WARNING! DO NOT connect or disconnect the Communications Converter Cable from MForce while power is applied!

MD-CC40x-001 Communications Cable

The MD-CC40x-001 is an in-line USB to RS-422/4895 converter with attachable cable to interface with the MForce MicroDrive P2 Communications connector. The included components will allow you to connect the USB port of a PC directly to the MForce Motion Control. The converter will automatically detect if RS422 or RS485 is being used and configure itself accordingly

There are three variations of this cable, which can be used with the different P2 connector variations of the MForce MicroDrive:

1. MD-CC400-001 USB to 10-Pin IDC connector.
2. MD-CC402-001 USB to 10-Pin Friction Lock Wire Crimp Connector. Note that this cable also has an optional prototype development cable available to interface to multiple MForces for party mode communications. Part Number PD10-1430-FL3.

The MD-CC40x-001 communications converter cable is designed to be used with all MForce, MForce MicroDrive and MForce MicroDrive Motion Control devices that utilize an RS-422/485 interface.

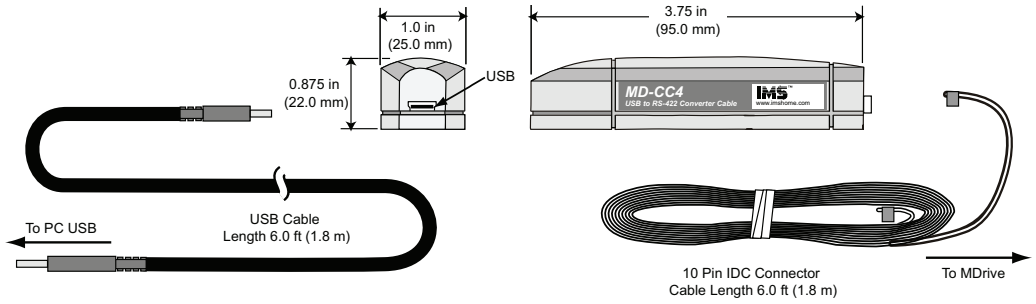
Supplied Components: MD-CC40x-001 Communications Converter, Drive Interface Cable, USB Cable, USB Drivers, IMS Terminal Interface Software.

Electrical Specifications

MD-CC40x-001 Specifications	
BAUD Rate	Up to 115 kbps
Power Requirement	Power from USB

Table D.1: MD-CC40x-001 Electrical Specifications

MD-CC400-001 Mechanical Specifications and Connector Details



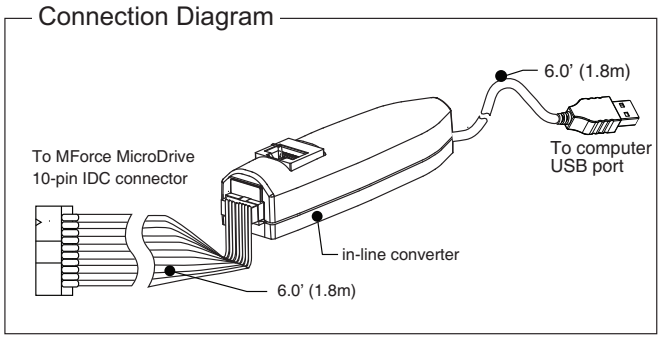


Figure D.1: MD-CC400-001 Mechanical Specifications and Connection

Connector Detail and Mating Connector Kit

Should you choose to create your own interface cable IMS now has mating connector kits available which assist you in creating interface cables in small quantities. These kits come with the connector shells and crimp pins (if applicable) to create five interface cables.

Connector Details

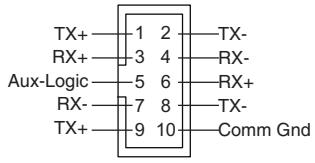


Figure D.2: 10-Pin IDC

Mating Connector Kit p/n: CK-01

Description:	5 mating connector shells for making interface cables to MForce's 10-pin IDC connector. 2-piece connector shell crimps onto a 10 conductor AMP ribbon cable. Ribbon Cable is not included.	
IDC Parts:	Shell:	SAMTEC TCSD-05-01-N
	Ribbon Cable:	AMP 1-57051-9

Using the MD-CC400-001 in MultiDrop Configuration

Required: MD-CC400-001 USB to RS-422 Communications Converter

Mating Connector Kit CK-01 or equivalent

1. Crimp the requred number of IDC connectors on the ribbon cable. If additional length is required, cable extenders are available from SAMTEC or an interface ribbion cable may be made to the length required. (IMS recommends not exceeding 15' cable length with ribbon cable).
2. Remove the ground conductor (Pin 10) between all connectors except the connector for the first MForce in the daisy chain. This is to prevent communication errors and and potential damage due to ground loops. See Figure D.3

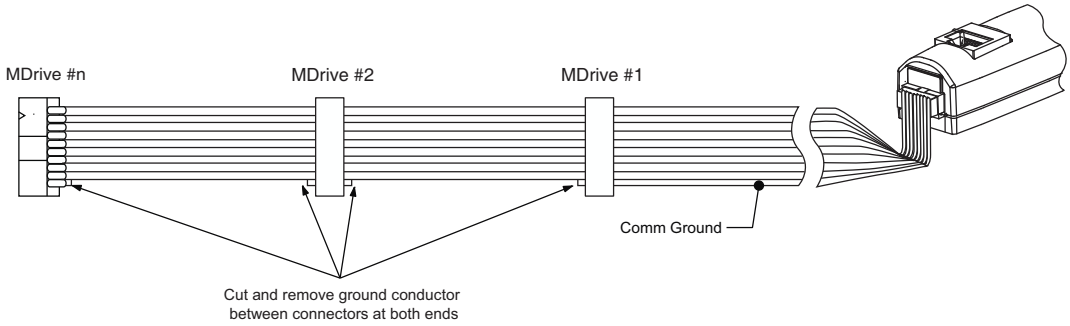


Figure D.3: Configuring the MD-CC400-001 for Multi-drop (Party Mode) Communications

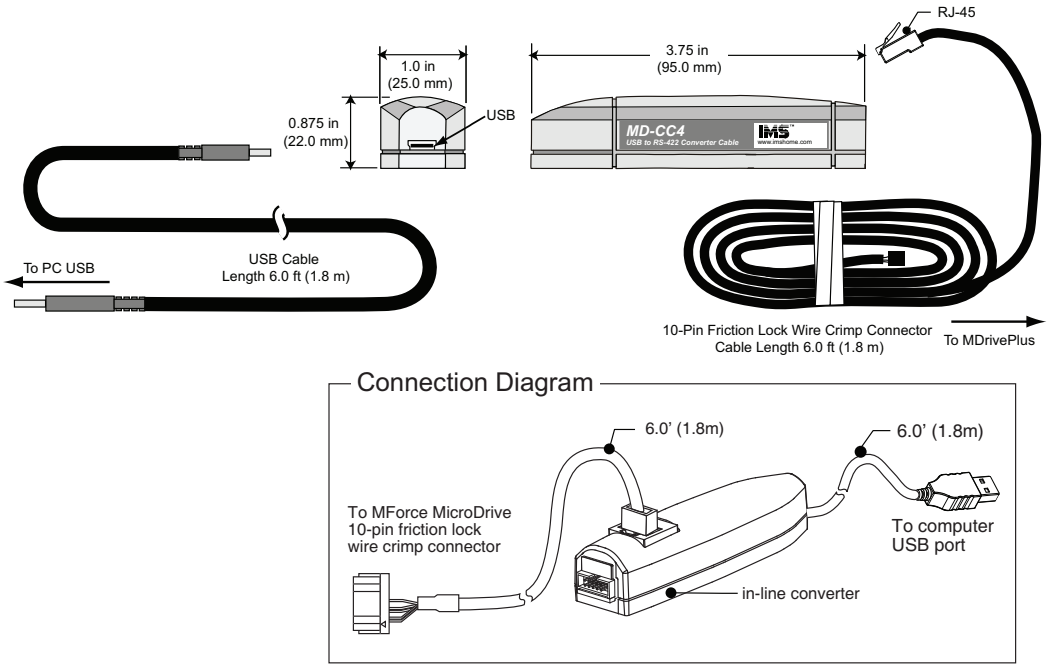
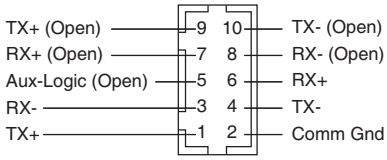


Figure D.4: MD-CC402-000 Mechanical Specifications and Connection

Connector Detail and Mating Connector Kit

Should you choose to create your own interface cable IMS now has mating connector kits available which assist you in creating interface cables in small quantities. These kits come with the connector shells and crimp pins to create five interface cables.

Connector Details



Pins 5-10 are left open to facilitate use of the PD10-1434-FL3 for multi-drop communications and connection of Aux-Logic.

Figure D.5: 10-Pin Wire Crimp

Mating Connector Kit p/n: CK-02

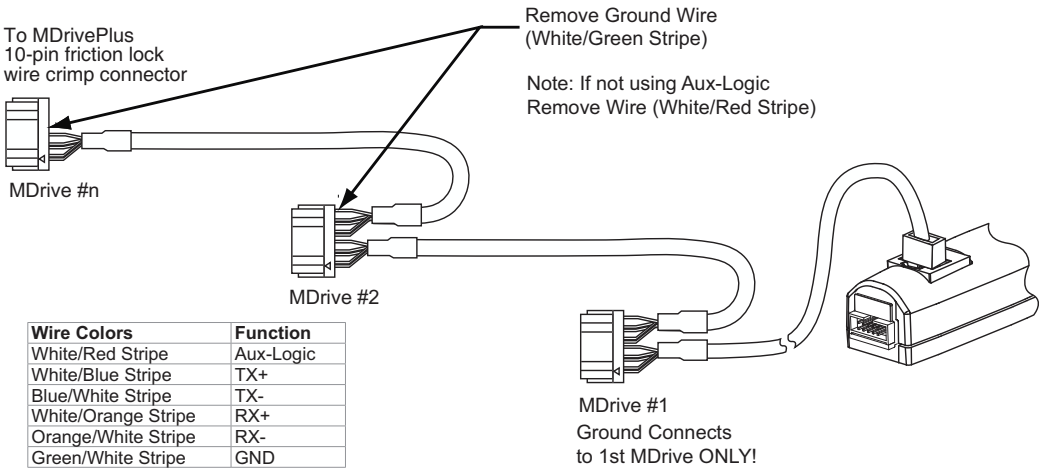
Description:	5 mating connector shells and crimp pins. Recommend Hirose Crimp tool (Not included).	
Hirose Parts:	Shell:	DF11-10DS-2C
	Pins:	DF11-2428SC
	Crimp Tool:	DF11-TA2428HC

PD-10-1434-FL3 and MD-CC402-001 in MultiDrop Configuration

Required: MD-CC402-001 USB to RS-422 Communications Converter

Prototype Development Cable PD10-1434-FL3

1. Connect crimp pins into the appropriate connector locations on the 10-pin wire crimp that are left open on the MD-CC402-001 for this purpose.
2. Remove the ground conductor (Pin 10) between all connectors except the connector for the first MForce in the daisy chain. This is to prevent communication errors and and potential damage due to ground loops. See Figure D.6



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

Figure D.6: Configuring the MD-CC402-001 for Multi-drop (Party Mode) Communications

Installation Procedure for the MX-CC40x-000

Note: An Interactive Tutorial covering the installation of the Cable/VCP drivers are located on the IMS Web Site at http://www.imshome.com/tutorials.html.

These Installation procedures are written for Microsoft Windows XP Service Pack 2. Users with earlier versions of Windows please see the alternate installation instructions at the IMS web site (http://www.imshome.com).

The installation of the MD-CC40x-001 requires the installation of two sets of drivers:

- Drivers for the IMS USB to RS-422 Converter Hardware.
- Drivers for the Virtual Communications Port (VCP) used to communicate to your IMS Product.

Therefore the Hardware Update wizard will run twice during the installation process.

The full installation procedure will be a two-part process: Installing the Cable/VCP drivers and Determining the Virtual COM Port used.

Installing the Cable/VCP Drivers

Before beginning installation, download the drivers from http://www.imshome.com/cable_drivers.html and extract to a location on you hard drive.

1) Plug the USB Converter Cable into the USB port of the MD-CC40x-001.

2) Plug the other end of the USB cable into an open USB port on your PC.

3) Your PC will recognize the new hardware and open the Hardware Update dialog.

4) Select “No, not this time” on the radio buttons in answer to the query “Can Windows Connect to Windows Update to search for software?” Click “Next” (Figure D.7).

Figure D.7: Hardware Update Wizard

5) Select “Install from a list or specific location (Advanced)” on the radio buttons in answer to the query “What do you want the wizard to do?” Click “Next” (Figure D.8).

6) Select “Search for the best driver in these locations.”
(a) Check “Include this location in the search.”
(b) Browse to the location of the extracted driver files.
(c) Click Next (Figure D.9).

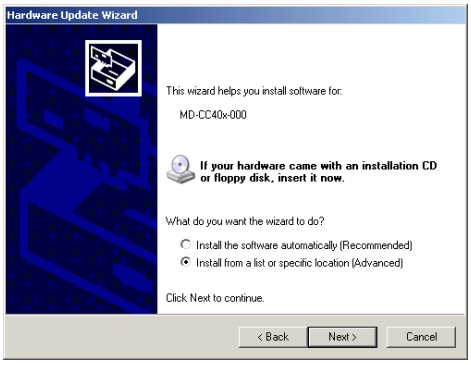


Figure D.8: Hardware Update Wizard Screen 2

7) The drivers will begin to copy.

8) On the Dialog for Windows Logo Compatibility Testing, click “Continue Anyway” (Figure D.10).

9) The Driver Installation will proceed. When the Completing the Found New Hardware Wizard dialog appears, Click “Finish” (Figure D.11).

10) Upon finish, the Welcome to the Hardware Update Wizard will reappear to guide you through the second part of the install process. Repeat steps 1 through 9 above to complete the cable installation.

11) Your IMS MD-CC402-001 is now ready to use.

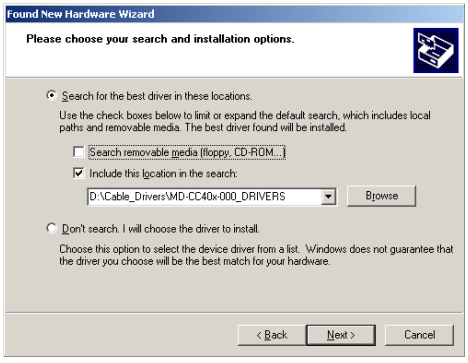


Figure D.9: Hardware Update Wizard Screen 3

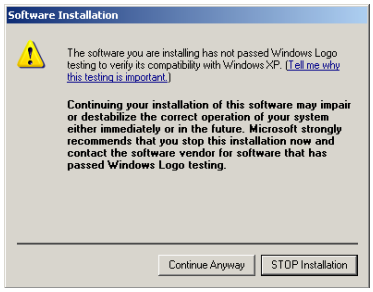


Figure D.10: Windows Logo Compatibility Testing

Figure D.11: Hardware Update Wizard Finish Installation

Determining the Virtual COM Port (VCP)

The MD-CC40x-000 uses a Virtual COM Port to communicate through the USB port to the MForce. A VCP is a software driven serial port which emulates a hardware port in Windows.

The drivers for the MD-CC40x-001 will automatically assign a VCP to the device during installation. The VCP port number will be needed when IMS Terminal is set up in order that IMS Terminal will know where to find and communicate with your IMS Product.

To locate the Virtual COM Port.

1) Right-Click the “My Computer” Icon and select “Properties”.
2) Browse to the Hardware Tab (Figure D.12), Click the Button labeled “Device Manager”.
3) Look in the heading “Ports (COM & LPT)” IMS USB to RS422 Converter Cable (COMx) will be listed (Figure D.13). The COM # will be the Virtual COM Port connected. You will enter this number into your IMS Terminal Configuration.

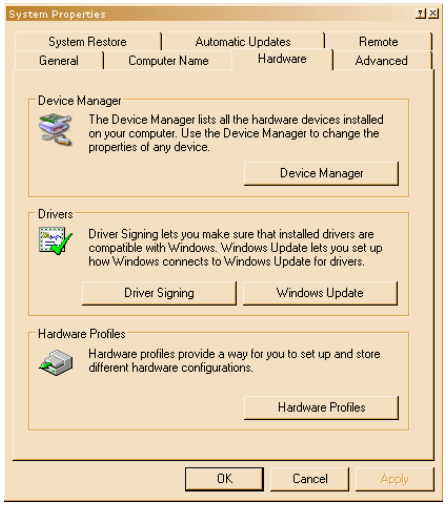


Figure D.12 Hardware Properties

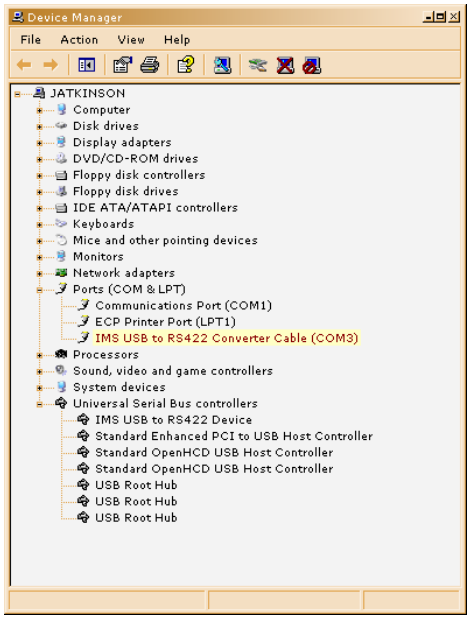


Figure D.13: Windows Device Manager