

DigiFlex[®] Performance[™] Servo Drive

DZXCANTE-015L080

Description

The DZXCANTE-015L080 digital servo drive is designed to drive brushed and brushless servomotors from a compact form factor ideal for embedded applications. This fully digital drive operates in torque, velocity, or position mode and employs 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, this drive features dedicated and programmable digital and analog inputs and outputs to enhance interfacing with external controllers and devices.

The DZXCANTE-015L080 features a single RS232 interface used for drive configuration and setup. Drive commissioning is accomplished using DriveWare® 7, available for download at www.a-m-c.com. The CANopen interface can be used for online operation in networked applications. All drive and motor parameters are stored in non-volatile memory.

The DZXCANTE-015L080 conforms to the following specifications and is designed to the Environmental Engineering Considerations as defined in MIL-STD-810F.

Power Rang	ge
Peak Current	15 A (10.6 A _{RMS})
Continuous Current	7.5 A (7.5 A _{RMS})
Supply Voltage	10 - 80 VDC





Extende	ed Environment Performance
Ambient Temperature	-40°C to +75°C (-40°F to +167°F)
Storage Temperature	-50°C to +100°C (-58°F to +212°F)
Thermal Shock	-40°C to +75°C (-40°F to +167°F) in 2 min.
Relative Humidity	0 to 95% Non-Condensing
Vibration	30 Grms for 5 min. in 3 axes

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

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
- Halls
- **Incremental Encoder**
- Auxiliary Incremental Encoder

PID + FF Position Loop

PIDF Velocity Loop

- Compact Size, High Power Density
- 12-bit Analog to Digital Hardware
- On-the-Fly Mode Switching
- On-the-Fly Gain Set Switching

INPUTS/OUTPUTS

- 2 High Speed Captures
- 1 Programmable Analog Input (12-bit Resolution)
- 2 Programmable Digital Inputs (Differential)
- 3 Programmable Digital Inputs (Single-Ended)
- 3 Programmable Digital Outputs (Single-Ended)

AGENCY APPROVALS & COMPLIANCE CONSIDERATIONS

- RoHS
- MIL-STD-810F (as stated) MIL-STD-1275D (optional)
- MIL-STD-461E (optional)
- MIL-STD-704F (optional)
- MIL-HDBK-217 (optional)
- Sold & Serviced By:

UL/ cUL 🥑 ELECTROM

Toll Free Phone (877) SERV098 Class A (EMC)

Toll Free Fax (877) SERV099

www.electromate.com

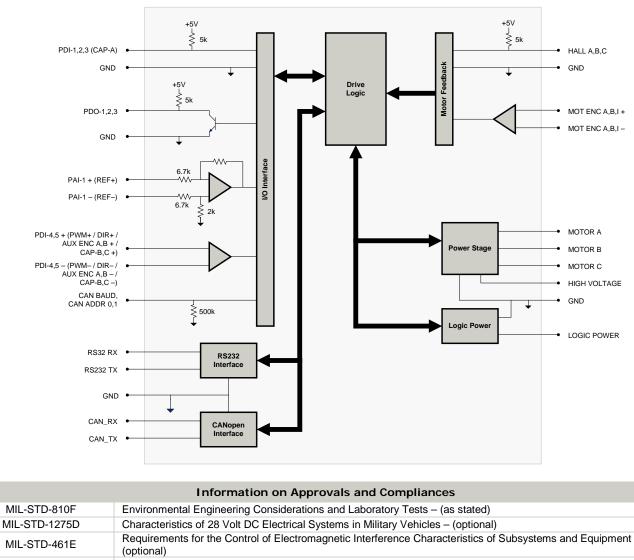
sales@electromate.com

Features

CLASS A (LVD)



BLOCK DIAGRAM



Requirements for the Control of Electromagnetic Interference Characteristics of Subsystems and Equipment – (optional)
Aircraft Electric Power Characteristics – (optional)
Reliability Prediction of Electronic Equipment (MTBF) – (optional)
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 manufactured in electrical and electronic equipment.

Sold & Serviced By: CONTINUE CONTINUES OF C



SPECIFICATIONS

DescriptionUnitsValueOS supp Voltage LanitVDC88DC Bus Own Voltage LinitVDC88DC Bus Under Voltage LinitVDC5 (x/- 5%)Da Bus Under Voltage LinitA (Arms)15 (10.5)Maximum Deak Output Current ¹ A (Arms)7 5 (7.5)Maximum Continuous Output Current ¹ A (Arms)7 5 (7.5)Maximum Continuous Output Current ¹ A (Arms)7 5 (7.5)Maximum Continuous Output Current ¹ W30Maximum Continuous Output Current ¹ W20Maximum Continuous Output Current ¹ W20Maximum Output Power%20Maximum Output Power%20Maximum Output PWM Duly Cycle%20Communication Indracase.CANopen (RS-322 for configuration)Communication Indracase.CANopen (RS-322 for configuration)Communication Indracase.410 V Analog, Encoder Following, Over Hone Network, PVM and Direction, Sequencing, Indexing, JoggingCommunication Indracase.410 V Configuration IncreasesCommunication Indracase.410 V Configuration IncreasesCommunication IndracaseSinuacidal, TrapezoidalMoles of Operation.40 Configuration Increases Paises (Ruselle, Sinutencing, Indexing, JoggingFeedback SupportedCommunication Indracase (Increase)Communication IndracaseCommunication Indracase <th></th> <th></th> <th>Power Specifications</th>			Power Specifications
DC Bis Over Voltage Limit VDC 88 DC Bus Under Voltage Limit VDC 6 (+ 5%) DC Bus Under Voltage Limit VDC 6 (+ 5%) Maximum Peak Output Current ¹ A (Arms) 7 5 (7.5) Maximum Continuous Output Current ¹ A (Arms) 7 5 (7.5) Maximum Continuous Output Power W 570 Maximum Continuous Output Power W 50 Maximum Continuous Output Over W 50 Maximum Continuous Output Over W 50 Maximum Over Output Power W 20 Minimum Load Inductance (Line-To-Line) ¹ µH 20 Maximum Over POWD Uty Oycle % 92 Description Units CANopen (RS-232 for configuration) Communication Interfaces - CONtool Specifications Communication Methods - Elo V Analog. Encoder Folowing. Over the Network, PWM and Direction, Sequencing. Indexing, Jogging Feedback Supported - Elo V Analog. Encoder Folowing. Over the Network, PWM and Direction, Sequencing. Indexing, Jogging Modes of Operation - Elo V Consolion, Auxiliary Incremental Encoder, Halls, Incremental Encoder Commut	Description	Units	•
DC Bus Under Voltage Limit VDC 8 Logic Supply Voltage VDC 5 (#/- 5%) Maximum Red Vogut Current ¹ A (Arms) 15 (10.6) Maximum Continuous Output Current ¹ A (Arms) 7.5 (7.5) Maximum Continuous Output Current ¹ A (Arms) 7.5 (7.5) Maximum Continuous Output Power W 30 Maximum Continuous Output Power W 30 Maximum Continuous Output Power W 30 Maximum Power Dissipation at Continuous Current W 30 Maximum Power Dissipation at Continuous Current W 30 Sutching Frequency KHz 20 Maximum Robust Continuous Output PWM Duty Cycle % 92 Communication Interfaces - e10 V Analog, Encoder Foldwing, Over the Network, PWM and Direction, Sequencing, Indexing, Jogging Commutation Methods - e10 VA Desito, Availiary Incremental Encoder, Halls, Incremental Encoder Commutation Methods - Sinusoidal, Tapezoidal Modes Operation - Clobe Votory, Foldre Votore, Policy Pol	DC Supply Voltage Range	VDC	10 - 80
Logic Supply Voltage VDC 6 (+/- 5%) Maximum Peak Output Current ¹ A (Arms) 15 (10.6) Maximum Peak Output Current ¹ A (Arms) 7.5 (7.5) Maximum Continuous Output Power W 570 Maximum Continuous Output Power W 30 Internal Bus Capacitance ¹ µF 20 Minimum Load Inductance (Line-To-Line) ¹ µH 250 Switching Frequency KHz 20 Maximum Output PVM Duty Cycle % 92 Communication Interfaces Control Specifications Value Communication Interfaces - ±10 V Analog, Encoder Following, Over the Network, PWM and Direction, Sequencing, Indexing, Jogging Feedback Supported - ±10 V Costion, Audilary Incremental Encoder Communication Methods - Sinscield. Modes of Operation - ±10 V Costion, Audilary Incremental Encoder, Note Note Note Note Note Note Note Note	DC Bus Over Voltage Limit	VDC	88
Maximum Peak Output Current ¹ A (Arms) 15 (10.6) Maximum Continuous Output Current ¹ A (Arms) 7.5 (7.5) Maximum Continuous Output Overent W 570 Maximum Power Dissipation at Continuous Current W 30 Internal Bus Capacitance ¹ µF 20 Minimum Load Inductance (Line-To-Line) ¹ µH 250 Switching Frequency kHz 20 Maximum Continuous Output PVM Duty Cycle % B 2 Control Specifications Output Symported - CANopen (RS-232 for configuration) Communication Interfaces - e10 V Analog. Encoder Following. Over the Network, PVM and Direction, Sequencing, Indexing, Jogging Feedback Supported - ±10 VC Position, Audiary Incremental Encoder Communication Interfaces - ±10 VC Position, Audiary Incremental Encoder Modes of Operation - ±10 VC Position, Audiary Incremental Encoder Modes of Operation - Elsinsoidal, Trapezoidal Modes of Operation - Elsinsoidal, Trapezoidal Modes of Operation - Elsinsoidal, Trapezoidal	DC Bus Under Voltage Limit	VDC	8
Maximum Continuous Output Current ¹ A (Arms) 7.5 (7.5) Maximum Continuous Output Power W 570 Maximum Continuous Output Power W 570 Maximum Power Dissipation at Continuous Current W 30 Internal Bus Capacitance ¹ µF 20 Maximum Output PWM Duty Cycle % 32 Description Units Value Command Sources - CANopen (RS-232 for configuration) Command Sources - CANopen (RS-232 for configuration) Communication Interfaces - CANopen (RS-232 for configuration) Commutation Methods - ±10 VAD cycle Sinch Auxiliary Incremental Encoder, Halls, Incremental Encoder Modes of Operation - £10 VAD cycle Sinch Auxiliary Incremental Encoder, Halls, Incremental Encoder Modes of Operation - Closed Loop Vector, Single Phase (Bushed, Voice Coil, Inductive Load), Three Phase (Bushed) Motors Supported - Closed Loop Vector, Single Phase (Bushed, Voice Coil, Inductive Load), Three Phase (Bushed, Voice Coil	Logic Supply Voltage	VDC	5 (+/- 5%)
Maximum Continuous Output Power W 570 Maximum Power Dissipation at Continuous Current W 30 Internal Bus Capacitance ³ μF 20 Minimum Load Inductance (Line-To-Line) ⁴ μH 250 Switching Frequency kHz 20 Maximum Output PWM Duy Cycle % 92 Control Specifications Command Sources - CANopen (RS-232 for configuration) Command Sources - CANopen (RS-232 for configuration) Gommand Sources - s10 V Analog, Encoder Following, Over the Network, PWM and Direction, Sequencing, Indexing, Jogging Feedback Supported - s10 VADO Sinusoicial, Trapezoidal Control Specifications - Sinusoicial, Trapezoidal Modes of Operation - Sinusoicial, Trapezoidal Modes of Operation - Configurabie Functions, Over Current, Over Temperature (Drive & Motor), Over Voltage. Short Circuit (Phase-Phase Anase-Ground), Under Voltage Programmable Digital Inputs/Outputs (PDIs/PODe) - S/3 Programmable Analog Inputs/Outputs (PDIs/PADes) - 1/0 Pri	Maximum Peak Output Current ¹	A (Arms)	15 (10.6)
Maximum Power Dissipation at Continuous Current W 30 Internal Bus Gapacitance ¹ μ F 20 Minimum Load Inductance (Line-To-Line) ¹ μ H 250 Switching Frequency KHz 20 Maximum Output PWM Duty Cycle % 92 Control Specifications Description Units Value Communication Interfaces - cANopen (RS-232 for configuration) Communication Interfaces - cANopen (RS-232 for configuration) Communication Methods - e10 V Analog, Encoder Following, Over the Network, PVM and Direction, Sequencing, Indexing, Jogging Feedback Supported - e10 V CP Cosition, Auxiliary Incremental Encoder Commutation Methods - Sinusoidal, Trapezoidal Mode, cyclic Synchronous Position Mode Profile Current, Profile Position, Cyclic Synchronous Current Mode, Cyclic Synchronous Velocity Modes of Operation - Closed Loop Vector, Single Phase (Brushet, Voice Coil, Inductive Load), Three Phase (Brushets) Mode, Cyclic Synchronous Position Mode - Single Phase (Brushet, Voice Coil, Inductive Load), Three Phase (Brushets) Programmable Analog Inputs/Outp	Maximum Continuous Output Current ²	A (Arms)	7.5 (7.5)
Internal Bus Capacitance ¹ µF 20 Minimum Load Inductance (Line To-Line) ¹ µH 250 Maximum Output PWM Duty Cycle % 92 Maximum Output PWM Duty Cycle % 92 Control Specifications Description Units Value Communication Interfaces - CANopen (RS-232 for configuration) Communication Nethods - ±10 VCD Position, Auxiliary Incremental Encoder, Halls, Incremental Encoder Communication Nethods - Sinusoidal, Trapezoidal Motors Supported - Closed Loop Vector, Single Phase (Brushed, Voice Coil, Inductive Load), Three Phase (Brushess) Hardware Protection - 40+ Configurable Functions, Over Temperature (Drive & Motor), Over Voltage, Short Circuit (Phase-Phase & Phase-Ground), Under Voltage Programmable Digital Inputs/Outputs (PAIs/PAOs) - 1/0 Primary I/O Loop Sample Time µs 50	Maximum Continuous Output Power	W	570
Minimum Load Inductance (Line-To-Line) ^{id} μH 250 Switching Frequency kHz 20 Maximum Output PVM Duty Cycle % 92 Description Units Value Communication Interfaces - ±10 V Analog, Encoder Following, Over the Network, PVM and Direction, Sequencing, Indexing, Jogging Feedback Supported - ±10 VAnalog, Encoder Following, Over the Network, PVM and Direction, Sequencing, Indexing, Jogging Feedback Supported - ±10 VAnalog, Encoder Following, Over the Network, PVM and Direction, Sequencing, Indexing, Jogging Kotes of Operation - ±10 VAnalog, Encoder Following, Over the Network, PVM and Direction, Sequencing, Indexing, Jogging Modes of Operation - ±10 VDC Position, Auxiliary Incremental Encoder Commutation Methods - Sinusoidal, Trapezoidal Modes of Operation - Closed Loop Vectory, Single Phase (Brushed, Voice Coil, Inductive Load), Three Phase (Brushless) Motors Supported - Closed Loop Vectory, Single Phase (Brushed, Voice Coil, Inductive Load), Three Phase (Brushless) Programmable Digital Inputs/Outputs (PDIs/PDOs) - 5/3 Programmable Analog Inputs/Outputs (PAIs/PAOs) - 1/0	Maximum Power Dissipation at Continuous Current	W	30
Switching Frequency KHz 20 Maximum Output PVM Duty Cycle % 92 Description Control Specifications Command Sources - C ANopen (RS-232 for configuration) Command Sources - C Anopen (RS-232 for configuration) Generation with and Direction, Sequencing, Indexing, Jogging Feedback Supported - #10 V Analog, Encoder Following, Over the Network, PVM and Direction, Sequencing, Indexing, Jogging Gommand Sources - Change, Encoder Following, Over the Network, PVM and Direction, Sequencing, Indexing, Jogging Feedback Supported - Sinusoidal, Trapezoidal Notice Modes of Operation - Sinusoidal, Trapezoidal Notice Coil, Inductive Load). Three Phase (Brushels) Modes of Operation - Else Supported - Else Supported Hardware Protection - (Phase-Phase & Phase-Ground), Under Voitage Notice Coil, Inductive Load). Three Phase (Brushels) Programmable Analog Inputs/Outputs (PDIs/PDOs) - 1/0 Promand Control Support (Phase-Phase & Phase-Ground), Under Voitage Primary I/O Logic Level - 5/3 100 1	Internal Bus Capacitance ³	μF	20
Maximum Output PVM Duty Cycle % 92 Description Control Specifications Operation Units Value Communication Interfaces . CANopen (RS-232 for configuration) Command Sources . ±10 V Analog. Encoder Following, Over the Network, PVM and Direction, Sequencing, Indexing, Jogging Feedback Supported . ±10 VDC Position, Auxiliary Incremental Encoder, Halls, Incremental Encoder Commutation Methods . ±10 VDC Position, Auxiliary Incremental Encoder, Colic Synchronous Current Mode, Cyclic Synchronous Velocity Mode, Cyclic Synchronous Current Mode, Cyclic Synchronous Velocity Mode, Cyclic Synchronous Position Mode Maximum Protection . Closed Loop Vector, Single Phase (Brushed, Voice Coil, Inductive Load), Three Phase (Brushes) Hardware Protection . 5/3 Commutation, Under Voitage Programmable Digital Inputs/Outputs (PDIs/PDOs) . 5/3 Voice Programmable Digital Inputs/Outputs (PAIs/PAOs) . 1/0 Primary I/O Logic Level . 5/0 . Output Symple Time µs 100 . Position Loop Sample Time µs 100 . .	Minimum Load Inductance (Line-To-Line)4	μΗ	250
Description Control Specifications 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 Commutation Methods - Sinusoidal, Trapezoidal Modes of Operation - Closed Loop Vector, Single Phase (Brushed, Voice Coil, Inductive Load), Three Phase (Brushes) Motors Supported - Closed Loop Vector, Single Phase (Brushed, Voice Coil, Inductive Load), Three Phase (Brushes) 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) - 5/3 Programmable Analog Inputs/Outputs (PAIs/PAOS) - 1/0 Primary I/O Logic Level - 5/7 Ourent Loop Sample Time µs 50 Description µs 100 Maximum Encoder Frequency MHz 20 (5 pre-quadrature) Method 20 (5 pre-quadrature) Value <t< td=""><td>Switching Frequency</td><td>kHz</td><td>20</td></t<>	Switching Frequency	kHz	20
DescriptionUnitsValueCommunication Interfaces-CANopen (RS-232 for configuration)Command Sources-±10 V Analog, Encoder Following, Over the Network, PWM and Direction, Sequencing, Indexing, JoggingFeedback Supported-±10 VDC Position, Auxiliary Incremental Encoder, Halls, Incremental EncoderCommutation Methods-Sinusoidal, TrapezoidalModes of Operation-Cicced Lorg Vector, Single Phase (Brushed, Voice Coil, Inductive Load), Three Phase (Brushes)Motors Supported-Cicced Lorg Vector, Single Phase (Brushed, Voice Coil, Inductive Load), Three Phase (Brushes)Hardware Protection-5/3Programmable Digital Inputs/Outputs (PDIs/PDOs)-5/3Programmable Analog Inputs/Outputs (PAIs/PAOs)-1/0Primary I/O Logic Level-5/7Velocity Loop Sample Timeµs50Velocity Loop Sample Timeµs100Postino Loop Sample Timeµs100Maximum Encoder FrequencyMHz20 (5 pre-quadrature)Agency ApprovalsCorff40+0.85 (Au-150-801 (Au-250 (Ciccals as (LVD), CE Class A (EMC))Size (H x W x D)mm (n)63.5 x 50.8 x 24.4 (2.5 x 2 x 1.0)Weightg (oz)105 (37)Baseplat Operating Temperature Range°C (°F)40-85 (40-185)Ambient Temperature Range°C (°F)40-0.85 (40-1867)	Maximum Output PWM Duty Cycle	%	92
DescriptionUnitsValueCommunication Interfaces-CANopen (RS-232 for configuration)Command Sources-±10 V Analog, Encoder Following, Over the Network, PVM and Direction, Sequencing, Indexing, JoggingFeedback Supported-±10 VDC Position, Auxiliary Incremental Encoder, Halls, Incremental EncoderCommutation Methods-Sinusoidal, TrapezoidalModes of Operation-Closed Log Vector, Single Phase (Brushed, Voice Coil, Inductive Load), Three Phase (Brushes)Motors Supported-Closed Log Vector, Single Phase (Brushed, Voice Coil, Inductive Load), Three Phase (Brushess)Hardware Protection-6/3Programmable Digital Inputs/Outputs (PDIs/PDOs)-Programmable Analog Inputs/Outputs (PIs/PAOs)-Programmable Analog Inputs/Outputs (PAIs/PAOs)-Programmable Analog Inputs/Outputs (PAIs/PAOs)			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, Halls, Incremental Encoder Commutation Methods - Sinusoidal, Trapezoidal Modes of Operation - Sinusoidal, Trapezoidal Modes of Operation - Closed Loop Vector, Single Phase (Brushles, Voice Coll, Inductive Load), Three Phase (Brushless) Motors Supported - Closed Loop Vector, Single Phase (Brushles, Voice Coll, Inductive Load), Three Phase (Brushless) Hardware Protection - 5/3 Programmable Digital Inputs/Outputs (PDIs/PDOs) - 5/3 Programmable Analog Inputs/Outputs (PAIs/PAOs) - 1/0 Primary I/O Logic Level - 5/3 Current Loop Sample Time µs 50 Velocity Loop Sample Time µs 100 Postition Loop Sample Time µs 100 Maximum Encoder Frequency MHz 20 (5 pre-quadrature) Maximum Encoder Frequency MHz 20 (5 pre-quadrature) Size (H x W x D) mm (in) 63.5 x 50.8 x 24.4 (2.5 x 2 x 1.0) Weight g(o	Description	Units	•
Feedback Supported - ±10 VDC Position, Auxiliary Incremental Encoder, Halls, Incremental Encoder Commutation Methods - Sinusoidal, Trapezoidal Modes of Operation - Sinusoidal, Trapezoidal Modes of Operation - Profile Current, Profile Velocity, Profile Position, Cyclic Synchronous Current Mode, Cyclic Synchronous Velocity Modes, Or Operation - Closed Loop Vector, Single Phase (Brushed, Voice Coil, Inductive Load), Three Phase (Brushels) Moder, Supported - Closed Loop Vector, Single Phase (Brushed, Voice Coil, Inductive Load), Three Phase (Brushels) Hardware Protection - Closed Loop Vector, Single Phase (Brushed, Voice Coil, Inductive Load), Three Phase (Brushels) Programmable Digital Inputs/Outputs (PDIs/PDOs) - 5/3 Programmable Analog Inputs/Outputs (PAIs/PAOs) - 1/0 Primary I/O Logic Level - 5/V TTL Current Loop Sample Time µs 50 Velocity Loop Sample Time µs 100 Maximum Encoder Frequency MHz 20 (5 pre-quadrature) Maximum Encoder Frequency MHZ 20 (5 pre-quadrature) Agency Approvals - RoHS, MIL-STD-810F (as stated), MIL-STD-1275D (optional), MIL-STD-704F (optional), MIL-MDK	Communication Interfaces	-	CANopen (RS-232 for configuration)
Commutation Methods - Sinusoidal, Trapezoidal Modes of Operation - Profile Current, Profile Velocity, Profile Position, Cyclic Synchronous Current Mode, Cyclic Synchronous Velocity Mode, Cyclic Synchronous Position Mode - Closed Loop Vector, Single Phase (Brushed, Voice Coil, Inductive Load), Three Phase (Brushless) Hardware Protection - Closed Loop Vector, Single Phase (Brushles, Voice Coil, Inductive Load), Three Phase (Brushless) Programmable Digital Inputs/Outputs (PDIs/PDOs) - 5/3 Programmable Analog Inputs/Outputs (PAIs/PAOs) - 1/0 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 Encoder Frequency MHz 20 (5 pre-quadrature) Agency Approvals - RoHS, MIL-STD-810F (as stated), MIL-STD-745E (optional), MIL-STD-704F (optional), MIL-HDBK-217 (optional), MIL-STD-746E (optional), MIL-STD-704F (optional), MIL-HDBK-217 (optional), MIL-STD-746E (optional), MIL-STD-704F (optional), MIL-HDBK-217 (optional), UL, CL, CE Class A (LVD), CE Class A (EMC) Size (H x W x D) mm (in) 63.5 x 28.4 x 24.4 (2.5 x 2 x 1.0) Weight g (oz) 105 (3.7)	Command Sources	-	±10 V Analog, Encoder Following, Over the Network, PWM and Direction, Sequencing, Indexing, Jogging
Modes of Operation Profile Current, Profile Velocity, Profile Position, Cyclic Synchronous Current Mode, Cyclic Synchronous Velocity Modes, Cyclic Synchronous Position Mode Modes of Operation Closed Loop Vector, Single Phase (Brushed, Voice Coil, Inductive Load), Three Phase (Brushelss) 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) - 5/3 Programmable Analog Inputs/Outputs (PAIs/PAOs) - 1/0 Primary I/O Logic Level - 50 Current Loop Sample Time μs 50 Velocity Loop Sample Time μs 100 Position Loop Sample Time μs 100 Description Units Value Agency Approvals Cortext Specifications Value Size (H x W x D) mm (n) 63.5 x 50.8 x 24.4 (2.5 x 2 x 1.0) Value Weight g (oz) 105 (3.7) Saseplate Operating Temperature Range C (°F) -40 - 85 (40 - 185)	Feedback Supported	-	±10 VDC Position, Auxiliary Incremental Encoder, Halls, Incremental Encoder
Modes of OperationMode, Cyclic Synchronous Position ModeMotors Supported-Closed Loop Vector, Single Phase (Brushed, Voice Coil, Inductive Load), Three Phase (Brushless)Hardware Protection40+ Configurable Functions, Over Current, Over Temperature (Drive & Motor), Over Voltage, Short Circuit (Phase-Phase & Phase-Ground), Under VoltageProgrammable Digital Inputs/Outputs (PDIs/PDOs)-5/3Programmable Analog Inputs/Outputs (PAIs/PAOs)-1/0Primary I/O Logic Level-5V TTLCurrent Loop Sample Timeμs50Velocity Loop Sample Timeμs100Position Loop Sample Timeμs100Maximum Encoder FrequencyMHz20 (5 pre-quadrature)MerchanderUnitsValueAgency ApprovalsRoHS, MIL-STD-810F (as stated), MIL-STD-1275D (optional), MIL-STD-461E (optional), MIL-STD-704F (optional), MIL-HDBK-217 (optional), MIL-STD-461E (optional), MIL-STD-704F (optional), MIL-HDBK-217 (optional), UL, cL, CE Class A (LVD), CE Class A (EMC)Size (H x W x D)mm (in)63.5 x 50.8 x 24.4 (2.5 x 2 x 1.0)Weightg (oz)105 (3.7)Baseplate Operating Temperature Range ⁶ °C (°F)-40 - 85 (40 - 185)Ambient Temperature Range°C (°F)-40 - 75 (-40 - 167)	Commutation Methods	-	Sinusoidal, Trapezoidal
Hardware Protection40+ Configurable Functions, Over Current, Over Temperature (Drive & Motor), Over Voltage, Short Circuit (Phase-Phase & Phase-Ground), Under VoltageProgrammable Digital Inputs/Outputs (PDIs/PDOs)-5/3Programmable Analog Inputs/Outputs (PAIs/PAOs)-1/0Primary I/O Logic Level-5V TTLCurrent Loop Sample Timeµs50Velocity Loop Sample Timeµs100Position Loop Sample Timeµs100Maximum Encoder FrequencyMHz20 (5 pre-quadrature)Maximum Encoder FrequencyUnitsVelocity Loop Sample TimeOescriptionUnitsValueValue0100Maximum Encoder FrequencyUnitsValueVelocity Loop Sample Timeµs100Maximum Encoder FrequencyMHz20 (5 pre-quadrature)Maximum Encoder FrequencyUnitsValueVelocity Loop Sample Timeµs100Maximum Encoder FrequencyUnitsValueVelocity Loop Sample Timeµs100Maximum Encoder FrequencyMHz20 (5 pre-quadrature)Mechanical Specifications (optional), MIL-STD-1275D (optional), MIL-STD-461E (optional), MIL-STD-704F (optional), MIL-HDBK-217 (optional), UL, cUL, CE Class A (LVD), CE Class A (EMC)Size (H x W x D)mm (in)63.5 x 50.8 x 24.4 (2.5 x 2 x 1.0)Weightg (oz)105 (3.7)Baseplate Operating Temperature Range ⁶ °C (°F)-40 - 85 (-40 - 185)Ambient Temperature Range°C (°F)-40 - 75 (-40 - 167) </td <td>Modes of Operation</td> <td>-</td> <td></td>	Modes of Operation	-	
Hardware Protection Image Protection (Phase-Phase & Phase & Phase-Ground), Under Voltage Programmable Digital Inputs/Outputs (PDIs/PDOs) - 5/3 Programmable Analog Inputs/Outputs (PAIs/PAOs) - 1/0 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 Encoder Frequency MHz 20 (5 pre-quadrature) Maximum Encoder Frequency MHz 20 (5 pre-quadrature) Agency Approvals - RoHS, MIL-STD-810F (as stated), MIL-STD-1275D (optional), MIL-STD-461E (optional), MIL-STD-704F (optional), MIL-STD-461E (optional), MIL-STD-461E (optional), MIL-STD-461E (optional), MIL-STD-461E (optional), M	Motors Supported	-	Closed Loop Vector, Single Phase (Brushed, Voice Coil, Inductive Load), Three Phase (Brushless)
Programmable Analog inputs/Outputs (PAIs/PAOs) - 1/0 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 Encoder Frequency MHz 20 (5 pre-quadrature) Velocity Loop Sample Time Description Units Value Agency Approvals Size (H x W x D) mm (in) 63.5 x 50.8 x 24.4 (2.5 x 2 x 1.0) Weight g (oz) 105 (3.7) Baseplate Operating Temperature Range °C (°F) -40 - 85 (-40 - 185) Ambient Temperature Range °C (°F) -40 - 75 (-40 - 167)	Hardware Protection	-	
Primary I/O Logic Level-5V TTLCurrent Loop Sample Timeμs50Velocity Loop Sample Timeμs100Position Loop Sample Timeμs100Maximum Encoder FrequencyMHz20 (5 pre-quadrature)Metchanical SpecificationsValueOescriptionUnitsValueAgency Approvals-RoHS, MIL-STD-810F (as stated), MIL-STD-1275D (optional), MIL-STD-461E (optional), MIL-STD-704F (optional), MIL-HDBK-217 (optional), UL, cUL, CE Class A (EMC)Size (H x W x D)mm (in)63.5 x 50.8 x 24.4 (2.5 x 2 x 1.0)Weightg (oz)105 (3.7)Baseplate Operating Temperature Range°C (°F)-40 - 85 (-40 - 185)Ambient Temperature Range°C (°F)-40 - 75 (-40 - 167)	Programmable Digital Inputs/Outputs (PDIs/PDOs)	-	5/3
Current Loop Sample Time µs 50 Velocity Loop Sample Time µs 100 Position Loop Sample Time µs 100 Maximum Encoder Frequency MHz 20 (5 pre-quadrature) Velocity Loop Sample Time Velocity Loop Sample Time Maximum Encoder Frequency MHz 20 (5 pre-quadrature) Velocity Colspan="2">Velocity Colspan="2">Velocity Colspan="2">Velocity Loop Sample Time Description Velocity Colspan="2">Velocity Colspan="2" Maximum Encoder Frequency MHz 20 (5 pre-quadrature) Velocity Colspan="2">Velocity Colspan="2" Velocity Colspan="2" Velocity Colspan="2" Velocity Colspan="2" Velocity Colspan="2" Velocity Colspan="2" Velocity Colspan="2" Agency Approvals Mm (in) 63.5 x 50.8 x 24.4 (2.5 x 2 x 1.0) Size (H x W x D) Mm (in) 63.5 x 50.	Programmable Analog Inputs/Outputs (PAIs/PAOs)	-	1/0
Velocity Loop Sample Time µs 100 Position Loop Sample Time µs 100 Maximum Encoder Frequency MHz 20 (5 pre-quadrature) Met-hanical Specifications Description Units Value Agency Approvals C RoHS, MIL-STD-810F (as stated), MIL-STD-1275D (optional), MIL-STD-461E (optional), MIL-STD-704F (optional), MIL-HDBK-217 (optional), UL, cUL, CE Class A (LVD), CE Class A (EMC) Size (H x W x D) mm (in) 63.5 x 50.8 x 24.4 (2.5 x 2 x 1.0) Weight g (oz) 105 (3.7) Baseplate Operating Temperature Range ⁵ °C (°F) -40 - 85 (-40 - 185) Ambient Temperature Range °C (°F) -40 - 75 (-40 - 167)	Primary I/O Logic Level	-	5V TTL
Position Loop Sample Time µs 100 Maximum Encoder Frequency MHz 20 (5 pre-quadrature) Description Mechanical Specifications Description Units Value Agency Approvals RoHS, MIL-STD-810F (as stated), MIL-STD-1275D (optional), MIL-STD-461E (optional), MIL-STD-704F (optional), MIL-STD-704F Size (H x W x D) mm (in) 63.5 x 50.8 x 24.4 (2.5 x 2 x 1.0) Weight g (oz) 105 (3.7) Baseplate Operating Temperature Range ⁵ °C (°F) -40 - 85 (-40 - 185) Ambient Temperature Range °C (°F) -40 - 75 (-40 - 167)	Current Loop Sample Time	μs	50
Maximum Encoder Frequency MHz 20 (5 pre-quadrature) Maximum Encoder Frequency Description Value Value <t< td=""><td>Velocity Loop Sample Time</td><td>μs</td><td>100</td></t<>	Velocity Loop Sample Time	μs	100
Mechanical Specifications Description Value Agency Approvals - RoHS, MIL-STD-810F (as stated), MIL-STD-1275D (optional), MIL-STD-461E (optional), MIL-STD-704F (optional), MIL-HDBK-217 (optional), UL, cUL, CE Class A (LVD), CE Class A (EMC) Size (H x W x D) mm (in) 63.5 x 50.8 x 24.4 (2.5 x 2 x 1.0) Weight g (oz) 105 (3.7) Baseplate Operating Temperature Range °C (°F) -40 - 85 (-40 - 185) Ambient Temperature Range °C (°F) -40 - 75 (-40 - 167)	Position Loop Sample Time	μs	100
Description Value Agency Approvals RoHS, MIL-STD-810F (as stated), MIL-STD-1275D (optional), MIL-STD-461E (optional), MIL-STD-704F Size (H x W x D) mm (in) 63.5 x 50.8 x 24.4 (2.5 x 2 x 1.0) Weight g (oz) 105 (3.7) Baseplate Operating Temperature Ranges °C (°F) -40.85 (-40.185) Ambient Temperature Range °C (°F) -40.75 (-40.167)	Maximum Encoder Frequency	MHz	20 (5 pre-quadrature)
Agency Approvals RoHS, MIL-STD-810F (as stated), MIL-STD-1275D (optional), MIL-STD-461E (optional), MIL-STD-704F (optional), MIL-HDBK-217 (optional), UL, CUL, CE Class A (LVD), CE Class A (EMC) Size (H x W x D) mm (in) 63.5 x 50.8 x 24.4 (2.5 x 2 x 1.0) Weight g (oz) 105 (3.7) Baseplate Operating Temperature Range ⁵ °C (°F) -40 - 85 (-40 - 185) Ambient Temperature Range °C (°F) -40 - 75 (-40 - 167)		Γ	Mechanical Specifications
Agency Approvals Imagency (optional), MIL-HDBK-217 (optional), UL, cUL, CE Class A (LVD), CE Class A (EMC) Size (H x W x D) mm (in) 63.5 x 50.8 x 24.4 (2.5 x 2 x 1.0) Weight g (oz) 105 (3.7) Baseplate Operating Temperature Range ⁵ °C (°F) -40 - 85 (-40 - 185) Ambient Temperature Range °C (°F) -40 - 75 (-40 - 167)	Description	Units	
Weight g (oz) 105 (3.7) Baseplate Operating Temperature Range ⁵ °C (°F) -40 - 85 (-40 - 185) Ambient Temperature Range °C (°F) -40 - 75 (-40 - 167)	Agency Approvals	-	
Baseplate Operating Temperature Range ⁵ °C (°F) -40 - 85 (-40 - 185) Ambient Temperature Range °C (°F) -40 - 75 (-40 - 167)	Size (H x W x D)	mm (in)	63.5 x 50.8 x 24.4 (2.5 x 2 x 1.0)
Ambient Temperature Range °C (°F) -40 - 75 (-40 - 167)	Weight	g (oz)	105 (3.7)
	Baseplate Operating Temperature Range ⁵	°C (°F)	-40 - 85 (-40 - 185)
Storage Temperature Range °C (°F) -50 - 100 (-58 - 212)	Ambient Temperature Range	°C (°F)	-40 - 75 (-40 - 167)
	Storage Temperature Range	°C (°F)	-50 - 100 (-58 - 212)
Thermal Shock °C (°F) -40 - 75 (-40 - 167) in 2 minutes	Thermal Shock	°C (°F)	-40 - 75 (-40 - 167) in 2 minutes
Vibration Grms 30 for 5 minutes in 3 axes	Vibration	Grms	30 for 5 minutes in 3 axes
Relative Humidity - 0 - 95% Non-Condensing	Relative Humidity	-	0 - 95% Non-Condensing
Cooling System - Natural Convection	Cooling System	-	Natural Convection
Form Factor - PCB Mounted	Form Factor	-	PCB Mounted
P1 Connector - 30-pin, 2.54 mm spaced, dual-row header	P1 Connector	-	30-pin, 2.54 mm spaced, dual-row header
P2 Connector - 24-pin, 2.54 mm spaced, dual-row header	P2 Connector	-	24-pin, 2.54 mm spaced, dual-row 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. It is recommended to connect a 100μ F / 100V electrolytic capacitor between High Voltage and Power Ground. 1.

2.

3.

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

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





PIN FUNCTIONS

		P1 - Signal Connector	
Pin	Name	Description / Notes	1/0
1	CAN ADDR 0		I
2	CAN ADDR 1	CAN Bus Address Selector	I
3	PAI-1 + (REF+)	Differential Decementation Academic Insult on Deferences Classed Insult (40 bit Decementation)	I
4	PAI-1 - (REF-)	Differential Programmable Analog Input or Reference Signal Input (12-bit Resolution)	I
5	GND	Ground	GND
6	CAN BAUD	CAN bus bit rate selector.	I
7	PDO-1	Programmable Digital Output	0
8	PDO-2	Programmable Digital Output	0
9	PDO-3	Programmable Digital Output	0
10	PDI-1	Programmable Digital Input	I
11	PDI-2	Programmable Digital Input	I
12	PDI-3 (CAP-A)	Programmable Digital Input or High Speed Capture	I
13	RS232 RX	Receive Line (RS-232)	I
14	CAN RX	CAN Receive Line (Requires External Transceiver)	I
15	RS232 TX	Transmit Line (RS-232)	0
16	CAN TX	CAN Transmit Line (Requires External Transceiver)	0
17	PDI-4 + (PWM+ / AUX ENC A+ / CAP-B+)	Programmable Digital Input or PWM or Auxiliary Encoder or High Speed Capture (For	I
18	PDI-4 - (PWM- / AUX ENC A- / CAP-B-)	Single-Ended Signals see DZ HW Installation Manual)	I
19	PDI-5 + (DIR+ / AUX ENC B+ / CAP-C+)	Programmable Digital Input or Direction or Auxiliary Encoder or High Speed Capture (For	I
20	PDI-5 - (DIR- / AUX ENC B- / CAP-C-)	Single-Ended Signals see DZ HW Installation Manual)	I
21	GND	Ground	GND
22	HALL A	Single-ended Commutation Sensor Input (For Differential Inputs See MC1XDZ01 Datasheet	I
23	HALL B	For Recommended Signal Conditioning)	I
24	HALL C	for recommended olginal conditioning)	I
25	MOT ENC I+	Differential Encoder Index Input (See MC1XDZ01 Datasheet For Recommended Signal	1
26	MOT ENC I-	Conditioning)	1
27	MOT ENC A+	Differential Encoder A Channel Input (See MC1XDZ01 Datasheet For Recommended	1
28	MOT ENC A-	Signal Conditioning)	1
29	MOT ENC B+	Differential Encoder B Channel Input (See MC1XDZ01 Datasheet For Recommended	1
30	MOT ENC B-	Signal Conditioning)	I

P2 - Power Connector

Р	in	Name	Description / Notes	1/0
1a		LOGIC PWR	Logic Supply Input	
	1b	RESERVED	Reserved	-
2a	2b	GND	Ground	GND
3a	3b	GND	Ground	GND
4a	4b	HIGH VOLTAGE	DC Power Input. 3A Continuous Current Rating Per Pin. 100µF, 100V external capacitor	I
5a	5b	HIGH VOLTAGE	recommended between High Voltage and Ground.	I
6a	6b	RESERVED	Reserved	-
7a	7b	MOTOR C		0
8a	8b	MOTOR C		0
9a	9b	MOTOR B	Motor Phase Outputs. Current output distributed equally across 4 pins per motor phase, 3A	0
10a	10b	MOTOR B	continuous current carrying capacity per pin.	0
11a	11b	MOTOR A		0
12a	12b	MOTOR A		0

Pin Details

CAN ADDR 0 (P1-1)

This pin, CAN ADDR 0, as well as CAN ADDR 1, are used for CAN bus addressing. To set the CAN node address of a drive, use the formula

$$CANAddress = \frac{7*Addr0}{3} + 8*\frac{7*Addr1}{3}$$

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where *CANAddress* is the desired node address and *Addr* parts and *Addr* represent the voltage that should be applied to pins CAN ADDR 0 and CAN ADDR 1, respectively. The values of *Address* and *Address* are aways integer multiples of 3/7 V within the range 0-3 V. Examples of the voltages required to set certain proceeded resses are given in the table below. Note that setting a CAN address of 0 will utilize the address stored in non-volatine memory SERV099

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DigiFlex[®] Performance™ Servo Drive

DZXCANTE-015L080

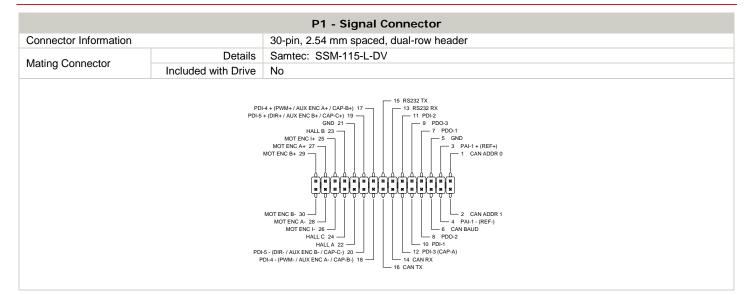
CAN ADDR 0 Value (V)	CAN ADDR 1 Value (V)	CAN ADDR Tolerance (V)	CAN Address (Node #)
0	0	±0.1	Address stored in non-volatile memory
3/7 (0.43)	0	±0.1	1
6/7 (0.86)	0	±0.1	2
9/7 (1.3)	0	±0.1	3
		±0.1	
18/7 (2.57)	21/7 (3.0)	±0.1	62
21/7 (3.0)	21/7 (3.0)	±0.1	63

CAN BAUD (P1-6)

The CAN bit rate is set by applying the appropriate voltage to the CAN BAUD pin as given in the table below.

CAN BAUD Value (V)	CAN BAUD Tolerance (V)	CAN Bus Bit Rate (bits/s)
0	±0.388	Bit rate stored in non-volatile memory
1	±0.388	500k
2	±0.388	250k
3	±0.388	125k

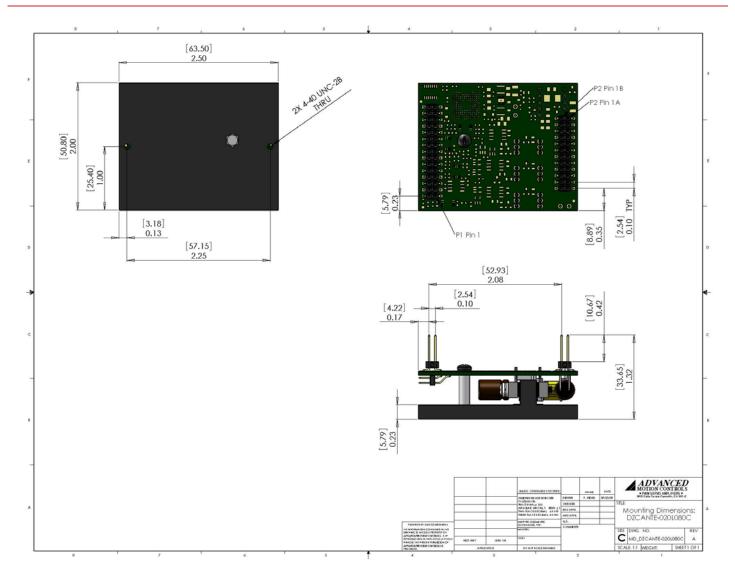
MECHANICAL INFORMATION



		P2 - Power Connector
Connector Information		24-pin, 2.54 mm spaced, dual-row header
N # 0 /	Details	Samtec: BCS-112-L-D-PE
Mating Connector	Included with Drive	No
		HIGH VOLTAGE 5a HIGH VOLTAGE 4a GND 2a GND 2a GND 2a GND 2b GND



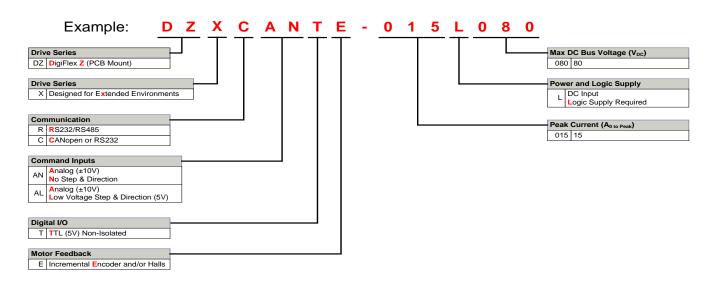
MOUNTING DIMENSIONS







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.

Examples of Customized Products			
Optimized Footprint	Tailored Project File		
Private Label Software	Silkscreen Branding		
OEM Specified Connectors	Optimized Base Plate		
No Outer Case	Increased Current Limits		
Increased Current Resolution	Increased Voltage Range		
Increased Temperature Range	Conformal Coating		
Custom Control Interface	Multi-Axis Configurations		
Integrated System I/O	Reduced Profile Size and Weight		

Feel free to contact Applications Engineering for further information and details.

Available Accessories

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



All specifications in this document are subject to change With 6000 With 6000 With 6000 Mile 600 Mile