



TG058: SENDING COMMANDS TO DISC PUMP DRIVE ELECTRONICS WITHOUT THE PC APP/GUI

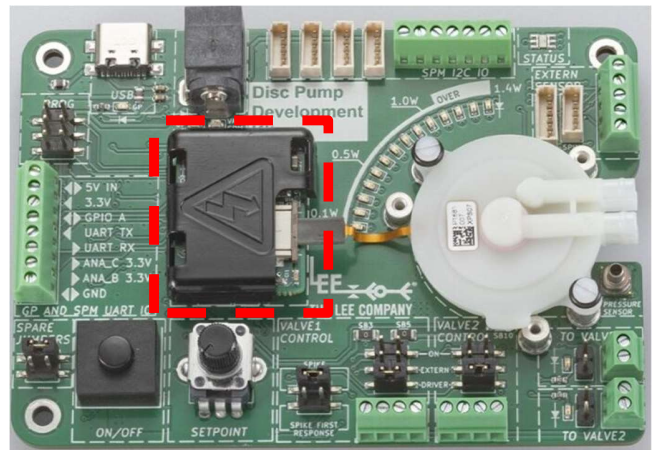
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1. INTRODUCTION

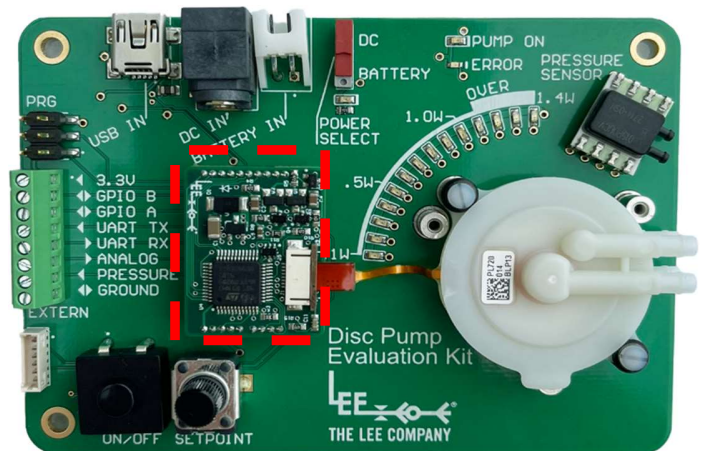
Individually adjusting some of the more advanced settings of the General Purpose (GP) drive board or the Smart Pump Module (SPM) cannot be achieved through the Pump Control App/GUI. This technical note will advise on using a serial terminal through Windows to directly send individual commands to the drive boards.



Smart Pump Module



Development kit motherboard with GP drive PCB under protective cover highlighted



Evaluation Kit motherboard with GP drive PCB highlighted

2. DISCLAIMER

This resource is provided "as is" and without any warranty of any kind, and its use is at your own risk. The Lee Company does not warrant the performance or results that you may obtain by using this resource. The Lee Company makes no warranties regarding this resource, express or implied, including as to non-infringement, merchantability, or fitness for any particular purpose. To the maximum extent permitted by law The Lee Company disclaims liability for any loss or damage resulting from use of this resource, whether arising under contract, tort (including negligence), strict liability, or otherwise, and whether direct, consequential, indirect, or otherwise, even if The Lee Company has been advised of the possibility of such damages, or for any claim from any third party.

3. HEALTH AND SAFETY



WARNING

The Disc Pump Driver PCB Voltage must not exceed $48V_{rms}$ (where for a typical square-wave drive $V_{rms} \approx V_{pk}$) at frequencies between 20 and 22 kHz. It is the user's responsibility to ensure that the Disc Pump Driver PCB is used and/or integrated within any product in a safe manner. Read the appropriate user manual prior to first operation and take note of all safety notices.



WARNING

Take care during use of the Disc Pump Drive PCB not to create short circuits between exposed conductive parts of the board. Short circuits may lead to malfunctioning and heating.

4. REQUIRED SOFTWARE AND HARDWARE

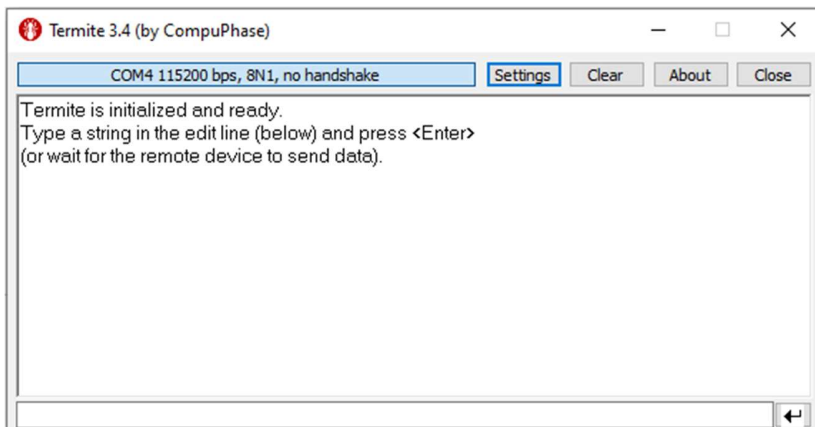
A USB to serial (UART) converter is used to establish the communication between the computer and the drive PCB. For the Development Kit and Evaluation Kit motherboards, the converter is built into the motherboard and only requires connecting it with a USB mini-C and USB mini-B cable respectively.



For the SPM one such converter cable is the UACX0500400E shown in the picture.

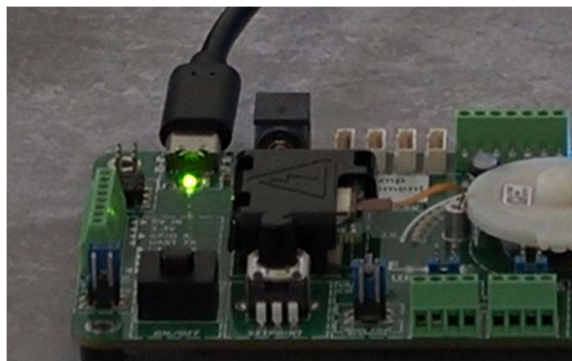


Download and install a serial monitor program such as Termiter by Compu Phase (https://www.compuphase.com/software_termite.htm).

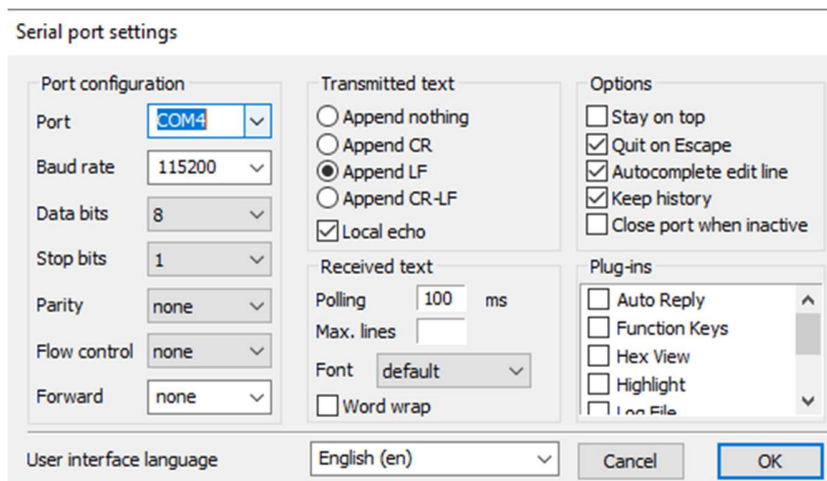


5. SENDING AND RECEIVING COMMANDS

Connect the drive board to a PC with the USB converter cable for the SPM (left), USB micro-C for the Development Kit motherboard (middle) or a USB micro-B for the Evaluation kit motherboard/GP drive PCB (right).



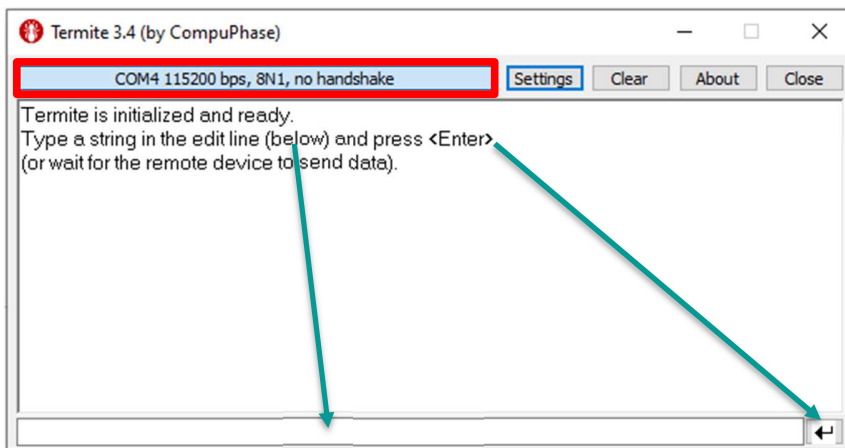
Open Termite and go to the settings menu on the top right.





Set the baud rate to 115200 and select the correct COM port that the board is connected to. The port can be easily identified by plugging and unplugging the board and seeing which COM port disappears. Click OK.

The board should automatically connect, but you may need to click on the top button that says the COM port to restart the connection:



If the board was connected to the PC app first, it will have streaming mode enabled. This would flood the screen with data on the status of the pump (such as voltage, current, pressure etc) and can make it difficult to see the results of sending and receiving commands. To stop streaming mode send the “#W2,0” command.

For the most up-to date information on the format of the commands and a list of commands please consult TN003, The Communications Guide. An example of sending and receiving commands is shown below.

Sending write commands in the format “#W1,123”, where 1 is the register ID and 123 is the value to be written.

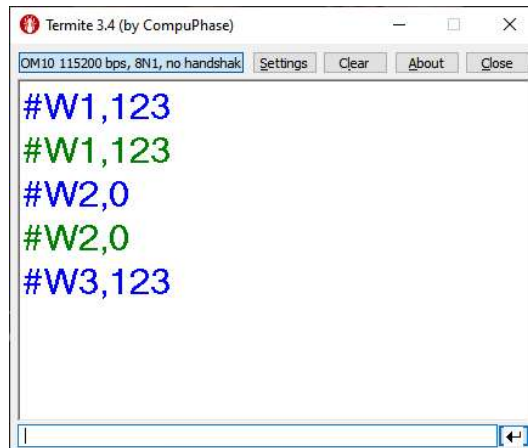


Figure 1. Example UART interaction, writing registers 1 and 2. Writing to register 3 fails, as this register is read only.

Blue: Command sent Green: Driver response

Sending read commands in the format "#R1", where 1 is the register ID.

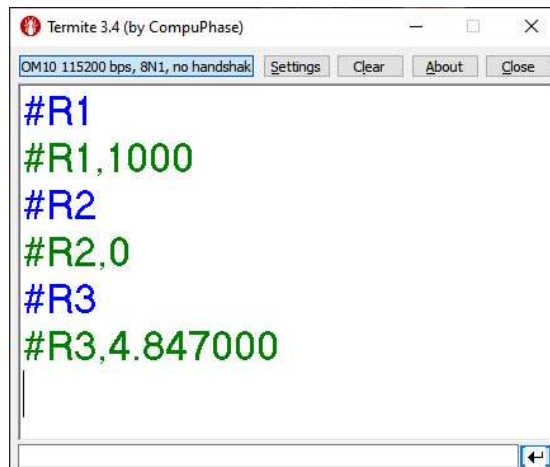


Figure 2. Example UART interaction, reading registers 1, 2, and 3 in turn.

Blue: Command sent Green: Driver response



6. ADDITIONAL SUPPORT

The Lee Company Website (<http://www.theleeco.com/discpumps>) provides advice on:

- Getting Started
- Applications
- Development Process
- Downloads (including datasheets, manuals, application notes, case studies and 3D models)
- Frequently Asked Questions

The Lee Company is happy to discuss next steps beyond prototyping, including system design. If you would like to discuss this with us, or for any other additional support, please contact your Lee Sales Engineer.

7. REVISION HISTORY

Date	Version	Change
04/06/24	R240604	Include Development Kit
03/08/23	R230806	Rebranded
04/03/23	R230304	Initial Release