

# Bulletin 1305 Drives to PowerFlex 40 Drives



LISTEN.  
THINK.  
SOLVE.™

## Table of Contents

Reference Materials . . . . .	2
Product Overview . . . . .	3
Features and Specifications . . . . .	4
Dimensions . . . . .	7
Terminal Comparison . . . . .	8
Communications . . . . .	10
Software . . . . .	11

## Reference Materials

For additional data and general drive information, refer to the following publications.

Title	Description
PowerFlex 4 and 40 Adjustable Frequency AC Drives Technical Data, publication <a href="#">22-TD001</a>	Provides technical data for the PowerFlex 4 and 40 drives, the smallest and most cost-effective members of the PowerFlex family of drives.
PowerFlex 40 Configured AC Drives Installation Instructions, publication <a href="#">23B-IN001</a>	Provides basic information on how to install and operate the PowerFlex 40 drive.
PowerFlex 40 Adjustable Frequency AC Drives User Manual, publication <a href="#">22B-UM001</a>	Provides information on how to start up, program, and troubleshoot the PowerFlex 40 drive.
Bulletin 1305 Adjustable Frequency AC Drives Brochure, publication <a href="#">1305-BR001</a>	Provides overall information on the Bulletin 1305 drive line.
Bulletin 1305 Adjustable Frequency AC Drives (Series A and B) User Manual, publication <a href="#">1305-UM001</a>	Provides information on how to install, program, start up and maintain the Bulletin 1305 drive (Series A and B).
Bulletin 1305 Adjustable Frequency AC Drives (Series C) User Manual, publication <a href="#">1305-UM002</a>	Provides information on how to install, program, start up and maintain the Bulletin 1305 drive (Series C).

## Product Overview

Providing users with powerful motor speed control in a compact, space savings design, Allen-Bradley PowerFlex 40 AC drives are the smallest and most cost effective members of the PowerFlex family of drives. Ideal for machine level speed control, these products provide the application versatility to meet the demands of global OEMs and end users who require flexibility, space savings and ease of use.

Drives are available in two frame sizes that cover ratings from 0.4 to 11 kW (0.5 to 15 HP), 100 to 120 volts, 200 to 240 volts, 380 to 480 volts and 460 to 600 volts.

## Product Features

- DIN Rail Mounting Design
- Feed-through Wiring Design
- Versatile Programming and Network Solutions
- Energy Savings with Speed Control and Regulation



## Features and Specifications

The marketing information and analysis provided are based upon information that is readily available.

Drive Model/Cat. No.	1305/1305-xxxx	PowerFlex 40/22B-xxxxxxx
<b>Power Ratings</b>		
120V	N/A	0.5...1.5 Hp (0.4...1.1 kW)
240V, 1-phase	0.25...2.0 Hp (0.19...1.5 kW)	0.5...3 Hp (0.4...2.2 kW)
240V, 3-phase	0.5...3 Hp (0.4...2.2 kW)	0.5...10 Hp (0.4...7.5 kW)
480V	0.5...5 Hp (0.4...4.0 kW)	0.5...15 Hp (0.4...11 kW)
600V	N/A	1...15 Hp (0.75...11 kW)
Normal duty overload		
Continuous	100%	100%
1 minute	150%	150%
3 seconds	200%	200%
<b>Specifications</b>		
Frequency control (max)	400 Hz	400 Hz
PWM frequency	2...8 kHz	2...16 kHz
Enclosure types	IP30 (NEMA Type 1)	<ul style="list-style-type: none"> <li>• Open Type - IP21</li> <li>• Type 1 - IP30 (with kit)</li> <li>• Type 4x - IP60 (B frame only)</li> <li>• Type 1/12/4/4X - IP40/54/65, C frame heatsink out the back</li> </ul>
Ambient temperature	0...50 °C (32...122 °F) Open	-10...50 °C (14...122 °F)
Torque control		
Open loop accuracy	N/A	N/A
Closed loop accuracy	N/A	N/A
Speed control		
Open loop accuracy	1% - 40:1	1% across 80:1 speed range, with slip comp.
Closed loop accuracy	N/A	N/A
HP with DC link choke	N/A	15 Hp
HP with AC line choke	N/A	N/A
Volt tolerance	±10%	±10%
Frequency tolerance	47...63 Hz	47...63 Hz
Compliance marks	CE, UL, cUL	CE, UL, cUL, C-Tick
Altitude (max)	1000 m (3281 ft)	1000 m (3281 ft)

## Features and Specifications *(continued)*

Drive Model/Cat. No.	1305/1305-xxxx	PowerFlex 40/22B-xxxxxxx
<b>Hardware</b>		
EMC filtering	External - 3-phase	Internal - 1-phase 230V only, External - 3-phase
Heatsink out the back	No	Yes, all frame sizes
Zero stacking	No	Yes
Internal DB transistor HP	Yes <sup>(2)</sup>	0.4...11 kW (0.5...15 Hp)
Internal DB resistor option HP	No	No
Encoder input standard	N/A	N/A
Additional feedback options	N/A	N/A
Number of simultaneous communication supports in drive	2	1
Removable MOV to ground	No	Yes
Safe-off	No	No
Short circuit rating (max)	200,000 A	100,000 A
<b>Inputs/Outputs</b>		
Standard discrete inputs	Seven 5V DC sink (Start, Stop, For/Rev, Jog, and three Presets)	Seven 24V sink/source (three for Start/Stop/Reverse, four for fully programmable)
Discrete outputs	One Form A Relay, one Open Collector (Sink): 24V DC	One Form C Relay, two optos
Analog inputs	Two analog (one 4-20 mA, one 0...10V DC)	One bipolar ( $\pm 10V$ or 4-20 mA), one unipolar (4-20 mA)
Analog outputs	One (0...10V DC)	One (0...10 V or 4-20 mA)
Optional I/O voltage	No	No
PTC input	No	No
Pulse input	No	No
Pulse output	No	No
Encoder input	No	No
Encoder output	No	No
Input timer/counter functions	No	Yes
Output timer/counter functions	No	No
Additional inputs/outputs	No	No
<b>Input/Output Specifications</b>		
Digital input scan time <sup>(1)</sup>	N/A	2.5 ms
Analog input scan time <sup>(1)</sup>	N/A	2.5 ms
Analog output scan time <sup>(1)</sup>	N/A	2.5 ms
Analog input resolution	10 bit	10 bit
Analog output resolution	8 bit	10 bit

<sup>(1)</sup> Not through-put time.

<sup>(2)</sup> Except for 200...230V, 0.37...0.75 kW (200...230V, 0.5... Hp).

## Features and Specifications *(continued)*

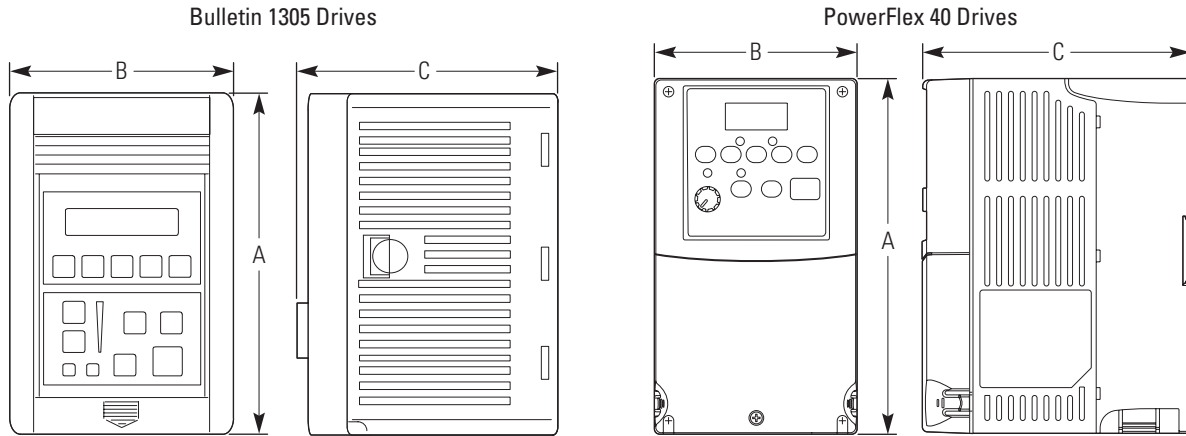
Drive Model/Cat. No.	1305/1305-xxxx	PowerFlex 40/22B-xxxxxxx
<b>HIM Information</b>		
Local LCD	Yes	No
Remote LCD	Yes	Yes
Local LED	No	Yes <sup>(1)</sup>
Hand-held	No	Yes
CopyCat function	Yes	Yes
Languages	6	7 <sup>(2)</sup>
Auto/manual function	No	No <sup>(3)</sup>
<b>Features</b>		
Motor control type	V/Hz	V/Hz and sensorless vector
Flying start	No	Yes
Bus regulator	Yes	Yes
S-curve	Yes	Yes
Drive overload protection	Yes	Yes
Advanced diagnostics	No	No
Input phase loss	No	No
User sets	No	No
Preset speeds	7	8
Process control loop	No	PID
Fast flux up	No	No
Fast brake to stop	No	No
Flux braking	No	No
Feedback loss switchover	No	No
Battery back-up	No	No
Multi-motor parameters	No	No
<b>Application Features</b>		
SynchLink	No	No
Motion controller	No	No
Inertia adaption	No	No
Speed profiles	No	Step Logic
Position control	No	Basic, using digital input
P-jump (traverse function)	No	No
Lifting application	No	No
Winder application	No	No
Electronic gearing/line shaft	No	No

<sup>(1)</sup> Includes pot and control keys.

<sup>(2)</sup> Language capability is available only with remote HIM.

<sup>(3)</sup> Auto/manual function is available through remote HIM.

## Dimensions



### Bulletin 1305 Drives

Input Rating (VAC)	Motor Rating		Dimensions mm (in.)		
	Hp (1-Phase)	Hp (3-Phase)	A	B	C (4)
200-230	0.25, 0.5	0.5, 0.75	195 (7.68)	120 (4.72)	122 (4.80)
200-230	0.75	1	195 (7.68)	120 (4.72)	140 (5.51)
200-230	1	2	195 (7.68)	170 (6.69)	179 (7.05)
380-460	—	0.5...3	195 (7.68)	170 (6.69)	179 (7.05)
200-230	2	3	195 (7.68)	210 (8.27)	179 (7.05)
380-460	—	5	195 (7.68)	210 (8.27)	179 (7.05)

### PowerFlex 40 Drives (1)

Input Rating (VAC)	Motor Rating		Dimensions mm (in.)		
	Hp (1-Phase)	Hp (3-Phase)	A	B	C
100-120, 200-240	0.5, 1	—	180 (7.09)	100 (3.94)	136 (5.35)
200-240, 380-480	—	0.5, 1.0	180 (7.09)	100 (3.94)	136 (5.35)
100-120	1.5	—	180 (7.09)	100 (3.94)	136 (5.35)
200-240 (2)	0.5, 1, 2	—	180 (7.09)	100 (3.94)	136 (5.35)
200-240 (3)	3	—	260 (10.24)	130 (5.12)	180 (7.09)
200-240, 380-480, 460-600	—	2, 3, 5	180 (7.09)	100 (3.94)	136 (5.35)
200-240, 380-480, 460-600	—	7.5, 10	260 (10.24)	130 (5.12)	180 (7.09)
380-480, 460-600	—	15	260 (10.24)	130 (5.12)	180 (7.09)

(1) Dimensions shown for a PowerFlex drive with an IP20, NEMA/UL Type Open enclosure. See the PowerFlex 40 Adjustable Frequency AC Drives User Manual, publication [22B-UM001](#), for drive dimensions with other enclosure types.

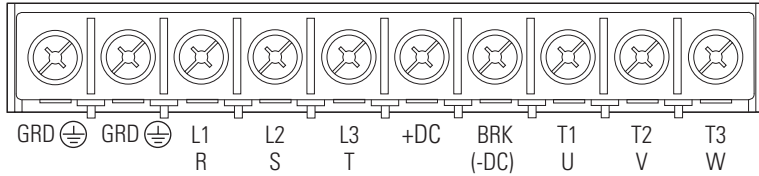
(2) These single-phase motors have integral "S Type" EMC filter.

(3) Single-phase 3 Hp motor can be ordered with or without integral "S Type" EMC filter.

(4) Dimensions shown are for a drive depth without pot. Add 5.1 mm (0.2 in.) to each number in this column for drive depth with pot.

# Terminal Comparison

## Bulletin 1305 Drive Power Terminal Block Designations



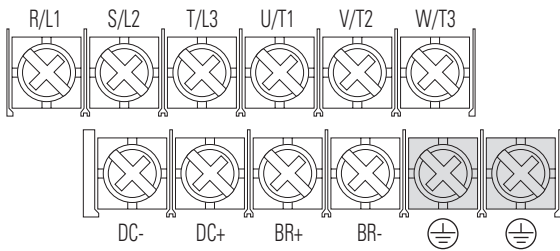
Terminal Description	Terminal Number	
	Bulletin 1305 Drive	PowerFlex 40 Drive
AC input line - R (L1)	R (L1)	R (L1)
AC input line - S (L2)	S (L2)	S (L2)
AC input line - T (L3)	T (L3)	T (L3)
Motor - U (T1)	U (T1)	U (T1)
Motor - V (T2)	V (T2)	V (T2)
Motor - W (T3)	W (T3)	W (T3)
Brake resistor	DC+	BR+

Terminal Description	Terminal Number	
	Bulletin 1305 Drive	PowerFlex 40 Drive
Brake resistor	BR/DC-	BR-
DC- bus	DC-	DC-
DC+ bus	DC+	DC+
DC bus inductor connection	N/A	P1 (1)
DC bus inductor connection	N/A	P2 (1)
Motor ground	PE	PE
Drive ground	PE	PE

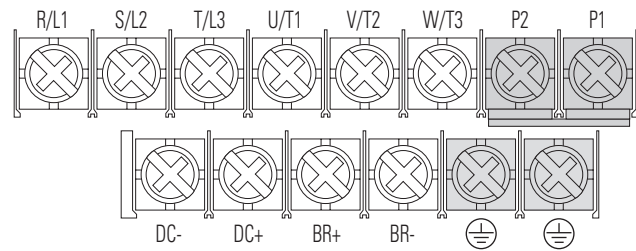
(1) C frame size only.

## PowerFlex 40 Drive Power Terminal Block Designations

### B Frame



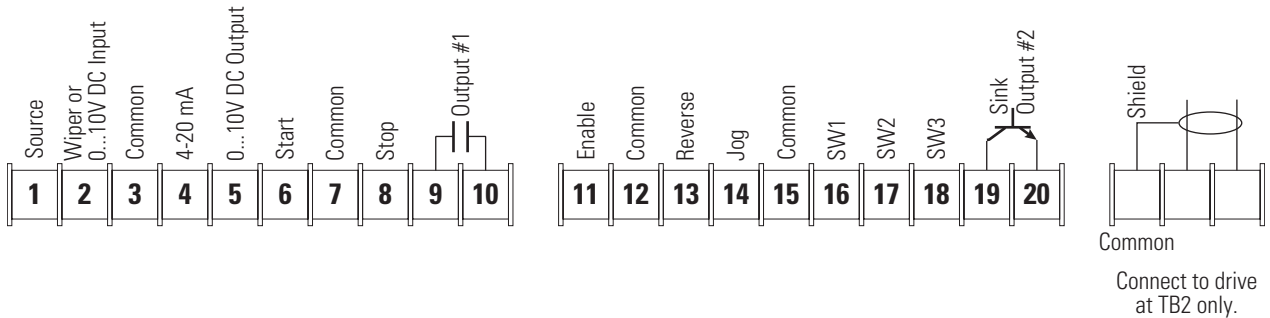
### C Frame





## Terminal Comparison *(continued)*

### Bulletin 1305 Drive Control Terminal Block Designations

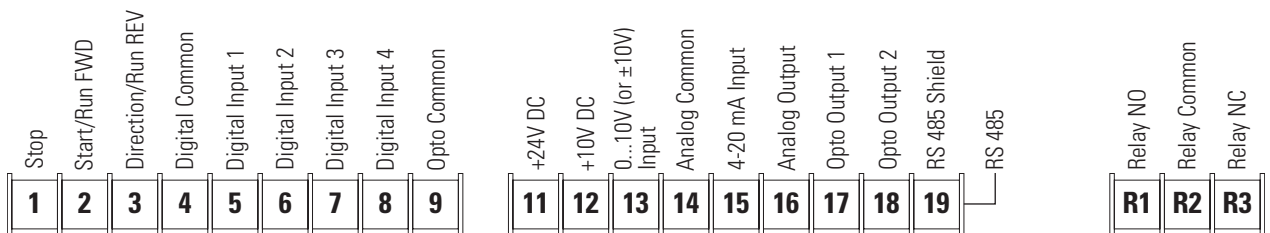


Terminal Description	Terminal Number	
	Bulletin 1305 Drive	PowerFlex 40 Drive
Analog input 1 Comm.	3	14
Analog input 1 ( $\pm$ )	2 (1)	13
Shield	—	19
Analog input 2 Comm.	3	—
Analog input 2 ( $\pm$ )	4	15
Analog output 1 (-)	3	14
Analog output 1 (+)	5 (1)	16
+10V reference	1	12
Reference common	3	14
Digital/relay output 1 (NO)	9 (2)	R1
Digital/relay output 1 Comm.	10 (2)	R1
Digital/relay output 1 (NC)	—	R3
Digital/relay output 2 Comm.	20 (3)	—

Terminal Description	Terminal Number	
	Bulletin 1305 Drive	PowerFlex 40 Drive
Digital/relay output 2 (NO)	19 (3)	17 (opto)
Digital/relay output 3 (NO)	—	18 (opto)
Digital inputs 1...3 Comm.	—	4
Digital input 1	6 (start)	2
Digital input 2	8 (stop)	1
Digital input 3	11 (enable)	(4)
Digital inputs 4...6 Comm.	—	4
Digital input 4	13 (reverse)	3
Digital input 5	14 (jog)	8
Digital input 6	16 (preset 1)	5
Digital input 7	17 (preset 2)	6
Digital input 8	18 (preset 3)	—

- (1) 0...10V DC.
- (2) C form.
- (3) Sink output.
- (4) Programmable.

### PowerFlex 40 Drive Control Terminal Block Designations



## Communications

Product Model Number	Allen Bradley 1305	PowerFlex 40
DF1	Yes	Yes (with SCM adapter)
AS-i	No	No
BACnet	No	Yes
CAN / Euromap	No	No
CANopen	No	No
CC-Link	No	No
ControlNet	Yes	Yes
Data Highway	No	No
DeviceNet	Yes	Yes
Ethernet or TCP/IP	No	No
EtherNet/IP	Yes	Yes
FIP I/O	No	No
Foundation Fieldbus	No	No
Interbus	No	No
LonWorks	No	Yes
Metasys N2	Yes, 3rd Party	No
Modbus ASCII	Yes, 3rd Party	No
Modbus Plus	Yes, 3rd Party	No
Modbus RTU	Yes, 3rd Party	Yes (Standard)
Modbus TCP/IP	No	No
PROFIBUS DP	Yes, 3rd Party	Yes
PROFINET	No	No
Remote I/O	Yes	No
SELMA 2	No	No
SERCOS	No	No
Siemens P1	No	No
Uni-Telway	No	No
USB	Yes (with USB converter)	Yes (with USB converter)
USS (Siemens proprietary)	No	No

## Software

<b>Software Feature</b>		<b>DriveTools SP/DriveExplorer</b>
Software Versions	Full version	Yes
	"Lite" version	Yes (freeware)
	Pocket PC version	Yes
	Palm version	No
Connectivity	Serial point-to-point	Yes
	Serial multi-drop	Yes
	Ethernet direct	Yes
	ControlNet	Yes
	DeviceNet	Yes
	Profibus DP	No
	Bluetooth	Yes
	WiFi	Yes
	Other/proprietary	Yes
Select Features	Offline capability	Yes
	Setup wizards	Yes
	Diagram views	Yes
	User-created views	Yes
	I/O terminal configuration	No
	Control	Yes
	Oscilloscope/graph	Yes
	Project management	No
	Flash	Yes
	File conversion tool	Yes
	On-line help	Yes
	Multi-language	English only

Allen-Bradley, PowerFlex, DPI, Compact I/O, SCANport and RSLogix are either trademarks or registered trademarks of Rockwell Automation, Inc. Trademarks not belonging to Rockwell Automation are property of their respective companies.

[www.rockwellautomation.com](http://www.rockwellautomation.com)

Corporate Headquarters

Rockwell Automation, 777 East Wisconsin Avenue, Suite 1400, Milwaukee, WI, 53202-5302 USA, Tel: (1) 414.212.5200, Fax: (1) 414.212.5201

Power, Control, and Information Solutions Headquarters

Americas: Rockwell Automation, 1201 South Second Street, Milwaukee, WI 53204-2496 USA, Tel: (1) 414.382.2000, Fax: (1) 414.382.4444

Europe/Middle East/Africa: Rockwell Automation SA/NV, Vorstlaan/Boulevard du Souverain 36, 1170 Brussels, Belgium, Tel: (32) 2 663 0600, Fax: (32) 2 663 0640

Asia Pacific: Rockwell Automation, 27/F Citicorp Centre, 18 Whitfield Road, Causeway Bay, Hong Kong, Tel: (852) 2887 4788, Fax: (852) 2508 1846