aetherharp-4

USER MANUAL

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:

1. Download and install the Arduino IDE, this program is needed to upload the Aetherharp-4 software. See [Arduino - Home](#)
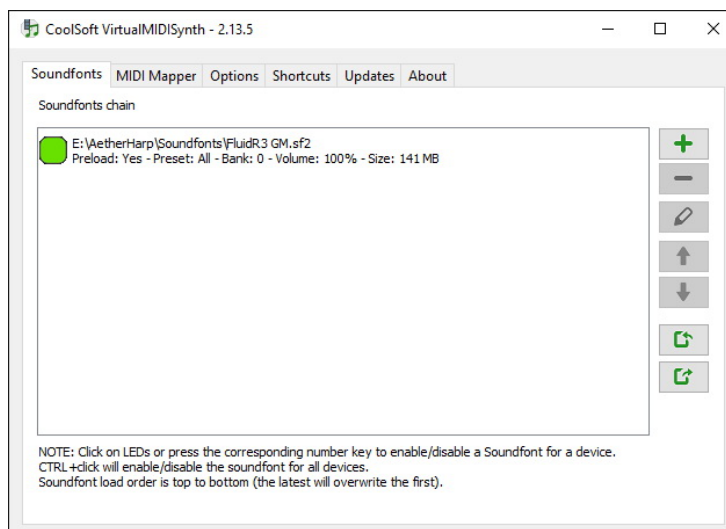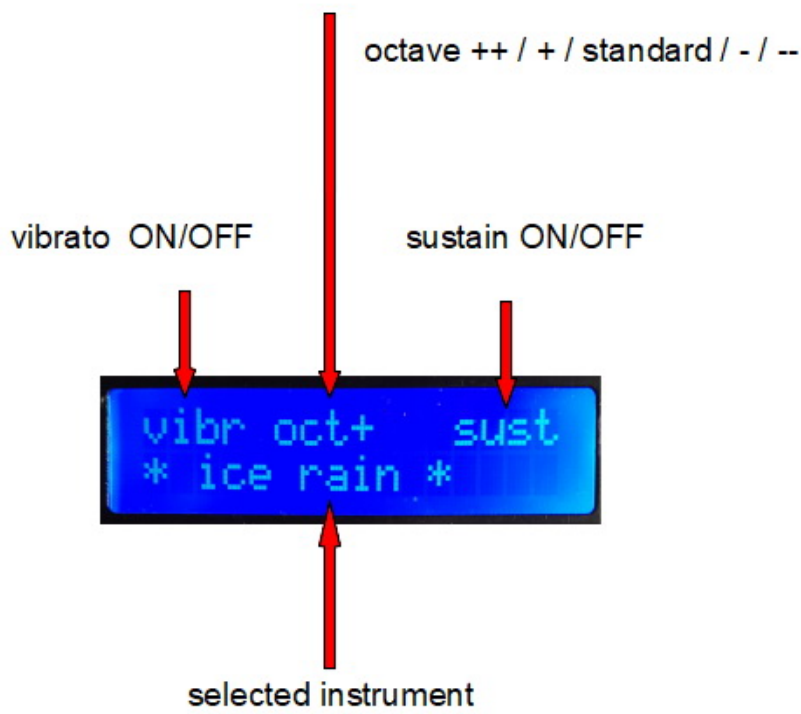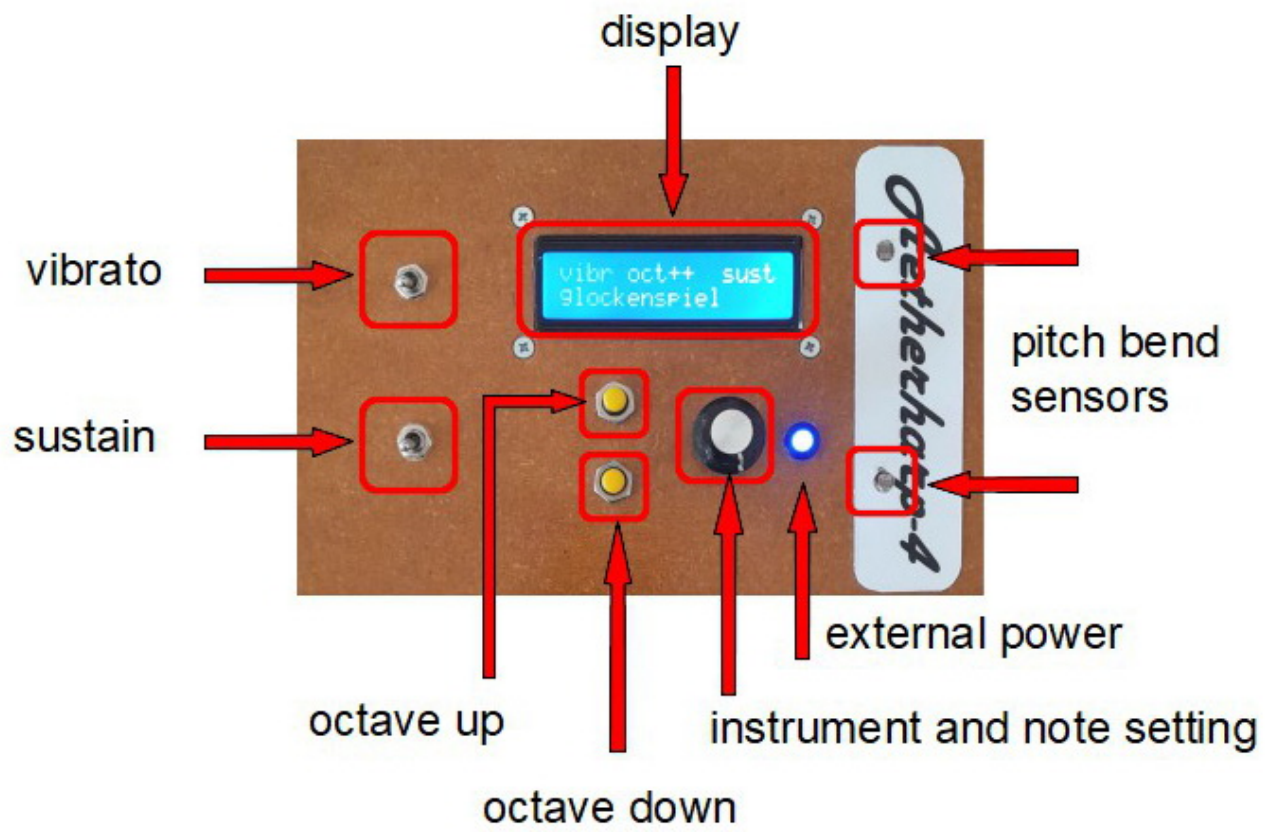

2. Download and install Teensyduino from the Teensy website. This is an addon for using the Teensy 3.5 with the Arduino IDE. See [PJRC: Electronic Projects](#)

3. Download the Aetherharp-4_V12.ino program 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".

4. Now download two programs to use the MIDI protocol. First download and install Virtual Midi Piano Keyboard (VMPK) See [VMPK. Virtual MIDI Piano Keyboard (sourceforge.io)](#)
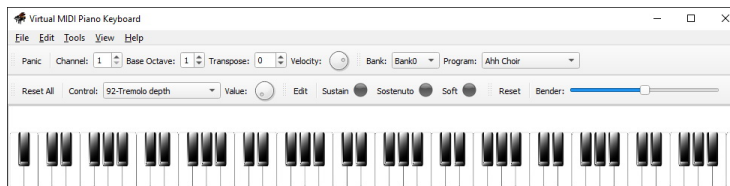
Then download and install a midi synthesizer called VirtualMIDISynth from Coolsoft. See [VirtualMIDISynth | CoolSoft](#)
On this site you can also download a few soundfonts with the instruments you can use.

display

vibrato

sustain

vibr oct++ sust
glockenspiel

pitch bend
sensors

octave up

octave down

instrument and note setting

external power

octave ++ / + / standard / - / --

vibrato ON/OFF

sustain ON/OFF

vibr oct+ sust
* ice rain *

selected instrument

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 VMPK (Virtual Midi Piano Keyboard).
When you start VMPK before the Aetherharp-4 is switched ON the notes will not be played.

Select the instrument to play:
Use the rotating knob to scroll through the list of instruments.

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 (F-major and G-major) or two octaves down (D-major or C-major).
"+,++,-,--" will be shown on the display behind "oct".

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--	-		+	++

--	-		+	++

E1	E2	E3	E4	E5	E6
F#1	F#2	F#3	F#4	F#5	F#6
G#1	G#2	G#3	G#4	G#5	G#6
A1	A2	A3	A4	A5	A6
B1	B2	B3	B4	B5	B6
C#2	C#3	C#4	C#5	C#6	C#7
D#2	D#3	D#4	D#5	D#6	D#7
E2	E3	E4	E5	E6	E7

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.
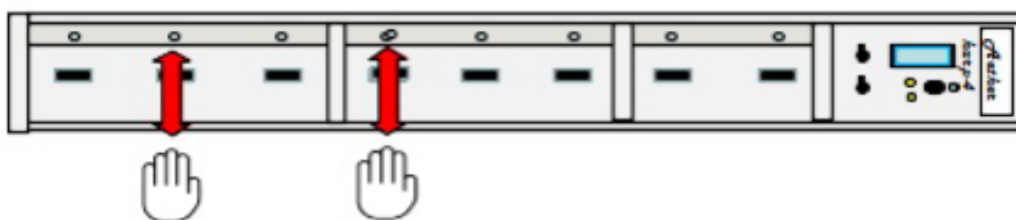
Add vibrato effect to your instrument:
Flip the vibrato switch, "vibr" will be shown on the display.

Let your notes sound without cutting them off:
Flip the sustain switch, "sust" 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.

Program your own notes:
Push the button from the rotating knob once to start programming mode.
rotate the knob to select a new note for sensor 1.
Push the button to store this value.
The second note is now selected and can be changed to a new value.
repeat this eight times. Pressing the knob the last time will stop the programming mode and your stored notes can be used.
Switching th Aetherharp-4 OFF will reset all notes.

Resetting all notes to the original E-major scale:
Push the button from the rotating knob and then push the octave UP button once. All notes will be reset.

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	