating.

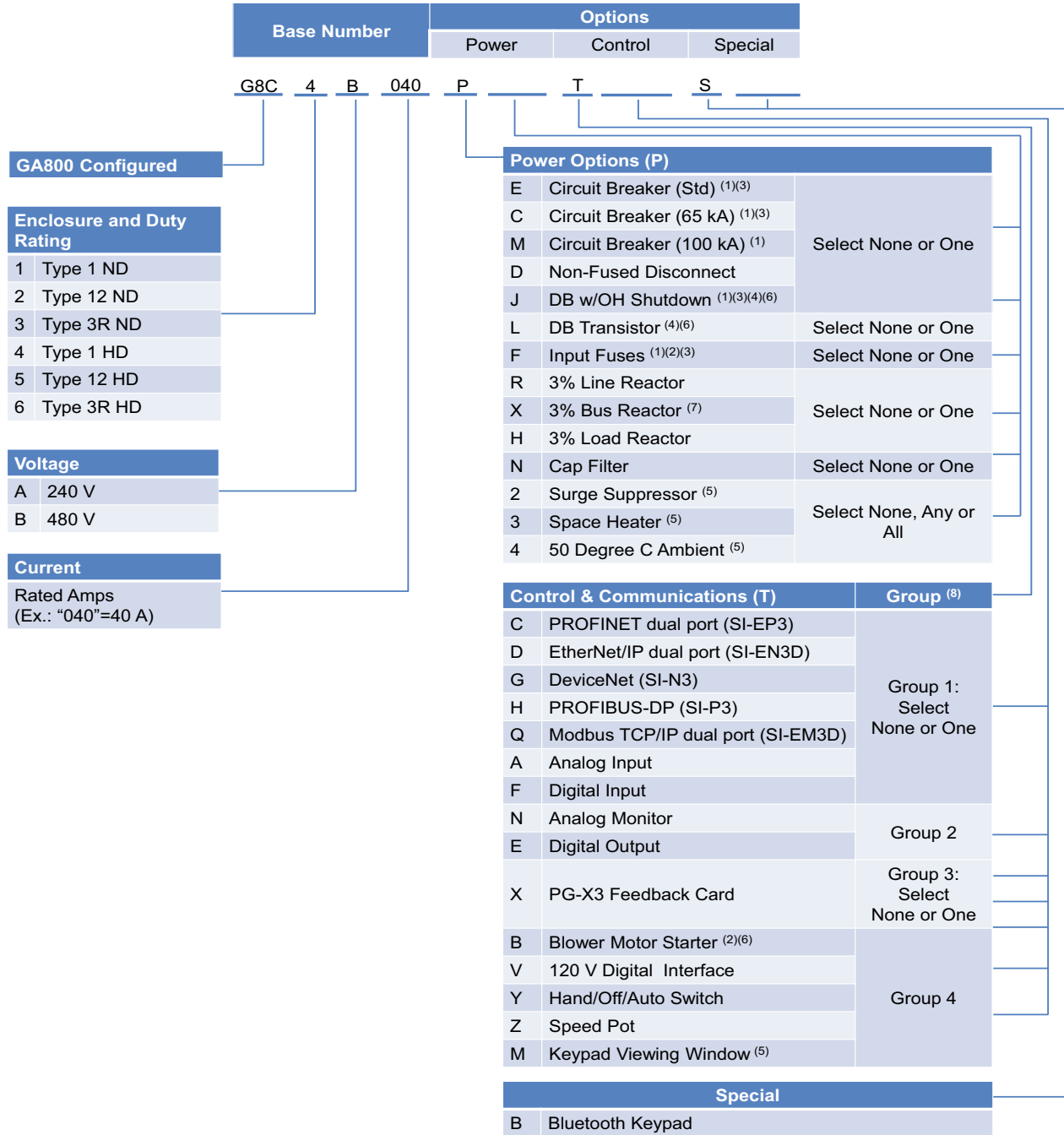
Step 2: Add the option code letter for each required option. Power options must be preceded by (P), any Control & Communication option by (T), and any Special Option by (S).

Step 3: Check that complete model number does not exceed 18 characters.

Step 4: Find the corresponding list price for the Base Number selected from the following pages. Add the list price of each selected option to this base price.

Example: A Type 1 Configured HD package (G8C4) with a 480 V, 40 A GA800 drive (B040), with standard AIC circuit breaker, a 3% bus reactor (P followed by EX), and PROFIBUS communications capability (T followed by H) would be G8C4B040PEXTH.

Figure 28: Model Number Key



- Option PF is not allowed with options E,C,J, or M for the following 480 V package models because input fusing is automatically included: G8C1B007 - G8C1B720, G8C2B065 - G8C2B720, G8C3B180 - G8C3B720, G8C4B004 - G8C4B590, G8C5B052 - G8C5B590, G8C6B156 - G8C6B590
- Option PF is not allowed with control option TB for the following base models because input fusing is automatically included: G8C1A004 - G81CA009, G8C1B002 - G8C1B007, G8C2A004 - G8C2A009, G8C2B002 - G8C2B007
- Power option E, F, C, or J is required for normal duty models B361 and larger, and heavy duty models B302 and larger
- Options J and L not allowed together.
- Type 3R enclosures only.
- Not available for Type 3R enclosure.
- 3% Bus reactors are only available as an option on small ratings - see table; large drives have a bus reactor as standard.
- The sum of options from Groups 1, 2, and 3 combined must not exceed 3 options.
If no option from Group 1 is selected, then ALL options from Group 2 and Group 3 may be selected.
- Select anything from Group 4, regardless of other group selections.

Table 57: GA800 Configured Panel SCCR (Short Circuit Current Rating) for Power Option Combinations

Option Type	SCCR (Short Circuit Current Rating) of Panel	
	With Input Fuse ¹	Without Input Fuse ¹
C - 65 kAIC Circuit Breaker	65 kA	65 kA when allowed as a selection
M - 100 kAIC Circuit Breaker	100 kA	100 kA when allowed as a selection
D - Disconnect	100 kA	According to the GA800 Technical Reference Short Circuit Protection
E - Standard Circuit Breaker	All 240 V: 25 kA Normal Duty 480 V B002 through B156: 18 kA Normal Duty 480 V B180 through B720: 35 kA Heavy Duty 480 V B002 through B180: 18 kA Heavy Duty 480 V B240 through B590: 35 kA	Same SCCR as with input fuses, but only when allowed as a selection. Refer to Model Number Key.
J - Dynamic Braking Overtemp Shutdown		
None of the options above	Varies by rating. Consult Factory	

1. Some package models with circuit breaker automatically include input fuses. Refer to Model Number Key.

Package Descriptions

Table 58: Configured Option Descriptions

Enclosure/Duty Options	
Type 1 ND:	(1) The Normal Duty drive and Configured controls are provided in a Type 1 enclosure, large enough to accommodate any or all of the Configured package options.
Type 1 HD:	(4) The Heavy Duty drive and Configured controls are provided in a Type 1 enclosure, large enough to accommodate any or all of the Configured package options.
Type 12 ND:	(2) The Normal Duty drive and Configured controls are provided in a Type 12 enclosure, large enough to accommodate any or all of the Configured package options.
Type 12 HD:	(5) The Heavy Duty drive and Configured controls are provided in a Type 12 enclosure, large enough to accommodate any or all of the Configured package options.
Type 3R ND:	(3) The Normal Duty drive and Configured controls are provided in a Type 3R enclosure, large enough to accommodate any or all of the Configured package options.
Type 3R HD:	(6) The Heavy Duty drive and Configured controls are provided in a Type 3R enclosure, large enough to accommodate any or all of the Configured package options.

Note: The term "Type" (when related to enclosure solutions) refers not only to NEMA Type, but also represents UL Listing for the specific Type(s).

Power Options	
Standard Circuit Breaker:	(E) This option provides a circuit breaker with operating handle. See Table 57 for package SCCR.
65 kAIC Circuit Breaker:	(C) This option provides a circuit breaker with operating handle and an Interrupting Capacity of 65 kA. See Table 57 for package SCCR.
100 kAIC Circuit Breaker:	(M) This option provides a circuit breaker with operating handle and an Interrupting Capacity of 100 kA. See Table 57 for package SCCR.
Disconnect:	(D) This option provides a non-fused disconnect with operating handle. See Table 57 for package SCCR.
Input Fuses:	(F) This option provides input fuses for drive short circuit protection. See Table 57 for package SCCR.
Input Reactor:	(R) No form of input impedance is normally required for the GA800 Configured. A 3% line reactor is available if additional impedance is desired, usually to reduce the effects of line-side transients and input current THD.
DC Bus Reactor:	(X) Large HP drives include 3% bus impedance. A 3% bus reactor is available for small HP drives (see table) if additional impedance is desired, usually to reduce the effects of line-side transients and input current THD.
Output Reactor:	(H) No form of output impedance is normally required for the GA800 Configured. A 3% load reactor is available if additional output impedance is desired, usually for long lead-lengths or noise reduction.
Cap Filter:	(N) The standard configuration does not include a filter. The cap filter is a delta-wye capacitive network, used to help attenuate electrical noise.
Dynamic Brake Transistor:	(L) Available only for Types 1 and 12 enclosures. For drives with internal transistor, this option provides a panel mounted terminal block for DB resistor connection point. For larger drives, this option provides panel mounted CDBR transistor modules. DB Resistors and overheat protection not included.
Dynamic Braking with Overtemp Shutdown:	(J) This option provides 10-15% duty cycle braking capability (DB resistors not included) to improve deceleration performance. A shunt trip circuit breaker (equivalent to option E) and circuitry is also provided to disconnect the input power from the drive if the DB over-temperature switches activate. See Table 57 for package SCCR. Not available for Type 3R enclosures.
Surge Suppressor:	(2) This option will offer some degree of protection from transient surges coming through the power line cables. Lightning strikes are the most common source of surges. This option is only available for the Type 3R enclosure.
Space Heater:	(3) This option maintains the internal cabinet temperature to reduce condensation. This option is only available for the Type 3R enclosure.
50 Degrees C Ambient:	(4) This option will allow the enclosure to be operated in an ambient temperature of 50 °C (122 °F). The standard basic design is rated for 40 °C ambient. This option is only available for the Type 3R enclosure.

Control Options	
EtherNet/IP (Dual Port) SI-EN3D:	(D) This option allows the drive to communicate on an Ethernet/IP network.
DeviceNet SI-N3:	(G) This option allows the drive to communicate on a DeviceNet network.
PROFIBUS SI-P3:	(H) This option allows the drive to communicate on a PROFIBUS network.
PROFINET SI-EP3:	(C) This option allows the drive to communicate on a PROFINET network.
Modbus TCP/IP (Dual Port) SI-EM3D:	(Q) This option allows the drive to communicate on a Modbus TCP/IP network.
Analog Input AI-A3:	(A) This option provides 3 additional high-resolution analog inputs (13 Bit + Sign) to the drive.
Digital Input DI-A3:	(F) This option provides 16 additional digital inputs (binary or BCD; 8, 12, or 16 bit) to the drive.
Analog Output AO-A3	(N) This option provides 2 additional isolated signal outputs (11 Bit + Sign) for remote monitoring of any two of the drive's "U1" parameters.
Digital Output DO-A3:	(E) This option provides 8 additional digital outputs for use in monitoring the status of the drive.
Encoder Feedback PG-X3:	(X) This option provides speed feedback using a line driver pulse generator (PG).
Blower Motor Starter:	(B) This option (available only for Type 1 and Type 12 enclosures) provides starter and fuses for control of a three-phase AC blower motor for the driven AC motor. Blower motor is the same voltage as the drive input voltage, and has the following max FLA values: 3.0 FLA for 240V, 1.5 FLA for 480V 3/4 through 400 HP, 3.0 FLA for 480V 450 through 500 HP.
120 VAC Input DI-101:	(V) This option converts external 120 VAC control signals to the drive's 24 VDC digital input terminals (S1 through S8).
Hand/Off/Auto Switch:	(Y) This option provides a door-mounted Hand/Off/Auto Selector Switch for determining start/stop and speed control.
Speed Pot:	(Z) This option provides a door-mounted Speed Pot with knob to control motor speed.
Keypad Viewing Window:	(M) All GA800 standard drive packages include a door mounted keypad enclosed in a plastic bezel with a clear door that opens for access. Option M (for Type 3R only) provides a larger painted steel solution, including a key lock that protects the keypad and other door mounted controls.
Special Options	
Bluetooth Keypad:	(B) This option equips the configured package with a Bluetooth enabled keypad.

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Type 1 Configured Package Dimensions

Table 59: 240 V, Type 1, Normal Duty

Type 1 Configured (ND) G8C1 . .	Amps	Nominal HP	Physical Dimensions (in.)			Weight (lb) ¹	Drawing Number ²
			H	W	D		
A004	4.2	1	28.8	18.3	14.3	81	DD.G.1.W1.01
A006	6.8	2				83	
A009	9.6	3				86	
A015	15.2	5				89	
A022	22	7.5	34.8	20.8	14.4	110	DD.G.1.W2.01
A028	28	10				113	
A042	42	15	39.8	25.8	15.9	146	DD.G.1.W3.01
A054	54	20				154	
A068	68	25				160	
A080	80	30				165	
A104	104	40	50.8	32.9	18.3	260	DD.G.1.W4.01
A130	130	50				274	
A154	154	60				325	
A192	192	75	85.7	41.3	34.1	705	DD.G.1.F1.01
A248	248	100				785	
A312	312	125				840	
A360	360	150				926	

1. This data represents the average drive package weight only, not shipping weight.

2. The drawings are available in pdf, .doc., and .dwg formats. Click the Mechanical Drawings link available on the GA800 Product Details page at www.yaskawa.com.

Table 60: 240 V, Type 1, Heavy Duty

Type 1 Configured (HD) G8C4 ..	Amps	Nominal HP	Physical Dimensions (in.)			Weight (lb) ¹	Drawing Number ²
			H	W	D		
A004	4.2	1	28.8	18.3	14.3	81	DD.G.1.W1.01
A006	6.8	2				83	
A009	9.6	3				86	
A015	15.2	5				89	
A022	22	7.5					
A028	28	10	34.8	20.8	14.4	110	DD.G.1.W2.01
A042	42	15				122	
A054	54	20	39.8	25.8	15.9	156	DD.G.1.W3.01
A068	68	25				161	
A080	80	30	50.8	32.9	18.3	254	DD.G.1.W4.01
A104	104	40				263	
A130	130	50				323	
A154	154	60				330	
A192	192	75	85.7	41.3	34.1	757	DD.G.1.F1.01
A248	248	100				788	
A312	312	125				896	
A360	360	150				969	

1. This data represents the average drive package weight only, not shipping weight.

2. The drawings are available in .pdf, .doc., and .dwg formats. Click the Mechanical Drawings link available on the GA800 Product Details page at www.yaskawa.com.

Table 61: 480 V, Type 1, Normal Duty

Type 1 Configured (ND) G8C1 . .	Amps	Nominal HP	Physical Dimensions (in.)			Weight (lb) ¹	Drawing Number ²
			H	W	D		
B002	2.1	1	28.8	18.3	14.3	80	DD.G.1.W1.01
B003	3.4	2					
B004	4.8	3					
B007	7.6	5					
B011	11	7.5					
B014	14	10	34.8	20.8	14.4	89	DD.G.1.W2.01
B021	21	15					
B027	27	20	39.8	25.8	15.9	118	DD.G.1.W3.01
B034	34	25					
B040	40	30					
B052	52	40	50.8	32.9	18.3	168	DD.G.1.W4.01
B065	65	50					
B077	77	60					
B096	96	75					
B124	124	100					
B156	156	125	85.7	41.3	34.1	319	DD.G.1.F1.01
B180	180	150					
B240	240	200					
B302	302	250					
B361	361	300					
B414	414	350	87.1	69.8	33.3	1065	DD.G.1.F2.01
B477	477	400					
B515	515	450					
B590	590	500					
B720	720	600					

1. This data represents the average drive package weight only, not shipping weight.

2. The drawings are available in .pdf, .doc., and .dwg formats. For additional formats, click the Mechanical Drawings link available on the GA800 Product Details page at www.yaskawa.com.

Table 62: 480 V, Type 1, Heavy Duty

Type 1 Configured (HD) G8C4 . .	Amps	Nominal HP	Physical Dimensions (in.)			Weight (lb) ¹	Drawing Number ²
			H	W	D		
B002	2.1	1	28.8	18.3	14.3	80	DD.G.1.W1.01
B003	3.4	2					
B004	4.8	3					
B007	7.6	5					
B011	11	7.5					
B014	14	10	34.8	20.8	14.4	90	DD.G.1.W2.01
B021	21	15					
B027	27	20	39.8	25.8	15.9	120	DD.G.1.W3.01
B034	34	25					
B040	40	30					
B052	52	40	50.8	32.9	18.3	150	DD.G.1.W4.01
B065	65	50					
B077	77	60					
B096	96	75					
B124	124	100					
B156	156	125	85.7	41.3	34.1	242	DD.G.1.F1.01
B180	180	150					
B240	240	200					
B302	302	250					
B361	361	300					
B414	414	350	87.1	69.8	33.3	761	DD.G.1.F2.01
B477	477	400					
B515	515	450					
B590	590	500					

1. This data represents the average drive package weight only, not shipping weight.

2. The drawings are available in .pdf, .doc., and .dwg formats. For additional formats, click the Mechanical Drawings link available on the GA800 Product Details page at www.yaskawa.com.

Type 12 Configured Package Dimensions

Table 63: 240 V, Type 12, Normal Duty

Type 12 Configured (ND) G8C2 ..	Amps	Nominal HP	Physical Dimensions (in.)			Weight (lb) ¹	Drawing Number ²
			H	W	D		
A004	4.2	1	29.0	18.0	18.4	110	DD.G.12.W1.01
A006	6.8	2					
A009	9.6	3					
A015	15.2	5					
A022	22	7.5	35.0	20.5	18.4	134	DD.G.12.W2.01
A028	28	10					
A042	42	15	40.0	25.5	18.4	170	DD.G.12.W3.01
A054	54	20				183	
A068	68	25				187	
A080	80	30				192	
A104	104	40	51.0	32.6	22.5	262	DD.G.12.W4.01
A130	130	50				277	
A154	154	60				333	
A192	192	75	85.7	41.3	34.2	545	DD.G.12.F1.01
A248	248	100				645	
A312	312	125				698	
A360	360	150				800	

1. This data represents the average drive package weight only, not shipping weight.

2. The drawings are available in .pdf, .doc., and .dwg formats. For additional formats, click the Mechanical Drawings link available on the GA800 Product Details page at www.yaskawa.com.

Table 64: 240V, Type 12, Heavy Duty

Type 12 Configured (HD) G8C5 . .	Amps	Nominal HP	Physical Dimensions (in.)			Weight (lb) ¹	Drawing Number ²
			H	W	D		
A004	4.2	1	29.0	18.0	18.4	110	DD.G.12.W1.01
A006	6.8	2					
A009	9.6	3					
A015	15.2	5					
A022	22	7.5					
A028	28	10	35.0	20.5	18.4	129	DD.G.12.W2.01
A042	42	15				142	
A054	54	20	40.0	25.5	18.4	184	DD.G.12.W3.01
A068	68	25				188	
A080	80	30	51.0	32.6	22.5	255	DD.G.12.W4.01
A104	104	40				273	
A130	130	50				332	
A154	154	60				338	
A192	192	75	85.7	41.3	34.2	636	DD.G.12.F1.01
A248	248	100				684	
A312	312	125				788	
A360	360	150				822	

1. This data represents the average drive package weight only, not shipping weight.

2. The drawings are available in .pdf, .doc., and .dwg formats. For additional formats, click the Mechanical Drawings link available on the GA800 Product Details page at www.yaskawa.com.

Table 65: 480 V, Type 12, Normal Duty

Type 12 Configured (ND) G8C2 . .	Amps	Nominal HP	Physical Dimensions (in.)			Weight (lb) ¹	Drawing Number ²
			H	W	D		
B002	2.1	1	29.0	18.0	18.4	110	DD.G.12.W1.01
B003	3.4	2					
B004	4.8	3					
B007	7.6	5					
B011	11	7.5					
B014	14	10	35.0	20.5	18.4	139	DD.G.12.W2.01
B021	21	15					
B027	27	20	40.0	25.5	18.4	172	DD.G.12.W3.01
B034	34	25				180	
B040	40	30				194	
B052	52	40	51.0	32.6	22.5	246	DD.G.12.W4.01
B065	65	50				265	
B077	77	60				279	
B096	96	75				313	
B124	124	100				327	
B156	156	125	85.7	41.3	34.2	643	DD.G.12.F1.01
B180	180	150				676	
B240	240	200				706	
B302	302	250				873	
B361	361	300				932	
B414	414	350	87.1	69.8	33.3	1384	DD.G.12.F2.01
B477	477	400				1441	
B515	515	450				1494	
B590	590	500				1520	
B720	720	600					

1. This data represents the average drive package weight only, not shipping weight.

2. The drawings are available in .pdf, .doc., and .dwg formats. For additional formats, click the Mechanical Drawings link available on the GA800 Product Details page at www.yaskawa.com.

Table 66: 480 V, Type 12, Heavy Duty

Type 12 Configured (HD) G8C5 . .	Amps	Nominal HP	Physical Dimensions (in.)			Weight (lb) ¹	Drawing Number ²
			H	W	D		
B002	2.1	1	29.0	18.0	18.4	110	DD.G.12.W1.01
B003	3.4	2					
B004	4.8	3					
B007	7.6	5					
B011	11	7.5					
B014	14	10	35.0	20.5	18.4	140	DD.G.12.W2.01
B021	21	15					
B027	27	20	40.0	25.5	18.4	177	DD.G.12.W3.01
B034	34	25				189	
B040	40	30				51.0	32.6
B052	52	40	292				
B065	65	50	300				
B077	77	60	321				
B096	96	75	326				
B124	124	100	85.7	41.1	34.2	647	DD.G.12.F1.01
B156	156	125				658	
B180	180	150				755	
B240	240	200				810	
B302	302	250				865	
B361	361	300	87.1	69.8	33.3	1342	DD.G.12.F2.01
B414	414	350				1449	
B477	477	400				1488	
B515	515	450				1531	
B590	590	500					

1. This data represents the average drive package weight only, not shipping weight.

2. The drawings are available in .pdf, .doc., and .dwg formats. For additional formats, click the Mechanical Drawings link available on the GA800 Product Details page at www.yaskawa.com.

Type 3R Configured Package Dimensions

Table 67: 240 V, Type 3R, Normal Duty

Type 3R Configured (ND) G8C3 . .	Amps	Nominal HP	Physical Dimensions (in.)			Weight (lb) ¹	Drawing Number ²
			H	W	D		
A004	4.2	1	29.0	21.2	21.5	140	DD.G.3R.W1.01 ³
A006	6.8	2					
A009	9.6	3					
A015	15.2	5				150	
A022	22	7.5	35.0	23.7	21.5	175	DD.G.3R.W2.01 ³
A028	28	10					
A042	42	15	40.0	28.7	21.5	225	DD.G.3R.W3.01 ³
A054	54	20				235	
A068	68	25				250	
A080	80	30					
A104	104	40	51.0	39.0	21.5	350	DD.G.3R.W4.01 ³
A130	130	50				375	
A154	154	60				400	
A192	192	75	92.6	41.2	48.7	875	DD.G.3R.F1.01
A248	248	100				950	
A312	312	125				1000	
A360	360	150				1100	

1. This data represents the average drive package weight only, not shipping weight.

2. The drawings are available in .pdf, .doc., and .dwg formats. For additional formats, click the Mechanical Drawings link available on the GA800 Product Details page at www.yaskawa.com.

3. Optional Freestanding Leg kits are available for Type 3R enclosures.

Table 68: 240 V, Type 3R, Heavy Duty

Type 3R Configured (HD) G8C6 . .	Amps	Nominal HP	Physical Dimensions (in.)			Weight (lb) ¹	Drawing Number ²
			H	W	D		
A004	4.2	1	29.0	21.2	21.5	140	DD.G.3R.W1.01 ³
A006	6.8	2					
A009	9.6	3					
A015	15.2	5					
A022	22	7.5				150	
A028	28	10	35.0	23.7	21.5	175	DD.G.3R.W2.01 ³
A042	42	15				185	
A054	54	20	40.0	28.7	21.5	240	DD.G.3R.W3.01 ³
A068	68	25					
A080	80	30	51.0	39.0	21.5	350	DD.G.3R.W4.01 ³
A104	104	40				375	
A130	130	50				400	
A154	154	60				415	
A192	192	75	92.6	41.2	48.7	925	DD.G.3R.F1.01
A248	248	100				950	
A312	312	125				1075	
A360	360	150				1150	

1. This data represents the average drive package weight only, not shipping weight.

2. The drawings are available in .pdf, .doc., and .dwg formats. For additional formats, click the Mechanical Drawings link available on the GA800 Product Details page at www.yaskawa.com.

3. Optional Freestanding Leg kits are available for Type 3R enclosures.

Table 69: 480 V, Type 3R, Normal Duty

Type 3R Configured (ND) G8C3 . .	Amps	Nominal HP	Physical Dimensions (in.)			Weight (lb) ¹	Drawing Number ²
			H	W	D		
B002	2.1	1	29.0	21.2	21.5	140	DD.G.3R.W1.01 ³
B003	3.4	2					
B004	4.8	3					
B007	7.6	5					
B011	11	7.5					
B014	14	10	35.0	23.7	21.5	150	DD.G.3R.W2.01 ³
B021	21	15					
B027	27	20	40.0	28.7	21.5	175	DD.G.3R.W3.01 ³
B034	34	25					
B040	40	30					
B052	52	40	51.0	39.0	21.5	225	DD.G.3R.W4.01 ³
B065	65	50					
B077	77	60					
B096	96	75					
B124	124	100					
B156	156	125					
B180	180	150	92.6	41.2	48.7	325	DD.G.3R.F1.01
B240	240	200					
B302	302	250					
B361	361	300					
B414	414	350					
B477	477	400	94.0	66.3	50.0	350	DD.G.3R.F2.01
B515	515	450					
B590	590	500					
B720	720	600					

1. This data represents the average drive package weight only, not shipping weight.

2. The drawings are available in .pdf, .doc., and .dwg formats. For additional formats, click the Mechanical Drawings link available on the GA800 Product Details page at www.yaskawa.com.

3. Optional Freestanding Leg kits are available for Type 3R enclosures.

Table 70: 480 V, Type 3R, Heavy Duty

Type 3R Configured (HD) G8C6 . .	Amps	Nominal HP	Physical Dimensions (in.)			Weight (lb) ¹	Drawing Number ²
			H	W	D		
B002	2.1	1	29.0	21.2	21.5	140	DD.G.3R.W1.01 ³
B003	3.4	2					
B004	4.8	3					
B007	7.6	5					
B011	11	7.5					
B014	14	10				150	
B021	21	15	35.0	23.7	21.5	185	DD.G.3R.W2.01 ³
B027	27	20					
B034	34	25	40.0	28.7	21.5	225	DD.G.3R.W3.01 ³
B040	40	30				240	
B052	52	40	51.0	39.0	21.5	330	DD.G.3R.W4.01 ³
B065	65	50				375	
B077	77	60				400	
B096	96	75				415	
B124	124	100					
B156	156	125	92.6	41.2	48.7	925	DD.G.3R.F1.01
B180	180	150				950	
B240	240	200				975	
B302	302	250				1125	
B361	361	300				1175	
B414	414	350	94.0	66.3	50.0	1400	DD.G.3R.F2.01
B477	477	400					
B515	515	450				1500	
B590	590	500					

1. This data represents the average drive package weight only, not shipping weight.

2. The drawings are available in .pdf, .doc., and .dwg formats. For additional formats, click the Mechanical Drawings link available on the GA800 Product Details page at www.yaskawa.com.

3. Optional Freestanding Leg kits are available for Type 3R enclosures.

Additional Configured Package Options

Table 71: Type 1, Type 12, Type 3R 240 V, 480 V Configured Package

Additional Installed Power Options (valid for all voltage and power ratings)	
P Code	Description
N	Noise Filter
2	Surge Suppressor (only for Type 3R)
3	Cabinet Space Heater (thermostatically controlled, only for Type 3R)

Table 72: Communication and Control Options

Installed Control Options (applies to all voltage and power ratings)		
Group ^{1 2}	T Code	Description
Group 1: Select None or One	C	PROFINET dual port (SI-EP3)
	D	EitherNet/IP dual port (SI-EN3D)
	G	DeviceNet (SI-N3)
	H	PROFIBUS-DP (SI-P3)
	Q	Modbus/TCP dual port (SI-EM3D)
	A	Analog Input (provides 3 additional inputs) (AI-A3)
	F	Digital Input (provides 16 additional inputs) (DI-A3)
Group 2	N	Analog Monitor (provides 2 additional outputs) (AO-A3)
	E	Digital Output (provides 8 additional outputs) (DO-A3)
Group 3: Select None or One	X	Incremental Encoder Interface (line driver type) (PG-X3)
Group 4: Select None, Any, or All	B	Blower Motor Starter (only for Type 1 and Type 12)
	V	120 V Digital Interface (converts standard inputs)
	Y	HOA Switch
	Z	Speed Pot
	M	Lockable Viewing Window (covers door mounted operator devices, only for Type 3R)

- The sum of option from Groups 1, 2, and 3 combined must not exceed three options.
If no option from Group 1 is selected, then ALL options from Group 2 and Group 3 may be selected.
Select anything from Group 4, regardless of other group selections.
- Option PF is not allowed with control option TB for the following base models because input fusing is automatically included:
G8C1A004 - G81CA009, G8C1B002 - G8C1B007, G8C2A004 - G8C2A009, G8C2B002 - G8C2B007.

Table 73: Special Options

Installed Special Options (applies to all voltage and power ratings)	
S Code	Description
B	Bluetooth Keypad Upgrade (comes with standard keypad if not selected)

Freestanding Leg Kit, Type 3R

This option allows all the Type 3R wall-mount enclosures to be mounted on legs so that the control can be freestanding and off the ground. Any kit can be used on the wall-mount enclosures. Floor-mount enclosures come standard with freestanding legs.

Table 74: Freestanding Leg Kits

Part Number	Description
UUX000923	12 inch height (for all Type 3R wall mount sizes)
UUX001656	18 inch height (for all Type 3R wall mount sizes)
UUX000924	30 inch height (for all Type 3R wall mount sizes)

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