

**Description**

The MC1XDZPE01 mounting card is designed to host a DZEANTU or DZPANTU series DigiFlex® Performance™ digital servo drive. The drive plugs into the bottom side of the mounting card, providing a compact assembly with connectors and switches readily accessible. The MC1XDZPE01 is ideal for prototyping and integrating a DZE or DZP series digital servo drive in your machine.

The MC1XDZPE01 utilizes side-entry right angle fixed screw terminals for the motor and power connectors, and quick-disconnect signal, feedback, and communication connectors. A dedicated connector for STO is also included.

DZE series DigiFlex® Performance™ digital servo drives communicate on an EtherCAT® network. EtherCAT is a registered trademark and patented technology, licensed by Beckhoff Automation GmbH, Germany.

DZP series DigiFlex® Performance™ digital servo drives communicate on an Ethernet interface for network communication using POWERLINK, Modbus TCP or Ethernet.

**Drive Compatibility**

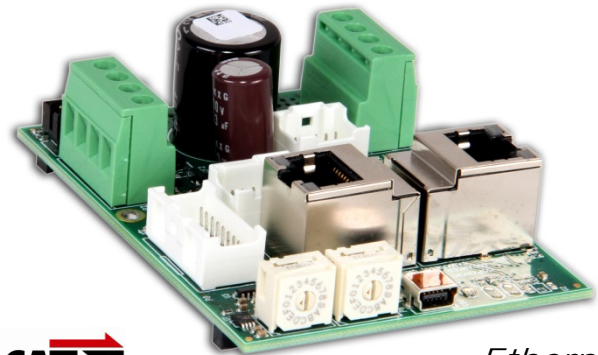
**DZEANTU/DZPANTU Drive Models**

**80V Drive Models**

- 40A
- 20A

**175V Drive Models**

- 20A



*Ethernet*



**Features**

- ▲ Mounts DZEANTU or DZPANTU DigiFlex® Performance™ Digital Servo Drives
- ▲ Single Axis Mounting Card
- ▲ On-board Rotary Switches for Configuration and Communication Settings

**DRIVES SUPPORTED**

- DZEANTU-020B080
- DZEANTU-040B080
- DZEANTU-020B200
- DZPANTU-020B080
- DZPANTU-040B080
- DZPANTU-020B200

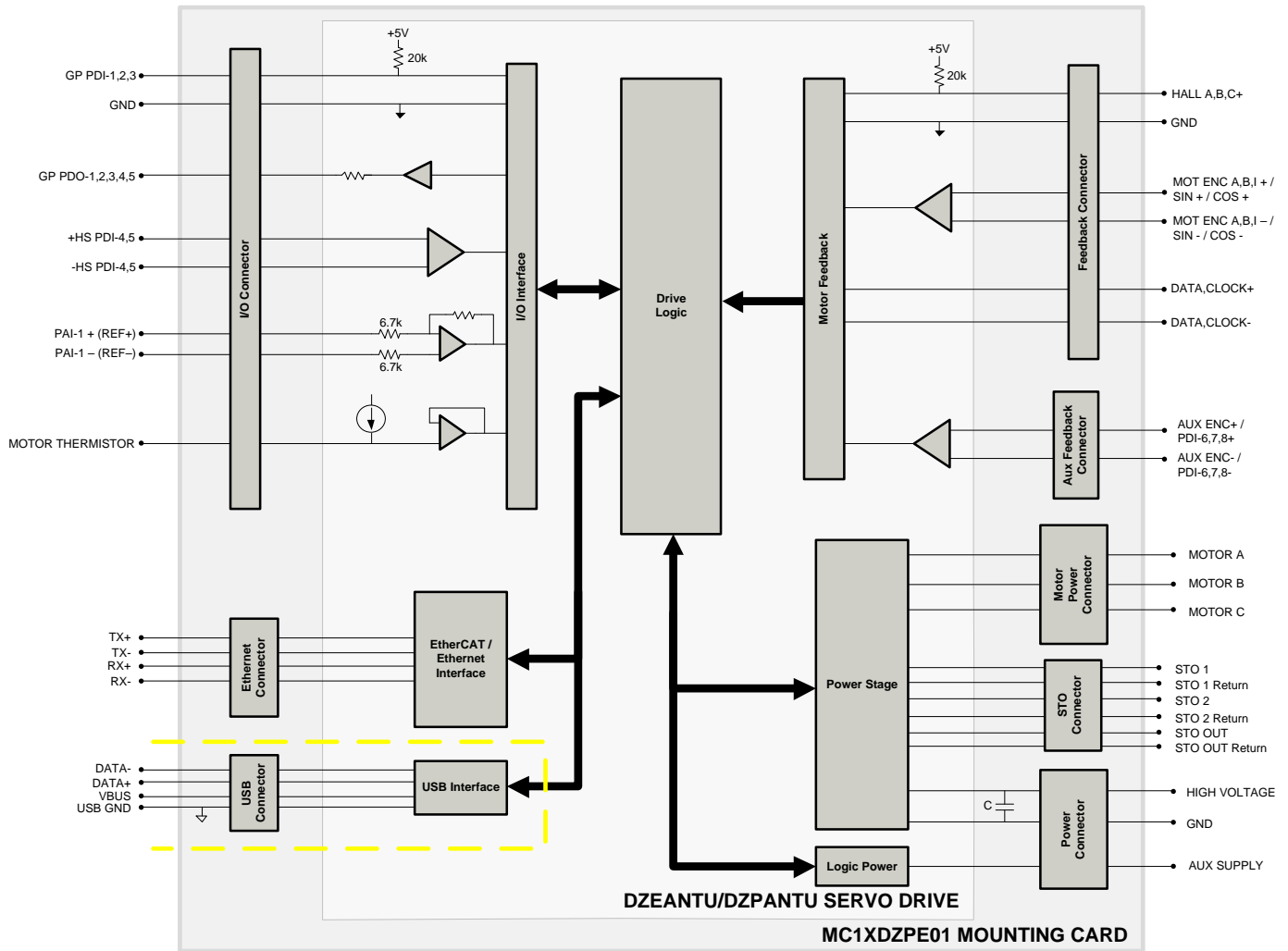
**FEEDBACK SUPPORTED (DRIVE FIRMWARE DEPENDENT)**

- Incremental Encoder
- Auxiliary Incremental Encoder
- Hall Sensors
- 1Vp-p Sine/Cosine Encoder
- Absolute Encoder (EnDat®, Hiperface® or BiSS C-Mode)
- ±10 VDC Position
- Tachometer (±10 VDC)

**COMPLIANCES & AGENCY APPROVALS**

- RoHS II

**BLOCK DIAGRAM & SPECIFICATION SUMMARY**



Mechanical Specifications	
Mounting Signal Connector: Mates Directly to Drive	96-port, 1.27mm spaced, dual-row socket
Mounting Power Connector: Mates Directly to Drive	58-pin, 2.0mm spaced, dual-row socket
Motor Power Connector: P1	4-port screw terminal
Power Connector: P2	4-port screw terminal
Ethernet Communication Connectors: P3/P4	Shielded, RJ-45 socket with LEDs
USB Connector: P6	5-pin, Mini USB B Type port
I/O Connector: P7*	20-pin, dual-row, 2.00 mm spaced plug terminal, vertical mount
Auxiliary Feedback Connector: P8*	10-pin, dual-row, 2.00 mm spaced plug terminal, vertical mount
Feedback Connector: P9*	18-pin, dual-row, 2.00 mm spaced plug terminal, vertical mount
STO Connector: P10*	8-port, 2.0 mm spaced, enclosed, friction lock header
Bus Capacitance	100 μF / 200 V
Size (L x W x H) mm (in)	63.50 x 88.90 x 26.29 (2.50 x 3.50 x 1.04)
Weight g (oz)	79.4 (2.8)

**\*Mating Connector Kit**

Mating connector housing and crimp pins can be ordered as a kit using *ADVANCED* Motion Controls part number **KC-MC1XDZP01**. This includes mating connector housing and crimp style contacts for the I/O, Feedback, Auxiliary Feedback, and STO connectors. The recommended tool for crimping the contacts is Molex part number **63811-6300**.

**PIN FUNCTIONS**

**Mounting Signal Connector**

This connector mates directly to the drive. Drive attaches from underside of mounting card PCB. For pin functions refer to the drive datasheet.

**Mounting Power Connector**

This connector mates directly to the drive. Drive attaches from underside of mounting card PCB. For pin functions refer to the drive datasheet.

**P1 – Motor Power Connector**

Pin	Name	Description / Notes	I/O
1	MOTOR C	Motor Phase Outputs (35A continuous maximum)	O
2	MOTOR B		O
3	MOTOR A		O
4	CHASSIS	Shield Connection.	-

**P2 – Power Connector**

Pin	Name	Description / Notes	I/O
1	CHASSIS	Shield Connection.	-
2	AUX SUPPLY	Logic Supply	I
3	GND	Ground.	GND
4	HV	DC Power Supply (24 A continuous maximum)	I

**P3/P4 – Ethernet Communication Connectors**

Pin	Name	Description / Notes	I/O
1	TX+	Transmit Line (100 Base TX)	I/O
2	TX-		I/O
3	RX+	Receive Line (100 Base TX)	I/O
4	RESERVED	Reserved	-
5	RESERVED	Reserved	-
6	RX-	Receive Line (100 Base TX)	I/O
7	RESERVED	Reserved	-
8	CHASSIS	Shield Connection.	-

**P6 – USB Communication Connector**

Pin	Name	Description / Notes	I/O
1	VBUS	Supply Voltage	O
2	DATA -	USB Data -	I/O
3	DATA +	USB Data +	I/O
4	RESERVED	Reserved	-
5	GND	USB Ground	UGND

**P7 – I/O Connector**

Pin	Name	Description	I/O
1	CHASSIS	Shield Connection.	-
2	RESERVED	Reserved	-
3	PDI-1	Programmable Digital Input	I
4	PDI-4+	High Speed Differential Programmable Digital Input	I
5	PDI-2	Programmable Digital Input	I
6	PDI-4-	High Speed Differential Programmable Digital Input	I
7	PDI-3	Programmable Digital Input	I
8	PDI-5+	High Speed Differential Programmable Digital Input	I
9	RESERVED	Reserved	-
10	PDI-5-	High Speed Differential Programmable Digital Input	I
11	PDO-1	Programmable Digital Output	O
12	RESERVED	Reserved	-
13	PDO-2	Programmable Digital Output	O
14	+5V OUT	+5V Output from Logic Supply	O
15	PDO-3	Programmable Digital Output	O
16	GND	Ground	GND
17	PDO-4	Programmable Digital Output	O
18	PAI-1+	Differential Programmable Analog Input or Reference Signal Input (12-bit resolution)	I
19	PDO-5	Programmable Digital Output	O
20	PAI-1-	Differential Programmable Analog Input or Reference Signal Input (12-bit resolution)	I

**P8 – Auxiliary Feedback Connector**

Pin	Name	Description	I/O
1	CHASSIS	Shield Connection.	-
2	RESERVED	Reserved	-
3	AUX ENC I+	Auxiliary Incremental Encoder Channel I or Differential Programmable Digital Input 8	I
4	AUX ENC A+	Auxiliary Incremental Encoder Channel A or Differential Programmable Digital Input 6	I
5	AUX ENC I-	Auxiliary Incremental Encoder Channel I or Differential Programmable Digital Input 8	I
6	AUX ENC A-	Auxiliary Incremental Encoder Channel A or Differential Programmable Digital Input 6	I
7	+5V USER	+5V User Supply Output (current shared with pin P9-17)	O
8	AUX ENC B+	Auxiliary Incremental Encoder Channel B or Differential Programmable Digital Input 7	I
9	GND	Ground	GND
10	AUX ENC B-	Auxiliary Incremental Encoder Channel B or Differential Programmable Digital Input 7	I

**P9 – Feedback Connector\***

Pin	Incremental Encoder	Absolute Encoder	1Vp-p Sin/Cos Encoder	Description / Notes	I/O
1	CHASSIS	CHASSIS	CHASSIS	Shield Connection.	-
2	RESERVED	RESERVED	RESERVED	Reserved	-
3	MOT ENC I+	RESERVED	RESERVED	Differential Encoder Index	I
4	MOT ENC A+	SIN+	SIN+	Differential Encoder A / Differential Sine Input	I
5	MOT ENC I-	RESERVED	RESERVED	Differential Encoder Index	I
6	MOT ENC A-	SIN-	SIN-	Differential Encoder A / Differential Sine Input	I
7	HALL A	RESERVED	HALL A	Commutation sensor input.	I
8	MOT ENC B+	COS+	COS+	Differential Encoder B/ Differential Cosine Input	I
9	HALL B	RESERVED	HALL B	Commutation sensor input.	I
10	MOT ENC B-	COS-	COS-	Differential Encoder B/ Differential Cosine Input	I
11	HALL C	RESERVED	HALL C	Commutation sensor input.	I
12	RESERVED	CLK+	RESERVED	Differential Clock Line	-
13	MOTOR THERMISTOR	MOTOR THERMISTOR	MOTOR THERMISTOR	Motor Thermal Protection	I/O
14	RESERVED	CLK-	RESERVED	Differential Clock Line	I/O
15	+5V USER	+5V USER	+5V USER	+5V User Supply Output (current shared with pin P8-7)	I/O
16	RESERVED	DATA+	RESERVED	Differential Data Line	I/O
17	GND	GND	GND	Ground	GND
18	RESERVED	DATA-	RESERVED	Differential Data Line	I/O

\*Note: Feedback supported (Incremental Encoder, Absolute Sin/Cos Encoder, or 1Vp-p Sin/Cos Encoder) will be dependent on drive firmware.

**P10 – Safe Torque Off (STO) Connector\***

Pin	Name	Description / Notes	I/O
1	STO OUTPUT	Safe Torque Off Output	O
2	STO 5V DISABLE	5V Supply Output for STO Disable. Internal use only.	O
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	STO GND DISABLE	Ground for STO Disable. Internal use only.	GND
8	STO OUT RETURN	Safe Torque Off Output Return	STORETO

\*Note: A dedicated STO Disable Key connector is included and should be installed for applications where STO is not required.

**BOARD CONFIGURATION**

**EtherCAT Station Alias or Ethernet Node ID/Address Selector Switches**

Switch Diagram	Description																								
	<p>Hexadecimal switch settings correspond to the drive Station Alias for DZEANTU drives. Note that drives on an EtherCAT network will be given an address automatically based on proximity to the host. Setting the switches manually is optional, and only necessary if a fixed address is required. For DZPANTU drives, hexadecimal switch settings correspond to the last octet of the IP Address of the drive within the Ethernet network. Note that for POWERLINK, the IP address will always be 192.168.100.xxx.</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th>SW1</th> <th>SW0</th> <th>Node ID</th> </tr> </thead> <tbody> <tr><td>0</td><td>0</td><td>000</td></tr> <tr><td>0</td><td>1</td><td>001</td></tr> <tr><td>0</td><td>2</td><td>002</td></tr> <tr><td>...</td><td>...</td><td>...</td></tr> <tr><td>F</td><td>D</td><td>253</td></tr> <tr><td>F</td><td>E</td><td>254</td></tr> <tr><td>F</td><td>F</td><td>255</td></tr> </tbody> </table>	SW1	SW0	Node ID	0	0	000	0	1	001	0	2	002	...	...	...	F	D	253	F	E	254	F	F	255
SW1	SW0	Node ID																							
0	0	000																							
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0	2	002																							
...	...	...																							
F	D	253																							
F	E	254																							
F	F	255																							

**Power LED Functions**

The MC1XDZPE01 features LEDs on the PCB that indicate DC Power Supply status (P), Logic Power Supply status (L), and the drive Bridge status (STS). The Power LED will light up green when power is applied to pin P2-4 (High Voltage), and the Logic LED will light up green when the Logic Power is applied to pin P2-2 (Aux Supply). The Bridge Status LED indicates the servo drive's power bridge state, and will be green when the drive is enabled, and red when the drive is in a fault state.

**Communication LED Functions (on RJ-45 Communication Connectors)**

LINK LED	
LED State	Description
Green – On	Valid Link - No Activity
Green – Flickering	Valid Link - Network Activity
Off	Invalid Link

STATUS LED (EtherCAT)	
LED State	Description
Green – On	The device is in the state OPERATIONAL
Green – Blinking (2.5Hz – 200ms on and 200ms off)	The device is in the state PRE-OPERATIONAL
Green – Single Flash (200ms flash followed by 1000ms off)	The device is in state SAFE-OPERATIONAL
Green – Flickering (10Hz – 50ms on and 50ms off)	The device is booting and has not yet entered the INIT state or The device is in state BOOTSTRAP or Firmware download operation in progress
Off	The device is in state INIT

ERROR LED (EtherCAT)		
LED State	Description	Example
Red – On	A PDI Watchdog timeout has occurred.	Application controller is not responding anymore.
Red – Blinking (2.5Hz – 200ms on and 200ms off)	General Configuration Error.	State change commanded by master is impossible due to register or object settings.
Red – Flickering (10Hz – 50ms on and 50ms off)	Bootling Error was detected. INIT state reached, but parameter "Change" in the AL status register is set to 0x01:change/error	Checksum Error in Flash Memory.
Red – Single Flash (200ms flash followed by 1000ms off)	The slave device application has changed the EtherCAT state autonomously: Parameter "Change" in the AL status register is set to 0x01:change/error.	Synchronization error; device enters SAFE-OPERATIONAL automatically
Red – Double Flash (Two 200ms flashes separated by 200ms off, followed by 1000ms off)	An application Watchdog timeout has occurred.	Sync Manager Watchdog timeout.

**CONNECTOR INFORMATION**

**Mounting Signal Connector**

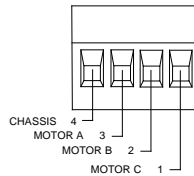
Connector Information	96-pin, 1.27 mm spaced, dual-row socket
Mating Connector Example	No Mating Connector Required. Mate directly to drive

**Mounting Power Connector**

Connector Information	50-pin, 2.0 mm spaced, dual-row socket
Mating Connector Example	No Mating Connector Required. Mate directly to drive

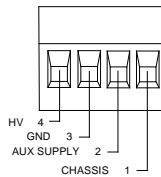
**P1 – Motor Power Connector**

Connector Information	4-port screw terminal	
Mating Connector	Details	Not Applicable
	Included with Card	Not Applicable



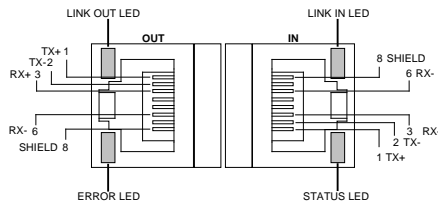
**P2 – Power Connector**

Connector Information	4-port screw terminal	
Mating Connector	Details	Not Applicable
	Included with Card	Not Applicable



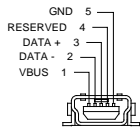
**P3/P4 – Ethernet IN/OUT Communication Connectors**

Connector Information	Shielded, RJ-45 sockets with LEDs	
Mating Connector	Details	CAT 5 Cable
	Included with Card	No



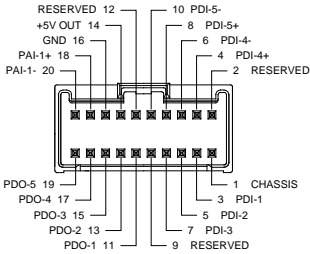
**P6 – USB Connector**

Connector Information		5-pin, Mini USB B Type port
Mating Connector	Details	TYCO: 1496476-3 (2-meter STD-A to MINI-B ASSY)
	Included with Card	No



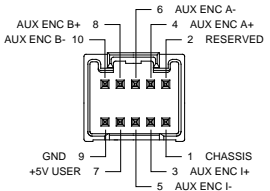
**P7 – I/O Connector**

Connector Information		20-pin, dual-row, 2.00 mm spaced plug terminal, vertical mount
Mating Connector	Details	Molex: P/N 51353-2000 (housing); 56134-9100 (contacts)
	Included with Card	No



**P8 – Auxiliary Feedback Connector**

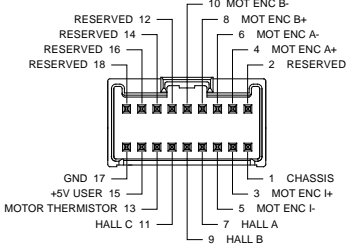
Connector Information		10-pin, dual-row, 2.00 mm spaced plug terminal, vertical mount
Mating Connector	Details	Molex: P/N 51353-1000 (housing); 56134-9100 (contacts)
	Included with Card	No



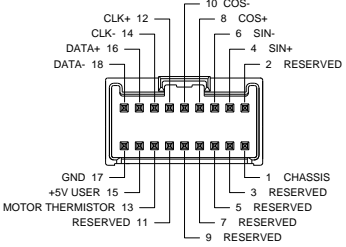
**P9 – Feedback Connector**

Connector Information		18-pin, dual-row, 2.00 mm spaced plug terminal, vertical mount
Mating Connector	Details	Molex: P/N 51353-1800 (housing); 56134-9100 (contacts)
	Included with Card	No

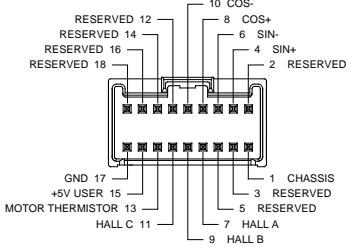
  



**Incremental Encoder**



**Absolute Encoder**

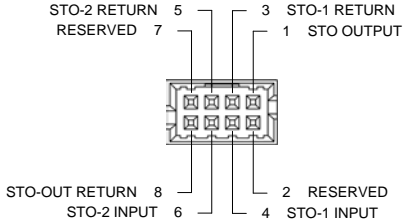


**1Vp-p Sin/Cos Encoder**

**STO – Safe Torque Off Connector**

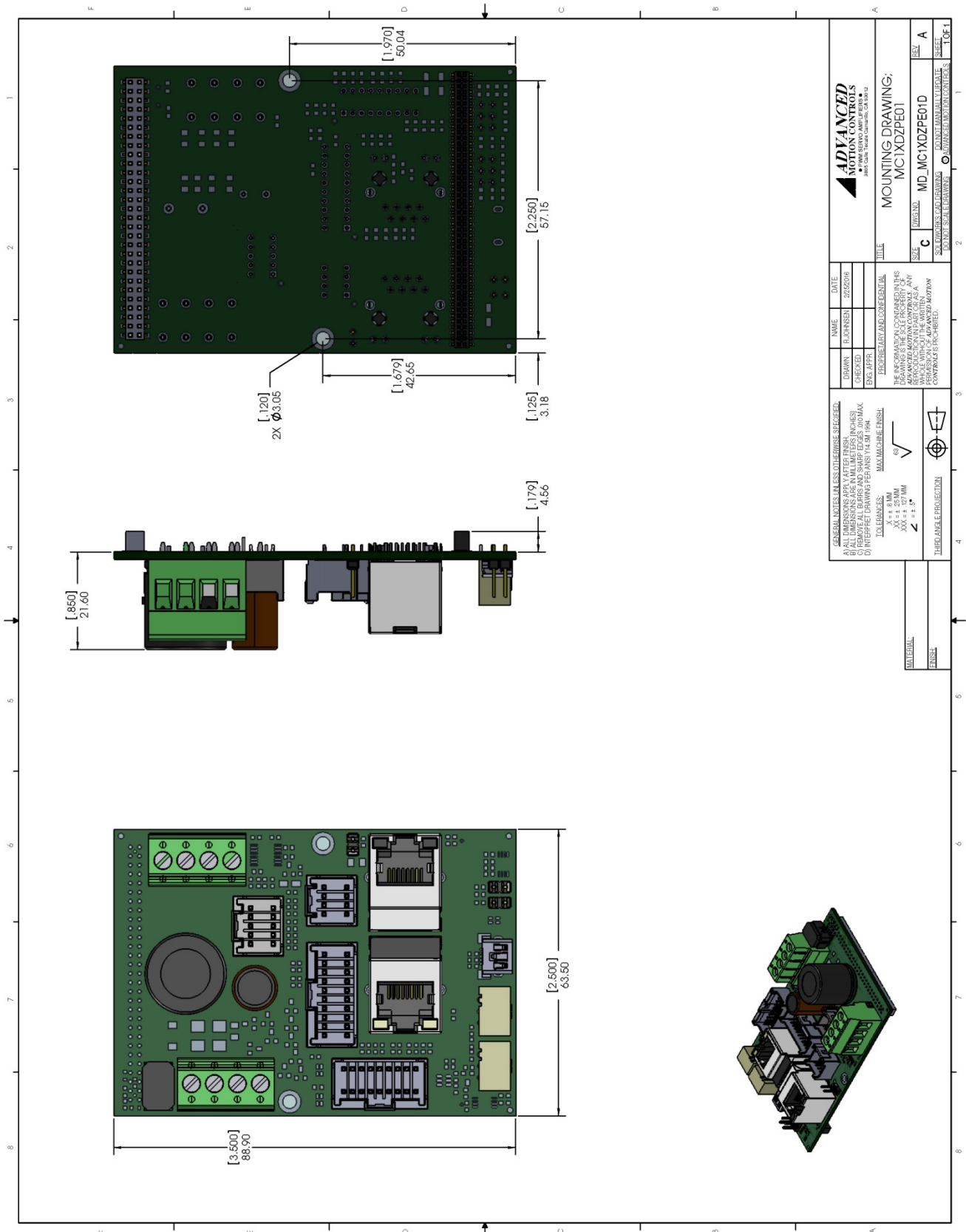
Connector Information		8-port, 2.00 mm spaced, enclosed, friction lock header
Mating Connector	Details	Molex: P/N 51110-0860 (housing); 50394-8051 (pins)
	Included with Card	No



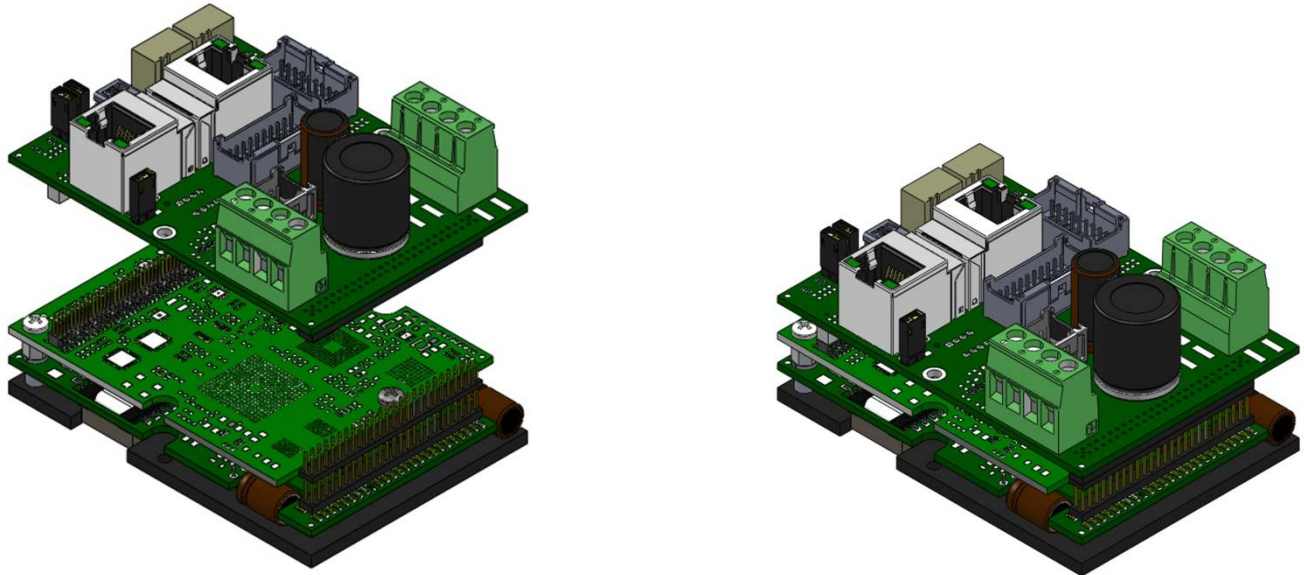


**MOUNTING DIMENSIONS**

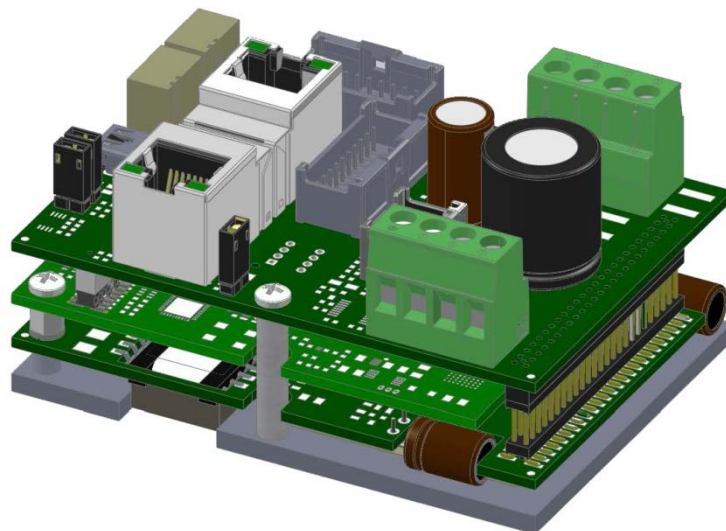


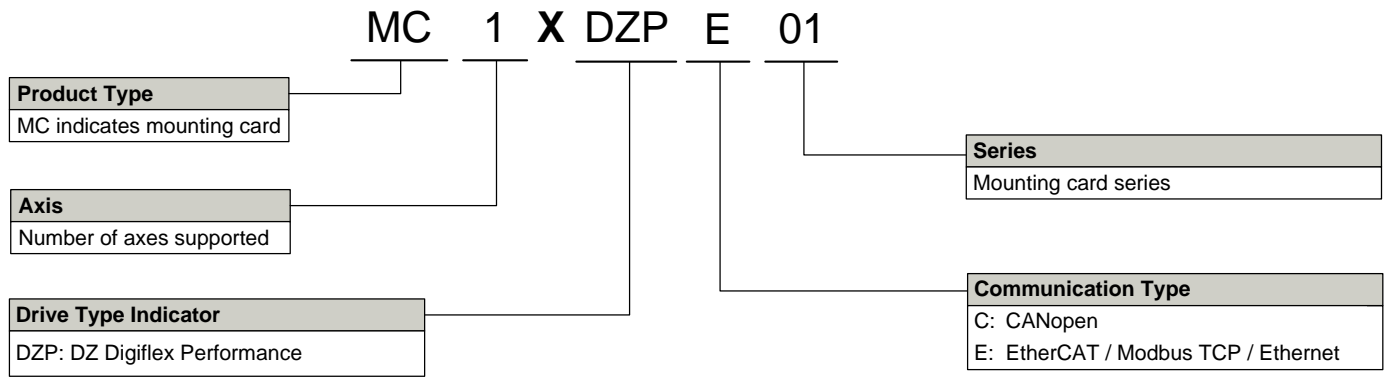
**MOUNTING CONFIGURATION**

Note that a DZEANTU/DZPANTU servo drive plugs into the MC1XDZPE01 from the underside of the mounting card to allow easy access to the mounting card switches and connectors. The drive and mounting card assembly can be secured to a panel or heatsink through the mounting holes in the drive baseplate and the sides of the mounting card.



The mounting card chassis should be secured to the drive baseplate by using the two spacers included with the MC1XDZPE01 between the MC1XDZPE01 mounting holes and the drive baseplate as shown in the below image.

**PART NUMBERING INFORMATION**



DigiFlex® Performance™ series of products are available in many configurations. All models listed in the selection tables of the website are readily available, standard product offerings.

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**

- |  |  |
|--|--|
| <ul style="list-style-type: none"> <li>▲ Optimized Footprint</li> <li>▲ Private Label Software</li> <li>▲ OEM Specified Connectors</li> <li>▲ No Outer Case</li> <li>▲ Increased Current Resolution</li> <li>▲ Increased Temperature Range</li> <li>▲ Custom Control Interface</li> <li>▲ Integrated System I/O</li> </ul> | <ul style="list-style-type: none"> <li>▲ Tailored Project File</li> <li>▲ Silkscreen Branding</li> <li>▲ Optimized Base Plate</li> <li>▲ Increased Current Limits</li> <li>▲ Increased Voltage Range</li> <li>▲ Conformal Coating</li> <li>▲ Multi-Axis Configurations</li> <li>▲ Reduced Profile Size and Weight</li> </ul> |
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Feel free to contact Applications Engineering for further information and details.

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