

## 1305 Adjustable Frequency AC Drive

0.37...4 kW (0.5...5 Hp), Firmware 4.01 and Up



Please read the **Attention Statement** on page 2-18 and 2-21 before installing the drive.

### 5. CATALOG NUMBER CODE EXPLANATION

1305 – 6. First Position	A Second Position	A02 Third Position	A Fourth Position	–DE Fifth Position	–HA1 Sixth Position
<b>Bulletin Number</b>	<b>Rating</b>	<b>Nominal Current Rating</b>	<b>Enclosure Type</b>		<b>Options</b>
	A 200-240V 1Ø 200-230V 3Ø B 380-460V 3Ø	A01 A02 A03 A04 A06 A08 A09 A12	<u>Letter</u> A <u>Enclosure Type</u> NEMA Type 1 (IP 30)		

**Language Code** (English language is included in base catalog number. To order a second language, add the appropriate suffix to the drive catalog number.)  
 DE German  
 ES Spanish  
 IT Italian  
 FR French

**Human Interface Modules, NEMA Type 1 (IP 30)** To order installed in the drive, add the appropriate suffix to the drive catalog number.  
 HAP Programmer Only  
 HA1 HIM with Analog Speed Pot  
 HA2 HIM with Digital Up-Down Keys

Table 1.A 7.Drive Rating and Derating Guidelines

Voltage Rating	Catalog Number IP30	Motor Rating					
		3 ∅ Input			1 ∅ Input		
		HP	kW	Output ①② Current (A)	HP	kW	Output ①② Current (A)
200-230V 50/60 Hz	1305-AA02A	1/2	0.37	2.3	1/4	0.19	1.2
	1305-AA03A	3/4	0.55	3	1/2	0.37	2.3
	1305-AA04A	1	0.75	4.5	3/4	0.55	3
	1305-AA08A	2	1.5	8	1	0.75	4.5
	1305-AA12A	3	2.2	12 ③	2	1.5	8 ③
380-460V 50/60 Hz	1305-BA01A	1/2	0.37	1.3	Not Available		
	1305-BA02A	3/4	0.55	1.6			
	1305-BA03A	1	0.75	2.3			
	1305-BA04A	2	1.5	4			
	1305-BA06A	3	2.2	6 ④			
	1305-BA09A	5	4.0	9 ⑤			

In general:

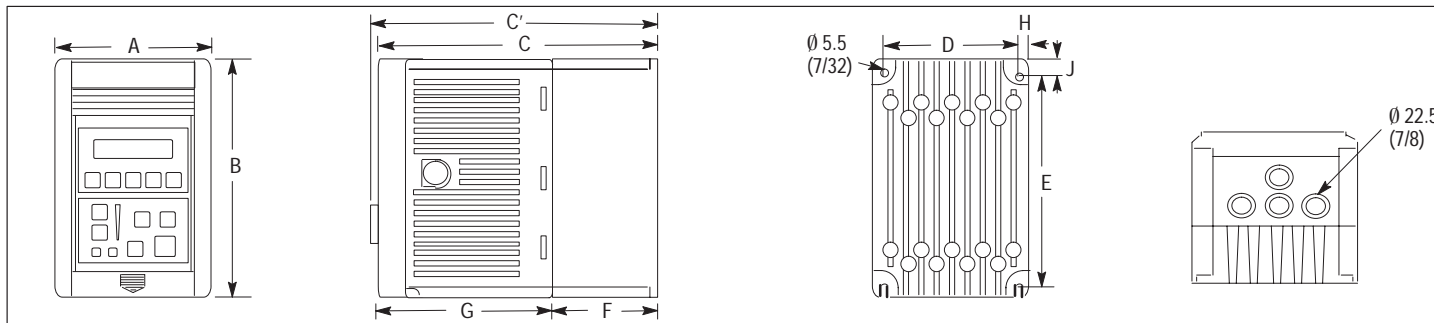
- ① Motor Full Load Amps (FLA) should not exceed the drive output current rating.
- ② If the **[PWM Frequency]** is set above 4kHz, the output current must be derated per the chart on page 5-19.

When operating the drive in an ambient temperature at or near the maximum operating temperature (50°C), the following derating guidelines are recommended to guard against overheating depending on application and operating conditions. For derating guidelines at ambient temperatures between 40°C and 50°C, consult Allen-Bradley.

- ③ Output current value listed for 200V input voltage. At 230V input voltage, output current is 9.6A for 3 phase and 6.8A for single phase.
- ④ Output current value listed for 380V input voltage. At 415V input voltage, output current is 5.3A. At 460V input voltage, output current is 4.8A.
- ⑤ Output current value listed for 380V input voltage. At 415V input voltage, output current is 8.4A. At 460V input voltage, output current is 7.6A.

**Figure 2.2 Bulletin 1305 Approximate Dimensions**

Dimensions shown in millimeters (inches). Shipping weights shown in kilograms (pounds).



200/230 V Cat. No. 1305-	380/460 V Cat. No. 1305-	A Width	B Height	C Depth w/o Pot	C' Depth w/ Pot	D	E	F	G	H	J	Approx. Ship Wt.
AA02A AA03A		120 (4-23/32)	195 (7-11/16)	122 (4-13/16)	127.1 (5)	110 (4-11/32)	180 (7-1/16)	9 (11/32)	113 (4-7/16)	5 (7/32)	7.5 (5/16)	1.6 (3.5)
AA04A		120 (4-23/32)	195 (7-11/16)	140 (5-1/2)	145.1 (5-23/32)	110 (4-11/32)	180 (7-1/16)	27 (1-1/16)	113 (4-7/16)	5 (7/32)	7.5 (5/16)	1.9 (4.2)
AA08A	BA01A BA02A BA03A BA04A BA06A	170 (6-11/16)	195 (7-11/16)	179 (7-1/16)	184.1 (7-1/4)	160 (6-5/16)	180 (7-1/16)	66 (2-19/32)	113 (4-7/16)	5 (7/32)	7.5 (5/16)	3.6 (8.0)
AA12A	BA09A	210 (8-1/4)	195 (7-11/16)	179 (7-1/16)	184.1 (7-1/4)	200 (7-7/8)	180 (7-1/16)	66 (2-19/32)	113 (4-7/16)	5 (7/32)	7.5 (5/16)	4.2 (9.2)

## INPUT POWER CONDITIONING

The drive is suitable for direct connection to a correct voltage, single phase or three-phase, AC power line. However, there are certain power line conditions which may introduce the possibility of drive input power component malfunction. To reduce the possibility of these malfunctions, a line reactor or isolation type transformer with an input impedance of 3% of the drive input VA rating may be required.

The basic rules for determining if a line reactor or isolation type transformer is required are as follows:

1. If the AC line supplying the drive has power factor correction capacitors that are switched in and out, installing an AC line reactor or isolation type transformer between the capacitor bank and the drive input may be required. Damage to drives can occur from the extreme current spikes caused by capacitor switching.
2. If the AC line frequently experiences transient power interruptions or significant voltage spikes, an AC line reactor or isolation type transformer may be required. Damage to drives can occur from extreme current spikes.

## INPUT FUSING



**ATTENTION:** The drive does not provide branch circuit protection. Specifications for the recommended fuse size and type which provide branch circuit protection against short circuits are provided in Table 2.A. Branch circuit breakers or disconnect switches cannot provide this level of protection for drive components.

**Table 2.A Maximum Recommended AC Input Line Fuse  
UL Class J, T, CC, or BS88 (or equivalent)**

3Ø Rating kW (HP)	1Ø Rating kW (HP)	Fuse 200–230V Rating	Fuse 380–460V Rating
.37 (1/2)	.19 (1/4)	6	3①
.55 (3/4)	.37 (1/2)	6	3①
.75 (1)	.55 (3/4)	10	6②
1.5 (2)	.75 (1)	15	10②
2.2 (3)	1.5 (2)	25	15②
4.0 (5)	--	--	20②

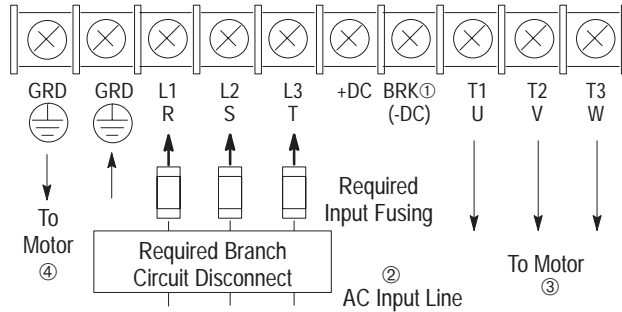
① *Must be dual element time delay, Bussmann LPJ or equivalent.*

② *If fuse blowing is a problem, use dual element type fuses.*

## POWER WIRING

Input and output power connections are performed through a ten position terminal block, TB1 (see page 2-3 for location).

Figure 2.6 Power Terminal Block Designations (TB1)



- ① Connection for Dynamic Brake Resistors for all models except the 200-230 Volt, 0.37 to 0.75 kW (1/2 to 1 HP) drive. **IMPORTANT:** The [DB Enable] parameter must be enabled for proper operation.
- ② For single phase applications, the AC input line can be connected to any two of the three input terminals R, S, T (L1, L2, L3).
- ③ Bulletin 1305 drives are UL and cUL listed, and CSA certified as a motor overload protective device. An external overload relay is *not* required for single motor applications. **IMPORTANT:** This drive is not intended for use with single phase motors.
- ④ Ground from drive to motor frame must be an independent continuous insulated wire run.

Table 2.B Power Block Terminal (TB1)

Terminals	Description
GRD	Earth Ground
R, S, T (L1, L2, L3)	AC Input Line Terminals
+DC, BRK (or -DC)	Dynamic Brake Option - Refer to instructions included with option
U, V, W (T1, T2, T3)	Motor Connection

Table 2.C Screw Size, Wire Size and Torque Specifications

Terminal	Screw Size	Max./Min. Wire Size mm <sup>2</sup> (AWG)	Maximum Torque N-m (lb-ins.)
TB1 (0.37 to 0.75kW/1/2 to 1 HP)	M4	3.5/0.75 (12/18)	0.90 (8)
TB1 (All except above)	M4	4/0.75 (10/18)	1.81 (16)
TB2 (All)	M3.5	1.5/0.20 (14/24)	0.90 (8)

## Table A.1 Specifications

Drive	Bulletin 1305 Drive Rated 200-230 V AC					Bulletin 1305 Drives Rated 380-460 V AC					
	-AA02A	-AA03A	-AA04A	-AA08A	-AA12A	-BA01A	-BA02A	-BA03A	-BA04A	-BA06A	-BA09A
<b>OUTPUT RATINGS</b>											
3 Phase Motor Rating kW (HP)	0.37 (1/2)	0.55 (3/4)	0.75 (1)	1.5 (2)	2.2 (3)	0.37 (1/2)	0.55 (3/4)	0.75 (1)	1.5 (2)	2.2 (3)	4.0 (5)
Output Current (A) ①	2.3	3.0	4.5	8.0	12.0 ②	1.3	1.6	2.3	4.0	6.0 ③	9.0 ④
Output Voltage	Adjustable from 0 V to Input Voltage										
Output Frequency (Hz)	0 to 400Hz Programmable										
ScanPort Load	250 mA maximum (all adapters combined)										
<b>INPUT RATINGS</b>											
Input Voltage & Frequency	200/230V Three Phase, 50/60 Hz					380/460V Three Phase, 50/60 Hz					
Operational Range (V)	180-265V, 47-63 Hz					340V-500V, 47-63 Hz					
Input kVA	0.9	1.3	1.7	3.1	4.6	0.9	1.3	1.7	3.1	4.6	7.0
Power Factor (Displacement)	0.8 (Lagging)										
Efficiency (%)	97.5 % (Typical)										
Power Dissipation (W)	27	34	46	76	108	21	27	34	52	73	107

- ① If the **[PWM Frequency]** is set above 4kHz, the output current rating must be derated per the chart on page 5-20.
- ② Output current value listed for 200V input voltage. At 230V input voltage, output current is 9.6A for 3 phase.
- ③ Output current value listed for 380V input voltage. At 415V input voltage, output current is 5.3A. At 460V input voltage, output current is 4.8A.
- ④ Output current value listed for 380V input voltage. At 415V input voltage, output current is 8.4A. At 460V input voltage, output current is 7.6A.