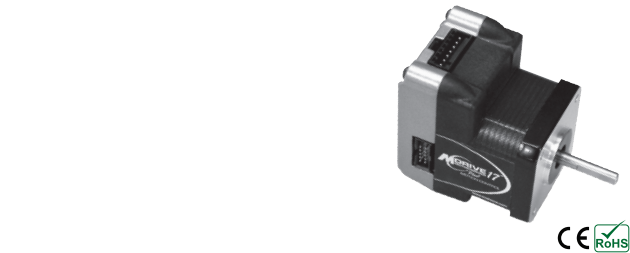


Quick Reference

MDrive17Plus
Motion Control



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. You can obtain them from the Internet at: http://www.imshome.com/mdrive17plus_md.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 +48 VDC unregulated linear or switching power supply. (Recommended: IMS IP404 or ISP200-4)
- RS-422/485 communications interface. (Recommended: IMS MD-CC400-001 or MD-CC402-001 Communication Converters) or CANopen communications converter. (Recommend MD-CC500-000)

Depending on your MDrivePlus connectors configuration, you may also need:

- If using a 7-pin pluggable terminal IMS recommends 22 AWG shielded twisted pairs for logic wiring. Wire gauge for power connection varies with the distance from the MDrive and current. See MDrivePlus product manual.
- I/O and Power interface to 16-pin wire crimp connector. (Recommended: IMS PD16-1417-FL3 Prototype Development Cable)

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

Getting Started

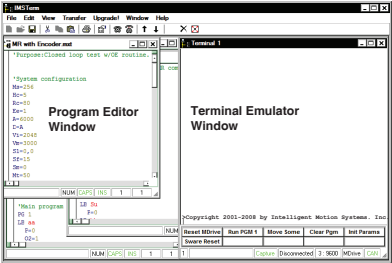
All documentation, software and resources are available online at: http://www.imshome.com/mdrive17plus_md.html

Connecting Power and I/O

Your MDrivePlus is configured with power and I/O combined on a single connector. Please refer to the opposite side of this document for connecting details and available IMS connectivity options including Prototype Development Cables and Mating Connector Kits.

Connecting Communications — RS-422/485

1. Connect IMS RS-422/485 communications converter to MDrivePlus and PC.
2. Install the communication converter drivers onto PC (available online).
3. Install and open IMS Terminal.
4. Apply power to MDrivePlus.
5. Within IMS Terminal, Click into the Terminal Window (shown below).



6. Key in CTRL+C. The MDrivePlus 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 IMS CANopen Tester GUI with the MD-CC500-000 USB to CANopen dongle is available online at: http://www.imshome.com/canopen_gs.html.

General Specifications

Electrical Specifications	
Input Voltage (+V) Range*	+12 to +48 VDC
Max Power Supply Current (Per MDrive17Plus)*	2 A
Aux-Logic Input Voltage**	+12 to +24 VDC
Aux-Logic Input Current**	161 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	Heat Sink	-40°C to +85°C
(non-condensing)	Motor	-40°C to +100°C

I/O Specifications	
General Purpose I/O - Number and Type	
Plus (I/O Points 1-4)	4 I/O programmable as inputs (sinking or sourcing) or outputs (sinking)
Plus ² (I/O Points 1-4, 9-12)	8 I/O programmable as inputs or outputs (sinking or sourcing)
General Purpose I/O - Electrical	
Inputs	TTL up to +24 VDC
Sinking Outputs (All)	Up to +24 VDC
Sourcing Outputs (Plus ²)	+12 to +24 VDC
Output Sink Current (Plus)	up to 600 mA (One Channel)
Output Sink Current (Plus ²)	up to 600 mA (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
Analog Input	
Resolution	10 Bit
Range (Voltage Mode)	0 to +5 VDC, 0 to +10 VDC
Range (Current Mode)	4 to 20 mA, 0 to 20mA
Clock I/O	
Types	Step/Direction, Up/Down, Quadrature
Logic Threshold	+5V TTL Input, TTL Output (with 2 kΩ Load to Ground)
Trip Output/Capture Input	
Logic Threshold	+5V TTL Input, TTL Output (with 2 kΩ Load to Ground)

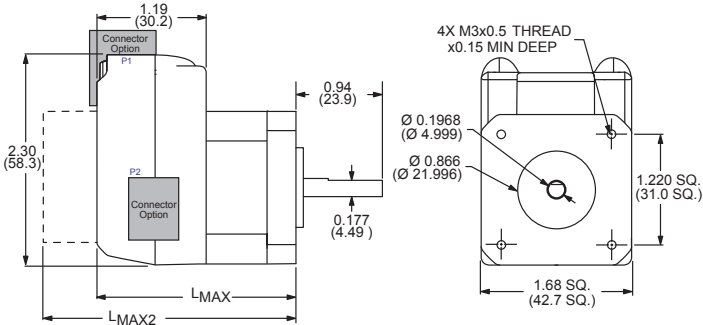
Communications Specifications	
Protocol	RS-422/RS-485
BAUD Rate	4.8k, 9.6k, 19.2k, 38.4k, 115.2 kbps
CANopen Option	
Protocol	CAN 2.0B Active
Communications Profile	CIA DS-301
BAUD Rate	10, 20, 50, 125, 250, 500, 800 kBit/s,
Note: 800 kbps not supported by the MD-CC500-000 USB to CANopen dongle.	1MBit/s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

Motion Specifications	
Microstep Resolution - Open Loop	
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 ¹	21600 ²	25400 ³
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



Motor Length	Dimensions in inches (mm)	
	LMAX1 (Single Shaft or Internal Encoder)	LMAX2 (Control Knob)
Single	2.20 (55.9)	2.79 (70.9)
Double	2.43 (61.7)	3.02 (76.7)
Triple	2.77 (70.4)	3.37 (85.6)

MDrive17Plus
Motion Control
Connectivity Options

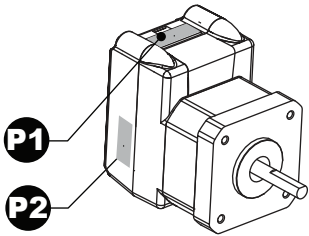
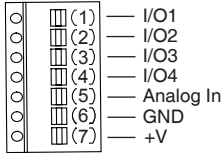


Table with 2 columns: Connector Style, Function. Rows include Pluggable Terminal, Flying Leads, 16-pin Wire Crimp, 10-pin Wire Crimp, 10-pin IDC, and DB-9F.

P1 I/O & Power
Pluggable terminal or flying leads

Pluggable Terminal

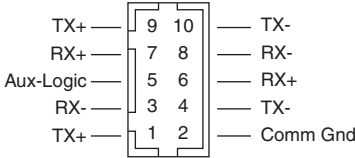


User Supplied Recommended Wire: 22 AWG Stranded

Flying Lead Colors

Table with 2 columns: Wire Color, Function. Rows include White/Yellow (I/O1), White/Orange (I/O2), White/Violet (I/O3), White/Blue (I/O4), Green (Analog In), Black (Ground), and Red (+V).

P2 Communications — RS-422/485
10-pin wire crimp



Communications Converter p/n: MD-CC402-001
Electrically isolated in-line USB to RS-422/485 converter pre-wired with mating connector to conveniently program and set configuration parameters.

P1 I/O & Power
16-pin wire crimp

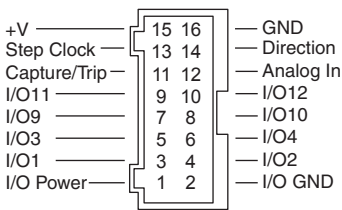
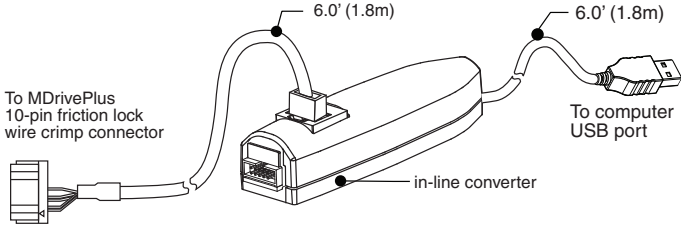
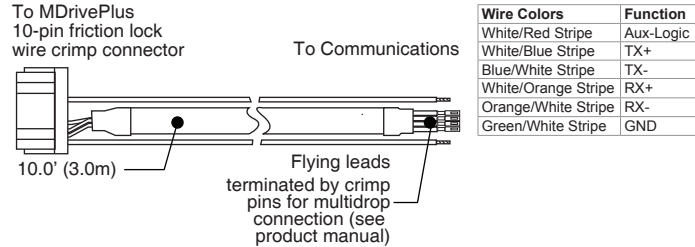


Table with 2 columns: Pin, Function. Rows include 7 (CH A +), 8 (CH A-), 9 (CH B+), 10 (CH B-), 13 (IDX +), and 14 (IDX-).



Prototype Development Cable p/n: PD10-1434-FL3
Speed test and development with pre-wired mating connector. Recommended for multi-drop systems, can be used in conjunction with the MD-CC402-001.



Prototype Development Cable p/n: PD16-1417-FL3
Function: Power & I/O Interface

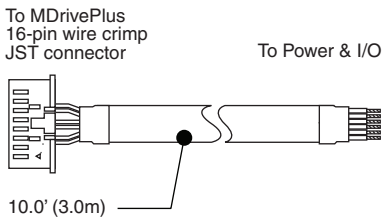
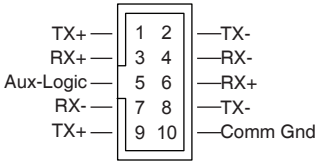


Table with 4 columns: Pair, Wire Colors, Function, Encoder Function. Rows include 1 (Direction, IDX+), 2 (Step Clock, IDX-), 3 (Analog In, Analog In), 4 (Capt/Trip, Capt/Trip), 5 (I/O12, CH B-), 6 (I/O11, CH B+), 7 (I/O10, CH A-), 8 (I/O9, CH A +), 9 (I/O4, I/O4), 10 (I/O3, I/O3), 11 (I/O2, I/O2), 12 (I/O1, I/O1), 13 (I/O Ground, I/O Ground), 14 (I/O Power, I/O Power), 15 (Power GND, Power GND), and 16 (+V, +V).

Mating Connector Kit p/n: CK-02
Use to make your own cables, kit contains 5 mating connector shells with crimp pins. Hirose crimp tool recommended.
Hirose Parts: Shell: DF11-10DS-2C, Pins: DF11-2428SC, Crimp Tool: DF11-TA2428HC

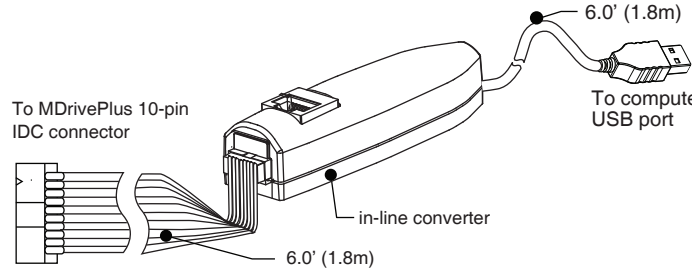
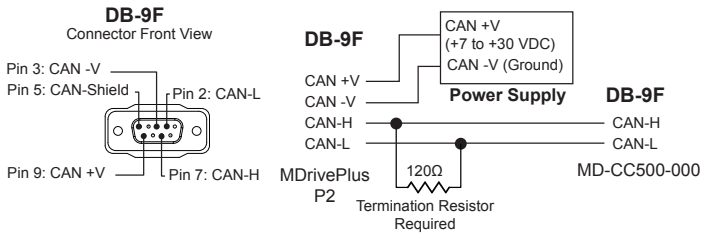
Mating Connector Kit p/n: CK-10
Use to make your own cables, kit contains 5 mating connector shells with crimp pins. JST crimp tool recommended.
JST Parts: Shell: PADP-16V-1-S, Pins: SPH-0011T-P0.5L, Crimp Tool: YHT 2622

P2 Communications — RS-422/485
10-pin IDC



Communications Converter p/n: MD-CC500-000
Electrically isolated in-line USB to CANopen converter. USB "A" Type connector to DB-9 (Male). An Interface cable must be constructed by the user to interface to the MDrivePlus.

Mating Cable Requirements
The following diagram illustrates the parts and connections for an interface cable connecting the MD-CC500-000 to the MDrivePlus.
Parts Required: Connectors: (2) DB-9 (female), Power Supply: +7 to +30 VDC, Terminating Resistor: 120 Ω 1%



Mating Connector Kit p/n: CK-01
Use to make your own cables, kit contains 5 mating connector shells for making interface cables.
IDC Parts: Shell: SAMTEC TCSD-05-01-N, Ribbon Cable: AMP 1-57051-9