

YASKAWA

HV305

SELECTION GUIDE

HVAC AC MICRODRIVE

CATALOG CODE:

HV35Uxxxxxxx

240 V Single - Phase, 1/6 to 5 HP

240 V Three - Phase, 1/6 to 30 HP

480 V Three - Phase, 1/2 to 40 HP

PDF

yaskawa.com/SL.HV305.01



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Preface

This book is intended to help easily locate component information for Yaskawa HV305 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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Other Documents and Manuals are available to support special use or installation of this product. 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 HV305 drive product are listed here and throughout this document:

Resource Links	
HV305 Price Book	HV305 Flyer
HV305 Brochure	HV305 Product Transition Guide



HV305 AC Microdrives



Drive Selection

The HV305 precisely controls induction, permanent magnet, and synchronous reluctance motors providing versatility to run a variety of applications with just one drive. The times of complex motor setup are over. With the new EZ Vector mode, the HV305 can run all of these motor types without comprehensive tuning.

- Time and Cost Savings
- Easy Installation and System Integration
- Easy to Use - Easy to Maintain
- More Reliable - Easier Machine Design

Standard (IP20/Protected Chassis) 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. UL Type 1 Adapters must be used when mounting the drive without an enclosure.

The HV305 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.

Catalog Code Designation

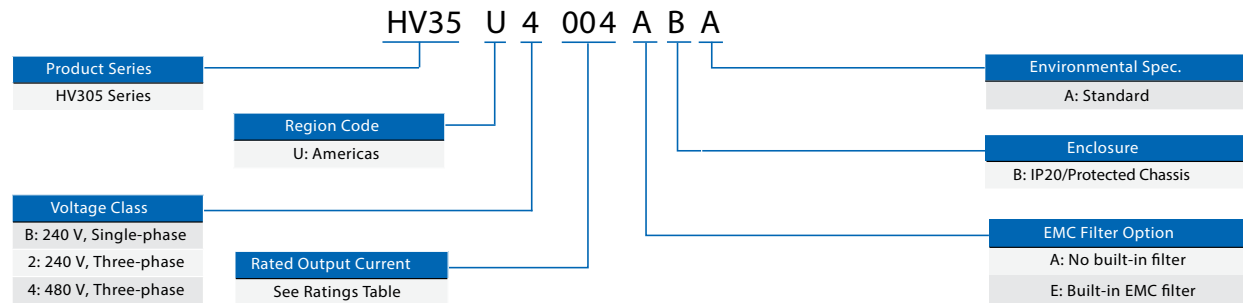


Table 1: 240 V, Single-Phase Input, IP20/Protected Chassis Drives, 1/6 to 5 HP

Normal Duty Output		Heavy Duty Output		Standard Drives ¹	Built-In EMC Drives ²
HP	Amps	HP	Amps	Catalog Code HV35U...	Catalog Code HV35U...
1/6	1.2	1/6	0.8	B001ABA	B001EBA
1/4	1.9	1/4	1.6	B002ABA	B002EBA
3/4	3.5	1/2	3	B004ABA	B004EBA
1.5	6	1	5	B006ABA	B006EBA
3	9.6	2	8	B010ABA	B010EBA
3	12.2	3	11	B012ABA	B012EBA
N/A	N/A	5	17.6	B018ABA	B018EBA

- Standard (IP20/Protected Chassis) Drives are intended for clean environments, and can be mounted 3 different ways as follows:
 - In a separate enclosure with heatsink internal (no extra mounting brackets required)
 - In a separate enclosure with heatsink external. See External Heatsink Adapters for sizes requiring extra mounting brackets
 - Without a separate enclosure, all sizes require UL Type 1 Adapters (see UL Type 1 Adapters)
- E: Built-in EMC Filter: C1: 200 V Single-Phase, C3: 200 V Three-Phase, C2: 400 V Three-Phase

Table 2: 240 V, Three-Phase Input, IP20/Protected Chassis Drives, 1/6 to 30 HP

Normal Duty Output		Heavy Duty Output		Standard Drives ¹	Built-In EMC Drives ²
HP	Amps	HP	Amps	Catalog Code HV35U...	Catalog Code HV35U...
1/6	1.2	1/6	0.8	2001ABA	2001EBA
1/4	1.9	1/4	1.6	2002ABA	2002EBA
3/4	3.5	1/2	3	2004ABA	2004EBA
1.5	6	1	5	2006ABA	2006EBA
3	9.6	2	8	2010ABA	2010EBA
4	12.2	3	11	2012ABA	2012EBA
7.5	21	5	17	2021ABA	2021EBA
10	30	7.5	25	2030ABA	2030EBA
15	42	10	33	2042ABA	2042EBA
20	56	15	47	2056ABA	2056EBA
25	70	20	60	2070ABA	2070EBA
30	82	25	75	2082ABA	2082EBA

1. Standard (IP20/Protected Chassis) Drives are intended for clean environments, and can be mounted 3 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. See External Heatsink Adapters for sizes requiring extra mounting brackets
 - C) Without a separate enclosure, all sizes require UL Type 1 Adapters (see UL Type 1 Adapters)
2. E: Built-in EMC Filter: C1: 200 V Single-Phase, C3: 200 V Three-Phase, C2: 400 V Three-Phase

Table 3: 480 V, Three-Phase Input, IP20/Protected Chassis Drive, 1 to 40 HP

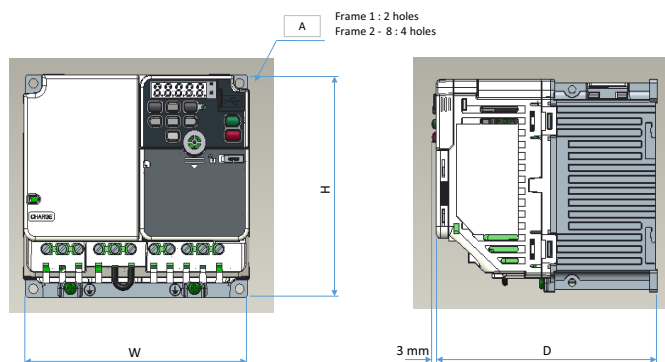
Normal Duty Output		Heavy Duty Output		Standard Drives ¹	Built-In EMC Drives ²
HP	Amps	HP	Amps	Catalog Code HV35U...	Catalog Code HV35U...
1/2	1.2	1/2	1.2	4001ABA	4001EBA
1	2.1	3/4	1.8	4002ABA	4002EBA
2	4.1	2	3.4	4004ABA	4004EBA
3	5.4	3	4.8	4005ABA	4005EBA
4	7.1	3	5.6	4007ABA	4007EBA
5	8.9	4	7.3	4009ABA	4009EBA
7.5	11.9	5	9.2	4012ABA	4012EBA
10	17.5	10	14.8	4018ABA	4018EBA
15	23.4	10	18	4023ABA	4023EBA
20	31	15	24	4031ABA	4031EBA
25	38	20	31	4038ABA	4038EBA
30	44	25	39	4044ABA	4044EBA
40	60	30	45	4060ABA	4060EBA

1. Standard (IP20/Protected Chassis) Drives are intended for clean environments, and can be mounted 3 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. See External Heatsink Adapters for sizes requiring extra mounting brackets
 - C) Without a separate enclosure, all sizes require UL Type 1 Adapters (see UL Type 1 Adapters)
2. E: Built-in EMC Filter: C1: 200 V Single-Phase, C3: 200 V Three-Phase, C2: 400 V Three-Phase

Dimensions & Weights

IP20/Protected Chassis Dimensions

Figure 1: Drive Dimensions



IP20/Protected Chassis Drive Without EMC Filter

Table 4: Dimensions without EMC Filter

Dimensions in (mm)			
Frame	Height	Width	Depth
1.1	5.03 (128)	2.67 (68)	2.99 (76)
1.2	5.03 (128)	2.67 (68)	4.64 (118)
1.3	5.03 (128)	2.67 (68)	5.03 (128)
2.1	5.03 (128)	4.25 (108)	5.07 (129)
2.2	5.03 (128)	4.25 (108)	5.07 (129)
2.3	5.03 (128)	4.25 (108)	5.39 (137)
2.4	5.03 (128)	4.25 (108)	6.06 (154)
3.1	5.03 (128)	5.51 (140)	5.62 (143)
3.2	5.03 (128)	5.51 (140)	6.41 (163)
4	5.03 (128)	6.69 (170)	7.08 (180)
5	10.23 (260)	5.51 (140)	5.51 (140)
6	11.81 (300)	7.08 (180)	5.62 (143)
7	13.77 (350)	8.66 (220)	7.36 (187)
8	13.77 (350)	7.48 (190)	8.03 (204)

Table 5: Dimensions with EMC Filter

Dimensions in (mm)			
Frame	Height	Width	Depth
1.1	5.03 (128)	2.67 (68)	4.57 (116)
1.2	5.03 (128)	2.67 (68)	6.22 (158)
1.3	5.03 (128)	2.67 (68)	6.61 (168)
2.1	5.03 (128)	4.25 (108)	6.85 (174)
2.2	5.03 (128)	4.25 (108)	4.96 (126)
2.3	5.03 (128)	4.25 (108)	7.20 (183)
2.4	5.03 (128)	4.25 (108)	7.83 (199)
3.1	5.03 (128)	5.51 (140)	7.60 (193)
3.2	5.03 (128)	5.51 (140)	7.99 (203)
5	10.23 (260)	5.51 (140)	7.72 (196)
6	11.81 (300)	7.08 (180)	7.72 (196)
7	13.77 (350)	8.66 (220)	8.50 (216)
8	13.77 (350)	7.48 (190)	9.88 (251)

Table 6: 240 V, Single-Phase Drives

Normal Duty (ND)	Heavy Duty (HD)	Catalog Code HV35U...	Output Amps		Weight lb (kg)	Frame
			ND	HD		
1/6	1/6	B001	1.2	0.8	1.32 (0.6)	1.1
1/4	1/4	B002	1.9	1.6	1.32 (0.6)	1.1
0.75	0.5	B004	3.5	3	1.98 (0.9)	1.2
1.5	1	B006	6	5	3.3 (1.5)	2.3
3	2	B010	9.6	8	3.3 (1.5)	2.4
3	3	B012	12.2	11	4.84 (2.2)	3.2
N/A	5	B018	N/A	17.6	6.38 (2.9)	4

Table 7: 240 V, Three-Phase Drives

Normal Duty (ND)	Heavy Duty (HD)	Catalog Code HV35U...	Output Amps		Weight lb (kg)	Frame
			ND	HD		
1/6	1/6	2001	1.2	0.8	1.54 (0.7)	1.1
1/4	1/4	2002	1.9	1.6	1.54 (0.7)	1.1
3/4	1/2	2004	3.5	3.0	1.76 (0.8)	1.2
1.5	1	2006	6	5.0	2.2 (1)	1.3
3	2	2010	9.6	8.0	4.18 (1.9)	2.1
4	3	2012	12.2	11.0	4.18 (1.9)	2.3
7.5	5	2021	21	17.6	4.84 (2.2)	3.1
10	7.5	2030	30	25.0	7.48 (3.4)	5
15	10	2042	42	33.0	7.48 (3.4)	5
20	15	2056	56	47.0	11 (5)	6
25	20	2070	70	60.0	16.5 (7.5)	7
30	25	2082	82	75.0	18.7 (8.5)	7

Table 8: 480 V, Three-Phase Drives

Normal Duty (ND)	Heavy Duty (HD)	Catalog Code HV35U...	Output Amps		Weight lb (kg)	Frame
			ND	HD		
1/2	1/2	4001	1.2	1.2	1.98 (0.9)	2.2
1	3/4	4002	2.1	1.8	2.2 (1)	2.2
2	2	4004	4.1	3.4	3.3 (1.5)	2.3
3	3	4005	5.4	4.8	3.52 (1.6)	2.4
4	3	4007	7.1	5.6	3.52 (1.6)	2.4
5	4	4009	8.9	7.3	3.52 (1.6)	2.4
7.5	5	4012	11.9	9.2	4.62 (2.1)	3.1
10	10	4018	17.5	14.8	7.26 (3.3)	5
15	10	4023	23.4	18	7.26 (3.3)	5
20	15	4031	31	24	10.34 (4.7)	6
25	20	4038	38	31	10.34 (4.7)	6
30	25	4044	44	39	15.4 (7)	8
40	30	4060	60	45	15.4 (7)	8

Drive Specifications

Power Ratings	
Item	Specification
Overload Capacity	110%/1 min. (Normal Duty) or 150%/1 min. (Heavy Duty)
Rated Voltage	200 to 240 VAC, -15 to +10%
	380 to 480 VAC, -15 to +10%
Capacity Range	240 V, Single-phase: 1/6 to 5 HP (0.1 to 3.7 kW)
	240 V, Three-Phase: 1/6 to 30 HP (0.1 to 22 kW)
	480 V, Three-Phase: 1/2 to 40 HP (0.2 to 30 kW)
Input Frequency	50/60 Hz +/-5%
Output Voltage Accuracy	+/-5%
Output Frequency	0 to 590 Hz
Control Method	V/f, Open Loop (IM/PM), Advanced Open Loop (PM), EZ Open Loop Vector
Motor Control	Induction Motor (IM), Permanent Magnet Motor (PM), Synchronous Reluctance Motor (SynRM)
Operating Environment	
Item	Specification
Ambient Temperature	-10 to +50°C (IP20/Protected Chassis), -10 to +40°C (UL Type 1), up to +60°C with derating
Storage Temperature	-40 to +70°C (short-term temperature during transportation)
Humidity	95% RH or less (non-condensing)
Altitude	Up to 1000 meters without derating, up to 4000 meters with output current and voltage derating
Shock	10 to 20 Hz: 9.8 m/s ²
	20 to 55 Hz: 5.9 m/s ²
Protection Design	IP20/Protected Chassis Standard, UL Type 1 kit optional
Mounting	Side-by-side, horizontal with derating, DIN rail, external heatsink
Conformal Coating (PCB's)	IEC 60721-3-3, Class 3C2 (chemical gases), Class 3S2 (solid particles)
Standards	CE, UL, cUL, RCM,RoHS

Network Communication Options

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

Table 9: Option Cards

Option ¹	Purpose	Catalog Code
Ethernet/IP™	ODVA compliant option cards to connect to Ethernet/IP. (single port card)	SI-EN3
Ethernet/IP dual port	ODVA compliant option cards to connect to Ethernet/IP. (dual port card)	SI-EN3/D
Modbus/TCP	Simple and effective solution to connect the drive to a Modbus TCP/IP network. (single port card)	SI-EM3
Modbus/TCP dual port	Simple and effective solution to connect the drive to a Modbus TCP/IP network. (dual port card)	SI-EM3/D
PROFINET®	PI compliant option cards to connect to a PROFIBUS-DP network.	SI-EP3
LonWorks	LonMark conformant option card to connect to a LonWorks network.	SI-W3

1. Use of an option card requires the Option Card Carrier.

Table 10: Option Card Carrier

Option	Purpose	Catalog Code
Option Card Carrier	For use when installing a communication option card on the HV305.	JOHB-GA50

The diagram illustrates the assembly process for installing a communication option card. It shows a 'Network Option Card' being inserted into an 'Option Card Carrier and Mounting Hardware'. This carrier is then shown being mounted to the 'Drive Cover' using screws. The components are shown in an exploded view to show their relative positions and how they fit together.

Keypad and Accessories

Additional Information
Keypads, Cables, and Mounting Kits

Table 11: Keypads

Catalog Code	Description
JVOP-KPLCA04MEB	LCD Keypad (standard, non-Bluetooth)
JVOP-KPLCC04MBB	LCD Keypad with Bluetooth



LCD Keypad with Bluetooth

Table 12: Remote Mount Adapters

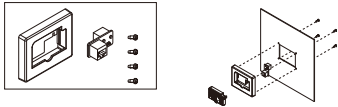
Catalog Code	Description	
ZPBA-HV305	UL Type 1 LED keypad mounting kit for standard HV305 keypad	
JVOP-KPBCH04AAA	Blank LED keypad when external mounting HV305 keypad (optional)	
900-192-933-001	Type 1 Keypad Panel Mount Kit A (brackets have tapped holes for use with screws) (For use with optional LCD keypad)	
900-192-933-002	Type 1 Keypad Panel Mount Kit B (brackets have untapped holes for use with panel studs) (For use with optional LCD keypad)	
900-239-230-001	Outdoor Type 12/3/3R Keypad Panel Mount (For use with optional LCD keypad)	

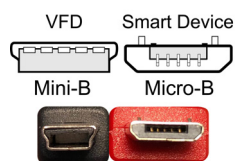


Table 13: Cables

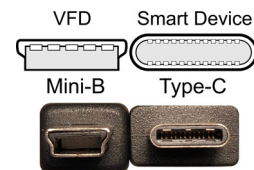
Catalog Code	Description
UWR0051	Keypad Remote Mount Cable - 1 Meter
UWR0052	Keypad Remote Mount Cable - 3 Meter
UWR01258	USB Cable for PC to Drive Communication - 3 Meter

Table 14: Android Mobile Device Interface Cables (for connecting Android device to USB port on drive)

Catalog Code	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



UWR01516-B - USB Mini-B to USB Micro-B



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, DIN Rail, a machine in a clean environment (UL Type 1), or inside a UL Type 1 enclosure with external heatsink. The UL Type 1 Adapters convert an Open Chassis Drive (IP20) without EMC to an enclosed wall-mounted drive (UL Type 1).

Additional Information

Enclosure Adapters and Kits

IP20/UL Type 1 Adapters



This adapter turns the HV305 IP20 into a HV305 UL Type 1 drive.

Table 15: 240 V, Single-Phase, IP20/UL Type 1 Adapter Kit

Catalog Code HV35U . .	Type 1 Adapters
	Catalog Code
B001ABA	ZBAA-GA50V1-1
B002ABA	ZBAA-GA50V1-1
B004ABA	ZBAA-GA50V1-2
B006ABA	ZBAA-GA50V2-1
B010ABA	ZBAA-GA50V2-2
B012ABA	ZBAA-GA50V3-1
B018ABA	ZBAA-GA50V4-1

Table 16: 240 V, Three-Phase, IP20/UL Type 1 Adapter Kit

Catalog Code HV35U . .	Type 1 Adapters
	Catalog Code
2001ABA	ZBAA-GA50V1-1
2002ABA	ZBAA-GA50V1-1
2004ABA	ZBAA-GA50V1-1
2006ABA	ZBAA-GA50V1-1
2010ABA	ZBAA-GA50V2-3
2012ABA	ZBAA-GA50V2-1
2021ABA	ZBAA-GA50V3-2
2030ABA	ZBAA-GA50V5-1
2042ABA	ZBAA-GA50V5-1
2056ABA	ZBAA-GA50V6-1
2070ABA	ZBAA-GA50V7-1
2082ABA	ZBAA-GA50V7-1

Table 17: 480 V, Three-Phase, IP20/UL Type 1 Adapter Kit

Catalog Code HV35U . .	Type 1 Adapters
	Catalog Code
4001ABA	ZBAA-GA50V2-4
4002ABA	ZBAA-GA50V2-4
4004ABA	ZBAA-GA50V2-5
4005ABA	ZBAA-GA50V2-2
4007ABA	ZBAA-GA50V2-2
4009ABA	ZBAA-GA50V2-2
4012ABA	ZBAA-GA50V3-2
4018ABA	ZBAA-GA50V5-1
4023ABA	ZBAA-GA50V5-1
4031ABA	ZBAA-GA50V6-1
4038ABA	ZBAA-GA50V6-1
4044ABA	ZBAA-GA50V8-1
4060ABA	ZBAA-GA50V8-1

External Heatsink Adapters

These adapters are for mounting standard IP20/Protected Chassis drives with the heatsink external to an enclosure.

Figure 2: External Heatsink Adapters

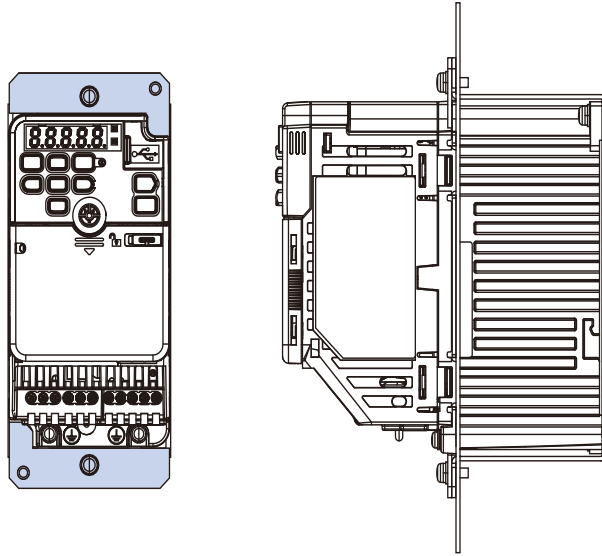


Table 18: 240 V, Single-Phase, Drive Mounting Adapters

Catalog Code HV35U . .	External Heatsink Adapter
	Catalog Code
B001*BA	ZPSA-GA50V1-1
B002*BA	
B004*BA	ZPSA-GA50V1-2
B006*BA	ZPSA-GA50V2-2
B010*BA	ZPSA-GA50V2-3
B012*BA	ZPSA-GA50V3-1
B018*BA	ZPSA-GA50V4-1

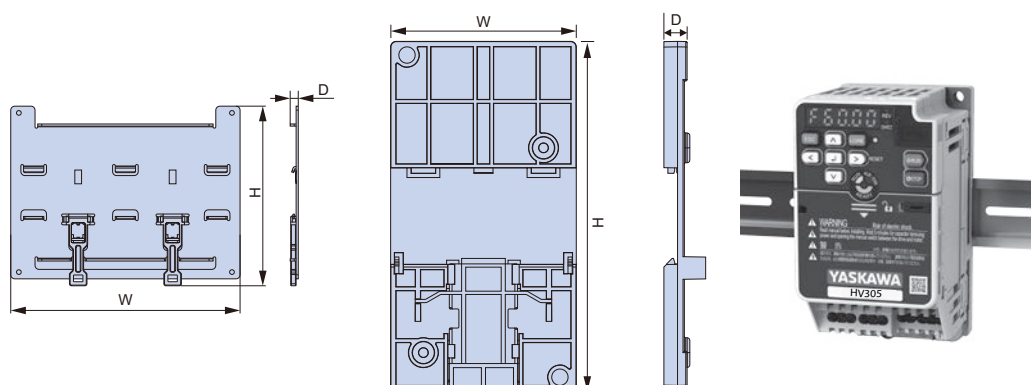
Table 19: 240 V, Three-Phase, Drive Mounting Adapters

Catalog Code HV35U . .	External Heatsink Adapter
	Catalog Code
2001*BA	ZPSA-GA50V1-1
2002*BA	
2004*BA	ZPSA-GA50V1-2
2006*BA	ZPSA-GA50V1-3
2010*BA	ZPSA-GA50V2-3
2012*BA	
2021*BA	ZPSA-GA50V3-1
2030*BA	ZPSA-GA50V5-1
2042*BA	
2056*BA	ZPSA-GA50V6-1
2070*BA	ZPSA-GA50V7-1
2082*BA	

Table 20: 480 V, Three-Phase, Drive Mounting Adapters

Catalog Code HV35U . .	External Heatsink Adapter
	Catalog Code
4001*BA	ZPSA-GA50V2-1
4002*BA	ZPSA-GA50V2-2
4004*BA	
4005*BA	ZPSA-GA50V2-3
4007*BA	
4009*BA	
4012*BA	ZPSA-GA50V3-1
4018*BA	ZPSA-GA50V5-1
4023*BA	
4031*BA	ZPSA-GA50V6-1
4038*BA	
4044*BA	ZPSA-GA50V8-1
4060*BA	

DIN Rail Mounting Adapters



By utilizing the DIN rail attachment, equipped drives can be attached and detached with one touch. DIN adapters can be mounted on models with dimensions less than 170 mm wide and less than 128 mm in height.

Table 21: DIN Rail Adapter Kit Dimensions for HV305 IP20/Protected Chassis without EMC Filter

Catalog Code HV35U...	Dimensions in (mm)			Catalog Code
	Width	Height	Depth	
B001ABA	2.68 (68)	5.04 (128)	0.33 (8.5)	ZPZ-GA50V1
B002ABA				
B004ABA				
B006ABA	4.17 (106)	5.04 (128)	0.33 (8.5)	ZPZ-GA50V2
B010ABA				
B012ABA	5.43 (138)	5.04 (128)	0.33 (8.5)	ZPZ-GA50V3
B018ABA	6.69 (170)	5.24 (133)	0.24 (6.0)	EZZ08122D
2001ABA	2.68 (68)	5.04 (128)	0.33 (8.5)	ZPZ-GA50V1
2002ABA				
2004ABA				
2006ABA				
2010ABA	4.17 (106)	5.04 (128)	0.33 (8.5)	ZPZ-GA50V2
2012ABA				
2021ABA	5.43 (138)	5.04 (128)	0.33 (8.5)	ZPZ-GA50V3
4001ABA	4.17 (106)	5.04 (128)	0.33 (8.5)	ZPZ-GA50V2
4002ABA				
4004ABA				
4005ABA				
4007ABA				
4009ABA				
4012ABA	5.43 (138)	5.04 (128)	0.33 (8.5)	ZPZ-GA50V3

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 Filters	• IP20 rated. • UL and cUL approved. • Install external EMC filters to the drive to input to comply with C2 levels of the EN 61800-3 EMC directive. • Improves the power supply total power factor.
DC Bus Reactor	• 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	• 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.
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

[HV305 Power Options](#)

EMC Filters



Provides electrical noise mitigation

Table 22: 240 V, Single-Phase EMC Filters

Catalog Code HV35...	Part Number
B001A**	FS23638-10-07
B002A**	FS23638-10-07
B004A**	FS23638-10-07
B006A**	FS23638-20-07
B0010A**	FS23638-20-07
B0012A**	FS23638-30-07
B0018A**	FS23638-40-07

Table 23: 240 V, Three-Phase EMC Filters

Catalog Code HV35...	Part Number
2001A**	FS23637-8-07
2002A**	FS23637-8-07
2004A**	FS23637-8-07
2006A**	FS23637-8-07
2010A**	FS23637-14-07
2012A**	FS23637-14-07
2021A**	FS23637-24-07
2030A**	FS5973-35-07
2042A**	FS5973-60-07
2056A**	FS5973-100-07
2070A**	FS5973-100-07
20082A**	Contact Factory

Table 24: 480 V, Three-Phase EMC Filters

Catalog Code HV35...	Part Number
4001A**	FS23639-5-07
4002A**	FS23639-5-07
4004A**	FS23639-5-07
4005A**	FS23639-10-07
4007A**	FS23639-10-07
4009A**	FS23639-10-07
4012A**	FS23639-15-07
4018A**	FS5972-35-07
4023A**	FS5972-35-07
4031A**	FS5972-60-07
4038A**	FS5972-60-07
4044A**	Contact Factory
4060A**	

EMC Filter Dimensions

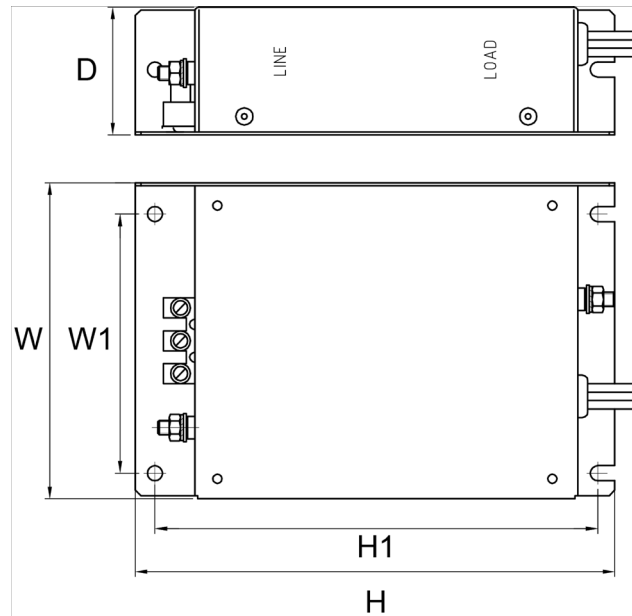


Table 25: EMC Filter Dimensions

Model Number #	EMC Filter Dimensions (mm)					Weight
	H	W	D	H1	W1	lb (kg)
FS23638-10-07	169	71	45	156	51	0.97
FS23638-20-07	169	111	50	156	91	1.76
FS23638-30-07	174	144	50	161	120	2.64
FS23638-40-07	174	174	50	161	150	3.52
FS23637-8-07	169	71	40	156	51	.88
FS23637-14-07	169	111	45	156	91	1.28
FS23637-24-07	174	144	50	161	120	1.98
FS5973-35-07	330	141	46	313	115	3.09
FS5973-60-07	335	206	60	336	175	6.61
FS5973-100-07	408	236	80	390	205	10.8
FS23639-5-07	169	111	45	156	91	1.1
FS23639-10-07	169	111	45	156	91	1.54
FS23639-15-07	174	144	50	161	120	1.98
FS5972-35-07	335	206	50	336	175	4.63
FS5979-60-07	408	236	65	390	205	8.82

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 or in a separate UL Type 1 enclosure.

Table 26: 240 V, Single-Phase DC Bus Reactors

HP	Catalog Code HV35U...		3% DC Bus Reactor				5% DC Bus Reactor			
	ND	HD	Open Type Catalog Code	Enclosed UL Type 1 Catalog Code	Amps	Inductance (mH)	Open Type Catalog Code	Enclosed UL Type 1 Catalog Code	Amps	Inductance (mH)
1/6	B001	B001	URX000042	URX000216	4	25	URX000042	URX000216	4	25
1/4	B002	B002	URX000041	URX000207	4	12	05P00620-0109	URX000217	4	15
1/2	--	B004	05P00620-0111	URX000208	9	7.5	URX000044	URX000218	9	11.5
3/4	B004	--								
1	--	B006	05P00620-0110	URX000257	9	3.22	05P00620-0111	URX000208	9	7.5
1.5	B006	--								
2	--	B010	URX000048	URX000210	18	2.75	05P00652-0216	URX000220	18	3.75
3	B010	--								
	B012	B012	URX000052	URX000211	25	1.75	URX000054	URX000224	25	4
5	--	B018	URX000055	URX000223	32	1.62	URX000056	URX000221	32	2.68

Table 27: 240 V, Three-Phase DC Bus Reactors

HP	Catalog Code HV35U...		3% DC Bus Reactor				5% DC Bus Reactor			
	ND	HD	Open Type Catalog Code	Enclosed UL Type 1 Catalog Code	Amps	Inductance (mH)	Open Type Catalog Code	Enclosed UL Type 1 Catalog Code	Amps	Inductance (mH)
1/6	2001	2001	URX000042	URX000216	4	25	URX000039	URX000215	2	50
1/4	2002	2002	URX000041	URX000207	4	12	URX000042	URX000216	4	25
1/2	--	2004	URX000041	URX000207	4	12	URX000041	URX000207	4	12
3/4	2004	--								
1	--	2006	05P00620-0111	URX000208	9	7.5	05P00620-0111	URX000208	9	7.5
1.5	2006	--								
2	--	2010	05P00620-0110	URX000257	9	3.22	05P00620-0111	URX000208	9	7.5
3	2010	--	05P00620-0110	URX000257	9	3.22	05P00620-0110	URX000257	9	3.22
	--	2012	URX000371	URX000258	12	2.1	05P00652-0213	URX000209	12	4
4	2012	--								
5	--	2021	05P00620-0115	URX000259	18	1.375	05P00652-0216	URX000220	18	3.75
7.5	2021	2030	URX000053	URX000212	25	1.275	URX000052	URX000211	25	1.75
10	2030	2042	URX000055	URX000223	32	1.62	URX000055	URX000223	32	1.62
15	2042	2056	URX000059	URX000262	50	0.625	URX000057	URX000184	40	1
20	2056	2070	URX000064	URX000213	62	0.61	URX000064	URX000213	62	0.61
25	2070	2082	URX000068	URX000214	80	0.4	URX000073	URX000265	92	0.6
30	2082	--	URX000072	URX000266	92	0.2	URX000073	URX000265	92	0.6

Table 28: 480 V, Three-Phase DC Bus Reactors

HP	Catalog Code HV35U...		3% DC Bus Reactor				5% DC Bus Reactor			
	ND	HD	Open Type Catalog Code	Enclosed UL Type 1 Catalog Code	Amps	Inductance (mH)	Open Type Catalog Code	Enclosed UL Type 1 Catalog Code	Amps	Inductance (mH)
1/2	4001	4001	URX000039	URX000215	2	50	URX000039	URX000215	2	50
3/4	--	4002	URX000042	URX000216	4	25	URX000039	URX000215	2	50
1	4002	--								
2	4004	4004	05P00620-0109	URX000217	4	15	URX000042	URX000216	4	25

HP	Catalog Code HV35U...		3% DC Bus Reactor				5% DC Bus Reactor			
	ND	HD	Open Type Catalog Code	Enclosed UL Type 1 Catalog Code	Amps	Inductance (mH)	Open Type Catalog Code	Enclosed UL Type 1 Catalog Code	Amps	Inductance (mH)
3	4005	4005	URX000044	URX000218	9	11.5	URX000042	URX000216	4	25
	--	4007	05P00620-0111	URX000208	9	7.5	URX000044	URX000218	9	11.5
4	4007	4009								
5	4009	4012	05P00620-0111	URX000208	9	7.5	URX000044	URX000218	9	11.5
7.5	4012	--	URX000046	URX000219	12	6	URX000046	URX000219	12	6
10	4018	4018	05P00652-0216	URX000220	18	3.75	URX000049	URX000260	18	6
	--	4023	URX000052	URX000211	25	1.75	URX000054	URX000224	25	4
15	4023	4031								
20	4031	4038	URX000056	URX000221	32	2.68	URX000056	URX000221	32	2.68
25	4038	4044	URX000058	URX000225	40	2.5	URX000058	URX000225	40	2.5
30	4044	4060	URX000057	URX000184	40	1	URX000058	URX000225	40	2.5
40	4060	--	URX000073	URX000265	92	0.6	URX000071	N/A	80	1.25

Open Type DC Bus Reactor Dimensions

Figure 3:

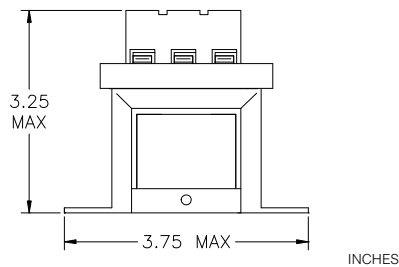


Figure 4:

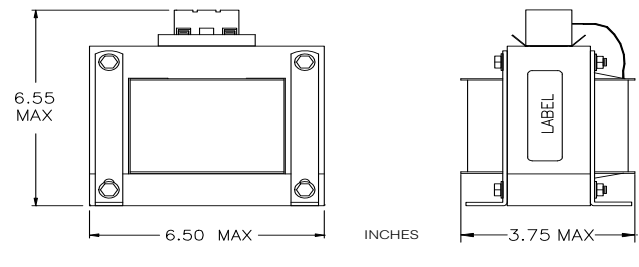


Figure 5:

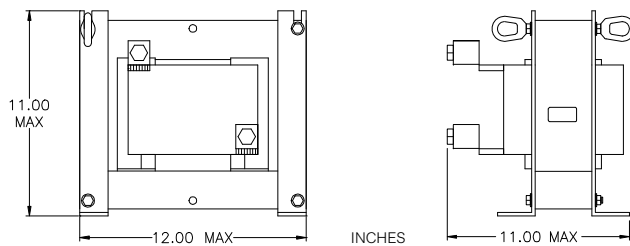
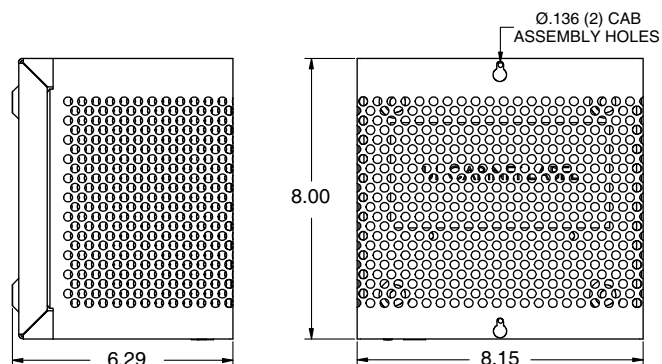


Table 29: Open Type DC Reactor Dimensions

DC Bus Reactor	Figure	DC Bus Reactor	Figure
05P00620-0109	3	URX000053	4
05P00620-0110	3	URX000054	4
05P00620-0111	4	URX000055	4
05P00620-0115	4	URX000056	4
05P00652-0213	4	URX000057	4
05P00652-0216	4	URX000058	4
URX000039	3	URX000059	4
URX000041	3	URX000064	5
URX000042	4	URX000068	5
URX000044	4	URX000071	5
URX000046	4	URX000072	5
URX000048	4	URX000073	5
URX000049	4	URX000371	4
URX000052	4		

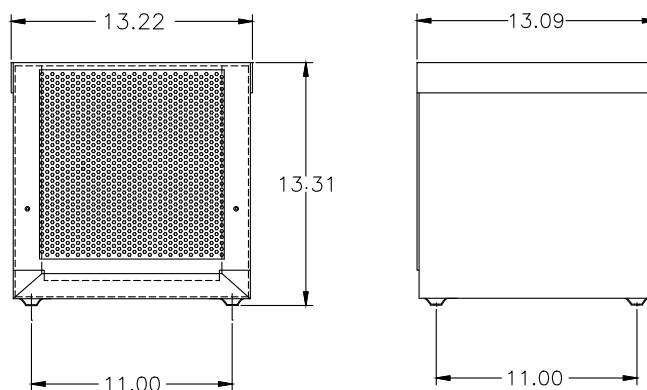
Enclosed DC Reactor Dimensions

Figure 6: CAB-8



UNITS: INCHES

Figure 7: CAB-13V



UNITS: INCHES

Table 30: Enclosed Type DC Reactor Dimensions

DC Bus Reactor	Figure	DC Bus Reactor	Figure
URX000184	6	URX000219	6
URX000207	6	URX000220	6
URX000208	6	URX000221	6
URX000209	6	URX000223	7
URX000210	6	URX000224	7
URX000211	6	URX000225	7
URX000212	6	URX000257	6
URX000213	7	URX000258	6
URX000214	7	URX000259	6
URX000215	6	URX000260	7
URX000216	6	URX000262	6
URX000217	6	URX000265	7
URX000218	6	URX000266	7

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 UL Type 1 enclosure.

Table 31: 240 V, Single-Phase, AC Input Reactors

HP	Catalog Code HV35U...		3% Input Reactor				5% Input Reactor			
	ND	HD	Open Type Catalog Code	Enclosed UL Type 1 Catalog Code	Amps	Inductance (mH)	Open Type Catalog Code	Enclosed UL Type 1 Catalog Code	Amps	Inductance (mH)
1/6	B001	B001	URX000291	URX000651	2.1	5.3	URX000292	URX000502	2.1	11
1/4	B002	B002	URX000299	URX000410	4.8	2.3	URX000300	URX000503	4.8	4.8
1/2	--	B004	URX000303	URX000411	7.6	1.5	URX000304	URX000504	7.6	3
3/4	B004	--								
1	--	B006	URX000307	URX000413	11	1	URX000308	URX000414	11	2.1
1.5	B006	--								
2	--	B010	URX000315	URX000418	21	0.53	URX000316	URX000419	21	1.1
3	B010	--								
	B012	B012	URX000319	URX000420	28	0.39	URX000320	URX000421	28	0.82
5	--	B018	URX000319	URX000420	28	0.39	URX000320	URX000421	28	0.82

Table 32: 240 V, Three-Phase, AC Input Reactors

HP	Catalog Code HV35U...		3% Input Reactor				5% Input Reactor			
	ND	HD	Open Type Catalog Code	Enclosed UL Type 1 Catalog Code	Amps	Inductance (mH)	Open Type Catalog Code	Enclosed UL Type 1 Catalog Code	Amps	Inductance (mH)
1/6	2001	2001	URX000283	URX000652	1.1	10	URX000284	URX000585	1.1	21
1/4	2002	2002	URX000291	URX000651	2.1	5.3	URX000292	URX000502	2.1	11
1/2	--	2004	URX000295	URX000409	3.4	3.2	URX000296	URX000584	3.4	6.8
3/4	2004	--								
1	--	2006	URX000299	URX000410	4.8	2.3	URX000300	URX000503	4.8	4.8
1.5	2006	--								
2	--	2010	URX000303	URX000411	7.6	1.5	URX000304	URX000504	7.6	3
3	2010	--	URX000307	URX000413	11	1	URX000308	URX000414	11	2.1
	--	2012	URX000307	URX000413	11	1	URX000308	URX000414	11	2.1
4	2012	--								
5	--	2021	URX000311	URX000415	14	0.79	URX000312	URX000416	14	1.6
7.5	2021	2030	URX000315	URX000418	21	0.53	URX000316	URX000419	21	1.1
10	2030	2042	URX000319	URX000420	28	0.39	URX000320	URX000421	28	0.82
15	2042	2056	URX000323	URX000422	35	0.35	URX000324	URX000423	35	0.71
20	2056	2070	URX000329	URX000501	55	0.27	URX000330	URX000553	55	0.48
25	2070	2082	URX000332	URX000426	65	0.19	URX000333	URX000554	65	0.38
30	2082	--	URX000335	URX000427	83	0.17	URX000336	URX000555	83	0.29

Table 33: 480 V, Three-Phase, AC Input Reactor

HP	Catalog Code HV35U...		3% Input Reactor				5% Input Reactor			
	ND	HD	Open Type Catalog Code	Enclosed UL Type 1 Catalog Code	Amps	Inductance (mH)	Open Type Catalog Code	Enclosed UL Type 1 Catalog Code	Amps	Inductance (mH)
1/2	4001	4001	URX000280	URX000653	0.75	31	URX000281	URX000654	0.75	49
3/4	--	4002	URX000288	URX000551	1.6	14	URX000289	URX000571	1.6	23
1	4002	--								
2	4004	4004	URX000296	URX000584	3.4	6.8	URX000297	URX000573	3.4	11

HP	Catalog Code HV35U...		3% Input Reactor				5% Input Reactor			
	ND	HD	Open Type Catalog Code	Enclosed UL Type 1 Catalog Code	Amps	Inductance (mH)	Open Type Catalog Code	Enclosed UL Type 1 Catalog Code	Amps	Inductance (mH)
3	4005	4005	URX000300	URX000503	4.8	4.8	URX000301	URX000552	4.8	7.7
	--	4007	URX000304	URX000504	7.6	3	URX000305	URX000574	7.6	4.8
4	4007	4009								
5	4009	4012	URX000304	URX000504	7.6	3	URX000305	URX000574	7.6	4.8
7.5	4012	--	URX000308	URX000414	11	2.1	URX000309	URX000505	11	3.3
10	4018	4018	URX000312	URX000416	14	1.6	URX000313	URX000417	14	2.6
	--	4023	URX000316	URX000419	21	1.1	URX000317	URX000568	21	1.8
15	4023	4031								
20	4031	4038	URX000320	URX000421	28	0.82	URX000321	URX000575	28	1.3
25	4038	4044	URX000320	URX000421	28	0.82	URX000321	URX000575	28	1.3
30	4044	4060	URX000324	URX000423	35	0.71	URX000325	URX000576	35	1.2
40	4060	--	URX000327	URX000425	46	0.55	URX000328	URX000577	46	0.98

AC Output Reactors



Output impedance reactors may be used to reduce the effects of load side transients on the drive. The reactors listed are available loose or in a separate UL Type 1 enclosure.

Table 34: 240 V, Single-Phase, AC Output Reactors

HP	Catalog Code HV35U...		3% DC Bus Reactor			
	Normal Duty	Heavy Duty	Open Type Catalog Code	Enclosed UL Type 1 Catalog Code	Amps	Inductance (mH)
1/6	B001	B001	URX000080	URX000243	2	6
1/4	B002	B002	URX000080	URX000243	2	6
1/2	--	B004	05P00620-0017	05P00620-0020	4	3
3/4	B004	--				
1	--	B006	05P00620-0024	05P00620-0027	8	1.5
1.5	B006	--				
2	--	B010	05P00620-0134	05P00620-0032	12	1.25
3	B010	--				
	B012	B012	05P00620-0134	05P00620-0032	12	1.25
5	--	B018	05P00620-0136	05P00620-0036	18	0.8

Table 35: 240 V, Three-Phase, AC Output Reactors

HP	Catalog Code HV35U...		3% Output Reactor			
	Normal Duty	Heavy Duty	Open Type Catalog Code	Enclosed UL Type 1 Catalog Code	Amps	Inductance (mH)
1/6	2001	2001	URX000080	URX000243	2	6
1/4	2002	2002	URX000080	URX000243	2	6
1/2	--	2004	05P00620-0017	05P00620-0020	4	3
3/4	2004	--				
1	--	2006	05P00620-0024	05P00620-0027	8	1.5
1.5	2006	--				
2	--	2010	05P00620-0024	05P00620-0027	8	1.5
3	2010	--	05P00620-0134	05P00620-0032	12	1.25
	--	2012	05P00620-0134	05P00620-0032	12	1.25
4	2012	--				
5	--	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	05P00620-0141	05P00620-0054	55	0.25
25	2070	2082	05P00620-0143	05P00620-0058	80	0.2
30	2082	--	URX000085	URX000204	100	0.15

Table 36: 480 V, Three-Phase, AC Output Reactors

HP	Catalog Code HV35U...		3% Output Reactor			
	Normal Duty	Heavy Duty	Open Type Catalog Code	Enclosed UL Type 1 Catalog Code	Amps	Inductance (mH)
1/2	4001	4001	URX000078	URX000242	1	18
3/4	--	4002	05P00620-0131	05P00620-0015	2	12
1	4002	--				
2	4004	4004	05P00620-0132	05P00620-0021	4	6.5

HP	Catalog Code HV35U...		3% Output Reactor			
	Normal Duty	Heavy Duty	Open Type Catalog Code	Enclosed UL Type 1 Catalog Code	Amps	Inductance (mH)
3	4005	4005	05P00620-0025	05P00620-0029	8	5
	--	4007	05P00620-0133	05P00620-0028	8	3
4	4007	4009				
5	4009	4012	05P00620-0133	05P00620-0028	8	3
7.5	4012	--	05P00620-0135	05P00620-0033	12	2.5
10	4018	4018	05P00620-0137	05P00620-0037	18	1.5
	--	4023	05P00620-0138	05P00620-0042	25	1.2
15	4023	4031				
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	--	05P00620-0142	05P00620-0055	55	0.5

AC Open Reactor Dimensions

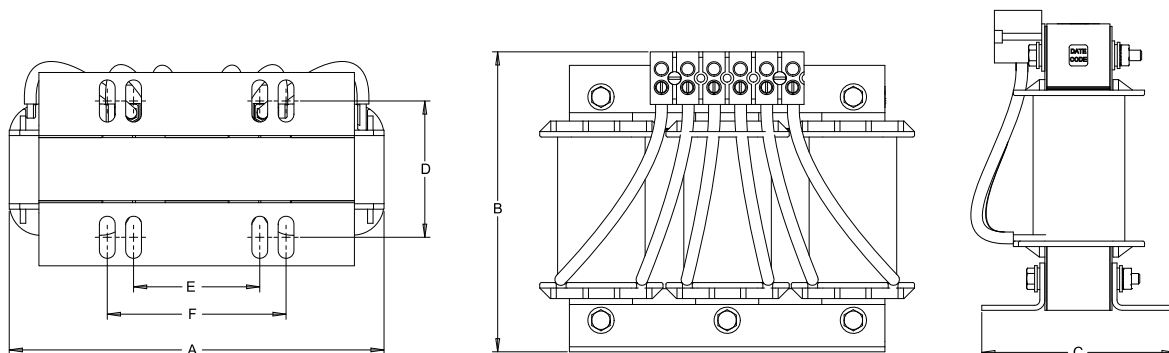


Table 37: AC Open Reactor Dimensions

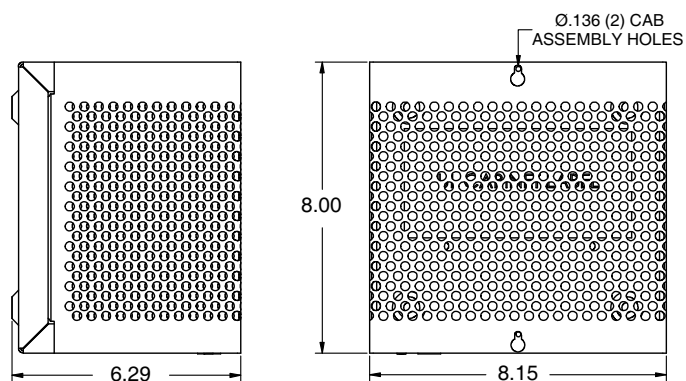
Open Type Reactor Catalog Code	Watt Loss	Dimensions (mm/in)						Weight
		A	B	C	D	E	F	lb (kg)
05P00620-0017	14.5	106.7/4.2	101.6/4	66/2.6	50/2	37/1.4	65/2.6	4 (1.8)
05P00620-0024	19.5	149.9/5.9	116.8/4.6	73.7/2.9	53/2.1	51/2	76.2/3	7 (3.2)
05P00620-0025	25.3	149.9/5.9	119.4/4.7	83.8/3.3	67/2.6	51/2	76.2/3	11 (5.0)
05P00620-0044	49	180.3/7.1	144.8/5.7	94/3.7	66/2.6	76/3	76.2/3	14 (6.4)
05P00620-0049	62	226.1/8.9	182.9/7.2	116.8/4.6	80/3.2	76/3	108/4.3	26 (11.8)
05P00620-0131	7.5	106.7/4.2	101.6/4	66/2.6	50/2	37/1.4	65/2.6	4 (1.8)
05P00620-0132	20	106.7/4.2	101.6/4	66/2.6	50/2	37/1.4	65/2.6	4 (1.8)
05P00620-0133	29	149.9/5.9	116.8/4.6	73.7/2.9	53/2.1	51/2	76.2/3	8 (3.6)
05P00620-0134	26	149.9/5.9	127/5	81.3/3.2	53/2.1	51/2	76.2/3	9 (4.1)
05P00620-0135	31	149.9/5.9	127/5	81.3/3.2	53/2.1	51/2	76.2/3	10 (4.5)
05P00620-0136	36	149.9/5.9	129.5/5.1	81.3/3.2	54/2.1	51/2	76.2/3	9 (4.1)

Open Type Reactor Catalog Code	Watt Loss	Dimensions (mm/in)						Weight
		A	B	C	D	E	F	lb (kg)
05P00620-0137	43	149.9/5.9	129.5/5.1	88.9/3.5	63/2.5	51/2	76.2/3	12 (5.4)
05P00620-0138	52	180.3/7.1	147.3/5.8	86.7/3.4	60/2.4	76/3	76.2/3	14 (6.4)
05P00620-0139	54	180.3/7.1	147.3/5.8	94/3.7	70/2.8	76/3	76.2/3	16 (7.3)
05P00620-0140	54	226.1/8.9	180.3/7.1	116.8/4.6	80/3.2	76/3	108/4.3	22 (10)
05P00620-0141	64	228.6/9	175.3/6.9	134.6/5.3	80/3.2	76/3	108/4.3	24 (10.9)
05P00620-0142	67	228.6/9	175.3/6.9	134.6/5.3	80/3.2	76/3	108/4.3	26 (11.8)
05P00620-0143	82	226.1/8.9	175.3/6.9	144.8/5.7	88/3.5	92/3.63	108/4.3	25 (11.3)
URX000078	8	111.8/4.4	104.1/4.1	71.1/2.8	50/2	37/1.4	65/2.6	3 (1.4)
URX000080	10.7	106.7/4.2	101.6/4	66/2.6	44/1.7	37/1.4	65/2.6	3 (1.4)
URX000083	48	180.3/7.1	144.8/5.7	86.7/3.4	60/2.4	76/3	76.2/3	11 (5.0)
URX000085	94	226.1/8.9	177.8/7	152.4/6	88/3.5	92/3.62	108/4.3	29 (13.2)
URX000280	6.6	114.3/4.5	94/3.7	38.1/1.5	N/A	N/A	101.6/4	2 (0.9)
URX000281	8.8	114.3/4.5	94/3.7	38.1/1.5	N/A	N/A	101.6/4	2 (0.9)
URX000283	4.8	114.3/4.5	94/3.7	38.1/1.5	N/A	N/A	101.6/4	2 (0.9)
URX000284	7.8	114.3/4.5	94/3.7	38.1/1.5	N/A	N/A	101.6/4	2 (0.9)
URX000288	10.9	114.3/4.5	94/3.7	38.1/1.5	N/A	N/A	101.6/4	2 (0.9)
URX000289	15	114.3/4.5	94/3.7	38.1/1.5	N/A	N/A	101.6/4	2 (0.9)
URX000291	9	114.3/4.5	94/3.7	38.1/1.5	N/A	N/A	101.6/4	2 (0.9)
URX000292	14.3	114.3/4.5	94/3.7	38.1/1.5	N/A	N/A	101.6/4	2 (0.9)
URX000295	12.3	114.3/4.5	94/3.7	38.1/1.5	N/A	N/A	101.6/4	2 (0.9)
URX000296	19.6	114.3/4.5	94/3.7	38.1/1.5	N/A	N/A	101.6/4	2 (0.9)
URX000297	26.5	106.7/4.2	101.6/4	66/2.6	48.3/1.9	35.6/1.4	66/2.6	3 (1.4)
URX000299	13.8	114.3/4.5	94/3.7	38.1/1.5	N/A	N/A	101.6/4	2 (0.9)
URX000300	23	114.3/4.5	94/3.7	38.1/1.5	N/A	N/A	101.6/4	2 (0.9)
URX000301	37.5	106.7/4.2	101.6/4	66/2.6	48.3/1.9	35.6/1.4	66/2.6	3 (1.4)
URX000303	19.2	114.3/4.5	94/3.7	38.1/1.5	N/A	N/A	101.6/4	2 (0.9)
URX000304	37.2	106.7/4.2	101.6/4	66/2.6	48.3/1.9	35.6/1.4	66/2.6	3 (1.4)
URX000305	47.8	106.7/4.2	101.6/4	76.2/3	58.4/2.3	35.6/1.4	66/2.6	4 (1.8)
URX000307	26.8	106.7/4.2	104.1/4.1	66/2.6	48.3/1.9	35.6/1.4	66/2.6	3 (1.4)
URX000308	40.9	106.7/4.2	104.1/4.1	66/2.6	48.3/1.9	35.6/1.4	66/2.6	4 (1.8)
URX000309	54.4	106.7/4.2	104.1/4.1	83.8/3.3	63.5/2.5	35.6/1.4	66/2.6	5 (2.3)
URX000311	32.7	106.7/4.2	104.1/4.1	66/2.6	48.3/1.9	35.6/1.4	66/2.6	3 (1.4)
URX000312	48.2	106.7/4.2	104.1/4.1	76.2/3	58.4/2.3	35.6/1.4	66/2.6	4 (1.8)
URX000313	60.6	149.9/5.9	119.4/4.7	73.7/2.9	53.3/2.1	50.8/2	76.2/3	7 (3.2)
URX000315	38.3	106.7/4.2	132.1/5.2	76.2/3	58.4/2.3	35.6/1.4	66/2.6	4 (1.8)
URX000316	57.4	149.9/5.9	152.4/6	73.7/2.9	53.3/2.1	50.8/2	76.2/3	7 (3.2)
URX000317	73.5	149.9/5.9	152.4/6	83.8/3.3	63.5/2.5	50.8/2	76.2/3	10 (4.5)
URX000319	48.2	106.7/4.2	55.9/2.2	83.8/3.3	63.5/2.5	35.6/1.4	66/2.6	5 (2.3)
URX000320	66.8	149.9/5.9	152.4/6	83.8/3.3	63.5/2.5	50.8/2	76.2/3	10 (4.5)
URX000321	93.8	149.9/5.9	152.4/6	83.8/3.3	63.5/2.5	50.8/2	76.2/3	10 (4.5)

Open Type Reactor Catalog Code	Watt Loss	Dimensions (mm/in)						Weight
		A	B	C	D	E	F	lb (kg)
URX000323	69	149.9/5.9	152.4/6	88.9/3.5	71.1/2.8	50.8/2	76.2/3	10 (4.5)
URX000324	103	180.3/7.1	147.3/5.8	94/3.7	68.6/2.7	N/A	76.2/3	13 (5.9)
URX000325	122	180.3/7.1	147.3/5.8	106.7/4.2	81.3/3.2	N/A	76.2/3	18 (8.2)
URX000327	100	180.3/7.1	144.8/5.7	106.7/4.2	81.3/3.2	N/A	76.2/3	17 (7.7)
URX000328	179	226.1/8.9	210.8/8.3	116.8/4.6	81.3/3.2	76.2/3	109.2/4.3	24 (10.9)
URX000329	68	180.3/7.1	139.7/5.5	124.5/4.9	81.3/3.2	N/A	76.2/3	10 (4.5)
URX000330	110	180.3/7.1	142.2/5.6	142.2/5.6	81.3/3.2	N/A	76.2/3	20 (9.1)
URX000332	87	180.3/7.1	142.2/5.6	127/5	81.3/3.2	N/A	76.2/3	18 (8.2)
URX000333	105	180.3/7.1	144.8/5.7	152.4/6	81.3/3.2	N/A	76.2/3	18 (8.2)
URX000335	119	180.3/7.1	142.2/5.6	149.9/5.9	81.3/3.2	N/A	76.2/3	19 (8.6)
URX000336	155	226.1/8.9	180.3/7.1	147.3/5.8	81.3/3.2	76.2/3	109.2/4.3	26 (11.8)

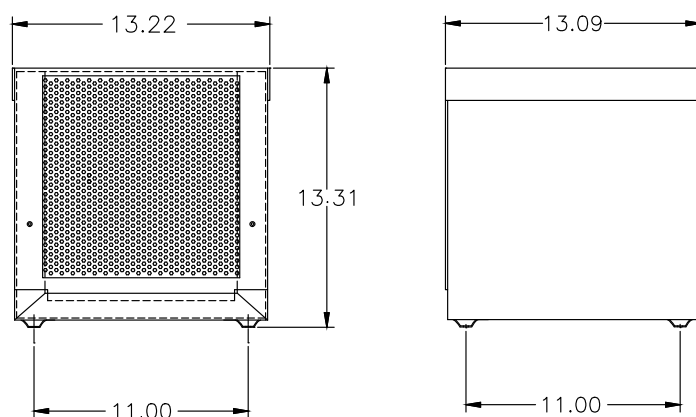
Enclosed AC Reactor Dimensions

Figure 8: CAB-8



UNITS: INCHES

Figure 9: CAB-13V



UNITS: INCHES

Table 38: AC Input/Output Enclosed Reactor Specifications

Enclosed UL Type 1 Reactor Catalog Code	Cabinet Reference (Figure)	Weight
		lb / kg
05P00620-0015	9	28 / 12.7
05P00620-0020		28.4 / 12.9
05P00620-0021		36 / 16.3
05P00620-0027		42 / 19.1
05P00620-0028		38 / 17.2
05P00620-0029		40 / 18.1
05P00620-0032		44 / 20
05P00620-0033		55 / 24.9
05P00620-0036	8	8.5 / 3.9
05P00620-0037		8.6 / 3.9
05P00620-0041		8.5 / 3.9
05P00620-0042		8.6 / 3.9
05P00620-0046		8.6 / 3.9
05P00620-0047		8.5 / 3.9
05P00620-0050		8.6 / 3.9
05P00620-0051		9.7 / 4.4
05P00620-0054		9.8 / 4.4
05P00620-0055		10 / 5
05P00620-0058		8.5 / 3.9
URX000204		8.5 / 3.9
URX000242		10 / 4.6
URX000243		10 / 5
URX000409		8.6 / 3.9
URX000410		8.7 / 3.9
URX000411		8 / 4
URX000413		9.7 / 4.4
URX000414		1.2 / 5.1
URX000415		9.8 / 4.4
URX000416		1.3 / 5.1
URX000417		4.1 / 6.4
URX000418	9	22.2 / 10.1
URX000419		25.2 / 11.4
URX000420		23.1 / 10.5
URX000421		27.5 / 12.5
URX000422		28 / 12.7
URX000423		31 / 14.1
URX000425		35 / 15.9
URX000426		36 / 16.3
URX000427		37 / 16.8
URX000501		36 / 16.3

Enclosed UL Type 1 Reactor Catalog Code	Cabinet Reference (Figure)	Weight
		lb / kg
URX000502	8	8.6 / 3.9
URX000503		8 / 4
URX000504		9.8 / 4.4
URX000505		2.3 / 5.6
URX000551		8.6 / 3.9
URX000552		9.8 / 4.4
URX000553	9	38 / 17.2
URX000554		40 / 18.1
URX000555		44 / 20
URX000568		28 / 12.7
URX000571	8	8.6 / 3.9
URX000573		9.7 / 4.4
URX000574		10 / 5
URX000575	9	28.4 / 12.9
URX000576		36 / 16.3
URX000577		42 / 19.1
URX000584	8	8.6 / 3.9
URX000585		8.6 / 3.9
URX000651		8.5 / 3.9
URX000652		8.5 / 3.9
URX000653		8.5 / 3.9
URX000654		8.5 / 3.9

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 V, Single-Phase
	460-480 V, 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	Manual
Specifications	Drawings

Table 39: Single-Phase Converters - 20 to 125 HP

Power Supply	System Kit Number ¹	Rated Power HP ²	Input Current (Amps)	Output Current (Amps)	Height (mm)	Width (mm)	Depth (mm)
230 - 240 Vac	SPBC-240-20HP	20	79	57	16.7 (423)	10 (254)	10 (254)
	SPBC-240-30HP	30	116	84	16.7 (423)	10 (254)	10 (254)
	SPBC-240-40HP	40	154	112	20.7 (525)	12 (305)	10.5 (267)
	SPBC-240-50HP	50	191	138	25 (636)	12.2 (310)	11.42 (290)
	SPBC-240-60HP	60	228	165	25 (636)	12.2 (310)	11.42 (290)
460 - 480 Vac	SPBC-480-30HP	30	58	42	16.7 (423)	10 (254)	10 (254)
	SPBC-480-40HP	40	77	56	16.7 (423)	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)	11.42 (290)
	SPBC-480-125HP	125	234	169	25 (636)	12.2 (310)	14.8 (375)

1. The kit includes open type/IP20 protected Chassis Single-Phase Converter and DC link choke.

2. The larger power Single Phase Converter unit may be used on lower power motors.

HV305 Drive Derating

Carrier Frequency

Table 40: 240 V, Single-Phase, Carrier Frequency Derating

Catalog Code HV35U..	Carrier Frequency Derating ^{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
B001	0.8	0.8	0.8	0.8	0.7	0.64	1.2	1.1	1	0.9	0.8	0.64
B002	1.6	1.6	1.6	1.6	1.4	1.3	1.9	1.9	1.7	1.6	1.4	1.3
B004	3	3	3	3	2.7	2.4	3.5	3.5	3.2	3	2.7	2.4
B006	5	5	5	5	4.5	4	6	6	5.4	5	4.5	4
B010	8	8	8	7.5	7	6.4	9.6	9.1	8.3	7.7	7.1	6.4
B012	11	11	11	10.4	9.6	8.8	12.2	11.9	11	10.4	9.6	8.8
B018	17.6	17.6	17.6	16.6	15.3	14.1	21	19.8	18.1	17	15.5	14.1

1. Applicable Motor Control Methods: HV305 Parameter A1-02 = 0, 2, 5, 8.
2. Refer to the HV305 Technical Manual for AOLV/PM Carrier Frequency Derating information.

Table 41: 240 V, Single-Phase, Carrier Frequency Derating (Permanent Magnet (PM) Control)

Catalog Code HV35U..	Carrier Frequency Derating ^{1 2}											
	Heavy Duty Rating Amps						Normal Duty Rating Amps					
	2 kHz	4 kHz	6 kHz	8 kHz	10 kHz	12 kHz	2 kHz	4 kHz	6 kHz	8 kHz	10 kHz	12 kHz
B001	0.8	0.8	0.8	0.7	0.6	0.5	1.2	1.1	0.9	0.8	0.6	0.5
B002	1.6	1.6	1.6	1.5	1.3	1.1	1.9	1.9	1.7	1.5	1.3	1.1
B004	3	3	3	2.8	2.4	2	3.5	3.5	3.1	2.8	2.4	2
B006	5	5	5	4.6	4	3.4	6	5.8	5.2	4.6	4	3.4
B010	8	8	7.8	7.1	6.4	5.7	9.6	8.8	8	7.2	6.4	5.6
B012	11	11	10.7	9.7	8.8	7.9	12.2	11.6	10.7	9.7	8.8	7.9
B018	17.6	17.6	17.1	15.6	14.1	12.6	21	19.3	17.5	15.8	14.1	12.3

1. Applicable Motor Control Methods: HV305 Parameter A1-02 = 6.
2. Refer to the HV305 Technical Manual for AOLV/PM Carrier Frequency Derating information.

Table 42: 240 V, Three-Phase, Carrier Frequency Derating

Catalog Code HV35U..	Carrier Frequency Derating ^{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
2001	0.8	0.8	0.8	0.8	0.7	0.6	1.2	1.1	1	0.9	0.8	0.6
2002	1.6	1.6	1.6	1.6	1.4	1.3	1.9	1.9	1.7	1.6	1.4	1.3
2004	3	3	3	3	2.7	2.4	3.5	3.5	3.2	3	2.7	2.4
2006	5	5	5	5	4.5	4	6	6	5.4	5	4.5	4
2010	8	8	8	7.5	7	6.4	9.6	9.1	8.3	7.7	7.1	6.4
2012	11	11	11	10.4	9.6	8.8	12.2	11.9	11	10.4	9.6	8.8
2021	17.6	17.6	17.6	16.6	15.3	14.1	21	19.8	18.1	17	15.5	14.1
2030	25	25	25	23.6	21.8	20	30	28.3	25.8	24.2	22.1	20
2042	33	33	33	31.1	28.8	26	42	39.4	35.5	32.9	29.7	26
2056	47	47	47	44.3	41	38	56	52.9	48.3	45.3	41.4	38
2070	60	60	60	56.6	52.3	48	70	66.3	60.8	57.2	52.6	48
2082	75	75	75	70.7	65.4	60	82	81.4	75	70.7	65.4	60

1. Applicable Motor Control Methods: HV305 Parameter A1-02 = 0, 2, 5, 8.
2. Refer to the HV305 Technical Manual for AOLV/PM Carrier Frequency Derating information.

Table 43: 240 V, Three-Phase, Carrier Frequency Derating (Permanent Magnet (PM) Control)

Catalog Code HV35U..	Carrier Frequency Derating ^{1 2}											
	Heavy Duty Rating Amps						Normal Duty Rating Amps					
	2 kHz	4 kHz	6 kHz	8 kHz	10 kHz	12 kHz	2 kHz	4 kHz	6 kHz	8 kHz	10 kHz	12 kHz
2001	0.8	0.8	0.8	0.7	0.6	0.5	1.2	1.1	0.9	0.8	0.6	0.5
2002	1.6	1.6	1.6	1.5	1.3	1.1	1.9	1.9	1.7	1.5	1.3	1.1
2004	3	3	3	2.8	2.4	2	3.5	3.5	3.1	2.8	2.4	2
2006	5	5	5	4.6	4	3.4	6	5.8	5.2	4.6	4	3.4
2010	8	8	7.8	7.1	6.4	5.7	9.6	8.8	8	7.2	6.4	5.6
2012	11	11	10.7	9.7	8.8	7.9	12.2	11.6	10.7	9.7	8.8	7.9
2021	17.6	17.6	17.1	15.6	14.1	12.6	21	19.3	17.5	15.8	14.1	12.4
2030	25	25	24.3	22.1	20	17.9	30	27.5	25	22.5	20	17.5
2042	33	33	32.1	29.2	26.4	23.6	42	38.1	34.2	30.3	26.4	22.5
2056	47	47	45.7	41.6	37.6	33.6	56	51.4	46.8	42.2	37.6	33
2070	60	60	58.3	53.1	48	42.9	70	64.5	59	53.5	48	42.5
2082	75	75	72.9	66.4	60	53.6	82	79.3	72.9	66.4	60	53.6

1. Applicable Motor Control Methods: HV305 Parameter A1-02 = 6
2. Refer to the HV305 Technical Manual for AOLV/PM Carrier Frequency Derating information.

Table 44: 480 V, Three-Phase, Carrier Frequency Derating

Catalog Code HV35U..	Carrier Frequency Derating ^{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
4001	1.2	1.2	1.2	1.1	0.9	0.7	1.2	1.2	1.2	1.1	0.9	0.7
4002	1.8	1.8	1.8	1.6	1.3	1.1	2.1	2.1	1.8	1.6	1.3	1.1
4004	3.4	3.4	3.4	3	2.5	2	4.1	4	3.4	3	2.5	2
4005	4.8	4.8	4.8	4.3	3.6	2.9	5.4	5.4	4.8	4.2	3.6	2.9
4007	5.5	5.5	5.5	4.9	4.1	3.3	7.1	6.5	5.5	4.9	4.1	3.3
4009	7.3	7.3	7.3	6.5	5.4	4.4	8.9	8.6	7.3	6.5	5.4	4.4
4012	9.2	9.2	9.2	8.1	6.8	5.5	11.9	10.8	9.2	8.2	6.8	5.5
4018	14.8	14.8	14.8	13.1	11	8.9	17.8	17.3	14.7	13.1	11	8.8
4023	18	18	18	13.1	11	11	23.4	21.3	18.2	16.1	13.4	11
4031	24	24	24	21.3	17.8	14	31	28.2	24.1	21.3	17.9	14
4038	31	31	31	27.5	23	19	38	36.3	31	27.5	23	19
4044	39	39	39	34.5	29	23	44	44	39	34.5	29	23
4060	45	45	45	39.9	33.4	27	60	54.5	46.3	40.8	33.9	27

1. Applicable Motor Control Methods: HV305 Parameter A1-02 = 0, 2, 5, 8.
2. Refer to the HV305 Technical Manual for AOLV/PM Carrier Frequency Derating information.

Table 45: 480 V, Three-Phase, Carrier Frequency Derating (Permanent Magnet (PM) Control)

Catalog Code HV35U..	Carrier Frequency Derating ^{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
4001	1.2	1.2	1.1	0.9	0.7	0.5	1.2	1.2	1.1	0.9	0.7	0.5
4002	1.8	1.8	1.7	1.4	1.1	0.8	2.1	2	1.7	1.4	1.1	0.8
4004	3.4	3.4	3.2	2.6	2	1.5	4.1	3.8	3.2	2.6	2	1.5
4005	4.8	4.8	4.5	3.7	2.9	2.1	5.4	5.3	4.5	3.7	2.9	2.1
4007	5.5	5.5	5.2	4.2	3.3	2.4	7.1	6.2	5.2	4.3	3.3	2.4
4009	7.3	7.3	6.9	5.6	4.4	3.1	8.9	8.1	6.9	5.6	4.4	3.1
4012	9.2	9.2	8.7	7.1	5.5	3.9	11.9	10.3	8.7	7.1	5.5	3.9
4018	14.8	14.8	14	11.4	8.9	6.3	17.8	16.4	15.2	11.4	8.8	6.3
4023	18	18	17	13.9	10.8	7.7	23.4	20.3	17.1	14	10.8	7.7
4031	24	24	22.6	18.5	14.4	10.3	31	26.9	22.7	18.6	14.4	10.3
4038	31	31	29.2	23.9	18.6	13.3	38	34.5	29.2	23.9	18.6	13.3
4044	39	39	36.8	30.1	23.4	16.7	44	43.5	36.8	30.1	23.4	16.7
4060	45	45	42.4	34.7	27	19.3	60	51.8	43.5	35.3	27	18.8

1. Applicable Motor Control Methods: HV305 Parameter A1-02 = 6.
2. Refer to the HV305 Technical Manual for AOLV/PM Carrier Frequency Derating information.

Altitude

Install the drive in a location that with an altitude of 1000 m (3281 ft) or lower. Derate the output current by 1% for each 100 m (328 ft) to install the drive in altitudes between 1000 m to 3000 m (3281 ft to 9843 ft). It is not necessary to derate the rated voltage in these conditions:

- Installing the drive at 2000 m (6562 ft) or lower.
- Installing the drive between 2000 m to 4000 m (6562 ft to 13132 ft) and grounding the neutral point on the power supply.

Contact Yaskawa or your nearest sales representative when the drive is not grounded with the neutral network.

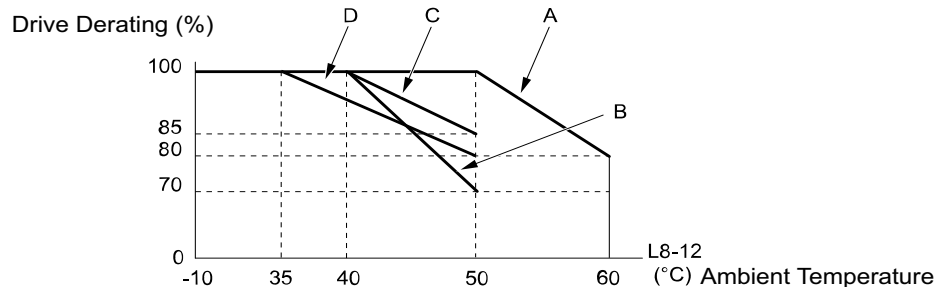
Ambient Temperature

IP20/Protected Chassis: -10 °C to + 50 °C (14 °F to 122 °F)

IP20/UL Type 1: -10 °C to + 40 °C (14 °F to 104 °F)

- Drive reliability is better in environments that do not have wide temperature fluctuations.
- When installing the drive in an enclosure, use a cooling fan or air conditioner to keep the internal air temperature in the permitted range.
- Do not let the drive freeze.
- To install the drive in areas with ambient temperatures between 40 °C to 60 °C (104 °F to 140 °F), see Figure 11 for output current derating.

Figure 10: Ambient Temperature Derating Chart



A - L8-35 = 0 [IP20, Finless]

B - L8-35 = 1 [Side-by-Side Installation]

C - L8-35 = 2 [UL Type 1, Wall Mount]

D - L8-35 = 3 [External Heatsink]

Watt Loss

Watt Loss without EMC Filter

Table 46: 240 V, Single-Phase Drives

Catalog Code HV35U...	240 V Normal Duty					240 V Heavy Duty (Fc = 2 kHz)					240 V Heavy Duty (Fc = Default)				
	Rated Output Current	Carrier Frequency	Interior Unit Loss	Cooling Fin Loss	Total Loss	Rated Output Current	Carrier Frequency	Interior Unit Loss	Cooling Fin Loss	Total Loss	Rated Output Current	Carrier Frequency	Interior Unit Loss	Cooling Fin Loss	Total Loss
	A	kHz	W	W	W	A	kHz	W	W	W	A	kHz	W	W	W
B001	1.2	2	8	6	14	0.8	2	7	4	11	0.8	10	8	5	13
B002	1.9	2	14	11	25	1.6	2	10	7	17	1.6	10	10	9	19
B004	3.5	2	14	17	31	3	2	13	13	26	3	10	14	16	30
B006	6	2	17	26	43	5	2	17	23	40	5	10	18	28	46
B010	9.6	2	36	50	86	8	2	30	37	67	8	8	31	42	73
B012	12.2	2	48	60	108	11	2	40	48	88	11	8	41	55	96
B018	--	2	49	92	141	17.6	2	49	72	121	17.6	8	53	98	151

Table 47: 240 V, Three-Phase Drives

Catalog Code HV35U...	240 V Normal Duty					240 V Heavy Duty (Fc = 2 kHz)					240 V Heavy Duty (Fc = Default)				
	Rated Output Current	Carrier Frequency	Interior Unit Loss	Cooling Fin Loss	Total Loss	Rated Output Current	Carrier Frequency	Interior Unit Loss	Cooling Fin Loss	Total Loss	Rated Output Current	Carrier Frequency	Interior Unit Loss	Cooling Fin Loss	Total Loss
	A	kHz	W	W	W	A	kHz	W	W	W	A	kHz	W	W	W
2001	1.2	2	7	5	12	0.8	2	6	4	10	0.8	10	6	5	11
2002	1.9	2	9	9	18	1.6	2	7	7	14	1.6	10	7	8	15
2004	3.5	2	11	16	27	3	2	9	13	22	3	10	10	16	26
2006	6	2	14	25	39	5	2	13	22	35	5	10	14	27	41
2010	9.6	2	25	51	76	8	2	17	37	54	8	8	18	43	61
2012	12.2	2	30	61	91	11	2	23	49	72	11	8	24	56	80
2021	21	2	52	111	163	17.6	2	36	83	119	17.6	8	40	108	148
2030	30	2	63	240	303	25	2	45	163	208	25	8	49	187	236
2042	42	2	84	307	391	33	2	55	200	255	33	8	60	232	292
2056	56	2	109	367	476	47	2	77	269	346	47	8	85	318	403
2070	70	2	142	534	676	60	2	108	411	519	60	8	119	473	592
2082	82	2	160	531	691	75	2	132	439	571	75	8	148	525	673

Table 48: 480 V, Three-Phase Drives

Catalog Code HV35U...	480 V Normal Duty					480 V Heavy Duty (Fc = 2 kHz)					480 V Heavy Duty (Fc = Default)				
	Rated Output Current	Carrier Frequency	Interior Unit Loss	Cooling Fin Loss	Total Loss	Rated Output Current	Carrier Frequency	Interior Unit Loss	Cooling Fin Loss	Total Loss	Rated Output Current	Carrier Frequency	Interior Unit Loss	Cooling Fin Loss	Total Loss
	A	kHz	W	W	W	A	kHz	W	W	W	A	kHz	W	W	W
4001	1.2	2	8	7	15	1.2	2	8	7	15	1.2	8	9	11	20
4002	2.1	2	13	12	25	1.8	2	10	10	20	1.8	8	11	16	27
4004	4.1	2	14	24	38	3.4	2	13	21	34	3.4	8	15	31	46
4005	5.4	2	16	32	48	4.8	2	15	29	44	4.8	8	18	42	60
4007	7.1	2	20	44	64	5.6	2	16	33	49	5.6	8	18	49	67
4009	8.9	2	28	58	86	7.3	2	21	45	66	7.3	8	25	65	90
4012	11.9	2	39	83	122	9.2	2	27	60	87	9.2	8	32	85	117
4018	17.5	2	52	155	207	14.8	2	48	126	174	14.8	8	55	166	221
4023	23.4	2	86	236	322	18	2	53	152	205	18	8	61	200	261
4031	31	2	101	284	385	24	2	68	191	259	24	8	79	255	334
4038	38	2	108	341	449	31	2	81	256	337	31	8	95	338	433
4044	44	2	137	417	554	39	2	109	338	447	39	8	127	442	569
4060	60	2	176	490	666	45	2	114	328	442	45	8	135	446	581

Note: Refer to the HV305 Drive Technical Manual (SIEPCYAIHV3001) for detailed Carrier Frequency Watt Loss information.

Watt Loss with EMC Filter

Table 49: 240 V, Single-Phase Drives

Catalog Code HV35U...	240 V Normal Duty					240 V Heavy Duty (Fc = 2 kHz)					240 V Heavy Duty (Fc = Default)				
	Rated Output Current	Carrier Frequency	Interior Unit Loss	Cooling Fin Loss	Total Loss	Rated Output Current	Carrier Frequency	Interior Unit Loss	Cooling Fin Loss	Total Loss	Rated Output Current	Carrier Frequency	Interior Unit Loss	Cooling Fin Loss	Total Loss
	A	kHz	W	W	W	A	kHz	W	W	W	A	kHz	W	W	W
B001E	1.2	2	9	6	15	0.8	2	8	4	12	0.8	10	9	5	14
B002E	1.9	2	18	11	29	1.6	2	12	7	19	1.6	10	12	9	21
B004E	3.5	2	19	17	36	3	2	17	13	30	3	10	18	16	34
B006E	6	2	20	26	46	5	2	20	23	43	5	10	21	28	49
B010E	9.6	2	44	50	94	8	2	34	37	71	8	8	35	42	77
B012E	12.2	2	56	60	116	11	2	45	48	93	11	8	46	55	101
B018E	N/A	2	50	92	142	17.6	2	50	72	122	17.6	8	54	98	152

Table 50: 240 V, Three-Phase Drives

Catalog Code HV35U...	240 V Normal Duty					240 V Heavy Duty (Fc = 2 kHz)					240 V Heavy Duty (Fc = Default)				
	Rated Output Current	Carrier Frequency	Interior Unit Loss	Cooling Fin Loss	Total Loss	Rated Output Current	Carrier Frequency	Interior Unit Loss	Cooling Fin Loss	Total Loss	Rated Output Current	Carrier Frequency	Interior Unit Loss	Cooling Fin Loss	Total Loss
	A	kHz	W	W	W	A	kHz	W	W	W	A	kHz	W	W	W
2001E	1.2	2	8	5	13	0.8	2	7	4	11	1.2	10	7	5	12
2002E	1.9	2	12	9	21	1.6	2	8	7	15	1.9	10	8	8	16
2004E	3.5	2	15	16	31	3	2	12	13	25	3.5	10	13	16	29
2006E	6	2	21	25	46	5	2	20	22	42	6	10	21	27	48
2010E	9.6	2	26	51	77	8	2	18	37	55	9.6	8	19	43	62
2012E	12.2	2	31	61	92	11	2	24	49	73	12.2	8	25	56	81
2021E	21	2	53	111	164	17.6	2	37	83	120	21	8	41	108	149
2030E	30	2	64	240	304	25	2	46	163	209	30	8	50	187	237
2042E	42	2	85	307	392	33	2	56	200	256	42	8	61	232	293
2056E	56	2	110	367	477	47	2	78	269	347	56	8	86	318	404
2070E	70	2	143	534	677	60	2	109	411	520	70	8	120	473	593
2082E	82	2	161	531	692	75	2	133	439	572	82	8	149	525	674

Table 51: 480 V, Three-Phase Drives

Catalog Code HV35U...	480 V Normal Duty					480 V Heavy Duty (Fc = 2 kHz)					480 V Heavy Duty (Fc = Default)				
	Rated Output Current	Carrier Frequency	Interior Unit Loss	Cooling Fin Loss	Total Loss	Rated Output Current	Carrier Frequency	Interior Unit Loss	Cooling Fin Loss	Total Loss	Rated Output Current	Carrier Frequency	Interior Unit Loss	Cooling Fin Loss	Total Loss
	A	kHz	W	W	W	A	kHz	W	W	W	A	kHz	W	W	W
4001E	1.2	2	9	7	16	1.2	2	9	7	16	1.2	8	10	11	21
4002E	2.1	2	14	12	26	1.8	2	11	10	21	1.8	8	12	16	28
4004E	4.1	2	16	24	40	3.4	2	15	21	36	3.4	8	17	31	48
4005E	5.4	2	18	32	50	4.8	2	17	29	46	4.8	8	20	42	62
4007E	7.1	2	23	44	67	5.6	2	18	33	51	5.6	8	20	49	69
4009E	8.9	2	33	58	91	7.3	2	24	45	69	7.3	8	28	65	93
4012E	11.9	2	41	83	124	9.2	2	29	60	89	9.2	8	34	85	119
4018E	17.5	2	56	155	211	14.8	2	52	126	178	14.8	8	59	166	225
4023E	23.4	2	94	236	330	18	2	57	152	209	18	8	65	200	265
4031E	31	2	109	284	393	24	2	73	191	264	24	8	84	255	339
4038E	38	2	119	341	460	31	2	89	256	345	31	8	103	338	441
4044E	44	2	151	417	568	39	2	119	338	457	39	8	137	442	579
4060E	60	2	200	490	690	45	2	128	328	456	45	8	149	446	595

Note: Refer to the HV305 Drive Technical Manual (SIEPCYAIHV3001) for detailed Carrier Frequency Watt Loss information.

Branch Circuit Protection

Table 52: 240 V AC Input Branch Circuit Protection

HV305 Series	Semiconductor Fuse	Time Delay Fuse ¹ (Class CC, J or T)	MCCB (Molded Case Circuit Breaker) or Class RK Fuse ²			
Catalog Code HV35X	Bussmann Part Number	Maximum Rating (A) ³	Maximum RK Rating (A) ²	Maximum MCCB Rating (A) ²	Minimum Enclosure Volume (in ⁴) ⁵	Maximum SCCR (MCCB or RK Fuse-Drive Combination)
B001XXX	FWH-25A14F	3.5	3.5	15	600	31kA
B002XXX	FWH-25A14F	6	6	15	600	31kA
B004XXX	FWH-60B	12	12	15	600	31kA
B006XXX	FWH-80B	20	20	25	600	31kA
B010XXX	FWH-100B	35	35	40	960	31kA
B012XXX	FWH-125B	40	40	45	960	31kA
B018XXX	FWH-150B	60	60	70	960	31kA
2001XXX	FWH-25A14F	2	2	15	600	31kA
2002XXX	FWH-25A14F	3.2	3.2	15	600	31kA
2004XXX	FWH-25A14F	6	6	15	600	31kA
2006XXX	FWH-25A14F	10	10	15	600	31kA
2010XXX	FWH-70B	15	15	15	600	31kA
2012XXX	FWH-70B	20	20	20	600	31kA
2021XXX	FWH-90B	35	35	40	960	31kA
2030XXX	FWH-100B	50	50	60	960	31kA
2042XXX	FWH-150B	70	70	80	960	31kA
2056XXX	FWH-200B	90	90	110	2560	31kA
2070XXX	FWH-200B	110	110	125	2560	31kA
2082XXX	FWH-225B	125	125	150	2560	31kA

1. Class T fuses are fast acting (non-time delay) only

2. Protected enclosure required for RK fuses (same as MCCB).

3. Maximum Fuse or MCCB ratings are based on ND ratings and 175 and 200% respectively

4. Alternate BCP fuse selection evaluation based on UL61800-5-1

5. Ventilated enclosure type

Table 53: 480 V AC Input Branch Circuit Protection

HV305 Series	Semiconductor Fuse	Time Delay Fuse ¹ (Class CC, J or T)	MCCB (Molded Case Circuit Breaker) or Class RK Fuse ²			
Catalog Code HV35X	Bussmann Part Number	Maximum Rating (A) ³	Maximum RK Rating (A) ²	Maximum MCCB Rating (A) ²	Minimum Enclosure Volume (in ⁴) ⁵	Maximum SCCR (MCCB or RK Fuse-Drive Combination)
4001XXX	FWH-40B	2	2	15	960	31kA
4002XXX	FWH-40B	3.5	3.5	15	960	31kA
4004XXX	FWH-50B	7	7	15	960	31kA
4005XXX	FWH-70B	9	9	15	960	31kA
4007XXX	FWH-70B	12	12	15	960	31kA
4009XXX	FWH-90B	15	15	15	960	31kA
4012XXX	FWH-90B	20	20	20	960	31kA
4018XXX	FWH-80B	30	30	35	960	31kA
4023XXX	FWH-100B	40	40	40	960	31kA
4031XXX	FWH-125B	50	50	60	2560	31kA
4038XXX	FWH-175B	60	60	75	2560	31kA
4044XXX	FWH-200B	75	75	80	2560	31kA
4060XXX	FWH-200B	100	100	110	2560	31kA

1. Class T fuses are fast acting (non-time delay) only
2. Protected enclosure required for RK fuses (same as MCCB).
3. Maximum Fuse or MCCB ratings are based on ND ratings and 175 and 200% respectively
4. Alternate BCP fuse selection evaluation based on UL61800-5-1
5. Ventilated enclosure type

Table 54: 480 V DC Input Branch Circuit Protection ¹

HV305 Series	Semiconductor Fuse	
Catalog Code HV35X	Bussmann Part Number	Maximum SCCR
B001XXX	FWH-25A14F	31kA
B002XXX	FWH-25A14F	31kA
B004XXX	FWH-60B	31kA
B006XXX	FWH-80B	31kA
B010XXX	FWH-100B	31kA
B012XXX	FWH-125B	31kA
B018XXX	FWH-150B	31kA
2001XXX	FWH-25A14F	31kA
2002XXX	FWH-25A14F	31kA
2004XXX	FWH-25A14F	31kA
2006XXX	FWH-25A14F	31kA
2010XXX	FWH-70B	31kA

HV305 Series	Semiconductor Fuse	
Catalog Code HV35X	Bussmann Part Number	Maximum SCCR
2012XXX	FWH-70B	31kA
2021XXX	FWH-90B	31kA
2030XXX	FWH-100B	31kA
2042XXX	FWH-150B	31kA
2056XXX	FWH-200B	31kA
2070XXX	FWH-200B	31kA
2082XXX	FWH-225B	31kA
4001XXX	FWH-40B	31kA
4002XXX	FWH-40B	31kA
4004XXX	FWH-50B	31kA
4005XXX	FWH-70B	31kA
4007XXX	FWH-70B	31kA
4009XXX	FWH-90B	31kA
4012XXX	FWH-90B	31kA
4018XXX	FWH-80B	31kA
4023XXX	FWH-100B	31kA
4031XXX	FWH-125B	31kA
4038XXX	FWH-175B	31kA
4044XXX	FWH-200B	31kA
4060XXX	FWH-200B	31kA

1. DC input applications are for open chassis rated models only.

YASKAWA

HV305 MICRODRIVE SELECTION GUIDE

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In the event that the end user of this product is to be the military and said product is to be employed in any weapons systems or the manufacture thereof, the export will fall under the relevant regulations as stipulated in the Foreign Exchange and Foreign Trade Regulations. Therefore, be sure to follow all procedures and submit all relevant documentation according to any and all rules, regulations and laws that may apply.

Specifications are subject to change without notice for ongoing product modifications and improvements.

Original Instructions

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