MDrive34Plus Motion Control

General Specifications

Electrical Specifications

Input Voltage (+V) Range*	+12 to +75 VDC
Max Power Supply Current (Per MDrive17Plus)*	2 A
Aux-Logic Input Voltage**	+12 to +24 VDC
Aux-Logic Input Current**	194 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 +75°C
(non-condensing)	Motor	-40°C to +90°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
Electrical Isolation	Galvanic

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

INTELLIGENT MOTION SYSTEMS, INC.

by Schneider Electric

Notes and Warnings

The user manuals are not included. You can obtain them from the Internet at: http://www.imshome.com/mdrive34plus_mdi.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. (Recommended: IMS IP804 or ISP300-7)
- RS-422/485 communications interface. (Recommended: IMS MD-CC400-001 or MD-CC402-001 Communication Converters)

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

- Power interface to 2-pin wire crimp connector. (Recommended: IMS PD02-3400-FL3 Prototype Development Cable)
- I/O interface to 14-pin wire crimp connector. (Recommended: IMS PD14-2334-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/mdrive34plus_mdi.html

Connecting Power and I/O

Your MDrivePlus is configured with power and I/O on separate connectors. 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

1. Connect IMS RS422/485 communications converter to MDrivePlus and PC.
2. Install the communication converter drivers onto PC (available online).
3. Install and open IMS Terminal.
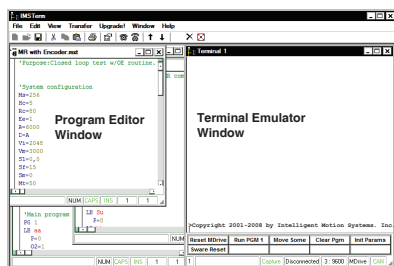
4. Apply power to MDrivePlus.
5. Within IMS Terminal, Click into the Terminal Window (shown below).
6. Key in CTRL+C. The MDrivePlus sign-on message: "Copyright 2001-2008 by Intelligent Motion Systems, Inc." should appear, verifying that communications is active.

Mechanical Specifications

	Dimensions in inches (mm)	
Motor Length	LMAX1 (Single Shaft)	LMAX2 (Control Knob)
Single	3.71 (94.23)	4.42 (112.27)
Double	4.50 (114.30)	5.21 (132.33)
Triple	6.07 (154.18)	6.78 (172.21)

All documentation, software, program examples and resources are available online at: http://www.imshome.com/mdrive34plus_mdi.html

MDrive34Plus
Motion Control
Connectivity Options
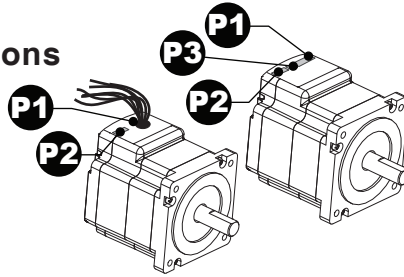
Connector Style		Function
P1	Flying Leads..................................	I/O and Power
	14-pin Wire Crimp.......................	I/O
P2	10-pin Wire Crimp.......................	Communications
	10-pin IDC..................................	Communications
P3	2-pin Wire Crimp.........................	Power

P1 I/O & Power

Flying leads

Wire Color	Function
White/Yellow	I/O1
White/Orange	I/O2
White/Violet	I/O3
White/Blue	I/O4
Green	Analog In
Black	Ground
Red	+V

P1 I/O

14-pin wire crimp

```
Step Clock ——  13  14  —— Direction
Capture/Trip ——  11  12  —— Analog In
I/O11 ——   9  10  —— I/O12
I/O9 ——   7   8  —— I/O10
I/O3 ——   5   6  —— I/O4
I/O1 ——   3   4  —— I/O2
I/O Power ——   1   2  —— I/O GND
```
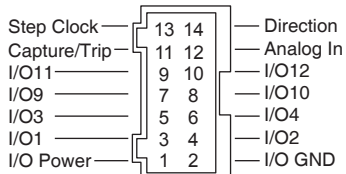
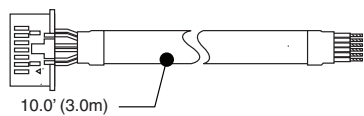***Prototype Development Cable p/n: PD14-2334-FL3***

Speed test and development with pre-wired mating connector.

To MDrivePlus
14-pin wire crimp
JST connector

To I/O

10.0' (3.0m)

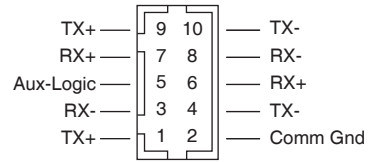| Pair	Wire Colors	Function
1	Black	Direction
	White	Step Clock
2	Black	Analog In
	Green	Capt/Trip
3	Black	I/O12
	Blue	I/O11
4	Black	I/O10
	Yellow	I/O9
5	Black	I/O4
	Brown	I/O3
6	Black	I/O2
	Orange	I/O1
7	Black	I/O Ground
	Red	I/O Power

Mating Connector Kit p/n: CK-09

Use to make your own cables, kit contains 5 mating connector shells with crimp pins. JST crimp tool recommended.

JST Parts	Shell:	PADP-14V-1-S
	Pins:	SPH-001T-P0.5L
	Crimp Tool:	YHT 2622

P3 Power

2-pin wire crimp

```
2 —— GND
1 —— Power
```

Prototype Development Cable p/n: PD02-3400-FL3

Function: Power Interface

To MDrivePlus
2-pin wire crimp
Molex connector

To Power

10.0' (3.0m)

Wire Colors	Function
Black	Power Ground
Red	+V

Mating Connector Kit p/n: CK-05

Use to make your own cables, kit contains 5 mating connector shells with crimp pins. Tyco crimp tool recommended.

Molex Parts	Shell:	510-67-0200
	Pins:	502-17-91011
	Crimp Tool:	63811-1200

P2 Communications

10-pin wire crimp

```
TX+ ——  9  10  —— TX-
RX+ ——  7   8  —— RX-
Aux-Logic ——  5   6  —— RX+
RX- ——  3   4  —— TX-
TX+ ——  1   2  —— Comm Gnd
```
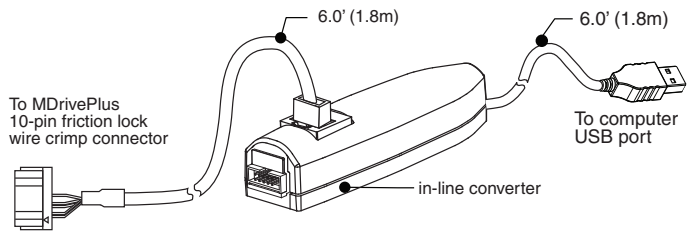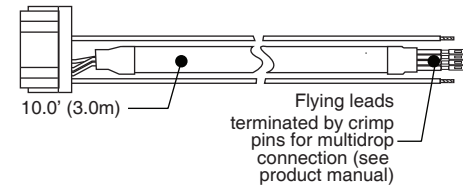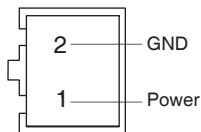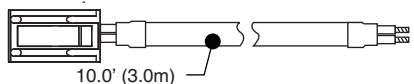
Communications Converter p/n: MD-CC402-001

Electrically isolated in-line USB to RS-422/485 converter pre-wired with mating connector to conveniently program and set configuration parameters.

6.0' (1.8m)   6.0' (1.8m)

To MDrivePlus
10-pin friction lock
wire crimp connector

To computer
USB port

in-line converter

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.

To MDrivePlus
10-pin friction lock
wire crimp connector

To Communications

10.0' (3.0m)

Flying leads terminated by crimp pins for multidrop connection (see product manual)

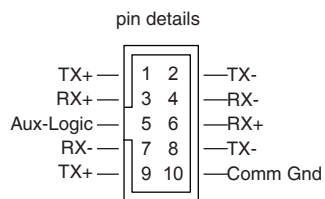| Wire Colors	Function
White/Red Stripe	Aux-Logic
White/Blue Stripe	TX+
Blue/White Stripe	TX-
White/Orange Stripe	RX+
Orange/White Stripe	RX-
Green/White Stripe	GND

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

P2 Communications

10-pin IDC

pin details

```
TX+ ——  1   2  —— TX-
RX+ ——  3   4  —— RX-
Aux-Logic ——  5   6  —— RX+
RX- ——  7   8  —— TX-
TX+ ——  9  10  —— Comm Gnd
```
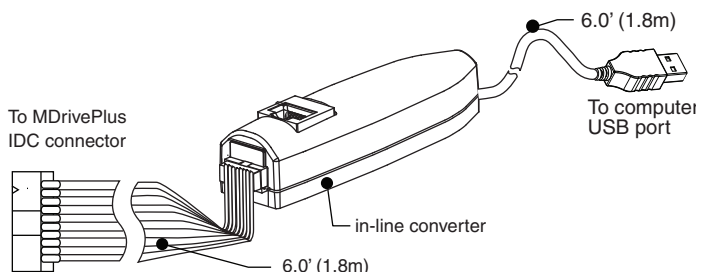
Communications Converter p/n: MD-CC400-001

Electrically isolated in-line USB to RS-422/485 converter pre-wired with mating connector to conveniently program and set configuration parameters.

6.0' (1.8m)

To MDrivePlus
IDC connector

To computer
USB port

in-line converter

6.0' (1.8m)

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