Description

The 1305 is a microprocessor controlled adjustable frequency drive designed for reliable control of three-phase induction motors. The drive produces a three-phase, PWM, adjustable frequency output to vary the motor speed. Output voltage is a function of output frequency and is adjustable to meet motor parameters so that optimum motor performance can be obtained.

Contents

Conformity to Standards

The 1305 conforms to the following:

Conformity to:	Standard Product	Packaged Product
UL Listed	✔	Consult A-B with catalog number for conformity standards
CSA Certified (C-UL)	✔	
CE Approved	✔	

Standard Products Program

This program includes standard 1305 drives rated from 0.37-4.0 kW (0.5-5 HP). Drive mounting is available in IP30 (NEMA Type 1). All products in this program are pre-defined and not subject to modification.

Product Selection

1305 Catalog Number Explanation

1305	–	AA02		A	–	ES	–	HA1
Bulletin Number		Drive Rating *(must be specified)*		Enclosure Rating *(must be specified)*		Language Module *(optional)*❶		Human Interface Module *(optional)*❷

1305 Drives

Voltage Rating	Drive Rating				IP 30 (NEMA Type 1)
	Three-Phase Input		Single-Phase Input		
	kW (HP)	Output Current Rating	kW (HP)	Output Current Rating	Cat. No.❶❷
380-480V 50/60 Hz	0.37 (0.5)	1.3A	–	–	1305-BA01A
	0.55 (0.75)	1.6A	–	–	1305-BA02A
	0.75 (1)	2.3A	–	–	1305-BA03A
	1.5 (2)	4.0A	–	–	1305-BA04A
	2.2 (3)	6.0A	–	–	1305-BA06A
	4.0 (5)	9.0A	–	–	1305-BA09A

Factory Installed Options

Language Modules

Description❶	Option Code
English	Standard
German	-DE
Spanish	-ES
Italian	-IT
French	-FR

Human Interface Module (HIM) Kits

Description❷	Option Code
Blank Panel	-HAB
Programmer Only	-HAP
Analog Speed Potentiometer	-HA1
Digital Up-Down Speed Control	-HA2

❶ 1305 drives include English text display. A second language text display may be added, if required. To order a second language, add the appropriate letter code.
For Example: To order an IP30 (NEMA Type 1) drive for a 1 HP, 460V motor with German display text and analog speed potentiometer, the catalog number would be 1305-BA03A-DE-HA1.

❷ To order a drive with a Human Interface Module installed, add the appropriate suffix. Note: Blank panel is included as part of base catalog number.

User Installed Options

Dynamic Braking Kits, Heavy Duty

Description	Used with . . .	Catalog Number *(Loose Kit)*
200-240V AC	0.37-0.75 kW (0.5-1 HP) 1.5-2.2 kW (2-3 HP)	Not Required 1305-KAA12
380-480V AC	0.37-0.75 kW (0.5-1 HP) 1.5-2.2 kW (2-3 HP) 4.0 kW (5 HP)	1305-KBA03 1305-KBA06 1305-KBA09❶

❶ For use with Series C or B drives only. DO NOT use with Series A drives.

Reflected Wave Reduction Device

Description	Used with . . .	Catalog Number *(Loose Kit)*
380-575VAC, 9A IP 20 (NEMA Type 1) B Frame	All 460V 1305 Drives, except in stack-style configuration with 1305-BA09A.	1204-RWR2-09-B
380-575VAC, 9 A IP 20 (NEMA Type 1) C Frame	1305-BA09A in stack-style configuration.	1204-RWR2-09-C

Terminators

Description	Used with . . .	Catalog Number *(Loose Kit)*
IP 66 (NEMA Type 4x) Connection Cable Included	❷ ❷	1204-TFA1 1204-TFB2

❷ See publication 1204-1.0 (Motor Terminator brochure) for selection information.

Drive Software

Description	
DriveTools32™ Software	See publication 9303-PL002… for Ordering/Pricing Information
DriveExplorer™ Software	
Pocket DriveExplorer™ Software	

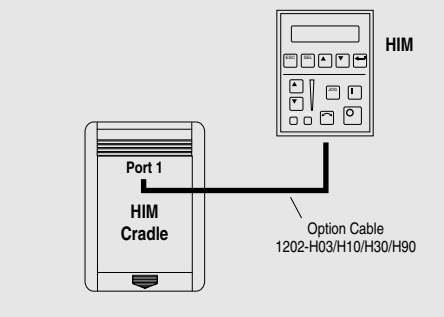
CE Conformance

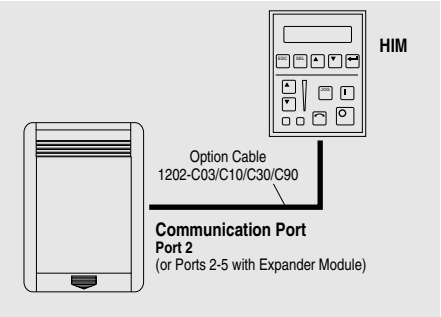
Conformance To CE requires all of the following:

- A Standard 1305 Drive with the "CE" mark on the data nameplate.
- Installation per the 1305 User Manual, publication 1305-5.2 (Appendix D).
- An EMC Filter and Metal Plate Kit from the table below.

Description	Used with . . .	Catalog Number *(Loose Kit)*
Filter Metal Plate Kit	0.37 kW (0.5 HP), 230V & 0.55 kW (0.75 HP), 230V	1305-RFB-5-A 1305-MP-05-A
Filter Metal Plate Kit	0.75 kW (1 HP), 230V	1305-RFB-5-A 1305-MP-06-A
Filter Metal Plate Kit	1.5 kW (2 HP), 230V & 0.37-2.2 kW (0.5-3 HP), 480V	1305-RFB-8-B 1305-MP-08-B
Filter Metal Plate Kit	2.2 kW (3 HP), 230V & 4.0 kW (5 HP), 480V	1305-RFB-12-C 1305-MP-12-C

Human Interface Module (HIM) Kits

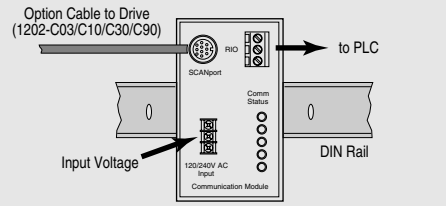




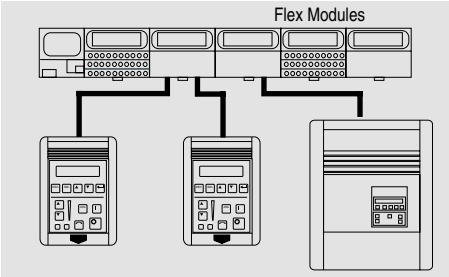
Description	Used with . . .	Catalog Number *(Loose Kit)*
IP 30 (NEMA Type 1) HIM Blank - No Functionality Programmer Only Programmer/Controller w/Analog Speed Pot. Programmer/Controller w/Digital Speed Pot.	IP 30 (NEMA Type 1) Drive Ratings	 1201-HAB 1201-HAP 1201-HA1 1201-HA2
IP 66 (NEMAType12/ULType 4X-Indoor) HIM Programmer Only Programmer/Controller w/Digital Speed Pot.	IP 66 (NEMA Type 12/ UL Type 4X Indoor) Enclosures	 1201-HJP❶ 1201-HJ2❶
Cable Kit (Male–Female) Connect to HIM Cradle Port (Port 1) 0.33 Meters (1.1 Feet) 1 Meter (3.3 Feet) 3 Meter (9.8 Feet) 9 Meter (29.5 Feet)	All HIMs not mounted on the drive chassis	 1202-H03 1202-H10 1202-H30 1202-H90
Cable Kit (Male–Male) Connect to Comm. Port (Ports 2-5) 0.33 Meters (1.1 Feet) 1 Meter (3.3 Feet) 3 Meter (9.8 Feet) 9 Meter (29.5 Feet)	All HIMs not mounted on the drive chassis	 1202-C03 1202-C10 1202-C30 1202-C90
IP 30 (NEMA Type 1) Door Mount Bezel Kit	User Supplied IP 30 (NEMA Type 1) Enclosures and HIM	1201-DMA

❶ Requires an Option Cable to be functional.

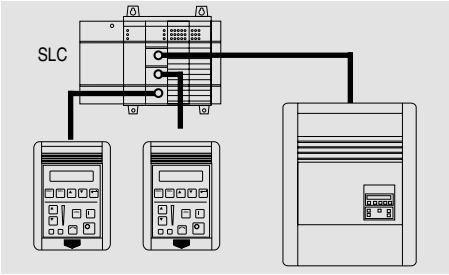
Communication Option Kits



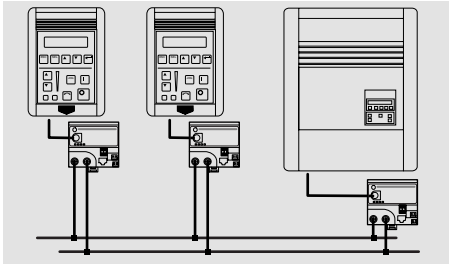
GD1/GD2 – Typical Configuration



FB1 and FM1 – Typical Configuration



SM1 – Typical Configuration



CN1 – Typical Configuration

Description	Used with . . .	Catalog Number *(Loose Kit)*
Remote Mounted (DIN Rail) – 115VAC Requires 115V AC power supply Single Point Remote I/O RS232/422/485, DF1 and DH485 Protocol	All Drive Ratings	 1203-GD1❶ 1203-GD2❶
Remote Mounted (DIN Rail) – 24V DC Requires 24V DC power supply Single Point Remote I/O RS232/422/485, DF1 and DH485 Protocol DeviceNet™ Enhanced DeviceNet™	All Drive Ratings	 1203-GK1❶ 1203-GK2❶ 1203-GK5❶ 1203-GU6❶❸
ControlNet™ to SCANport Adapter❶❸ Remote Mounted (DIN Rail) Requires 24V DC power supply	All Drive Ratings	1203-CN1❶❸
EtherNet/IP to SCANport Adapter❶❸ Remote Mounted (DIN Rail), 24V DC Requires 24V DC power supply AC to DC Power Receptacle	All Drive Ratings	1203-EN1❶❸ 20-XCOMM-AC-PS1
Flex™ I/O SCANport™ Module ❷ Flex I/O Terminal Base Flex I/O Module Each FM1/FB1 combination provides a connection for up to 2 drive products.	All Drive Ratings	 1203-FB1❷ 1203-FM1❶❷
Serial Flash Cable Connects CN1, GU6 and SSS to a computer RS-232 port for adapter programming and for DriveTools32 & DriveExplorer™ serial interface.	All Drive Ratings	1203-SFC
SLC™ Communication Module (SLC 500 to SCANport Module) Provides a connection for up to 3 drive products.	All Drive Ratings	1203-SM1❶
Smart Self-powered Serial Converter Includes 1203-SFC and 1202-C10 Cables Serial Null Modem Adapter	All Drive Ratings	1203-SSS 1203-SNM
Universal Serial Bus™ (USB) Converter Includes 2m USB, 20-HIM-H10 & 22-HIM-H10 Cables	All Drives	1203-USB
Communication Option Cable Kit 0.33 Meters (1.1 Feet) 1 Meter (3.3 Feet) 3 Meter (9.8 Feet) 9 Meter (29.5 Feet)	All Communication Options Listed	 1202-C03 1202-C10 1202-C30 1202-C90
SCANport Expander Module One to Two One to Four One to Two Port Splitter Cable	All Drive Ratings	 1203-SG2 1203-SG4 1203-S03

❶ Requires a Communication Option Cable (1202-C03/C10/C30/C90) to be functional.
❷ Each Flex I/O SCANport Module requires (1) 1203-FB1 and (1) 1203-FM1.
❸ Adapter is programmed/configured via RS-232 using the 1203-SFC cable, (purchased separately) and using a compatible network specific software tool.

Line Reactors *(For Remote User Mounting)*

Iron core, 600V, Class H insulation, 115 degree C rise, copper wound, 50/60 Hz., terminal blocks, UL, CSA.

Drive Ratings		Input/Output Line Reactor – 3% Impedance		Input/Output Line Reactor – 5% Impedance	
		IP 00 (Open Style)	IP 10 (NEMA Type 1)	IP 00 (Open Style)	IP 10 (NEMA Type 1)
Input Volts	kW (HP)	Catalog Number	Catalog Number	Catalog Number	Catalog Number
200-240V AC	0.37 (0.50)	1321-3R4-B	1321-3RA4-B	1321-3R4-C	1321-3RA4-C
	0.55 (0.75)	1321-3R4-A	1321-3RA4-A	1321-3R4-B	1321-3RA4-B
	0.75 (1)	1321-3R4-A	1321-3RA4-A	1321-3R4-B	1321-3RA4-B
	1.5 (2)	1321-3R8-A	1321-3RA8-A	1321-3R8-B	1321-3RA8-B
	2.2 (3)	1321-3R12-A	1321-3RA12-A	1321-3R12-B	1321-3RA12-B
380-480V AC	0.37 (0.50)	1321-3R2-B	1321-3RA2-B	1321-3R2-C	1321-3RA2-C
	0.55 (0.75)	1321-3R2-A	1321-3RA2-A	1321-3R2-B	1321-3RA2-B
	0.75 (1)	1321-3R2-A	1321-3RA2-A	1321-3R2-B	1321-3RA2-B
	1.5 (2)	1321-3R4-B	1321-3RA4-B	1321-3R4-C	1321-3RA4-C
	2.2 (3)❷	1321-3R4-B❷	1321-3RA4-B❷	1321-3R4-C❷	1321-3RA4-C❷
	2.2 (3)	1321-3R8-B	1321-3RA8-B	1321-3R8-C	1321-3RA8-C
	4.0 (5)❷	1321-3R8-B❷	1321-3RA8-B❷	1321-3R8-C❷	1321-3RA8-C❷
	4.0 (5)	1321-3R12-B	1321-3RA12-B	1321-3R12-C	1321-3RA12-C

Isolation Transformers *(For Remote User Mounting)*

230V/230V or 460V/460V Delta primary/Wye secondary, Class H insulation, 150 degree C rise, aluminum wound, 60 Hz., ±5% taps, (1) N.C. thermostat per coil, UL, CSA.

Drive Ratings kW (HP)	IP 23 (NEMA Type 1)	
	230V Primary & 230V Secondary	460V Primary & 460V Secondary
	Catalog Number	Catalog Number
0.37 (0.50)	1321-3TW005-AA	1321-3TW005-BB
0.55 (0.75)	1321-3TW005-AA	1321-3TW005-BB
0.75 (1)	1321-3TW005-AA	1321-3TW005-BB
1.5 (2)	1321-3TW005-AA	1321-3TW005-BB
2.2 (3)	1321-3TW005-AA	1321-3TW005-BB
4.0 (5)	–	1321-3TW007-BB

Encompass Partner Products

The following Encompass Partner Products **are not** Allen-Bradley products and **cannot** be ordered through **PASSPORT**.

Ordering Instructions:
Contact Leaf Technology Incorporated to order the following products.

Leaf Technology Incorporated
512 Industrial Drive
Hartland, WI 53029
(414) 369-2260 — Phone
(414) 369-2262 — FAX

www.leaftech.com — Internet

Catalog Number	Description
LT1305-N-24VDC	24 Volt DC Interface Card
LT1305-R-24VDC	24 Volt DC Interface Card with Relay
LT1305-N-120VAC	120 Volt DC Interface Card
LT1305-R-120VAC	120 Volt DC Interface Card with Relay

❶ Note the Discount Schedule difference between Bulletin 1321 and 1305 products.
❷ Input reactor only.
❸ Contact manufacturer for current pricing and available discounts.

PACKAGED DRIVES PROGRAM

The 1305 Packaged Drives Program allows users to create drive packages based on their specific needs. This program enhances stand-a-lone drive functionality through additional control, power and packaging options which are ideal for OEM and end users with special installation needs.

The program has two levels:

- Standard Packaged Drives
- Engineered Drives.

The **Standard Packaged Drives Program** allows users to create drive packages based on their specific needs. A complete drive package may be specified by assembling a single catalog number string that includes a base drive and all required options. The complexity of a chosen option list will determine delivery time for the package.

How to Order:

- Step 1
  Select basic Drive Catalog Number based on application requirements – nominal horsepower (or output current), input voltage, enclosure type (e.g. 1305-BA09AC, at $2,495 list each).
- Step 2
  Specify "Language Module" if different from English (e.g. Drive in Step 1 with Spanish language module – 1305-BA09AC-ESC: list price remains $2,495 each).
- Step 3
  Specify remaining factory installed options.

Example:

Description	Catalog No./Option Code
1) Basic Drive w/Spanish language module	1305-BA09AC-ESC
2) "Start and Stop" Pushbuttons	-D17
3) "Drive Run" White Pilot Light	-D35
4) Fused Disconnect Switch	-DS
Complete Catalog Number: 1305-BA09AC-ESC-DS-D17-D35	

PACKAGED DRIVES PROGRAM

The **Engineered Drives Program** offers users the ability to create custom drive packages beyond the Standard Packaged Drives offering. Options may or may not be defined within this publication. Product can be ordered by:

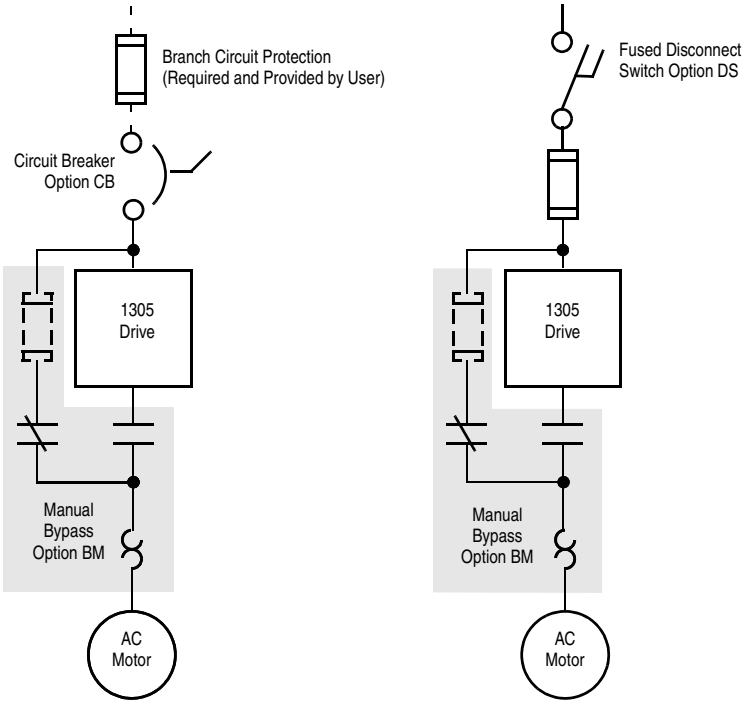
1. Assembling a catalog string from the options listed in this publication.

   Engineered options that are listed within this publication will be specified by the heading "Requires Engineered Drives Quote" and will have varied lead-times.

2. Entering a custom quote request for additional options not listed.

   A custom quote will require a Passport quote using "SP-SDB-CUSTOM" as the line item part number and entering a description of the base catalog string and custom options in the Competitive Summary. For questions or help with a custom quote please contact the Engineered Drives Group at 262-512-8415.

Power Distribution Details



PACKAGED DRIVES PROGRAM

Packaged Product Selection

1305 Packaged Catalog Number Explanation

1305	–	AA02		AC	–	HA1C	–	GD1C	–	CB
Bulletin Number		Drive Rating *(must be specified)*		Enclosure Rating *(must be specified)*		Human Interface Module *(optional)*❶		Communication Card *(optional)*❶		Remaining Options *(as/if required)*❶

Package includes:

- Constant or Variable Torque Drive
- English/English Language Module
- Enclosure

Important: The basic drive does not include a control power transformer. If local 115VAC power is not available, see option CP on page 10.

115V AC power is required for 0.75 kW (1 HP) and larger drives for the enclosure circulating fan.

Drive Rating		Drive Amps	Bypass Amps❺	IP42 (NEMA Type 1) General Purpose	IP65 (NEMA Type 4/12❷) Resist Water, Dust
Input Voltage	Nominal kW (HP)			Code	Code
380V AC	0.37 (0.5)	1.3	1.0	NA01AC	NA01FC
	0.55 (0.75)	1.6	1.6	NA02AC	NA02FC
	0.75 (1)	2.3	2.3	NA03AC	NA03FC
	1.5 (2)	4.0	4.0	NA04AC	NA04FC
	2.2 (3)	6.0	6.0	NA06AC	NA06FC
	4.0 (5)	9.0	9.0	NA09AC	NA09FC
480V AC	0.37 (0.5)	1.3	1.0	BA01AC	BA01FC
	0.55 (0.75)	1.6	1.6	BA02AC	BA02FC
	0.75 (1)	2.3	2.3	BA03AC	BA03FC
	1.5 (2)	4.0	4.0	BA04AC	BA04FC
	2.2 (3)	6.0	6.0	BA06AC❸	BA06FC❸
	4.0 (5)	9.0	9.0	BA09AC❹	BA09FC❹

❶ As many valid options as required may be strung together with a dash between each option code number.

❷ If a Door Mounted Human Interface Module is supplied, the enclosure will no longer meet NEMA Type 4, but it will meet IP65 qualifications for watertight indoor applications.

❸ When operating the drive in an ambient temperature at or near the maximum operating temperature (40 degrees C.), the following derating guidelines are recommended to guard against overheating (depending on application and operating conditions): At 415V input voltage, output current is 5.3A. At 460V input voltage, output current is 4.8A.

❹ When operating the drive in an ambient temperature at or near the maximum operating temperature (40 degrees C.), the following derating guidelines are recommended to guard against overheating (depending on application and operating conditions): At 415V input voltage, output current is 8.4A. At 460V input voltage, output current is 7.6A.

❺ When Bypass is ordered, the drive system is rated to the lower of the drive rating or thermal overload relay rating (as noted by Bypass Amps).

Factory Installed Options

Language Modules

Description	Option Code
English/English	Standard
English/German	-DEC❶
English/Spanish	-ESC❶
English/Italian	-ITC❶
English/French	-FRC❶

Power Disconnecting Means

Description	Option Code
Circuit Breaker	-CB
Fused Disconnect Switch (Class J)	-DS

Drive Bypass Operation

Description	Option Code
Bypass, Manual	-BM❷

Control Power

Description	Option Code
Control Power, 50VA	-CP

Human Interface Modules, Door Mounted

Description	Option Code
IP 42 (NEMA Type 1) Bezel Mount	
Programmer Only	-HAPC
Programmer/Control with Analog Potentiometer	-HA1C
Programmer/Control with Digital Potentiometer	-HA2C
IP 65 (NEMA Type 12/UL Type 4 Indoor)	
Programmer Only	-HJPC
Programmer/Control with Digital Potentiometer	-HJ2C
NEMA Type 4 Outdoor Duty	Not Available

Communication and Control Interface Modules

Description	Option Code
Single Point RIO	-GD1C❷
RS232/422/485, DF1 and DH485 Protocol	-GD2C❷
24V DC Interface Card with Relay	-LTR24❺
120V AC Interface Card with Relay	-LTR120❺

Operator Devices, Door Mounted

Description	Option Code
Hand/Off/Auto (Start/Stop/Speed) Selector Switch	-D13❸❹
Start and Stop Pushbuttons	-D17❸❹
Start, Stop and Jog Pushbuttons	-D19❸❹
Forward/Reverse Selector Switch	-D32❹
Speed Potentiometer, 1-Turn	-D61❹
Drive/Off/Bypass Selector Switch	Std. w/Option BM

❶ Replaces the Standard English/English Language Module supplied with the basic drive.
❷ Option -CP or user supplied 115V AC control power is required.
❸ Only one (-D13, -D17 or -D19) option may be specified.
❹ Can not be used with options -HA1C, -HA2C or -HJ2C.
❺ Configurations which include this option are not C-UL approved at this time.

Pilot Lights, Door Mounted - *Choose Only One*

Description	Option Code
Drive Run (White)	-D35❶
Drive Fault (Red)	-D36❶
At Speed (Amber)	-D31❶
Alarm (Red)	-D37❶
Above Current (Amber)	-D38❶
Above Frequency (Amber)	-D39❶

Thermal Overload Relay Adjustability Range

Class 10 adjustable thermal overload (included in Bypass Option BM)

Drive kW (HP) Rating	Adjustable Range			
	208V AC	230V AC	380V AC	480V AC
0.37 (0.5)	1.5-2.3A	1.5-2.3A	0.6-1.0A	0.6-1.0A
0.55 (0.75)	2.0-3.0A	2.0-3.0A	1.0-1.6A	1.0-1.6A
0.75 (1)	2.8-4.2A	2.8-4.2A	1.5-2.3A	1.5-2.3A
1.5 (2)	5.5-8.0A	5.5-8.0A	2.8-4.2A	2.8-4.2A
2.2 (3)	6.0-10.0A	6.0-10.0A	4.0-6.0A	4.0-6.0A
4.0 (5)	–	–	6.0-10.0A	6.0-10.0A

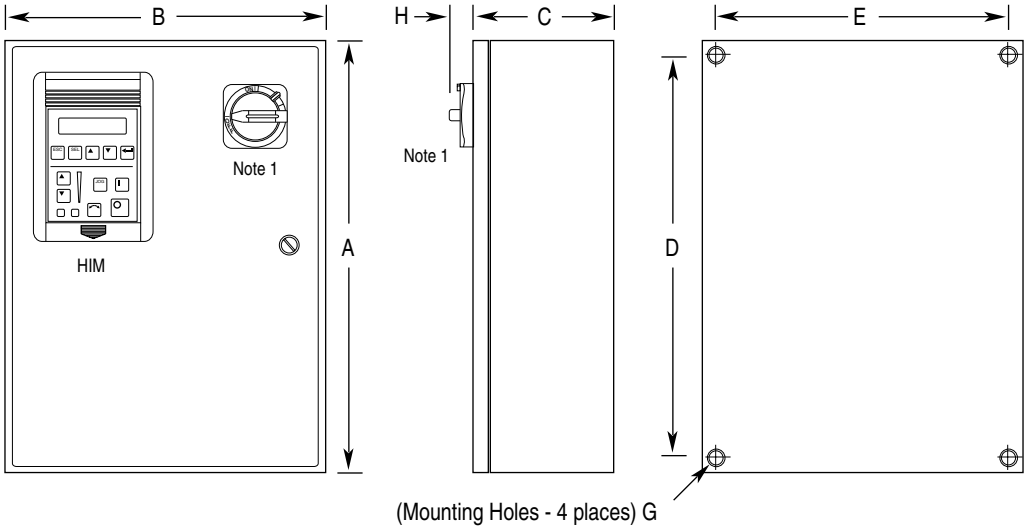
Option Selection Reference Chart

Selected Option	Must Be Used With . . .	Can Not Be Used With . . .
BM		
CB		DS
CP		
D13		D17, D19, HA1C, HA2C, HJ2C
D17		D13, D19, HA1C, HA2C, HJ2C
D19		D13, D17, HA1C, HA2C, HJ2C
D31		D35, D36, D37, D38, D39
D32		HA1C, HA2C, HJ2C
D35		D31, D36, D37, D38, D39
D36		D31, D35, D37, D38, D39
D37		D31, D35, D36, D38, D39
D38		D31, D35, D36, D37, D39
D39		D31, D35, D36, D37, D38
D61		HA1C, HA2C, HJ2C
DEC		ESC, FRC, ITC
DS		CB
ESC		DEC, FRC, ITC
FRC		DEC, ESC, ITC
GD1C		GD2C
GD2C		GD1C
HA1C	NEMA Type 1 Enclosure	D13, D17, D19, D32, D61, HA2C, HAPC, HJ2C, HJPC, IP65 or NEMA Type 4/12 Enclosures
HA2C	NEMA Type 1 Enclosure	D13, D17, D19, D32, D61, HA1C, HAPC, HJ2C, HJPC, IP65 or NEMA Type 4/12 Enclosures
HAPC	NEMA Type 1 Enclosure	HA1C, HA2C, HJ2C, HJPC, IP65 or NEMA Type 4/12 Enclosures
HJ2C	NEMA Type 12 or IP65 Enclosure	D13, D17, D19, D32, D61, HA1C, HA2C, HJPC, NEMA Type 1 or 4 Enclosures
HJPC	NEMA Type 12 or IP65 Enclosure	HAPC, HA1C, HA2C, HJ2C, NEMA Type 1 or 4 Enclosures
ITC		DEC, ESC, FRC
LTR24		LTR120
LTR120		LTR24

❶ Option -CP or user supplied 115V AC control power is required.

Enclosure Dimensions

IP42 (NEMA Type 1) and IP65 (NEMA Type 4/12) Enclosed Drives



Dimensions are in millimeters (inches)

Option Combinations Not Covered By Special Rule 1	**Special Rule #1** Any option combination that includes Bypass	**A Height**	**B Width**	**C Depth**	**D**	**E**	**G Dia.**	**H** ❶
AA02-AA04, HA02-HA04, BA01-BA03, NA01-NA03	–	350.0 (13.78)	400.0 (15.75)	232.7 (9.16)	315.0 (12.40)	177.8 (7.00)	6.4 (0.25)	40.5 (1.594)
BA04-BA09, NA04-NA09	AA02-AA04, HA02-HA04, BA01-BA09, NA01-NA09	609.6 (24.00)	406.4 (16.00)	223.7 (8.81)	571.5 (22.50)	368.3 (14.50)	12.7 (0.50)	40.5 (1.594)

❶ Disconnect switch or circuit breaker operating handle.