



# Products & Capabilities Overview

Servo Drives | Controls | Custom Solutions

a-m-c.com

# ADVANCED Motion Controls

"I wanted to be the best servo company in the world. I didn't want to be the biggest... I just wanted to be the best."

- Daniel Schoenewald, Co-founder







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exPro® Servo Drives	7
The next-generation in digital servo drive design, delivering an expanded feature set and our smallest form factor	yet.
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An automation solution for motion control designed for OEMs, systems integrators, and end users.	
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A motion control API using a pre-defined set of motion functions for simple C++ motion programming.	
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Drive configuration software with embedded motion controller functionality for Indexing and Sequencing.	
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Ruggedized servo drives designed for harsh environments and extreme ambient temperatures.	

Visit a-m-c.com for Company Information, Product Datasheets, Installation Manuals and Downloads.



# Our Company

# About ADVANCED Motion Controls

ADVANCED Motion Controls manufactures affordable, quality, high performance and high power density servo drives.

- Engineering, Manufacturing, Testing, Sales and Support in one location.
  - Located in Camarillo CA USA
  - 86,000 ft2 (8,000 m2)
  - State of the art electronics manufacturing machines and processes
- When working with ADVANCED Motion Controls, you will be adding an integral member to your engineering team with multi-industry expertise.
- Manufacturing servo drives since 1987, with over 2 million servo axes built and shipped worldwide!
  - 91% customer retention rate after 7 years
  - Our first customer is still a customer today!
  - Have maintained the original private ownership
- Renowned customer service and technical support.
- World-wide network of representatives and distributors













#### **Tech Support**

Our dedicated technical support team is comprised of highly qualified professionals, all holding degrees in engineering. They are available to all current and prospective customers via live phone calls, video conferencing and email. You have access to a live support person whether you buy one product or thousands.

#### Customer Service

Our highly acclaimed customer service team is committed to providing exceptional support. You can trust us to resolve any issues quickly and professionally.

#### Factory Visits

If you are ever in the Camarillo area, feel free to stop by. Factory visits are our unfair advantage to impress our customers. We encourage on-site inspections and quality audits of our manufacturing facilities!

#### Worldwide Support =

ADVANCED Motion Controls has representatives and distributors available around the world. With 40 sales partners with 300+ associates and 130+ support engineers worldwide. If an issue arises that cannot be resolved over the phone or during a video call, we can come to you and together, we will make it happen.

#### **Making Servo Drives**

Our product offering includes over 200 off-the-shelf servo drive models ranging from small & compact to heavy duty solutions. If you need something special, ask about a **custom solution**. We can customize any product to meet your exact needs.





#### All Under One Roof



Having everything under one roof means we can support our products better.



# Technologies and Product Capabilities

Our servo drives and controls can be found all over the world in the highest performance applications and the harshest environments, as well as working reliably in day-to-day operations. We have hundreds of off the shelf models that fit just about any application but if you can't find what you need we can make a custom solution. ADVANCED Motion controls has a solution for any servo application!



FlexPro®



FlexPro drives are our newest, most compact, most feature-packed, and highest performing servo drives available.

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DigiFlex Performance servo drives include over 100 models covering a wide range of power, form factors, and network connectivity.

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AxCent™



AxCent is our analog servo drive family capable of high bandwidth in centralized control schemes.

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Click&Move® is a complete automation solution. It can include motion control, PLC logic, local or networked I/O, and HMI functionality.

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DriveLibrary<sup>TM</sup> is a high-level API interface. DriveLibrary<sup>TM</sup> apps are created in C++.

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#### Motion Engine

Motion Engine is the embedded control functionality built into all our digital servo drives.

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# — Custom Drives —



We offer modified versions of our standard products as well as full custom products designed from scratch.

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## **Form Factors**



#### PCB Mount

Also known as embedded or plug-in style servo drives, these mate directly to another PCB via pins for the tightest integration. Use your own mating PCB or one of our available mounting cards.

#### Great for:

Mobile robotics, fixed robotics, aerospace, and any application with space or weight constraints



#### Machine Embedded

Combines the compactness of PCB mount servo drives with the convenience of traditional cable connections, offering you flexibility in your design.

#### Great for:

End effectors, aerospace, AGV and AMR traction and steering for warehouse automation and agriculture



#### Panel Mount

Classic style servo drives traditionally mounted in an electrical panel. They're typically covered with a metal or plastic housing.

#### Great for:

for industrial machinery, medical devices, simulators, and just about anywhere you can fit them.



#### Vehicle Mount

Vehicle mount servo drives provide high power from DC supplies such as batteries. Available with IP65 casing and vehicle-specific throttle I/O.

#### Great for:

AGV and AMR traction, steering, lifting, replacing hydraulics with electrical actuation, and any other high-torque jobs.



Features various full-size communication ports, feedback connectors, and power terminals. These drives allow for quick and easy configuration and setup.

#### Great for:

Prototypes and proofs of concept before integrating small drives into your system

# Extended Environment



Our Extended Environment products are **designed to operate under harsh** thermal and mechanical extremes.

#### See product datasheets for individual specs

- Ambient operating temperatures ranging from -40°C to 95°C (-45°F to 203°F)
- Over Temperature heat sink protection up to 105°C (221°F)
- Thermal shock with full temperature swing in about 2 minutes
- Mechanical shock up to 15g's at 11ms, vibration up to 30grms on all 3 axes
  - Standard models in PCB Mount and Machine Embedded form factors Panel Mount and Vehicle Mount models available as custom designs

Designed to assist system compliance toward:

- MIL-STD-810F: temperature, thermal shock, humidity, altitude, shock & vibration
- MIL-STD-1275D: characterization of 28VDC systems
- MIL-STD-461E: control of electromagnetic interference
- MIL-STD-704F: aircraft power characteristics
- MIL-HDBK-217: reliability predictions



# Technologies and Product Capabilities







# Industry Experience



Any Application, Any Industry

ADVANCED Motion Controls is able to utilize our extensive experience in providing high performance servo drives to support motion control applications in numerous industries. With an ever-expanding customer base across new and emerging fields, and having been established as a top supplier for traditional servo solutions, ADVANCED Motion Controls brings our wealth of diverse motion control knowledge to a wide variety of industries, including but not limited to:







**Inspection Testing and Rapid Prototyping** 



**Material Handling and Conveyed Systems** 



**Power Generation and Alternative Energy Sources** 









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# FlexPro®

The **FlexPro**® family is our answer to the growing demand for smaller yet more powerful servo drives that are easy to integrate into demanding applications.

Drive Family Overview								
Architecture	Digital							
# of Products	81							
Motor Types	Brushed/Brushless, 10/30, Rotary/Linear, DC/AC, Induction, Stepper							
Command	Network, Traditional							
Networks	EtherCAT CANOPEN EtherNet/IP RS 45 RS 33							
Voltage Range	10-90 VDC							
Current Range	Up to 100 A rms Continuous, 200 A rms Peak							
Feedback	Absolute Encoder (EnDat <sup>®</sup> 2.2, BiSS <sup>®</sup> C-Mode, Tamagawa), Incremental Encoder, Hall Sensors, Auxiliary Incremental Encoder, Tachometer							
Form Factors & Mounting								
	PCB Machine Panel Development Vehicle							

#### Features

- Full tuning control of Position, Velocity, and Torque Loops
- 50 µs current loop update rate, 100 µs velocity & position loop
- Functional Safety (STO) on all models
- Motion Engine embedded motion control capability (See page 24)
- Status panel for drive and system diagnostics
- I/O configuration for over 60 events and signals
- Dual loop feedback and control increases stability and accuracy
- Extended Environment versions available (FXE and FXM)
- Building block for modifications and complete custom solutions.

#### Perfect for...

- Cobots
- Warehouse Robots and AGVs
- Portable/Mobile Devices
- Integrated DesignsLab Automation
- ...And endless others!





# FlexPro®

# FlexPro® PCB Mount

Part Number	Voltage (VDC)	Current (Cont./ Peak)(A)	Network	Feedback	Dimensions (mm)	Functional Safety
FE060-1-CM	10-55	1/2	CANopen	Biss-C, EnDAT, Incremental Encoder, Halls	38 x 25 x 11	STO
FE060-1-EM	10-55	1/2	EtherCAT	Biss-C, EnDat, Incremental Encoder, Halls	38 x 25 x 16	STO
FE060-1-RM	10-55	1/2	RS-485	Biss-C, EnDAT, Incremental Encoder, Halls	38 x 25 x 11	STO
FE060-5-CM	10-55	5/10	CANopen	Biss-C, EnDat, Incremental Encoder, Halls	38 x 25 x 11	STO
FE060-5-EM	10-55	5/10	EtherCAT	Biss-C, EnDAT, Incremental Encoder, Halls	38 x 25 x 16	STO
FE060-5-IPM	10-55	5/10	Ethernet/IP	Biss-C, EnDat, Incremental Encoder, Halls	38 x 25 x 16	STO
FE060-5-RM	10-55	5/10	RS-485	Biss-C, EnDAT, Incremental Encoder, Halls	38 x 25 x 11	STO
FE060-10-CM	10-55	10/20	CANopen	Biss-C, EnDat, Incremental Encoder, Halls	38 x 25 x 11	STO
FE060-10-EM	10-55	10/20	EtherCAT	Biss-C, EnDAT, Incremental Encoder, Halls	38 x 25 x 16	STO
FE060-10-IPM	10-55	10/20	Ethernet/IP	Biss-C, EnDat, Incremental Encoder, Halls	38 x 25 x 16	STO
FE060-10-RM	10-55	10/20	RS-485	Biss-C, EnDAT, Incremental Encoder, Halls	38 x 25 x 11	STO
FE060-25-CM	10-55	25/50	CANopen	Biss-C, EnDat, Incremental Encoder, Halls	38 x 25 x 11	STO
FE060-25-EM	10-55	25/50	EtherCAT	Biss-C, EnDAT, Incremental Encoder, Halls	38 x 25 x 16	STO
FE060-25-IPM	10-55	25/50	Ethernet/IP	Biss-C, EnDat, Incremental Encoder, Halls	38 x 25 x 16	STO
FE060-25-RM	10-55	25/50	RS-485	Biss-C, EnDAT, Incremental Encoder, Halls	38 x 25 x 11	STO
FE060-60C-CM	10-55	60/60	CANopen	Biss-C, EnDat, Incremental Encoder, Halls	38 x 25 x 11	STO
FE060-60C-EM	10-55	60/60	EtherCAT	Biss-C, EnDAT, Incremental Encoder, Halls	38 x 25 x 16	STO
FE060-60C-RM	10-55	60/60	RS-485	Biss-C, EnDat, Incremental Encoder, Halls	38 x 25 x 11	STO
FE100-25-CM	20-90	25/50	CANopen	Biss-C, EnDAT, Incremental Encoder, Halls	38 x 25 x 11	STO
FE100-25-EM	20-90	25/50	EtherCAT	Biss-C, EnDat, Incremental Encoder, Halls	38 x 25 x 16	STO
FE100-25-RM	20-90	25/50	RS-485	Biss-C, EnDAT, Incremental Encoder, Halls	38 x 25 x 11	STO



FE060-10-EM Servo Drive

# FlexPro® PCB Mount Extended Environment

Part Number	Voltage (VDC)	Current (Cont./ Peak)(A)	Network	Feedback	Dimensions (mm)	Functional Safety
FXE060-5-CM	10-55	5/10	CANopen	Biss-C, EnDAT, Incremental Encoder, Halls	38 x 25 x 11	STO
FXE060-5-EM	10-55	5/10	EtherCAT	Biss-C, EnDAT, Incremental Encoder, Halls	38 x 25 x 16	STO
FXE060-5-RM	10-55	5/10	RS-485/232	Biss-C, EnDAT, Incremental Encoder, Halls	38 x 25 x 11	STO
FXE060-10-CM	10-55	10/20	CANopen	Biss-C, EnDAT, Incremental Encoder, Halls	38 x 25 x 11	STO
FXE060-10-EM	10-55	10/20	EtherCAT	Biss-C, EnDAT, Incremental Encoder, Halls	38 x 25 x 16	STO
FXE060-10-RM	10-55	10/20	RS-485/232	Biss-C, EnDAT, Incremental Encoder, Halls	38 x 25 x 11	STO
FXE060-25-CM	10-55	25/50	CANopen	Biss-C, EnDAT, Incremental Encoder, Halls	38 x 25 x 11	STO
FXE060-25-EM	10-55	25/50	EtherCAT	Biss-C, EnDAT, Incremental Encoder, Halls	38 x 25 x 16	STO
FXE060-25-RM	10-55	25/50	RS-485/232	Biss-C, EnDAT, Incremental Encoder, Halls	38 x 25 x 11	STO



FXE060-25-CM Servo Drive

Want a custom FlexPro drive? Turn to page 26



# FlexPro®

## FlexPro® Machine Embedded

Part Number	Voltage (VDC)	Current (Cont./ Peak)(A)	Network	Feedback	Dimensions (mm)	Functional Safety
FM060-1-CM	10-55	1/2	CANopen	Biss-C, EnDAT, Incremental Encoder, Halls	51 x 25 x 22	STO
FM060-1-EM	10-55	1/2	EtherCAT	Biss-C, EnDAT, Incremental Encoder, Halls	51 x 25 x 26	STO
FM060-1-RM	10-55	1/2	RS-485/232	Biss-C, EnDAT, Incremental Encoder, Halls	51 x 25 x 22	STO
FM060-5-CM	10-55	5/10	CANopen	Biss-C, EnDAT, Incremental Encoder, Halls	51 x 25 x 22	STO
FM060-5-EM	10-55	5/10	EtherCAT	Biss-C, EnDAT, Incremental Encoder, Halls	51 x 25 x 26	STO
FM060-5-RM	10-55	5/10	RS-485/232	Biss-C, EnDAT, Incremental Encoder, Halls	51 x 25 x 22	STO
FM060-10-CM	10-55	10/20	CANopen	Biss-C, EnDAT, Incremental Encoder, Halls	51 x 25 x 22	STO
FM060-10-EM	10-55	10/20	EtherCAT	Biss-C, EnDAT, Incremental Encoder, Halls	51 x 25 x 26	STO
FM060-10-RM	10-55	10/20	RS-485/232	Biss-C, EnDAT, Incremental Encoder, Halls	51 x 25 x 22	STO
FM060-25-CM	10-55	25/50	CANopen	Biss-C, EnDAT, Incremental Encoder, Halls	51 x 25 x 22	STO
FM060-25-EM	10-55	25/50	EtherCAT	Biss-C, EnDAT, Incremental Encoder, Halls	51 x 25 x 26	STO
FM060-25-RM	10-55	25/50	RS-485/232	Biss-C, EnDAT, Incremental Encoder, Halls	51 x 25 x 22	STO
FM060-60C-CM	10-55	60/60	CANopen	Biss-C, EnDAT, Incremental Encoder, Halls	51 x 25 x 22	STO
FM060-60C-EM	10-55	60/60	EtherCAT	Biss-C, EnDAT, Incremental Encoder, Halls	51 x 25 x 26	STO
FM060-60C-RM	10-55	60/60	RS-485/232	Biss-C, EnDAT, Incremental Encoder, Halls	51 x 25 x 22	STO
FM060-100-CM	10-55	100/200	CANopen	Biss-C, EnDAT, Incremental Encoder, Halls	51 x 43 x 23	STO
FM100-25-CM	20-90	25/50	CANopen	Biss-C, EnDAT, Incremental Encoder, Halls	51 x 25 x 22	STO
FM100-25-EM	20-90	25/50	EtherCAT	Biss-C, EnDAT, Incremental Encoder, Halls	51 x 25 x 26	STO
FM100-25-RM	20-90	25/50	RS-485/232	Biss-C, EnDAT, Incremental Encoder, Halls	51 x 25 x 22	STO
FM100-50-CM	20-90	50/100	CANopen	Biss-C, EnDAT, Incremental Encoder, Halls	51 x 43 x 23	STO
FM100-50-EM	20-90	50/100	EtherCAT	Biss-C, EnDAT, Incremental Encoder, Halls	51 x 43 x 27	STO
FM100-50-RM	20-90	50/100	RS-485/232	Biss-C, EnDAT, Incremental Encoder, Halls	51 x 43 x 23	STO



FM060-10-CM Servo Drive

# FlexPro® Machine Embedded Extended Environment

Part Number	Voltage (VDC)	Current (Cont./ Peak)(A)	Network	Feedback	Dimensions (mm)	Functional Safety
FXM060-5-CM	10-55	5/10	CANopen	Biss-C, EnDAT, Incremental Encoder, Halls	51 x 25 x 22	STO
FXM060-5-EM	10-55	5/10	EtherCAT	Biss-C, EnDAT, Incremental Encoder, Halls	51 x 25 x 26	STO
FXM060-5-RM	10-55	5/10	RS-485/232	Biss-C, EnDAT, Incremental Encoder, Halls	51 x 25 x 22	STO
FXM060-10-CM	10-55	10/20	CANopen	Biss-C, EnDAT, Incremental Encoder, Halls	51 x 25 x 22	STO
FXM060-10-EM	10-55	10/20	EtherCAT	Biss-C, EnDAT, Incremental Encoder, Halls	51 x 25 x 26	STO
FXM060-10-RM	10-55	10/20	RS-485/232	Biss-C, EnDAT, Incremental Encoder, Halls	51 x 25 x 22	STO
FXM060-25-CM	10-55	25/50	CANopen	Biss-C, EnDAT, Incremental Encoder, Halls	51 x 25 x 22	STO
FXM060-25-EM	10-55	25/50	EtherCAT	Biss-C, EnDAT, Incremental Encoder, Halls	51 x 25 x 26	STO
FXM060-25-RM	10-55	25/50	RS-485/232	Biss-C, EnDAT, Incremental Encoder, Halls	51 x 25 x 22	STO



FXM060-10-EM Servo Drive

> Want a custom FlexPro drive? Turn to page 26



## FlexPro<sup>®</sup> Panel Mount

Part Number	Voltage (VDC)	Current (Cont./ Peak)(A)	Network	Feedback	Dimensions (mm)	Functional Safety
FMP060-25-EM	10-55	25/50	EtherCAT	Biss-C, EnDAT, Incremental Encoder, Halls	191 x 89 x 41	STO
FMP060-25-IPM	10-55	25/50	Ethernet/IP	Biss-C, EnDAT, Incremental Encoder, Halls	191 x 89 x 41	STO
FMP100-50-IPM	20-90	50/100	Ethernet/IP	Biss-C, EnDAT, Incremental Encoder, Halls	241 x 102 x 33	STO



FMP060-25-IPM Servo Drive

# FlexPro® Development Board

Part Number	Voltage (VDC)	Current (Cont./ Peak)(A)	Network	Feedback	Dimensions (mm)	Functional Safety
FD060-5-CM	10-55	5/10	CANopen	Biss-C, EnDAT, Incremental Encoder, Halls	114 x 91 x 26	STO
FD060-5-EM	10-55	5/10	EtherCAT	Biss-C, EnDAT, Incremental Encoder, Halls	114 x 91 x 28	STO
FD060-5-RM	10-55	5/10	RS-485	Biss-C, EnDAT, Incremental Encoder, Halls	114 x 91 x 26	STO
FD060-10-CM	10-55	10/20	CANopen	Biss-C, EnDAT, Incremental Encoder, Halls	114 x 91 x 26	STO
FD060-10-EM	10-55	10/20	EtherCAT	Biss-C, EnDAT, Incremental Encoder, Halls	114 x 91 x 28	STO
FD060-10-RM	10-55	10/20	RS-485	Biss-C, EnDAT, Incremental Encoder, Halls	114 x 91 x 26	STO
FD060-25-CM	10-55	25/50	CANopen	Biss-C, EnDAT, Incremental Encoder, Halls	114 x 91 x 26	STO
FD060-25-EM	10-55	25/50	EtherCAT	Biss-C, EnDAT, Incremental Encoder, Halls	114 x 91 x 28	STO
FD060-25-RM	10-55	25/50	RS-485	Biss-C, EnDAT, Incremental Encoder, Halls	114 x 91 x 26	STO
FD060-60C-CM	10-55	60/60	CANopen	Biss-C, EnDAT, Incremental Encoder, Halls	114 x 91 x 26	STO
FD060-60C-EM	10-55	60/60	EtherCAT	Biss-C, EnDAT, Incremental Encoder, Halls	114 x 91 x 28	STO
FD060-60C-RM	10-55	60/60	RS-485	Biss-C, EnDAT, Incremental Encoder, Halls	114 x 91 x 26	STO
FD100-25-CM	20-90	25/50	CANopen	Biss-C, EnDAT, Incremental Encoder, Halls	114 x 91 x 26	STO
FD100-25-EM	20-90	25/50	EtherCAT	Biss-C, EnDAT, Incremental Encoder, Halls	114 x 91 x 28	STO
FD100-25-RM	20-90	25/50	RS-485	Biss-C, EnDAT, Incremental Encoder, Halls	114 x 91 x 26	STO
FD100-50-CM	20-90	50/100	CANopen	Biss-C, EnDAT, Incremental Encoder, Halls	133 x 127 x 18	STO
FD100-50-EM	20-90	50/100	EtherCAT	Biss-C, EnDAT, Incremental Encoder, Halls	133 x 127 x 19	STO
FD100-50-IPM	20-90	50/100	Ethernet/IP	Biss-C, EnDAT, Incremental Encoder, Halls	133 x 127 x 19	STO
FD100-50-RM	20-90	50/100	RS-485	Biss-C, EnDAT, Incremental Encoder, Halls	133 x 127 x 18	STO



FD060-25-EM Servo Drive

Want a custom FlexPro drive? Turn to page 26



# DigiFlex<sup>®</sup> Performance<sup>™</sup>

**DigiFlex® Performance**<sup>™</sup> is our most comprehensive servo drive family in terms of power capabilities and feature options.

Drive Family Overview									
Architecture	Digital								
# of Products	87								
Motor Types	Brushed/Brushless, 1Ф/3Ф, Rotary/Linear, DC/AC, Induction, Stepper								
Command	Network, Traditional								
Networks									
Voltage Range	10-747 VDC, 120-480 VAC								
Current Range	Up to 150 A rms Continuous, 250 A rms Peak								
Feedback	Absolute Encoder (EnDat <sup>®</sup> , Hiperface <sup>®</sup> , BiSS <sup>®</sup> C-Mode), Incremental Encoder, Hall Sensors, Resolver, 1Vp-p Sin/Cos Encoder, Tachometer								
Form Factors									
	PCB Machine Panel Development Vehicle								

- Compatible with DriveLibrary<sup>™</sup> ADVANCED Motion Controls' API for C++ motion programming (See page 23)
- Status panel for drive and system diagnostics
- I/O configuration for over 60 events and signals
- Dual loop feedback and control increases stability and accuracy
- Extended Environment versions available (DZX series Z-Drives

- Universal servo motor capability by means of automatic commutation adjustment
- Full tuning control of Position, Velocity, and Torque Loops
- Functional Safety (STO) on select models
- Motion Engine embedded motion controller functionality that allows Indexing, Sequencing, and other motion tasks (See page 24)
  - Create up to 16 Relative or Absolute Index tasks and up to 16 Sequences to initiate on power-up, via network command, or digital inputs
  - Execute Dynamic Indexes, Jogs, PVT Profiles, or Homing Routines
  - View real-time motion profile data





#### DigiFlex<sup>®</sup> Performance<sup>™</sup> PCB Mount <u></u>

Part Number	Voltage (VDC)	Current (Cont./ Peak)(A)	Network	Feedback	Dimensions (mm)	Functional Safety
DZCANTE-020L080	10-80	12/20	CANopen	±10 VDC Position, Halls, Incremental Encoder, Tachometer	64 x 51 x 23	
DZRALTE-020L080	10-80	12/20	Modbus RTU, RS-485-232	±10 VDC Position, Halls, Incremental Encoder, Tachometer	64 x 51 x 23	
DZCANTS-020L080	10-80	12/20	CANopen	±10 VDC Position, Halls, Incremental Encoder	64 x 57 x 23	STO
DZCANTE-040L080	10-80	20/40	CANopen	±10 VDC Position, Halls, Incremental Encoder, Tachometer	76 x 51 x 23	
DZRALTE-040L080	10-80	20/40	Modbus RTU, RS-485-232	±10 VDC Position, Halls, Incremental Encoder, Tachometer	76 x 51 x 23	
DZCANTE-060L080	10-80	30/60	CANopen	±10 VDC Position, Halls, Incremental Encoder, Tachometer	76 x 51 x 23	
DZRALTE-060L080	10-80	30/60	Modbus RTU, RS-485-232	±10 VDC Position, Halls, Incremental Encoder, Tachometer	76 x 51 x 23	
DZCANTS-060L080	10-80	30/60	CANopen	±10 VDC Position, Halls, Incremental Encoder	76 x 51 x 23	STO
DZCANTE-012L080	20-80	6/12	CANopen	±10 VDC Position, Halls, Incremental Encoder, Tachometer	64 x 51 x 18	
DZCANTU-040B080	18-80	20/40	CANopen	±10 VDC Position, Halls, Sine/Cosine Encoder, Incremental Encoder, Absolute Encoder, Tachometer	89 x 64 x 20	STO
DZCANTE-025L200	40-175	12.5/25	CANopen	$\pm 10$ VDC Position, Halls, Incremental Encoder, Tachometer	76 x 51 x 23	
DZRALTE-012L080	20-80	6/12	Modbus RTU, RS-485-232	±10 VDC Position, Halls, Incremental Encoder, Tachometer	64 x 51 x 18	
DZRALTE-025L200	40-175	12.5/25	Modbus RTU, RS-485-232	±10 VDC Position, Halls, Incremental Encoder, Tachometer	76 x 51 x 23	



DZCANTS-020L080 Servo Drive

Want a custom DigiFlex drive? Turn to page 26



#### DigiFlex<sup>®</sup> Performance<sup>™</sup> Panel Mount (DC Only)

Part Number	Voltage (VDC)	Current (Cont./Peak) (A)	Network	Feedback	Dimensions (mm)	Functional Safety
DPCANTE-020B080	20-80	10/20	CANopen	±10 VDC Position, Halls, Incremental Encoder, Tachometer	133 x 90 x 36	STO
DPCANTR-020B080	20-80	10/20	CANopen	±10 VDC Position, Resolver, Tachometer	133 x 90 x 36	STO
DPEANIU-020B080	20-80	10/20	EtherCAT	±10 VDC Position, Sine/Cosine Encoder, Absolute Encoder, Halls, Incremental Encoder, Tachometer	133 x 90 x 36	STO
DPRALTE-020B080	20-80	10/20	Modbus RTU, RS-485/232	±10 VDC Position, Halls, Incremental Encoder, Tachometer	133 x 90 x 36	STO
DPCANTE-040B080	20-80	20/40	CANopen	±10 VDC Position, Halls, Incremental Encoder, Tachometer	191 x 112 x 36	STO
DPCANTR-040B080	20-80	20/40	CANopen	±10 VDC Position, Resolver, Tachometer	191 x 112 x 36	STO
DPRALTE-040B080	20-80	20/40	Modbus RTU, RS-485/232	±10 VDC Position, Halls, Incremental Encoder, Tachometer	191 x 112 x 36	STO
DPRALTR-040B080	20-80	20/40	Modbus RTU, RS-485/232	±10 VDC Position, Resolver, Tachometer	191 x 112 x 36	STO
DPCANTE-060B080	20-80	30/60	CANopen	±10 VDC Position, Halls, Incremental Encoder, Tachometer	191 x 112 x 36	sto
DPCANTR-060B080	20-80	30/60	CANopen	±10 VDC Position, Resolver, Tachometer	191 x 112 x 36	STO
DPRALTE-060B080	20-80	30/60	Modbus RTU, RS-485/232	±10 VDC Position, Halls, Incremental Encoder, Tachometer	191 x 112 x 36	STO
DPRALTR-060B080	20-80	30/60	Modbus RTU, RS-485/232	±10 VDC Position, Resolver, Tachometer	191 x 112 x 36	STO
DPCANIE-100B080	20-80	60/100	CANopen	±10 VDC Position, Halls, Incremental Encoder, Tachometer	191 x 112 x 67	STO
DPCANIA-100B080	20-80	60/100	CANopen	±10 VDC Position, Sine/Cosine Encoder, Absolute Encoder, Tachometer	191 x 112 x 67	STO
DPEANIU-100B080	20-80	60/100	EtherCAT	±10 VDC Position, Sine/Cosine Encoder, Absolute Encoder, Halls, Incremental Encoder, Tachometer	191 x 112 x 67	STO
DPRANIE-100B080	20-80	60/100	Modbus RTU, RS-485/232	±10 VDC Position, Halls, Incremental Encoder, Tachometer	191 x 112 x 67	STO
DPCANTE-025B200	20-190	12.5/25	CANopen	±10 VDC Position, Halls, Incremental Encoder, Tachometer	191 x 112 x 36	STO
DPCANTR-025B200	20-190	12.5/25	CANopen	±10 VDC Position, Resolver, Tachometer	191 x 112 x 36	STO
DPRALTE-025B200	20-190	12.5/25	Modbus RTU, RS-485/232	±10 VDC Position, Halls, Incremental Encoder, Tachometer	191 x 112 x 36	STO
DPRALTR-025B200	20-190	12.5/25	Modbus RTU, RS-485/232	±10 VDC Position, Resolver, Tachometer	191 x 112 x 36	STO
DPCANTE-015B200	40-190	7.5/15	CANopen	±10 VDC Position, Halls, Incremental Encoder, Tachometer	133 x 90 x 36	STO
DPCANTR-015B200	40-190	7.5/15	CANopen	±10 VDC Position, Resolver, Tachometer	133 x 90 x 36	STO
DPRALTE-015B200	40-190	7.5/15	Modbus RTU, RS-485/232	±10 VDC Position, Halls, Incremental Encoder, Tachometer	133 x 90 x 36	STO
DPRALTR-015B200	40-190	7.5/15	Modbus RTU, RS-485/232	±10 VDC Position, Resolver, Tachometer	133 x 90 x 36	STO



DPRALTR-060B080 Servo Drive

Want a custom DigiFlex drive? Turn to page 26



# DigiFlex<sup>®</sup> Performance<sup>™</sup>

#### DigiFlex<sup>®</sup> Performance<sup>™</sup> Panel Mount (AC or DC)

Part Number	Voltage (VDC)	Voltage (VAC)	Current (Cont./Peak)(A)	Network	Feedback	Dimensions (mm)	Functional Safety
DPCANIE-040A400	127-373	100-240	20/40	CANopen	±10 VDC Position, Halls, Incremental Encoder, Tachometer	178 x 134 x 49	STO
DPCANIA-040A400	127-373	100-240	20/40	CANopen	±10 VDC Position, Sine/Cosine Encoder, Absolute Encoder, Tachometer	178 x 134 x 49	STO
DPEANIU-040A400	127-373	100-240	20/40	EtherCAT	±10 VDC Position, Sine/Cosine Encoder, Absolute Encoder, Halls, Incremental Encoder, Tachometer	178 x 134 x 49	STO
DPRANIE-040A400	127-373	100-240	20/40	Modbus RTU, RS-485/232	±10 VDC Position, Halls, Incremental Encoder, Tachometer	178 x 134 x 49	STO
DPRAHIE-040A400	127-373	100-240	20/40	Modbus RTU, RS-485/232	±10 VDC Position, Halls, Incremental Encoder, Tachometer	178 x 134 x 49	STO
DPRANIR-040A400	127-373	100-240	20/40	Modbus RTU, RS-485/232	±10 VDC Position, Resolver, Tachometer	178 x 134 x 49	STO
DPCANIE-015S400	127-373	100-240	7.5/15	CANopen	±10 VDC Position, Halls, Incremental Encoder, Tachometer	178 x 123 x 45	STO
DPCANIA-015S400	127-373	100-240	7.5/15	CANopen	$\pm 10$ VDC Position, Sine/Cosine Encoder, Absolute Encoder, Tachometer	178 x 123 x 45	STO
DPEANIU-015S400	127-373	100-240	7.5/15	EtherCAT	±10 VDC Position, Sine/Cosine Encoder, Absolute Encoder, Halls, Incremental Encoder, Tachometer	178 x 123 x 56	STO
DPRANIE-015S400	127-373	100-240	7.5/15	Modbus RTU, RS-485/232	±10 VDC Position, Halls, Incremental Encoder, Tachometer	178 x 123 x 44	STO
DPRAHIE-015S400	127-373	100-240	7.5/15	Modbus RTU, RS-485/232	±10 VDC Position, Halls, Incremental Encoder, Tachometer	178 x 123 x 44	STO
DPRANIR-0155400	127-373	100-240	7.5/15	Modbus RTU, RS-485/232	±10 VDC Position, Resolver, Tachometer	178 x 123 x 44	STO
DPCANIE-C060A400	255-373	200-240	30/60	CANopen	$\pm 10$ VDC Position, Halls, Incremental Encoder, Tachometer	257 x 183 x 84	STO
DPCANIA-C060A400	255-373	200-240	30/60	CANopen	±10 VDC Position, Sine/Cosine Encoder, Absolute Encoder, Tachometer	257 x 183 x 84	STO
DPEANIU-C060A400	255-373	200-240	30/60	EtherCAT	$\pm 10$ VDC Position, Sine/Cosine Encoder, Absolute Encoder, Halls, Incremental Encoder, Tachometer	257 x 183 x 84	STO
DPRANIE-C060A400	255-373	200-240	30/60	Modbus RTU, RS-485/232	±10 VDC Position, Halls, Incremental Encoder, Tachometer	235 x 162 x 151	STO
DPRANIR-C060A400	255-373	200-240	30/60	Modbus RTU, RS-485/232	±10 VDC Position, Resolver, Tachometer	235 x 162 x 151	STO
DPCANIE-C100A400	255-373	200-240	50/100	CANopen	±10 VDC Position, Halls, Incremental Encoder, Tachometer	257 x 183 x 135	STO
DPCANIA-C100A400	255-373	200-240	50/100	CANopen	±10 VDC Position, Sine/Cosine Encoder, Absolute Encoder, Tachometer	257 x 183 x 135	STO
DPEANIU-C100A400	255-373	200-240	50/100	EtherCAT	±10 VDC Position, Sine/Cosine Encoder, Absolute Encoder, Halls, Incremental Encoder, Tachometer	257 x 183 x 135	STO
DPRANIE-C100A400	255-373	200-240	50/100	Modbus RTU, RS-485/232	±10 VDC Position, Halls, Incremental Encoder, Tachometer	273 x 230 x 149	STO
DPRANIR-C100A400	255-373	200-240	50/100	Modbus RTU, RS-485/232	±10 VDC Position, Resolver, Tachometer	273 x 230 x 149	STO
DPCANIE-030A800	255-747	200-480	15/30	CANopen	±10 VDC Position, Halls, Incremental Encoder, Tachometer	301 x 231 x 92	STO
DPCANIA-030A800	255-747	200-480	15/30	CANopen	±10 VDC Position, Sine/Cosine Encoder, Absolute Encoder, Tachometer	301 x 231 x 91	STO
DPEANIU-030A800	255-747	200-480	15/30	EtherCAT	$\pm 10~\text{VDC}$ Position, Sine/Cosine Encoder, Absolute Encoder, Halls, Incremental Encoder, Tachometer	301 x 231 x 91	STO
DPRANIE-030A800	255-747	200-480	15/30	Modbus RTU, RS-485/232	±10 VDC Position, Halls, Incremental Encoder, Tachometer	301 x 231 x 91	STO
DPRAHIE-030A800	255-747	200-480	15/30	Modbus RTU, RS-485/232	±10 VDC Position, Halls, Incremental Encoder, Tachometer	301 x 231 x 91	STO
DPRANIR-030A800	255-747	200-480	15/30	Modbus RTU, RS-485/232	±10 VDC Position, Resolver, Tachometer	301 x 231 x 91	STO
DPCANIE-060A800	255-747	200-480	30/60	CANopen	$\pm 10$ VDC Position, Halls, Incremental Encoder, Tachometer	301 x 231 x 92	STO
DPCANIA-060A800	255-747	200-480	30/60	CANopen	±10 VDC Position, Sine/Cosine Encoder, Absolute Encoder, Tachometer	301 x 231 x 141	STO
DPEANIU-060A800	255-747	200-480	30/60	EtherCAT	±10 VDC Position, Sine/Cosine Encoder, Absolute Encoder, Halls, Incremental Encoder, Tachometer	301 x 231 x 141	STO
DPRAHIE-060A800	255-747	200-480	30/60	Modbus RTU, RS-485/232	±10 VDC Position, Halls, Incremental Encoder, Tachometer	301 x 231 x 141	STO
DPRANIE-060A800	255-747	200-480	30/60	Modbus RTU, RS-485/232	±10 VDC Position, Halls, Incremental Encoder, Tachometer	301 x 231 x 141	STO
DPRANIR-060A800	255-747	200-480	30/60	Modbus RTU, RS-485/232	±10 VDC Position, Resolver, Tachometer	301 x 231 x 141	STO



DPRANIR-C060A400 Servo Drive

> Want a custom DigiFlex drive? Turn to page 26



DigiFlex<sup>®</sup> Performance<sup>™</sup> PCB Mount Extended Environment

#### DigiFlex<sup>®</sup> Performance<sup>™</sup> Vehicle Mount

Part Number	Voltage (VDC)	Current (Cont./Peak) (A)	Network	Feedback	Dimensions (mm)	Functional Safety
DVC250A060	20-54	150/250	CANopen	±10 VDC Position, Halls, Incremental Encoder, Tachometer	203 x 140 x 60	STO
DVC200A100	20-80	125/200	CANopen	±10 VDC Position, Halls, Incremental Encoder, Tachometer	203 x 140 x 60	STO

#### Vehicle Specific I/O

M/V series motor controllers feature unique programmable and dedicated inputs and outputs designed with mobile electric vehicular applications in mind.

- Key Switch / Main Contactor Operation
- Electromagnetic Holding Brake Output
- Speed Limit Input
- Reduced Speed Reverse
- Forward / Reverse Inputs
- "Push" (Neutral) Input
- Horn / Reverse Alarm

	Part Number	Voltage (VDC)	Current (Cont./Peak) (A)	Network	Feedback	Dimensions (mm)
0	DZXCANTE-008L080	10 - 80	4/8	CANopen	±10 VDC Position, Halls, Incremental Encoder, Tachometer	64 x 51 x 23
	DZXRALTE-008L080	10 - 80	4/8	Modbus RTU, RS-485/232	±10 VDC Position, Halls, Incremental Encoder, Tachometer	64 x 51 x 23
1	ZXCANTE-015L080	10 - 80	7.5/15	CANopen	±10 VDC Position, Halls, Incremental Encoder	64 x 51 x 23
	DZXRALTE-015L080	10 - 80	7.5/15	Modbus RTU, RS-485/232	±10 VDC Position, Halls, Incremental Encoder, Tachometer	64 x 51 x 23
	DZXRALTE-040L080	10 - 80	20/40	Modbus RTU, RS-485/232	±10 VDC Position, Halls, Incremental Encoder, Tachometer	76 x 51 x 23
ſ	DZXCANTE-040L080	10 - 80	20/40	CANopen	±10 VDC Position, Halls, Incremental Encoder, Tachometer	76 x 51 x 23

DZXCANTE-015L080 Servo Drive

Want a custom DigiFlex drive? Turn to page 26

**ADVANCED** MOTION CONTROLS



DVC250A060 Servo Drive





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# AxCent™

**AxCent**<sup>™</sup> analog servo drive technology achieves higher bandwidth and faster response times at a lower cost. They have been a staple of servo system solutions since day one. Our years of experience in building the highest quality products has created a solid and continuously improving selection of analog drives.

#### **Drive Family Overview**

Architecture	Analog				
# of Products	66				
Motor Types	Brushed/E	Brushless, 1Φ/3	Φ, Rotary/	Linear, DC/AC, In	duction, Stepper
Command	Traditiona	I			
Voltage Range	10-400 VD	OC, 45-265 VAC			
Current Range	Up to 150	A rms Continu	ous, 250 A	rms Peak	
Feedback	Increment	al Encoder, Ha	I Sensors,	Tachometer	
Form Factors	<u> 1</u> 0000				
	РСВ	Machine	Panel	Development	Vehicle

- Built-in hardware protection Over Current, Over Voltage, Under Voltage, Over Temperature, Short Circuit
- DIP Switches and Potentiometers for loop tuning, current limit adjustments and drive configuration
- Support for both brushless and brushed motor varieties
- Velocity feedback provided via incremental encoder, Hall Sensors, or tachometer
- Optical isolation between high and low power signals standard on certain models
- Current and Velocity analog output signals
- Four quadrant regenerative operation
- Extended Environment versions available



#### **Advanced Tuning**

Certain AxCent<sup>™</sup> models feature advanced tuning capabilities useful for fine-tuning both the current and velocity loop response behavior. Advanced tuning is accomplished via DIP Switches and allows applications to achieve maximum performance.



## AxCent<sup>™</sup> PCB Mount **□**

Part Number	Voltage (VDC)	Current (Cont./Peak) (A)	Operating Modes	Dimensions (mm)
AZBH10A4	10-36	5/10	Hall Velocity	43 x 38 x 9
AZB10A4	10-36	5/10	Current	38 x 38 x 7
AZBD10A4	10-36	5/10	Duty Cycle	43 x 38 x 9
AZBE10A4	10-36	5/10	Velocity	43 x 38 x 9
AZBDC10A4	10-36	5/10	Current	38 x 38 x 7
AZBDC10A4IC	10-36	5/10	Current	38 x 38 x 17
AZBDC20A8	10-80	12/20	Current	76 x 51 x 23
AZBH20A8	10-80	12/20	Current, Duty Cycle, Hall Velocity, Velocity	76 x 51 x 23
AZBE20A8	10-80	12/20	Current, Duty Cycle, Velocity	76 x 51 x 23
AZB20A8	10-80	12/20	Current	76 x 51 x 23
AZBE40A8	10-80	20/40	Current, Duty Cycle, Velocity	76 x 51 x 23
AZBDC40A8	10-80	20/40	Current	76 x 51 x 23
AZB40A8	10-80	20/40	Current	76 x 51 x 23
AZBH40A8	10-80	20/40	Current, Duty Cycle, Hall Velocity, Velocity	76 x 51 x 23
AZB60A8	10-80	30/60	Current	76 x 51 x 23
AZBDC60A8	10-80	30/60	Current	76 x 51 x 23
AZBE60A8	10-80	30/60	Current, Duty Cycle, Velocity	76 x 51 x 23
AZBH60A8	10-80	30/60	Current, Duty Cycle, Hall Velocity, Velocity	76 x 51 x 23
AZBDC6A8	20-80	3/6	Current	64 x 51 x 17
AZBE6A8	20-80	3/6	Current, Duty Cycle, Velocity	64 x 51 x 17
AZB6A8	20-80	3/6	Current	64 x 51 x 17
AZBH6A8	20-80	3/6	Current, Duty Cycle, Hall Velocity, Velocity	64 x 51 x 17
AZBDC12A8	20-80	6/12	Current	64 x 51 x 17
AZB12A8	20-80	6/12	Current	64 x 51 x 17
AZBH12A8	20-80	6/12	Current, Duty Cycle, Hall Velocity, Velocity	64 x 51 x 17
AZBE12A8	20-80	6/12	Current, Duty Cycle, Velocity	64 x 51 x 17
AZBH25A20	40-175	12.5/25	Current, Duty Cycle, Hall Velocity, Velocity	76 x 51 x 23
AZB25A20	40-175	12.5/25	Current	76 x 51 x 23
AZBE25A20	40-175	12.5/25	Current, Duty Cycle, Velocity	76 x 51 x 23
AZBDC25A20	40-175	12.5/25	Current	76 x 51 x 23



AZB20A8 Servo Drive

Want a custom AxCent drive? Turn to page 26



Axcent Panel wount	AxCent <sup>™</sup>	Panel	Mount
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Part Number	Voltage (VDC)	Voltage (VAC)	Current (Cont./Peak) (A)	Operating Modes	Dimensions (mm)
AB25A100	20-80		15/25	Current, Duty Cycle, Velocity	129 x 76 x 25
AB30A100	20-80		15/30	Current, Duty Cycle, Velocity, Hall Velocity, Tachometer Velocity	187 x 109 x 27
AB50A100	20-80		25/50	Current, Duty Cycle, Velocity, Hall Velocity, Tachometer Velocity	187 x 109 x 27
AB15A100	20-80		7.5/15	Current, Duty Cycle, Velocity	129 x 76 x 25
AB20A200	40-175		12/20	Current, Duty Cycle, Velocity	129 x 76 x 25
AB30A200I	40-175		15/30	Current, Duty Cycle, Velocity, Hall Velocity, Tachometer Velocity	187 x 109 x 27
AB30A200	40-175		15/30	Current, Duty Cycle, Velocity, Hall Velocity, Tachometer Velocity	187 x 109 x 27
AB30A200AC	40-175	30-125	15/30	Current, Duty Cycle, Velocity, Hall Velocity, Tachometer Velocity	187 x 107 x 62
AB50A200I	40-175		25/50	Current, Duty Cycle, Velocity, Hall Velocity, Tachometer Velocity	187 x 109 x 27
AB50A200	40-175		25/50	Current, Duty Cycle, Velocity, Hall Velocity, Tachometer Velocity	187 x 109 x 27
B30A40	60-400		15/30	Current, Duty Cycle, Hall Velocity, Velocity	203 x 143 x 41
B30A40AC	60-400	45-265	15/30	Current, Duty Cycle, Hall Velocity, Velocity	203 x 166 x 103
B060A400AC	255-373	200-240	30/60	Current, Duty Cycle, Hall Velocity, IR Compensation, Velocity, Voltage	257 x 183 x 84
B100A400AC	255-373	200-240	50/100	Current, Duty Cycle, Hall Velocity, IR Compensation, Velocity, Voltage	257 x 183 x 135



AB30A100 Servo Drive

Want a custom AxCent drive? Turn to page 26



#### AxCent<sup>™</sup> Vehicle Mount **■**

Part Number	Voltage (VDC)	Current (Cont./Peak) (A)	Operating Modes	Dimensions (mm)
AB250A060	20-54	150/250	Current, Duty Cycle, Hall Velocity, IR Compensation, Velocity, Voltage	203 x 140 x 60
AVB250A060	20-54	150/250	Current, Duty Cycle, Hall Velocity, IR Compensation, Velocity, Voltage	203 x 140 x 60
AB125A200	40-175	80/125	Current, Duty Cycle, Hall Velocity, IR Compensation, Velocity, Voltage	203 x 140 x 60
AVB200A100	20-80	125/200	Current, Duty Cycle, Hall Velocity, IR Compensation, Velocity, Voltage	203 x 140 x 60
AB200A100	20-80	125/200	Current, Duty Cycle, Hall Velocity, IR Compensation, Velocity, Voltage	203 x 140 x 60
AVB125A200	40-175	80/125	Current, Duty Cycle, Hall Velocity, IR Compensation, Velocity, Voltage	203 x 140 x 60
AB100C200	40-175	100/100	Current, Duty Cycle, Hall Velocity, IR Compensation, Velocity, Voltage	203 x 140 x 60
AVB100C200	40-175	100/100	Current, Duty Cycle, Hall Velocity, IR Compensation, Velocity, Voltage	203 x 140 x 60

# AVBD250A060

#### AVBD250A060 Servo Drive

#### Vehicle Specific I/O

M/V series motor controllers feature unique programmable and dedicated inputs and outputs designed with mobile electric vehicular applications in mind.

- Key Switch / Main Contactor Operation
- Electromagnetic Holding Brake Output
- Speed Limit Input
- Reduced Speed Reverse
- Forward / Reverse Inputs
- "Push" (Neutral) Input
- Reverse Alarm





Want a custom AxCent drive? Turn to page 26

# AxCent<sup>™</sup> PCB Mount Extended Environment IIII 📥

Part Number	Voltage (VDC)	Current (Cont./Peak) (A)	Operating Modes	Dimensions (mm)
AZXBE8A8	10 - 80	4/8	Current, Duty Cycle, Velocity	64 x 51 x 23
AZXBH8A8	10 - 80	4/8	Current, Duty Cycle, Hall Velocity, Velocity	64 x 51 x 23
AZXBDC8A8	10 - 80	4/8	Current	64 x 51 x 23
AZXB8A8	10 - 80	4/8	Current	64 x 51 x 23
AZXBDC15A8	10 - 80	7.5/15	Current	64 x 51 x 23
AZXB15A8	10 - 80	7.5/15	Current	64 x 51 x 23
AZXBE15A8	10 - 80	7.5/15	Current, Duty Cycle, Velocity	64 x 51 x 23
AZXBH15A8	10 - 80	7.5/15	Current, Duty Cycle, Hall Velocity, Velocity	64 x 51 x 23
AZXBE25A8	10 - 80	12.5/25	Current, Duty Cycle, Velocity	76 x 51 x 23
AZXBDC25A8	10 - 80	12.5/25	Current	76 x 51 x 23
AZXBH25A8	10 - 80	12.5/25	Current, Duty Cycle, Hall Velocity, Velocity	76 x 51 x 23
AZXBDC40A8	10 - 80	20/40	Current	76 x 51 x 23
AZXBE40A8	10 - 80	20/40	Current, Duty Cycle, Velocity	76 x 51 x 23
AZXBH16A20	40 - 175	8/16	Current, Duty Cycle, Hall Velocity, Velocity	76 x 51 x 23



# Click&Move® Automation Solution

# CLICK&MOVE®

**Click&Move**<sup>®</sup> is an automation solution designed for OEMs, systems integrators, and end users. Click&Move can include motion control, PLC logic, local I/O, and networked I/O. Applications can be simple, single-axis with minimal I/O to complex, multi-axes running in real-time.

#### Capabilities

- Complete motion controller capable of
  - Distributed control where the servo drives close the velocity and position loops
- Centralized control where C&M closes the velocity and position loops and sends torque commands to individual servo drives
- Coordinated motion certified to PLCopen Part 4
- Full featured PLC for machine control
- Compliant with PLCopen IEC 61131-3 industrial control programming using graphical Function Block Diagrams (FBDs)
- HMI Integrated with the Qt framework to facilitate development of stunning user interfaces

#### **Features**

- Extensive library of pre-configured Function Blocks
  - Network blocks to implement EtherCAT, CANopen and more.
  - Coordinated Motion
  - G-code
- User Defined Function Blocks fully customizable using C++
- FBDs compiled to ANSI C++ source code
- Project logic is based on state machine architecture
- Supported platforms: PC (Win OS and Linux), stand-alone controller (MACC), ADVANCED Motion Controls ®' servo drives, Raspberry PI, more
- Supports CANopen®, EtherCAT®, POWERLINK, and Modbus TCP network protocols
- Controls multi-axis networks or Click&Move® embedded stand-alone drives

#### **Ilot and Industry 4.0 Ready**

- Supports big data mining via both wired and wireless connectivity to the Cloud and local databases
- Broad FB Class libraries support "Smart Machine" design
- Supports distributed control across networked machines
- Incorporates the use of UID/GUID for runtime nodes

#### **Click&Move®Application Examples**

- Packaging Machines
- Arc Welding
- Plasma Cutting
- Fixed Robotics
- 3D Printing AGVs

Cobots and Industrial Robot

Industrial Actuators

Arms

- Lab Automation
- Communications Telemetry
- Laser Engraving ...and many more!







# **Click&Move® Automation Solution**





#### **MACC Controller Family**

Motion Automation Control Cards (MACC) are general purpose motion/ automation controllers with embedded Click&Move® capability. MACC controllers can control ADVANCED Motion Controls servo drives over CANopen®, EtherCAT®, POWERLINK, or Modbus TCP networks. Additionally, the optional plug-in MACC I/O Modules enable control of non-networked servo drives using traditional commands such as Step/ Dir, ±10V Analog, and PWM/Dir.

- ٠ MACC with Network Drives and Network I/O Module - This solution can meet demands for drive and I/O command update rates in the few hundred microseconds range. The MACC integrates field bus masters directly or they can be installed into an external PC.
- MACC with Non-Network Drives Non-networked servo drives, combined . with the MACC, provide a system with the lowest overall cost. This solution can meet demands for drive and I/O command update rates in the 50 microsecond range. In this case, motor feedback connections are made to the external I/O module's dedicated inputs.



#### MACC02

As a stand-alone controller, the MACC02 can take the place of a PC in a control system to reduce cost, or can be configured to work in conjunction with a PC where the MACC02 handles the real-time and time-critical processes such as motion control, and the PC handles less time-critical processes such as the HMI.

- ARM Cortex-A9 microprocessor
- Micro SD card storage

 Fieldbus I/O connectivity Multi-axes motion control

- Real-Time Linux
- Real-Time clock
- Full PLC Logic for machine control
- CANopen, EtherCAT, POWERLINK, or Modbus TCP master capability
  - WLAN and Bluetooth compatible

#### MACC11



The MACC11 (µMACC) is designed to be a compact, lowcost controller for machine automation and/or process control applications. Based on the firmware loaded, the MACC11 can control up to 6 axes of servos or steppers, servo drives via the CAN bus, or 2 servo axes via PWM signals.

- 32-bit 120 MHz Risc processor
- 256 kbyte zero wait state SRAM for data
- 1 Mbyte FLASH for firmware and user program storage
- C Programmable
- Micro SD card storage
- RTC with battery backup

- 6 12-bit analog inputs
- 2 11-bit analog outputs
- 9 digital I/Os
- 100 Mbit Ethernet
- USB 2.0 full speed peripheral for firmware update purposes
- Isolated CAN bus and RS485/232



#### MACC I/O Modules

The MACCIO modules feature the necessary digital and analog I/O to fulfill any application requirement. These cards are partially or fully customizable to fit the application specifications and budget. All of the different MACCIO modules are compatible with all models of the MACC Controller Family.



#### MACCI01

- 8 16-bit analog inputs
- 8 16-bit digital inputs
- 16 optocoupled digital inputs
- 16 optocoupled digital outputs
- 2x4 isolated high speed RS422 differential outputs
- 4 isolated high speed RS422 differential inputs
- 4 incremental or EnDat 2.0 encoder inputs (population option)

#### MACCIO2

- 16 optocoupled digital inputs
- 16 optocoupled digital outputs

#### MACCIO3

- 6 stages for Step/Dir drive control (isolation population option) » 4 high speed RS422 differential outputs (per stage)
  - » 2 high speed RS422 differential inputs (per stage)
- RS422 inputs for 4 incremental handwheels
- 12 optocoupled digital inputs
- 12 optocoupled digital outputs
- 2 high speed optocoupled digital inputs

#### MACCIO4

- 4 stages for Step/Dir drive control
  - » 4 non-isolated digital outputs (open collector darlington) » 4 non-isolated digital inputs
- 4 independent encoder inputs supporting encoders or handwheels





# DriveLibrary™



# Drive**Library**™

**DriveLibrary<sup>™</sup>** is a motion control API for controlling ADVANCED Motion Controls' DigiFlex<sup>®</sup> Performance<sup>™</sup> servo drives. Using a pre-defined set of motion functions, a programmer can easily command motion profiles for a single-axis and multiple uncoordinated axes. DriveLibrary is designed to allow software developers without expertise in drive control to effectively develop motion applications.





# Motion Engine

The Motion Engine is embedded motion controller functionality in all FlexPro<sup>®</sup> and DigiFlex<sup>®</sup> Performace<sup>™</sup> servo drives. It is configured using ACE<sup>™</sup> or DriveWare<sup>®</sup> software.



Create up to 16 unique Index tasks Indexes can be combined with by defining position, velocity, and acceleration/deceleration values. Sequences Indexes can be either Relative or Absolute motion profiles

Indexes are activated using the Motion Panel, digital inputs, or by using an external network command

Homing routines and other control functions to form up to 16 different

Sequences can be configured to initiate on power-up, via a digital input, or over the network

Ideal for use in: Material Handling Conveyed Systems Feed-to-Length Systems Packaging Lab Automation ... And many more!



# **Configuration Software**



**A C E**<sup>TM</sup>

ACE<sup>™</sup> (AMC Configuration Environment) is the configuration software used to commission and troubleshoot FlexPro® servo drives. With added capabilities to maximize the performance of our IMPACT architecture, ACE is the most versatile drive commissioning software available.



Drive Ware R

DriveWare® 7 is the configuration software used to commission and troubleshoot DigiFlex<sup>®</sup> Performance<sup>™</sup> servo drives. Powerful, reliable, and proven, DriveWare provides the tools necessary to maximize the performance of your digital drive system.

Command : Unknown   Gains : Gain 0	Loops : Position around Velocity   Velocity FB : N	Notor Encoder   Position FB : Motor Encoder		Terr and
DPCANE-015N400	Gain Set 0 ×	Scope X		Drive status
Br-Action Objection Configuration 0	Proper radio on the Week and the Scheme Machine M	Sort Units / Dr. Offset Sort Inc. Sort Inc	V Some me. •   i Laboration ·   i Laboration	Consultation Capiton Biological Section Consultation Cons



J User Disable User Aux Disable User Stop User Positive Lim User Negative Li

Group Event

User

∆ Current

Velocity

Position tion Engine Motion Engine Erro

△ Software Software Over Voltage

Software Under Voltage Software Disable

Software Positive Limit Software Negative Limit

Continuous Current Foldbar

Current Limit Active

urrent Loop Saturated

Motor Over Speed Motor Over Temp

Input Type Active Function I GP High Motor Ove

GP GP HSC:B HSC:C HSC:A

Input Setting

Active Low Active High

Delay [ms] Action

No Action No Action ( Disable Power Bridge ( Disable Positive Direction (

Disable Negative Di

No Action

No Action No Action

No Action

No Action

Disable Power Bridge

9 9

High High High High High High

High Motor Over Ter

#### **Common Features**

ACE and DriveWare are similar and have these feature in common:

 Easy-to-use interface common to everyday applications

· Configuration and diagnostics of all digital and analog inputs and outputs

- Real-time Status Panel provides event and fault monitoring and history
- Universal feedback and motor support with AutoComm commutation routine
- Real-time gain adjustment to optimize tuning and achieve the highest performance
- On-the-fly Mode Switching
- On-the-fly Gain Set Switching
- Drive and motor limits and events all configurable within the software
- Built-in Digital Oscilloscope and Multimeter to monitor real-time internal drive signals
- Two independent Programmable Limit Switches are configurable directly within the software or by using network commands
- CANopen, EtherCAT, POWERLINK, Modbus, RS485, and Ethernet TCP/IP network compatibility

Both ACE and DriveWare are available as free downloads from our website, www.a-m-c.com.



# **Custom Servo Drives**

# Can't find exactly what you need? Let's make you a Custom Servo Drive!

Whether it's a small modification to an existing product or brand new servo drive designed from scratch, ADVANCED Motion Controls is the industry leader in custom solutions.

# The Custom Advantage

# **Our Customs Process**











What kind of customizations can we make? Turn the page and find out!

**Onsite Visits** 



# Create a Custom Servo Drive...

# Connectors Connector Selection Image: Connec



#### **Connector Locations**







Give us the size constraints for your project and we will try to make it fit.

#### Number of axes?



How many axes? 1, 2, 3, 4, ...n



Baseplate shape and features, mounting hole types and locations, heatsink

> ADVANCED MOTION CONTROLS

# Temperature

**Ruggedization** 



#### **Ingress Protection**



#### **Shock & Vibration**



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# **Functionality**

Networks

Standard options include:

EtherCA		
EtherNet/IP	<b>RS</b> <sup>485</sup>	<b>RS</b> <sup>232</sup>
Ethernet TCP/IP	Modbus	ethernet POWERLINK

Don't see your network? Ask for it!

#### **I/O**

Additional Programmable or Dedicated I/O.

Outputs:	Velocity monitor, motor current, over current, temperature, over speed, etc.
Inputs:	Master inhibit, directional inhibit, STO, high-speed capture, etc.
Scale factors:	Tailor I/O scaling to match application (ex: $1V = 1$ krpm, or $1V = 3A$ ).
Network I/O <sup>.</sup>	Read/write to analog or digital I/O

via network. Control end effectors, nozzle output, sensor reading (torque, temperature), etc.

#### Programming

functionality:

Programmatic Sequenced motion, velocity as a function of pressure, etc.

# Value Added Assemblies

Electronic Assemblies built to your specification





Servo Drive

Power Supply



Cooling Fan



Assembled into a single unit, wired, and tested.

#### **Benefits:**

Simplify parts management, reduce your assembly time, save space, increase reliability.



Private Label

Add your own silkscreen, branding or logo



Part Number

Create a custom part number that matches your internal schema

# SD-Main01

#### Packaging

- Minimal packaging to saving on shipping and • reduce waste
- Custom box and foam to make a good impression for reselling









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#### Partnering with ADVANCED Motion Controls

- » Superior performance and product offering
- » Fast delivery to meet your needs
- » Worldwide factory trained technical and sales support
- » Engineering support available to you on-site
- » Close collaboration with, and an extension of, your engineering team
- » Diverse industrial experiences and knowledge allows us to improve your systems
- » Proud of providing you with the most optimized solutions
- » Passionate about your success

Providing motion control solutions to OEMs is our focus...

Make it Happen!