

**Description**

The DigiFlex® Performance™ (DP) Series digital servo drives are designed to drive brushed and brushless servomotors. These fully digital drives operate in torque, velocity, or position mode and employ Space Vector Modulation (SVM), which results in higher bus voltage utilization and reduced heat dissipation compared to traditional PWM. The command source can be generated internally or can be supplied externally. In addition to motor control, these drives feature dedicated and programmable digital and analog inputs and outputs to enhance interfacing with external controllers and devices.

This DP Series drive features a single RS-232/RS-485 interface used for drive configuration and setup. Drive commissioning is accomplished using DriveWare, available at [www.a-m-c.com](http://www.a-m-c.com).

All drive and motor parameters are stored in non-volatile memory.

**Power Range**

Peak Current	25 A (17.7 A <sub>RMS</sub> )
Continuous Current	12.5 A (8.8 A <sub>RMS</sub> )
Supply Voltage	40 - 190 VDC



**Features**

- ▲ Four quadrant regenerative operation
- ▲ Space vector modulation (SVM) technology
- ▲ Fully digital state-of-the-art design
- ▲ Programmable gain settings
- ▲ Fully configurable current, voltage, velocity and position limits
- ▲ PIDF velocity loop
- ▲ PID + FF position loop
- ▲ Compact size, high power density
- ▲ 16-bit analog to digital hardware

**MODES OF OPERATION**

- Current
- Position
- Velocity

**COMMAND SOURCE**

- Encoder Following
- 5V Step and Direction

**FEEDBACK SUPPORTED**

- Halls
- Incremental Encoder
- ±10 V Analog
- Auxiliary Incremental Encoder

**INPUTS/OUTPUTS**

- 3 Programmable Analog Inputs (12-bit Resolution)
- 5 Programmable Digital Inputs (Differential)
- 5 Programmable Digital Inputs (Single-Ended)
- 4 Programmable Digital Outputs (Single-Ended)

**COMPLIANCES & AGENCY APPROVALS**

- RoHS
- UL/cUL Pending
- CE Pending

**SPECIFICATIONS**

Power Stage Specifications		
Description	Units	Value
DC Supply Voltage Range	VDC	40 - 190
DC Bus Over Voltage Limit	VDC	198
DC Bus Under Voltage Limit	VDC	35
Logic Supply Voltage	VDC	40 - 190
Maximum Peak Output Current	A (Arms)	25 (17.7)
Maximum Continuous Output Current	A (Arms)	12.5 (8.8)
Maximum Continuous Output Power	W	2256.3
Maximum Power Dissipation at Continuous Current	W	118.8
Minimum Load Inductance (Line-To-Line) <sup>1</sup>	μH	300
Switching Frequency	kHz	20
Low Voltage Supply Outputs	-	+5 VDC (250 mA)
Control Specifications		
Description	Units	Value
Communication Interfaces	-	RS-232, RS-485
Command Sources	-	5V Step and Direction, Encoder Following
Feedback Supported	-	±10 V Analog, Auxiliary Incremental Encoder, Halls, Incremental Encoder
Commutation Methods	-	Sinusoidal, Trapezoidal
Modes of Operation	-	Current, Position, Velocity
Motors Supported	-	Brushed, Brushless, Induction, Voice Coil
Hardware Protection	-	40+ Configurable Functions, Over Current, Over Temperature (Drive & Motor), Over Voltage, Short Circuit (Phase-Phase & Phase-Ground), Under Voltage
Programmable Digital Inputs/Outputs (PDIs/PDOs)	-	10/4
Programmable Analog Inputs/Outputs (PAIs/PAOs)	-	3/0
Current Loop Sample Time	μs	50
Velocity Loop Sample Time	μs	100
Position Loop Sample Time	μs	100
Maximum Encoder Frequency	MHz	20 (5 pre-quadrature)
Mechanical Specifications		
To Be Determined		

**Notes**

1. Lower inductance is acceptable for bus voltages well below maximum. Use external inductance to meet requirements.

**HARDWARE SETTINGS**
**Switch Functions**

Switch	Description	Setting	
		On	Off
1	Bit 0 of binary RS-485 drive address. Does not affect RS-232 settings.	1	0
2	Bit 1 of binary RS-485 drive address. Does not affect RS-232 settings.	1	0
3	Bit 2 of binary RS-485 drive address. Does not affect RS-232 settings.	1	0
4	Bit 3 of binary RS-485 drive address. Does not affect RS-232 settings.	1	0
5	Bit 4 of binary RS-485 drive address. Does not affect RS-232 settings.	1	0
6	Bit 5 of binary RS-485 drive address. Does not affect RS-232 settings.	1	0
7	Bit 0 of drive RS-485 baud rate setting. Does not affect RS-232 settings.	1	0
8	Bit 1 of drive RS-485 baud rate setting. Does not affect RS-232 settings.	1	0

*Additional Details*

The drive can be configured to use the address and/or bit rate stored in non-volatile memory by setting the address and/or bit rate value to 0. Use the table below to map actual bit rates to a bit rate setting.

Baud Rate (kbps)	Value For Bit Rate Setting
Load from non-volatile memory	0
9.6	1
38.4	2
115.2	3

**PART NUMBERING INFORMATION**

Example: **D P R A N I E - 0 1 5 A 4 0 0 -**

Drive Series
DP DigiFlex Performance

Communication
R RS232/RS485
C CANopen or RS232
Q SynqNet

Command Inputs
AN Analog (±10V) No Step & Direction
AL Analog (±10V) Low Voltage Step & Direction (5V)
AH Analog (±10V) High Voltage Step & Direction (24V)
NL No Analog Low Voltage Step & Direction (5V)
NN No Analog, No Step & Direction (Communication Interface Only)

Digital I/O
I Isolated (24V)
T TTL (5V) Non-Isolated

Motor Feedback
E Incremental Encoder and/or Halls
R Resolver
A Absolute Sin/Cos (Hiperface & Endat)
S Sin/Cos with Halls

Customer Special
Code used to identify customer specials

Revision
A through Z (letters may be skipped)

Max DC Bus Voltage (V <sub>DC</sub> )
080 80
200 200
400 400
800 800

Power and Logic Supply
A AC Input +24V <sub>DC</sub> User Logic Supply Required
N AC Input Only No Logic Supply Required (Internal Supply)
B DC Input Both Logic Supply Options (Internal or User)
L DC Input Logic Supply Required
D DC Input Only Internal Logic Supply

Peak Current (A <sub>0 to Peak</sub> )
015 15
016 16
020 20
025 25
030 30
040 40
060 60
100 100

DigiFlex® Performance™ series of products are available in many configurations. All models listed in the selection tables of the website are readily available, standard product offerings. Other combinations or possibilities can be made available for OEMs with sufficient volume requests. Feel free to contact Applications Engineering for further information and details.

All specifications in this document are subject to change without written notice. Actual product may differ from picture provided in this document.

**This datasheet is incomplete. Contact Advanced Motion Controls for more information.**