

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. The DPC Series Hardware Installation Manual is available for download at www.a-m-c.com.

Power Range	
Peak Current	60 A (42.4 A _{RMS})
Continuous Current	30 A (30 A _{RMS})
AC Supply Voltage	200 - 240 VAC
DC Supply Voltage	255 - 373 VDC



CANopen

Features

- Follows the CAN in Automation (CiA) 301 Communications Profile and 402 Device Profile
- ▲ 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
- Built-in brake/shunt regulator
- On-the-Fly Mode Switching
- On-the-Fly Gain Set Switching
- Dedicated Safe Torque Off (STO) Inputs

MODES OF OPERATION

- Profile Current
- Profile Velocity
- Profile Position
- Interpolated Position Mode (PVT)

COMMAND SOURCE

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

FEEDBACK SUPPORTED

- ±10 VDC Position
- Auxiliary Incremental Encoder
- EnDat® 2.1/2.2
- Hiperface®
- 1Vp-p Sine/Cosine Encoder
- Tachometer (±10 VDC)

INPUTS/OUTPUTS

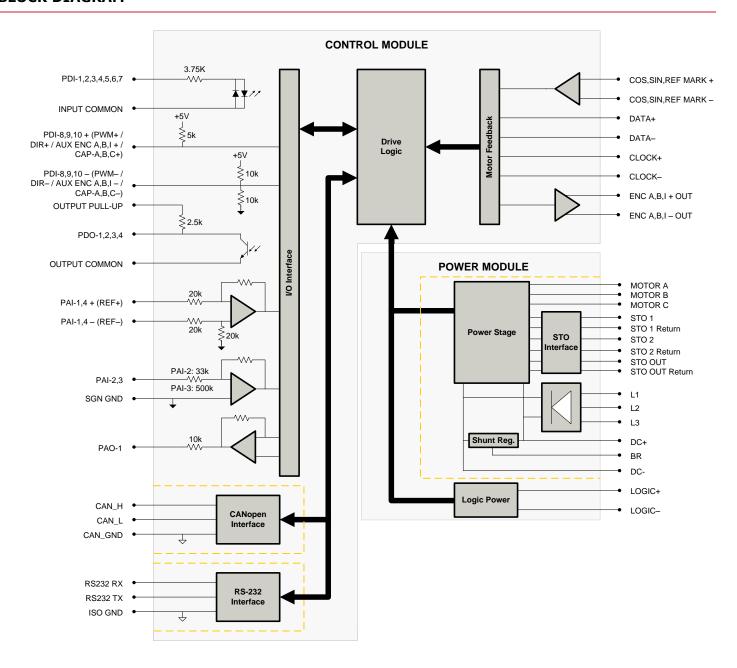
- 3 High Speed Captures
- 4 Programmable Analog Inputs (16-bit/12-bit Resolution)
- 1 Programmable Analog Output (10-bit Resolution)
- 3 Programmable Digital Inputs (Differential)
- 7 Programmable Digital Inputs (Single-Ended)
- 4 Programmable Digital Outputs (Single-Ended)

COMPLIANCES & AGENCY APPROVALS

- RoHS II
- TÜV Rheinland® (STO)
- UL/cUL Pending
- CE Pending



BLOCK DIAGRAM



Information on Approvals and Compliances



The RoHS II Directive 2011/65/EU restricts the use of certain substances including lead, mercury, cadmium, hexavalent chromium and halogenated flame retardants PBB and PBDE in electronic equipment.



Functional Safety STO is TÜV Rheinland® certified and meets requirements of the following standards:

EN ISO 13849-1 Category 4 / PL e
 EN IEC 61800-5-2 STO (SIL 3)
 EN62061 SIL CL3

IEC 61508 SIL 3



SPECIFICATIONS

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ACC Stappy Manipum VAC 200 - 240 ACC Stappy Manipum VAC 264 ACC Stappy Manipum VAC 264 ACC Stappy Manipum VAC 264 ACC Stappy Manipum VAC 265 ACC Stappy Presumery 14			
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Mary			
DE Silvey Vindege Franger			
DC Bits Under Visiongs Limit VDC 209 Logic Supply Visiongs VDC 20 - 30 (8 85 m/k) Sale Trange Off Visiongs VDC 20 - 30 (8 85 m/k) Macroman Continuous Output Churnet* A (Arms) 00 (84.4) Macroman Continuous Output Power & Rated Viologe* W 9682 Max. Continuous Dever Diseption & Bard Viologe W 9692 Max. Continuous Dever Diseption & Bard Viologe W 9692 Internal Blac Capacitismos µF 1120 Esternal Shurt Research Uniform Resistance* µF 1120 Esternal Shurt Research Uniform Resistance* µF 100 Low Viologe Supply Output ½6 10 Low Viologe Supply Output ½7 100 Description No. Control Specifications Value Communication Interfaces 1 410 Van			
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Sale Torque Off Voltage			
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Mostmanu Continuous Duplout Current* A (Ama) 30 (30) Max. Continuous Opula Power (8 Rated Voltage) W 509 Max. Continuous Opula Power (8 Rated Voltage) W 509 Increase Blax Opulation (8 Rated Voltage) PF 1120 Externed Shurt Recistor Minimum Load Industria (Liber To-Univ)* July 4 600 Solicitality Frequency 1842 14 Mostman Output PVM Duty Option 1872 14 (30) Description Output Description Value Communication Interfaces 2 C Albaper (R* 232 for configuration) Communication Methods 2 C Albaper (R* 232 for configuration) Communication Methods 2 4 (10 V Analog, Encoder Following, Over the Network, PWM and Direction, Sequencing, Indexing, Jogging Feedback Supported 2 4 (10 V Analog, Encoder Following, Over the Network, PWM and Direction, Sequencing, Indexing, Jogging Communitation Methods 3 5 (20) (20) (20) (20) Modes of Operation 4 10 V Analog, Encoder Following, Over the Network, PWM and Direction, Sequencing, Indexing, Jogging Feedback Supported 2 4 (10 V DC) 10 (10 V DC) <td></td> <td>-</td> <td></td>		-	
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Max. Continuous Power Disapitantin (Read Voltage) W/ 509 Exernal Shurt Resisted Minimum Resistance ¹ 0 2 Exernal Shurt Resisted Minimum Resistance ² 0 2 Minimum Load Inductace (Line To-Line) ² y H 600 Switching Frequency 8 Hz 14 Maximum Outpot PWM Duty Oyde % 100 Low Vollage Supply Outputs *** 4 Hz Vollage Supply Outputs Description **** **** Control Specifications** Commanication Interfaces 2 C Analoga (Res 232 for configuration) Commanication Methods 2 C Analoga (Res 232 for configuration) Commanication Methods 2 S Insucational Modes of Operation 2 Profile Courrent, Profile Volocity, Profile Position, Interplated Position Mode (PVT) Modes of Operation 2 Profile Courrent, Profile Volocity, Profile Position, Interplated Position Mode (PVT) Modes of Operation 2 Profile Courrent, Profile Volocity, Profile Position, Interplated Position Mode (PVT) Modes of Operation 2 Profile Courrent, Profile Volocity, Profile Position, Profile Position, Profile Volocity, Profile Position, Profile Volocity, P	·	1	
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External Shurth Resistance (Line 17-Line)			
Minimum Load Indications (Line-To-Line)** IpH 600 Maximum Dutput (PWM Duty Cycle 15% 100 Low Voltage Supply Outputs 15% 100 Command Surves Comma		· ·	
Skitching Frequency SHZ 14 Maximum Output (PWM duty Cycle) % 100 Communication Interfaces Units Control Specifications Value Communication Interfaces CANDER (PS-232 for configuration) Value Communication Interfaces CANDER (PS-232 for configuration) Value Communication Methods 1 41 V Analog, Encoder Enforcing, Over the Network, PWM and Direction, Segurating, Juggling Modes of Operation 1 41 V Analog, Encoder Enforcer, Endoder, Endoder, Endoder, Endoder, Tuby 2 Sine-Ocian, Endoder, 14 (10 VIDC) Modes of Operation 1 41 V Analog, Encoder Endoder, Prolific Prolation, Interface, Nature, 14 (10 VIDC) Modes of Operation 1 9 Prolific Current, Prolific Velocity, Prolific Polation, Interpolated Position Mode (PVT) Modes of Operation 1 9 Prolific Current, Prolific Velocity, Prolific Polation, Interpolated Position Mode (PVT) Modes of Operation 1 9 Prolific Current, Prolific Velocity, Prolific Polation, Interpolated Position Mode (PVT) Modes of Operation 1 4 Prolific Current, Prolific Velocity, Prolific Polation, Interpolated Position Mode (PVT) Value 1 4 Prolific Current, Prolific Velocity, Prolific Polation, Interpolated Pola			
Maximum Nurcous Number Numbe	· ·	· ·	
Description			
Obsertiption Control Specifications Value Communication Interfaces - CANopen (IRS-222 for configuration) Value Communication Interfaces - at 0 VA Padage, Encoder Following, Over the Network, PVM and Direction, Sequencing, Indexing, Jogging Feedback Supported - at 0 VXD Position, Auxiliary incremental Encoder, EnDate 2 1/2 2, Hiperface®, 1Vp-p Sine Cosine Encoder, Tachometer (14 0 VXD) Modes of Operation - Sinusoidal Motors Supported - Profile Uniform, Profile Velocity, Profile Position, Interpolated Position Mode (PVT) Motors Supported - 4P Colleged Loop Vector, Single Phase (Brushed, Voice Coil, Inductive Load), Three Phase (Brushed) Hardware Protection - 4P Configurable Functions, Over Current, Over Temperature (Drive & Motor), Over Vollage, Short Circuit (Phase-Phase & Phase-Ground), Under Voltage Hardware Protection - 4P Configurable Eval Circuits, Over Temperature (Drive & Motor), Over Vollage, Short Circuit (Phase-Phase & Phase-Ground), Under Voltage Programmable Analog Inputs/Outputs (PDIs/PDOs) - 4P Configurable Eval Circuits, Over Temperature (Drive & Motor), Over Vollage, Short Circuit Programmable Analog Inputs/Outputs (PDIs/PDOs) - 4P Interpolation Circuits (PDIs/PDOs) Profile Victory (Plase-Phase & Phase	Maximum Output PWM Duty Cycle	%	
Obscription Units Value Communication Interfaces - CANopen (RS-232 for configuration) Command Sources - ±10 VA railog, Encoder Following, Over the Network, PWIA and Direction, Sequencing, Indexing, Jogging Feedback Supported - ±10 VDC (Position, Auxiliary Incremental Encoder, EnDaré 2 1/2 2, Hiperface8, 1VP.p. Sine-Cosine Encoder. Modes of Operation - Sinuscial Motors Supported - Closed Loop Vestor, Single Phase (Buthely Coll, Inductive Load), Three Phase (Brashes) Hardware Protection - Closed Loop Vestor, Single Phase (Brushes) Phase (Brushes), Three Phase (Brushes) Hardware Protection - 10/4 Programmable Upital Inputs/Outputs (PDIsPDOs) - 10/4 Programmable Analog Inputs/Outputs (PAIs/PACs) - 4 Programmable Upital Inputs/Outputs (PAIs/PACs) - 4 Current Loop Sample Time µs 142.9 Velocity Loop Sample Time µs 142.9 Maximum Sin/Cos Innerpolation - 2.04 Coc Maximum Sin/Cos Innerpolation - No Internal Shart Resistor - No	Low Voltage Supply Outputs	-	
Communication Interfaces CANopen (RS-322 for configuration) Command Sources 4.0 4.50 4 Analog, Excoder Fellowing, Over the Network, PWM and Direction, Sequencing, Indexing, Jodging Feedback Supported 2.0 4 10 VDC Peation, Auxiliary Incremental Encoder, EnDaté 2.1/2.2, Hiperface®, 1/bp p. Simc Cosine Encoder, Tackmeter (±10 VDC) Command Sources 2.0 5 Profiles Current, Profile Velocity, Profile Position, Interpolated Position Mode (PVT) Modes of Operation 2.0 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 (Programmable Digital inputs/Outputs (PDIs/POS)) 2.0 1/4 Programmable Digital inputs/Outputs (PDIs/POS) 3.0 4/1 Programmable Digital inputs/Outputs (PAIs/PAOS) 4.0 4 Primary I/O Logic Level 4.0 ys. 1/14.4 Valor 4.0 ys. 1/4.9 Position Loop Sample Time μ.ps. 1/4.2 Maximum Sin/Cos Interpolation 4.0 ys. 1.42.9 Maximum Sin/Cos Interpolation 5.0 ys. No Internal Shart Resistor 9.0 ys. 8.0 ys. Size (H x W x D) 9.0 ys. 8.0 St. 11.1 ys. 12.2 xs.	Description	Unito	
Command Sources ±10 V Anabag, Encoder Following, Over the Network, PWM and Direction, Sequencing, Indexing, Jogging Feedback Supported ±10 VDCP Seation, Auulianian Incremental Encoder, EnDate 2.1/2.2, Hiperface®, IVp-p Sine/Cosine Encoder, Tackmenter (±10 VDC) Commutation Methods ±-0 Sinusoidal Modes of Operation ±-0 Proffile Current, Profile Velocity, Profile Position, Interpolated Position Mode (PVT) Motors Supported ±-0 Closead Loop Vector, Single Phase (Brushed, Voice Coil, Inductive Load), Time Phase (Brushess) Hardware Protection ±-0 40+ Configurable Encoders, Over Current, Profile Velocity, Profile Position, Interpolated Position Mode (PVT) Programmable Anabog Inputs/Outputs (PAIs/PAOs) ±-0 40+ Configurable Encoders, Over Temperature (Drive & Motor), Over Voltage, Short Circuit (Phase-Phase & Phase-Ground), Under Voltage 40+ Over Temperature (Drive & Motor), Over Voltage, Short Circuit (Phase-Phase & Phase-Ground), Under Voltage Programmable Analog Inputs/Outputs (PAIs/PAOs) ±-0 4/1 Velocity Loop Sample Time ±-18 4/1 Using Level ±-19 142.9 Maximum Sin/Cos Encoder Frequency H-12 20 Maximum Sin/Cos Encoder Frequency H-12 20 Maximum Sin/Cos Encoder Frequency H-	•		
# 10 VOC Position, Auxiliary Incremental Encoder, EnDate 2.1/2.2, Hiperface®, 1/0-p Sine Cosine Encoder in Tachemeter (±10 VOC Position, Auxiliary Incremental Encoder, EnDate 2.1/2.2, Hiperface®, 1/0-p Sine Cosine Encoder in Tachemeter (±10 VOC Position, Auxiliary Incremental Encoder, EnDate 2.1/2.2, Hiperface®, 1/0-p Sine Cosine Encoder in Tachemeter (±10 VOC Position, Auxiliary Incremental Encoder, EnDate 2.1/2.2, Hiperface®, 1/0-p Sine Cosine Encoder in Tachemeter (±10 VOC Position, Cher Voltage, Encoder, Protection Motors Supported			,
Techmater (±10 VDC)		-	
Modes Supported - Profile Current, Profile Velocity, Profile Position, Interpolated Position Mode (PVT) Motors Supported - Closed Loop Vector, Single Phase (Brushed, Voice Col., Inductive Load), Three Phase (Brusheds) Hardware Protection - 40	Feedback Supported	-	
	Commutation Methods	-	Sinusoidal
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) - 24 VDC Firminary I/O Logic Level μs 71.4 Current Loop Sample Time μs 142.9 Velocity Loop Sample Time μs 142.9 Maximum Sin/Cos Encoder Frequency kHz 20 Maximum Sin/Cos Encoder Frequency kHz 20 Maximum Sin/Cos Encoder Frequency kHz 20 Internal Shunt Regulator - 2 Ves No Internal Shunt Resistor - 10 No Description *** ** ** ** ** ** ** ** ** ** ** ** **	Modes of Operation	-	Profile Current, Profile Velocity, Profile Position, Interpolated Position Mode (PVT)
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Programmable Analog Inputs/Outputs (PAIs/PAOs) - 4/1 Primary I/O Logic Level - 24 VDC Current Loop Sample Time μs 142.9 Velocity Loop Sample Time μs 142.9 Position Loop Sample Time μs 142.9 Maximum Sin/Cos Encoder Frequency kHz 200 Maximum Sin/Cos Interpolation - 2048 counts per sin/cos cycle Internal Shurt Regulator - No Internal Shurt Regulator - No Description Units Web-Internal Specifications Agency Approvals - RoHS II, TÜV Rheinland® (STO), UL/cUL Pending, CE Pending Size (H x W x D) mm (in) 256.5 x 182.6 x 83.7 (10.1 x 7.2 x 3.3) Weight g (c) 2812.3 (99.2) Heastink (Base) Temperature Range °C (°F) -0 -75 (32 - 167) Storage Temperature Range °C (°F) -40 - 85 (40 - 185) Form Factor - Panel Mount Coling System - Natural Convection +24V LOGI Connector - 2-pont, 3.5 mm spaced, enclosed,	Hardware Protection	-	
Primary I/O Logic Level - 24 VDC Current Loop Sample Time μs 71.4 Velocity Loop Sample Time μs 142.9 Position Loop Sample Time μs 142.9 Maximum Sin/Cos Encoder Frequency kHz 200 Maximum Sin/Cos Interpolation - 2048 counts per sin/cos cycle Internal Shunt Regulator - Yes Internal Shunt Resistor No No Mechanical Specifications Mechanical Specifications Mechanical Specifications Mechanical Specifications Mechanical Specifications Value Agency Approvals - RoHS II, TÜV Rheinland® (STO), UL/cUL Pending, CE Pending Size (H x W x D) mm (in) 256.5 x 182.6 x 83.7 (10.1 x 7.2 x 3.3) Weight g (oz) 2812.3 (99.2) Heatsink (Base) Temperature Range® "C ("F) 0 - 76 (32 - 167) Storage Temperature Range® "C ("F) -40 - 85 (40 - 185) Storage Temperature Range <td>Programmable Digital Inputs/Outputs (PDIs/PDOs)</td> <td>-</td> <td>10/4</td>	Programmable Digital Inputs/Outputs (PDIs/PDOs)	-	10/4
Current Loop Sample Time µs 71.4 Velocity Loop Sample Time µs 142.9 Position Loop Sample Time µs 142.9 Maximum Sin/Cos Incoder Frequency kHz 200 Maximum Sin/Cos Interpolation	Programmable Analog Inputs/Outputs (PAIs/PAOs)	-	4/1
Velocity Loop Sample Time µs 142.9 Position Loop Sample Time µs 142.9 Maximum Sin/Cos Enceder Frequency kHz 200 Maximum Sin/Cos Interpolation - 2048 counts per sin/cos cycle Internal Shunt Regulator - Yes Mechanical Specifications Description Mechanical Specifications Description Mechanical Specifications Value Mechanical Specifications Value Description Mechanical Specifications Value Mechanical Specifications Value Description Mechanical Specifications Value Description Mechanical Specifications Value Description Mechanical Specifications Value Mechanical Specifications Value Mechanical Specifications </td <td>Primary I/O Logic Level</td> <td>-</td> <td>24 VDC</td>	Primary I/O Logic Level	-	24 VDC
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Maximum Sin/Cos Incoder Frequency kHz 200 Maximum Sin/Cos Interpolation	Velocity Loop Sample Time	μs	142.9
Maximum Sin/Cos Interpolation - 2048 counts per sin/cos cycle Internal Shunt Regulator - Yes Internal Shunt Resistor - No ****	Position Loop Sample Time	μs	142.9
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Internal Shunt Resistor Poscription Value Agency Approvals - RoHS II, TÜV Rheinland® (STO), UL/cUL Pending, CE Pending Size (1 x W x D) mm (in) 256,5 x 182.6 x 83.7 (10.1 x 7.2 x 3.3) Weight g (oz) 256,5 x 182.6 x 83.7 (10.1 x 7.2 x 3.3) Beatsink (Base) Temperature Range® °C (°F) 0 - 75 (32 - 167) Storage Temperature Range °C (°F) 40 - 85 (-40 - 185) Form Factor Panel Mount Cooling System °C (°F) Altural Convection FAN Connector °C (°F) 2-port, 3.5 mm spaced insert connector FAN Connector °C (°F) 2-port, 5.08 mm spaced, enclosed, friction lock header AUX COMM Connector °C (°F) 3-pin, 2.5 mm spaced, enclosed, friction lock header AUX ENCODER Connector °C (°F) 4-port, 10.16 mm spaced, enclosed, friction lock header FEEDBACK Connector °C (°F) 4-port, 10.16 mm spaced, enclosed, friction lock header FOO Connector °C (°F) 4-port, 10.16 mm spaced, enclosed, friction lock header FOO Connector °C (°F) 4-port, 10.16 mm spaced, enclosed, friction lock header	Maximum Sin/Cos Interpolation	-	2048 counts per sin/cos cycle
Description Units Value Agency Approvals - RoHS II, TÜV Rheinland® (STO), UL/cUL Pending, CE Pending Size (H x W x D) mm (in) 256.5 x 182.6 x 83.7 (10.1 x 7.2 x 3.3) Weight g (oz) 2812.3 (99.2) Heatsink (Base) Temperature Range® °C (°F) 0 - 75 (32 - 167) Storage Temperature Range °C (°F) 4-0 - 85 (-40 - 185) Form Factor - Panel Mont Cooling System - Natural Convection +24V LOGIC Connector - 2-port, 3.5 mm spaced, enclosed, friction lock header AUX COMM Connector - 2-port, 5.08 mm spaced, enclosed, friction lock header AUX ENCODER Connector - 15-pin, 2.5 mm spaced, enclosed, friction lock header COMM Connector - 15-pin, high-density, male D-sub COMM Connector - 4-port, 10.16 mm spaced, enclosed, friction lock header FEEDBACK Connector - 15-pin, high-density, female D-sub MOTOR POWER Connector - 4-port, 10.16 mm spaced, enclosed, friction lock header AC POWER Connector - 4-port, 10.16 mm spaced, enclosed, friction lock header<	Internal Shunt Regulator	-	Yes
Description Units Value Agency Approvals - ROHS II, TÜV Rheinland® (STO), UL/cUL Pending, CE Pending Size (H x W x D) mm (in) 256.5 x 182.6 x 83.7 (10.1 x 7.2 x 3.3) Weight g (oz) 2812.3 (99.2) Heatsink (Base) Temperature Range °C (°F) 0 - 75 (32 - 167) Storage Temperature Range °C (°F) -40 - 85 (-40 - 185) Form Factor Panel Mount Cooling System - Natural Convection +24V LOGIC Connector - 2-port, 3.5 mm spaced insert connector FAN Connector - 2-port, 5.50 mm spaced, enclosed, friction lock header AUX COMM Connector - 3-pin, 2.5 mm spaced, enclosed, friction lock header AUX ENCODER Connector - 15-pin, high-density, male D-sub COMM Connector - 4-port, 10.16 mm spaced, enclosed, friction lock header FEEDBACK Connector - 4-port, 10.16 mm spaced, enclosed, friction lock header MOTOR POWER Connector - 4-port, 10.16 mm spaced, enclosed, friction lock header AC POWER Connector - 4-port, 10.16 mm spaced, enclosed, friction lock header	Internal Shunt Resistor	-	No
Agency Approvals - RoHS II, TÜV Rheinland® (STO), UL/cUL Pending, CE Pending Size (H x W x D) mm (in) 256.5 x 182.6 x 83.7 (10.1 x 7.2 x 3.3) Weight g (oz) 2812.3 (99.2) Heatsink (Base) Temperature Range °C (°F) 0 - 75 (32 - 167) Storage Temperature Range °C (°F) 40 - 85 (-40 - 185) Form Factor Panel Mount Cooling System - Natural Convection 24V LOGIC Connector - Natural Convection FAN Connector - 2-port, 3.5 mm spaced, enclosed, friction lock header AUX COMM Connector - 3-pin, 2.5 mm spaced, enclosed, friction lock header AUX ENCODER Connector - 15-pin, high-density, male D-sub COMM Connector - 4-port, 10.16 mm spaced, enclosed, friction lock header FEEDBACK Connector - 4-port, 10.16 mm spaced, enclosed, friction lock header I/O Connector - 4-port, 10.16 mm spaced, enclosed, friction lock header NOTOR POWER Connector - 4-port, 10.16 mm spaced, enclosed, friction lock header STO Connector - 4-port, 10.16 mm spaced, enclosed, friction lock he			
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Weight g (oz) 2812.3 (99.2) Heatsink (Base) Temperature Range ⁸ °C (°F) 0 - 75 (32 - 167) Storage Temperature Range °C (°F) -40 - 85 (-40 - 185) Form Factor Panel Mount Cooling System - Natural Convection +24V LOGIC Connector - Natural Convection FAN Connector - 2-port, 3.5 mm spaced insert connector FAN Connector - 2-port, 5.08 mm spaced, enclosed, friction lock header AUX COMM Connector - 15-pin, high-density, male D-sub COMM Connector - 4-port, 10.16 mm spaced, enclosed, friction lock header DC POWER Connector - 4-port, 10.16 mm spaced, enclosed, friction lock header FEEDBACK Connector - 4-port, 10.16 mm spaced, enclosed, friction lock header MOTOR POWER Connector - 4-port, 10.16 mm spaced, enclosed, friction lock header AC POWER Connector - 4-port, 10.16 mm spaced, enclosed, friction lock header STO Connector - 4-port, 10.16 mm spaced, enclosed, friction lock header			
Heatsink (Base) Temperature Range®°C (°F)0 - 75 (32 - 167)Storage Temperature Range°C (°F)-40 - 85 (-40 - 185)Form FactorPanel MountCooling System- Natural Convection+24V LOGIC Connector- 2-port, 3.5 mm spaced insert connectorFAN Connector- 2-port, 5.08 mm spaced, enclosed, friction lock headerAUX COMM Connector- 3-pin, 2.5 mm spaced, enclosed, friction lock headerAUX ENCODER Connector- 15-pin, high-density, male D-subCOMM Connector- 4-port, 10.16 mm spaced, enclosed, friction lock headerFEEDBACK Connector- 4-port, 10.16 mm spaced, enclosed, friction lock headerI/O Connector- 26-pin, high-density, female D-subMOTOR POWER Connector- 4-port, 10.16 mm spaced, enclosed, friction lock headerAC POWER Connector- 4-port, 10.16 mm spaced, enclosed, friction lock headerAC POWER Connector- 4-port, 10.16 mm spaced, enclosed, friction lock headerAC POWER Connector- 4-port, 10.16 mm spaced, enclosed, friction lock headerSTO Connector- 8-port, 2.0 mm spaced, enclosed, friction lock header			
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AUX COMM Connector AUX ENCODER Connector COMM Comm Comm Comm Comm Comm Comm Comm Co			
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AC POWER Connector - 4-port, 10.16 mm spaced, enclosed, friction lock header STO Connector - 8-port, 2.0 mm spaced, enclosed, friction lock header		-	
STO Connector - 8-port, 2.0 mm spaced, enclosed, friction lock header		-	
		-	
	STO Connector	-	8-port, 2.0 mm spaced, enclosed, friction lock header

Notes

- 1. 2. 3.
- Can operate on single-phase AC (208 VAC minimum) as long as output power does not exceed 3kW maximum.

 Large inrush current may occur upon initial DC supply connection to DC Bus.

 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_{mus} value attainable when RMS Charge-Based Limiting is used.

 P = (DC Rated Voltage) * (Cont. RMS Current) * 0.95.

 ADVANCED Motion Controls recommends using an external fuse in series with the shunt resistor. A 5 amp motor delay fuse is typical.

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

 Additional cooling and/or heatsink may be required to achieve rated performance.



PIN FUNCTIONS

	COMM - CAN Communication Connector			
Pin	Name	Description / Notes	I/O	
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	I/O
1	COS+	Cooling Input	I
2	COS -	Cosine Input	I
3	SIN +	Cina lanut	I
4	SIN -	Sine Input	I
5	SGN GND	Signal Ground	SGND
6	DATA-	Differential Data Line (Differential Hall A if using 1Vp-p Sine/Cosine encoder. Pin 6 = Hall	I/O
7	DATA+	A+, Pin 7 = Hall A For single-ended Halls leave negative terminal open.)	I/O
8	CLOCK+	Differential Clock Line (Differential Hall B if using 1Vp-p Sine/Cosine encoder. Pin 8 = Hall	0
9	CLOCK-	B+, Pin 9 = Hall B For single-ended Halls leave negative terminal open.)	0
10	REF MARK +	Reference mark from sine/cosine encoder	I
11	RESERVED	Reserved (Differential Hall C if using 1Vp-p Sine/Cosine encoder. Pin 11 = Hall C+, Pin 12 =	-
12	RESERVED	Hall C For single-ended Halls leave negative terminal open.)	-
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	I/O
1	PDO-1	Isolated Programmable Digital Output	0
2	OUTPUT COMMON	Digital Output Common	OGND
3	PDO-2	Isolated Programmable Digital Output	0
4	PAI-1 + (REF+)	Differential Draggemental Angles Input or Deference Cignal Input (4C hit Decelution)	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	OUTPUT PULL-UP	Digital Output Pull-Up For User Outputs	I
9	PDI-5	Isolated Programmable Digital Input	I
10	PDO-3	Isolated Programmable Digital Output	0
11	PDI-1	Isolated Programmable Digital Input	I
12	PDI-2	Isolated Programmable Digital Input	I
13	PDI-3	Isolated Programmable Digital Input	I
14	PDO-4	Isolated Programmable Digital Output	0
15	INPUT COMMON	Digital Input Common (Can Be Used To Pull-Up Digital Inputs)	IGND
16	SGN GND	Signal Ground	SGND
17	PDI-4	Isolated Programmable Digital Input	I
18	PDI-6	Isolated Programmable Digital Input	I
19	PDI-7	Isolated Programmable Digital Input	I
20	ENC A+ OUT	Emulated Encoder Channel A Output	0
21	ENC A- OUT	Emulated Encoder Chamber A Output	0
22	ENC B+ OUT	Ferrilated Francis Channel B Output	0
23	ENC B- OUT	Emulated Encoder Channel B Output	0
24	ENC I+ OUT	Emulated Encoder Index Output	0
25	ENC I- OUT	Emulated Encoder index Odiput	0
26	SGN GND	Signal Ground	SGND

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



AUX ENCODER - Auxiliary Feedback Connector			
Pin	Name	Description / Notes	I/O
1	RESERVED	Reserved	-
2	RESERVED	Reserved	-
3	RESERVED	Reserved	-
4	PDI-8 + (PWM+ / AUX ENC A+ / CAP-B+)	Programmable Digital Input or PWM or Auxiliary Encoder or High Speed Capture (For	I
5	PDI-8 - (PWM- / AUX ENC A- / CAP-B-)	Single-Ended Signals Leave Negative Terminal Open)	I
6	PDI-9 + (DIR+ / AUX ENC B+ / CAP-C+)	Programmable Digital Input or Direction Input or Auxiliary Encoder or High Speed Capture	I
7	PDI-9 - (DIR- / AUX ENC B- / CAP-C-)	(For Single-Ended Signals Leave Negative Terminal Open)	I
8	PDI-10 + (AUX ENC I+ / CAP-A+)	Programmable Digital Input or Auxiliary Encoder or High Speed Capture (For Single-Ended	I
9	PDI-10 - (AUX ENC I- / CAP-A-)	Signals Leave Negative Terminal Open)	I
10	SGN GND	Signal Ground	SGND
11	SGN GND	Signal Ground	SGND
12	SGN GND	Signal Ground	SGND
13	+5V OUT	+5V Encoder Supply Output (Short Circuit Protected)	0
14	PAI-4 +	Differential Programmable Angles Input (42 bit Decelution)	I
15	PAI-4 -	Differential Programmable Analog Input (12-bit Resolution)	I

		Logic Power Connector	
Pin	Name	Description / Notes	I/O
1	LOGIC GND	Logic Supply Ground	GND
2	LOGIC PWR	Logic Supply Input	I

Fan Power Connector			
Pin	Name	Description / Notes	I/O
1	FAN GND	Fan Ground	GND
2	FAN PWR	Fan Power Input	I

		AC Power Connector	
Pin	Name	Description / Notes	I/O
1	L1		I
2	L2	AC Supply Input (Three Phase)	I
3	L3		I
4	CHASSIS	Chassis Ground	CGND

		DC Power Connector	
Pin	Name	Description / Notes	I/O
1	DC-	Power Ground	PGND
2	DC+	DC Power Input	I
3	DC+	External Shunt Resistor Connection. Connect resistor between DC+ and BR.	-
4	BR	External Shuff Resistor Confidentials. Confident resistor between DC+ and BR.	-

	Motor Power Connector			
Pin	Name	Description / Notes	I/O	
1	CHASSIS	Chassis Ground	CGND	
2	MOTOR A	Motor Phase A	0	
3	MOTOR B	Motor Phase A	0	
4	MOTOR C	Motor Phase B	0	

		STO – Safe Torque Off Connector	
Pin	Name	Description / Notes	I/O
1	STO OUTPUT	Safe Torque Off Output	0
2	RESERVED	Reserved	-
3	STO-1 RETURN	Safe Torque Off 1 Return	STORET1
4	STO-1	Safe Torque Off – Input 1	I
5	STO-2 RETURN	Safe Torque Off 2 Return	STORET2
6	STO-2	Safe Torque Off – Input 2	I
7	RESERVED	Reserved	-
8	STO OUT RETURN	Safe Torque Off Output Return	STORETO



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. Note that higher bit rates are possible when using the value stored in NVM.

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

Safe Torque Off (STO) Inputs

The Safe Torque Off (STO) Inputs are dedicated +24VDC max sinking single-ended inputs. A dedicated STO Disable Key connector is included and should be installed for applications where STO is not required.

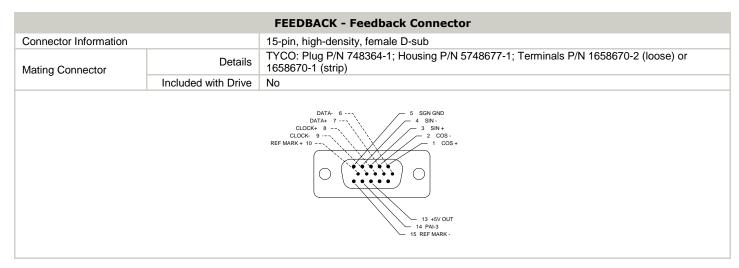
Jumper Settings

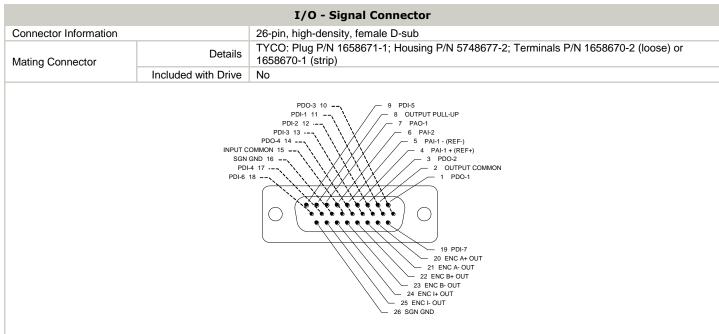
Jumper	Description		Configuration	
	Header Jumper	Not Installed	Pins 1-2	Pins 2-3
J1	CAN bus termination. Install this jumper (2.54mm) on the last drive in a CAN network. This jumper is located on a 4-pin header adjacent to the RS-232 connector. It consists of the two pins furthest from the connector.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



MECHANICAL INFORMATION

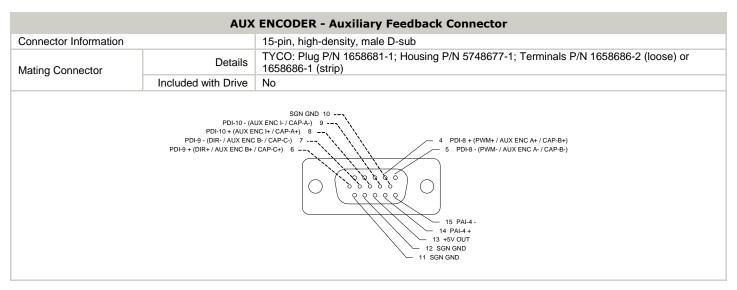
	COMM - CAN Communication Connector		
Connector Information		Shielded, dual RJ-45 socket with LEDs	
Mating Connector	Details	AMP: Plug P/N 5-569552-3	
Mating Connector	Included with Drive	No	
		A B CAN_GND 7	







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



Logic Power Connector			
Connector Information		2-port, 3.5 mm spaced insert connector	
Mating Compater	Details	Phoenix Contact: P/N 1840366	
Mating Connector	Included with Drive	Yes	
		8 8 1 LOGIC GND 2 LOGIC PWR	

Fan Power Connector		
Connector Information		2-port, 5.08 mm spaced, enclosed, friction lock header
Mating Connector	Details	Phoenix Contact: P/N 1757019
Mating Connector	Included with Drive	Yes
		2 FAN PWR 1 FAN GND 1 SS & SS



AC Power Connector			
Connector Information		4-pin, 10.16 mm spaced, enclosed, friction lock header	
Mating Connector	Details	Phoenix Contact: P/N 1913523	
Mating Connector	Included with Drive	Yes	
		4 CHASSIS 3 L3	

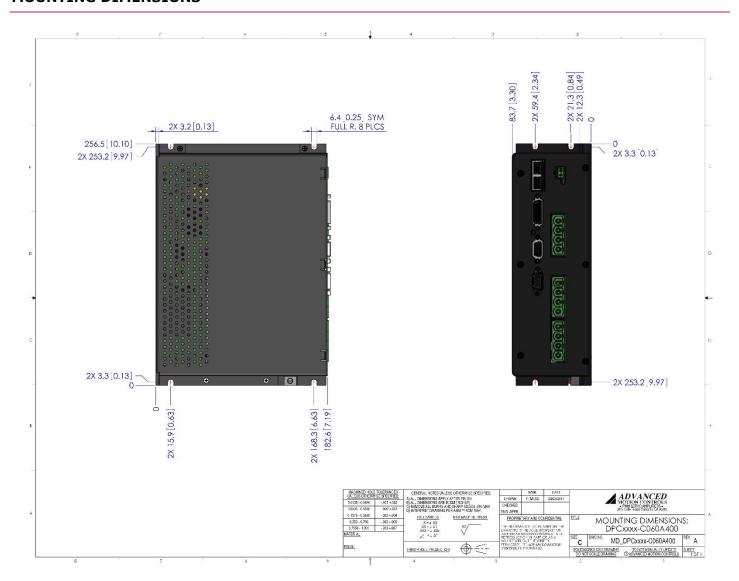
DC Power Connector		
Connector Information		4-pin, 10.16 mm spaced, enclosed, friction lock header
Mating Connector	Details	Phoenix Contact: P/N 1913523
Mating Connector	Included with Drive	Yes
		3 DC+ 1 DC.

	Motor Power Connector		
Connector Information		4-pin, 10.16 mm spaced, enclosed, friction lock header	
Mating Connector	Details	Phoenix Contact: P/N 1913523	
Mating Connector	Included with Drive	Yes	
		4 MOTC 1 CHASSIS	

STO – Safe Torque Off Connector			
Connector Information		8-port, 2.00 mm spaced, enclosed, friction lock header	
Mating Connector	Details	Molex: P/N 51110-0860 (housing); 50394-8051 (pins)	
Mating Connector	Included with Drive	Yes	
STO-2 RETURN 5 3 STO-1 RETURN 1 STO OUTPUT STO OUT RETURN 8 2 RESERVED STO-2 6 4 STO-1		STO OUT RETURN 8 2 RESERVED STO-2 6 4 STO-1	

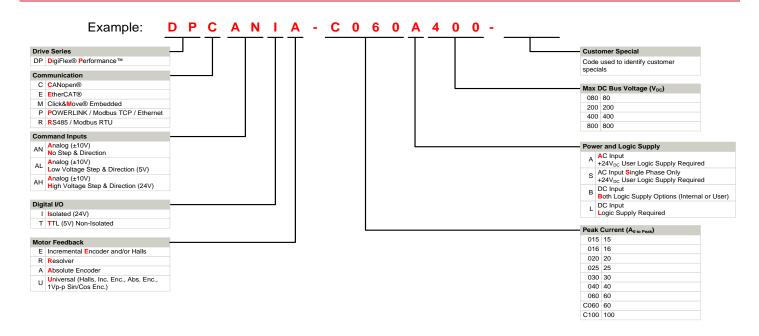


MOUNTING DIMENSIONS





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.



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