

# How to Communicate with the Solectria Universal Motor Controller (UMOC) Using Microsoft HyperTerminal <sup>TM</sup>

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## Introduction

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The following text will help you to use Microsoft HyperTerminal™ to communicate with your Solectria Universal Motor Controller (UMOC).

By following the steps outlined in this manual, you will be able to

- locate the Microsoft HyperTerminal™ program on your PC's Windows desktop
- create a HyperTerminal™ **C**onnection **C**onfiguration **D**ata (CCD) file and save it
- connect your UMOC to your PC, power and drive systems
- change your UMOC's parameters either manually or using an auto-programming disk provided by Solectria
- save your new parameters
- disconnect your PC from your UMOC

*Read all instructions in this manual thoroughly before starting any procedure.* Improper changes to UMOC parameters can result in the catastrophic failure of your unit and will void all warranties. If you have questions regarding any of the procedures outlined in this manual or are unsure as to the proper parameters configuration for your unit, contact Solectria's Customer Service department using the phone number provided on page 20. Please have the serial and model numbers of your unit(s) ready when you call, so that we can answer your questions as quickly as possible.



## How to use this Manual

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The following will aid you in your ability to quickly get the information that you need from this manual and to help you perform tasks safely.

### Short Cuts

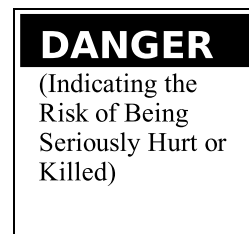
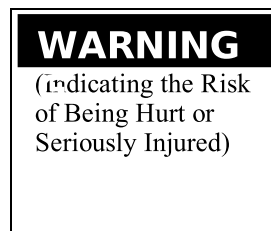
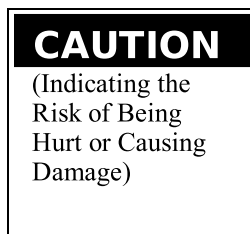
If you already have a HyperTerminal™ Connection Configuration Data (CCD) file, you may skip page seven and go to page nine and the section titled “Connecting Your UMOC to Your PC and Drive System”.

### Safety

Your UMOC, when attached to a power source, contains voltages sufficient to cause severe personal injury. *Always use caution when operating near sources of high voltage.*

### Warning Labels

Labels will be located on the right-hand side of the page to indicate areas in a procedure where you should be taking the appropriate precautions. Labels include:



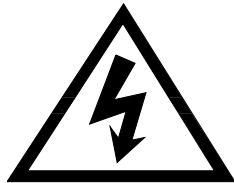
## Safety Notes

Use these precautions while following any procedure.

- Read all instructions thoroughly before beginning any procedure
- Wear safety goggles at all times to prevent the risk of eye injury.
- When using hand tools to make electrical connections, make sure that the tools have been properly insulated to prevent the risk of electrical shock.

## Warning Symbols

The warning symbol shown below indicates the risk of an electrical shock in the performance of a procedure.



Use appropriate precautions wherever this symbol is indicated.

## Computer Instructions

All computer program names, file names and drop down box choices will be displayed in **Bold Type**.

The computer keyboard commands given in the section titled “**Changing Your UMOc’s Parameters**”, are displayed in **[brackets]** and **bold type**.



## Accessing HyperTerminal™

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In order to change any of the parameters in your UMOc's long-term memory, you must first create a communications link between the unit and your PC. The link is created by using the HyperTerminal™ program located in your PC's Windows 95/98 software.

Once you are in HyperTerminal™, you must then enter in the information required to create a HyperTerminal™ Connection Configuration Data (CCD) file and save it. This allows you to access your communication configuration for your UMOc by just double clicking the icon that you choose from those listed in the HyperTerminal™ files window.

Use the following instructions to access and enter HyperTerminal.

1. Using your PC's mouse, click **Start** to view the Windows **Start** menu.
2. Scroll to **Programs**.
3. Scroll to **Accessories**.
4. Next to **Accessories**, click on the **HyperTerminal™** folder.

You should now be viewing a window entitled

**C:\ProgramFiles\Accessories\HyperTerminal™**

This is the HyperTerminal™ access window. From here you can enter HyperTerminal™ by double clicking the icon labeled **HYPERTERM**.

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## Creating a Connection Configuration Data File

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Now that you have entered HyperTerminal™, you must create a Connection Configuration Data (CCD) file. This will allow you to connect with the program that allows you to communicate with your UMOC.

If a CCD file has already been created, double click on it or on your Windows desktop shortcut for it, and then skip ahead to Page 9. If not, go now to step 1.

Use the following instructions to create a CCD file for your PC.

1. When HyperTerminal™ opens, you should see a dialog box called **Connection Description**. This box will ask you to enter a name and choose an icon picture for the connection. We recommend calling the connection UMOC. The program automatically adds the period and extension: “.ht”. You may choose an icon picture of your liking. After naming your connection click **OK**. If this is your first session, you will be asked at the end of the session if you would like to save it. Click **Yes**.

2. You should now be viewing a dialog box called **Phone Number**. At the bottom of this box, you will see **Connect using**. From the list provided, **click** the name of the serial port of your PC that you will be connecting your RS-232 cable. For example: **Direct to COM 1** or COM 2, COM 3, etc. It may be necessary to consult your PC's manual to determine the number of serial ports you have available.

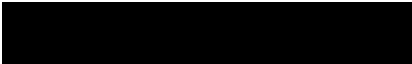
Once you have made your choice, other fields in the dialog box will shut off. After setting your COM connection, click **OK**.

You should now be viewing a dialog box called **COM \*n Properties**. \*(n= the number of the serial port you selected in step 2)

3. **Click** on the individual drop down menu tabs and for each one choose these settings from the ones listed:

- Bits per second: **38400**
- Data bits: **8**
- Parity: **None**
- Stop bits: **1**
- Flow control: **None**

4. After setting your COM Properties, click **OK**. A window entitled “**UMOC HyperTerminal™**” will appear.

- 
5. Click on the **file** tab and from the drop down menu click **Save** to save your CCD file. The file will be saved as UMOC.ht in the HyperTerminal™ folder.

You are now ready to communicate with your SOLECTRIA UMOC!

All of the UMOC's power and communication lines must be connected to your corresponding system cables at this time. To know which cables you must have connected, continue to **section 3 – Connecting your UMOC to your PC**





# Connecting your UMOC to your PC and Drive System

Now that you have entered HyperTerminal™ and created a CCD file, you must now connect the power and communication lines that are necessary in order to view the parameters of your UMOC unit. The connections are listed below.

**Before making any connection, read all instructions thoroughly.**

Note: The connections that must be made at all times in order to establish communication with you unit are written in bold type.

## UMOC Connections to PC and Drive System

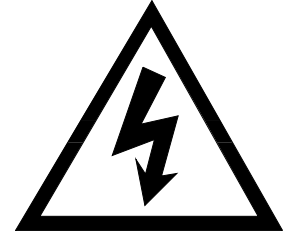
<b>DB 9 female panel connector</b>	<b>to RS-232 cable (Connected to Your PC's Serial Data Port)</b>
DB25-pin (Drivers signals)	to Ignition Box DB25-pin
DB9-pin (Motor Sensor)	to Drive Motor Sensor
Packard 4-pin (Lamp Outputs)	to Brake Lamps
<b>Packard 2-pin male (Keyed 12v)</b>	<b>to Vehicle Ignition Switch</b>
Packard 2-pin female (Fan Output)	to UMOC Cooling Fans
Motor Power Connector (red, white, blue)	to Drive Motor power Wires
<b>Battery - In Connector (Gray or orange Anderson)</b>	<b>to Main Drive Batteries</b>

**CAUTION**  
Failure to make connections properly may hamper your efforts to communicate with your **UMOC** and even damage your **UMOC** or Computer.

## Making Connections

Use the following instructions to make the connections required between your UMOC, PC and drive system.

**Remember:** Always use **caution** when working around electricity or electrical components.



1. If your UMOC is already connected to your drive system's 12V- power source, that is activated by turning on your ignition switch, disconnect power to your unit by switching your vehicle off or removing power to the 2-pin Packard male connector.
2. Connect one end of a male to female RS-232 (Radio Shack # 26-117) cable to the UMOC Data communications port. This is a DB9-pin connector flush mounted on the side of the controller, next to the DB25 Drivers Signals cable. Older UMOC's that have a beige-colored UMOC Data communications port also require a null modem adapter (RS# 26-264) to be added between the cable and that port.
3. Connect the other end of the RS-232 cable to the computer.
4. Turn you computer on and enter the HyperTerminal™ CCD program file that you created earlier.
5. Power up the UMOC by turning your drive system's ignition switch to the "on" position or by applying 12V power to the 2-pin Packard male connector. Now on your computer you will see the **SOLECTRIA** banner similar to this one should appear:

(Solectria/Induction UMoC 440, Mon Mar 30 11:57:48 1998 Config:13)

You are now communicating with your Solectria UMOC! Use the instructions provided in "**Changing Your UMOC's Parameters**" to make the adjustments that you would like to your unit.

## Changing Your UMOC's Parameters

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The following text gives you step by step instructions for you to change your UMOC parameters by "auto programming" new parameters developed by Solectria.

Instructions start when the Solectria banner appears on your screen. Items inside **[brackets]** show what you need to type into your computer. **[ENTER<]** indicates pressing the enter key. Text that is not bracketed, bold and written in *Courier New* font, represents what should appear on your screen.

### CAUTION

Straying from your specific instructions **WILL VOID YOUR WARRANTY** and may permanently damage your UMOC!

Your goal is to change the parameters only as instructed. **Any other changes could be catastrophic and will void your warranty.**

If in doubt about what you have changed, do not write the parameters to the UMOC's long term memory (EEPROM).

Use the following instructions to change the parameter settings of your UMOC.

1. If you are auto-programming a new parameters file created by Solectria into the UMOC, load the disk containing the new parameter file into your PC floppy drive, then copy the file to the hard drive of your PC.
2. Make sure to connect your UMOC to the PC via the RS-232 cable. You must also, at the very least, connect your UMOC to your battery power via the gray or orange Anderson connector and to the keyed 12V-power supply via the Packard 2-pin male connector.
3. On your PC, launch the **HyperTerminal™ CCD** file for the UMOC by double clicking on **UMOC.ht**.
4. If the UMOC is receiving battery and keyed-12V power, and the HyperTerminal™ is configured correctly, a banner should appear on your computer screen similar to:

Solectria/Induction UMoC 440, *Compile Date: Configuration Number:*

5. When that appears, press **[ENTER]** twice, type in your **password**, if any, and press **[ENTER]** again. The main menu screen will appear:

ad: 21 718 1021 1020 3 627 68 155  
D: 0 -1 11: 0A 0A 0A

INFO: LIMITS TO TORQUE: STATUS:  
ped\_T 0 Pwr Svr: 1.0 Relay: ON  
Id 0.0 A Mtr Temp: 1.0 Power Stage: DISABLED  
Iq 0.0 A Box Temp: 1.0 Regen. Braking: ENABLED  
Temp 24.3 C Dev Temp: 0.8 Error PAL: LEDPwr  
Bat. 289.3 V BatV: 1.0 NEUTRAL  
Rotor 0 rpm Speed: 0.0

p Paramtrs. | A Auto Prgm | U User pwd  
W Wr.EE Solectria/GillTronics Induction UMoC 440, *Compile Date: Configuration Number:*  
PROM | B reBoot |

Remember, your values will vary

To auto-program new Solectria parameters from a UMOC parameter file, select option **A** for **AutoPrgm**.

Type **[A]** on your keyboard

Disabling unit ('n' to cancel) will appear

Press **[ENTER<]** on your keyboard

Send file -will appear

At the top of the HyperTerminal™ window, there are pull down menus entitled File, Edit, View, Call Transfer or Help. **Click** on the pull down menu entitled '**Transfer**', and select the **Send Text File** option.

Use the browser window to find the parameter file that you want to program into the UMOC.

Make sure to set the '**Files of Type**' selection-box in the browser window to '**All Files (\*.\*)**' so that all files in the directory are displayed. Select the file by double clicking on it. This should start the transfer of the new parameters to the UMOC.

If the parameter file contains incorrect syntax or is not sent or received properly, the UMOc will reply with 'Error...'. If the file has correct syntax and is sent and received properly, the UMOc will indicate the transfer is ok and that the EEPROM should be written to make the new parameters permanent.

**Press [ENTER<]**

If you see - "Error due to..., Do not write to EEPROM" - this will indicate that the parameter file's syntax is wrong.

If the transfer was successful, you should see-  
Write EEPROM to save changes -on your screen

**Press [ENTER<]**

If an error is indicated, check that the correct file name is being used or that the cable connections are tight and try again. If you repeatedly receive an error message, contact Solectria.

If no error is returned, you can **type 'p'** to examine the new parameters, and if they are satisfactory, return to the main screen.

**Type [p]** on your keyboard

Your UMOc's parameters will appear *(Remember, your parameters may vary)*

0 Max Bat. Volts:364.0 V      1 Max Fwd Speed : 10.0 kRPM vs 12.0  
2 Min Bat. Volts:266.0 V    vs 234.0 3 Max Rev Speed : 2.0 kRPM vs 3.0  
4 Max Pwr Mtr I :350.0 Apk      5 Brake Min Spd.: 0.2 kRPM  
6 Max Reg Mtr I :225.0 Apk    vs 170.0 7 Brake Lt Curr.:100.0 Apk vs 50.0  
8 Power Svr. Pot: 10.0 kOhm      9 Pedal MaxBrake: 0.10  
10 Power Svr. Min: 80 A    vs 20 11 Pedal Brake : 0.30  
12 Power Svr. Max: 250 A    vs 180 13 Pedal Accel : 0.30    vs 0.40  
14 Regen Bat Max : 200 A    vs 60 15 Pedal MaxAccel: 0.67    vs 0.85  
16 Shaft Dir. : -190 rm/Hz vs 166

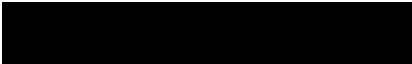
**Press [ENTER<]**

You may check your old parameters' settings by re-booting your computer now.  
**Remember**, your new parameters' settings will be lost if you do so.

## WARNING

**DO NOT WRITE TO THE EEPROM IF AN ERROR MESSAGE IS DISPLAYED.**

The UMOc's short-term memory may have been corrupted. Remove 12-volt power for 10 seconds and start again.



Type **[W]** on your keyboard to write the new parameters to the EEPROM.

Sure?: Will appear.

Type **[y]** on your keyboard.

EEPROM written. Will appear.

Press **[ENTER<]**

Your parameters screen will appear again.

(Remember, your parameters may vary)

ad: 21 718 1021 1020 3 627 68 155  
D: 0 -1 1 l: 0A 0A 0A

INFO:	LIMITS TO TORQUE:	STATUS:
ped_T 0	Pwr Svr: 1.0	Relay: ON
Id 0.0 A	Mtr Temp: 1.0	Power Stage: DISABLED
Iq 0.0 A	Box Temp: 1.0	Regen. Braking: ENABLED
Temp 24.3 C	Dev Temp: 0.8	Error PAL: LEDPwr
Bat. 289.3 V	BatV: 1.0	NEUTRAL
Rotor 0 rpm	Speed: 0.0	

Solectria/GillTronics Induction UMoC 440, *Compile Date: Configuration Number:*  
p Paramtrs. | A Auto Prgm | U User pwd  
W Wr.EEPROM | B reBoot |

## Rebooting the UMOc's Processor

Now that you have set the new parameters for your UMOc, you must reboot the unit's processor in order to check the new settings.

Use the following steps to reboot your processor.

1. **Press [Shift] then [B]** on your keyboard.

You will see the following banner line:

*Solectria/Induction UMOc 440, Compile Date: Configuration Number:*

2. **Press [ENTER<]**
3. **Press [ENTER<]** again
4. **Type** your password (If any)
5. **Press [ENTER<]**

The UMOc's status screen will appear.

ad: 21 718 1021 1020 3 627 68 155  
D: 0 -1 1 I: 0A 0A 0A

INFO:        LIMITS TO TORQUE:    STATUS:  
ped\_T 0    Pwr Svr: 1.0        Relay: ON  
Id 0.0 A    Mtr Temp: 1.0        Power Stage: DISABLED  
Iq 0.0 A    Box Temp: 1.0        Regen. Braking: ENABLED  
Temp 24.3 C    Dev Temp: 0.8        Error PAL: LEDPwr  
Bat. 289.3 V    BatV: 1.0        NEUTRAL  
Rotor 0 rpm    Speed: 0.0

p Paramtrs. | A Auto Prgm | U User pwd  
W Wr.EE Solectria/GillTronics Induction UMOc 440, *Compile Date: Configuration Number:*  
PROM | B reBoot |

(Remember, your values will vary)



Type [p] on your keyboard to view the parameters of your UMOC.

Check to see that all of your parameters are appropriate.

Remember, your parameters will vary

```
0 Max Bat. Volts:364.0 V      1 Max Fwd Speed : 10.0 kRPM vs 12.0
2 Min Bat. Volts:266.0 V    vs 234.0 3 Max Rev Speed : 2.0 kRPM vs 3.0
4 Max Pwr Mtr I :350.0 Apk      5 Brake Min Spd.: 0.2 kRPM
6 Max Reg Mtr I :225.0 Apk vs 170.0 7 Brake Lt Curr.:100.0 Apk vs 50.0
8 Power Svr. Pot: 10.0 kOhm      9 Pedal MaxBrake: 0.10
10 Power Svr. Min: 80 A vs 20 11 Pedal Brake : 0.30
12 Power Svr. Max: 250 A vs 180 13 Pedal Accel : 0.30 vs 0.40
14 Regen Bat Max : 200 A vs 60 15 Pedal MaxAccel: 0.67 vs 0.85
16 Shaft Dir. : -190 rm/Hz vs 166
```

Press [ENTER<] to return to the status screen

Now that you have entered the HyperTerminal™ program, saved your CCD file settings, communicated with your UMOC, changed your parameters and rebooted your UMOC's processor, you can now exit HyperTerminal™ and disconnect the RS232 cable from your UMOC.

Press [B] to reboot your computer before disconnecting. This will help prevent electrostatic noise from being interpreted as information by your UMOC.





## Exiting HyperTerminal™ and Disconnecting Your Computer

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Now that you have completed your tasks for changing the parameters in your UMOC you can now exit the HyperTerminal™ program and disconnect the RS232 cable from your computer.

Use the following steps in order to exit HyperTerminal™ and disconnect your computer from your UMOC.

1. To close out the HyperTerminal, first click on the **file** icon at the top-left of the window.
2. From the pull down menu, **click** on **[X]** to exit the file.
3. A window will appear that will ask you if you want to disconnect now. **Click Yes**. If you have not saved your UMOC.HT file, you will be asked if you want to save it now. Click **Yes**.

You should now be back to your Windows desktop.

Remove the 9-pin RS232 cable from your UMOC and then from your computer.



## Conclusion

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This concludes the steps necessary in order to change the parameters of you Solectria Universal Motor Controller.

By following all of the directions given, you should have completed the following tasks:

- locate the Microsoft HyperTerminal™ program on your PC's Windows desktop
- create a HyperTerminal™ **C**onnection **C**onfiguration **D**ata (CCD) file and save it
- connect your UMOC to your PC, power and drive systems
- change your UMOC's parameters either manually or using an auto-download disk provided by Solectria
- save your new parameters
- exit HyperTerminal™ and disconnect your PC from your UMOC

If you have had any problems with any of the procedures described in this text, please contact the Solectria Customer Service department at:

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