

# *aetherharp-4*



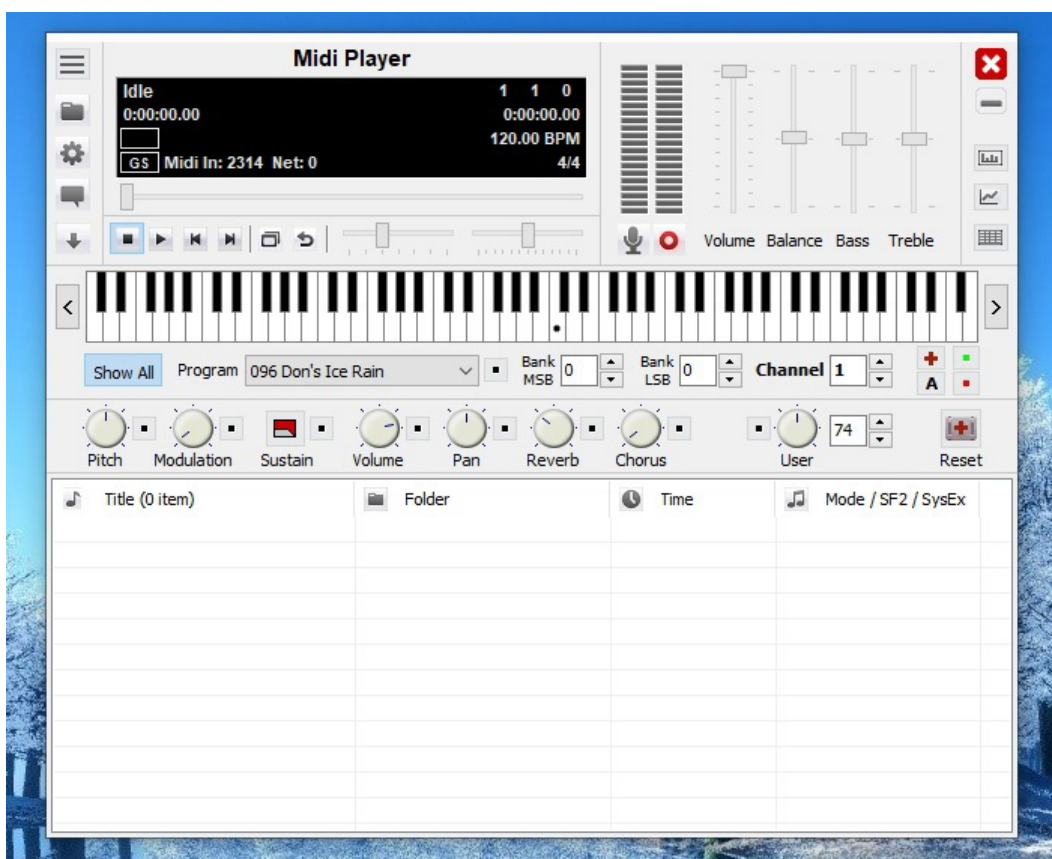
## USER MANUAL

November 2024

The Aetherharp-4 is a music instrument with 8 virtual keys with infrared distance sensors. The keys are activated by moving your hands above these sensors and you can play 8 notes in 6 octaves. the information from the sensors is transmitted to a PC/laptop via the MIDI protocol with 128 selectable instruments.

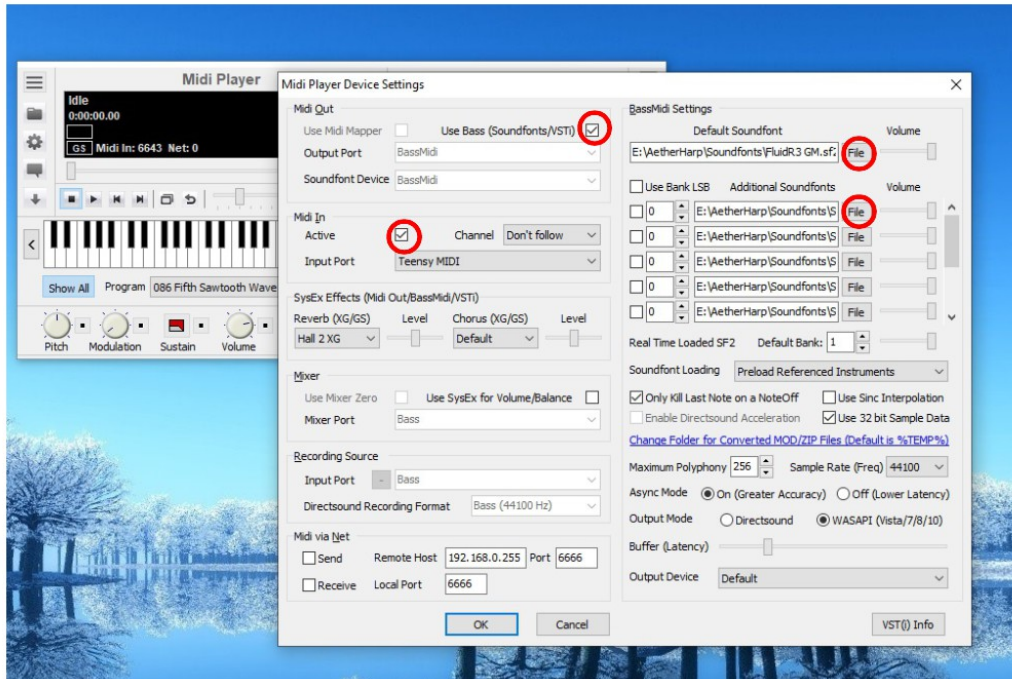
## preparing your PC/laptop:

- Download and install the Arduino IDE, this program is needed to upload the Aetherharp-4 software. See [Arduino - Home](#)
- Download and install Teensyduino from the Teensy website. This is an addon for using the Teensy 3.5 with the Arduino IDE. See [PJRC: Electronic Projects](#)
- Download the latest (ino) sketch of the Aetherharp-4 on the instructables website and upload it to the Aetherharp-4. Under board type select Teensy 3.5 and under USB type select "serial+midi".
- Now download a midi player program to use the MIDI protocol. See <https://falcsoft.hu/software.html#midiplayer>



Download a soundfont (Sf2) file and load it into the program player settings. The midi-input must be checked to use the Teensy 3.5 as input. Also check „use soundfonts“.

Multiple soundfonts can be loaded and activated.

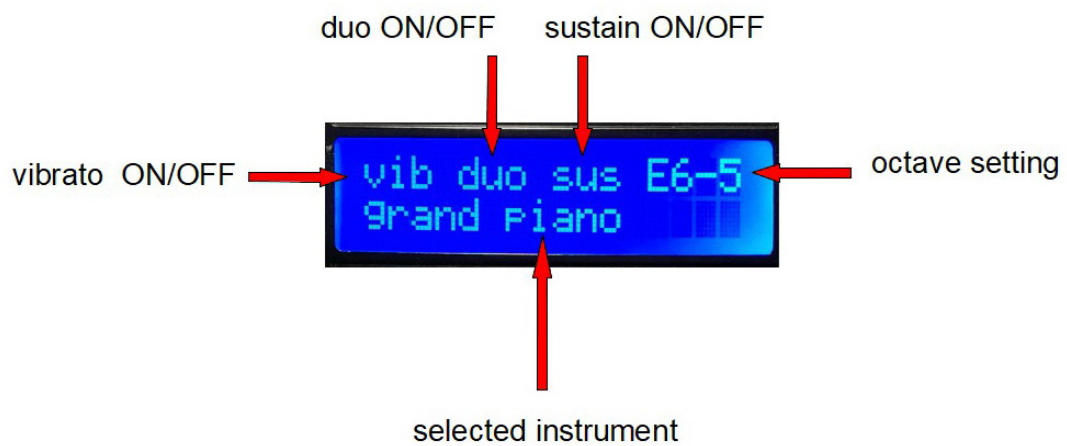
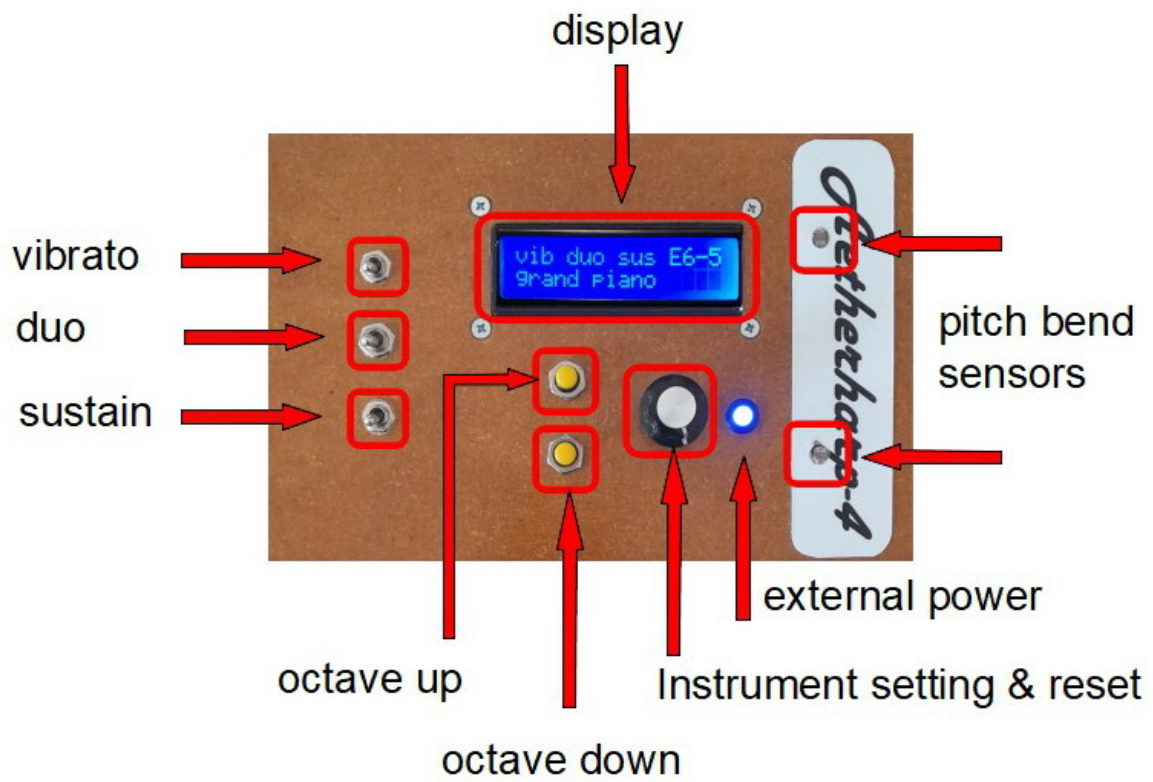


Soundfont files can be found here:

<https://sites.google.com/site/soundfonts4u/>

<https://musical-artifacts.com/>

<https://www.zanderjaz.com/>



## Playing:

### Starting:

First connect the external power supply and then connect the USB output to the PC/laptop. Wait until the startup sequence is finished.

When this is done you can start MidiPlayer. When you start this program before the Aetherharp-4 is switched ON the notes will not be played. check the midi-input on active in the settings, else the notes will not be played.

### Select the instrument to play:

Press the rotating knob button once and turn it left or right to scroll through the list of instruments. All blue leds will light during the selection process.

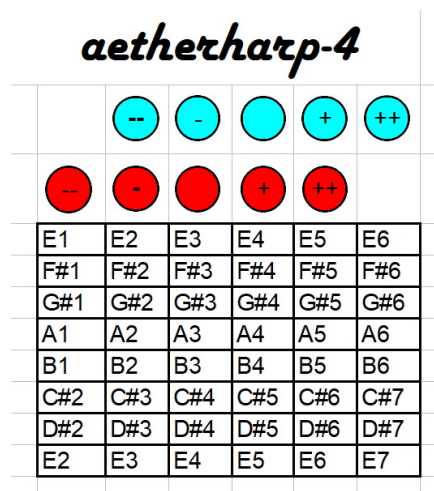
Press the rotating knob again to confirm the selected instrument.

Press the knob for 2 seconds and the instrument will be reset to the first one in the list (grand piano).

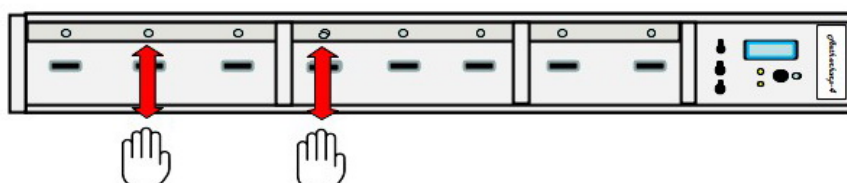
### Change the octave you are using:

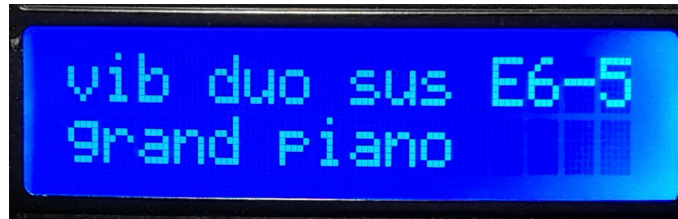
The Aetherharp-4 starts with the major E-scale.

By pushing the octave UP/DOWN buttons the scale can be changed two octaves up or two octaves down. On startup "E4-3" will be shown on the display.



All these notes can be played using the octave UP/DOWN buttons and selecting the distance between your hand and the sensor. The red notes are activated by moving your hand forwards and backwards in a horizontal plane appr. 5 cm. above the sensors. The blue notes are played by moving your hand at a distance of appr. 15 cm. above the sensors.





**Vib: Add vibrato effect to your instrument:**

Flip the vibrato switch, “vib“ will be shown on the display.

**Sus: Let your notes sound without cutting them off:**

Flip the sustain switch, “sus“ will be shown on the display.

**Duo: Play two notes at the same time:**

When selected two notes will be played at the same time when one sensor is activated. Flip the duo switch, “duo“ will be shown on the display.

**Change the pitch:**

Cover one of the pitch bend sensors (LDR) with your hand to change the pitch of the note with a gliding scale up or down.

This is the reference chart for music notes and MIDI note numbers:

Note	-1	0	1	2	3	4	5	6	7	8	9
C	0	12	24	36	48	60	72	84	96	108	120
C#	1	13	25	37	49	61	73	85	97	109	121
D	2	14	26	38	50	62	74	86	98	110	122
D#	3	15	27	39	51	63	75	87	99	111	123
E	4	16	28	40	52	64	76	88	100	112	124
F	5	17	29	41	53	65	77	89	101	113	125
F#	6	18	30	42	54	66	78	90	102	114	126
G	7	19	31	43	55	67	79	91	103	115	127
G#	8	20	32	44	56	68	80	92	104	116	
A	9	21	33	45	57	69	81	93	105	117	
A#	10	22	34	46	58	70	82	94	106	118	
B	11	23	35	47	59	71	83	95	107	119	