ccShell 3

Software Instruction Manual

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1 System Requirements

ccShell-3 requires a JAVA Runtime Environment (JRE) V1.5 or newer. The JRE 5.0 can be downloaded at no charge from:

http://java.sun.com/javase/downloads/index_jdk5.jsp

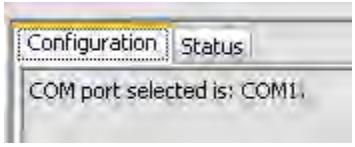
If you have installed the JRE and ccShell-3, you are ready to get started!

2 Getting Started

2.1 Selecting the COM Port

First you need to select which serial port you are going to use to talk to the DMoC. Select the appropriate COM port by going to Configuration >> Com Configuration. You should see a window like the one below:

After you select the COM port, COM1 in this example, the Configuration tab at the bottom of the screen should show the following:

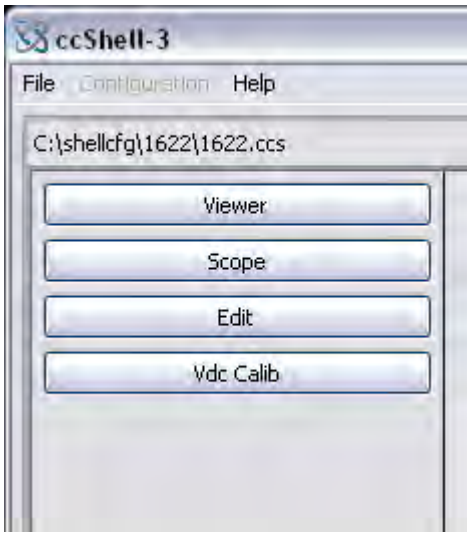


Hint *When you exit ccShell by selecting File >> Quit, settings like the COM port will be remembered for your next session.*

2.2 Connecting to the DMoC

To talk to the DMoC, be sure that the DMoC is connected to the correct serial port, and that the DMoC has power (high voltage and low voltage are required for most units). You should now open the .ccs file for your DMoC (this .ccs file should have been provided by Azure Dynamics.) Go to File >>Open and select the appropriate .ccs on your computer.

You should see a column of buttons on the left of the screen, similar to the following:



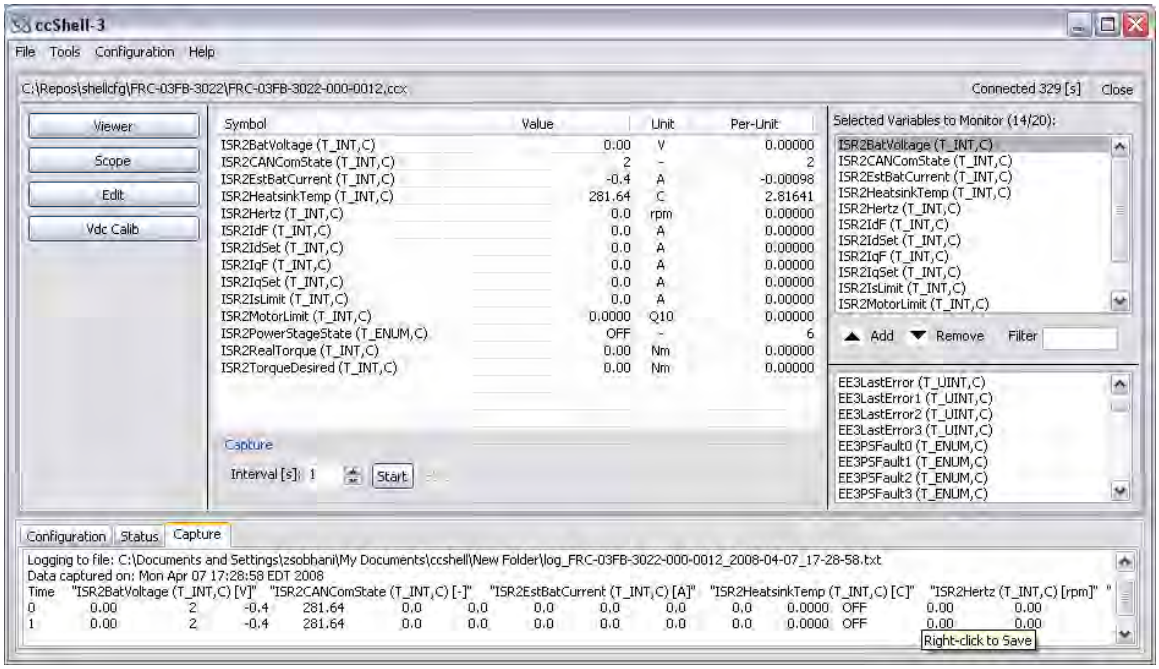
If you do not see this, check out Appendix A for debugging tips. If you got this far, you are ready to talk to the DMoC!

2.3 Monitoring the Connection

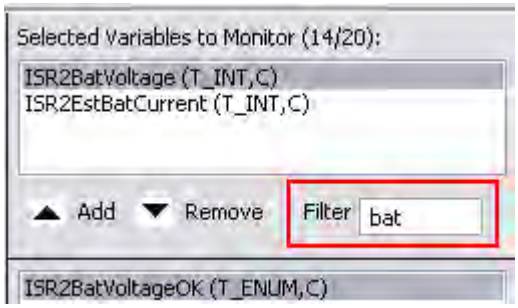
Once you have connected to the DMoC, the connection state feedback is provided in the upper left with a timer to tell you if you are still connected, or if your connection was lost, for example, because the DMoC was powered off or your serial cable is unplugged. Below shows an example:

3 Viewing Variables

The "Viewer" is used to view and log parameters; this is useful for seeing all sorts of good information.



To change the variables you wish to monitor, simply use the Add and Remove buttons to adjust the selection in the list on the right. Note you can also use the "Filter" box to help search for variables. The filter applies to both lists, is case-insensitive and does not accept any wild cards. The example below helps locate battery variables:



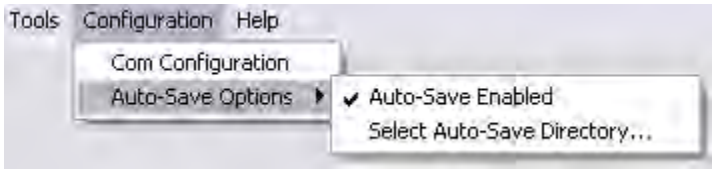
To clear the filter, just delete the text.

3.1 Logging Data

The View Panel can also be used to log variables. The logging interval can be changed, but 1 second is the fastest that these variables can be logged. When you click the start button the variables that are currently being viewed will be logged to the bottom of the screen. To save the variables to a file, right-click on the data in the capture tab (at the bottom) and save the data to a file.

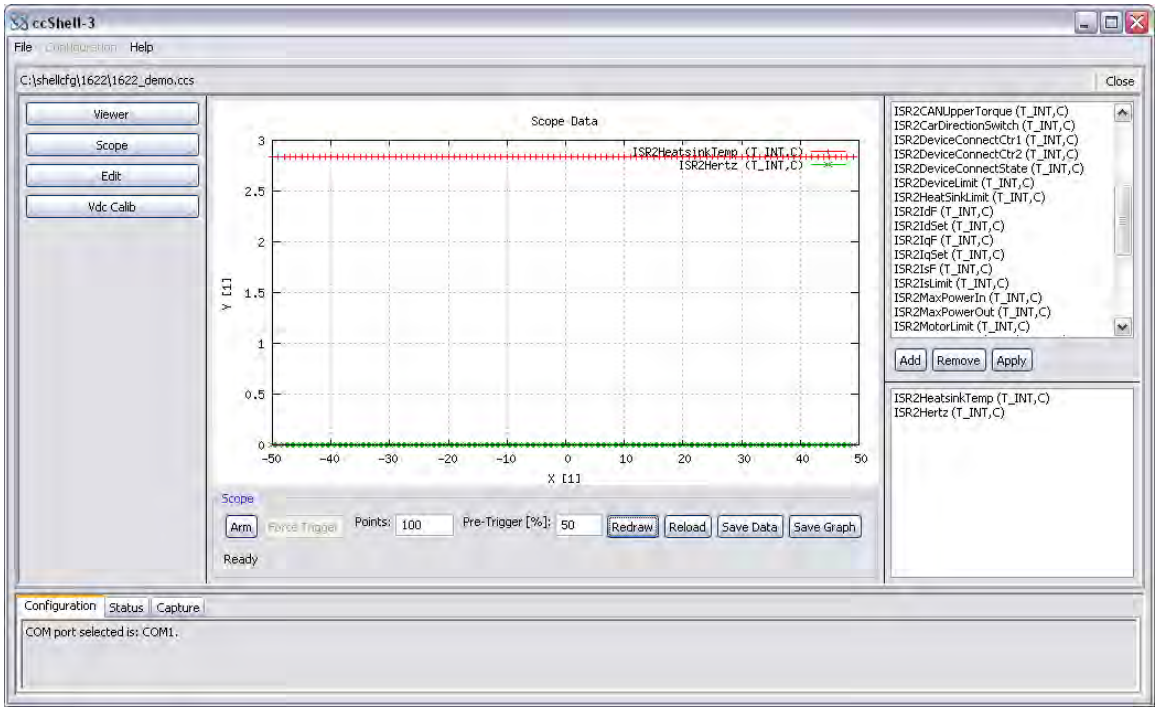
3.2 Auto Saving View Data

Since data loss is never desirable, ccShell will default to automatically saving your data (applicable for viewer logs and scope plots and data as well). To disable Auto Save, deselect the menu option under Configuration. Below shows the default with Auto Save enabled. The default directory is
C:\Documents and Settings\<your_user_name>\ccShellData
and can be changed also from the menu.



4 The Scope Tool

The capture facility (of the Viewer) is only capable of logging fairly slowly. If you want to see what is happening at a faster rate, you will need to use the Scope Tool. After you select the variables to be logged (same procedure as for the Viewer), you then "arm" the scope (this will start the pretrigger buffer.) When the event you are interested in occurs, you can trigger the scope and the data will be captured and plotted for you. The scope tool will automatically trigger if an Error occurs on the DMoC. This means that in the event of a recurring fault, you could capture data from the fault event, but you must first select the variables to view and "arm" the scope tool. You can use the pretrigger % to adjust where the data is collected relative to the trigger point. For example, if you are going to manually trigger the scope after a specific even occurs, you might want a 100% pretrigger, which means your trigger will mark the end of the log.



4.1 Auto Saving Scope Data

As with the view tool, data collected is saved by default. Both the text file and the plot image will be saved. See above to disable or change the default directory.

4.2 Configuring the Scope Logging Rate

The scope tool logs the selected variables until the specified buffer is full. The logging rate is determined by the parameter EE1LoggingRate. Negative numbers indicate logging at a multiple of the slow control loop and positive numbers are relative to the fast loop. Typically the fast loop is running at 10kHz and the slow loop at 100Hz. The default is -1, which means typically 100Hz. See the Table 1 for a quick reference.

Table 1: How to use EE1LoggingRate to adjust the scope sampling rate.

EE1LoggingRate	Logging rate (Hz)	Actual time between points (sec)
1	10000	0.0001
2	5000	0.0002
10	1000	0.001
-1	100	0.01
-2	50	0.02
-10	10	0.1
-100	1	1

For logging rates equal to or greater than 1 second the viewing tool may be used for continuous logging.

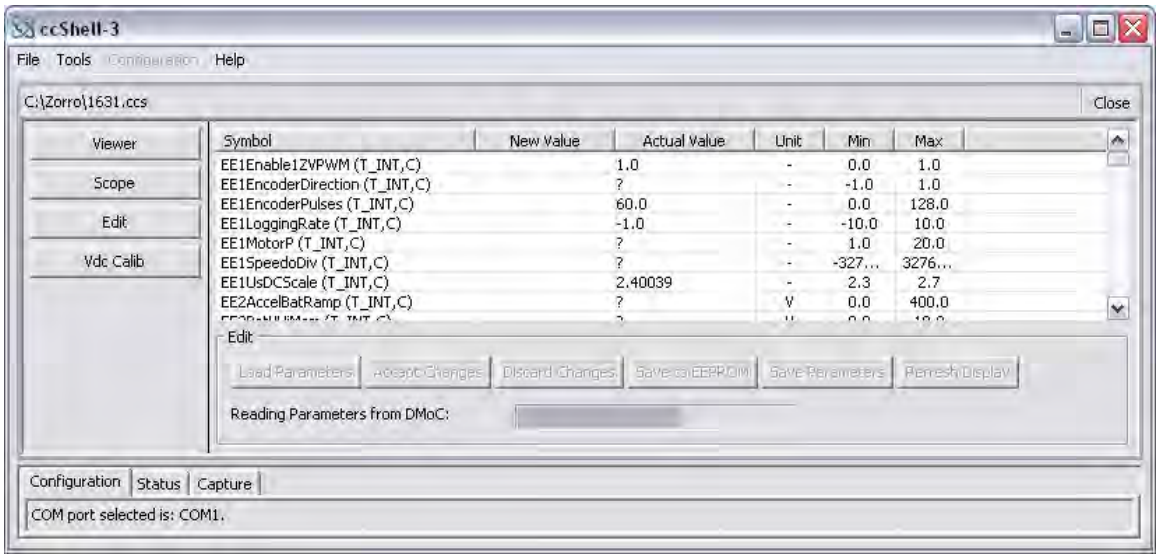
5 Voltage Calibration

Most users should never need to adjust the voltage calibration. If the voltage measurement needs to be recalibrated (due to a change in operating voltage, or reprogramming of the DMoC), this panel provides an easy way to adjust the voltage sensor calibration.

It is recommended that you calibrate the voltage sensor near your desired operating voltage. To calibrate the DMoC voltage measurement you need an independent voltage measurement, for example from a Digital Multimeter. When the DMoC has high voltage, you can input the new “Measured Voltage” and select “Calibrate”. You should see the “DMoC Reported Voltage” adjust to match the measured voltage you entered. If you are happy with the change, save the change to EEPROM (and the calibration will be saved for the future.)

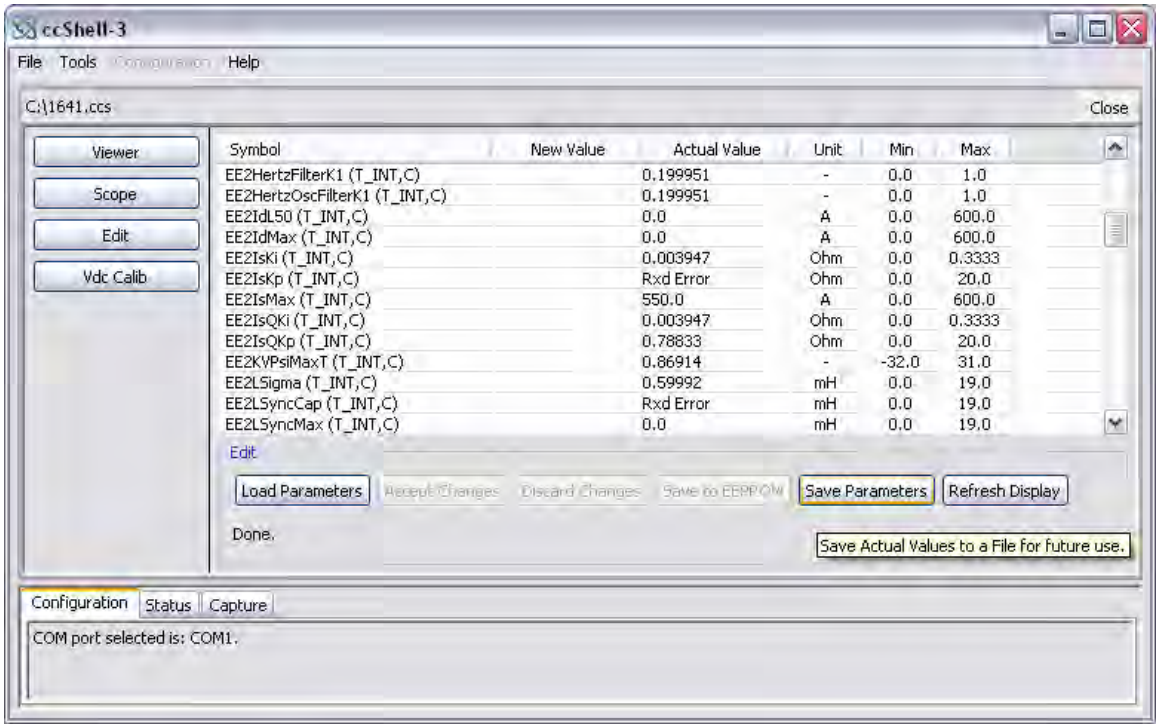
6 Parameter Editor

The Parameter Editor is used to access DMoC parameters. When you first open the Parameter Editor Panel, the parameters will be loaded from the DMoC; this may take a few moments. As the parameters are being loaded the "?" in the Actual Value column will be replaced with the parameter values on the DMoC. If there is an error (for example if the DMoC was powered off or disconnected), the Actual Value will display as "Rxd error", indicating a receive error. If the DMoC is powered off while ccShell is in use, you may select "Refresh Display", which will reload the parameters from the DMoC. This button will also clear any changes that you have made in the "New Value" column.



6.1 Saving Parameters

Saving the current parameters on the DMoC can be very useful when trouble-shooting, for example to send them to an Azure Dynamics Representative to double-check if you are having trouble, or to back up changes you made that you liked. To save parameters, just wait for the parameters to load and then save them to a file by selecting "Save Parameters".

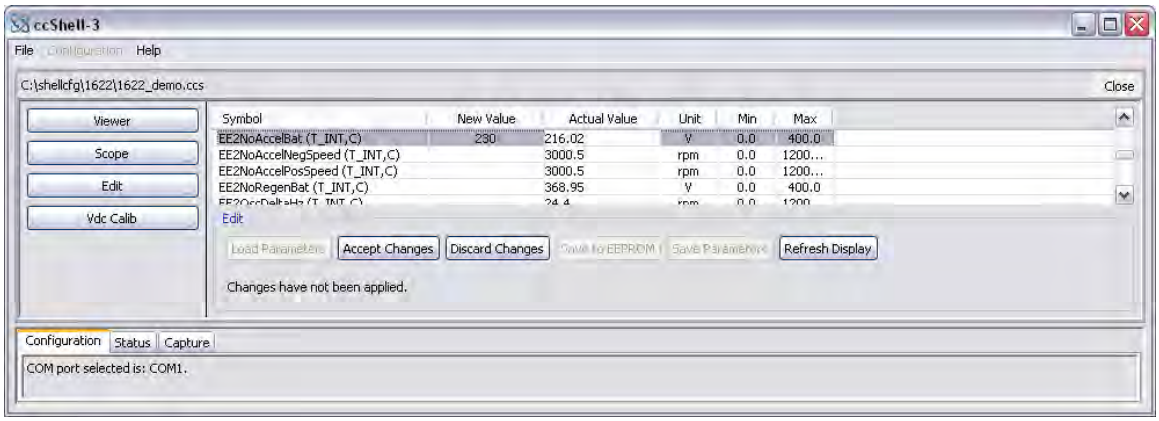


6.2 Editing Parameters

WARNING! Do not change parameters here unless you know what you are doing. If you are making changes you might want to first "Save Parameters" so you have a backup of the parameters you received from Azure Dynamics.

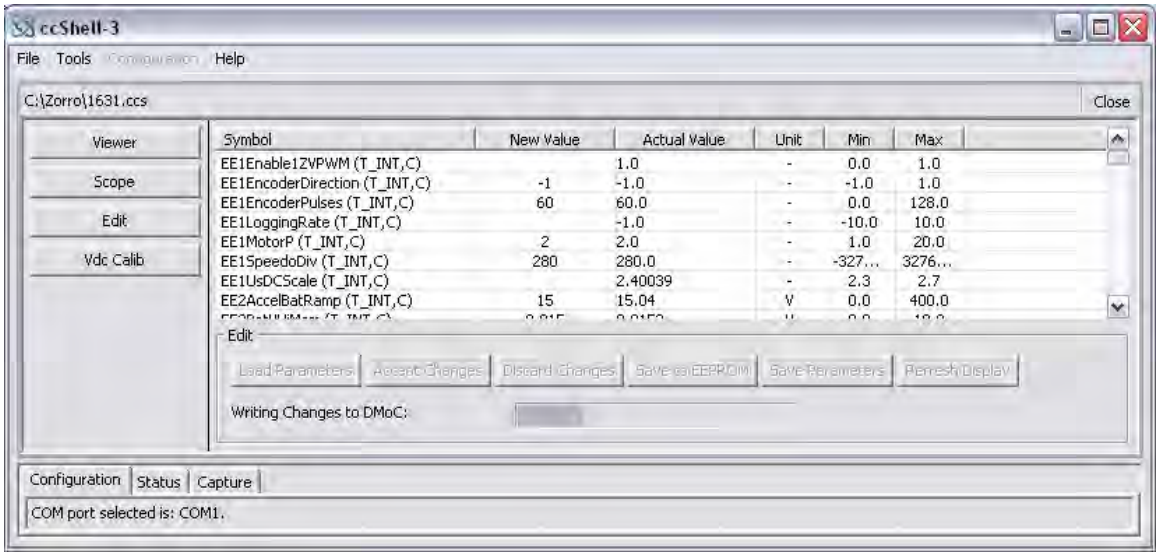
To edit a parameter you may change specific parameters by editing them in the "New Value" column (note you must hit ENTER to register the change), or you can Load Parameters from a file using the "Load Parameters" option. If you attempt to set a parameter outside the range allowed, you will see the warning "Limits Violation" and no change will be applied.

After you make your changes in the editor, you will be prompted to accept the changes and send them to the DMoC, as shown in the figure below.

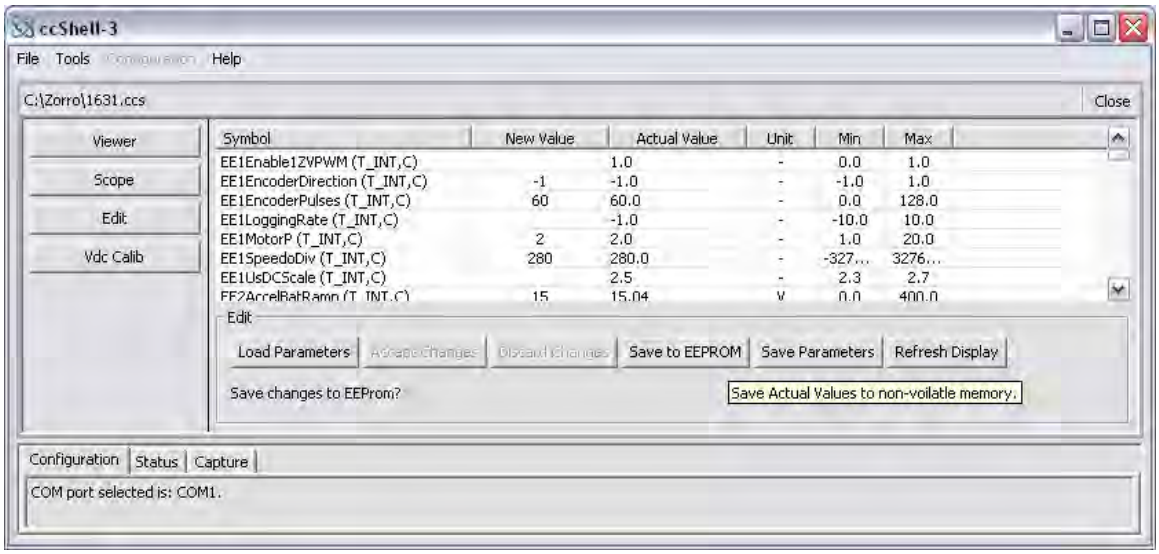


When you select "Accept Changes", your changes will be written temporarily to the DMoC. Of course if you choose to "Discard Changes" they will be forgotten! If the DMoC is not properly connected and powered up when attempting to write changes, you will be warned of a transmit error: "Txd Error".

NOTE: Some changes are not allowed on-the-fly and accepting them will immediately disable the DMoC.



Don't forget, if you are happy with your changes you should save them to EEPROM, by selecting "Save to EEPROM". This step ensures that your changes will be remembered after you power cycle the DMoC.



If you want your changes to be remembered, don't forget to "Save to EEPROM".

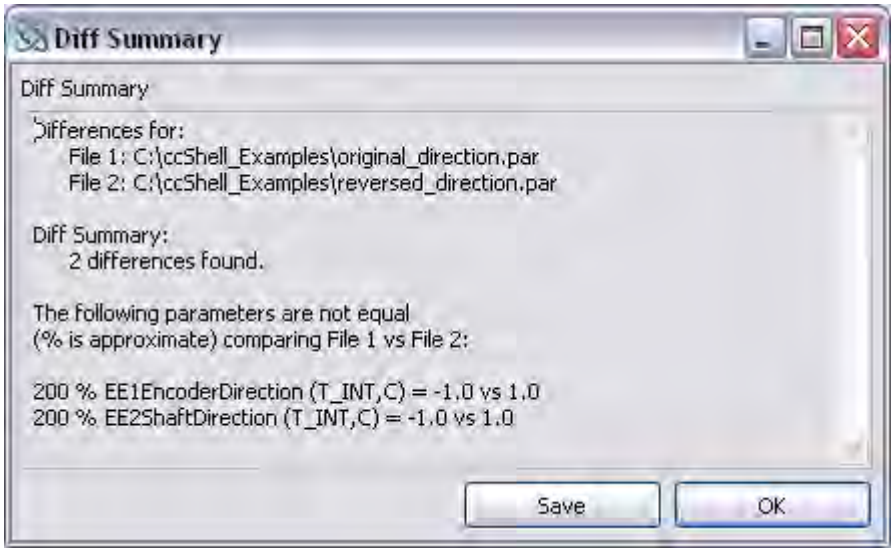
6.3 Loading Parameters From a File

Using the "Load Parameters" options you can load parameters from a file. This is similar to manually editing a group of parameters at once. So you must still Accept the Changes and Save to EEPROM as described above.

6.4 Parameter File Difference Tool

From the menu Tools >> Compare two Parameter (.par) Files … you can select two parameter files to compare (select one after the other). ccShell will generate a list of the differences between these two files for you. This tool can be used to verify that the actual parameters in the DMoC match a file that has been loaded, or quickly review what changes have been made.

The following shows a comparison you might see if your motor installation was changed and the positive shaft direction was reversed:



Note the save option will save the output to a text file for your records.

You can also obtain a live difference and compare a saved parameter file to the parameters currently on the DMoC using the "Compare Parameters" button on the Editor Panel.

7 Reporting Issues with ccShell-3

If you are experiencing problems with ccShell-3 they should be reported to the following email address:

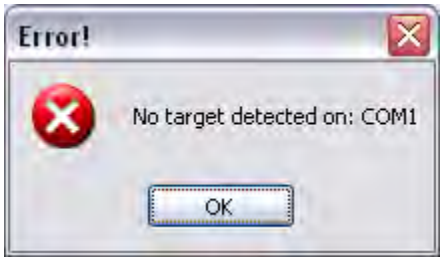
ccshell@azuredynamics.com

To best help us resolve the problem, please include the following information in your email:
the steps to reproduce the problem,
what you expected to happen,
what happened instead,
ccShell version number you are using (version number available from help >> about)
and
if a serious error occurred it will be logged in the file "ccshell_error_log.txt" in the ccShell install directory.

8 Appendix A: Error Messages when Connecting to DMoC

There are a few common problems when connecting to the DMoC, so if you see one of these error messages, read on for more details.

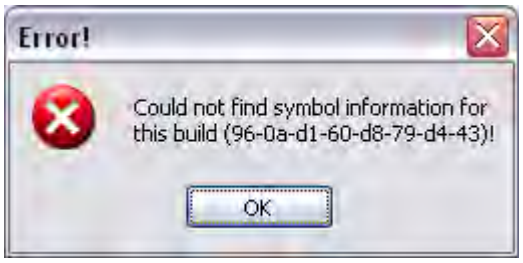
8.1 No Target Detected



If you get a message that says "Error! No target detected on: COM1" this means that the DMoC was not communicating on the COM port you selected. Verify that:
you selected the right COM port
your computer is connected to the DMoC
the DMoC has power (high and low voltage)

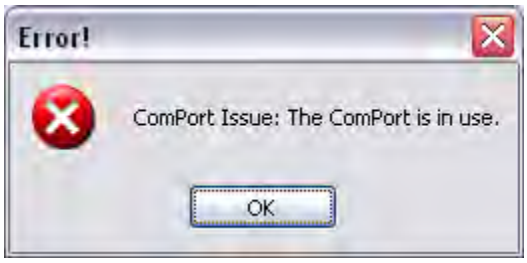
If you have checked these things to the best of your ability and the error continues, you should verify that the DMoC is really communicating by using HyperTerminal.

8.2 Could Not Find Symbol Information



This warning indicates that you are using the wrong .ccs file for the code that is programmed in your DMoC. You should use HyperTerminal to determine which code is on your DMoC. If your company has lots of DMoCs perhaps you were using the wrong .ccs file. If you are still stumped, you should send the information from HyperTerminal (and the ccShell warning) to your Azure contact and we will help you out.

8.3 ComPort is in Use



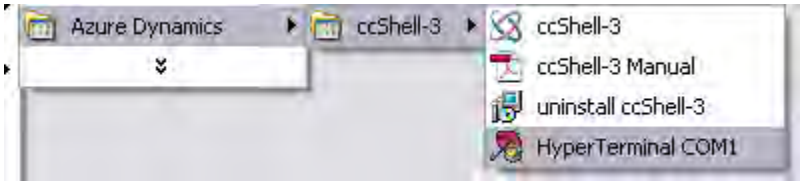
Is the COM Port being used by another application? Since ccShell thinks the ComPort is in use, be sure you closed HyperTerminal, other instances of ccShell, and any other devices using the serial port. This message should then go away. Sometimes Windows is a bit slow to release the COM port, so be patient and it might work in a few seconds. If all else fails, use the TaskManager to kill any lingering ccShell or other serial processes. Lastly, try restarting your PC.

Tip If you are having lots of trouble with the COM port, try running your laptop off the battery, or an isolated serial connection.

9 Appendix B: HyperTerminal Configuration

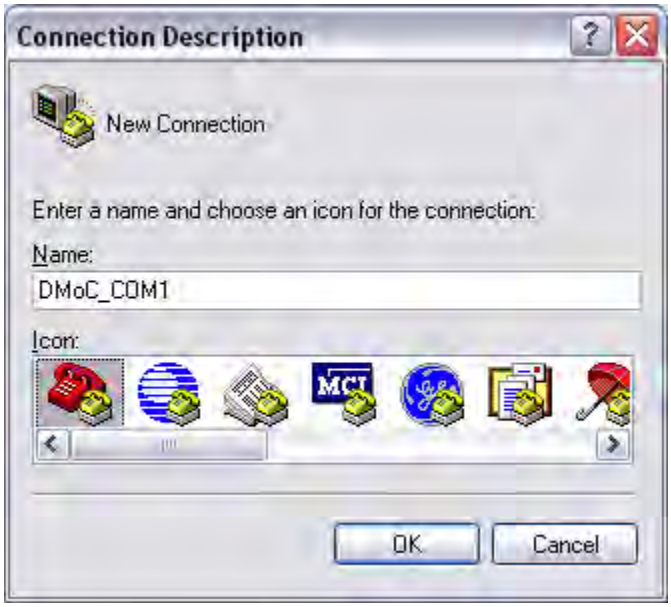
HyperTerminal is part of your normal Windows installation. It is found from the Start menu under Programs >> Accessories >> Communications >> HyperTerminal.

For convenience, the ccShell installation includes a HyperTerminal setup for COM1, accessible from the Start Menu under Programs>> Azure Dynamics …



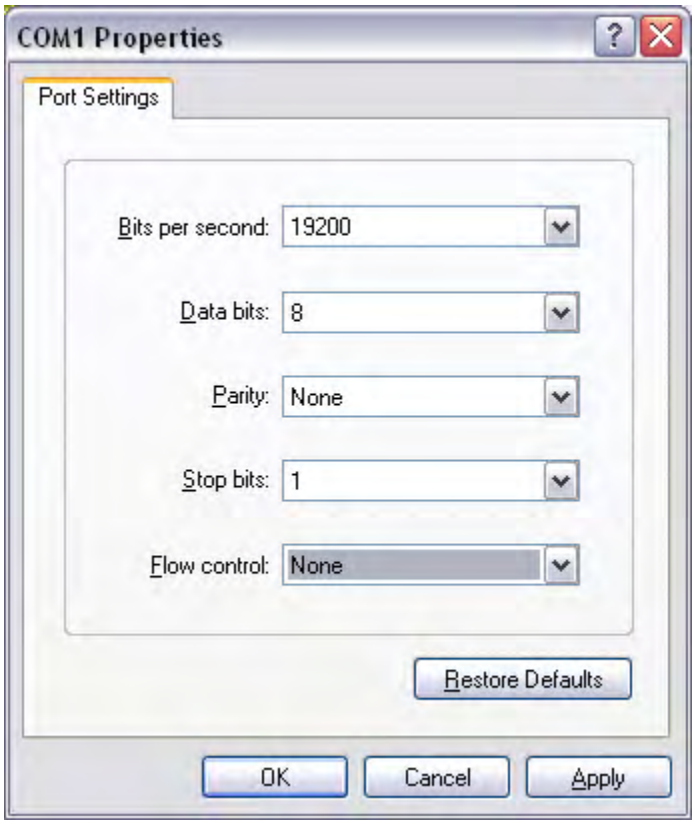
If you are not using COM1, you can configure HyperTerminal yourself as follows:

Give your session a name (DMoC_COM1 in this example):



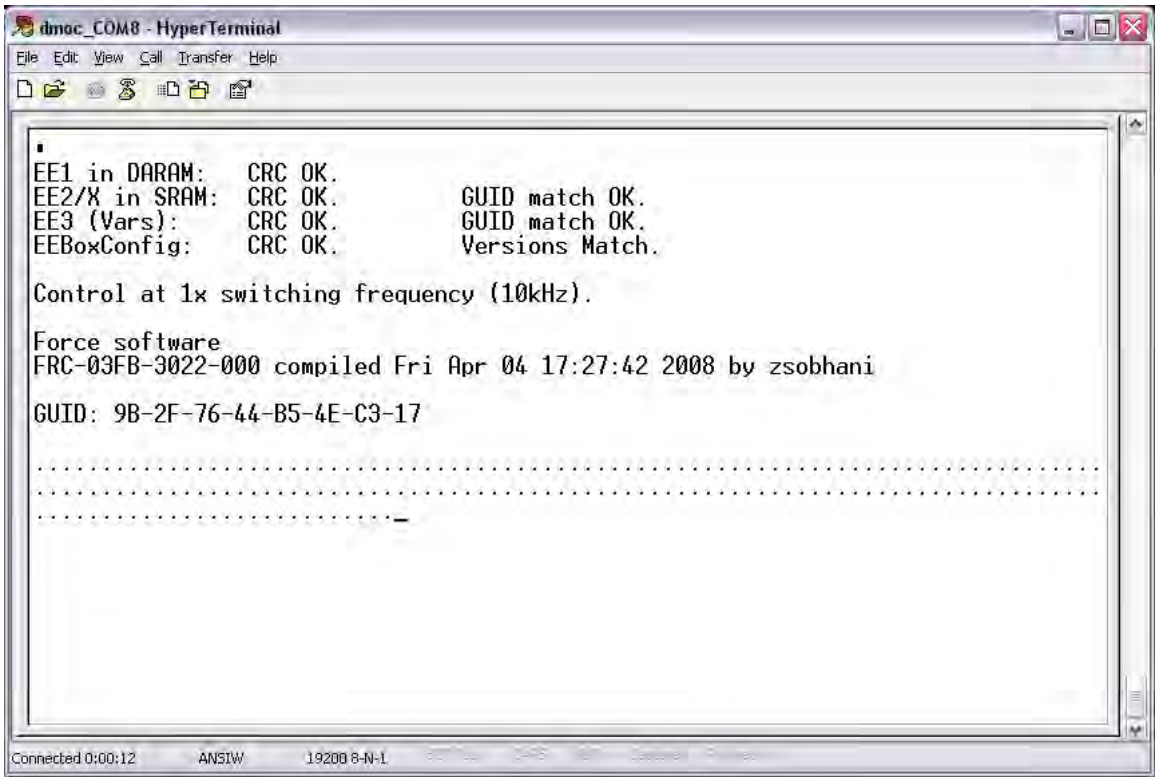
And configure the connection to use the desired COM port (COM1 in this example):

The HyperTerminal settings for communicating with the DMoC should be 19200 Baud, 8N1, with no flow control. For example, in Windows XP:

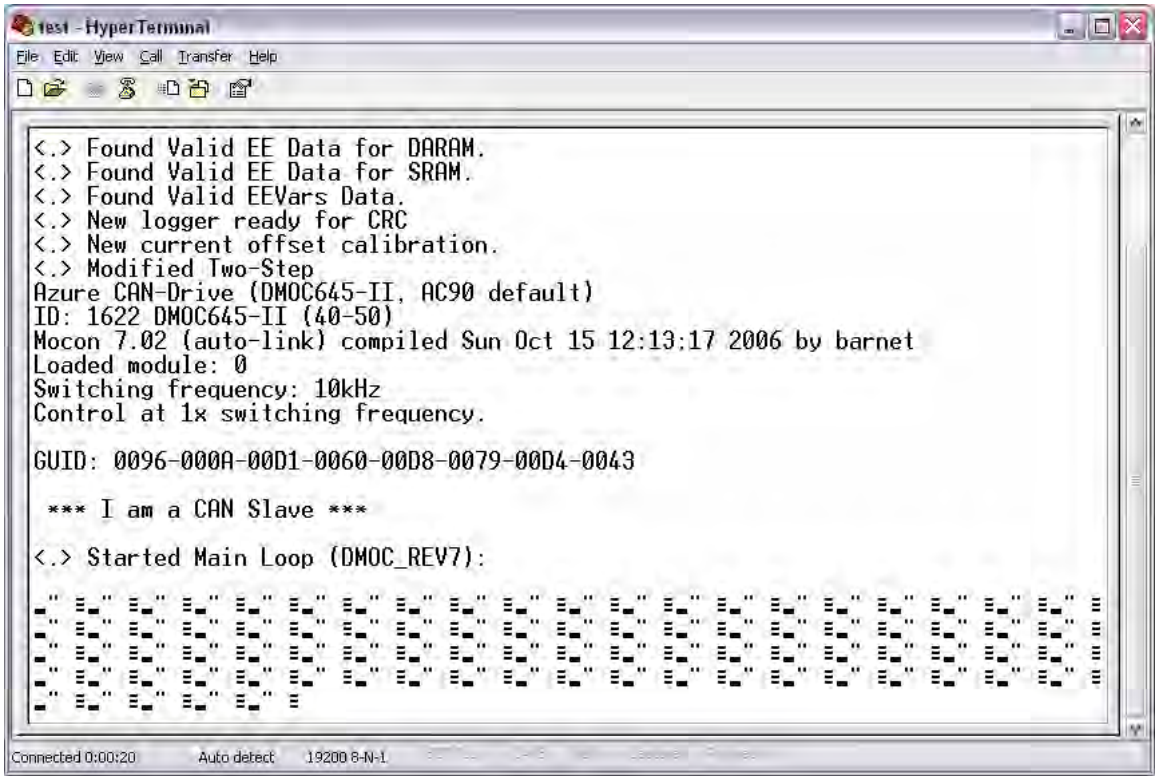


Once HyperTerminal is configured you can connect to the COM Port; if the DMoC is communicating you should see random symbols or dots being printed to the screen. On startup the DMoC will print out some configuration information. After that it will just keep printing to show it's awake and connected; if you don't see anything, then the DMoC is not connected or is not powered up. (Don't forget for most models of DMoC you need both high voltage and low voltage before the DMoC will start talking!)

If all is working well you should see something like the following when you power on the DMoC:



Or for code released in 2007 and before:



If you see any exclamation points, or warnings, send a copy of this startup banner to your Azure contact.