## Description

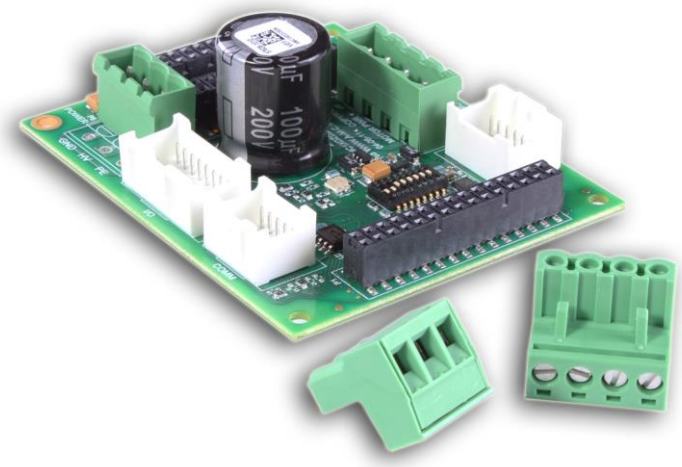
The MC1XDZR02-QD mounting card is designed to host a DZR or DZRC series DigiFlex® Performance™ digital servo drive. The drive plugs into the bottom side of the mounting card, providing a compact assembly with connectors and switches readily accessible. The MC1XDZR02-QD is ideal for prototyping and integrating a DZR or DZXR series digital servo drive in your machine.

The MC1XDZR02-QD utilizes vertical-entry quick-disconnect screw terminals for the Motor and Power connectors (mating connectors included). For side-entry right angle Motor and Power connections use the MC1XDZR02 mounting card.

## Drive Compatibility*

| DZ (Standard Environment) | | DZX (Extended Environment) |
|---|---|---|
| **80 V Models** | **175 V Models** | **80 V Models** |
| 20A | 25A | 15A |
| 12A | 10 | 8A |

*For 40 amp DZ series, use MC1XDZR02 mounting card model
*For 60 amp DZ series, use MC1XDZC02-HP1 mounting card model



## Features

- Mounts DZR- and DZXR-Series DigiFlex® Performance™ Digital Servo Drives
- Single Axis Mounting Card
- On-board Signal Conditioning
- On-board 8-position DIP Switch for Configuration and Communication Settings

**DRIVES SUPPORTED**

- DZRALTE-012L080
- DZRALTE-020L080
- DZRALTE-010L200
- DZRALTE-025L200
- DZXRALTE-008L080
- DZXRALTE-015L080

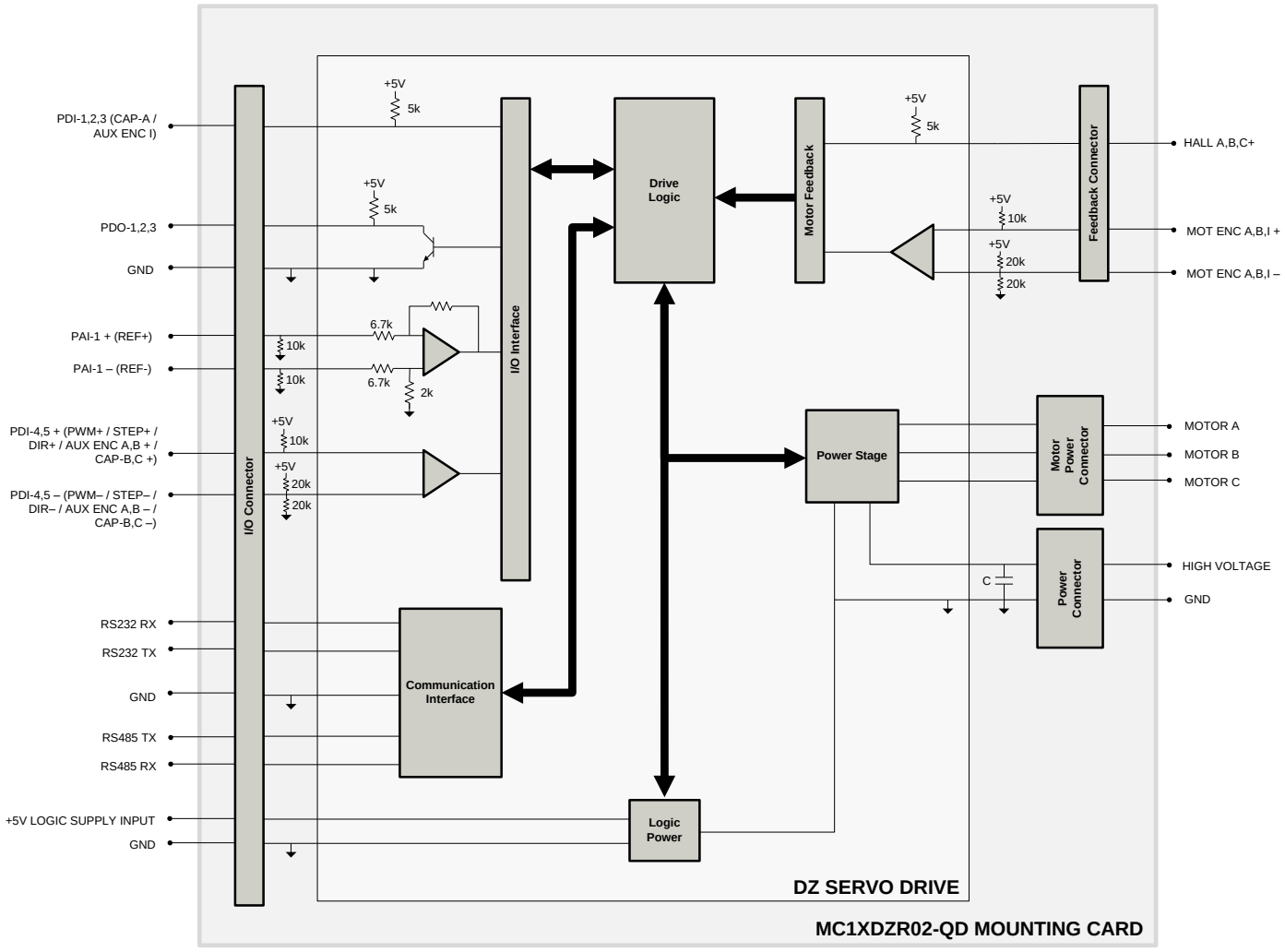
**FEEDBACK SUPPORTED**

- Incremental Encoder
- Hall Sensors
- Auxiliary Incremental Encoder

**COMPLIANCES & AGENCY APPROVALS**

- RoHS II

## BLOCK DIAGRAM & SPECIFICATION SUMMARY




| Mechanical Specifications | |
|---|---|
| Mounting Signal Connector: P1 | 30-pin, dual-row, 2.54 mm pitch socket |
| Mounting Power Connector: P2 | 24-pin, dual-row, 2.54 mm pitch socket |
| Mounting Power Connector: P3 | 24-pin, dual-row, 2.54 mm pitch socket |
| I/O Connector: P4* | 16-port, dual-row, 2.00 mm spaced plug terminal |
| Communication Connector: P5* | 10-port, dual-row, 2.00 mm spaced plug terminal |
| Feedback Connector: P6* | 12-port, dual-row, 2.00 mm spaced plug terminal |
| Motor Power Connector: P7 (mating connector included) | 4-port, 5.08 mm spaced insert connector |
| Power Connector: P8 (mating connector included) | 3-port, 5.08 mm spaced insert connector |
| Bus Capacitance | 100 μF / 200 V |
| Size (L x W x H) | 2.5 x 3.0 x 1.0 inches |
| Weight | 50.7 g (1.8 oz) |

***Mating Connector Kit**

Mating connector housing and crimp pins can be ordered as a kit using *ADVANCED* Motion Controls part number **KC-MC1XDZ02**. This includes mating connector housing and crimp style contacts for the I/O, Feedback, and Communication connectors. The recommended tool for crimping the contacts is Molex part number **63811-6300**.

## PIN FUNCTIONS

| P1 – Mounting Signal Connector |
|---|
| This connector mates directly to the drive. For pin functions refer to the drive datasheet. |

| P2 – Mounting Power Connector |
|---|
| This connector mates directly to the drive. For pin functions refer to the drive datasheet. |

| P3 – Mounting Power Connector |
|---|
| This connector mates directly to the drive. For pin functions refer to the drive datasheet. |

**P4 – I/O Connector**

| Pin | Name | Description | I/O |
|---|---|---|---|
| 1 | +5V LOGIC | +5V Logic Supply Input | I |
| 2 | GND | Ground | GND |
| 3 | PDI-3 | Programmable digital input 3, or High Speed Capture A, or Aux Enc I | I |
| 4 | PAI-1 + (REF +) | Differential reference signal input, 12-bit resolution. Can also be used as programmable analog input 1. | I |
| 5 | PDI-2 | Programmable digital input 2 | I |
| 6 | PAI-1 - (REF -) | Differential reference signal input, 12-bit resolution. Can also be used as programmable analog input 1. | I |
| 7 | PDI-1 | Programmable digital input 1 | I |
| 8 | PDO-3 | Programmable digital output 3 | O |
| 9 | GND | Ground | GND |
| 10 | PDO-2 | Programmable digital output 2 | O |
| 11 | PDI-5 + | Programmable, differential digital input or Direction+ or Aux Enc B+ or Capture C+ | I |
| 12 | PDO-1 | Programmable digital output 1 | O |
| 13 | PDI-5 - | Programmable, differential digital input or Direction- or Aux Enc B- or Capture C- | I |
| 14 | PDI-4 + | Programmable differential digital input, or PWM+ or Step+ or Aux Enc A+ or Capture B+ | I |
| 15 | GND | Ground | GND |
| 16 | PDI-4 - | Programmable differential digital input, or PWM- or Step- or Aux Enc A- or Capture B- | I |

**P5 – Communication Connector**

| Pin | Name | Description | I/O |
|---|---|---|---|
| 1 | 2-WIRE RS485 JUMPER | For RS-485 2-Wire system, attach a jumper between pins 1 and 2. Also attach a jumper between pins 3 and 4. | - |
| 2 | 2-WIRE RS485 JUMPER | | - |
| 3 | RS232 RX | RS-232 Receive/Transmit. Connect pin 3 to TX port on PC. Connect pin 4 to RX port on PC. For RS-485 2-Wire system, attach a jumper between pins 3 and 4. | I/O |
| 4 | RS232 TX | | I/O |
| 5 | GND | Ground | GND |
| 6 | GND | | GND |
| 7 | RS485 RX- | Receive Line (RS-485) | I/O |
| 8 | RS485 TX- | Transmit Line (RS-485) | I/O |
| 9 | RS485 RX+ | Receive Line (RS-485) | I/O |
| 10 | RS485 TX+ | Transmit Line (RS-485) | I/O |

| P6 – Feedback Connector | | | |
|---|---|---|---|
| **Pin** | **Name** | **Description** | **I/O** |
| 1 | HALL B | Commutation Sensor Inputs. | I |
| 2 | HALL A | Commutation Sensor Inputs. | I |
| 3 | MOT ENC A+ | Differential Encoder A Channel Input | I |
| 4 | HALL C | Commutation Sensor Inputs. | I |
| 5 | MOT ENC A- | Differential Encoder A Channel Input (for single-ended signals use only the positive input) | I |
| 6 | GND | Ground | GND |
| 7 | +5V OUT | +5V Encoder Supply Output | O |
| 8 | MOT ENC B+ | Differential Encoder B Channel Input | I |
| 9 | MOT ENC I+ | Differential Encoder Index Input | I |
| 10 | MOT ENC B- | Differential Encoder B Channel Input (for single-ended signals use only the positive input) | I |
| 11 | MOT ENC I- | Differential Encoder Index Input (for single-ended signals use only the positive input) | I |
| 12 | GND | Ground | GND |

| P7 – Motor Power Connector | | | |
|---|---|---|---|
| **Pin** | **Name** | **Description** | **I/O** |
| 1 | MOTOR A | Motor phase A | O |
| 2 | MOTOR B | Motor phase B | O |
| 3 | MOTOR C | Motor phase C | O |
| 4 | PE | Protective Earth Ground (motor cable shield) | PE |

| P8 –Power Connector | | | |
|---|---|---|---|
| **Pin** | **Name** | **Description** | **I/O** |
| 1 | PE | Protective Earth Ground | PE |
| 2 | HIGH VOLTAGE | DC Power Input | I |
| 3 | POWER GND | Power Ground (Common with Signal Ground) | GND |

## BOARD CONFIGURATION

### DIP Switch Functions

*Drive Address Settings*

| Node-ID | SW1 | SW2 | SW3 | SW4 | SW5 | SW6 |
|---|---|---|---|---|---|---|
| Load from non-volatile memory | OFF | OFF | OFF | OFF | OFF | OFF |
| 1 | ON | OFF | OFF | OFF | OFF | OFF |
| 2 | OFF | ON | OFF | OFF | OFF | OFF |
| 3 | ON | ON | OFF | OFF | OFF | OFF |
| … | … | … | … | … | … | … |
| 63 | ON | ON | ON | ON | ON | ON |

*RS485 Bit Rate Settings*

| Bit Rate (bits/sec) | SW7 |
|---|---|
| Load from non-volatile memory | OFF |
| 9.6K | ON |

*RS485 Termination Node Selection*

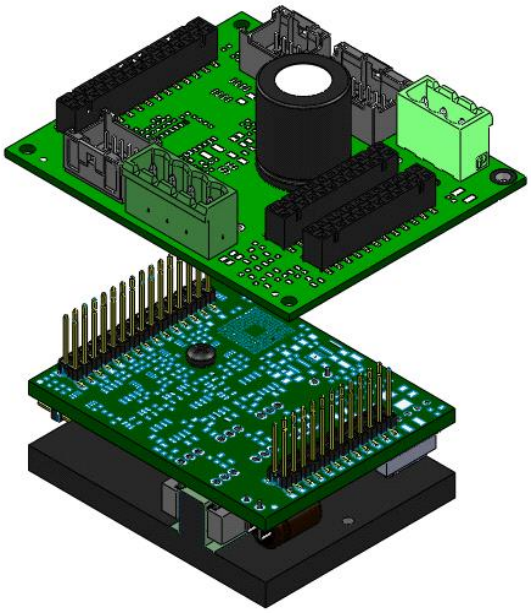
| RS485 Termination | SW8 |
|---|---|
| Not Terminated | OFF |
| Terminated | ON |

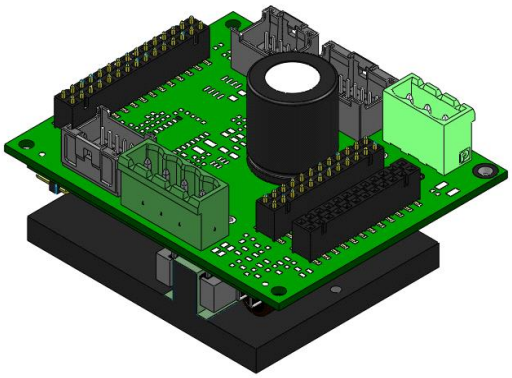
### LED Functions

The MC1XDZR02-QD contains LEDs that indicate DC Power and Logic power supply status. The Power LED will light up when power is applied to P7-Power Connector, and the Logic LED will light up when the +5 VDC Logic Power is applied to P4-I/O Connector.

### Mounting Configuration

Note that a DZ servo drive plugs into the MC1XDZR02-QD 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, or with standoffs at the four mounting holes in the corners of the mounting card (standoff height must be at least 22.11mm for DZ-012L080 drive models, and 26.65mm for all other drive models).





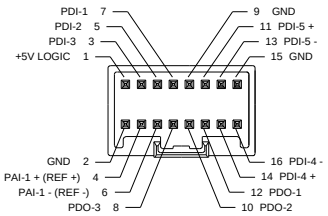
## CONNECTOR INFORMATION

| P1 – Mounting Signal Connector | |
|---|---|
| Connector Information | 30-pin, dual-row, 2.54 mm pitch header |
| Mating Connector Example | No Mating Connector Required. Mate directly to drive |

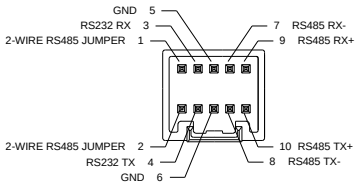
| P2 – Mounting Power Connector | |
|---|---|
| Connector Information | 24-pin, dual-row, 2.54 mm pitch header |
| Mating Connector Example | No Mating Connector Required. Mate directly to drive |

| P3 – Mounting Power Connector | |
|---|---|
| Connector Information | 24-pin, dual-row, 2.54 mm pitch header |
| Mating Connector Example | No Mating Connector Required. Mate directly to drive |

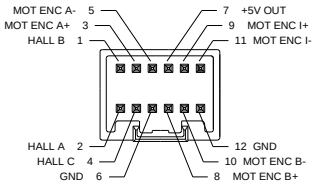
| P4 – I/O Connector | | |
|---|---|---|
| Connector Information | | 16-port, dual-row, 2.00 mm spaced plug terminal, vertical mount |
| Mating Connector | Details | Molex: P/N 51353-1600 (housing); 56134-9100 (contacts) |
| | Included with Card | No |



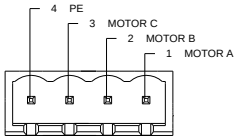

| P5 – Communication Connector | | |
|---|---|---|
| Connector Information | | 10-port, dual-row, 2.00 mm spaced plug terminal, vertical mount |
| Mating Connector | Details | Molex: P/N 51353-1000 (housing); 56134-9100 (contacts) |
| | Included with Card | No |



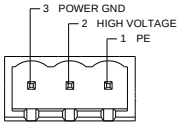
| P6 – Feedback Connector | | |
|---|---|---|
| Connector Information | | 12-port, dual-row, 2.00 mm spaced plug terminal, vertical mount |
| Mating Connector | Details | Molex: P/N 51353-1200 (housing); 56134-9100 (contacts) |
| | Included with Card | No |



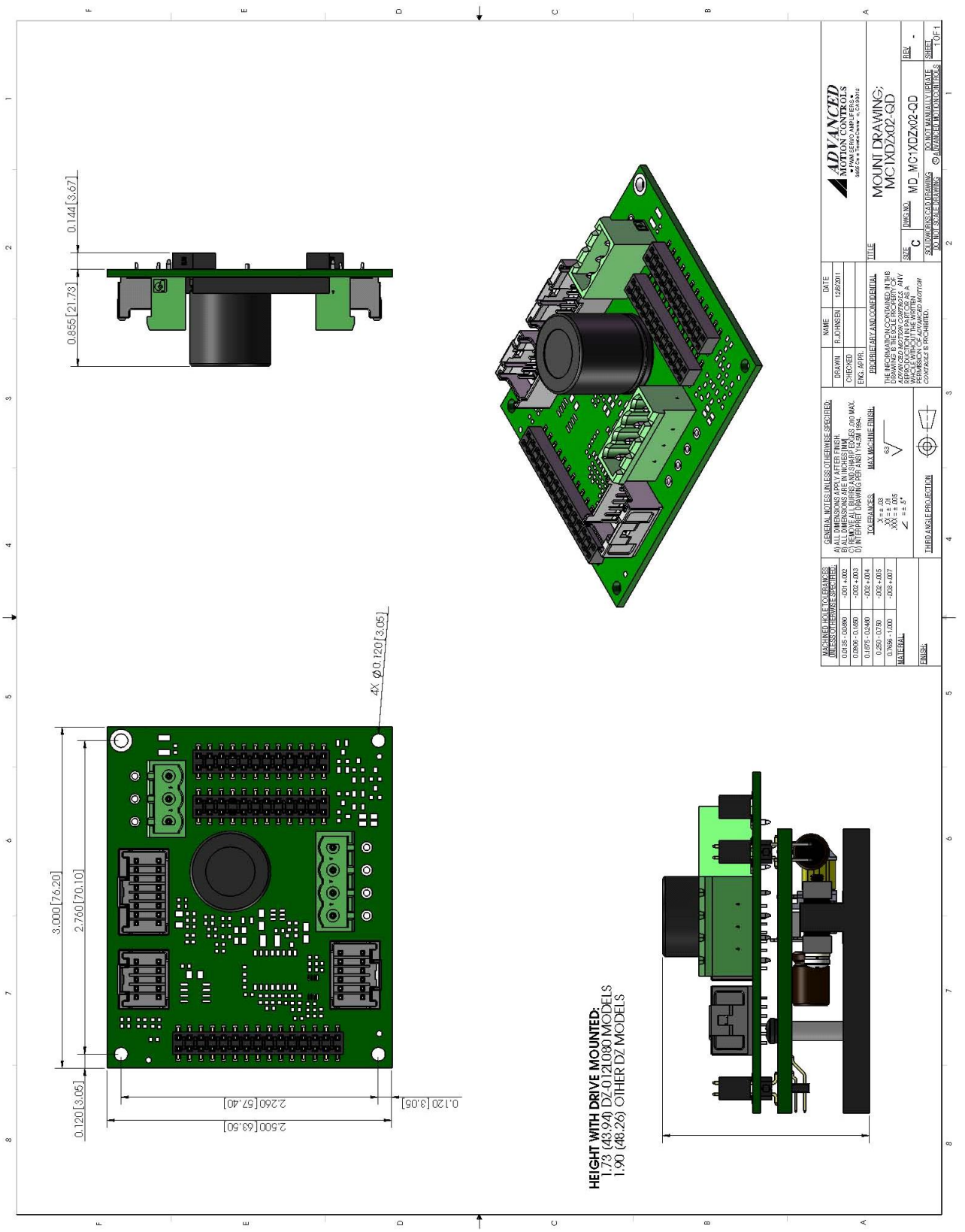

| P7 – Motor Power Connector | | |
|---|---|---|
| Connector Information | | 4-port, 5.08 mm spaced insert connector, vertical mount |
| Mating Connector | Details | Phoenix Contact: P/N 1757035 |
| | Included with Card | Yes |



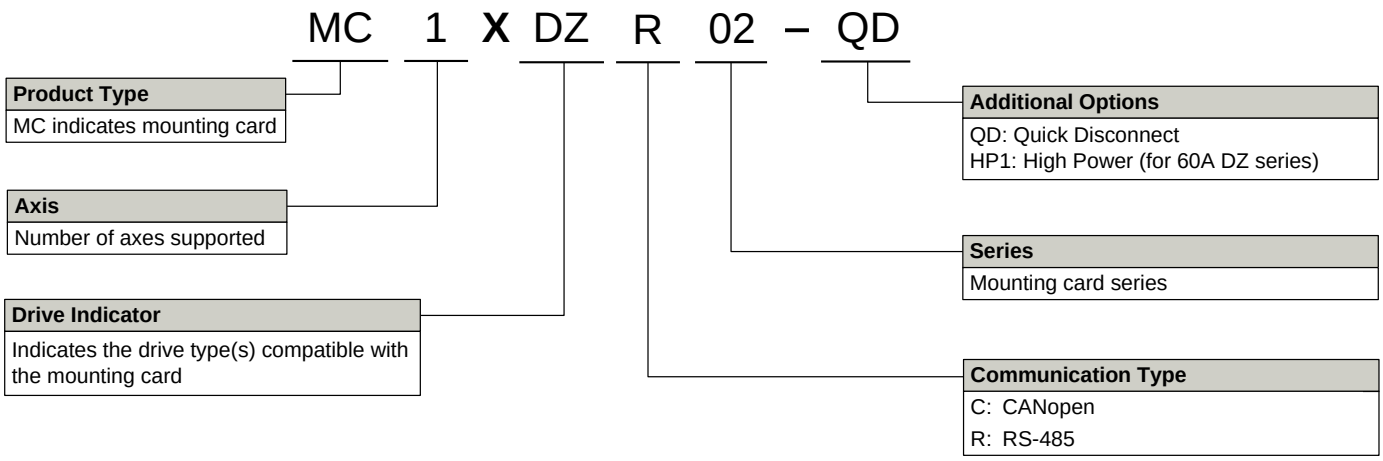

| P8 –Power Connector | | |
|---|---|---|
| Connector Information | | 3-port, 5.08 mm spaced insert connector, vertical mount |
| Mating Connector | Details | Phoenix Contact: P/N 1757022 |
| | Included with Card | Yes |



## MOUNTING DIMENSIONS



## 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**

- 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

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

[A]ll specifications in this document are subject to change without written notice. Actual product may differ from pictures provided in this document.