Operators' Manual
Monroe Electronics, Inc.
Model 300
Charge Plate Monitor

P/N 0340193
Console Firmware Rev 1.05
Plate Assembly Firmware Rev 1.02
01302015

MONROE ELECTRONICS
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Section 1

Specifications

All specifications are referred to plate voltage unless otherwise specified.

Charger		±1,100 volts (minimum), selectable polarity
Fieldmeter		
	Range:	0 to ±1,300 volts on display 0 to ±1,800 volts at analog output 1 volt resolution
	Accuracy:	±2% of reading, ±2 volts, + zero offset, typical
	Analog Output:	1/1000th of the plate voltage, ±3%, typical
	Bandwidth:	6 Hz
Timer		
	Range:	0.1 second to 999.9 seconds
	Accuracy:	0.1 second
	Resolution:	0.1 second
Trip Points		
	Start Voltage:	1000 volts
	Stop Voltage:	Settable from 10 volts to 990 volts in 1-volt increments
Charge Plate		
	Size:	6 inches x 6 inches (15 cm x 15 cm)
	Capacitance:	20 pF ±10%
	Self-Discharge:	Less than 100 volts within 5 minutes (<60% R.H.)
Power Requirements:		100 VAC to 220 VAC nominal line voltage; less than 5 watts
Battery Life:		>8 hours per charge
Dimensions:		6-3/8” W x 6” H x 8-3/4” D (162mm x 152.4 mm x 223 mm)
Weight:		5.2 pounds (2.4 kg)

Accessories Included:

CD containing: 300 Operator's Manual
300 Data Sheet
300COM Software
300COM Software Operator's Guide

Carrying Case
AC Adaptor w/international plug kit
6-inch-long Plate Cable
5-ft-long Plate Cable
Patch cord w/alligator clip & boot
USB cable
Stereo Phone Plug (analog output)

What this instrument does —

This instrument is a charged-plate monitor for evaluating the performance of ionization systems. As such, it performs positive and negative decay tests, and balance (offset voltage) tests to determine if an ionization system is operating effectively. It can be used to test all types of ionization systems as described in ESD Association Standard ANSI/ESD STM3.1 Ionization.

Over the years new technologies have placed new demands on both ionization systems and on the capabilities and features of the charged-plate monitors used to evaluate them. Monroe Electronics has responded to these needs by incorporating many additional and improved features in the Model 300 Charged-Plate Monitor.

Section 2

GENERAL INFORMATION

Model 300 performs manual or automatic decay and balance (offset voltage) tests for qualification and periodic verification of ionization equipment. It then stores the results and balance averages for manual tests and for a complete automatic test sequence, and saves that data until the data is over-written by a subsequent manual test or automated test sequence.

All instrument functions are controlled using six pushbuttons.

In DECAY mode, a built-in high-voltage generator charges the plate to a voltage greater than 1,000 volts. During the test the plate will discharge toward zero in the presence of ionization. The elapsed time of decay between a 1000 volts and a selected stop voltage is displayed.

In the BALANCE (offset voltage) mode, the plate is first grounded, then disconnected from ground and allowed to float to any voltage in response to air ion imbalances. It displays the plate voltage, test duration, and minimum and maximum peak voltages. (Nearby charge sources will also induce a voltage on the isolated plate.)

Memory is non-volatile. Setup and data are retained when the instrument is not in use.

CAUTION

When charged, the plate voltage can be in excess of 1000 volts with respect to ground. Although the charges and potentials are below those that are normally detected by human senses, A SHOCK HAZARD EXISTS.

- **If you are handling the plate assembly or conducting a test that involves touching the plate, expect a shock.**
- **Do not charge large capacitors with this device.**

Incoming Confidence Test

Plug the Model 300 into the AC power source. The display on the front panel of the Model 300 will indicate the battery voltage.

Turn on the Model 300 by pressing the **Power** button on the front panel. The **Power** indicator above the **Power** button will illuminate. See also Power Switch and Power Indicator.

The display will indicate “CPA 300”, then will display the firmware revision numbers for both the console and the ion-collecting plate assembly, and will then display the system prompt, which is **-.-**.

Press the **Bal** button to start a balance test. Observe that the display counts up to 30 seconds and then scrolls through the minimum, maximum, and average plate voltages.

Press **+Decay**. Observe that the display indicates a voltage greater than +1000 volts.

Press **-Decay**. Observe that the display indicates a voltage greater than -1000 volts.

Press **Shift/Cancel**. Observe that the display indicates the system prompt, which is **-.-**.

Section 3

OVERVIEW

The Model 300 is comprised of two major assembles: the ion collecting plate assembly and the console.

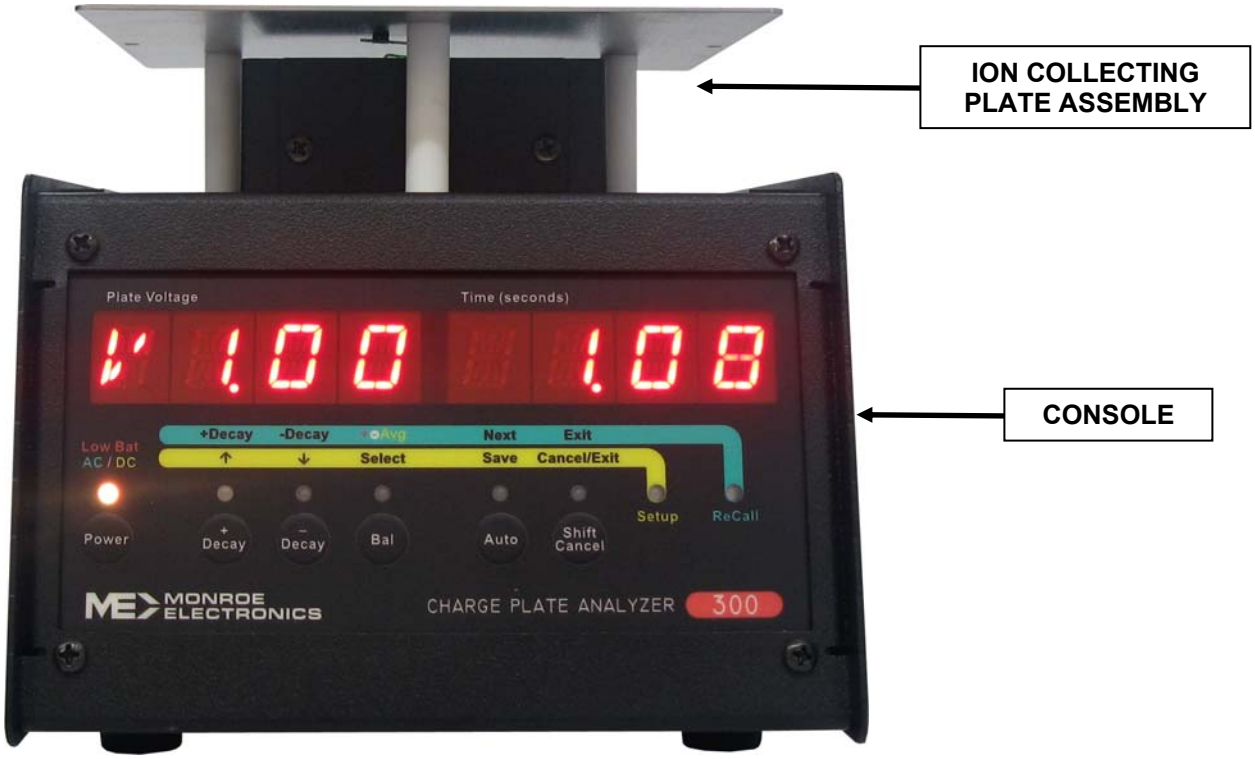


Figure 1. Front View and Major Assemblies

Front Panel of the Console

Power Button and Power Indicator

The **Power** button turns the instrument on and off.

If operating from the AC line, press and release the **Power** button to turn on the Model 300. It will display "**CPA 300**", and then will display the firmware revision numbers of both the console and the plate assembly, respectively. Then the Model 300 will display the system prompt, which is "**-.-**".

If operating from battery, press the **Power** button for greater than 3 seconds to turn on the Model 300. It will display "**CPA 300**" and then will display the firmware revision numbers of both the console and the plate assembly, respectively. Then the Model 300 will display the system prompt, which is "**-.-**".

The Model 300 will run on either AC line or battery power. The internal, rechargeable battery will supply up to 8 hours of operation.

The **Power** indicator presents one of three colors to indicate power conditions:

- **Green** when the instrument is turned on and receiving power from the AC line.
- **Amber** when the instrument is turned on and operating on battery power.
- **Red** when the instrument is turned on, operating on battery power and the battery needs to be re-charged.

NOTICE: When unplugging the AC adapter from the console, unplug the adapter from the console unit before unplugging it from the wall outlet. Otherwise, the Model 300 will turn off and will not continue to operate on battery power.

Charging the Battery

The Model 300 CPM is designed to be used on a regular basis. If it is not going to be used for an extended period of time:

1. Leave unit connected to the charger. or
2. Recharge the battery every 60 days. or
3. Recharge the battery and remove one of the leads from the battery, then recharge battery every 6 months.

Whenever the Model 300 is operated from an AC power source, it is charging the battery.

The display on the front panel of the Model 300 will indicate the battery voltage when the Model 300 is plugged into an AC power source and is turned off.

The **Power** indicator is red when the battery needs to be recharged. Recharging the battery may take up to ten (10) hours for a full charge.

Rear Panel of the Console

AC Power Connection

Connect the AC adaptor to the power jack on the rear panel of the Model 300. Use only the AC adaptor provided by Monroe Electronics, Inc. for use with the Model 300.

USB Port

This connector is for control and data collection from a computer. Monroe Electronics offers a program that can be installed on a computer for remote control and data collection.

CPM Plate

Connect the ion-collecting plate assembly to this connector using a CAT 5 cable. A 6-inch-long cable is provided for making this connection when the ion-collecting plate assembly is installed on the top of the console. A 5-foot-long cable is also provided to locate the ion-collecting plate farther from the console.

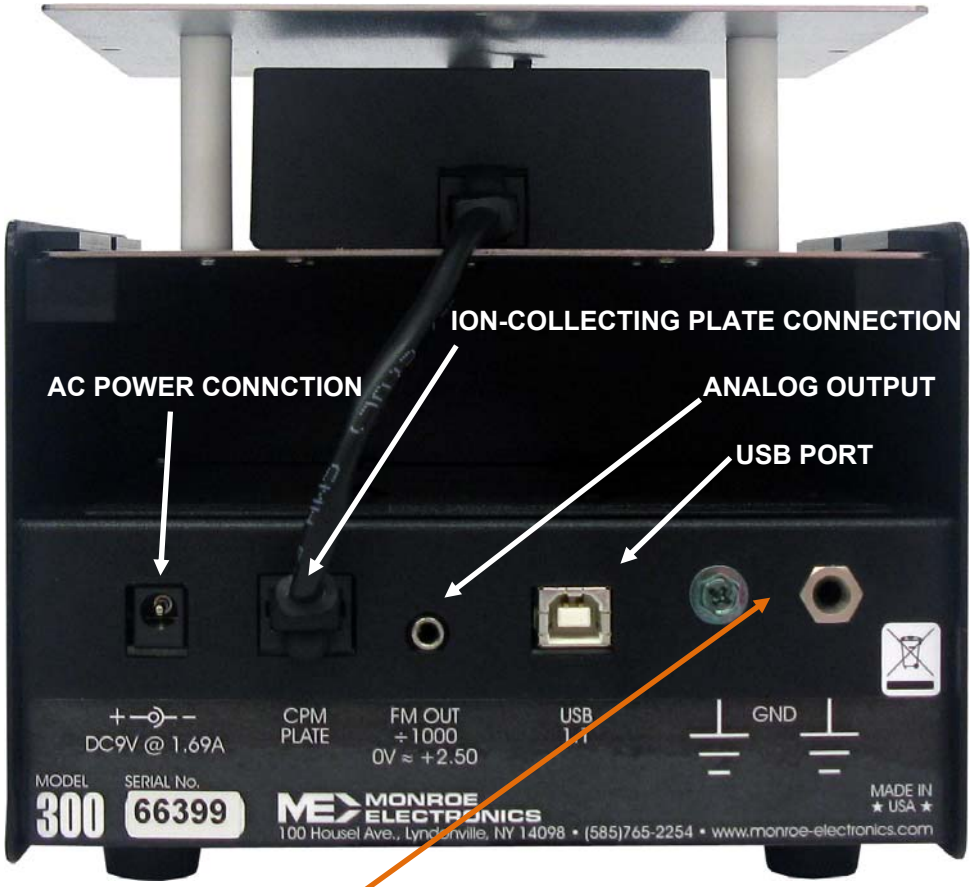


Figure 2. Rear View

Grounding the Model 300

A ground connection is essential for proper measurements of ionization systems. It is essential to connect the chassis of the console to the facility ground conductor. The AC adaptor does not provide a ground connection. Connect the Model 300 to ground via either the banana jack or the green screw on the rear panel of the console.

FM OUT ÷1000 (Fieldmeter Analog Output)

An analog output jack is provided on the rear panel of the console for connection to test equipment such as chart recorders and oscilloscopes. The output signal is NOT a ground-referenced signal.

A reference voltage representing zero volts on the ion-collecting plate is provided on one pin of the connector. This reference voltage is in the range of 2.27V and 2.50V.

The analog output is a unipolar signal representing the plate voltage. The fieldmeter (plate voltage sensor) output signal appears on another pin of the connector, and is in the range of ±1V from the reference voltage, wherein +1V with respect to the reference voltage represents +1000V on the ion collecting plate, and -1V with respect to the reference voltage represents -1000V on the ion collecting plate.

A stereo phone plug is provided. The third terminal is a ground connection.

If connecting the analog output of the Model 300 to an oscilloscope, we recommend connecting the reference voltage output to one input of the oscilloscope and connecting the signal output to another input of the oscilloscope, and subtracting the reference output from the signal output using the math feature or add/invert features of the oscilloscope.

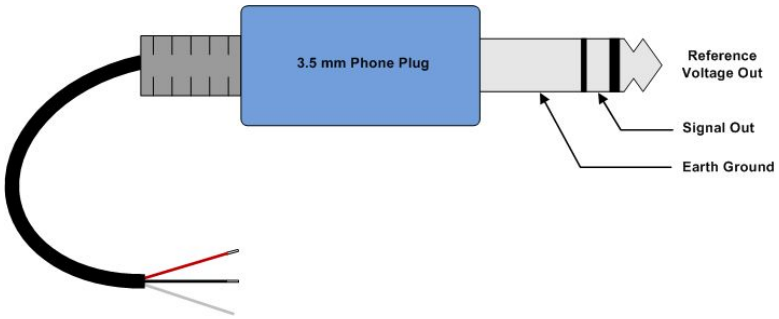


Figure 3. Analog Output Connections

Tripod Mounting

Both the bottom of the console and the bottom of the ion collecting plate are equipped with a threaded insert for tripod mounting. Thus, either the entire instrument or just the ion collecting plate can be tripod mounted, depending on your requirements.

Ion Collecting Plate Assembly

Ion Collecting Plate

The Model 300 has a 6″ X 6″ (15 cm x 15 cm) ion collecting plate assembly (plate assembly) that can be used in an operational position on the top of the Model 300 console, or it can be removed and located remotely for testing ionization systems. The plate assembly operational position atop the console is different from the plate assembly storage position for shipment.

Moving the Plate Assembly from the Storage Position to the Operational Position

As received, the ion collecting plate assembly is stored in the console. (See Figure 4.) The Model 300 cannot be operated properly when the plate assembly is in this storage position.

Move the plate assembly from the storage position (See Figure 4.) to the operating position atop the console unit (see Figure 5). Slide the plate assembly backwards to remove it from

Figure 4. Rear View Showing Plate Assembly Storage Position

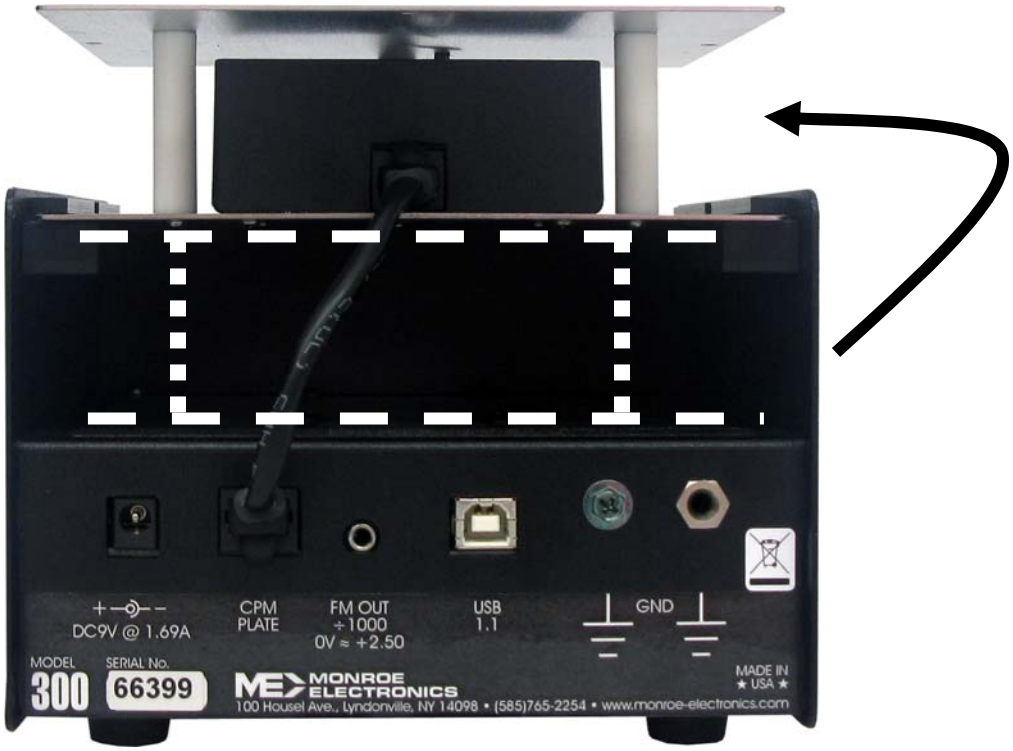


Figure 5. Rear View Showing Plate Assembly In Operational Position On Top of Console Unit

the console unit. Then slide it forward in the guide channel to insert it into the operational position.

Connect the 6-inch CAT 5 cable between the plate assembly and the console unit.

> NOTICE: The power should be off when connecting the plate assembly to the console.

> NOTICE: We recommend returning the plate assembly to the storage position for transport.

Remote Placement of the Plate Assembly

Turn off the Model 300 before detaching the ion collecting plate from the console.

Disconnect the cable connecting the ion collecting plate to the console.

Slide the ion collecting plate backwards to remove it from the console.

Reconnect the ion collecting plate to the console using the 5-foot-long cable provided.

> NOTE: When it is detached from the console, the ion collecting plate maintains a ground connection via this cable.

> NOTE: This cable is a standard CAT 5 cable. Longer cables can be purchased and used when greater separations between the ion collecting plate and the console are needed.

Navigating the Front Panel

Three operations can be performed from the system prompt (**-.-**).

1. Perform ionizer tests- initiate tests directly from the system prompt, **-.-**.
2. Recall test results- press the **Shift/Cancel** button once to recall test results for the Model 300.
3. Feature Set Up- press the **Shift/Cancel** button twice to set up features for the Model 300.

Programming (Customizing) the Model 300 for Testing

From the system prompt, **-.-**, press the **Shift/Cancel** button until the yellow SETUP indicator is on, and “SET UP” is displayed.

The yellow button legend becomes the active legend to follow for the buttons.

Use the ↑ and ↓ buttons to scroll through the set up parameters. Once you have reached a parameter that you want to change, press **SELECT** to edit its value. EDIT OPT is momentarily displayed. Then use the ↑ and ↓ buttons to change the value. When done changing the value, press **SAVE** to save the new value (SAVE OPT is momentarily displayed) or **CANCEL** to exit without saving.

The set up parameters are as follows:

TDLY 0 — Test Delay: Set a delay of 0 to 15 seconds after the button is pressed (for a test) before the test begins. The factory default is 0 seconds.

GPLT DLY — Choose an option for grounding the plate:

- GPLT DLY — ground the plate during the test delay
- GPLT <DLY — ground the plate prior to the test delay, but not during the test delay
- GPLT DLY> — ground the plate after the test delay, but not during the test delay

The factory default is to ground the plate during the test delay.

VSTP 100 — Decay Stop Voltage: Set the desired stop voltage. The stop voltage can be set to any value from 10V to 990V in 1V increments. The factory default is 100V.

DLEN 30 — Decay Test Length: Set the desired test length for a decay test before test “times out” and ends the decay test. The decay test length can be set to any value from 10 to 999 seconds in 1-second increments. The factory default is 30 seconds.

BLEN 30 — Balance (Offset Voltage) Test Length: Set the desired test length for a balance test before the test “times out” and terminates the balance test. The balance test length can be set to any value from 0 to 9999 seconds in 1-second increments. Choosing zero (0) as a test length causes the balance test to run forever. The factory default is 30 seconds.

PKDL 3 — Balance Peak Delay: Set the desired time delay after the start of a balance test before the peak detectors begin to record peak offset voltages. The balance peak delay can be set to any value from 10 to 300 seconds in 1-second increments. The Balance Peak Delay must be less (shorter) than the balance test length. The factory default is 3 seconds.

PWR 300 — DC Auto Power Off: Set the desired time that the Model 300 will operate on battery before shutting off. The DC Auto Power Off can be set to any value from 10 to 9999 seconds in 1-second increments. Choosing zero (0) as a time causes the Model 300 not to automatically shut off. The factory default is 300 seconds.

+++ ---B — Automated Test Sequence: Set the desired number and order of tests for an automated sequence of tests. “+”represents a positive decay test in the sequence. “-“ represents a negative decay test in the sequence. “B” represents a balance (offset voltage) test in the sequence. The choices for an automated test sequence are +-, +-+- +-, +++---, +-B, +-+-+-B, and +++---B. The factory default is +++---B.

DEFT SET — Use this set up option to restore all set up options to their factory default settings. Press **SELECT** and then the ↑ and ↓ buttons to choose “YES” or “NO” to restore the factory defaults edit the value using. Once the desired value is displayed, press the **SAVE** button to save the new value for the feature. SAVE OPT is displayed momentarily.

CLR DATA — Use this set up option to clear all saved test results. Press **SELECT** and then the ↑and ↓ buttons to choose “YES” or “NO” to restore the factory defaults edit the value using. Once the desired value is displayed, press the **SAVE** button to save the new value for the feature. SAVE OPT is displayed momentarily.

Press the **Shift/Cancel** button again to return to the system prompt, **-.-**.

Section 4

OPERATION

Performing Ionizer Tests

Initiate automated test sequences and manual tests directly from the system prompt, **-.-**.

Selecting a Manual Test: Press **+Decay** to start a positive discharge test.

Press **-Decay** to start a negative discharge test.

Press **Bal** to start a balance (offset voltage) test.

The respective indicator is on and flashing while a test is in progress.

The respective indicator is on and not flashing when the test is complete and data is available.

Manual Zero for the Plate: In the event that the instrument does not indicate zero volts for a balance test (when the ion collecting plate is hard-grounded), the fieldmeter can be zeroed by pressing the **Bal** button for >2 seconds. This would be done from the system prompt, **-.-**.

Selecting an Automated Test Sequence: Press **Auto** to run a sequence of discharge and balance tests.

Cancelling a Test: Press **Shift/Cancel** to cancel a test after it is started.

To View Test Results: Test results are displayed after each test.

For a Decay test, the Decay time is displayed until a new button is pressed. In the instance when a decay test fails, such as if there is no ionization to reduce the plate voltage, a failure message is displayed: either **+DCY DFAI** or **-DCY DFAI**, depending on the polarity of the decay test.

For a Balance test, the display scrolls through the negative peak voltage (**VMIN**), the positive peak voltage (**VMAX**) and the average voltage (**AVG**).

Press **+Decay**, **-Decay**, **Bal** or **Auto** to start a new test or sequence of tests.

Press **Shift/Cancel** to return to the system prompt **-.-.**

Test data can also be viewed using the **ReCall** feature of the Model 300.

Recalling Ionizer Test Results

The test results are saved for the most recent of each positive decay, negative decay, balance (offset voltage) and auto test. These test results can be recalled by pressing **Shift/Cancel** until the green ReCall indicator is on, and **RECALL** is displayed.

The green button legend becomes the active legend to follow for the buttons.

The indicator corresponding to each type of test (+Decay, -Decay, Balance, and Auto) is on if there is data available for viewing.

To view the data, press the corresponding button and the data is shown in the alpha-numeric display.

For recalling balance data, each time the **Bal** button is pressed, the Model 300 scrolls to display VMIN (most negative offset voltage), VMAX (most positive offset voltage), AVG (average offset voltage for the balance test duration), and VSTP (final offset voltage at the end of the balance test duration).

For recalling automated test sequence data, each time the **Auto** button is pressed, the Model 300 scrolls to display +1D (first +Decay time), +2D (second +Decay time), +3D (third +Decay time), +AVG (average time for the three +Decay tests), -1D (first -Decay time), -2D (second -Decay time), -3D (third -Decay time), -AVG (average time for the three -Decay tests), VMIN (most negative offset voltage), VMAX (most positive offset voltage), BAVG (average offset voltage for the balance test duration), and VSTP (final offset voltage at the end of the balance test duration).

The test data is saved until overwritten by new test data, or until the data is cleared using CLR DATA in the setup menu.

Section 5

MAINTENANCE

Precautions

User maintenance should normally be limited to keeping the instrument clean and free from physical damage. Store the instrument in its protective carrying pouch when not in use.

Cleaning

Fingerprints and other contaminants may be removed from the case with a clean lint-free cloth dampened in a 70%/30% mix of clean technical grade isopropyl alcohol and de-ionized water. DO NOT use soap or detergent.

Battery

Battery charge life depends on type of tests being run.

A complete re-charge cycle takes 10 hours with the power off. The battery voltage is displayed on the console unit when the Model 300 is plugged into an AC power source and is turned off.

The Model 300 CPM is designed to be used on a regular basis. If it is not going to be used for an extended period of time:

1. Leave unit connected to the charger. or
2. Recharge the battery every 60 days. or
3. Recharge the battery and remove one of the leads from the battery, then recharge battery every 6 months.

Calibration

Calibration is not a user function and is beyond the scope of this manual. Calibration information is available from the factory. Monroe Electronics recommends annual calibration and/or when the instrument is damaged or repaired or where called for more often by contract. Monroe Electronics, Inc. offers repair and calibration services for a fee.

Locating the Serial Numbers

Serial number information is useful when consulting with Monroe Electronics or its distributors for service.

The console and the plate assembly each have a serial number.

The serial number for the console is located on the rear panel.

The serial number for the plate assembly is located on the bottom of the assembly.

Section 6

REFERENCES

Documents associated with ionization:

ESD Association Standard — ANSI/ESD STM3.1 –Ionization

ESD Association Advisory – ESD ADV3.2 – Selection and Acceptance of Air Ionizers

ESD Association Standard – ANSI/ESD SP3.3 – Periodic Verification of Air Ionizers

ESD Association Advisory – ESD ADV1.0 – Glossary

These documents are available from:

ESD Association, Inc.
7900 Turin Rd.
Building 3, Suite 2
Rome, NY 13440-2069

Phone (315) 339-6937
Fax (315) 339-6793
eosesd@aol.com
http://www.eosesd.org

Monroe Electronics, Inc. does not supply copies of standards or advisories.

Section 7

APPENDIX I

Bad Battery Message and Resetting the Dead Battery Flag

When operating from the AC line, if the Model 300 has a bad battery, meaning that the Model 300 detects that the battery will not charge above 4 volts within 5 minutes, then a Bad Battery flag is set and the battery charger will stop trying to charge the battery until the Bat Battery flag is cleared.

When this condition occurs, the Model 300 displays a **BAD BAT** message on the front panel for four (4) seconds. The Model 300 continues to operate properly from the AC line. In the event that the operator does not see the **BAD BAT** message when it appears on the front panel, this message is also displayed when the unit is turned on.

We recommend that the battery be replaced when this message is seen, although the unit will continue to operate properly under AC power conditions.

Once the battery has been replaced, the Bad Battery flag can be reset by pressing **Shift/Cancel** when **BAD BAT** is displayed during turn on. The Model 300 will display **RSET BATO** to indicate that the Bad Battery flag is reset.

APPENDIX II

CPA300 USB Driver Installation on Windows XP

1) Install the CPA300 pc software on to the PC. You may need to log onto the PC as Administrator to install the software and the USB driver.
2) Turn on the Model 300. The display shows: [CPA 300], [V1.03 1.02] then the prompt: [-.-].
   If all these are shown, then go on to Step 3.
   If it shows [CPA 300], [COMM ERR], [V1.03 ???], then please check that the plate cable on the back of the unit is properly connected to the plate assembly. Power the Model 300 down then up again to see if it is connected. If the problem persists, report it to Monroe Electronics.
3) Connect the Model 300 to the PC via the USB cable.
4) Run the CPA300 software. It will start searching available comports and list the CPA300 with the comport if it is found. Selecting the port it will flash green and the software is ready to communicate with the unit.
   If the 300 device is not found, then go on to Windows Start - Control Panel, find the device, and update the driver:

Figure 1

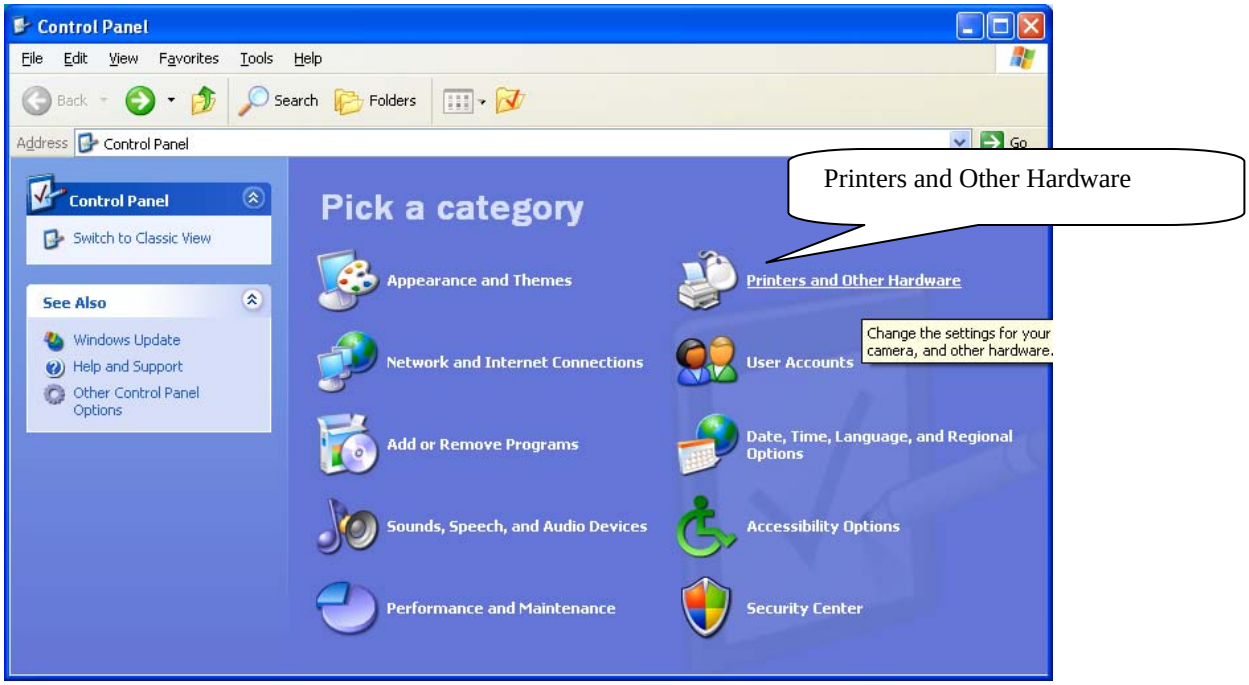


Figure 2

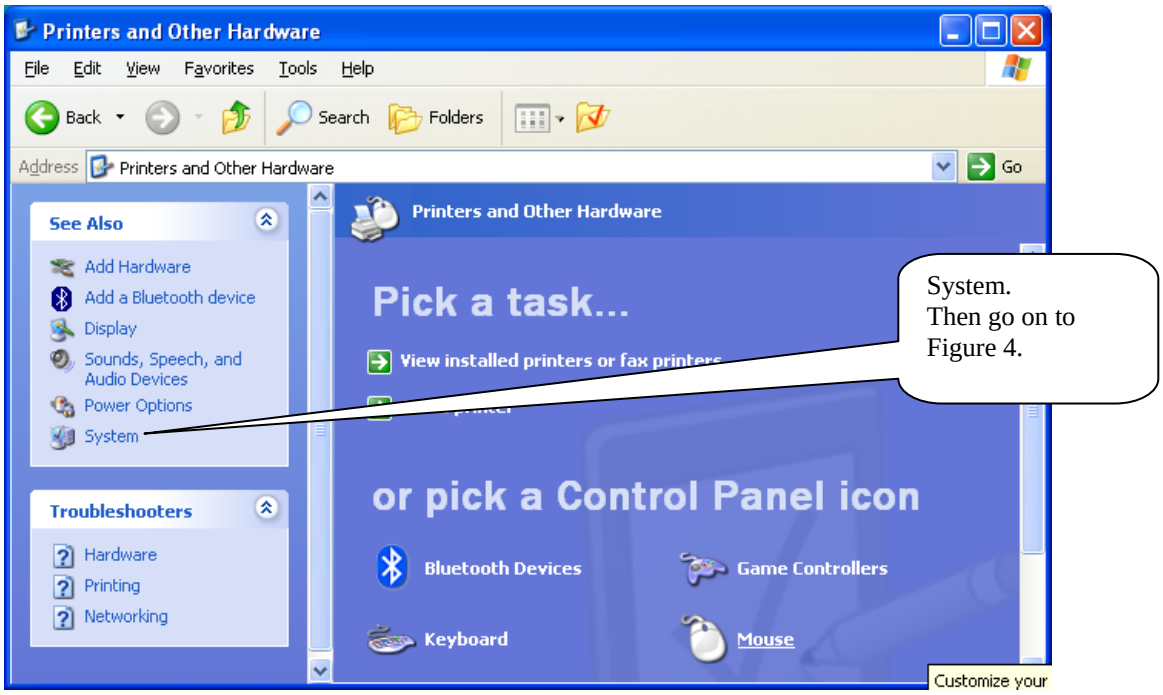


Figure 2a

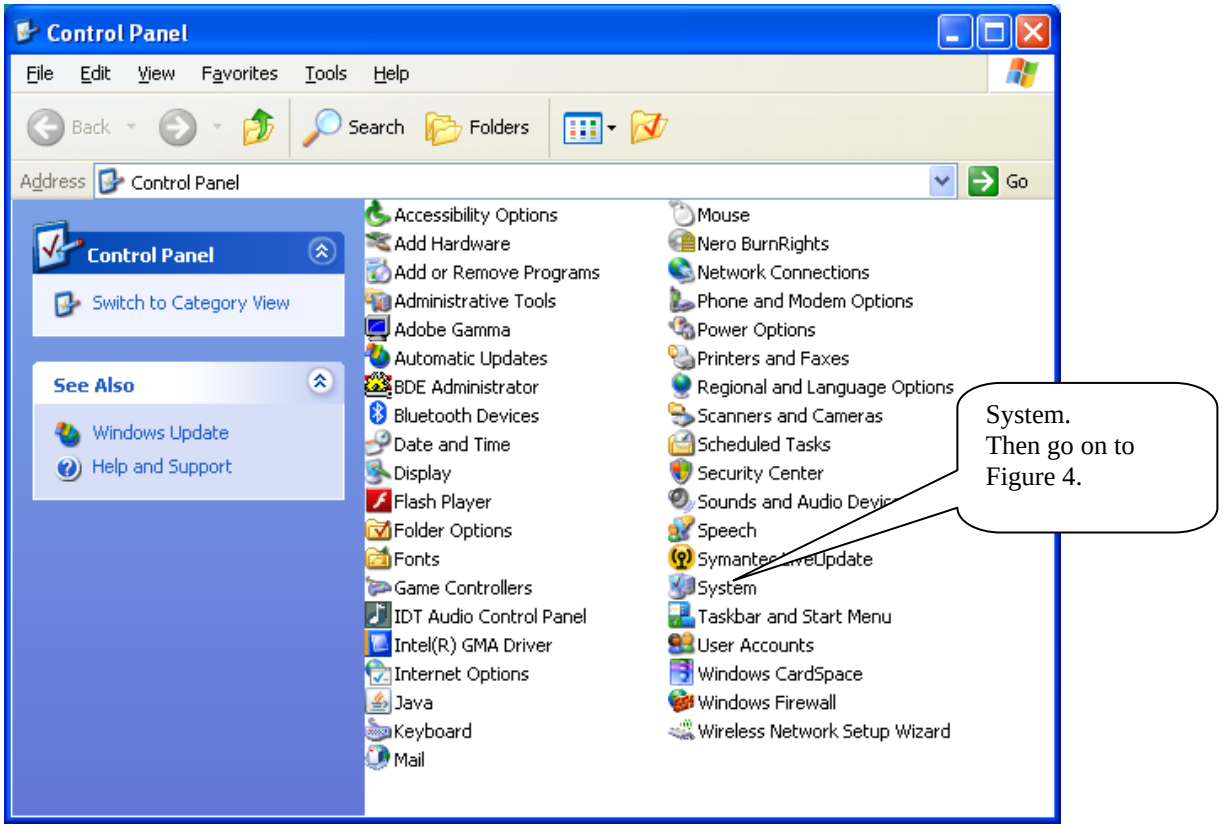

Control Panel
File Edit View Favorites Tools Help
Back Search Folders
Address Control Panel
Go
Control Panel
Switch to Category View
See Also
Windows Update
Help and Support
Accessibility Options
Add Hardware
Add or Remove Programs
Administrative Tools
Adobe Gamma
Automatic Updates
BDE Administrator
Bluetooth Devices
Date and Time
Display
Flash Player
Folder Options
Fonts
Game Controllers
IDT Audio Control Panel
Intel(R) GMA Driver
Internet Options
Java
Keyboard
Mail
Mouse
Nero BurnRights
Network Connections
Phone and Modem Options
Power Options
Printers and Faxes
Regional and Language Options
Scanners and Cameras
Scheduled Tasks
Security Center
Speech
System
Taskbar and Start Menu
User Accounts
Windows CardSpace
Windows Firewall
Wireless Network Setup Wizard
System.
Then go on to
Figure 4.

Figure 3

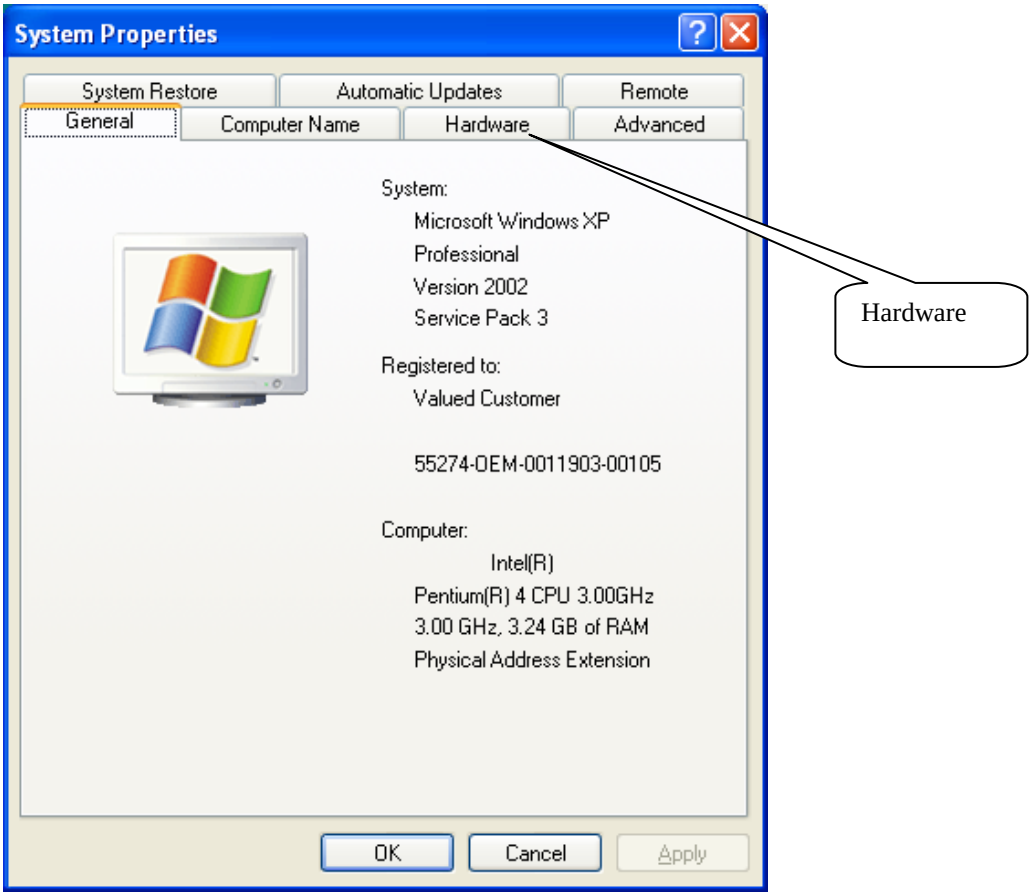

System Properties
System Restore
Automatic Updates
Remote
General
Computer Name
Hardware
Advanced
System:
Microsoft Windows XP
Professional
Version 2002
Service Pack 3
Registered to:
Valued Customer
55274-OEM-0011903-00105
Computer:
Intel(R)
Pentium(R) 4 CPU 3.00GHz
3.00 GHz, 3.24 GB of RAM
Physical Address Extension
OK
Cancel
Apply
Hardware

Figure 4

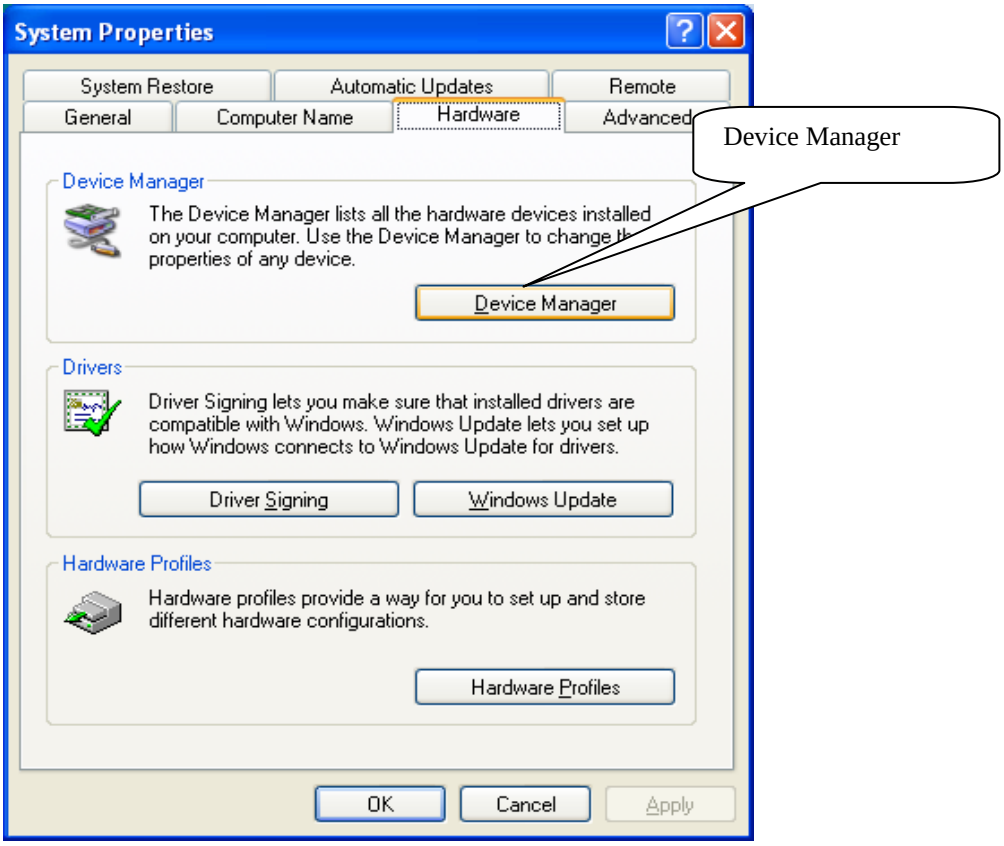

System Properties
System Restore
Automatic Updates
Remote
General
Computer Name
Hardware
Advanced
Device Manager
Device Manager
The Device Manager lists all the hardware devices installed on your computer. Use the Device Manager to change the properties of any device.
Device Manager
Drivers
Driver Signing lets you make sure that installed drivers are compatible with Windows. Windows Update lets you set up how Windows connects to Windows Update for drivers.
Driver Signing
Windows Update
Hardware Profiles
Hardware profiles provide a way for you to set up and store different hardware configurations.
Hardware Profiles
OK
Cancel
Apply

Figure 5

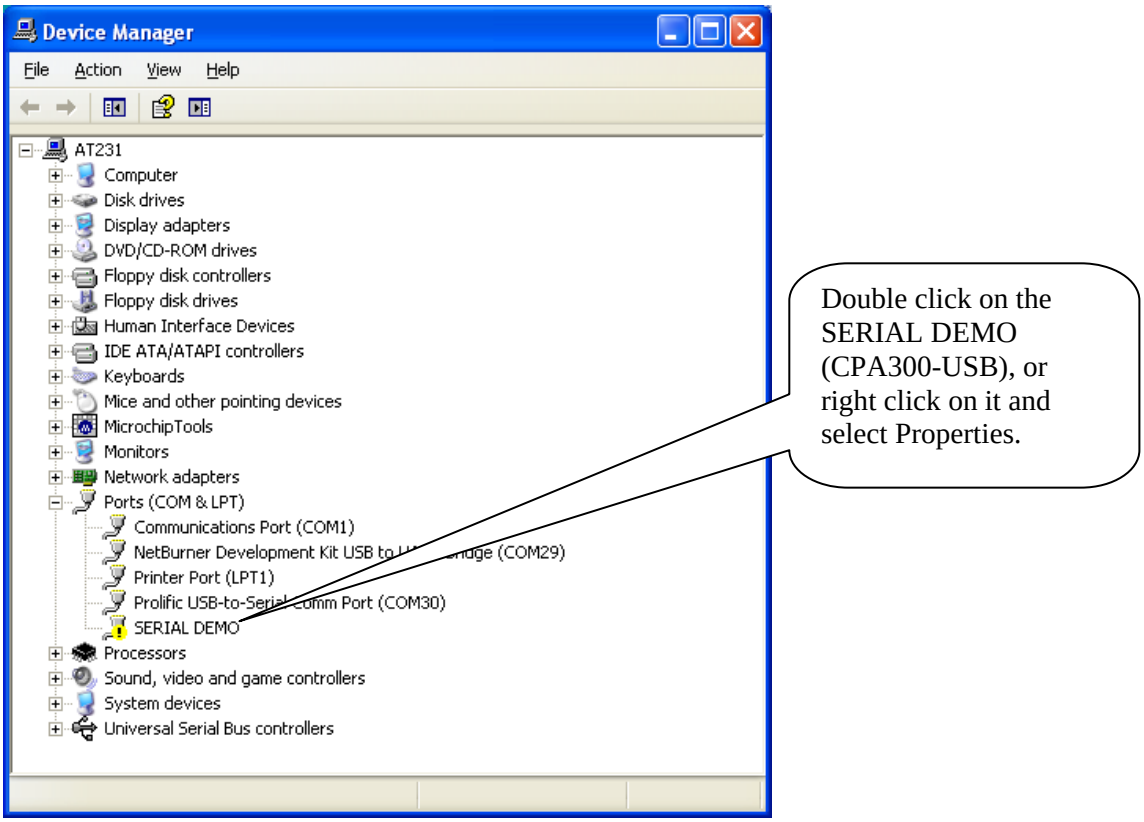

Device Manager
File Action View Help
AT231
Computer
Disk drives
Display adapters
DVD/CD-ROM drives
Floppy disk controllers
Floppy disk drives
Human Interface Devices
IDE ATA/ATAPI controllers
Keyboards
Mice and other pointing devices
MicrochipTools
Monitors
Network adapters
Ports (COM & LPT)
Communications Port (COM1)
Printer Port (LPT1)
SERIAL DEMO
Processors
Sound, video and game controllers
System devices
Universal Serial Bus controllers
Double click on the SERIAL DEMO (CPA300-USB), or right click on it and select Properties.

Figure 6

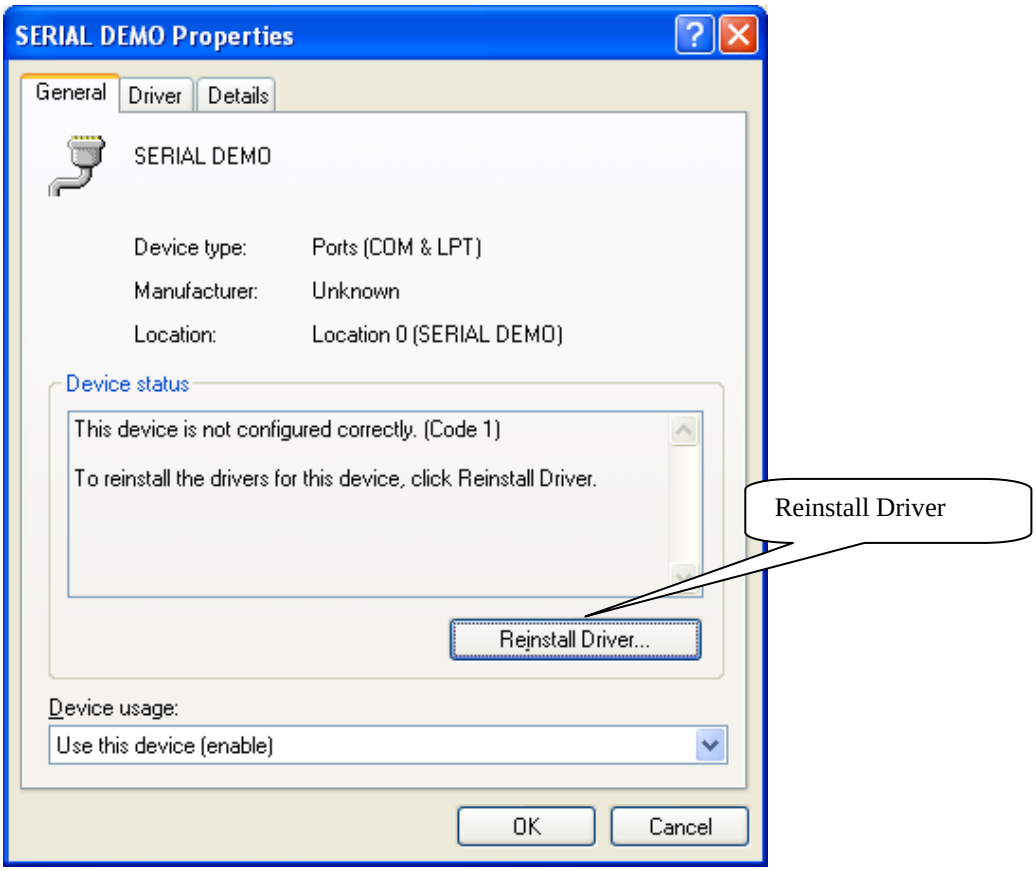


Figure 7

Figure 8

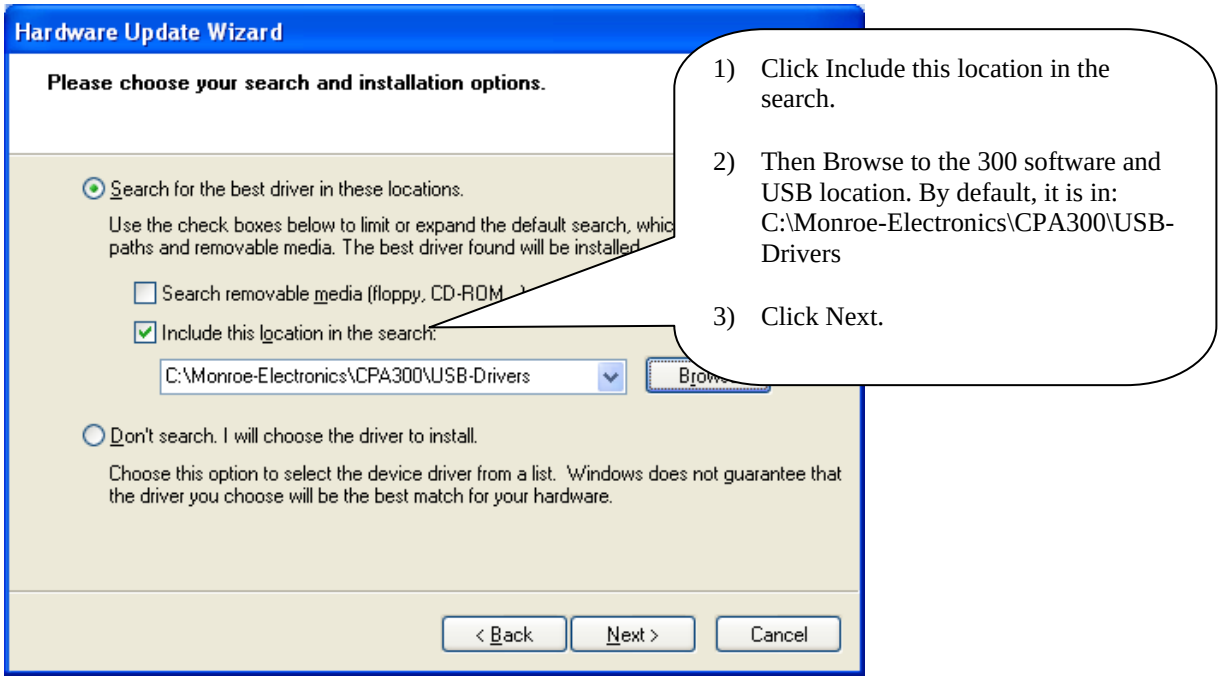

Hardware Update Wizard
Please choose your search and installation options.
Search for the best driver in these locations.
Use the check boxes below to limit or expand the default search, whic
paths and removable media. The best driver found will be installed
Search removable media (floppy, CD-ROM
Include this location in the search:
C:\Monroe-Electronics\CPA300\USB-Drivers
Don't search. I will choose the driver to install.
Choose this option to select the device driver from a list. Windows does not guarantee that the driver you choose will be the best match for your hardware.
< Back
Next >
Cancel
1) Click Include this location in the search.
2) Then Browse to the 300 software and USB location. By default, it is in: C:\Monroe-Electronics\CPA300\USB-Drivers
3) Click Next.

Figure 9

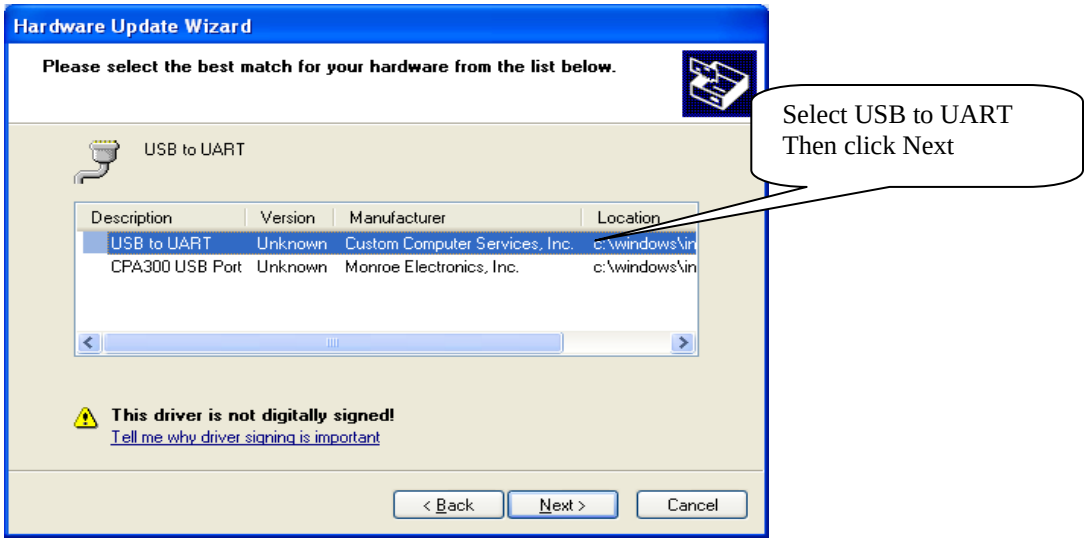


Figure 10

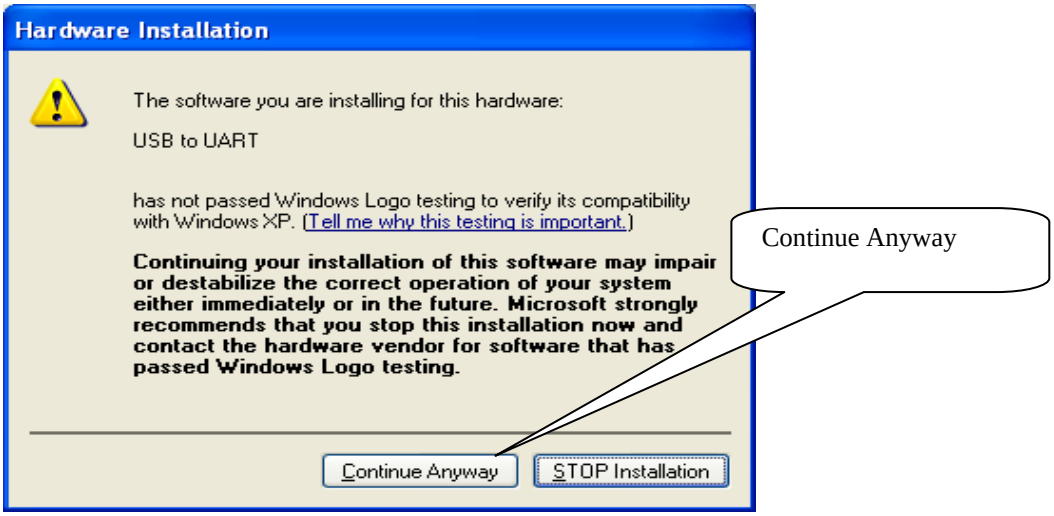


Figure 11

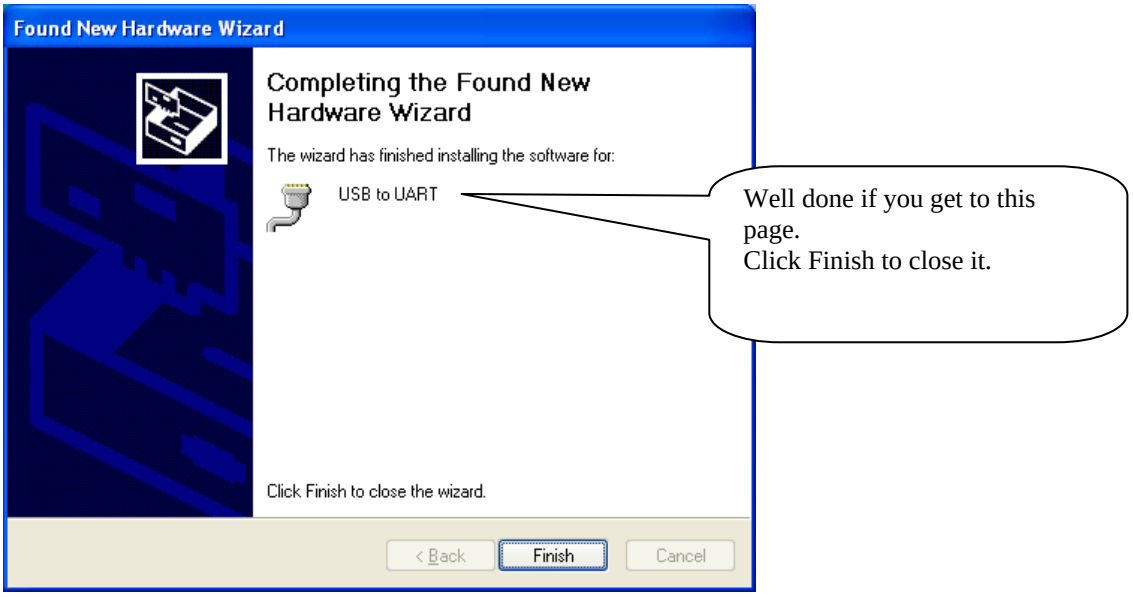


Figure 12

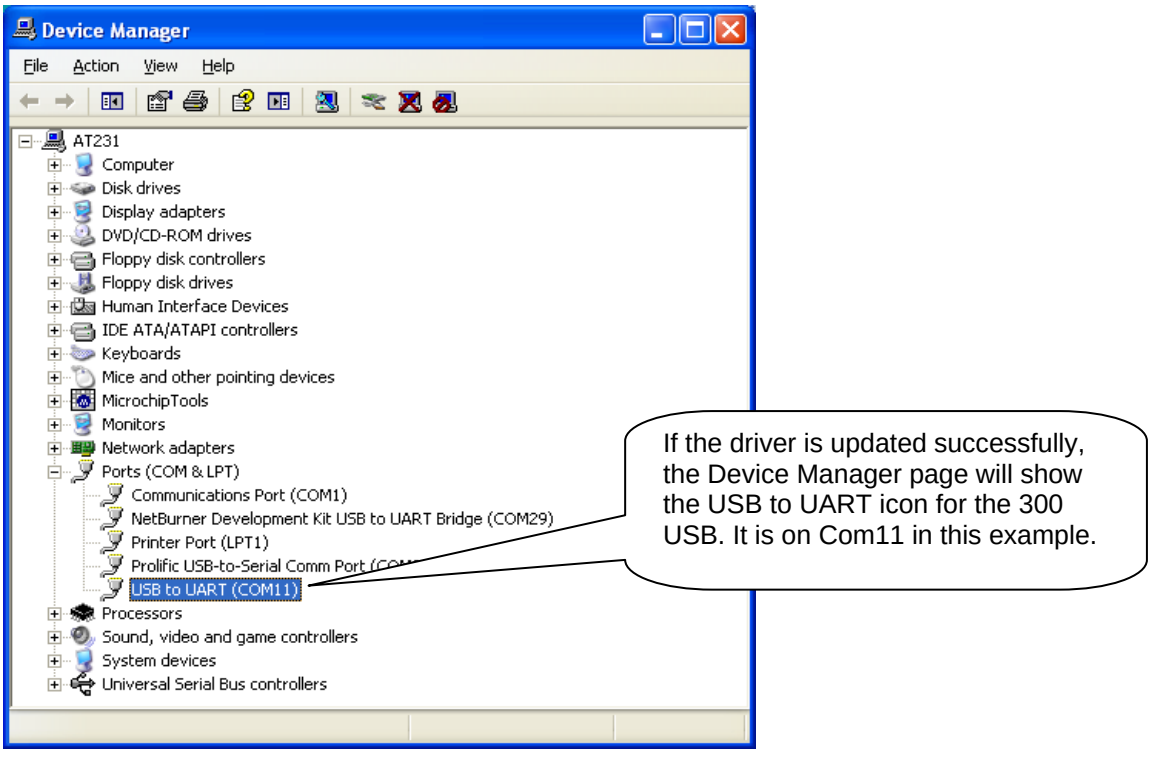


Figure 13

Power up the Model 300. You should see the system prompt, **-.-**, without showing “COMM ERR”.
Run the 300 PC software, or click on the Connection. It will search for the comport and the devices. Select the comport that labeled with CPA-300. Then click the [Select highlighted comport and exit].

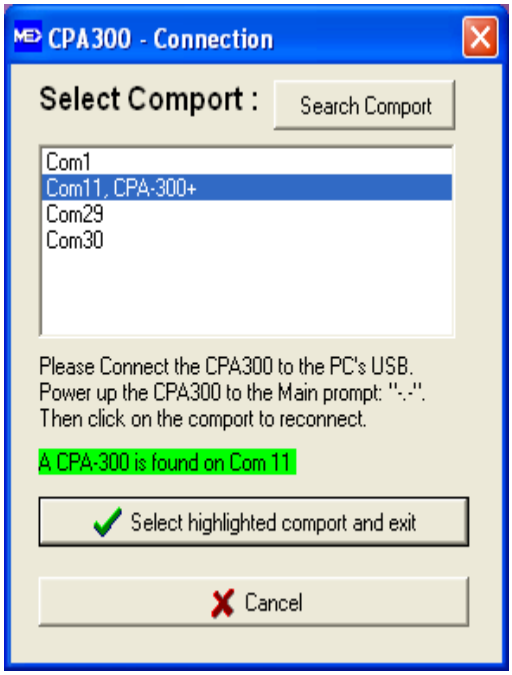
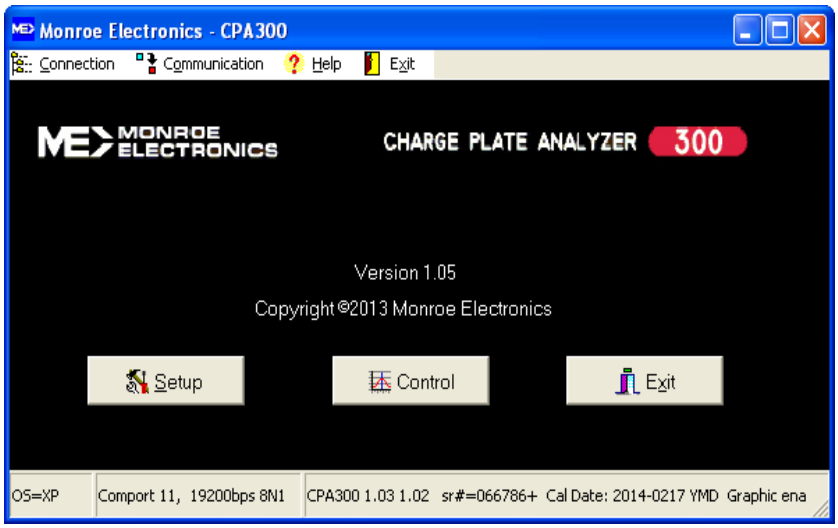


Figure 14

The PC is now connected to the 300 via USB:



If it found the comport, but no CPA300 attached to it, then please try again from step 2.

APPENDIX III

CPA300 USB Driver Installation on Windows 7

1) Install the CPA300 pc software on to the Win7 PC. You may need to log onto the PC as Administrator to install the software and the USB driver.
2) Turn on the CPA300 unit, the display shows: [CPA 300], [V1.03 1.02], then the system prompt, [**-.-**].

   If all these are shown, then go on to Step 3.

   If it shows [CPA 300], [COMM ERR], [V1.03 ???], then please check that the plate cable on the back of the unit is properly connected to the plate assembly. Power the Model 300 down and then up again to see if it is connected. If a problem persists, report it to Monroe Electronics.
3) Connect the Model 300 to the PC via the USB cable.
4) Run the CPA300 software. It will start searching available comports and list the CPA300 with the comport if it is found. Selecting the port. It will flash green and the software is ready to communicate with the unit.

   If the 300 device is not found, then go on to Windows Start - Control Panel, find the device, and update the driver:

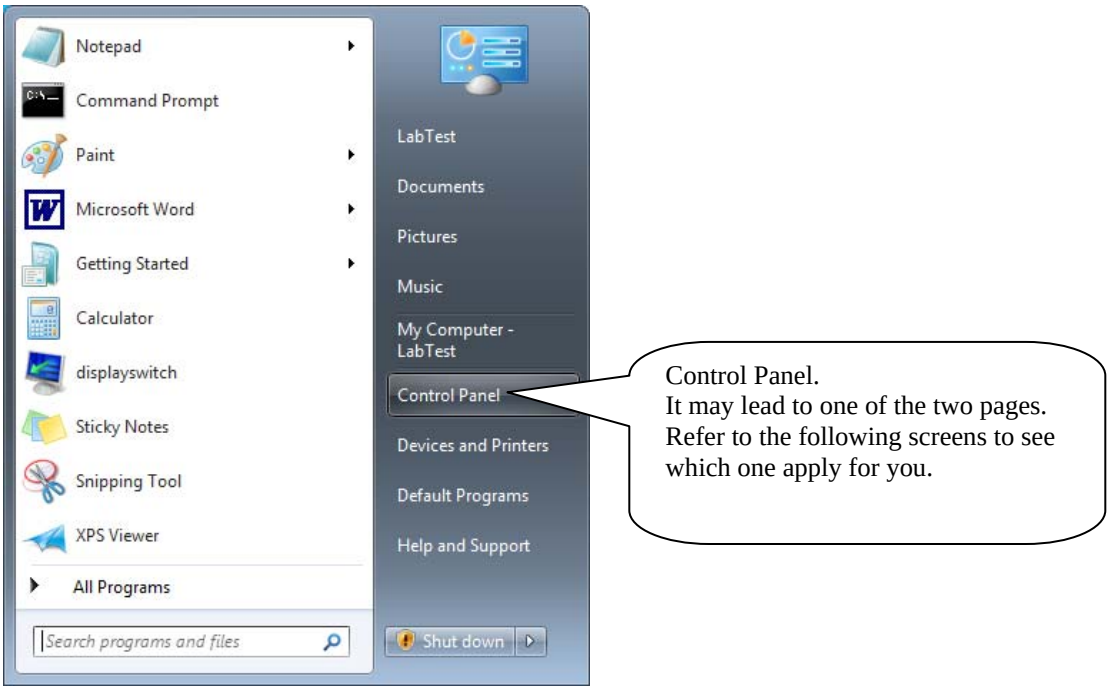


Figure 1

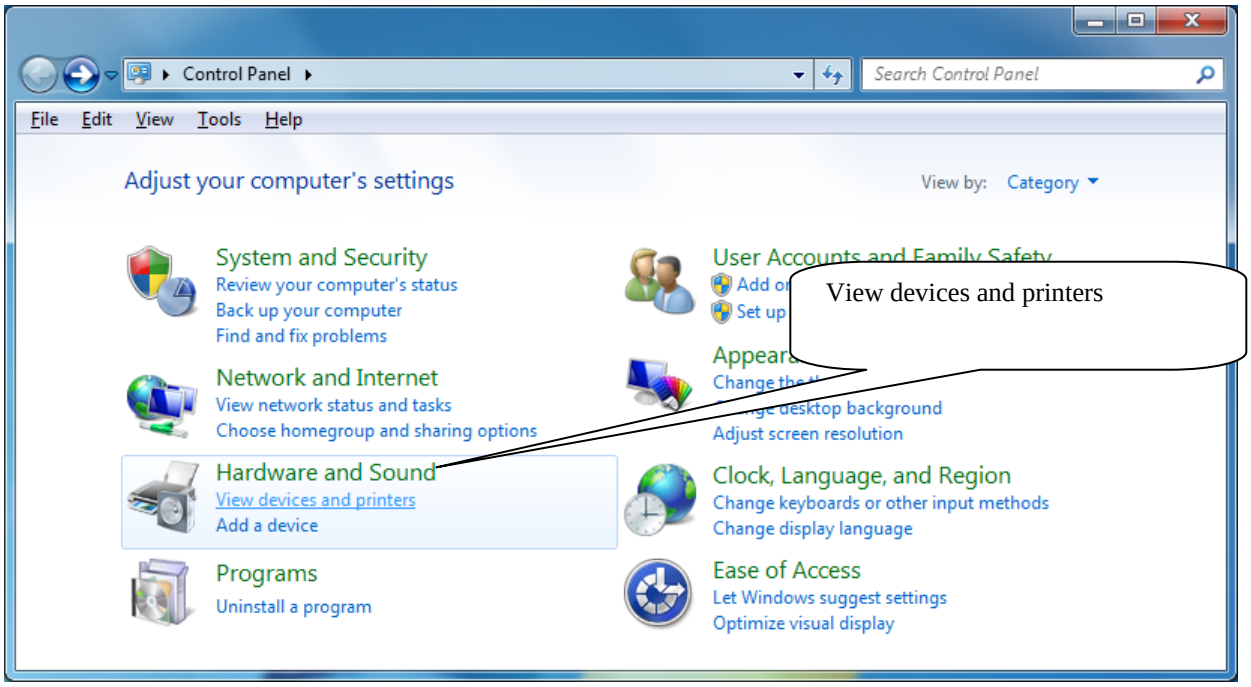


Figure 2

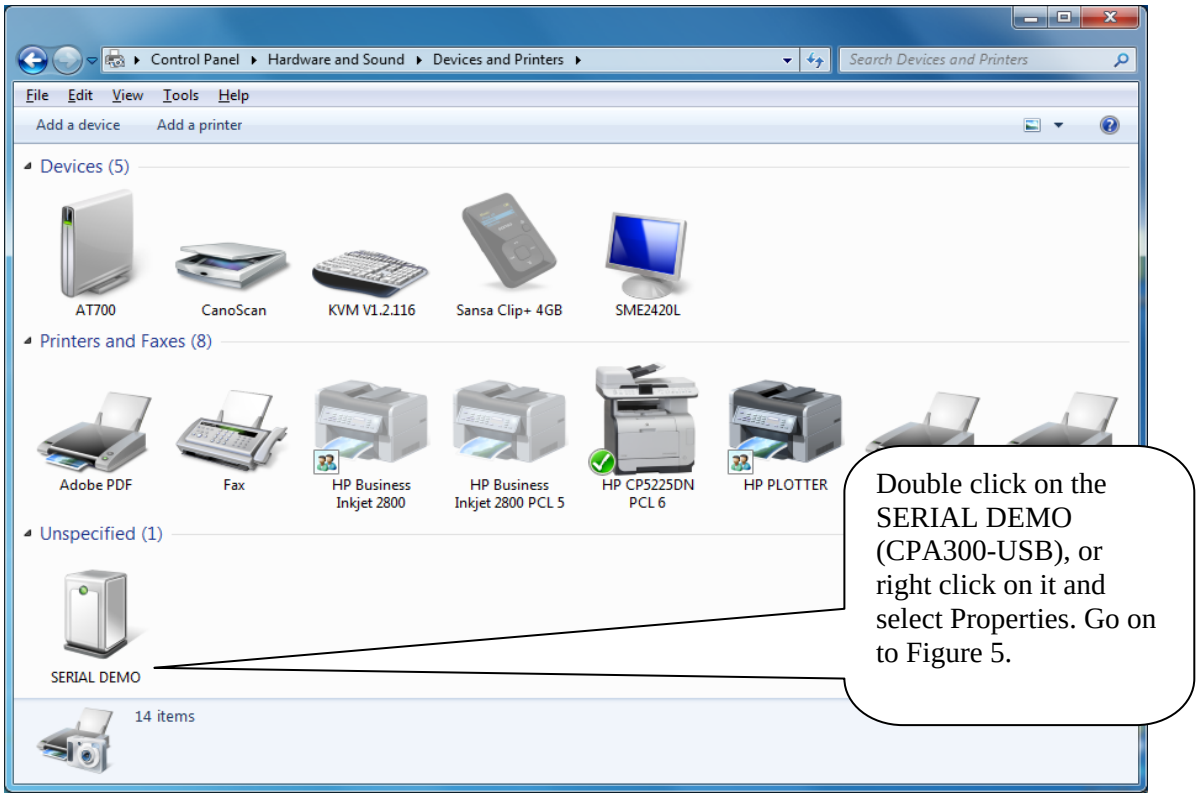


Figure 3

Or from Windows – Start – Control Panel

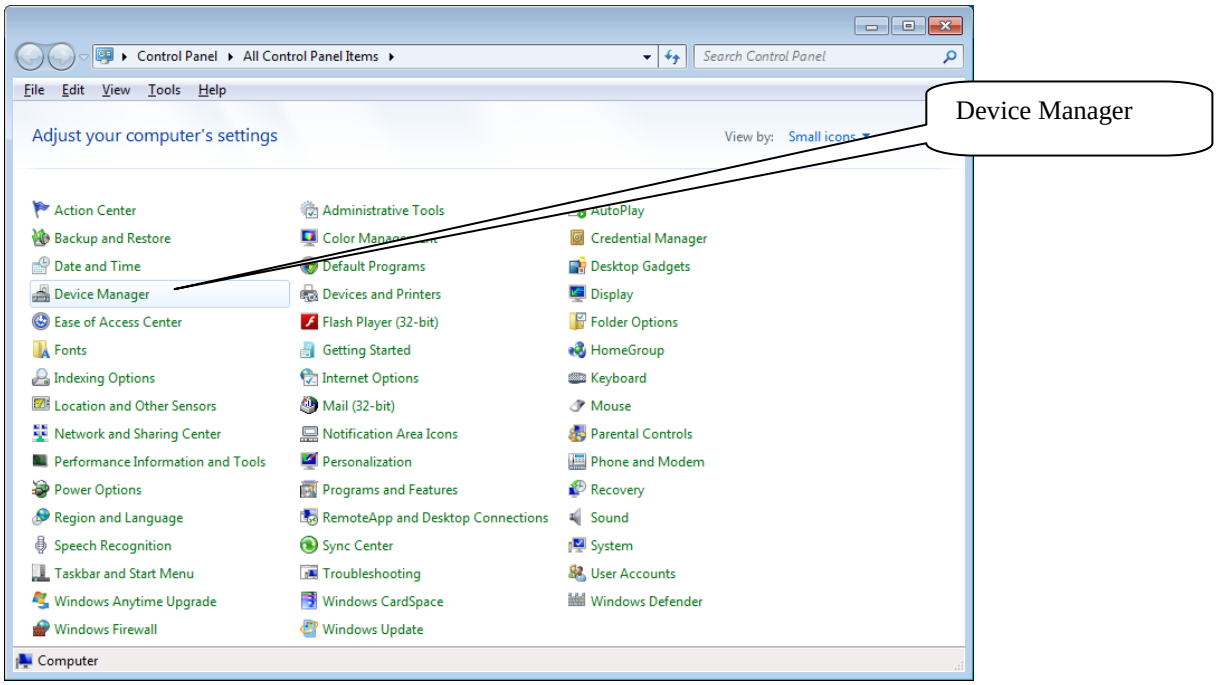


Figure 4

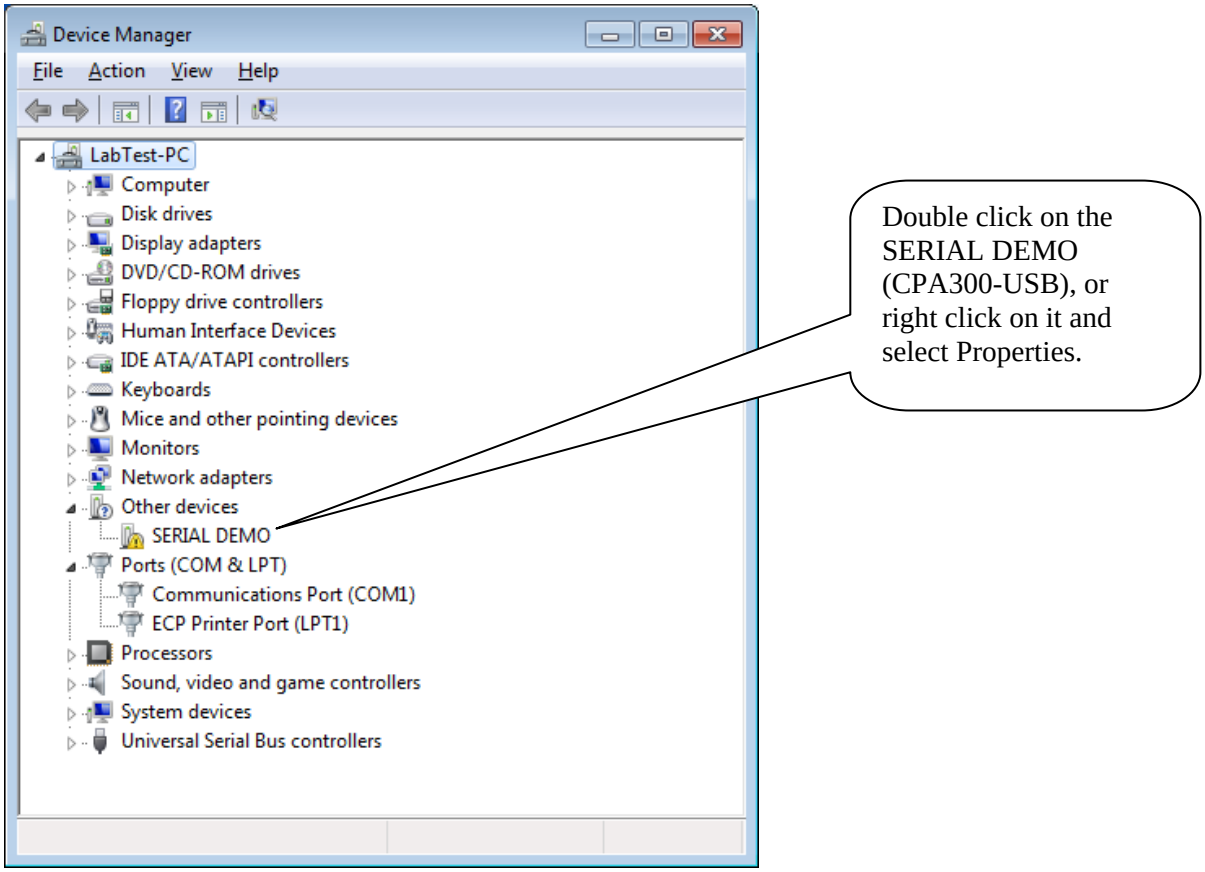


Figure 5

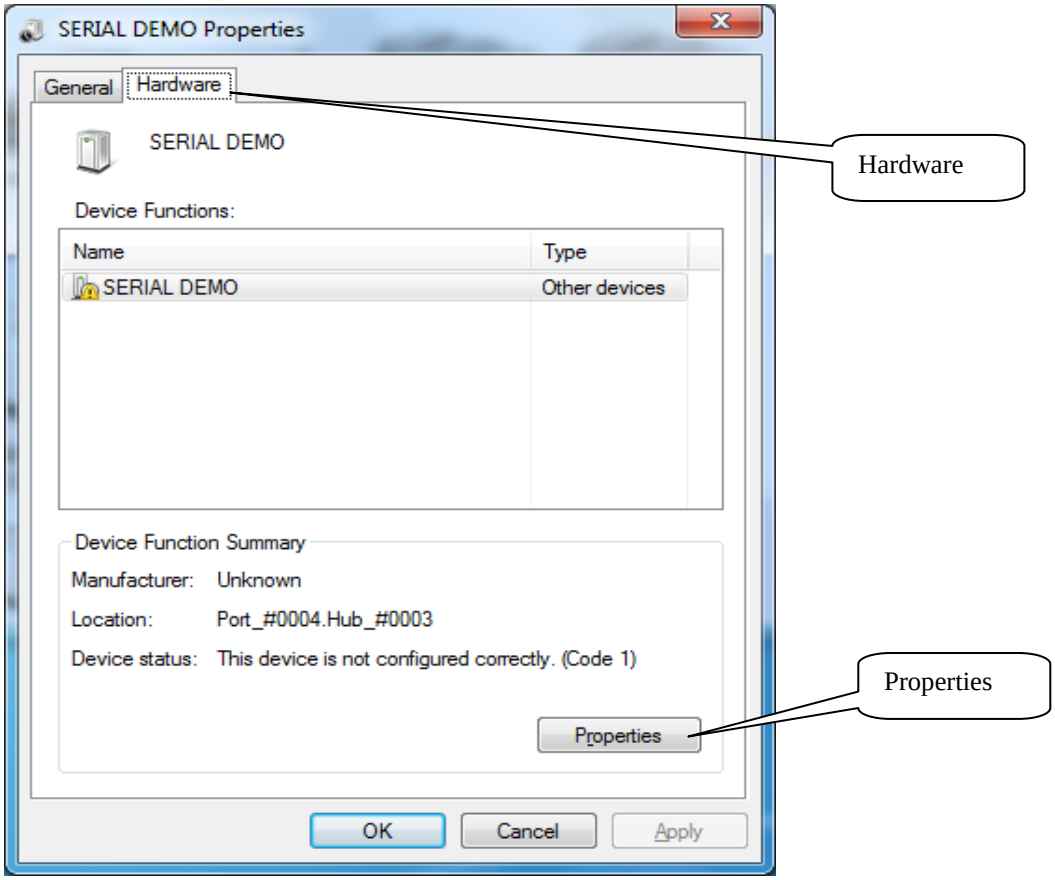

SERIAL DEMO Properties
General
Hardware
SERIAL DEMO
Device Functions:
Name
Type
SERIAL DEMO
Other devices
Device Function Summary
Manufacturer: Unknown
Location: Port_#0004.Hub_#0003
Device status: This device is not configured correctly. (Code 1)
Properties
OK
Cancel
Apply
Hardware
Properties

Figure 6

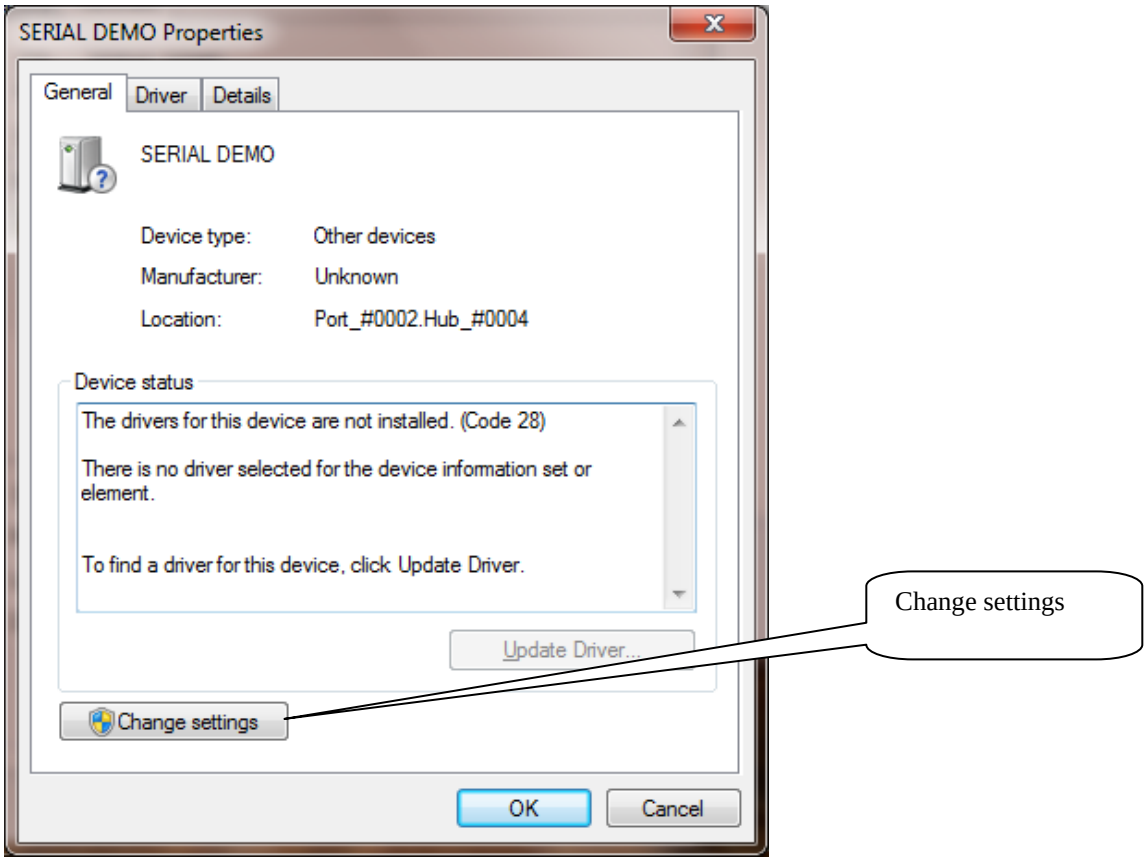

SERIAL DEMO Properties
General
Driver
Details
SERIAL DEMO
Device type: Other devices
Manufacturer: Unknown
Location: Port_#0002.Hub_#0004
Device status
The drivers for this device are not installed. (Code 28)
There is no driver selected for the device information set or element.
To find a driver for this device, click Update Driver.
Update Driver...
Change settings
OK
Cancel
Change settings

Figure 7

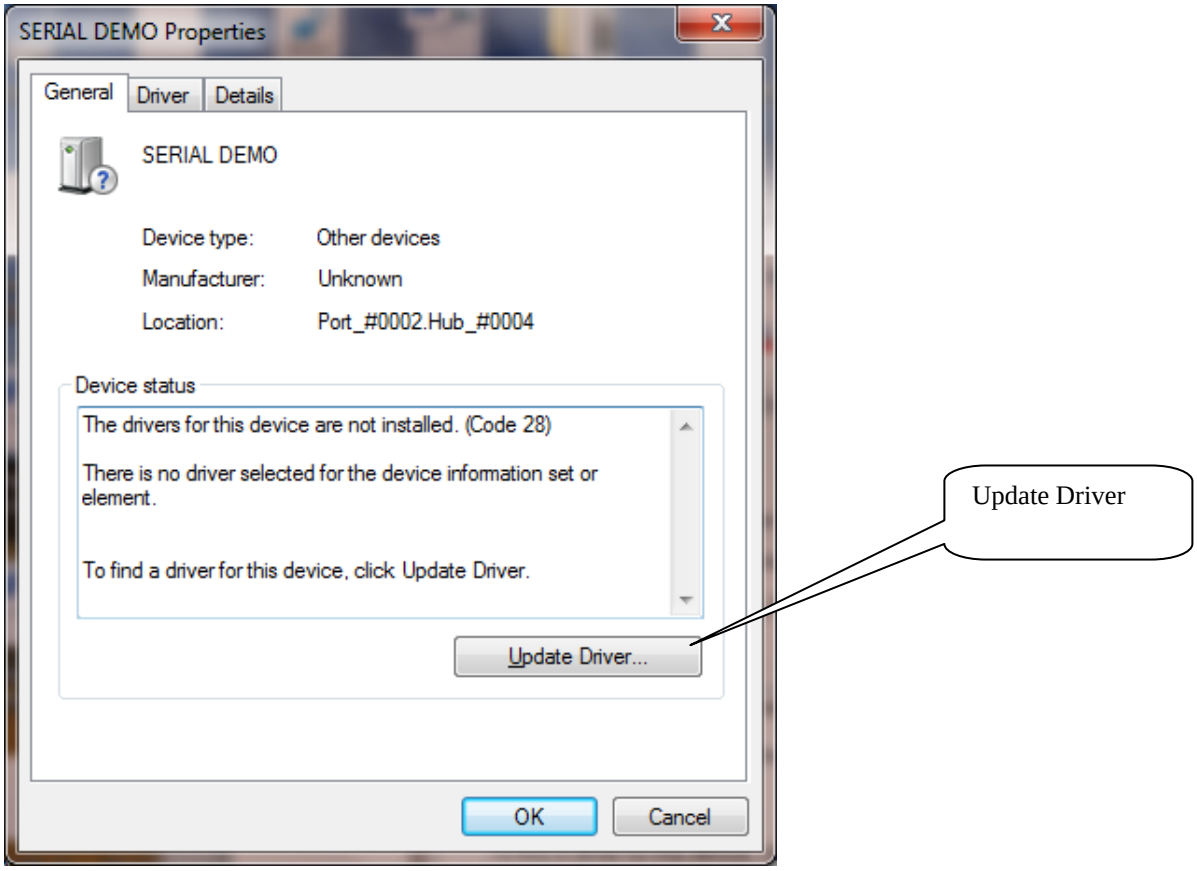


Figure 8

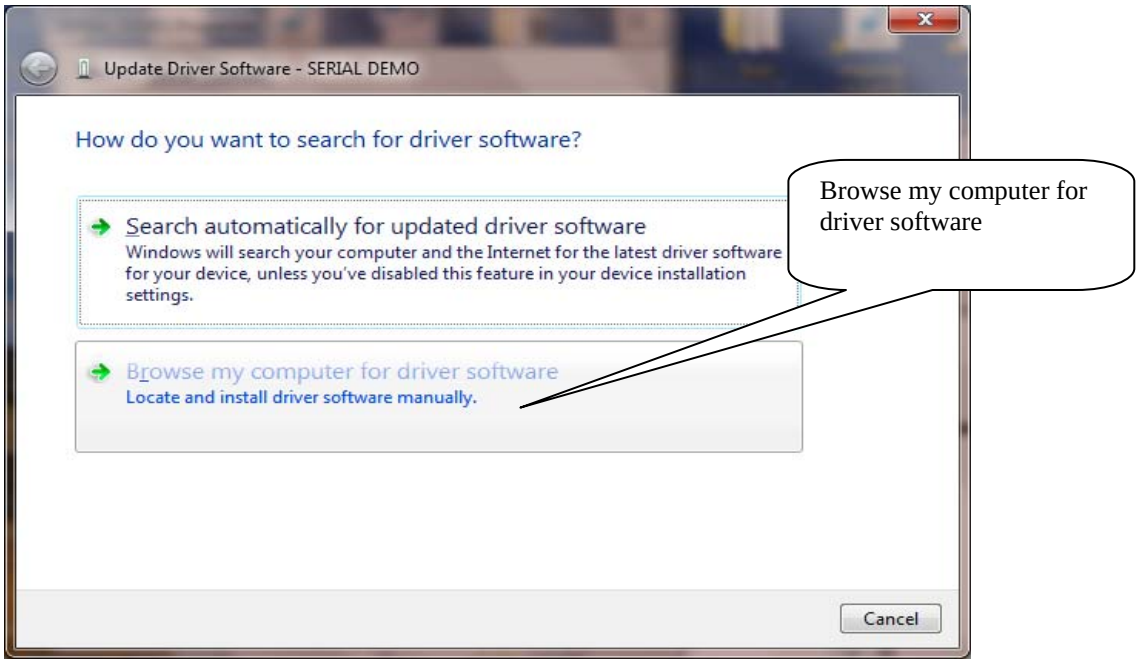


Figure 9

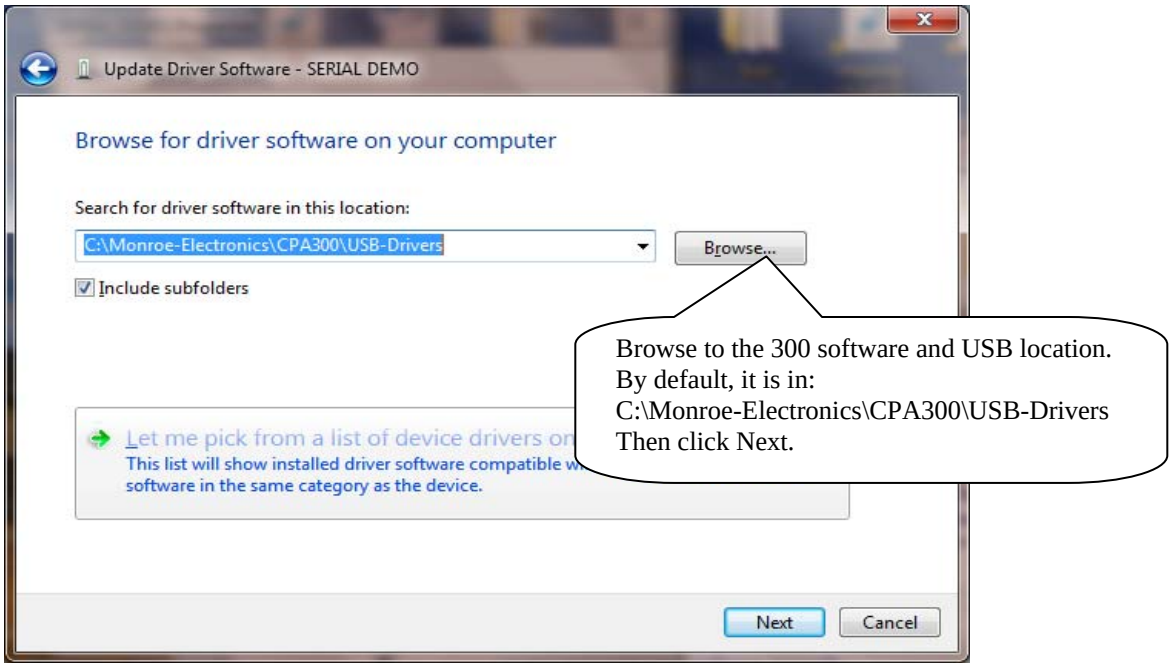


Figure 10

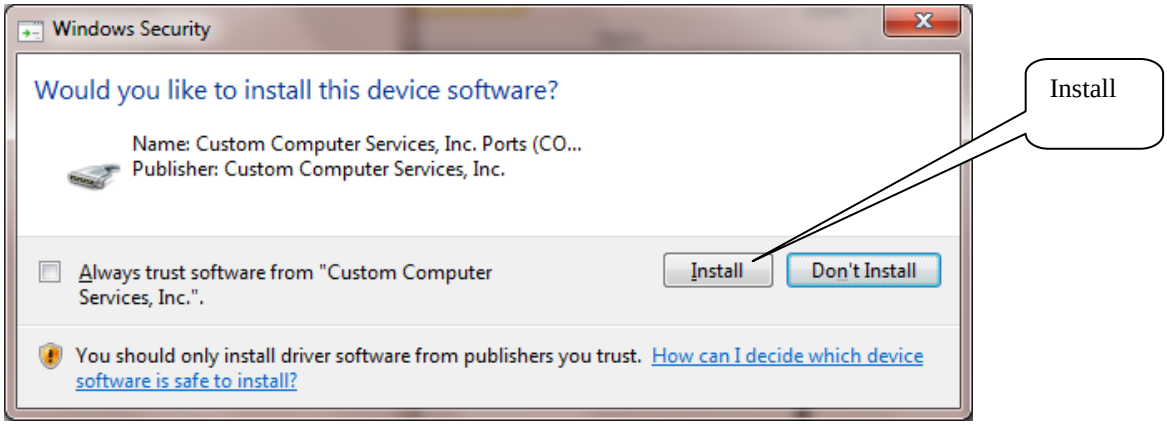


Figure 11

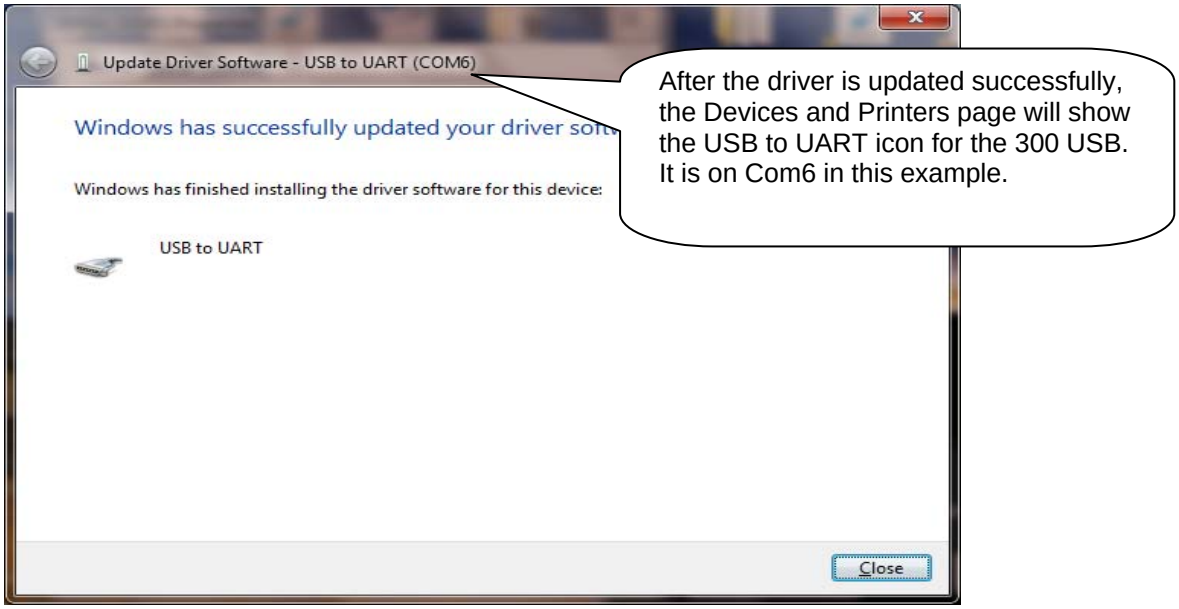


Figure 12

Run the 300 PC software again, and the 300 is power up to the prompt, **-.-**, without showing "COMM ERR".

The Model 300 software will search for the comport and the devices. Select the comport with CPA-300, then click the [Select highlighted comport and exit].

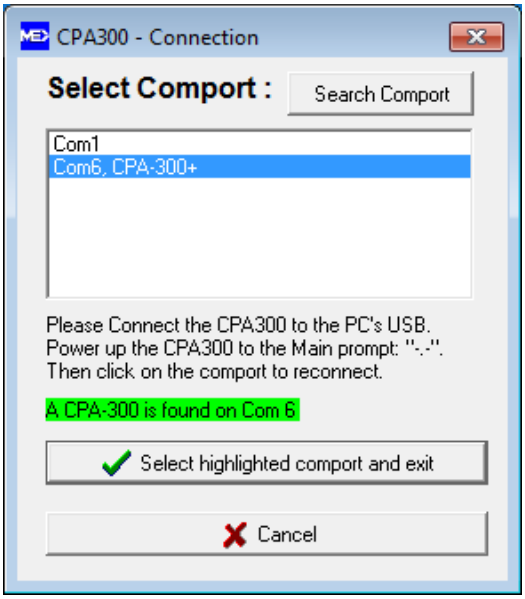
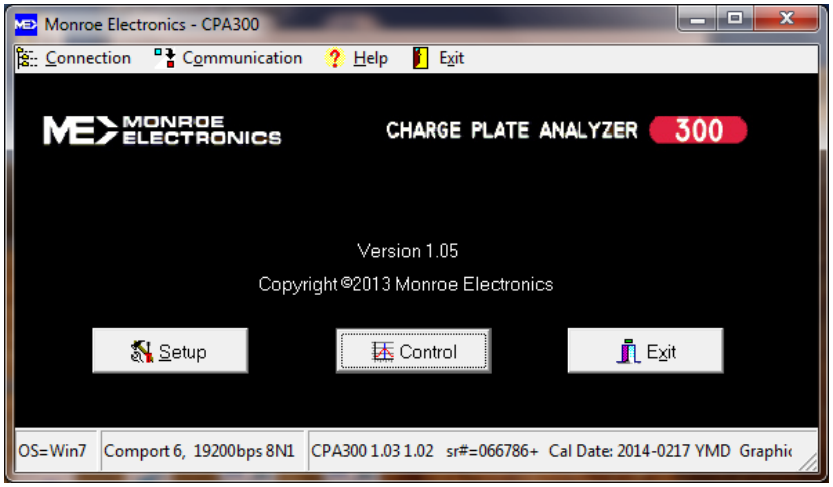


Figure 13

Now the PC is connected to the 300 via USB.



If it found the comport, but no CPA300 attached to it, please try again from step 2.

APPENDIX IV

CPA300 USB Driver Installation on Windows 8

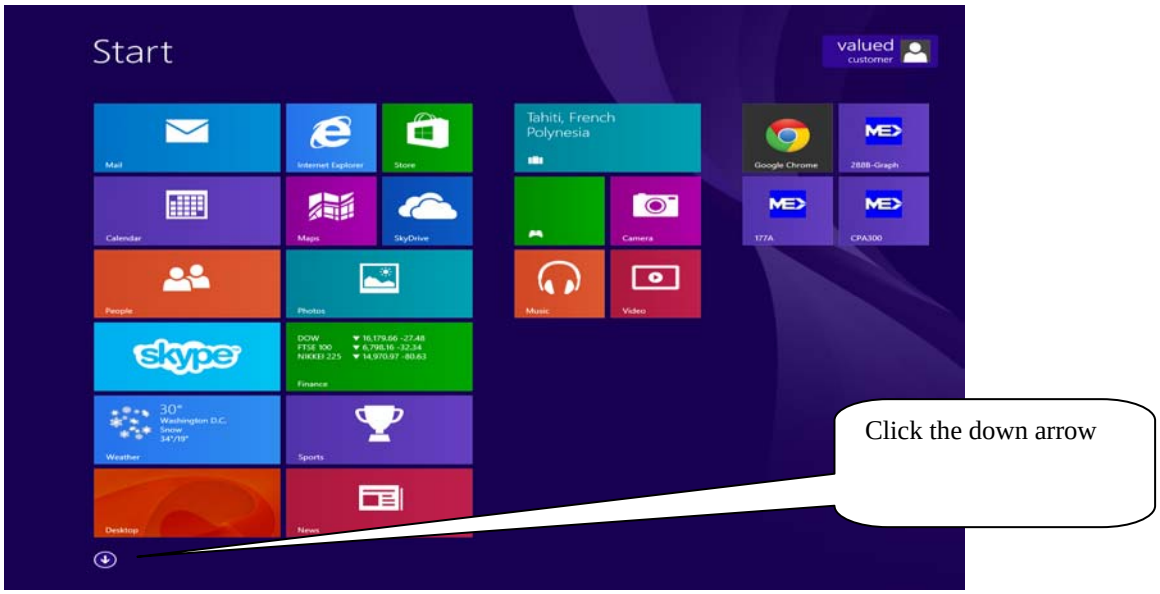
1) Install the CPA300 pc software on to the PC. You may need to log on to the PC as Administrator to install the software and the USB driver.
2) Turn on the CPA300 unit. The display shows: [CPA 300], [V1.03 1.02] then the prompt,

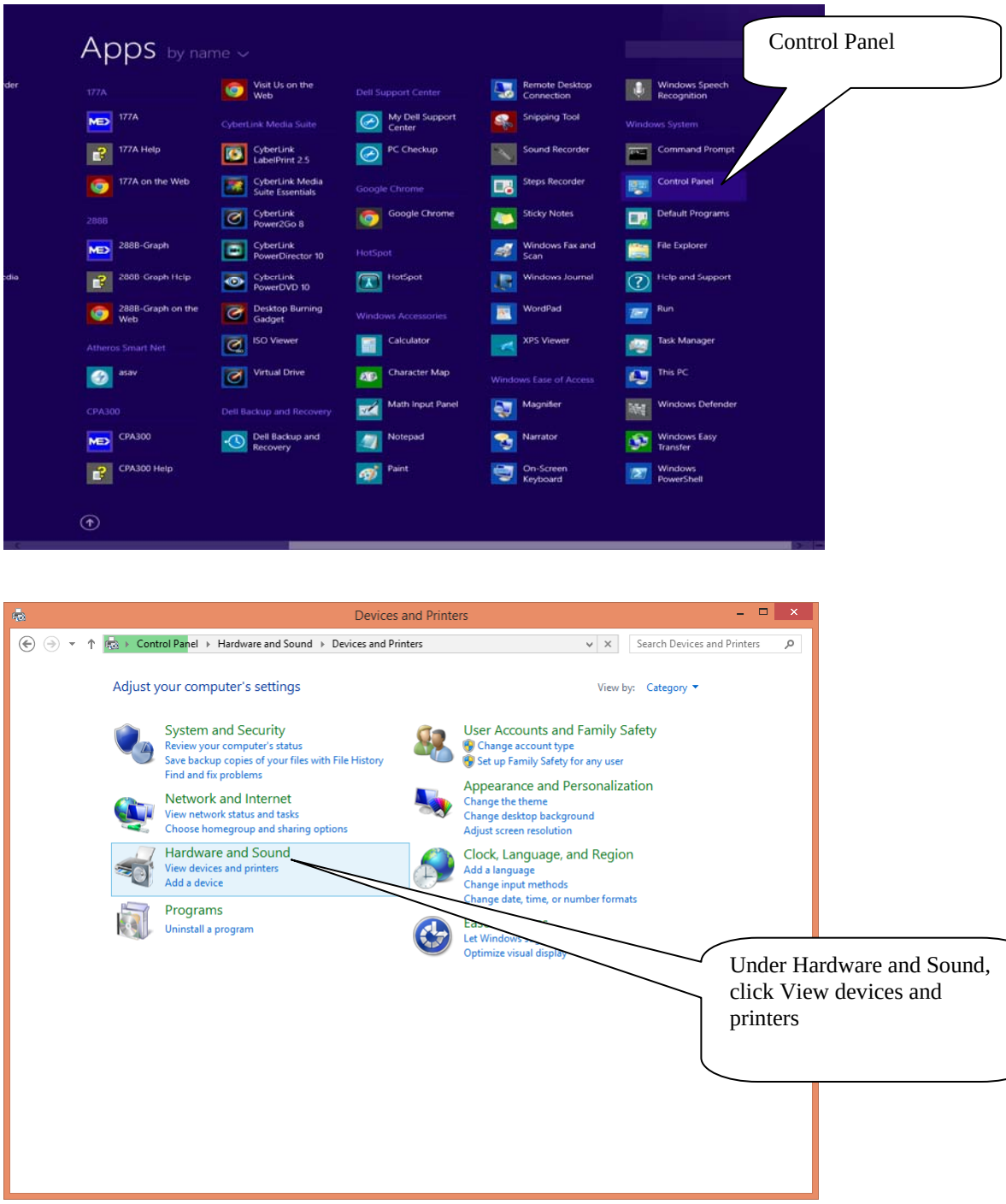
   -.-.

   If all these are shown, then go on to Step 3.

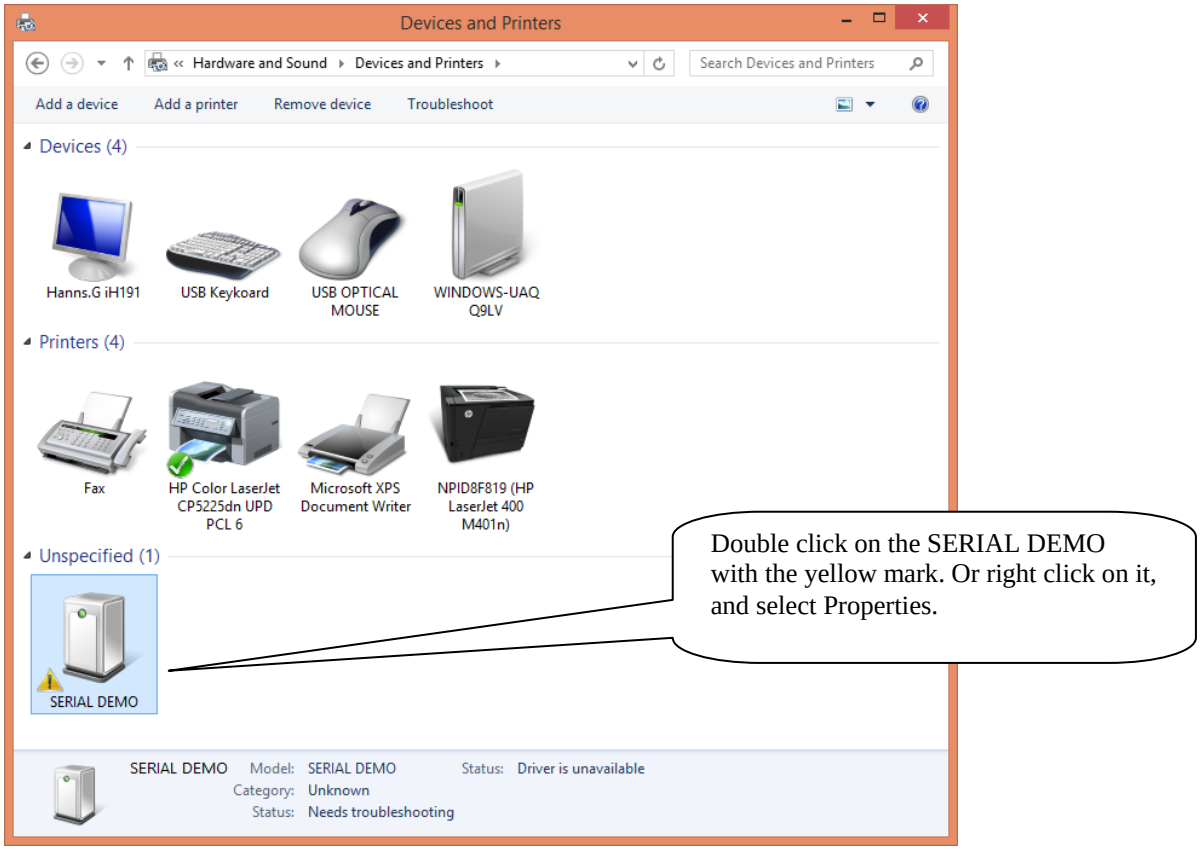
   If it shows [CPA 300], [COMM ERR], [V1.03 ???], then please check that the plate cable on the back of the unit is properly connected to the plate assembly. Power the Model 300 down, and then up again to see if it is connected. If the problem persists, report it to Monroe Electronics.
3) Connect the Model 300 to the PC via the USB cable.
4) Run the CPA300 software. It will start searching available comports and list the CPA300 with the comport if it is found. Selecting the port it will flash green and the software is ready to communicate with the unit.

   If not found, then go on to Control Panel, find the device, and update the driver.

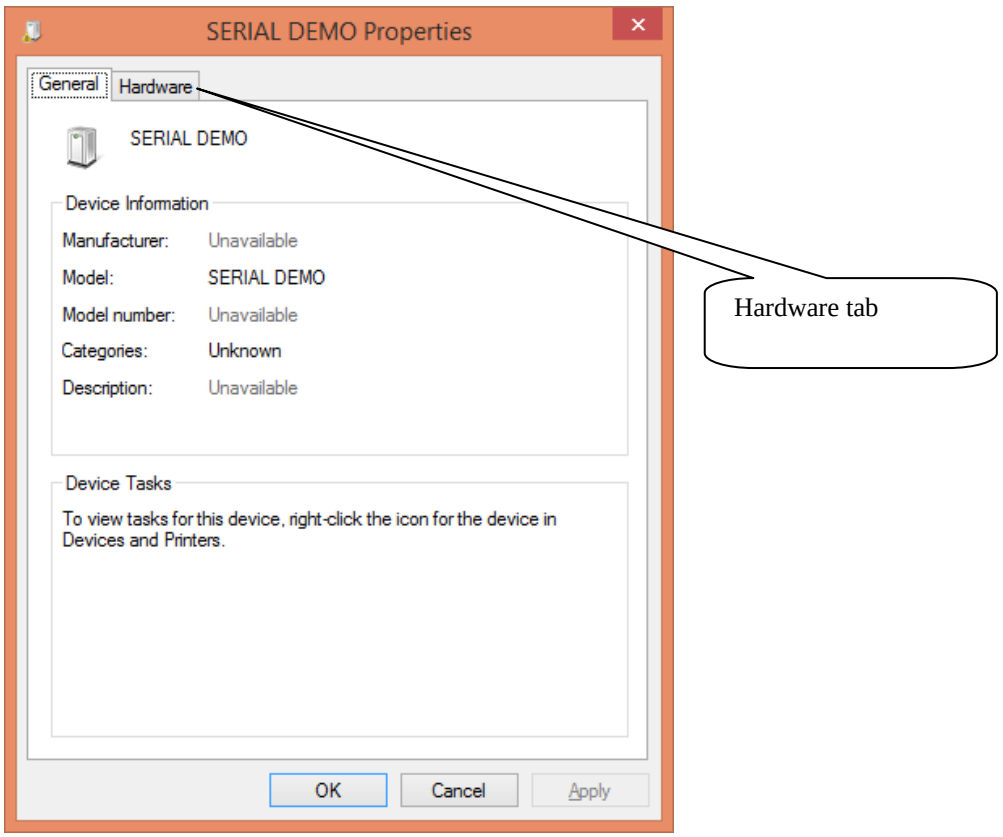


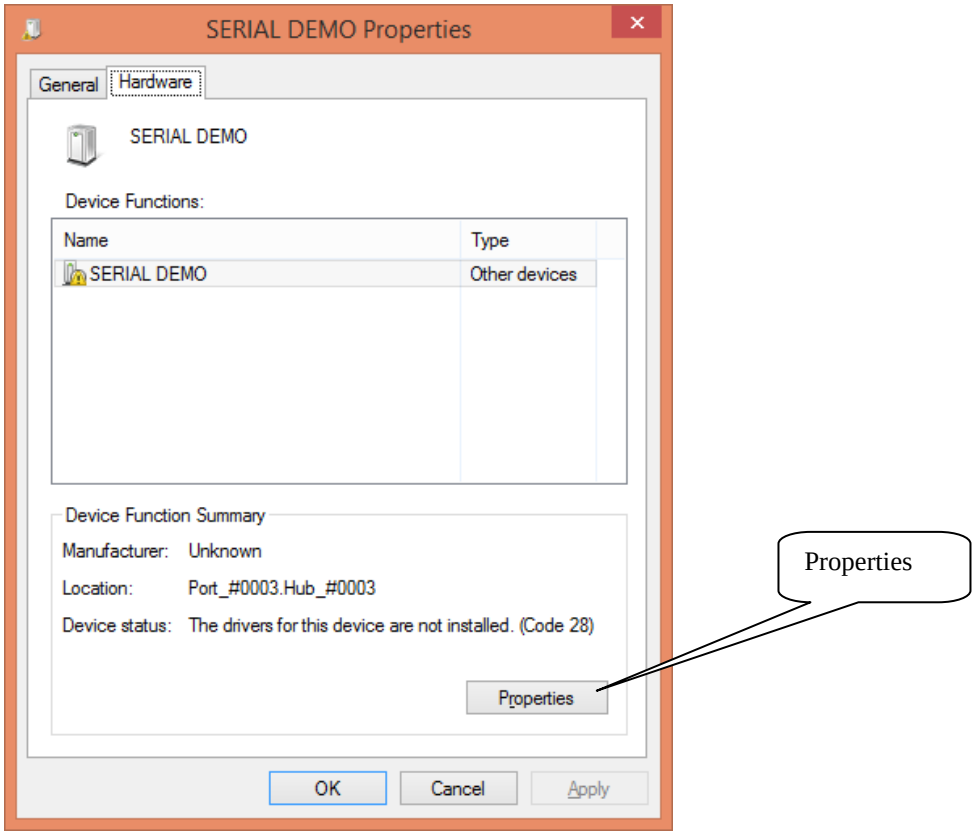


Select Hardware and Sound:

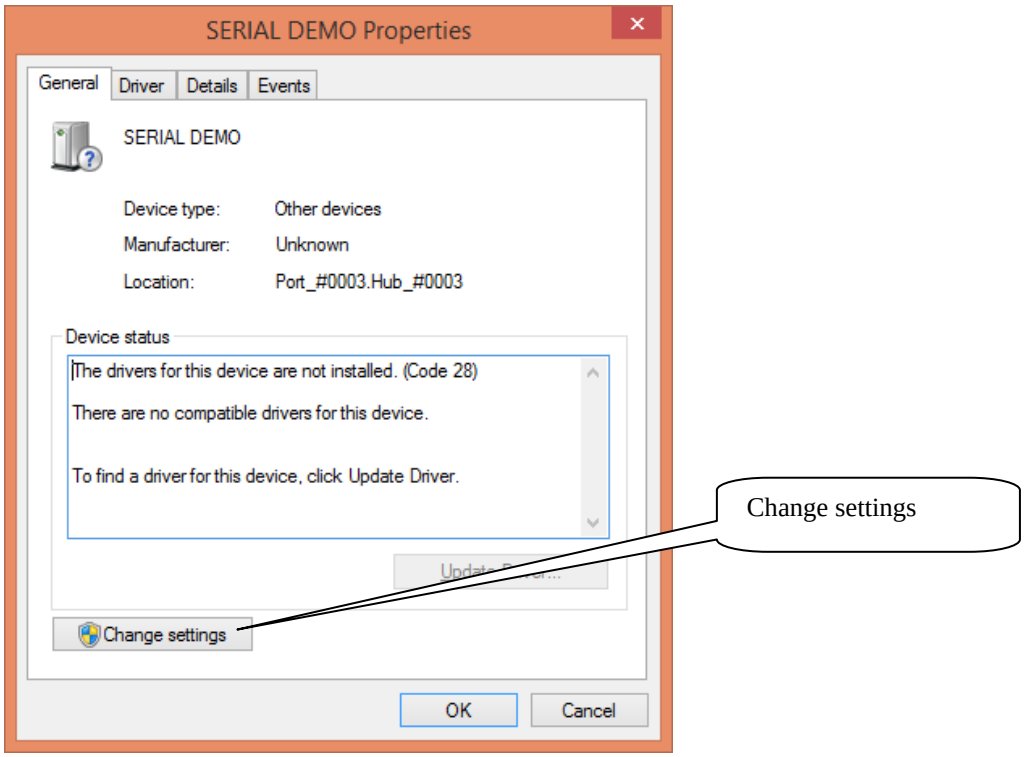


Double click on the SERIAL DEMO, or right click on it select Properties

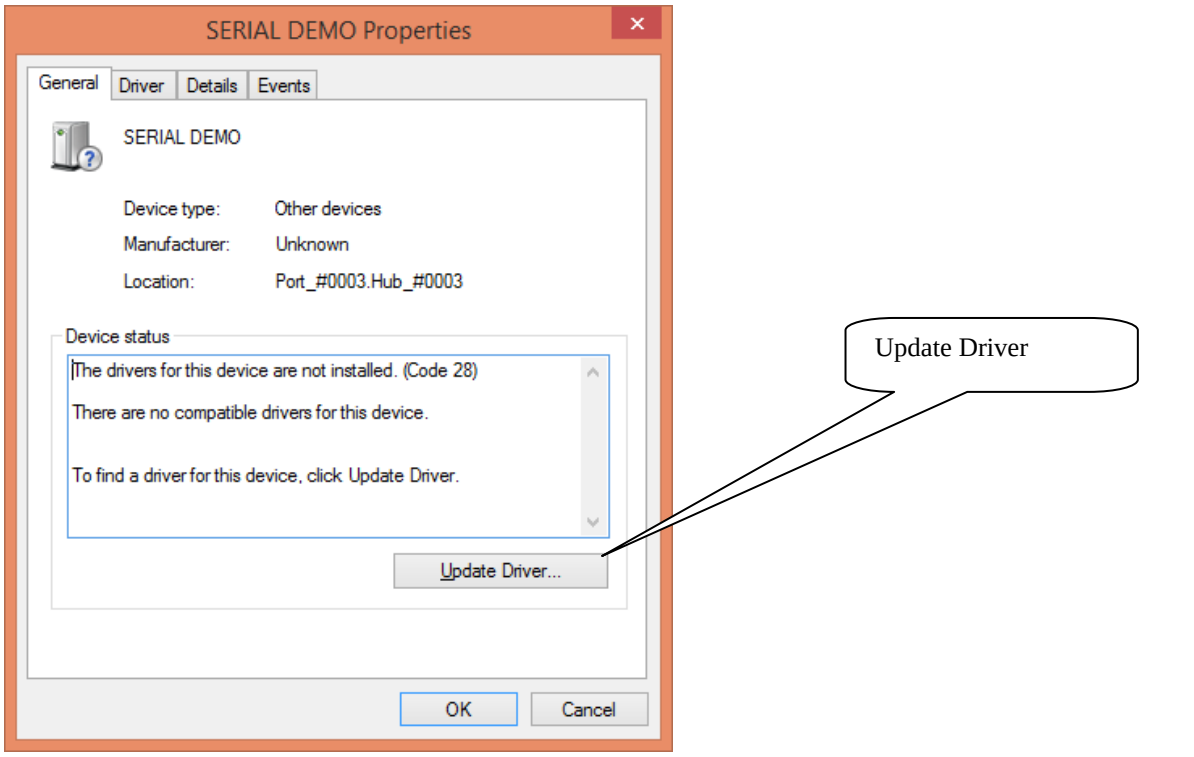




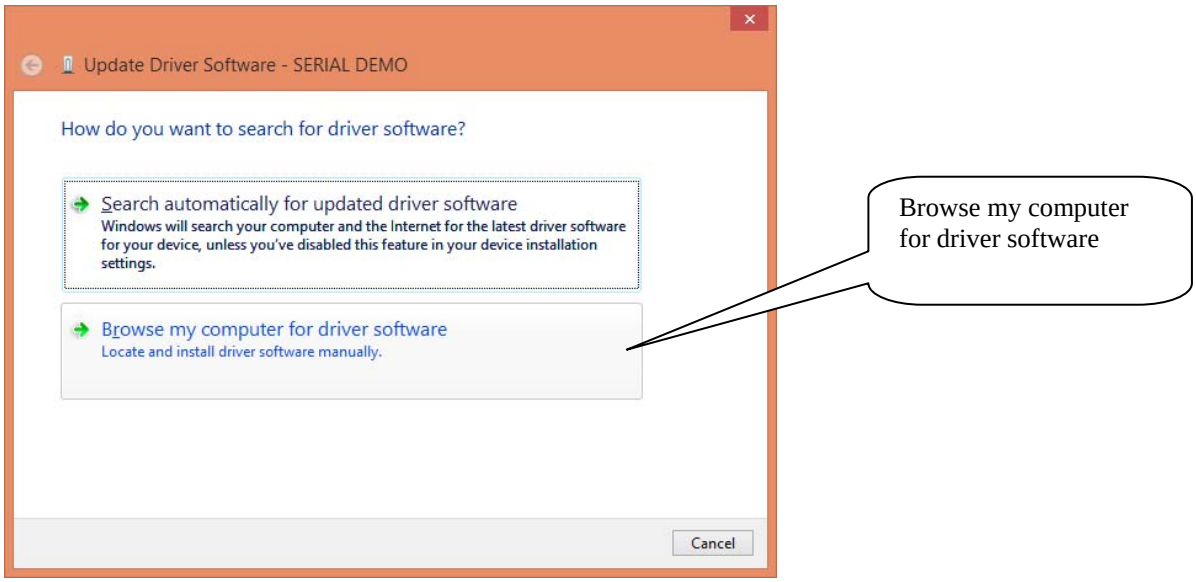
Properties:



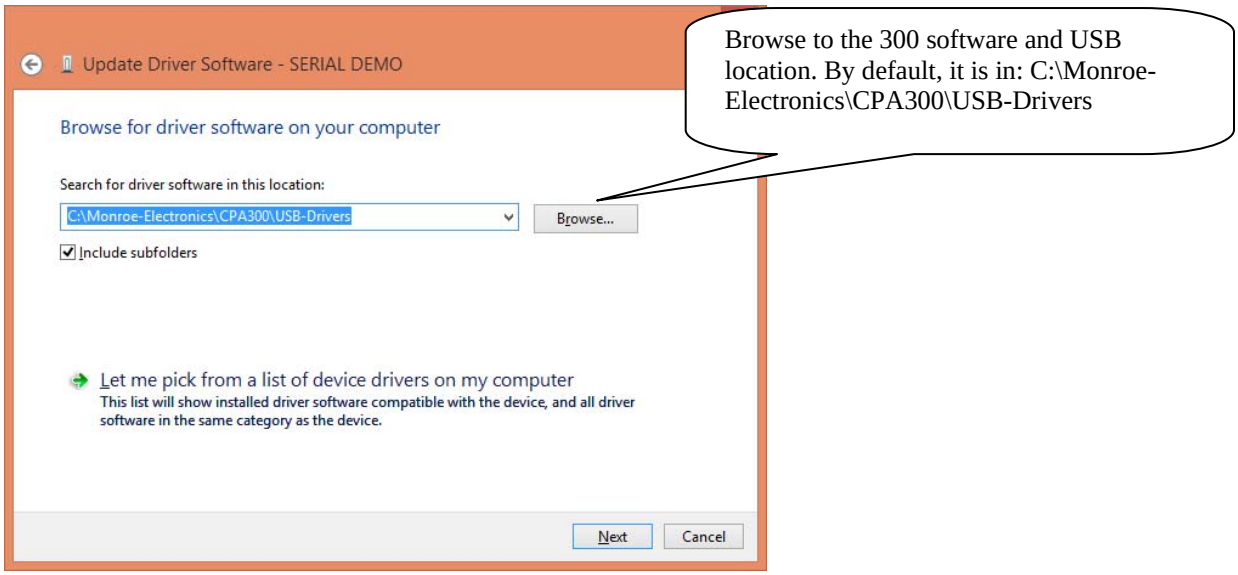
Change settings:



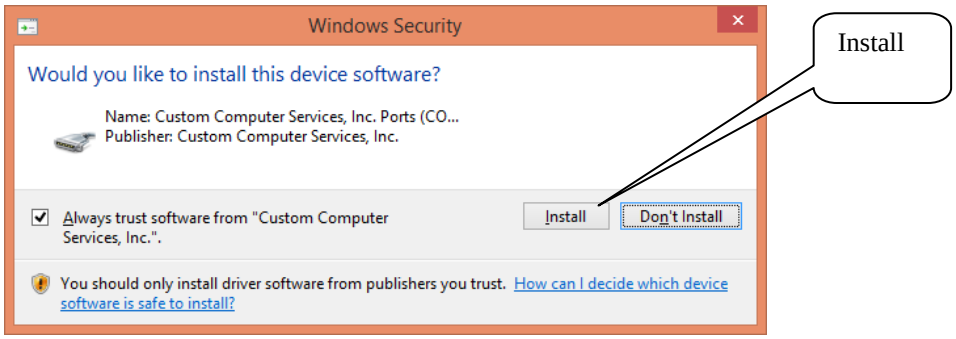
Update Driver



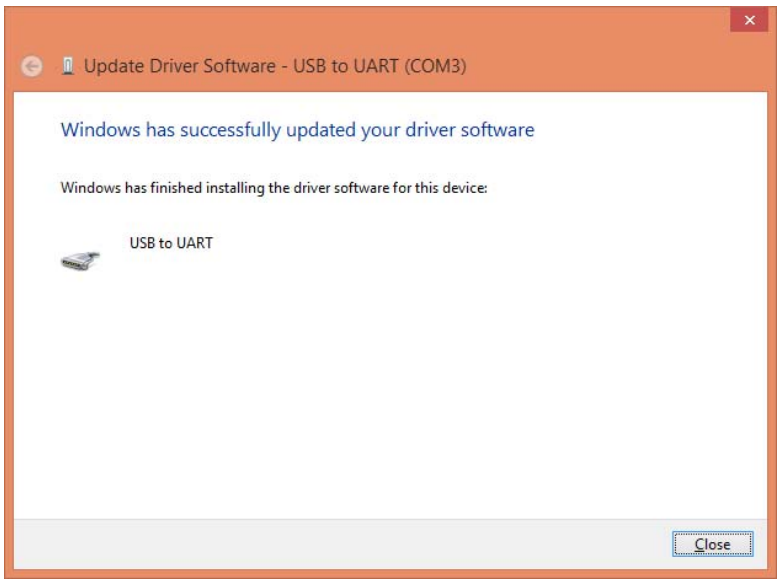
Browse my computer:

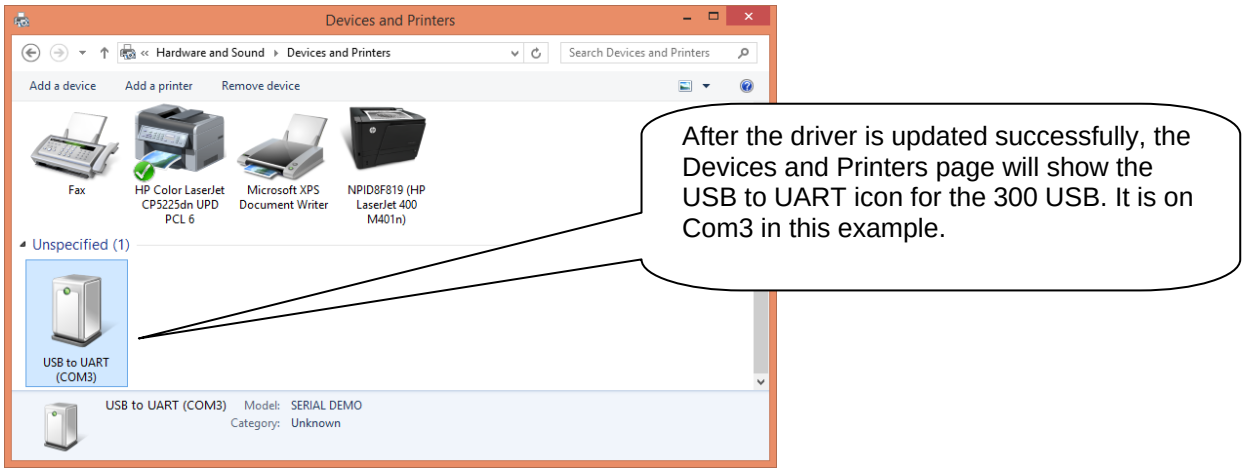


Browse and enter the 300 USB-Driver location, then Next:

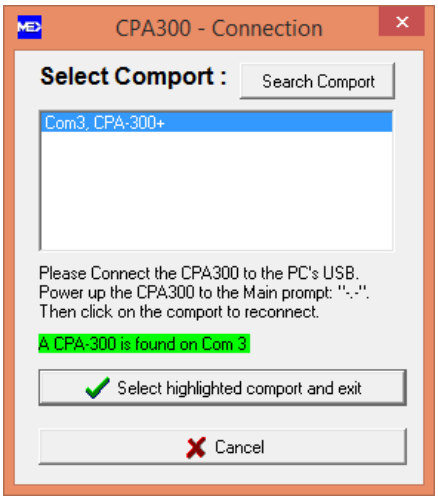


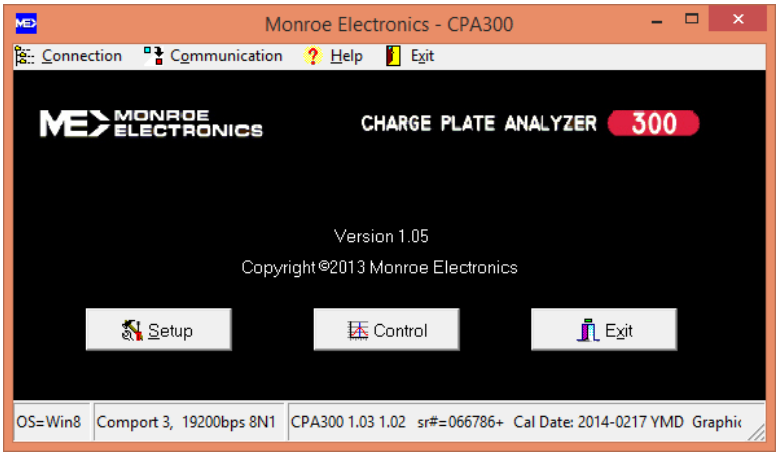
Install:





Run the Model 300 PC software again. The Model 300 is powered up to the prompt, "**-.-**", without showing "COMM ERR". The Model 300 software will search for the comport and the devices. Select the comport with CPA-300, then click the [Select highlighted comport and exit]. The PC is now connected to the Model 300 via USB.





APPENDIX V

Error Messages

Error Messages on RECALL test data:

+DCY CFAI **+decay charge failed.**
-DCY CFAI **-decay charge failed.**
The Model 300 charged for 30 seconds and the plate voltage did not reach to 1100v.

+DCY DFAI **+decay failed.**
-DCY DFAI **-decay failed.**
It is caused by one of the following:

1) After charging to 1100v, the decay test ran for 1 minute without getting to 1000v, and the decay timer did not start.

2) After the decay timer started at 1000v, the decay test ran to the maximum decay length and the voltage did not reached to the V stop setting (timed out).

+AVG FAIL
-AVG FAIL **The decay average fails to calculate on an auto sequence test when one or more decay tests fails.**

Error Message during operation:

COMM ERR **The plate isn't connected to the base unit. Check connection.**

CHRG CFAI **Charge failed.**
On a decay test, the Model 300 charged for 30 seconds without getting to 1100v.

DCAY DFAI **Decay failed. Refer to above "DCY DFAI" for the cause.**

BAD BAT **Bad battery**

When the Model 300 is plugged in to AC power, the battery charger starts. If charging for 5 minutes and the battery voltage is still below 4v, then the Bad Battery flag is set and the charger stops charging until the flag is cleared. The device is

still functional with AC supply. Replacing the battery is recommended.

RSET BAT0 **Reset Bad Battery Flag.**

When the Model 300 is powered up and the Bad Battery flag is set, it displays "BAD BAT" for 4 seconds. During this time, pressing the Shift key will reset the Bad Battery flag. If successful, it will show: "RSET BAT0".

BAT LTMP **Battery at low temperature <4c environment**

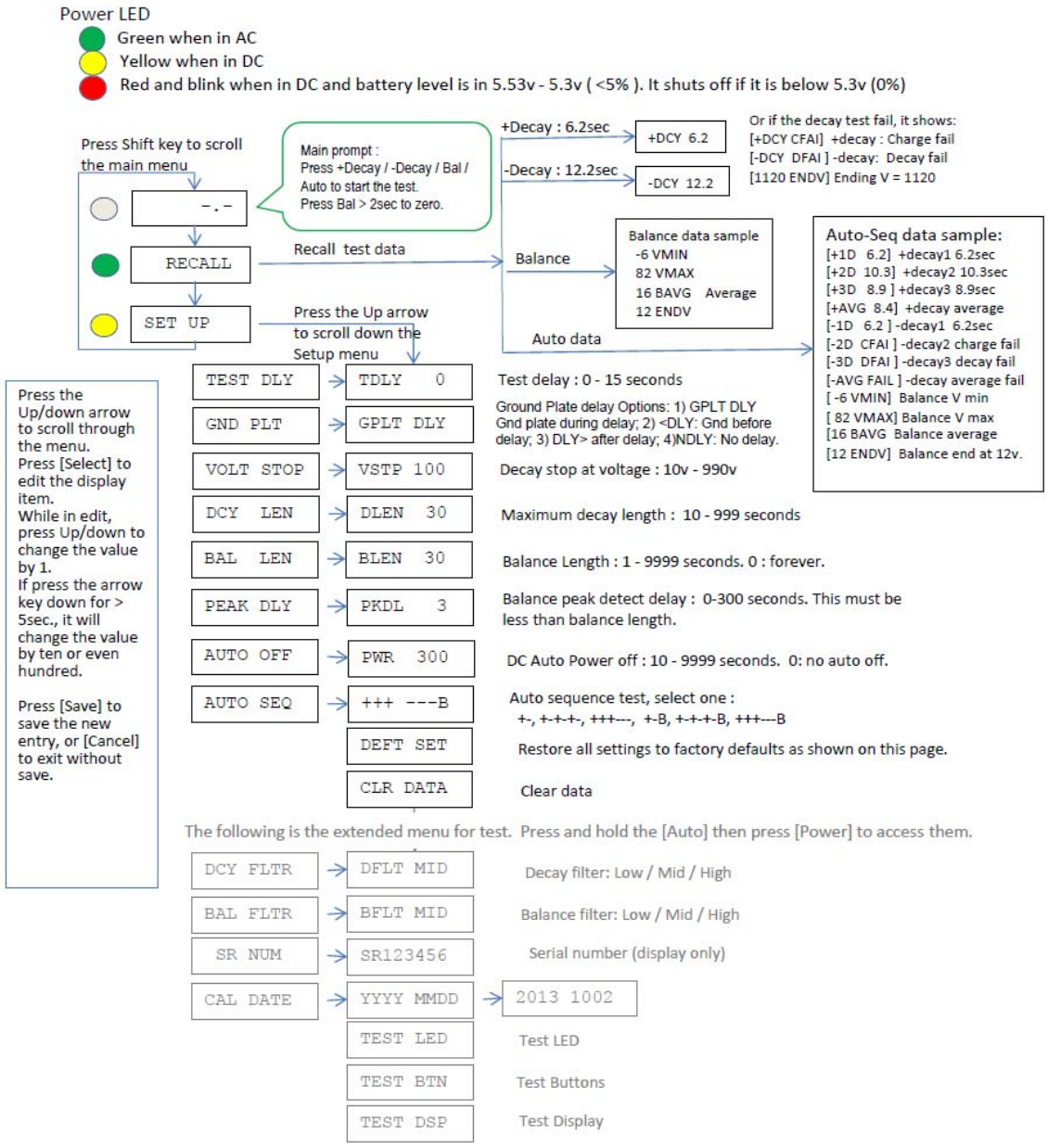
BAT HTMP **Battery at high temperature >50c environment**

When in AC on power up, if the battery temperature sensor detects that the temperature is below 4c or above 50c, the Model 300 will not charge the battery until the temperature is back to within 4c - 50c.

There is no need to take any action, the Model 300 continues to function as normal. The message will not be shown when the temperature is back within normal range, and then the charging resumes.

APPENDIX VI

Model 300 Operations Chart



Error Message:

BAD BAT	When the 300 is plugged into AC, the battery charger starts. If, after charging for 5 minutes, the voltage is still below 4v, the Bad Battery flag is set, and it stops charging until the flag is cleared. The Model 300 is still functional from the AC supply. It is advised to change the battery, then power up the device, and reset the flag by pressing the Shift key while it is showing "BAD BAT". If the flag is reset, it will show "RSET BAT0" on success.
BAT LTMP BAT HTMP	When in AC, if the temperature is below 4c or above 50c, it will stop charging the battery until the temperature is back to normal range: 4c to 50c. No need to take any action at this time, the Model 300 will still function as normal. The message will go away when the temperature is back within the normal range, and it starts charging.

WARRANTY

Monroe Electronics, Inc., warrants to the Owners, this instrument to be free from defects in material and workmanship for a period of two years after shipment from the factory. This warranty is applicable to the original purchaser only.

Liability under this warranty is limited to service, adjustment or replacement of defective parts (other than tubes, fuses or batteries) on any instrument or sub-assembly returned to the factory for this purpose, transportation prepaid.

This warranty does not apply to instruments or sub-assemblies subjected to abuse, abnormal operating conditions, or unauthorized repair or modification.

Since Monroe Electronics, Inc. has no control over conditions of use, no warranty is made or implied as to the suitability of our product for the customer's intended use.

THIS WARRANTY SET FORTH IN THIS ARTICLE IS EXCLUSIVE AND IN LIEU OF ALL OTHER WARRANTIES AND REPRESENTATIONS, EXPRESS, IMPLIED OR STATUTORY INCLUDING BUT NOT LIMITED TO THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS. Except for obligations expressly undertaken by Monroe Electronics, in this Warranty, Owner hereby waives and releases all rights, claims and remedies with respect to any and all guarantees, express, implied, or statutory (including without limitation, the implied warranties of merchantability and fitness), and including but without being limited to any obligation of Monroe Electronics with respect to incidental or consequential damages, or damages for loss of use. No agreement or understanding varying or extending the warranty will be binding upon Monroe Electronics unless in writing signed by a duly authorized representative of Monroe Electronics.

In the event of a breach of the foregoing warranty, the liability of Monroe Electronics shall be limited to repairing or replacing the non-conforming goods and/or defective work, and in accordance with the foregoing, Monroe Electronics shall not be liable for any other damages, either direct or consequential.

RETURN POLICIES AND PROCEDURES FACTORY REPAIR

Return authorization is required for factory repair work. Material being returned to the factory for repair must have a *Return Material Authorization* number. To obtain an RMA number, call 585-765-2254 and ask for Customer Service.

Material returned to the factory for warranty repair should be accompanied by a copy of a dated invoice or bill of sale, which serves as a proof of purchase for the material. Serial numbers, date codes and tamper proof stickers on our products also serve to determine warranty status. Removal of these labels or tags may result in voiding a product's warranty.

Repairs will be returned promptly. Repairs are normally returned to the customer by UPS within 10 to 15 working days after receipt by Monroe Electronics, Inc. Return (to the customer) UPS charges will be paid by Monroe Electronics on warranty work. Return (to the customer) UPS charges will be prepaid and added to invoice for out-of-warranty repair work.

RETURN OF REPAIRED ITEMS:

Factory repairs will be returned to the customer by the customer's choice of FedEx, DHL or UPS. Warranty repairs will be returned via UPS ground. The customer may request accelerated shipping via the previous mentioned carriers for both warranty and non-warranty repairs. **NOTE:** Accelerated transportation expenses for all factory repairs will always be at the expense of the customer despite the warranty status of the equipment.

FACTORY REPAIRS TO MODIFIED EQUIPMENT:

Material returned to the factory for repair that has been modified will not be tested unless the nature and purpose of the modification is understood by us and does not render the equipment untestable at our repair facility. We will reserve the right to deny service to any modified equipment returned to the factory for repair regardless of the warranty status of the equipment.