

FED3 Quick Start Instructions

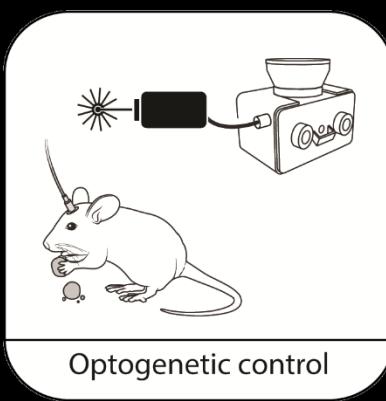


What is FED3?

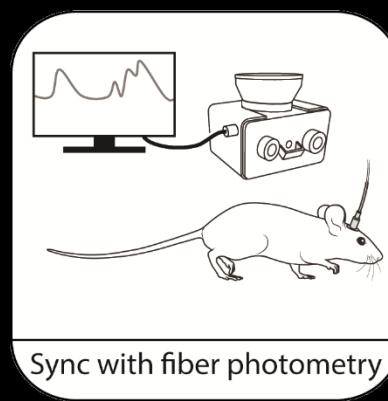
The Feeding Experimentation Device version 3 (FED3) is a stand-alone pellet dispensing device for training mice on operant tasks. FED3 is small enough to fit inside of rodent home cages and does not require a connected computer to operate. FED3 is designed to simplify rodent training, it ships with 12 built-in programs, including fixed-ratio and progressive-ratio operant training routines, as well as optogenetic self-stimulation programs. Most importantly, FED3 is open-source and it can be programmed by users to achieve new functionality.



Operant behavior

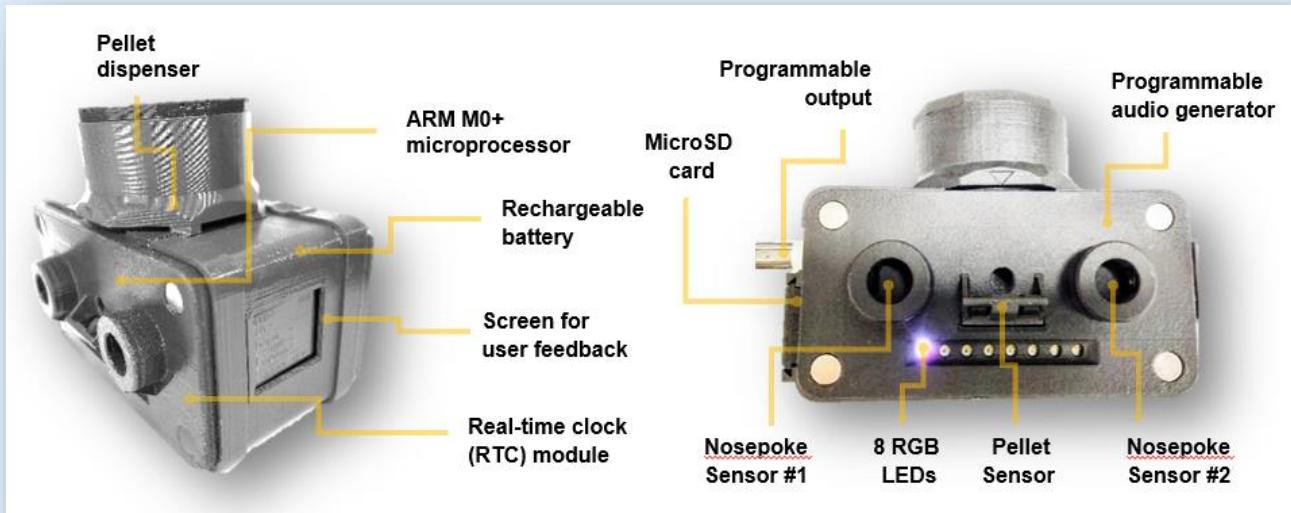


Optogenetic control



Sync with fiber photometry

Hardware Overview



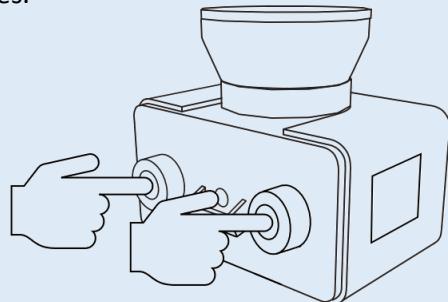
Initial Setup

Setting the time and date

FED3 timestamps every data point based using its onboard real time clock (RTC). To set the time and date of the RTC flash a FED3 with the “FED3_SetClock.ino” script with the Arduino IDE (see appendix 1).

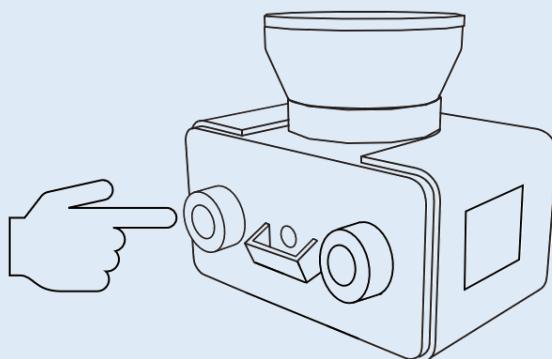
Setting the device number and timed feeding hours

While the mouse is running across the startup screen, activate both left and right pokes together. This will enter a screen that lets you edit the hours for timed feeding, as well as the device number by operating the left and right pokes.



Selecting programs

A range of operant and stimulation program can be selected by poking the left and right pokes during the mouse animation at startup. FED3 is open-source, and one of its main strengths is the ability to modify the code to achieve new functionality!



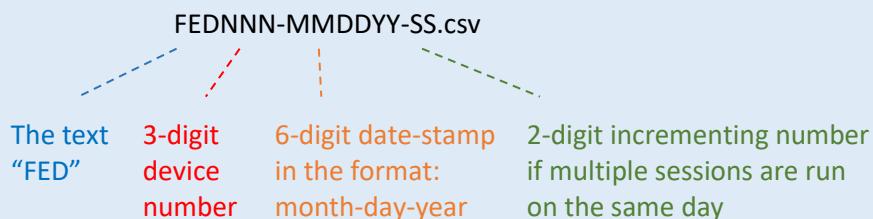
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- Free feeding
 - Timed feeding
 - Fixed Ratio 1, 3, and 5
 - Progressive Ratio
 - Extinction
 - Optogenetic stimulation
 - Light tracking task
 - ... plus your own programs!
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Retrieving data

Every event that FED3 does is stored to the on-board SD card for later analysis. Remove the card and copy the data files off for analysis. Data cannot be retrieved via the microUSB port, this is only for charging and programming the FED3.

File naming:

FED3 saves data in comma-separated value (CSV) format. FED3 will auto-generate a unique data file when each new session starts. This data file has the naming format:



Using the programmable output

The BNC output jack is connected to a programmable output that can be used for synchronizing FED with optogenetics, electrophysiology, or fiber photometry systems. A 200ms pulse is sent whenever the pellet is removed from FED3. The output can easily be re-programmed to send different patterns of pulses based on specific behavioral events.

For troubleshooting please visit and post to the [FED3 Google Group](#).