

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 drive can be configured for a variety of external command signals. Commands can also be configured using the drive's built-in Motion Engine, an internal motion controller used with distributed motion applications. 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 CANopen interface for networking and a RS-232 interface for drive configuration and setup. Drive commissioning is accomplished using DriveWare® 7, available for download at www.a-m-c.com.

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

Power Range	
Peak Current	15 A (10.6 A _{RMS})
Continuous Current	7.5 A (7.5 A _{RMS})
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
- On-the-Fly Mode Switching
- On-the-Fly Gain Set Switching

MODES OF OPERATION

- Profile Current
- Profile Velocity
- Profile Position
- Cyclic Synchronous Current Mode
- Cyclic Synchronous Velocity Mode
- Cyclic Synchronous Position Mode

COMMAND SOURCE

- ±10 V Analog
- PWM and Direction
- Encoder Following
- Over the Network
- Sequencing
- Indexing
- Jogging

FEEDBACK SUPPORTED

- ±10 VDC Position
- Auxiliary Incremental Encoder
- Heidenhain EnDat®
- Stegmann Hiperface®
- Tachometer (±10 VDC)

INPUTS/OUTPUTS

- 3 High Speed Captures
- 3 Programmable Analog Inputs (16-bit/12-bit Resolution)
- 2 Programmable Analog Outputs (10-bit Resolution)
- 2 Programmable Digital Inputs (Differential)
- 6 Programmable Digital Inputs (Single-Ended)
- 4 Programmable Digital Outputs (Single-Ended)

COMPLIANCES & AGENCY APPROVALS

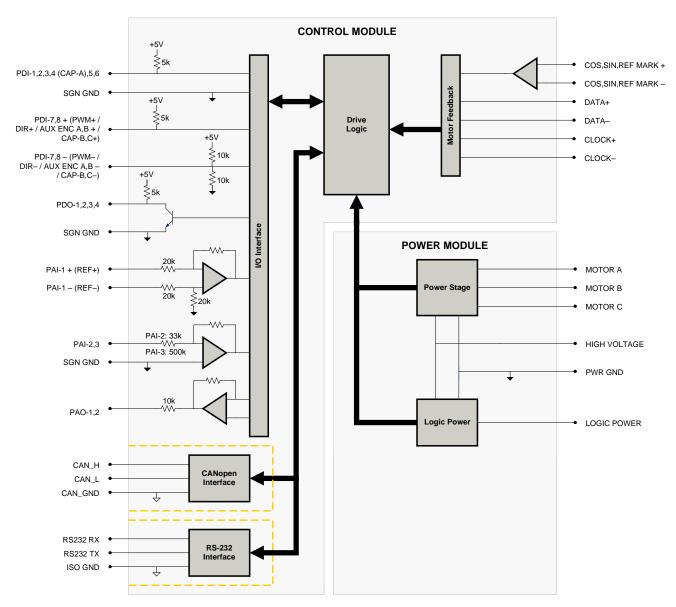
- UL
- cUL
- CE Class A (LVD)
- CE Class A (EMC)
- RoHS

Sold & Serviced By:





BLOCK DIAGRAM



Information on Approvals and Compliances US and Canadian safety compliance with UL 508c, the industrial standard for power conversion electronics. UL registered under file number E140173. Note that machine components compliant with UL are considered UL registered as opposed to UL listed as would be the case for commercial products. Compliant with European CE for both the Class A EMC Directive 2004/108/EC on Electromagnetic Compatibility (specifically EN 61000-6-4:2007 and EN 61000-6-2:2005) and LVD requirements of directive 2006/95/EC (specifically EN 60204-1:2006), a low voltage directive to protect users from electrical shock. RoHS (Reduction of Hazardous Substances) is intended to prevent hazardous substances such as lead from being COMPLIANCE manufactured in electrical and electronic equipment.

Sold & Serviced By:



sales@electromate.com



SPECIFICATIONS

Description Units			Power Specifications
DC Bus Lorder Voltage Limit VCC 198 CD Bus Linder Voltage VDC 4.0 ± 190 Logic Supply Voltage VDC 4.0 ± 190 Maximum Peak Output Current ¹ A (Arms) 15 (10.6) Maximum Centinous Output Dever W 1.353.8 Maximum Centinous Output Dever W 1.353.8 Maximum Development Continuous Current W 7.5 Internal Bus Capacitance µF 20 Minimum Load Inductione (Line-To-Line) ¹ µH 250 Switching Frequency H± 2 20 Low Voltage Supply Outputs % 100 Description Units Control Specifications Value Communication Interfaces . CANAppen (RS-232 for configuration) Value Communication Interfaces . CANAppe			10000
DC Bus Under Voltage Lindin VDC Ling Supply Voltage VDC Ling Supply Voltage VDC Linding Supply Voltage VDC Linding Supply Voltage VDC Linding Supply Sup	DC Supply Voltage Range		40 - 190
Logic Supply Voltage	DC Bus Over Voltage Limit	VDC	198
Maximum Peak Output Current IA (Arms) 15 (10s) Maximum Continuous Output Current W 1353.8 Maximum Dominuous Output Power W 1353.8 Maximum Power Desipation at Continuous Current W 71.3 Internal Bus Capacitance µF 20 Minimum Load Inductance (Line-To-Line) µH 250 Maximum Output PWM Duty Cycle % 100 Lov Vottage Supply Outputs 1° 4° VO (250 rA) Control Specifications Units Value Control Specifications Units Value Command Sources 1° CANopen (RS-22 for configuration) Command Sources 1° CANOpen (RS-22 for co	DC Bus Under Voltage Limit	VDC	35
Maximum Continuous Output Current* A Arms (Logic Supply Voltage	VDC	40 - 190
Maximum Continuous Output Prever W 153.8.8 Maximum Power Dissipation at Continuous Current W 71.3 Maximum Power Dissipation at Continuous Current µF 20 Minimum Load Inductance (Inte-To-Line) ¹ µH 250 Maximum Output PVM Duty Cycle ½ 100 Control Specifications Control Specifications Description Volts Value Command Sources - CNAppen (RS 232 for configuration) Feedback Supported - - CNAppen (RS 232 for configuration) Feedback Supported - - CNAppen (RS 232 for configuration) Feedback Supported - - 410 VaC Position, Auxiliary Incremental Encoder, Heldenhain EnDatifis, Stegmann Hiperface®, Tachonester (±10 VCC) Commandation Methods - - 410 VCC Position, Auxiliary Incremental Encoder, Heldenhain EnDatifis, Stegmann Hiperface®, Tachonester (±10 VCC) Modes of Operation - - 410 VCC Position, Auxiliary Incremental Encoder, Heldenhain EnDatifis, Stegmann Hiperface®, Tachonester (±10 VCC) Motors Supported - - 410 VCC Position Auxiliary Incremental E	Maximum Peak Output Current ¹	A (Arms)	15 (10.6)
Maximum Power Dissipation at Continuous Current W P 20 Internal Bus Capacitance μP 20 Minimum Load Inductionas (InenTo Line)¹ μP 20 Switching Frequency kHz 20 Maximum Output PWM Duty Cycle % 100 Low Voltage Supply Outputs *** VDC (250 mA) Control Specifications Communication Interfaces Units Value Communication Interfaces - 2 CANpoper (RS-232 for configuration) Communication Interfaces - 3 CANpoper (RS-232 for configuration) Communication Interfaces - 4 CANpoper (RS-232 for configuration) Communication Interfaces - 3 CANpoper (RS-232 for configuration) Communication Methods - 3 CANpoper (RS-232 for configuration), Over the Natural, PWM and Direction, Sequencing, Indexing, Jogging Modes of Operation - 3 Profit Current, Profite Velocity, Profite Position, Over the Natural, PWM and Direction, Sequencing, Indexing, Jogging Modes of Operation - 3 Profite Current, Profite Velocity, Profite Position, Over the Natural, PWM and Direction, Sequencing, Indexing, Jogging Motors Supported - 3 Colosed Loop Vector, Single Phase (Brushed, Voice Coil,	Maximum Continuous Output Current ²	A (Arms)	7.5 (7.5)
Internal Bus Capacitance μF 20 Minimum Load inductance (Line-To-Line)** μH 250 Maximum Output PVM Duty Cycle % 100 Low Voltage Supply Outputs % 100 Control Specifications Voltage Operation Value Command Sources — CANopen (RS-232 for configuration) Command Sources — CANopen (RS-232 for configuration) Command Sources — CANopen (RS-232 for configuration) Command Sources — CAN popen (RS-232 for configuration) Command Sources — CAN popen (RS-232 for configuration) Command Sources — — CAN popen (RS-232 for configuration) — Command Sources — — CAN popen (RS-232 for configuration) — — — — Command Sources — — — — — — — — — — — — — <th< td=""><td>Maximum Continuous Output Power</td><td>W</td><td>1353.8</td></th<>	Maximum Continuous Output Power	W	1353.8
Minimum Load Inductance (Line-To-Line)¹ µH 250 Switching Frequency kHz 20 Switching Frequency %Hz 100 Low Voltage Supply Outputs 5 4 5 VDC (250 mA) Communication Interfaces Units Value Communication Interfaces CANopen (RS-322 for configuration) Communication Interfaces = 10 VDC Position, Auxiliary Incremental Encoder, Heidenhain EnDaté, Stegmann Hiperface®, Tachometer (10 VDC) Feedback Supported = 6 Sinusoidal Communication Methods = 6 Sinusoidal Communication Methods = 6 Profite Current, Profite Velocity, Profile Position, Cyclic Synchronous Current Mode, Cyclic Synchronous Velocity Modes of Operation Motors Supported = 6 Closes Loop Vector, Single Phase (Brushed, Voice Coll, Inductive Load), Three Phase (Brusheds) Motors Supported = 6 Closes Loop Vector, Single Phase (Brushed, Voice Coll, Inductive Load), Three Phase (Brusheds) Motors Supported = 6 Sinusoidal Marka Protection = 6 Sinusoidal Motors Supported = 6 Sinusoidal Very Collegate Programmable Digital Inputs/	Maximum Power Dissipation at Continuous Current	W	71.3
Switching Frequency M±Z 20 Maximum Output PVM Duty Cycle % 100 Low Vottage Supply Outputs control Specifications Description Units Value Command Sources - 4 5 VDC (250 mA) Command Sources - 4 10 VDC Position, Auxiliary Incremental Encoder, Heidenhain EnDat®, Stegmann Hiperface®, Tachometer (±10 VDC) Command Sources - 4 10 VDC Position, Auxiliary Incremental Encoder, Heidenhain EnDat®, Stegmann Hiperface®, Tachometer (±10 VDC) Command Sources - 4 10 VDC Position, Auxiliary Incremental Encoder, Heidenhain EnDat®, Stegmann Hiperface®, Tachometer (±10 VDC) Command Sources - 4 10 VDC Position, Auxiliary Incremental Encoder, Heidenhain EnDat®, Stegmann Hiperface®, Tachometer (±10 VDC) Command Sources - 4 10 VDC Position, Auxiliary Incremental Encoder, Heidenhain EnDat®, Stegmann Hiperface®, Tachometer (±10 VDC) Modes of Operation - 4 10 VDC Position, Auxiliary Incremental Encoder, Heidenhain EnDat®, Stegmann Hiperface®, Tachometer (±10 VDC) Modes of Operation - 4 10 VDC Position, Auxiliary Incremental Encoder, Heidenhain EnDat®, Stegmann Hiperface®, Tachometer (±10 VDC) Modes of Operation - 4 10 VDC Position, Stephanne, Stegmann Hiperface®, Tachometer	Internal Bus Capacitance	μF	20
Maximum Output PWM Duty Cycle % 100 Low Voltage Supply Outputs 1 5 VDC (250 mA) Description Units Value Communication Interfaces 1 0 CANpen (RS-232 for configuration) Command Sources 1 0 V Analog, Encoder Following, Over the Network, PVM and Direction, Sequencing, Indexing, Jogging Feedback Supported 1 0 V Analog, Encoder Following, Over the Network, PVM and Direction, Sequencing, Indexing, Jogging Feedback Supported 2 10 V Analog, Encoder Following, Over the Network, PVM and Direction, Sequencing, Indexing, Jogging Modes of Operation 2 1 10 V Analog, Encoder Following, Over the Network, PVM and Direction, Sequencing, Indexing, Jogging Modes of Operation 2 1 10 V Analog, Encoder Following, Over the Network, PVM and Direction, Sequencing, Indexing, Jogging Modes of Operation 2 2 1 10 V Analog, Encoder Following, Over the Network, PVM and Direction, Sequencing, Indexing, Jogging Modes of Operation 2 2 1 10 V Analog, Encoder Following, Over the Network, PVM and Direction, Sequencing, Indexing, Jogging Modes of Operation 4 1 10 V Analog, Encoder Following, Albertane Reposition, Availiary Incremental Encoder, Heiderhan Encoder, Publication	Minimum Load Inductance (Line-To-Line)3	μH	250
Low Voltage Supply Outputs Control Specifications Obsertiption Control Specifications Command Sources 5 CANOgen (RS-232 for configuration) Command Sources 5 CANOgen (RS-232 for configuration) Feedback Supported 40 V Analog, Encoder Following, Over the Network, PVM and Direction, Sequencing, Indexing, Jogging Feedback Supported 40 V Analog, Encoder Following, Over the Network, PVM and Direction, Sequencing, Indexing, Jogging Modes of Operation 2 - 0 Sinusoidal Motors Supported 2 - 0 Sinusoidal Motors Supported 2 - 0 Closed Loop Vector, Single Phase (Brushed, Voice Coll, Inductive Load), Three Phase (Brusheds) Motors Supported 2 - 0 Closed Loop Vector, Single Phase (Brushed, Voice Coll, Inductive Load), Three Phase (Brusheds) Motors Supported 2 - 0 Closed Loop Vector, Single Phase (Brushed, Voice Coll, Inductive Load), Three Phase (Brusheds) Programmable Analog Inputs/Outputs (PDIs/PDOs) 3 - 0 32 Programmable Analog Inputs/Outputs (PAIs/PAOs) 3 - 0 32 Value (Level 3 - 0 32 32 Value (Level 3 - 0 3 - 0 3 - 0 <t< td=""><td>Switching Frequency</td><td>kHz</td><td>20</td></t<>	Switching Frequency	kHz	20
Description Units Value Communication Interfaces - CANopen (RS-232 for configuration) Command Sources - 2.10 V Analog, Encoder Following, Over the Network, PVM and Direction, Sequencing, Indexing, Jogging Feedback Supported - 2.10 V Analog, Encoder Following, Over the Network, PVM and Direction, Sequencing, Indexing, Jogging Communiation Methods - 3. Invalidation Modes of Operation - Profile Current, Profile Velocity, Profile Position, Cycle Synchronous Current Mode, Cycle Synchronous Position Mode Motors Supported - Closed Loop Vestor, Single Phase (Brushed, Voice Job, Inductive Load), Three Phase (Brushless) Hardware Protection - Closed Loop Vestor, Single Phase (Brushed, Voice Job, Inductive Load), Three Phase (Brushless) Hardware Protection - Closed Loop Vestor, Single Phase (Brushed, Voice Job, Inductive Load), Three Phase (Brushless) Hardware Protection - Closed Loop Vestor, Single Phase (Brushed, Voice Job, Inductive Load), Three Phase (Brushless) Programmable Analog Inputs/Outputs (PDIs/PDOs) - 8 Programmable Analog Inputs/Outputs (PDIs/PDOs) - 8 Programmable Analog Inputs/Outputs (PDIs/PDOs) - 8	Maximum Output PWM Duty Cycle	%	100
Obescription Units Value Communication Interfaces - CANopen (RS-232 for configuration) Command Sources - ±10 V Analog, Encoder Following, Over the Network, PWM and Direction, Sequencing, Indexing, Jogging Feedback Supported ±10 VDC Position, Auxiliary Incremental Encoder, Heiderhain EnDatils, Stegmann Hiperfaces, Tachometer (±10 VDC) Commutation Methods - Sinusoidal Modes of Operation - Profile Current, Profile Velocity, Profile Position, Cyclic Synchronous Current Mode, Cyclic Synchronous Velocity Motors Supported - Cisced Loop Vector, Single Phase (Brushed, Voice Coll, Inductive Load), Three Phase (Brushles) Hardware Protection - Cisced Loop Vector, Single Phase (Brushed, Voice Coll, Inductive Load), Three Phase (Brushless) Hardware Protection - 40+ Configurable Functions, Over Current, Over Temperature (Drive & Motor), Over Voltage, Short Circuit (Phase-Phase & Phase-Ground), Under Voltage Programmable Analog Inputs/Outputs (PDIs/PObs) - 8/4 Programmable Analog Inputs/Outputs (PDIs/PObs) - 8/4 Programmable Analog Inputs/Outputs (PDIs/PObs) - 8/4 Value - 5 VTL Current Loop Sample Time µs	Low Voltage Supply Outputs	-	+5 VDC (250 mA)
Communication Interfaces - CANopen (RS-232 for configuration) Command Sources - ± 10 V Analog. Encoder Following. Over the Network, PWM and Direction, Sequencing, Indexing, Jogging and 10 VDC Position, Auxiliary Incremental Encoder, Heidenhain EnDatile, Stegmann Hiperfaces®, Tachometer (±10 VDC) Commutation Methods - Sinusoidal Modes of Operation - Profile Current, Profile Velocity, Profile Position, Cyclic Synchronous Current Mode, Cyclic Synchronous Velotity Mode, Cyclic Synchronous Position Mode Motors Supported - Closed Loop Vector, Single Phase (Brushed, Voice Coil, Inductive Load), Three Phase (Brushless) Hardware Protection - Adv Configurable Functions, Over Current, Over Temperature (Drive & Motor), Over Voltage, Short Circuit (Phase-Phase & Phase-Ground), Under Voltage Programmable Digital Inputs/Outputs (PAIs/PAOs) - 84 Value - 84 100 Current Loop Sample Time µs 100			Control Specifications
Command Sources ±10 V Analog, Encoder Following, Over the Network, PWM and Direction, Sequencing, Indexing, Jogging Feedback Supported ±10 VDC Position, Auxiliary Incremental Encoder, Heidenhain EnDat®, Stegmann Hiperface®, Tachemeter (±10 VDC) Commutation Methods - Sinusoidal Modes of Operation - Profile Current, Profile Velocity, Profile Position, Cyclic Synchronous Current Mode, Cyclic Synchronous Position Mode (by Cyclic Synchronous Current Mode (by Cyclic Synchronous Position Mode (by Cyclic Synchronous Current Mode (by Cyclic Synchronous Current Mode (by Cyclic Synchronous Current Mode (by Cyclic Synchronous Curren	Description	Units	Value
Feedback Supported x.10 VDC Position, Auxiliary Incremental Encoder, Heidenhain EnDat®, Stegmann Hiperface®, Tachometer (x10 VDC) Commutation Methods x. Sinusoidal Modes of Operation x. Sinusoidal Motors Supported x. Closed Loop Vector, Singh Phase (Brushed, Voice Coil, Inductive Load), Three Phase (Brushes) Hardware Protection x. 40 + Configurable Functions, Over Emperature (Drive & Motor), Over Voltage, Short Circuit (Phase-Phase & Phase-Ground), Under Voltage Programmable Digital Inputs/Outputs (PDIs/PDOs) x. 84 Programmable Analog Inputs/Outputs (PAIs/PAOs) x. 32 Primary I/O Logic Level x. 55 Velocity Loop Sample Time ys 100 Valocity Loop Sample Time ys 100 Maximum Sin/Cos Encoder Frequency kHz 200 Maximum Sin/Cos Encoder Frequency kHz 200 Maximum Sin/Cos Interpolation ys 5 (EC Isas A (EMC), CE Class A (LVD), cUL, RoHS, UL Size (H x W x D) mm (in) 31.2.5 x 89.5 x 35.9 (5.2 x 3.5 x 1.4) Weight g (oz) 495 (17.5) 40 - 85 (40 - 185) Form Factor Panel Mount Cooling System x Natural Convecti	Communication Interfaces	-	CANopen (RS-232 for configuration)
VDC Commutation Methods	Command Sources	-	±10 V Analog, Encoder Following, Over the Network, PWM and Direction, Sequencing, Indexing, Jogging
Modes of Operation Profile Current, Profile Position, Cyclic Synchronous Current Mode, Cyclic Synchronous Velocity Mode, Cyclic Synchronous Position Mode Motors Supported - Closed Loop Vector, Single Phase (Brushed, Voice Coil, Inductive Load), Three Phase (Brushless) 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) - 8/4 Programmable Analog Inputs/Outputs (PAIs/PAOs) - 8/4 Primary I/O Logic Level - 5 V TTL Current Loop Sample Time µs 100 Velocity Loop Sample Time µs 100 Maximum Sin/Cos Incoder Frequency kHz 200 Maximum Sin/Cos Incoder Frequency kHz 200 Maximum Sin/Cos Interpolation Units *** ** ** ** ** ** ** ** ** ** ** Description Units ** ** ** ** ** ** ** ** ** ** Agency Approvals • ** ** ** ** ** ** ** ** ** ** ** Yalue Size (H xW xD) mm (in) 132,5 x 99,5 x 35,9 (2 x 3.5 x 1.4) *** Weight g (oz) 49 5 (17.5) <	Feedback Supported	-	
Modes of Operation - Image: Color of Color	Commutation Methods	-	Sinusoidal
Hardware Protection 40+ Configurable Functions, Over Current, Over Temperature (Drive & Motor), Over Voltage, Short Circuit (Phase-Phase & Phase-Ground), Inder Voltage Programmable Digital Inputs/Outputs (PDIs/PDOs) - 8/4 Programmable Analog Inputs/Outputs (PAIs/PAOs) - 3/2 Primary I/O Logic Level - 5 VT TL Current Loop Sample Time μs 50 Velocity Loop Sample Time μs 100 Postion Loop Sample Time μs 100 Maximum Sin/Cos Interpolation ±b 200 Maximum Sin/Cos Interpolation ±b 2048 counts per sin/cos cycle Agency Approvals - CE Class A (EMC), CE Class A (LVD), cUL, RoHS, UL Size (H x W x D) mm (in) 132.5 x 89.5 x 35.9 (5.2 x 3.5 x 1.4) Weight g (c) 495 (17.5) Heatsink (Base) Temperature Range °C (°F) -6 65 (32 - 149) Storage Temperature Range °C (°F) -40 - 85 (-40 - 185) Form Factor - Natural Convection IP Rating - Natural Convection IP Rating - Natural Convection <td>Modes of Operation</td> <td>-</td> <td></td>	Modes of Operation	-	
FlatOware Protection (Phase-Phase & Phase-Ground), Under Voltage Programmable Digital Inputs/Outputs (PDIs/PDOs) - 8/4 Programmable Analog Inputs/Outputs (PAIs/PAOs) - 3/2 Primary I/O Logic Level - 5 V TTL Current Loop Sample Time μs 50 Velocity Loop Sample Time μs 100 Position Loop Sample Time μs 100 Maximum Sin/Cos Encoder Frequency kHz 200 Maximum Sin/Cos Interpolation - 2 v48 counts per sin/cos cycle **** Protection Survey Provals Description **** Units **** Value Agency Approvals - C C Class A (EMC), CE Class A (LVD), cUL, RoHS, UL Size (H x W x D) mm (in) 13.25 x 89.5 x 35.9 (5.2 x 3.5 x 1.4) Weight g (oz) 495 (7.5) Heatsink (Base) Temperature Range* "C (*F) 0 - 65 (32 - 149) Storage Temperature Range "C (*F) 40 - 85 (40 - 185) Form Factor - Panel Mount Cooling System - Natural Convection	Motors Supported	-	Closed Loop Vector, Single Phase (Brushed, Voice Coil, Inductive Load), Three Phase (Brushless)
Programmable Analog Inputs/Outputs (PAIs/PAOs) - 3/2 Primary I/O Logic Level - 5V TTL Current Loop Sample Time μs 100 Velocity Loop Sample Time μs 100 Position Loop Sample Time μs 100 Maximum Sin/Cos Encoder Frequency kHz 200 Maximum Sin/Cos Interpolation - 2048 counts per sin/cos cycle ***********************************	Hardware Protection	-	
Primary I/O Logic Level - 5V TTL Current Loop Sample Time μs 50 Velocity Loop Sample Time μs 100 Position Loop Sample Time μs 100 Maximum Sin/Cos Encoder Frequency kHz 200 Maximum Sin/Cos Interpolation - 2048 counts per sin/cos cycle Merchanical Specifications Description Units Value Agency Approvals - C EC Class A (EMC), CE Class A (LVD), cUL, ROHS, UL Size (H x W x D) mm (in) 132.5 x 89.5 x 35.9 (5.2 x 3.5 x 1.4) Weight g (oz) 495 (17.5) Heatsink (Base) Temperature Range ⁴ °C (°F) 0 - 65 (32 · 149) Storage Temperature Range °C (°F) 40.68 (34 · 185) Form Factor Panel Mount Cooling System - Natural Convection IP Rating - Natural Convection AUX COMM Connector - 3-pin, 2.5 mm spaced, enclosed, friction lock header COMM Connector - 15-pin, high-density, female D-sub I/O Connector	Programmable Digital Inputs/Outputs (PDIs/PDOs)	-	8/4
Current Loop Sample Time μs 50 Velocity Loop Sample Time μs 100 Position Loop Sample Time μs 100 Maximum Sin/Cos Encoder Frequency kHz 200 Mechanical Specifications Value Description Value Agency Approvals - CE Class A (EMC), CE Class A (LVD), cUL, RoHS, UL Size (H x W x D) mm (in) 132.5 x 89.5 x 35.9 (5.2 x 3.5 x 1.4) Weight g (oz) 495 (17.5) Heatsink (Base) Temperature Range ⁴ °C (°F) 0 - 65 (32 - 149) Storage Temperature Range °C (°F) -40 - 85 (-40 - 185) Form Factor Panel Mount Cooling System - Natural Convection IP Rating - Natural Convection IP Rating - Spielded, dual RJ-45 socket with LEDs FEEDBACK Connector - Spielded, dual RJ-45 socket with LEDs FEEDBACK Connector - 15-pin, high-density, female D-sub I/O Connector - 26-pin, high-density, female D-sub	Programmable Analog Inputs/Outputs (PAIs/PAOs)	-	3/2
Velocity Loop Sample Time µs 100 Position Loop Sample Time µs 100 Maximum Sin/Cos Encoder Frequency kHz 200 Maximum Sin/Cos Interpolation - 2048 counts per sin/cos cycle Web Thatical Specifications Description Units Value Agency Approvals - CE Class A (EMC), CE Class A (LVD), cUL, RoHS, UL Size (H x W x D) mm (in) 132.5 x 89.5 x 35.9 (5.2 x 3.5 x 1.4) Weight g (oz) 495 (17.5) Heatsink (Base) Temperature Range ⁴ °C (°F) 0 - 65 (32 - 149) Storage Temperature Range °C (°F) -40 - 85 (-40 - 185) Form Factor - Panel Mount Colling System - Natural Convection IP Rating - Natural Convection PAR AUX COMM Connector - Shielded, dual RJ-45 socket with LEDs FEEDBACK Connector - Shielded, dual RJ-45 socket with LEDs FEEDBACK Connector - 15-pin, high-density, female D-sub	Primary I/O Logic Level	-	5V TTL
Position Loop Sample Time μs 100 Maximum Sin/Cos Encoder Frequency kHz 200 Maximum Sin/Cos Interpolation - 2048 counts per sin/cos cycle Wethanical Specifications Units Value Agency Approvals - CE Class A (EMC), CE Class A (LVD), cUL, RoHS, UL Size (H x W x D) mm (in) 132.5 x 89.5 x 35.9 (5.2 x 3.5 x 1.4) Weight g (oz) 495 (17.5) Heatsink (Base) Temperature Range¹ °C (°F) 0 - 65 (32 - 149) Storage Temperature Range °C (°F) 40 - 85 (-40 - 185) Form Factor Panel Mount Cooling System - Natural Convection IP Rating - Natural Convection AUX COMM Connector - 3-pin, 2.5 mm spaced, enclosed, friction lock header COMM Connector - Shielded, dual RJ-45 socket with LEDs FEEDBACK Connector - 15-pin, high-density, female D-sub I/O Connector - 26-pin, high-density, female D-sub	Current Loop Sample Time	μs	50
Maximum Sin/Cos Encoder Frequency kHz 200 Maximum Sin/Cos Interpolation - 2048 counts per sin/cos cycle Merbanical Specifications Description Value Agency Approvals C E Class A (EMC), CE Class A (LVD), cUL, RoHS, UL Size (H x W x D) mm (in) 132.5 x 89.5 x 35.9 (5.2 x 3.5 x 1.4) Weight g (oz) 495 (17.5) Heatsink (Base) Temperature Range ⁴ °C (°F) 0 - 65 (32 - 149) Storage Temperature Range °C (°F) -40 - 85 (-40 - 185) Form Factor Panel Mount Cooling System - Natural Convection IP Rating - Natural Convection IP Rating - Natural Convection AUX COMM Connector - 3-pin, 2.5 mm spaced, enclosed, friction lock header COMM Connector - 5-pin, high-density, female D-sub I/O Connector - 46-pin, high-density, female D-sub	Velocity Loop Sample Time	μs	100
Maximum Sin/Cos Interpolation - 2048 counts per sin/cos cycle Mechanical Specifications Description Units Value Agency Approvals - CE Class A (EMC), CE Class A (LVD), cUL, RoHS, UL Size (H x W x D) mm (in) 132.5 x 89.5 x 35.9 (5.2 x 3.5 x 1.4) Weight g (c²) 495 (17.5) Heatsink (Base) Temperature Range ⁴ °C (°F) 0 - 65 (32 - 149) Storage Temperature Range °C (°F) - 40 - 85 (-40 - 185) Form Factor - Panel Mount Cooling System - Natural Convection IP 10 AUX COMM Connector - IP10 AUX COMM Connector - Shielded, dual RJ-45 socket with LEDs FEEDBACK Connector - Shielded, dual RJ-45 socket with LEDs FEEDBACK Connector - Shielded, dual RJ-45 socket with LEDs - VO Connector - Shielded, dual RJ-45 socket w	Position Loop Sample Time	μs	100
Mechanical Specifications Units Value Agency Approvals - CE Class A (EMC), CE Class A (LVD), cUL, RoHS, UL Size (H x W x D) mm (in) 132.5 x 89.5 x 35.9 (5.2 x 3.5 x 1.4) Weight g (oz) 495 (17.5) Heatsink (Base) Temperature Range⁴ °C (°F) 0 - 65 (32 - 149) Storage Temperature Range °C (°F) -40 - 85 (-40 - 185) Form Factor Panel Mount Cooling System - Natural Convection IP Rating - IP10 AUX COMM Connector - 3-pin, 2.5 mm spaced, enclosed, friction lock header COMM Connector - Shielded, dual RJ-45 socket with LEDs FEEDBACK Connector - 15-pin, high-density, female D-sub I/O Connector - 26-pin, high-density, female D-sub	Maximum Sin/Cos Encoder Frequency	kHz	200
Description Units Value Agency Approvals - CE Class A (EMC), CE Class A (LVD), cUL, RoHS, UL Size (H x W x D) mm (in) 132.5 x 89.5 x 35.9 (5.2 x 3.5 x 1.4) Weight g (oz) 495 (17.5) Heatsink (Base) Temperature Range ⁴ °C (°F) 0 - 65 (32 - 149) Storage Temperature Range °C (°F) -40 - 85 (-40 - 185) Form Factor Panel Mount Cooling System - Natural Convection IP Rating IP10 AUX COMM Connector 3-pin, 2.5 mm spaced, enclosed, friction lock header COMM Connector Shielded, dual RJ-45 socket with LEDs FEEDBACK Connector 15-pin, high-density, female D-sub I/O Connector - 26-pin, high-density, female D-sub	Maximum Sin/Cos Interpolation	-	2048 counts per sin/cos cycle
Agency Approvals - CE Class A (EMC), CE Class A (LVD), cUL, RoHS, UL Size (H x W x D) mm (in) 132.5 x 89.5 x 35.9 (5.2 x 3.5 x 1.4) Weight g (oz) 495 (17.5) Heatsink (Base) Temperature Range ⁴ °C (°F) 0 - 65 (32 - 149) Storage Temperature Range °C (°F) -40 - 85 (-40 - 185) Form Factor Panel Mount Cooling System - Natural Convection IP Rating - IP10 AUX COMM Connector 3-pin, 2.5 mm spaced, enclosed, friction lock header COMM Connector Shielded, dual RJ-45 socket with LEDs FEEDBACK Connector 15-pin, high-density, female D-sub I/O Connector - 26-pin, high-density, female D-sub		r	Mechanical Specifications
Size (H x W x D) mm (in) 132.5 x 89.5 x 35.9 (5.2 x 3.5 x 1.4) Weight g (oz) 495 (17.5) Heatsink (Base) Temperature Range ⁴ °C (°F) 0 - 65 (32 - 149) Storage Temperature Range °C (°F) -40 - 85 (-40 - 185) Form Factor Panel Mount Cooling System - Natural Convection IP Rating - IP10 AUX COMM Connector - 3-pin, 2.5 mm spaced, enclosed, friction lock header COMM Connector - Shielded, dual RJ-45 socket with LEDs FEEDBACK Connector 15-pin, high-density, female D-sub I/O Connector - 26-pin, high-density, female D-sub	Description	Units	Value
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Heatsink (Base) Temperature Range⁴ °C (°F) 0 - 65 (32 - 149) Storage Temperature Range °C (°F) -40 - 85 (-40 - 185) Form Factor - Panel Mount Cooling System - Natural Convection IP Rating - IP10 AUX COMM Connector - 3-pin, 2.5 mm spaced, enclosed, friction lock header COMM Connector - Shielded, dual RJ-45 socket with LEDs FEEDBACK Connector 15-pin, high-density, female D-sub I/O Connector - 26-pin, high-density, female D-sub	Size (H x W x D)	mm (in)	132.5 x 89.5 x 35.9 (5.2 x 3.5 x 1.4)
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Form Factor - Panel Mount Cooling System - Natural Convection IP Rating - IP10 AUX COMM Connector - 3-pin, 2.5 mm spaced, enclosed, friction lock header COMM Connector - Shielded, dual RJ-45 socket with LEDs FEEDBACK Connector - 15-pin, high-density, female D-sub I/O Connector - 26-pin, high-density, female D-sub	Heatsink (Base) Temperature Range ⁴	°C (°F)	0 - 65 (32 - 149)
Cooling System - Natural Convection IP Rating - IP10 AUX COMM Connector - 3-pin, 2.5 mm spaced, enclosed, friction lock header COMM Connector - Shielded, dual RJ-45 socket with LEDs FEEDBACK Connector - 15-pin, high-density, female D-sub I/O Connector - 26-pin, high-density, female D-sub	Storage Temperature Range	°C (°F)	-40 - 85 (-40 - 185)
IP Rating - IP10 AUX COMM Connector - 3-pin, 2.5 mm spaced, enclosed, friction lock header COMM Connector - Shielded, dual RJ-45 socket with LEDs FEEDBACK Connector - 15-pin, high-density, female D-sub I/O Connector - 26-pin, high-density, female D-sub	Form Factor	-	Panel Mount
AUX COMM Connector - 3-pin, 2.5 mm spaced, enclosed, friction lock header COMM Connector - Shielded, dual RJ-45 socket with LEDs FEEDBACK Connector - 15-pin, high-density, female D-sub I/O Connector - 26-pin, high-density, female D-sub	Cooling System	-	Natural Convection
COMM Connector - Shielded, dual RJ-45 socket with LEDs FEEDBACK Connector - 15-pin, high-density, female D-sub I/O Connector - 26-pin, high-density, female D-sub	IP Rating	-	IP10
FEEDBACK Connector - 15-pin, high-density, female D-sub 1/O Connector - 26-pin, high-density, female D-sub	AUX COMM Connector	-	3-pin, 2.5 mm spaced, enclosed, friction lock header
I/O Connector - 26-pin, high-density, female D-sub	COMM Connector	-	Shielded, dual RJ-45 socket with LEDs
I/O Connector - 26-pin, high-density, female D-sub	FEEDBACK Connector	-	15-pin, high-density, female D-sub
POWER Connector - 6-pin, 3.96 mm spaced, friction lock header	I/O Connector	-	
	POWER Connector	-	6-pin, 3.96 mm spaced, friction lock header

Notes

- Capable of supplying drive rated peak current for 2 seconds with 10 second foldback to continuous value. Longer times are possible with lower current limits. Continuous A_{rms} value attainable when RMS Charge-Based Limiting is used. Lower inductance is acceptable for bus voltages well below maximum. Use external inductance to meet requirements. 1.
- 2. 3.
- Additional cooling and/or heatsink may be required to achieve rated performance.



PIN FUNCTIONS

	AUX COMM - RS232 Communication Connector		
Pin	Name	Description / Notes	1/0
1	RS232 RX	Receive Line (RS-232)	I
2	RS232 TX	Transmit Line (RS-232)	0
3	ISO GND	Isolated Signal Ground	IGND

	COMM - CAN Communication Connector				
Pin	Name	Description / Notes	1/0		
1	CAN_H	CAN_H Line (Dominant High)	I		
2	CAN_L	CAN _L Line (Dominant Low)	I		
3	CAN_GND	CAN Ground	CGND		
4	RESERVED	Reserved	-		
5	RESERVED	Reserved	-		
6	RESERVED	Reserved	-		
7	CAN_GND	CAN Ground	CGND		
8	RESERVED	Reserved	-		

		FEEDBACK - Feedback Connector	
Pin	Name	Description / Notes	1/0
1	COS+	Coning Input	I
2	COS -	Cosine Input	I
3	SIN +	Sine Input	I
4	SIN -	Sine input	I
5	SGN GND	Signal Ground	SGND
6	DATA-	D''' 1' 1 D 1 1'	I/O
7	DATA+	Differential Data Line	I/O
8	CLOCK+	Differential Clock Line	0
9	CLOCK-	Differential Clock Line	0
10	REF MARK +	Reference mark from sine/cosine encoder	I
11	RESERVED	Reserved	-
12	RESERVED	Reserved	-
13	+5V OUT	+5V Encoder Supply Output (Short Circuit Protected)	0
14	PAI-3	Programmable Analog Input (12-bit Resolution)	I
15	REF MARK -	Reference mark from sine/cosine encoder	I



		I/O - Signal Connector	
Pin	Name	Description / Notes	1/0
1	PDO-1	Programmable Digital Output	0
2	SGN GND	Signal Ground	SGND
3	PDO-2	Programmable Digital Output	0
4	PAI-1 + (REF+)	D''' 6 1 D 1 1 4 1 1 4 1 D (I
5	PAI-1 - (REF-)	Differential Programmable Analog Input or Reference Signal Input (16-bit Resolution)	I
6	PAI-2	Programmable Analog Input (12-bit Resolution)	I
7	PAO-1	Programmable Analog Output (10-bit Resolution)	0
8	PAO-2	Programmable Analog Output (10-bit Resolution)	0
9	PDI-8 - (DIR- / AUX ENC B- / CAP-C-)	Programmable Digital Input or Direction or Auxiliary Encoder or High Speed Capture (Leave Open for Single-Ended Signal)	I
10	PDO-3	Programmable Digital Output	0
11	PDI-1	Programmable Digital Input	I
12	PDI-2	Programmable Digital Input	I
13	PDI-3	Programmable Digital Input	I
14	PDO-4	Programmable Digital Output	0
15	+5V OUT	+5V Encoder Supply Output (Short Circuit Protected)	0
16	SGN GND	Signal Ground	SGNE
17	PDI-7 + (PWM + / AUX ENC A+ / CAP- B+)	Programmable Digital Input or PWM or Auxiliary Encoder or High Speed Capture	I
18	PDI-8 + (DIR+ / AUX ENC B+ / CAP-C+)	Programmable Digital Input or Direction or Auxiliary Encoder or High Speed Capture	I
19	PDI-4 (CAP-A)	Programmable Digital Input or High Speed Capture	I
20	PDI-5	Programmable Digital Input	I
21	PDI-6	Programmable Digital Input	I
22	SGN GND	Signal Ground	SGNE
23	RESERVED	Reserved	-
24	RESERVED	Reserved	-
25	RESERVED	Reserved	-
26	PDI-7 - (PWM- / AUX ENC A- / CAP-B-)	Programmable Digital Input or PWM or Auxiliary Encoder or High Speed Capture (Leave Open for Single-Ended Signals)	I

	POWER - Power Connector			
Pin	Name	Description / Notes	1/0	
1	MOTOR A	Motor Phase A	0	
2	MOTOR B	Motor Phase B	0	
3	MOTOR C	Motor Phase C	0	
4	HIGH VOLTAGE	DC Power Input	I	
5	PWR GND	Power Ground (Common With Signal Ground)	PGND	
6	LOGIC PWR	Logic Supply Input	I	



HARDWARE SETTINGS

Switch Functions

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

Bit Rate (kbits/sec)	Value For Bit Rate Setting
Load from non-volatile memory	0
500	1
250	2
125	3

Jumper Settings

Jumper	Description		Configuration	
	Header Jumper	Not Installed	Pins 1-2	Pins 2-3
J1	CAN bus termination. Install this jumper (2.54mm) on the last drive in a CAN network. This jumper is located on a 4-pin header adjacent to the RS-232 connector. It consists of the two pins furthest from the connector.	Non- terminating Node	Terminating Node	N/A
J2	Reserved.	-	-	N/A



MECHANICAL INFORMATION

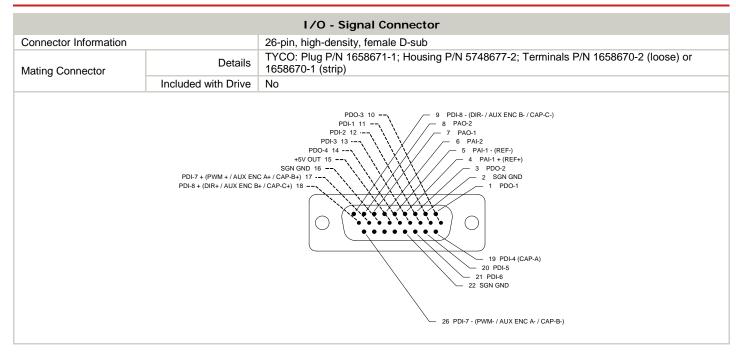
	AUX	COMM - RS232 Communication Connector
Connector Information		3-pin, 2.5 mm spaced, enclosed, friction lock header
Mating Compactor	Details	Phoenix: Plug P/N 1881338
Mating Connector	Included with Drive	Yes
3 ISO GND 2 RS232 TX 1 RS232 RX		

COMM - CAN Communication Connector		
Connector Information		Shielded, dual RJ-45 socket with LEDs
Mating Connector	Details	AMP: Plug P/N 5-569552-3
Mating Connector	Included with Drive	No
		A CAN_GND 7 CAN_GND 3 CAN_L 2 CAN_L 1 7 CAN_GND

FEEDBACK - Feedback Connector			
Connector Information		15-pin, high-density, female D-sub	
Mating Connector	Details	TYCO: Plug P/N 748364-1; Housing P/N 5748677-1; Terminals P/N 1658670-2 (loose) or 1658670-1 (strip)	
	Included with Drive	No	
DATA+ 6 5 SGN GND CLOCK+ 8 2 COS+ REF MARK + 10 1 COS+ 13 +5V OUT 14 PAI-3 15 REF MARK -			

sales@electromate.com

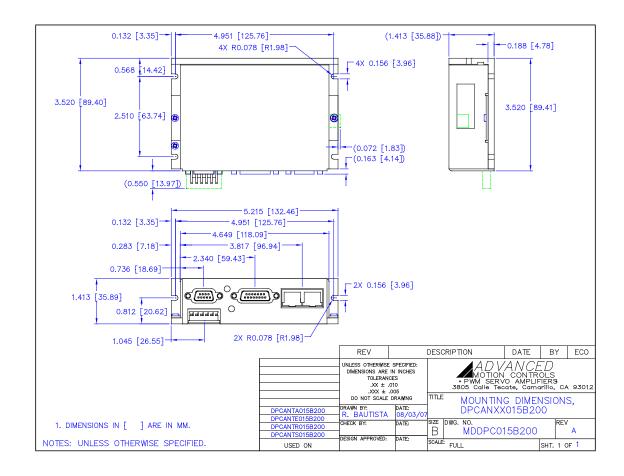




POWER - Power Connector			
Connector Information		6-pin, 3.96 mm spaced, friction lock header	
Mating Connector	Details	AMP: Plug P/N 770849-6; Terminals P/N 770522-1 (loose) or 770476-1 (strip)	
	Included with Drive	Yes	
		6 LOGIC PWR 5 PWR GND 4 HIGH VOLTAGE 3 MOTOR C 2 MOTOR B 1 MOTOR A	

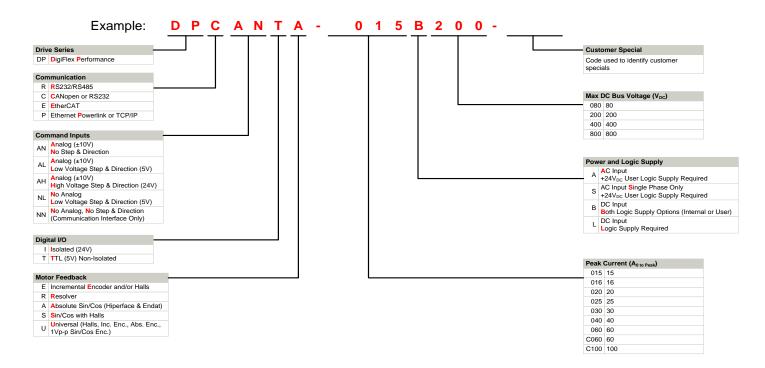


MOUNTING DIMENSIONS





PART NUMBERING INFORMATION



DigiFlex® Performance™ series of products are available in many configurations. Note that not all possible part number combinations are offered as standard drives. All models listed in the selection tables of the website are readily available, standard product offerings.

ADVANCED Motion Controls also has the capability to promptly develop and deliver specified products for OEMs with volume requests. Our Applications and Engineering Departments will work closely with your design team through all stages of development in order to provide the best servo drive solution for your system. Equipped with on-site manufacturing for quick-turn customs capabilities, ADVANCED Motion Controls utilizes our years of engineering and manufacturing expertise to decrease your costs and time-to-market while increasing system quality and reliability. Feel free to contact Applications Engineering for further information and details.

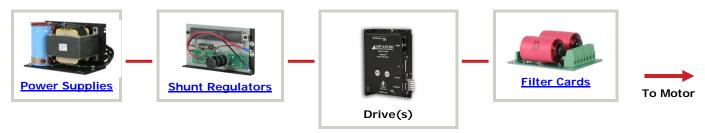
Examples of Customized Products

- Optimized Footprint
- ▲ Private Label Software
- OEM Specified Connectors
- ▲ No Outer Case
- ▲ Increased Current Resolution
- ▲ Increased Temperature Range
- Custom Control Interface
- ▲ Integrated System I/O

- Tailored Project File
- ▲ Silkscreen Branding
- Optimized Base Plate
- ✓ Increased Current Limits
- ▲ Increased Voltage Range
- Conformal Coating
- ▲ Multi-Axis Configurations
- ▲ Reduced Profile Size and Weight

Available Accessories

ADVANCED Motion Controls offers a variety of accessories designed to facilitate drive integration into a servo system. Visit www.a-m-c.com to see which accessories will assist with your application design and implementation.



Sold & Serviced By:

All specifications in this document are subject to change that EuteCTRO WATE oduct may differ from pictures provided in this document.