Modular *Sensorless* Brushless Motor Drives
DPFlex II Series

Compact motor drive with up to 1200 W output

Allied Motion's DPFlex™ II is the second generation of our innovative, patented digital sensorless brushless motor drive series. The DPFlex II adds higher speed capability (up to 150,000 RPM), a higher bus voltage capability, the ability to drive lower impedance motors, and convenient digital direction selection instead of motor rewiring. The result: a brushless sensorless drive able to power a broader range of motors.

The patented technology in the DPFlex II enables detection of motor rotor position even at standstill using algorithms that use motor phase inductance measurements to enable reliable starting under load. The result is robust, stable motor operation at reduced cost compared to sensored motor drive combinations. The DPFlex II boasts performance levels exceeding even those of conventional Hall-commutated drives.

Applications that can benefit from use of the DPFlex II include pumps, high speed compressors, medical hand pieces, fans and blowers, respirators, centrifuges, conveyors, variable-speed scanners, and similar speed/torque control equipment.

Allied Motion provides DP.D™ Windows-based software for the DPFlex II. DP.D enables you to easily set-up and configure the DPFlex II. It auto-calculates optimum current loop settings for the motor; enables easy setting of inputs and outputs on the drive; and provides a four-channel oscilloscope tool able to log system register data in real time.

QuickShip Products

Some of the part number configurations for this product are in stock and available for ***immediate delivery***!

Look for the QuickShip symbol next to available part numbers. Then, click on the part number to go directly to our online store.

Features & Benefits

- 12, 24 and 48 VDC models at up to 30 A continuous peak will mate with most small brushless motors
- Software selectable CW or CCW direction; full PID closed loop motoring and dynamic braking in either direction mode
- Sensorless control of brushless motors reduces system cost and wiring
- Capable of driving low impedance motors, delta- or wye-connected at up to 150,000 RPM
- Compact modular drive for brushless motors with up to 1200 W output power
- Up to 48 V and 30 A peak output will drive a wide range of brushless motors
- Broad 20:1 speed control range
- Closed loop control of current (torque) and velocity
- Adjustable PID loop compensation
- Analog input to set speed levels along with digital inputs for enable and motor direction control
- Protection afforded against phase-to-phase shorts, over and under voltage, over current and over temperature conditions
- LED status indicator
- Easy software set up and configuration

Options

- Comm-to-USB translator dongle
- Pre-made cables
- Embeddable PCB assembly version with or without mounting kit

AMERICAS +1 (716) 242-7535
EUROPE +46 (8) 546 11 100
ASIA +852 2607 4038

Issue Date: 5.15.17

DPFlex II – Specifications

Model		DPX-20430001	DPX-20430002	DPX-20430003	DPX-20430004	DPX-20430005	DPX-20430006	DPX-20430007	DPX-20430008	DPX-20430009
DC Bus Voltage Input		12 VDC (nominal) Range: 9 - 18			24 VDC (nominal) Range: 18 - 34			48 VDC (nominal) Range: 36 - 55		
Output Voltage – VDC (max)		17			33			54		
Output Current	Continuous [1]	5	15	30	5	15	30	5	15	30
	Peak	5	15	30	5	15	30	5	15	30
Output Power – W (cont)		50	150	300	100	300	600	200	600	1200
Motor Type Compatibility		AC brushless or DC brushless motors, delta- or wye-connected, rated up to 1200 W; 150 µs minimum time constant; 10 µH minimum phase-phase inductance								
Amplifier Type		PID closed loop control of torque or velocity in CW or CCW direction; rotation direction software selectable; 20 kHz PWM, 100% duty-cycle capable								
Efficiency		> 92% at 30 °C								
Current Loop Type		PID, 50 µs loop delay								
Velocity Loop Type		PID, 1 ms loop delay								
Speed or Torque Command Input		0 - 5 VDC, 10-bit resolution, non-isolated, single-ended								
Speed Range & Regulation		20:1 typical, 10:1 minimum (no-load speed at rated bus voltage to minimum controllable speed), ± 5% top speed regulation								
Analog I/O		Analog command input: 0 - 5 V, 10-bit resolution, non-isolated, single-ended, speed or torque								
Digital I/O		• 2 IN: Active high; minimum 8V high level threshold; maximum 0.5V low level threshold; 20 kHz sampled; absolute values: 60V maximum, -0.5V minimum: - One input for motor direction control - One input for motor enable control • 1 OUT non-isolated, bus level output (approximately 2V below), clamped to 24V for greater bus voltages, 10 mA max source (configurable through DP.D software as either a speed or a fault indicator)								
Status Indicator		Two-color LED: Red blink (1 Hz): fault; green blink (1 Hz): disabled but powered; green blink (2 Hz): enabled								
Communication Interface		USB UART, 115.2 kBd (requires USB-to-RS232 converter accessory)								
Protection Features		• Over- under-bus voltage fault: Nom. Bus / Low V / High V 12 / 8 / 20 24 / 16 / 36 48 / 34 / 57 • Reverse voltage protection • Over current shutoff at 115% of peak • Phase-to-phase short-circuit protection • Over temperature shutdown at 90 °C								
Weight		0.2 kg (0.44 lb)								
Ambient Operating Temperature		-30 to +50 °C max								
Ambient Storage Temperature		-40 to +100 °C								

[1] Heat sink temperature dependent: Heat sink must remain below 90 °C

Issue Date: 5.15.17

DP.D Software

DP.D™ is our Windows-based commissioning software for the DPFlex™ family of drives, designed to assist you with:

- Motor set-up and configuration
- I/O set-up and configuration
- Motor verification and performance analysis

DP.D also includes an integrated Help system that is easily accessible within DP.D. It provides detailed documentation that fully describes the operation of the DPFlex. In addition, background information is provided related to setup and mechanical configuration, the command set, and detailed operation within each functional block of the drive.

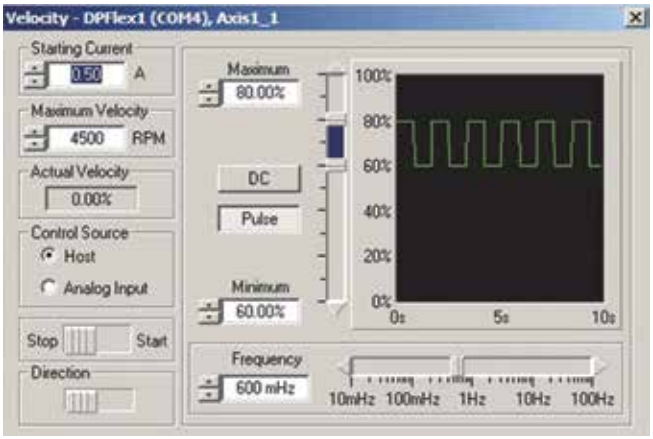
DP.D can be used with or without a physical connection to the DPFlex. By operating in virtual mode, you are able to access all documentation and help functions, access and set up all parameter settings and save your settings to a file for later use.

Features

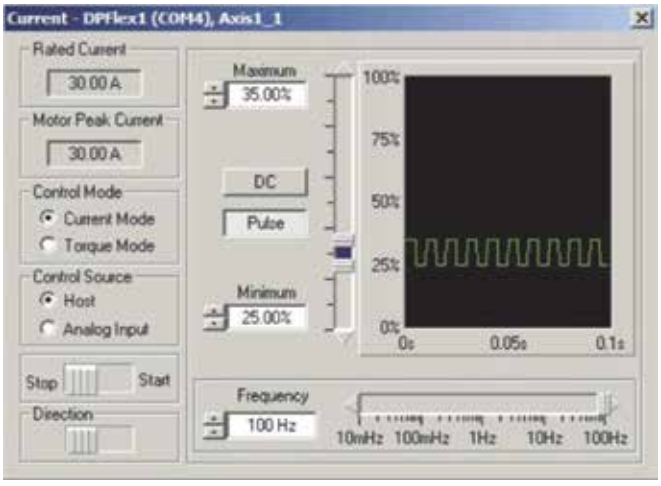
- DP.D is a Windows 2000/ XP/ Vista/7/8 application designed to assist the user in tuning, configuring and programming the DPFlex
- DP.D commands are sent to the driver via a standard USB-UART interface
- Quickly set up, tune and program the DPFlex
- Built-in oscilloscope tool to datalog system registers in real time
- Auto-calculation of optimum current loop settings for any compatible motor
- Performs cyclic motion to exercise system axes
- Enables viewing and setting of inputs
- Includes a motor verification tool

Key DP.D Modules

- Windows Configuration and Diagnostics
- Motor and System Tuning
- 4-channel Oscilloscope views
- Graphical Configuration of I/O
- Diagnostic and Error displays
- Parameter Configuration file creation
- Firmware update download
- Interactive Help Screens with User Manual

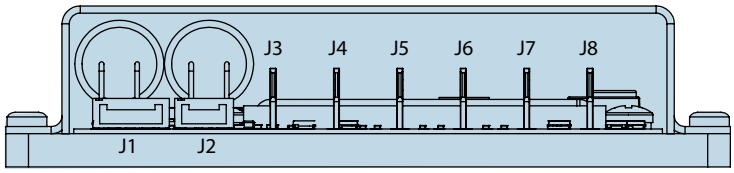


A built-in four-channel oscilloscope allows you to visually monitor results on the PC while adjusting tuning parameters. DP.D is capable of automatically determining the resistance and inductance of a motor to in order to set up current loop compensation. In addition, it will automatically determine the motor's start-up parameters.



Issue Date: 5.15.17

DPFlex II Electrical Connections



I/O Connector (J1)

Pin	Function
1	3.3 V Output
2	Analog Input, 0 - 5 V
3	Analog/Logic Common
4	Digital Input 1
5	Digital Input 2
6	Digital Output

JST #SM06B-GHS-TB
(Mate: JST #GHR-06V-S,
Pins JST #SSHL-002T-P0.2)

Comm Connector (J2)

Pin	Function
1	Common
2	Receive
3	3.3 V Output
4	Transmit

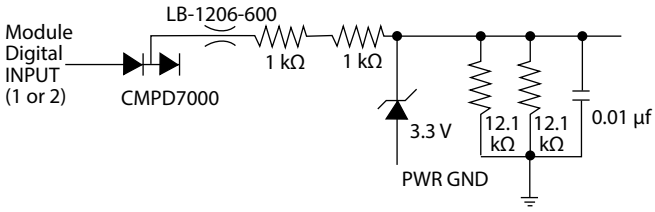
JST #SM04B-GHS-TB
(Mate: JST #GHR-04V-S,
Pins JST #SSHL-002T-P0.2)

Power Connectors

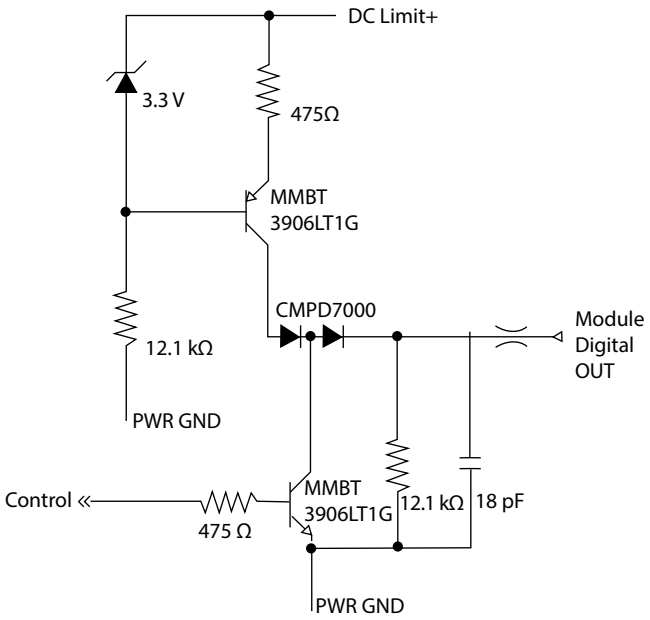
Pin	Function
J3	+ Power VDC
J4	– Power VDC
J5	Motor Phase A
J6	Motor Phase B
J7	Motor Phase C
J8	Digital Input 1

Mates: TE Connectivity
#62181-1 or #2-520193-2

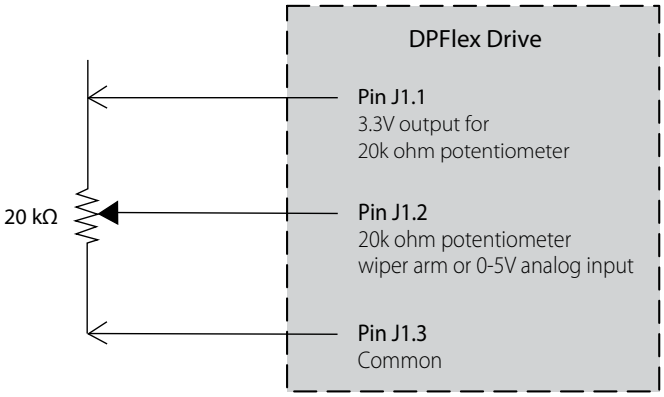
DPFlex II Digital Active-High Input Circuit:



DPFlex II Digital Output Circuit:

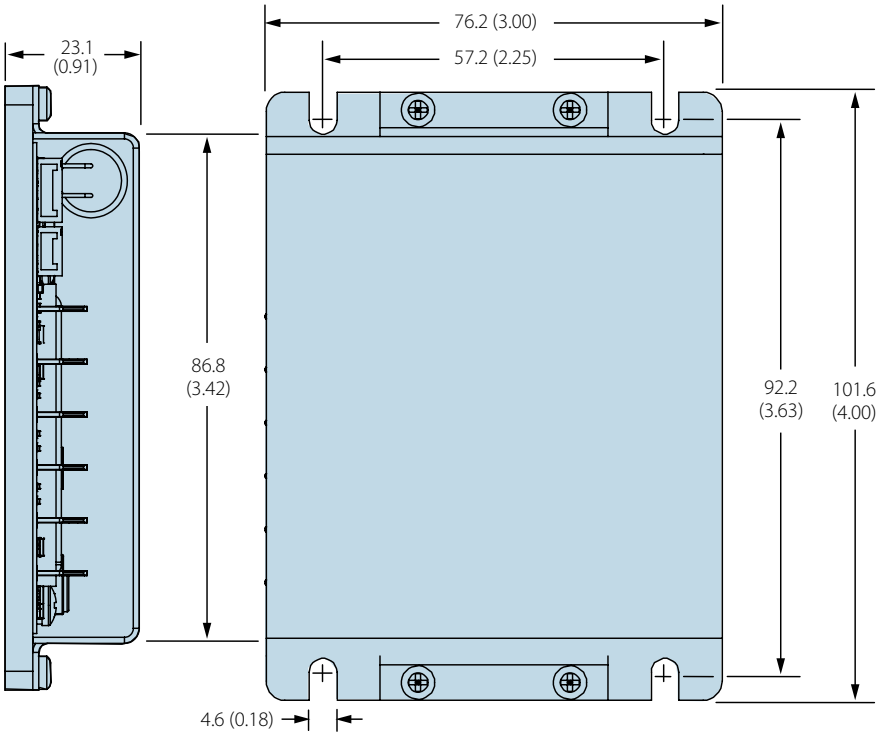


DPFlex II Analog Input Connection



Issue Date: 5.15.17

DPFlex II Dimensions — mm (in)



DPFlex II Cable Accessories

	Description	Part Number
USB	DPFlex USB translator "dongle" (p/n: 10-0177) plus 1 meter USB extension cable (Type B and Type A connectors)	AC-CB-100117
Power	DPFlex power (p/n: 40-0165), motor (p/n: 40-0166), and signal (p/n: 40-0167) cables kit, each cable 1 meter in length	AC-CB-100118

Documents & Software

Documentation and most software are available for download from the Allied Motion website (www.allliedmotion.com)

34-2003	User Manual, DPFlex Gen 2 Series Sensorless Brushless Motor Drives
DP.D	DP.D development and commissioning software for the DPFlex I and II drive

Issue Date: 5.15.17

Allied Motion
Motion Solutions That Change the Game

Custom & Specific-Purpose Products & Sub-Assemblies

Allied Motion offers a very wide selection of standard motion control solutions to satisfy the requirements found in the commercial, industrial and aerospace and defense markets. And, we are adding new products every year to meet new demands we find in those markets.

However, a recognized strength of Allied Motion is our willingness and ability to develop custom motion control products and systems to meet the specific needs of customers. Please contact us to discuss your specialized application requirements.

Allied Motion Solution Centers

Allied Motion maintains Solution Centers in three geographically strategic locations to assist our customers with all aspects of their product selection and buying decisions. These facilities assure local support no matter your location around the globe.

Each Solution Center's experienced application engineering and customer service team provide:

- Application analysis assistance
- Detailed product information and documentation
- Standard product selection
- Product customization and options guidance
- Specification development assistance for custom-design products
- Price quotations
- Ordering, order status and shipment information
- Logistics assistance

For assistance with your project, contact us at one of our continental Allied Motion Solution Centers listed below.

Allied Motion also has a global network of factory trained selling partners to serve you. Visit our website for contact information for the Allied Motion Sales Partner nearest you.

High-Performance Specialty Motors & Application-Specific Motion Systems

Aerospace & Defense
Automation
Commercial-Consumer
Industrial
Medical
Pumps
Robotics
Vehicles

www.alliedmotion.com

North America

United States, Canada, Mexico:

Allied Motion Technologies NASC
495 Commerce Drive, Ste 3
Amherst, NY 14228 USA

+1 (716) 242-7535

inquiry@alliedmotion.com

Europe

UK, Ireland, continental Europe, Eastern Europe, Scandinavia, Israel:

Allied Motion Technologies EUSC
Ekbacksvägen 26, PO Box 11198
S-161 11 Bromma, Sweden

+46 (8) 546 111 00

inquiry@alliedmotion.com

Asia

China, Taiwan, Japan, S. Korea, and other Far East Countries:

Allied Motion Technologies ASC
58 Leshan Road
Xinbei District, Changzhou 213022
China

+852 2607 4038 + 86 519 85113625

inquiry@alliedmotion.com