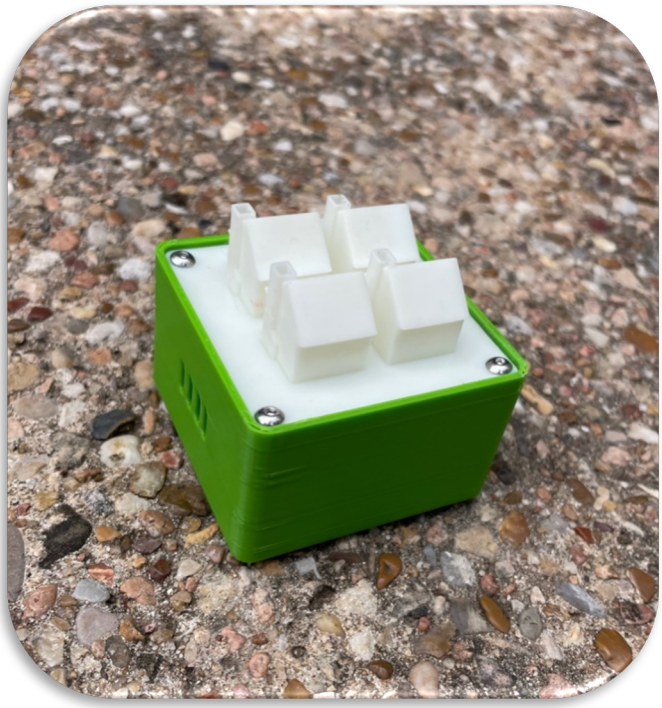
The House Load Model

Overview

The House Load model (HLm) allows you to generate wind for experiments. This is typically used with models like the Wind Turbine, Solar Panel and Power Plant models.

Features:

- 1 5VDC House Load with four individual light loads
- Individual control for each House Load
- Adruino ATMega 328 based processor with USB serial-power connector
- Pre-installed Arduino sketch with API commands for monitoring and control



House Load Model (HLm)

Connecting the House Load model

The House Load model (HLm) can be connected directly to your computer's USB connector through a standard USB C connector. Simply plug in a USB cable to your computer and then the USB C connector into the HLm model.

Upon connecting the HLm to your computer, the HLm is ready for monitoring and control.

Monitoring and Controlling the House Load model

The HLm has a set of pre-programmed commands for you to interface with it. When these commands are issued to the HLm, it will carry out the requested action. If you issue a command to the HLm that it does not recognize, that command will be ignored.

There are several ways to send commands and receive responses to the HLm. One way is to address it through a serial terminal like those found in the Arduino IDE or in apps. Other ways to control the model is through programming languages like LabVIEW, Matlab, Python, C, or anything that can send and receive serial strings through a USB serial port.

The first two commands that the HLm recognizes are:

ID?* and *getCommands

The ***ID?** function. Sending the ***ID?** string to the HLm will prompt it to respond with its identification string. The HLm responds with the string "Houseload".

The **getCommands** function. Sending the **getCommands** string to the HLm will prompt it to respond with a list of the commands that it understands. Below is the

list of functions and their meanings that the HLm will return when it receives **getCommands**

Overview of House Load model Commands

Command	Description	Number of parameters sent or returned
init	This initializes the HLm to its starting state	
autoOn	Initiates random house lighting. Any number or pattern of houses may be lit.	
autoOff	Turns off the auto load lighting function	
setLimits	This determines if a load can be turned on or not. If a 0 is sent, it will be set as off on and unable to be turned on until a 1 is sent. Send four separate numbers (either 1 or 0) after the setLimits command is sent.	4 sent
getAll	This returns seven numbers from the House Load. These are: House Load kilowatt capacity, the current KW level being generated, the load allocated to the HLm, the difference between what's being generated and the load assigned to it, the type of energy (1=renewable, 0=non-renewable, and -1 meaning neither like a house load, and line voltage	7 returned
getLoads	Returns the current load settings	4 returned
getLoadVal	Returns the load value of the combined load of all lit houses	1 returned
getKW	Returns the kilowatt value the of all the lit houses.	1 returned
getCarbon	This returns the about of carbon dioxide the HLm is generating measured in tons. This value will be zero	1 returned
blinkHouses	This Blinks the houses one time	
lightsOut	This turns off lights in all houses	
lightAll	This turns on all lights in the four houses	
light0	This turns on the lights in the first house	
light1	This turns on the lights in the second house	
light2	This turns on the lights in the third house	
light3	This turns on the lights in the fourth house	
chaseOn	This turns on the chase pattern of lights	
chaseOff	This turns off the chase pattern	
off	This turns off the HLm. Typically done before disconnecting the HLm from the USB connector	

eoc	Indicates end of command list	