



APPLICATION NOTE

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Product Family: C-more

Number: AN-EA-014

Subject: C-more USB driver guide

Date Issued: 10-3-2013

Revision:

C-More Universal Serial Bus (USB) Device Driver Guide

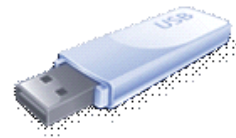
This is a practical guide for troubleshooting USB Driver installation on Windows XP and Windows 7 for the Automation Direct C-More HMI.

INTRODUCTION

Universal Serial Bus (USB) is a fast interface for connecting devices to computers. These devices can be standard peripherals, like keyboards, mice and hard drives, or custom devices like the C-More HMI. This guide focuses on Windows XP, Windows 7, and USB 2.0, since they are the predominant platform technologies that ADC customers use.



TYPICAL DEVICES

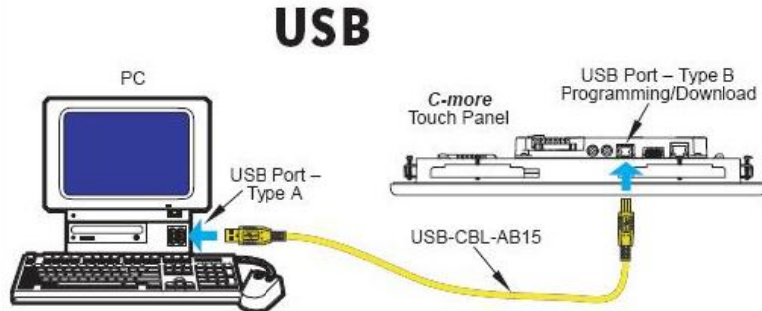




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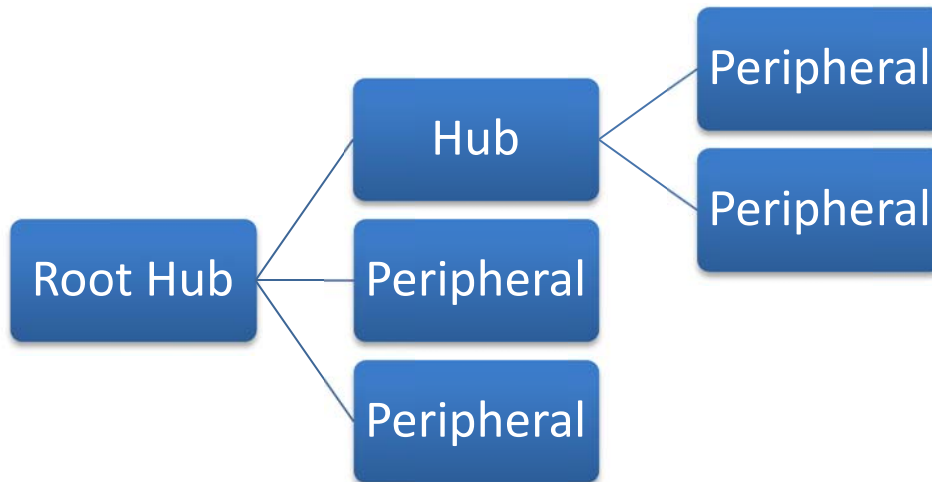
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CUSTOM DEVICE (C-More HMI)



Conceptually, when USB devices are connected to a computer, they are logically arranged in a hierarchy, originating at a top level device (called the root hub) and then proceeding downward as either a port expansion device (called a hub) or an end point device (called a peripheral). This is important to remember because a single device can be moved among different physical USB ports on the host computer and this has implications in Windows Device Manager (as well as Windows Registry)

BUS TOPOLOGY



When a USB peripheral is initially plugged into a PC, the USB hardware and software architecture goes through a process of device detection and driver selection. This is commonly referred to as "enumeration".



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ENUMERATION (Generic)

1. Physical connection
2. USB Root Hub queries for Device Descriptors (Vendor_ID and Product_ID) from Peripheral
3. Windows USB implementation searches for INF file containing a matching Vendor_ID and Product_ID

TROUBLESHOOTING

It is not possible to know what USB devices have been used with a given PC. With this in mind, it is imperative to establish a known baseline that represents what the machine looks like during a first time installation. To do this, you must unwind all previously installed software and remove any system generated data that resides in the Windows Registry.

The main tool to use for managing USB devices is the Windows Device Manager. This is a component of the Microsoft Management console and is the primary way to view and manipulate USB device information. It provides an ordered way to deal with the device registry data that is generated during a USB device install or uninstall.

The other tool to use is the Windows Control Panel. This is the primary mechanism for viewing and uninstalling application software.

Windows XP and Windows 7 have some differences in USB device management, so those situations are described separately in the following sections.

Important: "Run as administrator" for all steps.

This will avoid situations where operations are administratively prohibited by lower privileges. Ideally, it is best to be logged in with an administrator account, but you can also indicate administrator privileges as you go.

Note: The directions and screen captures in this document are relevant to the following software.

Software	Version
Windows XP	SP3
Windows 7	SP1
C-More Programming Software	2.78
C-More USB Driver	2.1.3.0



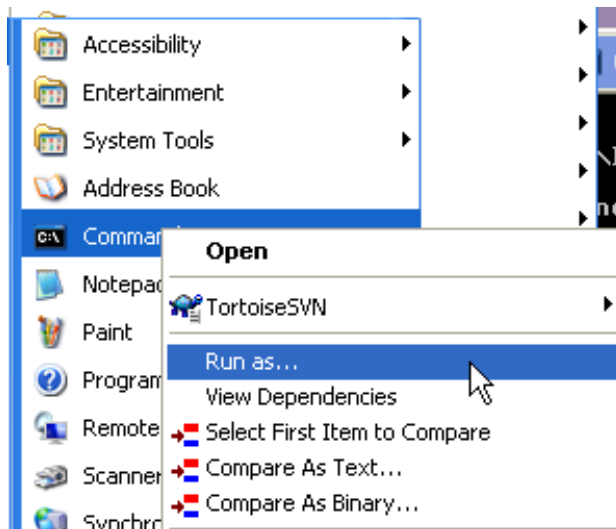
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WINDOWS XP BASELINE PROCEDURE

Set Initial Conditions: (Establish clean baseline)

1. Disconnect ALL C-more USB devices. I.E. physically remove the USB cable between the PC and the C-more panel.
2. Device Manager:
 - a. Click on the Start Button.
 - b. Click on All Programs.
 - c. Click on Accessories.
 - d. Right mouse click on Command Prompt.
 - e. From the pop-up menu, choose "Run as..."

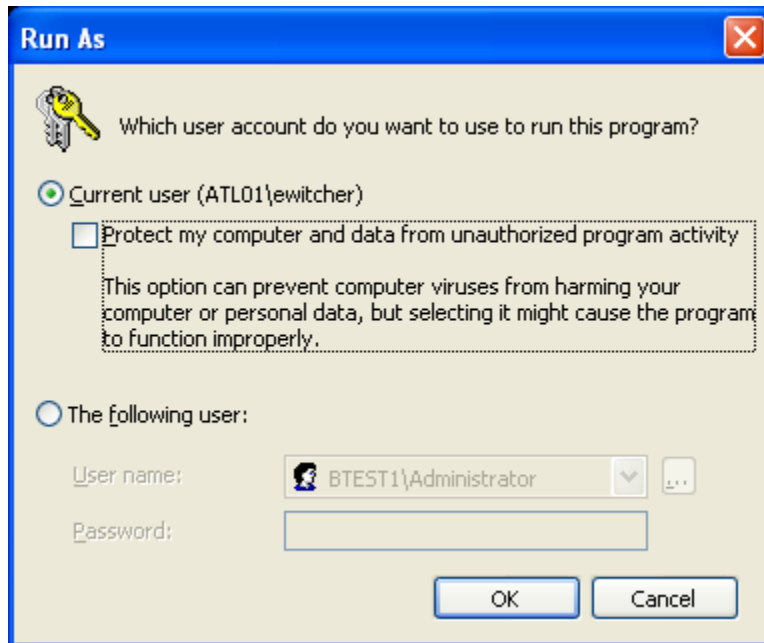


- f. At the "Run As" dialog box, choose Current User if that user has administrator privileges, otherwise, choose "The following user:" and enter credentials for a user that has administrator privileges. If you use Current User, make sure to uncheck the "Protect my computer and data from unauthorized program activity" box.



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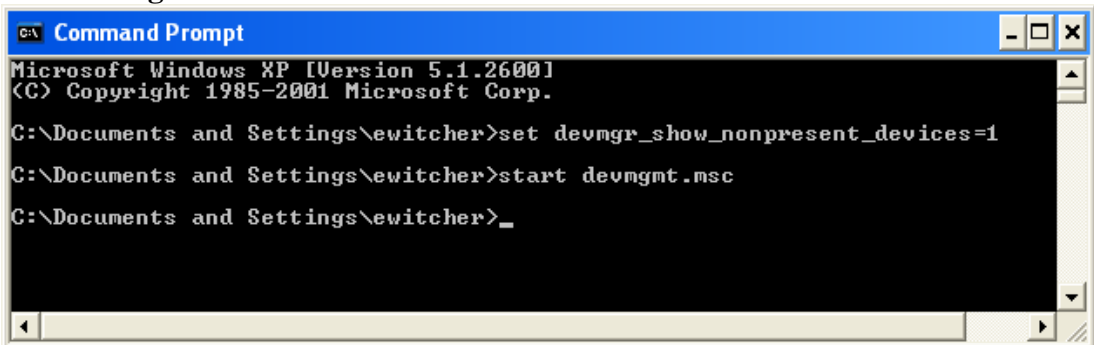
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- g. Click on OK.
- h. At the command prompt, type

set devmgr_show_nonpresent_devices=1 <Enter>

start devmgmt.msc <Enter>



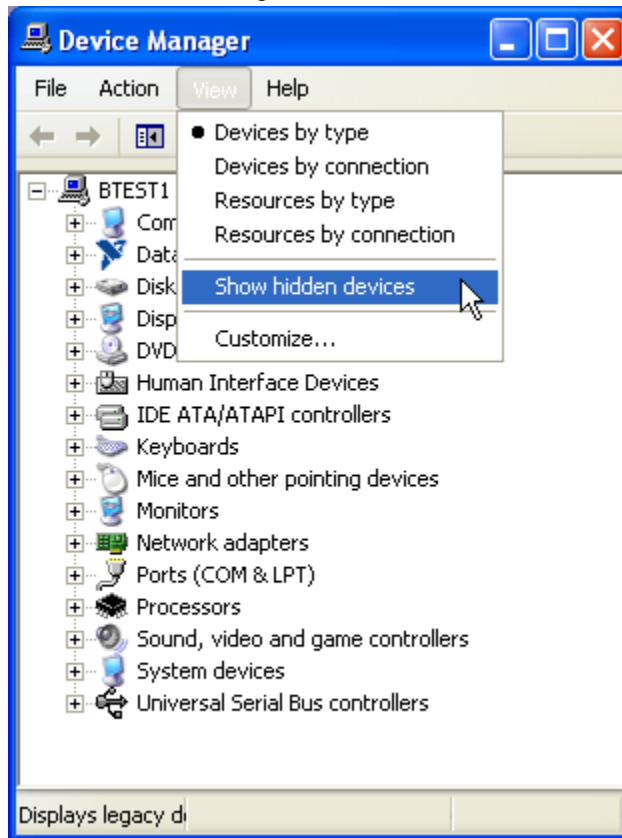
This will launch the Device Manager application in another window.



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- i. On the Device Manager menu bar, choose View->Show hidden devices



- j. Click on the Universal Serial Bus controllers item to expand the device list. Note any C-more devices that are indicated with a greyed out icon. You should not see any C-more devices shown that are not greyed out. If you do, then you still have a C-more panel physically connected to the PC. As mentioned before, if you have connected a single C-more panel to different USB ports on the PC, you will see multiple entries here. This is because the information is maintained on a port by port basis.

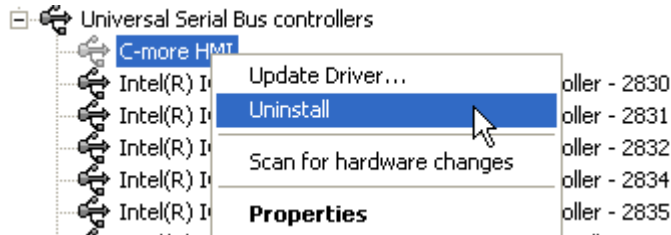


On each C-more device, right mouse click on the entry and choose "Uninstall" from the pop-up menu

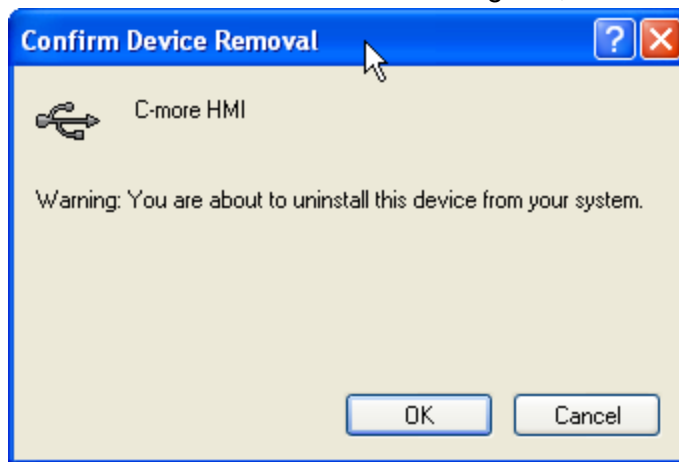


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- k. At the Confirm Device Removal dialog box, click on "OK".



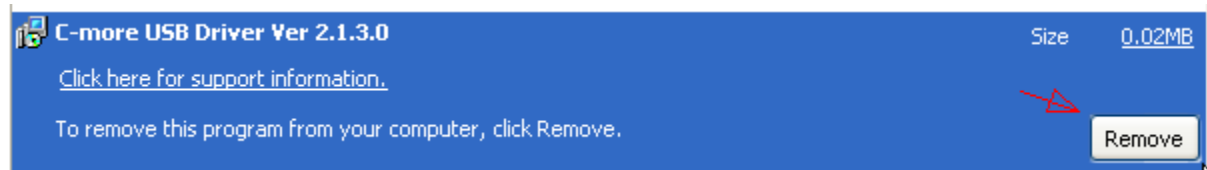
- l. At this point, you will have removed all C-more driver associations in the device manager. **Please note that the C-more device driver software is still installed on the PC hard drive—contrary to what may be suggested by the term "Uninstall" in the Device Manager.**

3. Control Panel:

- a. Click on the Start Button.
- b. Click on the Control Panel Button.
- c. In the Classic View, double-click on Add or Remove Programs icon.



- d. In the Add or Remove Programs window, click on the C-More USB Driver Version 2.1.3.0 Remove button.

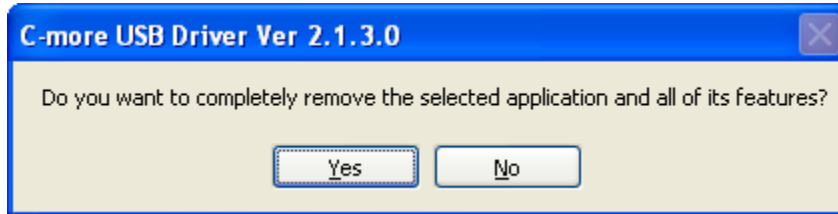




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- e. Click on the “Yes” button in the C-more USB Driver Ver 2.1.3.0 dialog.



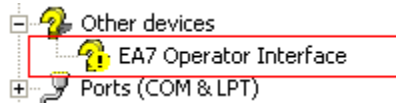
- f. At this point, the C-more driver INF file has been removed from the C:\Windows\INF directory. **However, the C-more USB Driver install directory is still intact and the kyceusb.inf file as well as the kyceusb.sys file remain in C:\Program Files\AutomationDirect\C-More USB Driver. Adding to the confusion—there is an empty folder in the C-More programming software install directory under C:\Program Files\AutomationDirect\C-more\USB Driver.**

4. Windows Explorer:

- a. Delete the directory C:\Program Files\AutomationDirect\C-more USB Driver
- b. Leave the directory C:\Program Files\AutomationDirect\C-more\USB Driver intact

5. Verification:

- a. To verify that you have a clean install base, plug the C-more panel USB cable into the PC USB port and the C-more panel USB port with the C-more panel power ON and check that you see the following in the device manager.



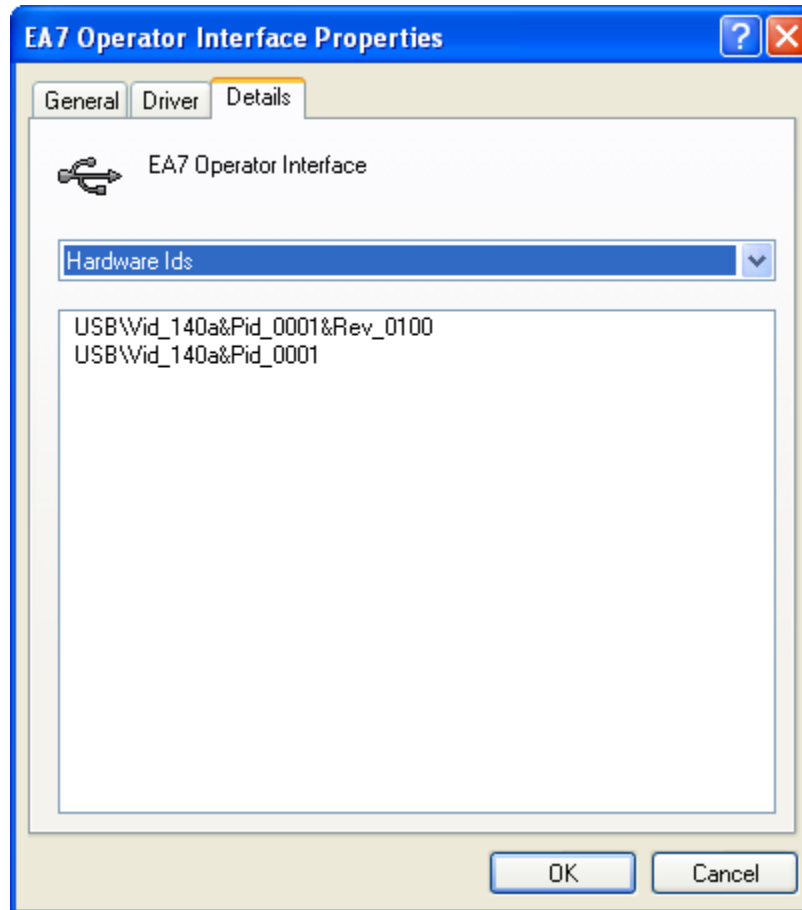
(Alternatively, this may show “Unknown Device”)

In addition, right mouse click on the item and select “Properties”, then go to the “Details” Tab. Confirm the Vendor ID (VID=140A) and Product ID (PID_0001) as shown below.



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This verifies three things.

1. C-more panel has power and has reported a valid USB Vendor ID and Product ID.
 2. The USB cable between the C-more panel and the PC is intact.
 3. There is no C-more USB driver installed.
- b. Unplug the USB cable. **IMPORTANT!**
- c. You are now ready for a normal install. Follow the instructions from the C-more Programming Software Installation Guide. (EA-PGMSW-SIG)
-



Windows 7

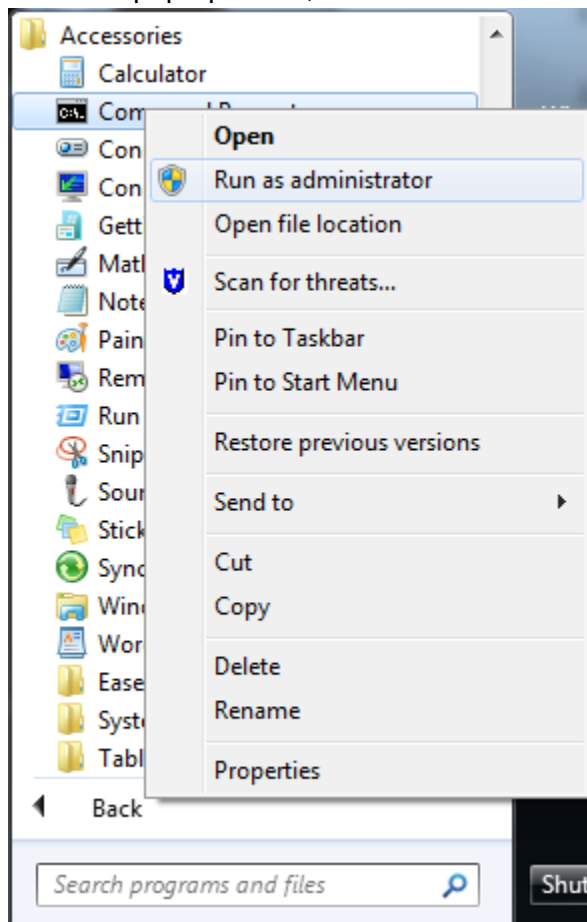
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WINDOWS 7 BASELINE PROCEDURE

Set Initial Conditions: (Establish clean baseline)

1. Disconnect ALL C-more USB devices. I.E. physically remove the USB cable between the PC and the C-more panel.
2. Device Manager:
 - a. Click on the Start Button.
 - b. Click on All Programs.
 - c. Click on Accessories.
 - d. Right mouse click on Command Prompt.
 - e. From the pop-up menu, choose "Run as administrator"



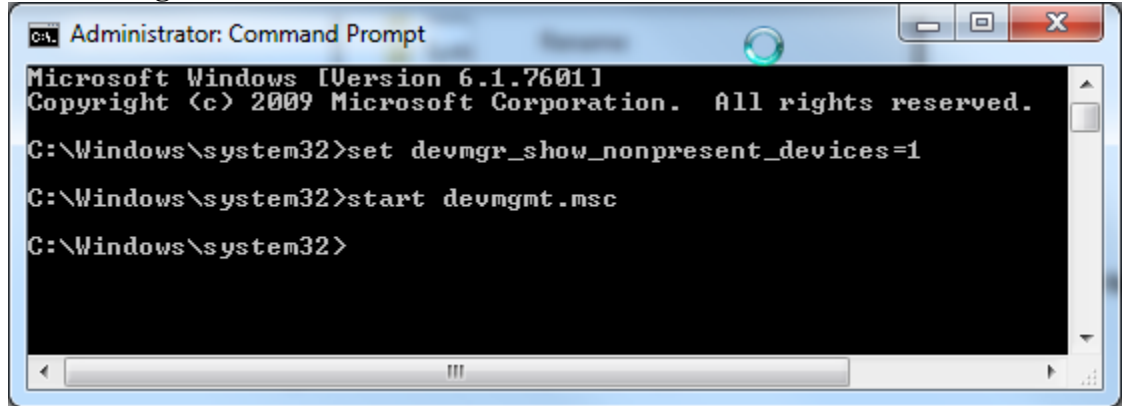
- f. If you see a User Account Control Dialog box, "Do you want the following program to allow changes to this computer?", click on "Yes".
- g. At the command prompt, type



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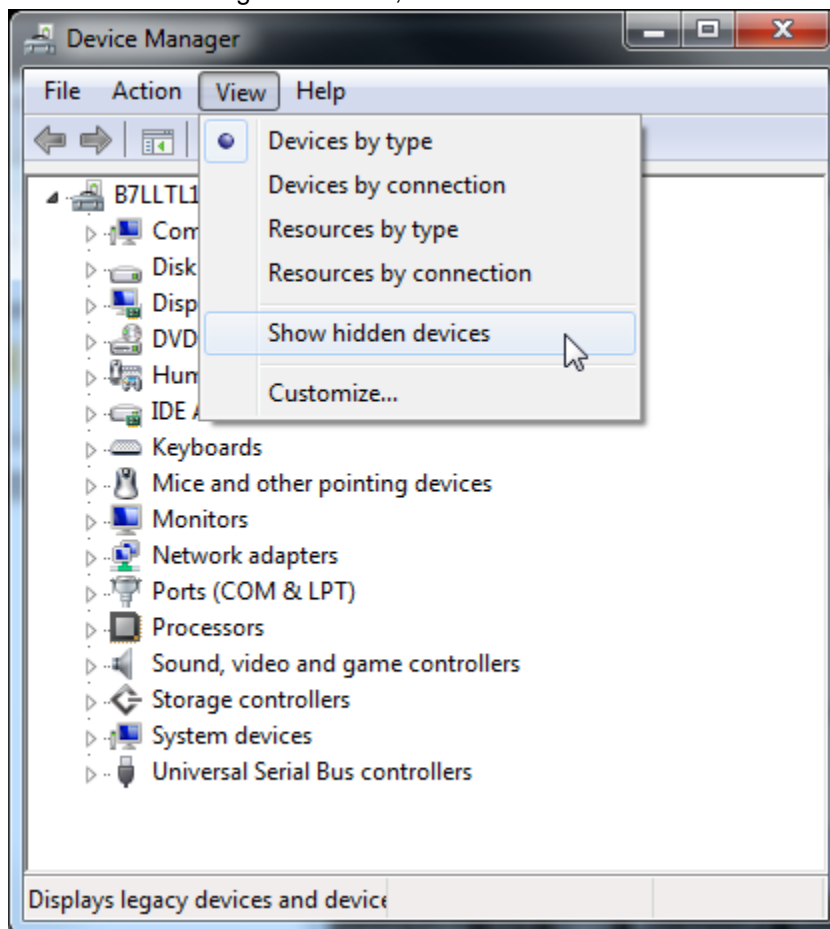
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set devmgr_show_nonpresent_devices=1 <Enter>
start devmgmt.msc <Enter>



This will launch the Device Manager application in another window.

- h. On the Device Manager menu bar, choose View->Show hidden devices



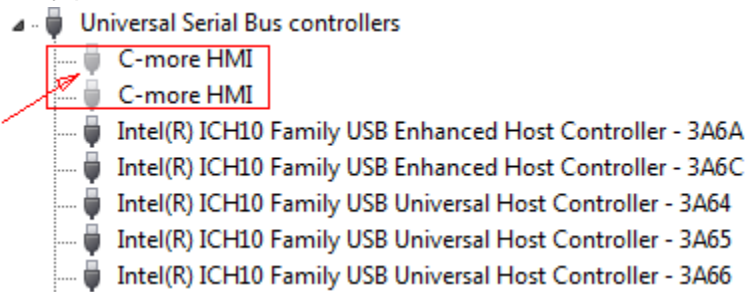
- i. Click on the Universal Serial Bus controllers item to expand the device list. Note any C-more devices that are indicated with a greyed out icon. You should not see any C-more devices shown that are not greyed out. If you do, then you still



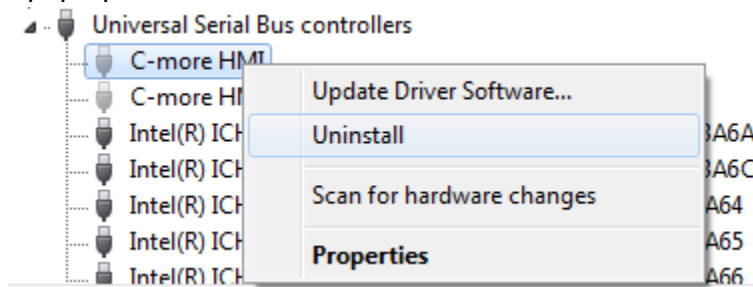
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have a C-more panel physically connected to the PC. As mentioned before, if you have connected a single C-more panel to different USB ports on the PC, you will see multiple entries here. This is because the information is maintained on a port by port basis.



- j. On each C-more device, right mouse click on the entry and choose "Uninstall" from the pop-up menu



- k. At the Confirm Device Uninstall dialog box, click on "OK". Do not select the "Delete the driver software for this device." check box.



- l. At this point, you will have removed all C-more driver associations in the device manager. **Please note that the C-more device driver software is still installed on the PC hard drive—contrary to what may be suggested by the term "Uninstall" in the Device Manager.**

3. Control Panel:

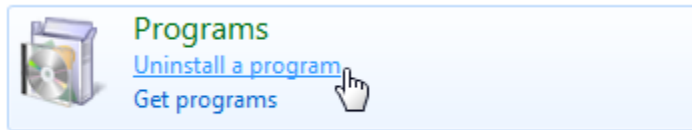
- a. Click on the Start Button.
- b. Click on the Control Panel Button.



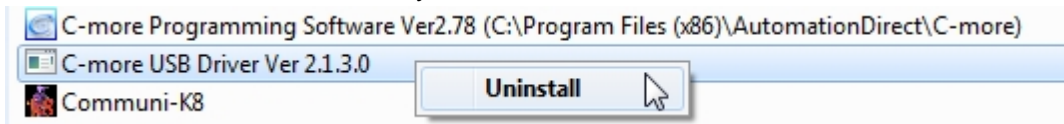
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- c. In the Category view, click on the Programs->Uninstall a program link.



- d. In the Uninstall or change a program window, Right mouse click on the C-More USB Driver Version 2.1.3.0 entry and select "Uninstall"



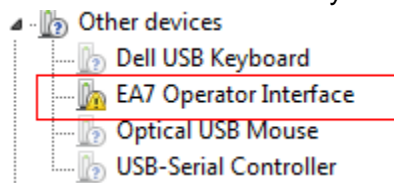
- e. At this point, the C-more driver INF file has been removed from the C:\Windows\INF directory. **However, the C-more install directory is still intact and the files [kyceusb.inf, kyceusb.sys , kyceusbx64.cat] remain in C:\Program Files (x86)\AutomationDirect\C-More USB Driver. In addition, the actual/effective driver file "kyceusb.sys" still remains in the C:\Windows\System32\drivers directory. Adding to the confusion—there is an empty folder in the C-More programming software install directory under C:\Program Files (x86)\AutomationDirect\C-moreUSB Driver.**

4. Windows Explorer:

- a. Delete the file C:\Windows\System32\drivers\kyceusb.sys
- b. Delete the directory C:\Program Files (x86)\AutomationDirect\C-more USB Driver
- c. Leave the directory C:\Program Files (x86)\AutomationDirect\C-more\USB Driver intact

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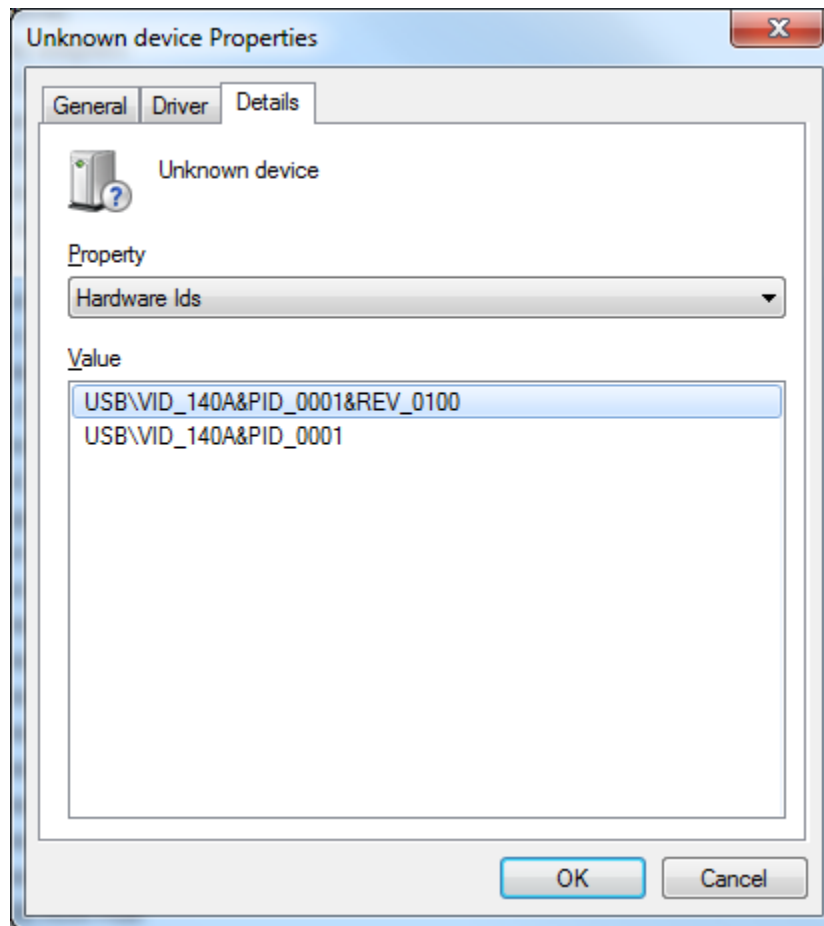
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 2. The USB cable between the C-more panel and the PC is intact.
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- b. Unplug the USB cable. **IMPORTANT!**
- c. You are now ready for a normal install. Follow the instructions from the C-more Programming Software Installation Guide. (EA-PGMSW-SIG)
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ADVANCED DEBUG

In the event that you continue to have problems after establishing a baseline and attempting a normal install, Windows provides some low-level logging capabilities for USB Device installations. This logging is performed automatically and creates one or more output files (depending on platform).

The log files contain useful information that can be provided to ADC technical support. Interpreting the contents of these files can give insight into where a given install is failing.

Windows XP	Windows 7
C:\Windows\setupapi.log	C:\Windows\INF\setupapi.dev.log
	C:\Windows\INF\setupapi.app.log

Windows XP “**setupapi.log**” excerpt (Install Success)

```
[2013/09/16 13:16:27 3476.2]
#-199 Executing "C:\WINDOWS\system32\rundll32.exe" with command line: rundll32.exe newdev.dll,ClientSideInstall
\\.\pipe\PNP_Device_Install_Pipe_0.{EDE664F2-579E-49AC-B3A7-00EF33BF80A1}
#I060 Set selected driver.
#-019 Searching for hardware ID(s): usb\vid_140a&pid_0001&rev_0100,usb\vid_140a&pid_0001
#-018 Searching for compatible ID(s): usb\class_00&subclass_00&prot_00,usb\class_00&subclass_00,usb\class_00
#I022 Found "USB\VID_140A&PID_0001" in C:\WINDOWS\inf\oem107.inf; Device: "C-more HMI"; Driver: "C-more HMI";
Provider: "KOYO ELECTRONICS INDUSTRIES CO.,LTD."; Mfg: "KOYO ELECTRONICS INDUSTRIES CO.,LTD."; Section name:
"KoyoDeviceModelName/Number_Inst".
#I087 Driver node not trusted, rank changed from 0x00000001 to 0x00008001.
#I023 Actual install section: [KoyoDeviceModelName/Number_Inst.NTx86]. Rank: 0x00008001. Effective driver date:
10/09/2007.
#-166 Device install function: DIF_SELECTBESTCOMPATDRV.
#I063 Selected driver installs from section [KoyoDeviceModelName/Number_Inst] in "c:\windows\inf\oem107.inf".
#I320 Class GUID of device remains: {36FC9E60-C465-11CF-8056-444553540000}.
...<OMITTED FOR BREVITY>
#-024 Copying file "C:\Program Files\AutomationDirect\C-more USB Driver\.\kyceusb.sys" to
"C:\WINDOWS\system32\DRIVERS\kyceusb.sys".
#E362 An unsigned or incorrectly signed file "C:\Program Files\AutomationDirect\C-more USB
Driver\.\kyceusb.sys" for driver "C-more HMI" will be installed (Policy=Warn). Error 1168: Element not found.
#-166 Device install function: DIF_REGISTER_COINSTALLERS.
#I056 Coinstallers registered.
#-166 Device install function: DIF_INSTALLINTERFACES.
#-011 Installing section [KoyoDeviceModelName/Number_Inst.NTx86.Interfaces] from "c:\windows\inf\oem107.inf".
#I054 Interfaces installed.
#-166 Device install function: DIF_INSTALLDEVICE.
#I123 Doing full install of "USB\VID_140A&PID_0001\5&18E0A94F&0&1".
#I121 Device install of "USB\VID_140A&PID_0001\5&18E0A94F&0&1" finished successfully.
```



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Windows 7 "setupapi.dev.log" excerpt (Install Success)

```
>>> [Device Install (Hardware initiated) - USB\VID_140A&PID_0001\5&24be52aa&0&2]
>>> Section start 2013/09/16 13:28:37.103
...<OMITTED FOR BREVITY>
dvi:                {Install DEVICE}
inf:                Opened PNF:
'c:\windows\system32\driverstore\filerepository\kyceusb.inf_amd64_neutral_3c25035bef86662c\kyceusb.inf'
({strings})
dvi:                Processing Registry/Property directives...
inf:                {Install Inf Section [KoyoDeviceModelName/Number_Inst]}
inf:                AddReg=KoyoDeviceModelName/Number.AddReg (kyceusb.inf line 30)
inf:                {Install Inf Section [KoyoDeviceModelName/Number_Inst] exit (0x00000000)}
inf:                {Install Inf Section [KoyoDeviceModelName/Number_Inst.Hw]}
inf:                Empty section
inf:                {Install Inf Section [KoyoDeviceModelName/Number_Inst.Hw] exit (0x00000000)}
dvi:                {Writing Device Properties}
dvi:                Provider name=KOYO ELECTRONICS INDUSTRIES CO.,LTD.
dvi:                DriverDate 02/06/2013
dvi:                DriverVersion=2.1.0.0
dvi:                Class name=USB
dvi:                Manufacturer=KOYO ELECTRONICS INDUSTRIES CO.,LTD.
dvi:                Matching DeviceID=usb\vid_140a&pid_0001
dvi:                Strong
Name=oem29.inf:KOYO.ntamd64:KoyoDeviceModelName/Number_Inst:2.1.0.0:usb\vid_140a&pid_0001
dvi:                {Writing Device Properties - Complete}
inf:                {Install Inf Section [KoyoDeviceModelName/Number_Inst.Services]}
inf:
AddService=kyceusb,0x00000002,KoyoDeviceModelName/Number_Service_Inst,KoyoDeviceModelName/Number_EventLog_Inst
(kyceusb.inf line 33)
inf:                ServiceType=0x1 (kyceusb.inf line 36)
inf:                StartType=0x3 (kyceusb.inf line 37)
inf:                ErrorControl=0x0 (kyceusb.inf line 38)
inf:                ServiceBinary=C:\Windows\system32\DRIVERS\kyceusb.sys (kyceusb.inf line 39)
dvi:                Add Service: Modified existing service 'kyceusb'.
inf:                AddReg=KoyoDeviceModelName/Number_EventLog_Inst.AddReg (kyceusb.inf line
50)
inf:                {Install Inf Section [KoyoDeviceModelName/Number_Inst.Services] exit(0x00000000)}
dvi:                Updated reflected section names for: oem29.inf
dvi:                {Install DEVICE exit (0x00000000)}
dvi:                Writing common driver property settings.
dvi:                DriverDescription=C-more HMI
dvi:                DeviceDisplayName=C-more HMI
dvi:                Install Device: Restarting device. 13:28:59.661
dvi:                Install Device: Restarting device completed. 13:28:59.723
dvi:                Default installer: Exit
dvi:                {DIF_INSTALLDEVICE - exit(0x00000000)} 13:28:59.723
dvi:                {DIF_NEWDEVICEWIZARD_FINISHINSTALL} 13:28:59.723
dvi:                No class installer for 'C-more HMI'
dvi:                Default installer: Enter 13:28:59.723
dvi:                Default installer: Exit
dvi:                {DIF_NEWDEVICEWIZARD_FINISHINSTALL - exit(0xe000020e)} 13:28:59.723
ndv:                Device install status=0x00000000
ndv:                Performing device install final cleanup...
ndv:                {Core Device Install - exit(0x00000000)} 13:28:59.723
ump: Server install process exited with code 0x00000000 13:28:59.739
<<< Section end 2013/09/16 13:28:59.739
<<< [Exit status: SUCCESS]
```




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Event Tracing for Windows

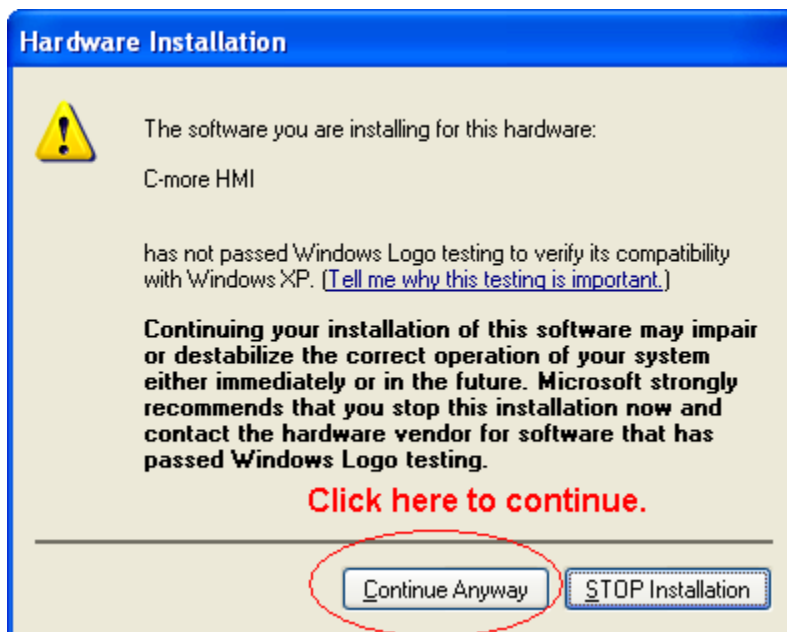
For even lower level debugging involving the USB hardware or USB stack, you can use Event Tracing for Windows (ETW). Event Tracing for Windows is a kernel-level tracing facility that can capture kernel or application-defined events to a log file. This has finer granularity control than the log files above.

OTHER CONSIDERATIONS

In general, it is a good idea to install the USB driver software package first, **WITHOUT** the USB device connected. Once the software is installed, you should then physically plug the device into the desired USB port.

The C-More HMI USB driver has not undergone any Windows Logo testing. As a result, on Windows XP, when you go through the user interactive install steps after plugging in a device, you will see the following dialog. Click on the "Continue Anyway" button to proceed since this is expected.

Windows XP - Windows Logo testing warning dialog



Starting with C-More Version 2.78, the C-More USB driver package contains a digital signature to be compliant with the latest Windows 7 security model. We strongly urge customers to upgrade to this version of C-More software when possible.

In the event that a customer wants to run an older version of the C-more Software (and use the corresponding USB driver version) on Windows 7 (x64) they will run into two issues. The first issue is that Windows 7 (x64) has a setting that disallows



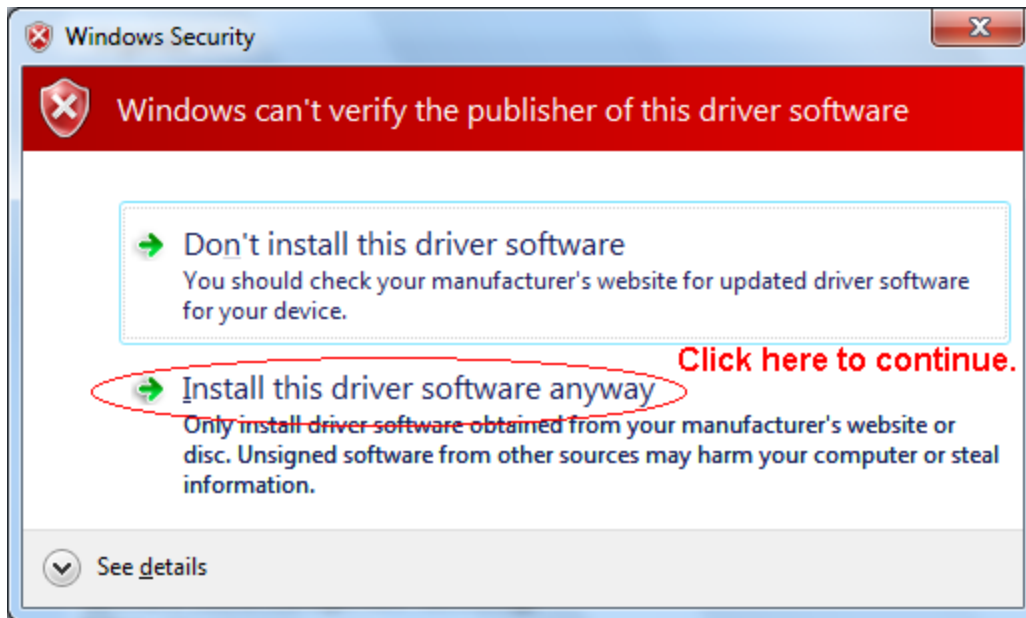
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installation of an “unsigned” driver. The workaround for this limitation is to restart the machine and hit the <F8> key to access the Advanced Boot Options screen. From here, use the arrow key to highlight the “Disable Driver Signature Enforcement” entry and then hit the <Enter> key. After the OS completes booting, then install the C-more Programming Software and the USB driver software.

The second issue is that they will encounter the following Windows Security dialog box after inserting the USB device into a USB port. The proper procedure is to click on the “Install this driver software anyway” button since this is expected.

Windows 7 – Unsigned Driver Warning



Windows also supports extensive features for workstation management by a central IT organization. These features are managed through “Group policy” practice. These can be enabled on a machine-by-machine basis, or on a network basis. These policy items can prohibit or allow a user accessing computer or network resources. In addition, you can define a policy to prevent a user from enumerating a USB device. However, this is not a common practice.

By design, the default Windows 7 USB driver installation first searches the internet based Microsoft driver repository. In some cases, we have seen this fail, and as a result the desired USB driver is not correctly installed. You can change this behavior and prevent Windows 7 from doing a network search by the following procedure.

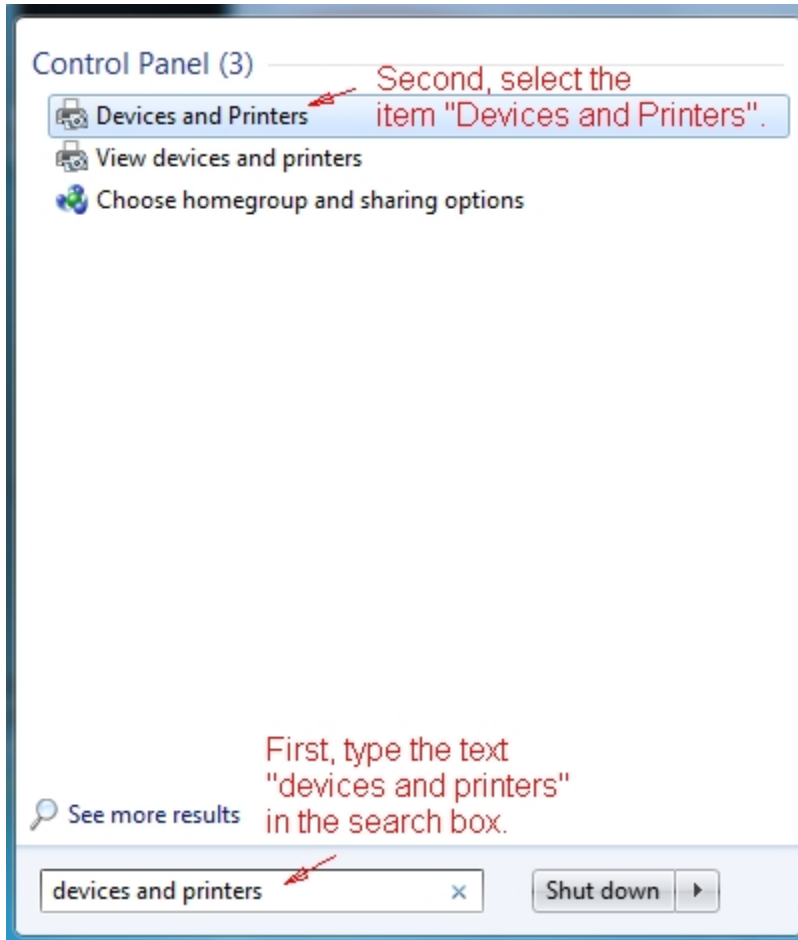


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Change “Device installation settings”

1. Click the **Start** button, type “**devices and printers**” in the search box, then select “**Devices and Printers**”.

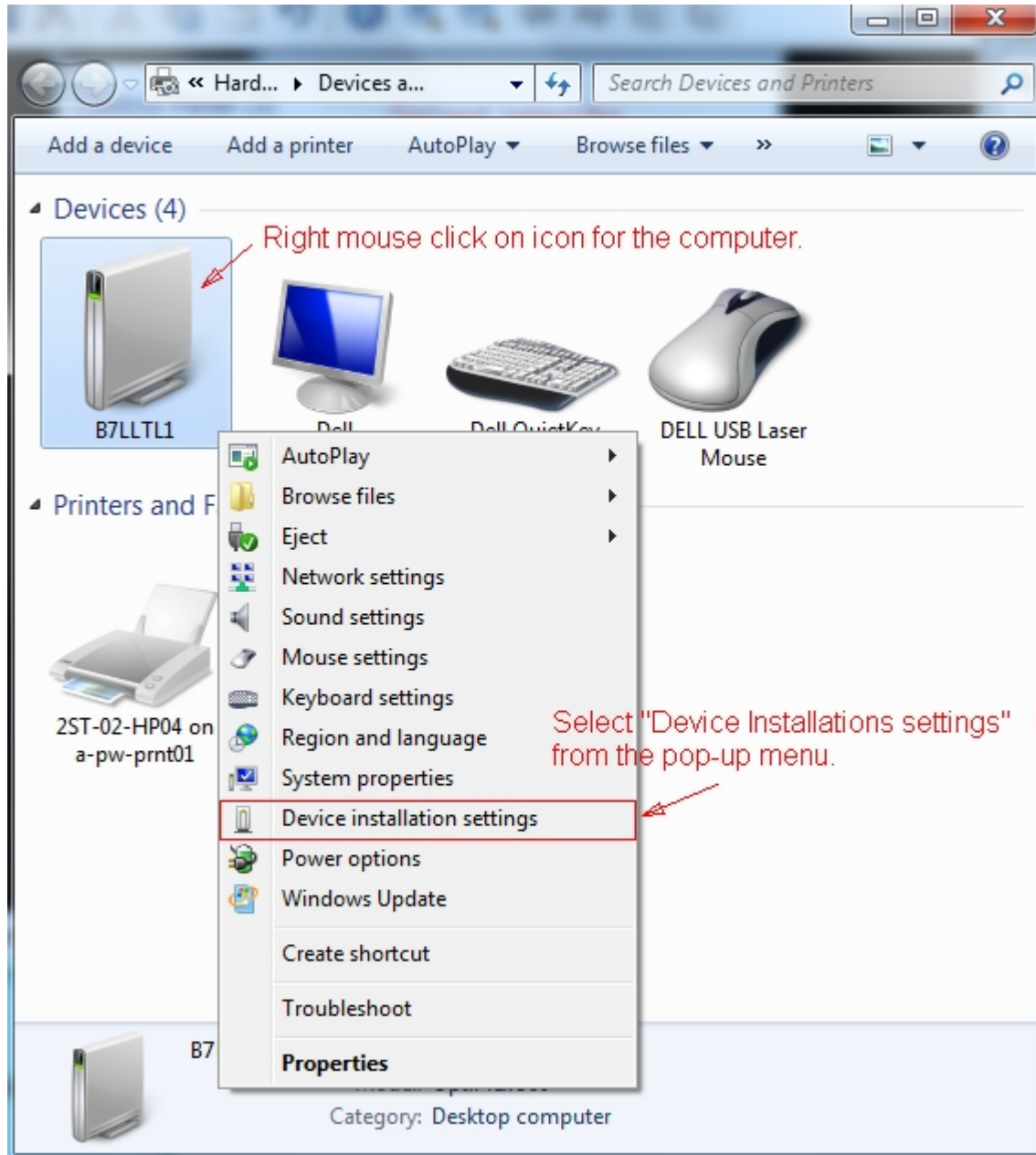


2. In the **Devices** section, right mouse click the icon for the computer, then select the “**Device installation settings**” menu item.



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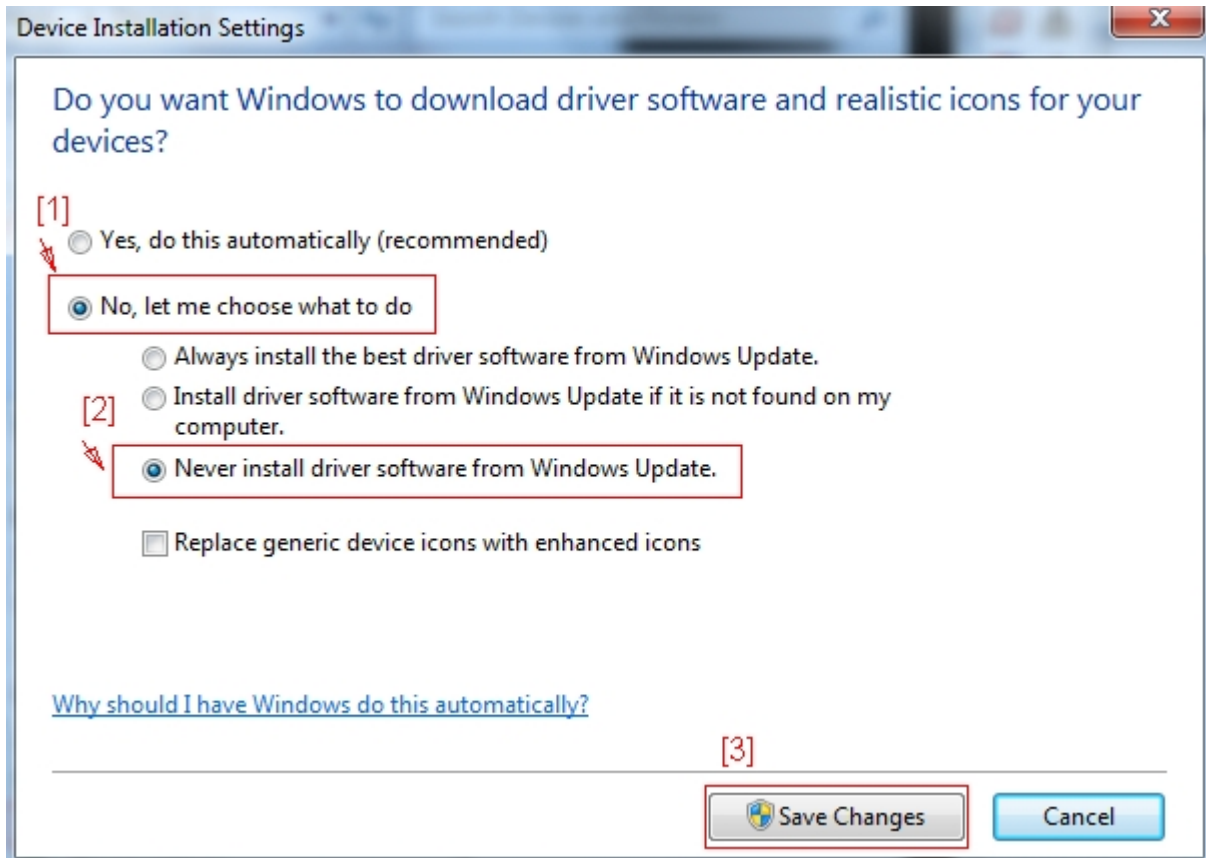


3. In the Device Installation Settings dialog, select the **"No, let me choose what to do"** radio button, then select **"Never install driver software from Windows update"**, and then click on the **Save Changes** button.

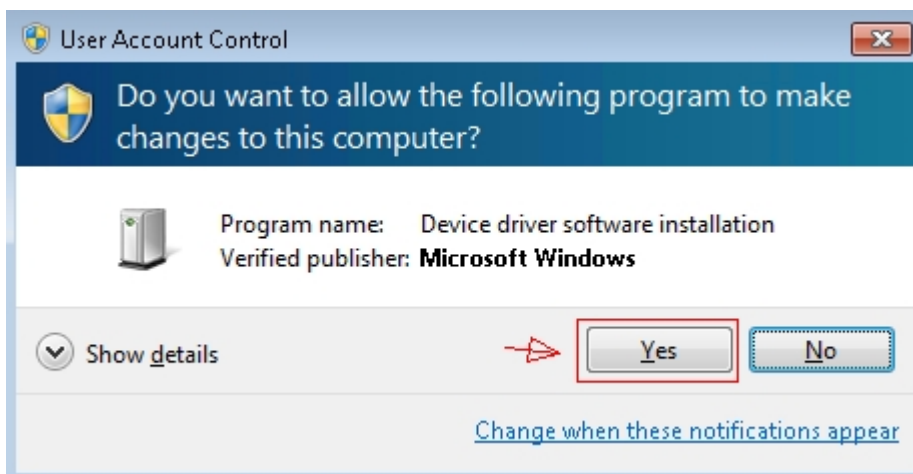


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4. In the User Account Control dialog, click “Yes” to allow the changes.





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When it is not possible to use a network connection to access the C-More panel (perhaps no crossover cable on hand or available network) and it is not possible to use USB (perhaps the USB driver still refuses to work), the customer always has the option of using a USB thumb drive for transferring projects to and from the HMI.

References:

USB Complete, 2nd Edition; Jan Axelson

Universal Serial Bus System Architecture, 2nd Edition; Don Anderson

C-more_Installation_Guide.pdf (EA-PGMSW-SIG)

How to stop Windows 7 automatically installing drivers

<http://support.microsoft.com/kb/2500967>

Technical

Assistance: If you have questions regarding this Application Note, please contact us at 770-844-4200 for further assistance.