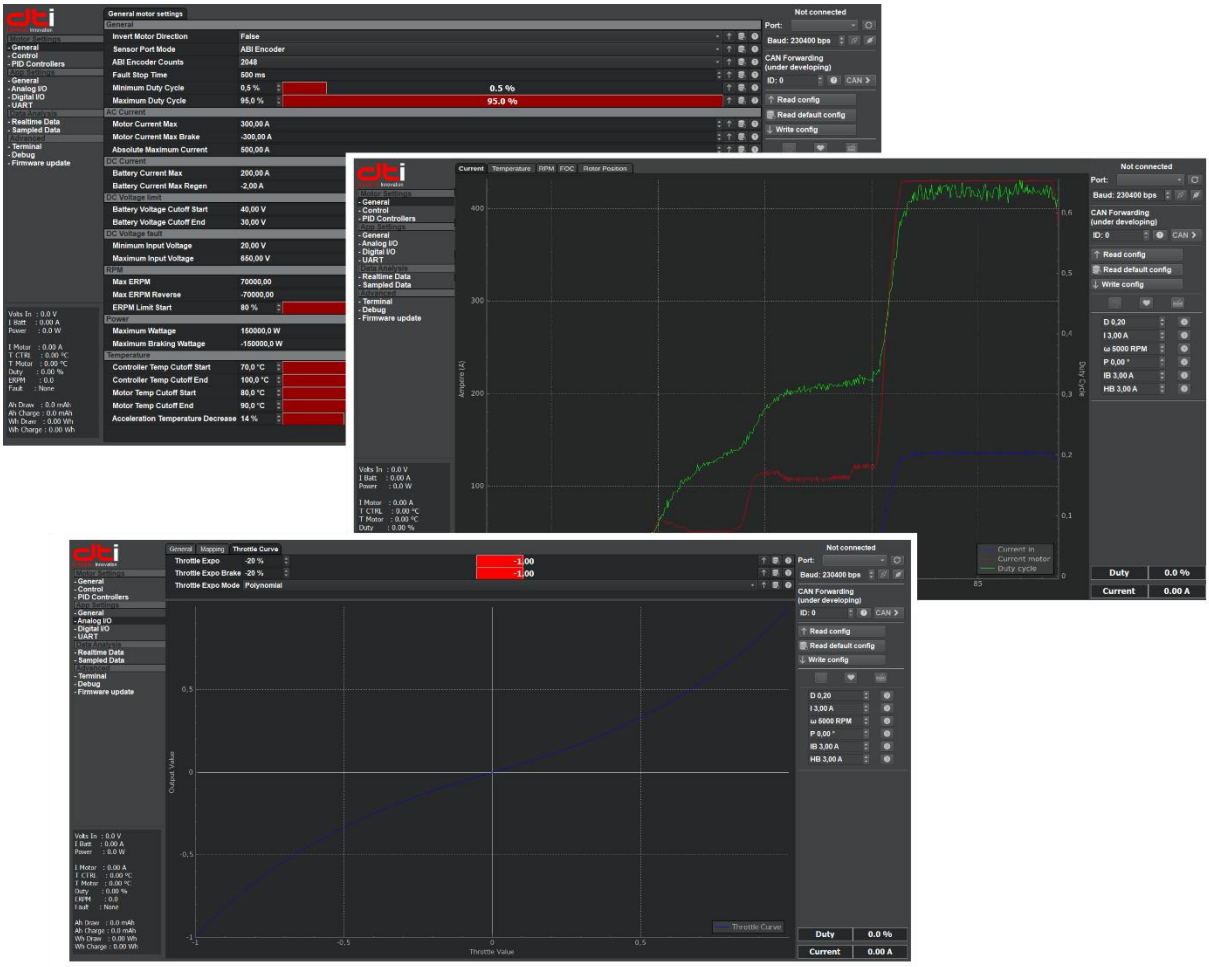
DTI TOOL USER MANUAL

BETA VERSION



www.drivetraininnovation.com

V2.1

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OVERVIEW

The DTI Tool is used to configure a high-power inverter. DTI Tool allows you to generate real time data and find out how to set up the inverter. Every setting has a help button that shows explanations for easy understanding.

Read the manual carefully and thoroughly before using the controller. If you have any questions, please contact us. info@drivetraininnovation.com

SAFETY USE

DTI Tool and the DTI Firmware are experimental software designed to develop and test electrical systems incorporating electric motors or actuators. Electrical systems can cause danger to humans, property and nature; therefore precautions shall be taken to avoid any risk. Under no circumstances shall the software be used where humans or property are put to risk without validating and testing the whole system.

The user must ensure that in case of malfunctions neither personnel nor machines are endangered and that the inverter is stopped. Saved data can be changed by third parties. Any imported data record must be checked prior to re-use. Any adjustments or optimising work on the running inverter must only be carried out by trained competent personnel with knowledge of drive and control engineering and computer handling. Further to this, the safety advice for the amplifier and the inverter used must be observed. Any operation not conform to the safety guidelines is not permissible.

DTI® Tool and the DTI® firmware are experimental software designed to develop and test electrical systems incorporating electric motors or actuators. Electrical systems can cause danger to humans, property and nature; therefore precautions shall be taken to avoid any risk. Under no circumstances shall the software be used where humans or property are put to risk without validating and testing the whole system. Software and hardware interact in various ways, and software developers cannot foresee all possible combinations of hardware used together with their software, nor problems that can occur in these different combinations. Things that can happen, even when using the correct settings, are:

- electrical failure
- fire
- electric shock
- hazardous smoke
- overheating motors and actuators
- overstrained power sources, causing fire or explosions (e.g. Lithium Ion Batteries)
- motors or actuators stopping from spinning/moving
- motors or actuators locking in, acting like a brake (full stop)
- motors or actuators losing control over torque production (uncontrolled acceleration or braking)
- interferences with other systems
- other non-intended or unforeseeable behavior of the system

DTI Tool and the DTI firmware are developer tools that for safety reasons may only be used:

- by experts and experienced users, knowing exactly what they do.
- following safety standards applicable in the area of usage.
- under safe conditions where software or hardware malfunction will not lead to death, injuries or severe property damage.
- keeping in mind that software and hardware failures can happen. Although we design our products to minimize such issues, you should always operate with the understanding that a failure can occur at any point of time and without warning. As such, you shall take the appropriate precautions to minimize danger in case of failure.

OPERATING SYSTEM

Recommended operating system: Windows 10 x86 or x64.

If you would like to use another operating system, please contact us info@drivetraininnovation.com

Recommended display resolution: minimum 1600 X 900

CONNECTION

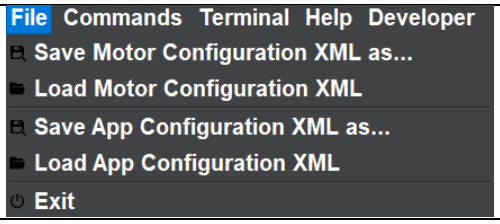
The user can connect the inverter with a USB to RS-232 adapter (*for example: ATEN UC232A*) to the PC, where the inverter can be parameterized. Use the „H" connector 5. and 13. pins and ground to common potential.

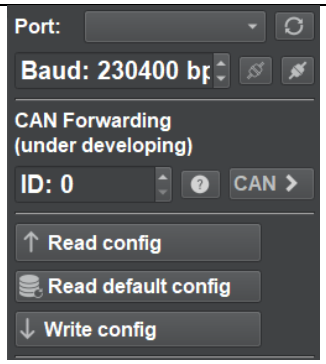
1. The first step is to make sure that the inverter and the motor area are clean.
2. Make sure the low voltage power supply is on and stable.
3. Connect the Serial-USB converter to the PC. Please install the converter driver if necessary.
4. In Device Manager, see which COM port the converter is located on
5. In DTI Tool, select the same COM port
6. Use the set baud rate. Default value is: 230400 bps
7. Then click connect button 
8. If the connection is successful, then the bottom bar status message indicates that the connection is successful.
9. if the connection did not succeed try the following:
    a. Restart the lov voltage supply
    b. Displug and replug the USB adapter
    c. Change the baud rate or com port
    d. Restart the PC

BASIC INFORMATIONS

There are 3 buttons next to each values. You can read directly the current value  or read default settings  or this button shows the help. 

All changes must be written to the inverter. If the user miss this, the inverter will run with the old settings. Do not operate the motor while writing or reading the configuration.

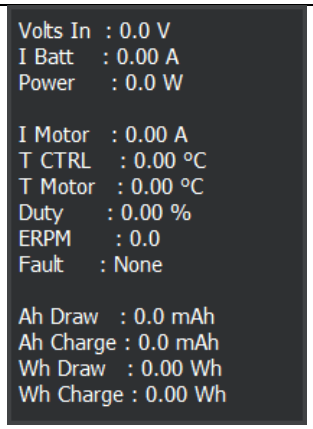
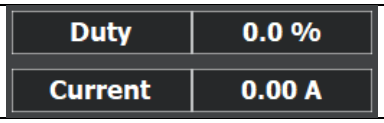
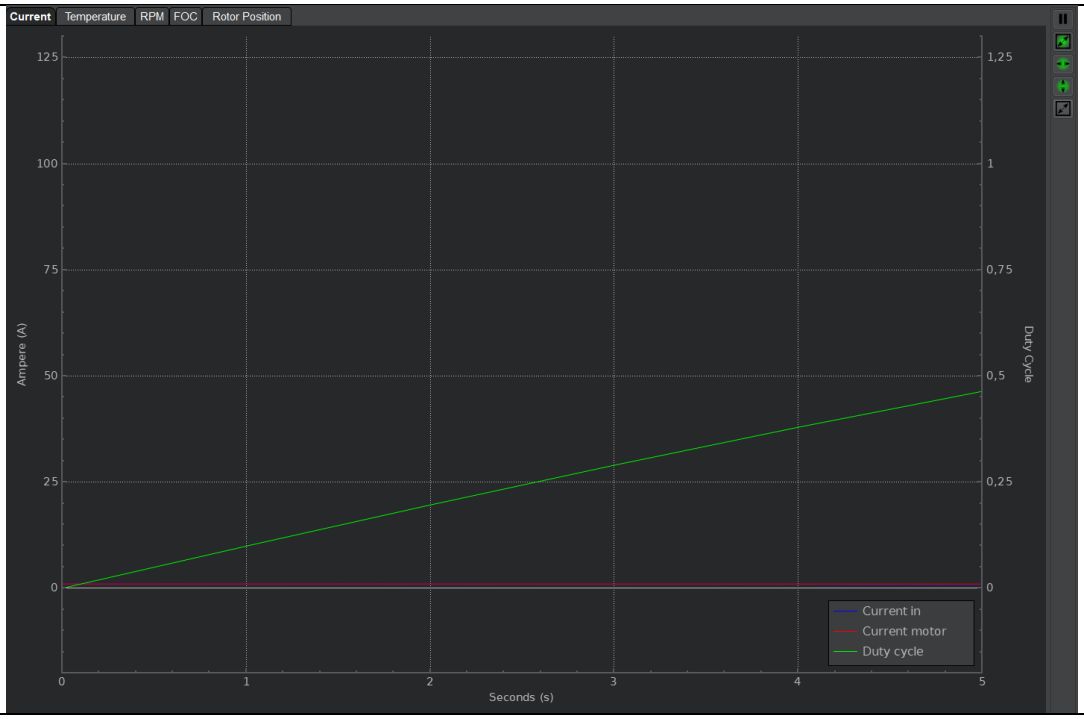
	The graphical interface has separate motor and application configuration. Can save and load both settings separately.

Both the app config and the motor config can be written and read at the same time from the inverter.	

	This interface is only recommended for advanced users. This interface only works if UART is selected in the "App to Use" section. Otherwise the analog input will overwrite the sent command. You can control with a keyboard (just current) or send a continuous message with the arrows next to the values. Activate that button you want to use. 
The motor setting includes motor related and high voltage values. The app settings contain the application settings. Mainly the low voltage section (digital I/O, analog input, CAN communication etc.)	Motor Settings - General - Control - PID Controllers App Settings - General - Analog I/O - Digital I/O - UART - CAN
Data Analysis - Realtime Data - Sampled Data	You can see realtime data on graphs. Here you can see how affects the system to change the settings. With different trigger settings, you can get a high speed sampled data. This type of data sampling is very noise sensitive, so if you stop communication because of anything you will not be able to download the data.
We provide information for advanced users on advanced menu points. You should use this only if you are aware of what you are doing and what effects it. You can send direct commands to the inverter. You can see debug information about the operation of the inverter and you can also do the software update here.	Advanced - Terminal - Debug - Firmware update

REALTIME DATA

The DTI Tool shows the current variables with a quick update in a graph and number format.

Some variables are visible from each menu point.	
Some important values	
AC current and duty cycle on a slider	
The important values are shown on a graph The graph can be stopped, zoomed or moved.	
	

Analog inputs

The analog inputs can also be seen at the bottom of the "Mapping" menu item. This can only be seen if the analog is set in the "APP to Use" menu item. This is helpful for the maximum and minimum values setup.