

# Quick Reference MForce PowerDrive Motion Control



**IMS**  
INTELLIGENT MOTION  
SYSTEMS, INC.

**Schneider**  
Electric

## General Specifications

| Electrical Specifications                         |                |
|---|----------------|
| Input Voltage (+V) Range*                         | +12 to +75 VDC |
| Max Power Supply Current (Per MForce PowerDrive)* | 4 A            |
| Output Current (RMS)                              | 5.0 Amps       |
| Output Current (Peak)                             | 7.0 Amps       |
| Aux-Logic Input Voltage**                         | +12 to +24 VDC |
| Aux-Logic Input Current**                         | 230 mA Max     |

\*Actual Power Supply Current will depend on voltage and load.  
\*\*Used to power logic circuitry in the absence of +V.

| Environmental Specifications                                       |                |
|--|----------------|
| Operating Temperature — measured at the heat sink (non-condensing) | -40°C to +85°C |

| I/O Specifications                           |   |
|--|---|
| <b>General Purpose I/O - Number and Type</b> |   |
| I/O Points 1-4, 9-12                         | 8 I/O programmable as inputs or outputs (sinking or sourcing) |
| <b>General Purpose I/O - Electrical</b>      |   |
| Inputs                                       | TTL up to +24 VDC   |
| Sinking Outputs                              | Up to +24 VDC   |
| Sourcing Outputs                             | +12 to +24 VDC  |
| Output Sink Current                          | up to 600 mA<br>(One Channel in each I/O Bank)                |
| Logic Threshold (Logic 0)                    | < 0.8 VDC   |
| Logic Threshold (Logic 1)                    | > 2.2 VDC   |
| Protection (Sinking)                         | Over Temp, Short Circuit                                      |
| Protection (Sourcing)                        | Transient Over Voltage, Inductive Clamp                       |
| <b>Analog Input</b>                          |   |
| Resolution                                   | 10 Bit  |
| Range (Voltage Mode)                         | 0 to +5 VDC, 0 to +10 VDC                                     |
| Range (Current Mode)                         | 4 to 20 mA, 0 to 20mA   |
| <b>Clock I/O</b>                             |   |
| Types  | Step/Direction, Up/Down, Quadrature                           |
| Logic Threshold                              | +5V TTL Input, TTL Output<br>(with 2 kΩ Load to Ground)       |
| <b>Trip Output/Capture Input</b>             |   |
| Logic Threshold                              | +5V TTL Input, TTL Output<br>(with 2 kΩ Load to Ground)       |

| Communications Specifications |  |
|-------------------------------|--|
| Protocol                      | RS-422/RS-485  |
| BAUD Rate                     | 4.8k, 9.6k, 19.2k, 38.4k, 115.2 kbps                                 |
| <b>CANopen Option</b>         |  |
| Protocol                      | CAN 2.0B Active  |
| Communications Profile        | CiA DS-301   |
| BAUD Rate                     | 10, 20, 50, 125, 250, 500, 800 kBit/s,<br>1MBit/s (default)          |
| Note:                         | 800 kbps not supported by the MD-CC500-000<br>USB to CANopen dongle. |

| Motion Specifications                   |    |
|---|----|
| <b>Microstep Resolution - Open Loop</b> |    |
| Number of Resolutions                   | 20 |

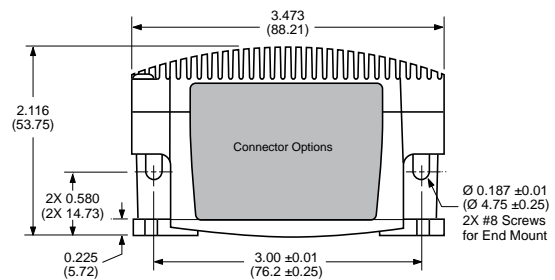
| Available Microsteps Per Revolution |       |       |       |       |       |       |                    |                    |                    |
|-------------------------------------|-------|-------|-------|-------|-------|-------|--------------------|--------------------|--------------------|
| 200                                 | 400   | 800   | 1000  | 1600  | 2000  | 3200  | 5000               | 6400               | 10000              |
| 12800                               | 20000 | 25000 | 25600 | 40000 | 50000 | 51200 | 36000 <sup>1</sup> | 21600 <sup>2</sup> | 25400 <sup>3</sup> |

1=0.01 deg/μstep    2=1 arc minute/μstep    3=0.001 mm/μstep

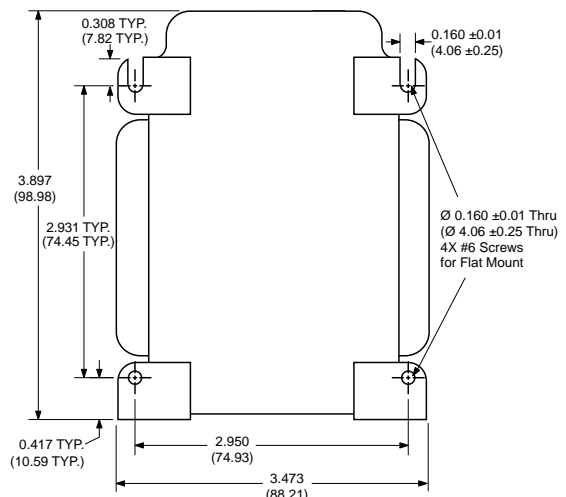
| Software Specifications           |                  |
|-----------------------------------|------------------|
| Program Storage Type/Size         | Flash/6384 Bytes |
| User Program Labels and Variables | 192              |
| Party Mode Addresses              | 62               |

## Mechanical Specifications

FRONT VIEW



BOTTOM VIEW



## Notes and Warnings

Installation, configuration and maintenance must be carried out by qualified technicians only. You must have detailed information to be able to carry out this work. This information can be found in the user manuals.

- Unexpected dangers may be encountered when working with this product!
- Incorrect use may destroy this product and connected components!

The user manuals are not included, but may be obtained from the Internet at: <http://www.imshome.com/downloads/manuals.html>.

## Required for Setup\*

- PC running Microsoft® Windows XP Service Pack 2 or greater.
- IMS Terminal integrated program editor and terminal emulator (available online).
- +12 to +75 VDC unregulated linear or switching power supply.
- NEMA size 23 or 34 stepping motor.
- RS-422/485 communications interface (recommended: MD-CC402-001 communication converter). CANopen communications converter (recommended: MD-CC500-000).

Depending on your connector configuration, you may also need:

- I/O or I/O and encoder interface to 14-pin or 20-pin wire crimp connector (recommended: PD14-2334-FL3 or PD20-3400-FL3 prototype development cable).
- Power interface to 2-pin wire crimp connector (recommended: PD02-3400-FL3 prototype development cable).
- Motor interface to 4-pin wire crimp connector (recommended: PD04-MF34-FL3 prototype development cable).

\* If you purchased your MForce PowerDrive with a QuickStart Kit, you have received all of the connecting cables needed for initial functional setup and system testing.

## Getting Started

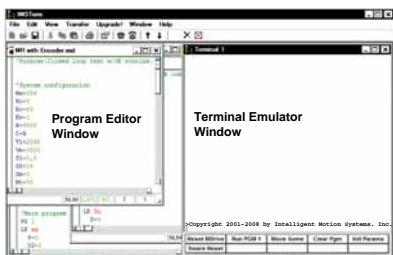
All documentation, software and resources are available online at: [http://www.imshome.com/products/mforce\\_overview.html](http://www.imshome.com/products/mforce_overview.html).

### Connecting the Motor, Power and I/O

Your MForce PowerDrive is configured with power, I/O and motor on separate connectors. Please refer to the opposite side of this document for connecting details and available connectivity options including prototype development cables and mating connector kits.

### Connecting Communications — RS-422/485

1. Connect RS-422/485 communications converter to MForce and PC.
2. Install the communication converter drivers onto PC (available online).
3. Install and open IMS Terminal.
4. Apply power to MForce PowerDrive.
5. Within IMS Terminal, Click into the terminal window (shown below).
6. Key in CTRL+C. The sign-on message: "Copyright 2001-2008 by Intelligent Motion Systems, Inc." should appear, verifying that communications is active.



### Connecting Communications — CANopen

A "Getting Started" tutorial using the CANopen Tester GUI with the MD-CC500-000 USB to CANopen dongle is located in the CANopen implementation manual, available online.

