To be able to set a reference position for the system, and to see where the system currently is, a user interface needs to be implemented.
There are multiple ways in which a user interface can be implemented. Two og which will be discussed in this section, a command-line interface and a hardware interface.

0.0.1 Command-line interface

A command-line interface is practical for tuning the system, since it allows for data to be sent to a receiver and analyzed. However It is not suitable as a userfriendly way to interact with the system on its own, which is why in this project it is used for debugging operations.
Since logging data is essential for tuning of the system, a command-line interface has been implemented to achieve the gains nessecary for the wanted behavior fo the system.
Implementation of the command-line interface is realised by utilizing the USB port on the Tiva to communicate with a computer via a UART interface.

0.0.2 Hardware interface

The hardware interface is considered more userfriendly since it is useable without connecting a computer to the system. Since the system already is equipped with a matrix keypad and a small LCD screen, these will be used to create the hardware interface.
However the LCD is only capable of displaying 32 characters distributed on 2 rows of 16 characters, thus only the position and refernce is displayed.

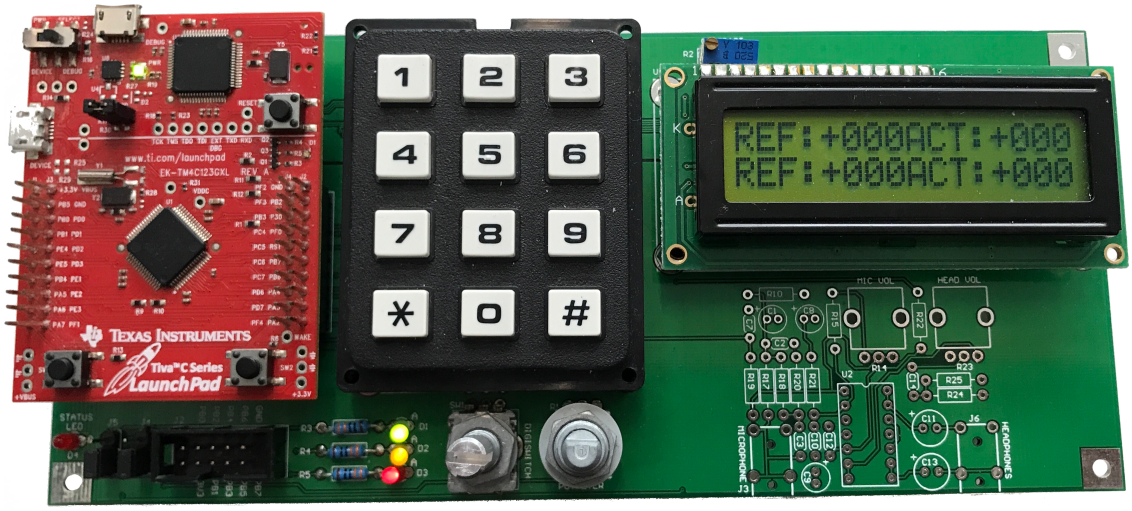

Figure 1: *User interface.*

0.0.3 User interface summary

A command-line interface has been implemented in order to acces the system response data. Furhtermore, a hardware interface has been implemted. This is to use the system when the tuning is done, and the debug utilities no longer is required. These two interfaces provide the option to tune and use the system as desired.