Instructions

Supplements the "building it" section of the article in ME issue4573

Circuit

The Eagle PCB files are provided

Build the circuit, this can be quite easily done either with Veroboard, or a home-made PCB. Other than the IC's and connectors there are not a lot of other discrete components required.

Maybe the best starting point would be a prototyping breadboard

Software

The Dynobox-PJT-18F26K80-v6-5_6.production.hex file needs to be loaded onto your PIC18F26K80. There are a number of ways of doing this but by far the easiest is with the Microchip PICKit2 or 3 in circuit debugger module and the free MPLAB IPE available from the Microchip website. The circuit design includes an in circuit serial programming environment (ICSP) connection compatible with the PICKit interface.

Modules

All these modules are available from the usual internet suppliers

> **Bluetooth** - This is a 'standard' HC-05 module available from the internet. It need to be configured for 57600 baud, 8 data bits 1 stop bit and no parity bit. There are a number of ways to do this so just search Google for a method that suits you.
>
> One point, if you are having problems just try switching the TX and RX lines over. (been there done that!)
>
> **Realtime clock** – Again a 'standard' DS3231 module. Be careful these have a backup battery and designed for a rechargeable battery. If you use a non-rechargeable CR2032 you need to modify the board to disconnect the charging circuit.
> https://www.youtube.com/watch?v=ND2shVqV9s4
>
> **SD card** – I've used a Duinotech XC-4598 module from Jaycar. These provide the pin connections for the SD card, the 3.3v power supply and signal level modification between 5V and 3.3V. There will be similar alternatives available. Google "arduino sd card shield". If you use an SD card or micro SD card is up to you, both will work.
>
> Format the SD card on your PC and load the config file, including the folder 'config'.

Wheel Sensor

I've used and Hall switch and neo magnet fixed to the wheel of my driving trolley. It's only a 3 wire connection to the hall switch

Mobile phone

Use an android phone or tablet and got to Google Play and install "Bluetooth Electronics" It will install a folder "keuwlsoft" in the top level directory on your phone. From your PC put the two ".kwl" files in the folder.

Open the Bluetooth Electronics App and scroll to one of the empty application windows and select "edit" on the right-hand side scroll down to Import/Export select and then select import on the bottom panel find the 'DynoBox_6.5.6.kwl' file and select and import. In a new window do the same for the 'Set_time_3.0.kwl' file.

Once done pair the phone with your Bluetooth module.

Pete