

NYSTRÖM 

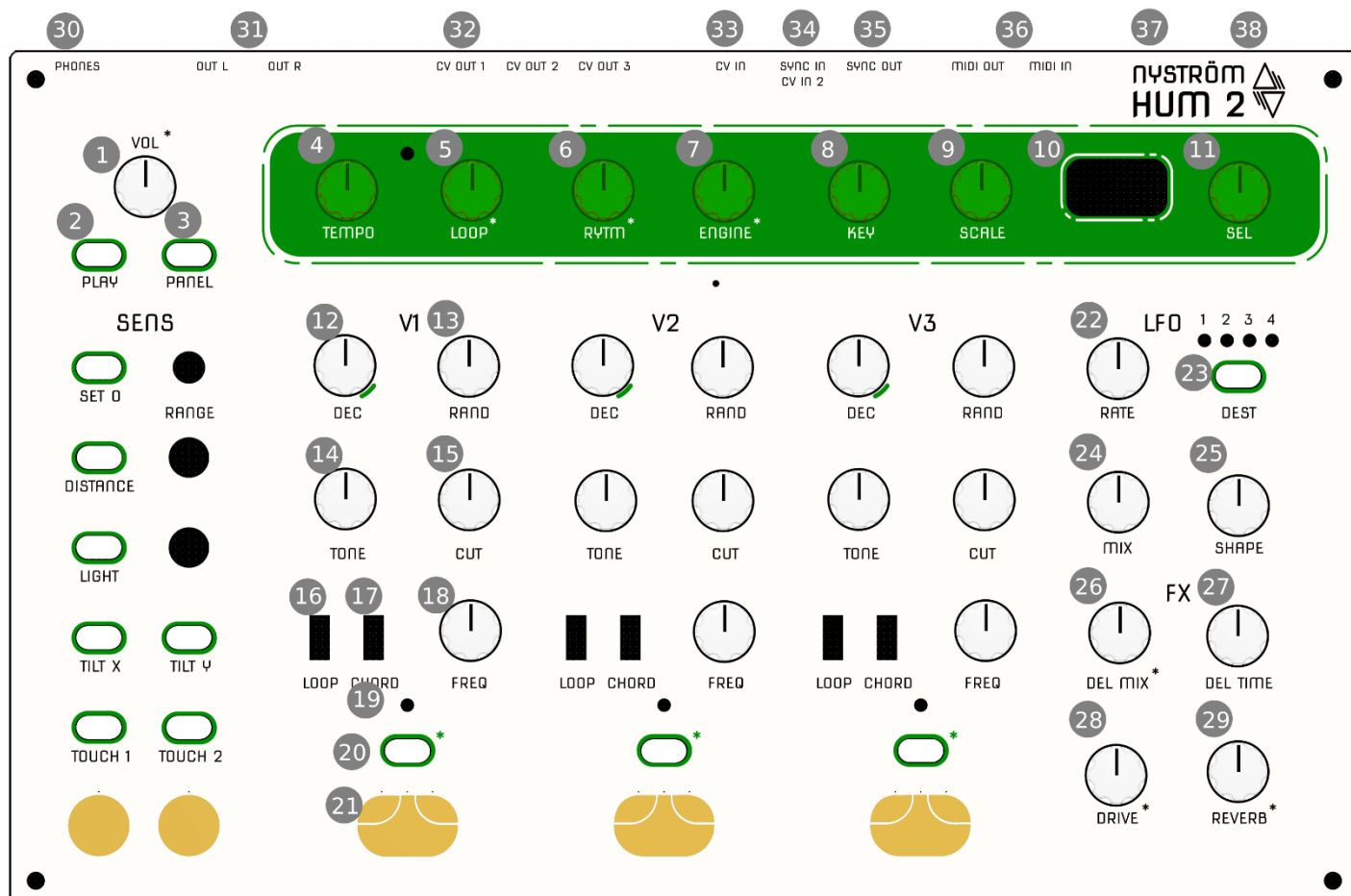
HUM 2

User manual v1.0

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HUM 2



MASTER PARAMETERS

1. VOL

Master volume control. Adjusts the level of the Line Out and Headphone jacks.
Hold **voice button** while turning **VOL** to set individual voice volume.

2. PLAY

Starts and stops the internal sequencer.

Reset Playback: Hold SET 0 + **PLAY** to restart the sequence from Step 1.

3. PANEL

Bypasses the stored preset values. Pressing this "snaps" the sound engine to reflect the physical positions of all knobs and switches.

4. TEMPO

Adjusts the internal clock from 40-300 BPM. A dedicated LED flashes to indicate the current pulse.

5. LOOP

Sets the sequencer loop length from 1-64 steps.

Hold **voice button** while turning **LOOP** to set individual voice loop length.

6. RYTM

Determines the rhythmic density of generated notes.

Ranging from half notes (**Counter-Clockwise**) to 32nd notes (**Clockwise**)

Hold **voice button** while turning **RYTM** to set individual voice loop length.

7. ENGINE

Selects the synthesis model for the voices.

Hold **voice button** while turning **ENGINE** to set individual engines per voice.

Sawtooth | Pulse | Basic wave | Wavetable 1 | Wavetable 2
Wavetable 3 | 2-Op FM | 3-Op FM | FM Pluck | FM Pad
Organ | Formant | Karplus | Glitch

8. KEY

Sets the root key and lowest playable note (C0-C4).

Fine Tuning: For non-440Hz calibration, go to Settings > MISC > Tune.

9. SCALE

Sets the quantization for the sequencer and voices.

1. Minor Pent. | 2. Major Pent. | 3. Minor | 4. Major | 5. Dorian | 6. Lydian |
7. Blues | 8. Harmonic Minor | 9. Phrygian Dom. | 10. Melodic Minor | 11.
Whole Tone | 12. Chromatic | 13. Microtonal (24 notes / oct) | 14. Overtone
series | 15. Just Major | 16. Just Chromatic

10. DISPLAY

Default screen shows voice Loop Length, Playhead Position, Key, and Scale.

Go to **SETTINGS** page for information on menu navigation.

11. SEL

[Select] Primary menu navigation encoder.

Rotate: Scroll through menu items or change values.

Press: Enter or Exit menus and confirm selections.

VOICE STRUCTURE

The HUM 2 has three identical voices (V1, V2, V3) that can be controlled separately.

12. DEC

Sets the decay of the notes being played. When turned all the way clockwise the voice plays in *drone mode*, where notes are held infinitely if touch pad is held down or latched.

13. RAND

When the sequence is playing this sets the probability of a new note being generated for each step, according to the *RYTHM* setting. When sequence is stopped this sets the probability of a new note being generated each time the touch pad is pressed.

14. TONE

This knob behaves differently depending on which *ENGINE* is selected.

Saw: 7 to 12 o'clock = *detune*. 12-5 o'clock = *interval tuning*.

Pulse: 7 to 12 o'clock = *detune*. 12-5 o'clock = *pulse width*.

Basic Wave: morph between basic waveforms: Sine > Triangle > Saw > Square

Wavetable 1 + Wavetable 2 + Wavetable 3: morph between waveforms.

2 Op Fm + 3 Op Fm: select different modulator ratios.

Fm pluck: selects different operator and modulator waveforms

Fm pad: select different modulator ratios.

Organ: morph between different drawbar settings.

Formant: morph between formants / Vowels

Karplus: exciter intensity / hardness

Glich: weird stuff.

15. CUT

Sets filter cutoff frequency.

7-12 o'clock = low-pass. 12-5 o'clock = high-pass

16. LOOP

Up = Enabled. Down = Disabled.

When enabled it locks the current sequence into a loop, *RYTM* and *RAND* do no longer affect the notes being played.

When disabled the voice generates new notes based on *RYTM* and *RAND*.

17. CHORD

Enables/Disables chord playing.

Chords are quantized to the selected *SCALE*.

18. FREQ

Scrolls through the selected *SCALE* Selects the lowest possible note that the voice will play. *KEY* affects the range of this knob.

19. Voice LED

Indicates current volume of the voice.

It also indicates whether the voice is latched or not, green Led means latched.

20. Voice button

The voice button is used to *latch* the voice to its current volume *and* to access per-voice parameter changes.

Latch (Short press)

When in *Decay mode*, this latches the last velocity played on the main touch pad.

When in *Drone mode*, this holds the current voice volume. Latch can be disabled by exceeding the current held volume.

Individual voice parameters (press and hold)

Press and hold the voice button while changing any of the parameters indicated by an asterisk (*) to change that parameter for the selected voice only. The following settings can be set per voice:

Volume, Loop length, Rytm, Engine, Delay mix, Drive, Reverb

21. Touch pads

Each voice has three touch pads.

The main touch pad (middle) sets the volume/velocity of the voice.

Touch sensitivity and *velocity sensitivity* can be adjusted in settings: *Sound > T-Sens* and *Sound > V-Sens* respectively.

The left and right touch pads bend the note up or down. Maximum Bend range can be set in half step increments from 0-12 semitones in settings: *Sound > V1 / V2 / V3 bend*.

SENSORS

The HUM 2 features six sensors (Distance, Light, Tilt X/Y, and Touch 1/2) that can be mapped to any knob.

Mapping & Control

- **Enable/Disable Mapping:** Hold a **Sensor Button** and slightly turn the **Knob(s)** you wish to control. The display will confirm the connection. Repeat this process to unbind a specific knob.
a Clockwise turn of the knob will result in a positive modulation (+) and vice versa.
- **Clear All Mappings:** Double-tap a **Sensor Button** to reset all its assignments.
- **Adjust Sensitivity:** While holding a **Sensor Button**, turn the **RANGE** knob to set the sensor's depth/sensitivity.
- **Calibrate Zero:** Press **SET 0** while holding a sensor button to set its current reading as the zero point.

Sensor Types

- **DISTANCE:** Measures objects from 0-40 cm via the aperture right of the button. Defaults to zero when out of range.
- **LIGHT:** Detects brightness through the aperture right of the button.
- **TILT X & Y:** Detects the physical inclination of the device on each axis.
- **TOUCH 1 & 2:** Measures capacitive pressure on the two pads below the buttons.

LFOs

Hum 2 features 4 LFOs. These can be set to modulate any number of parameters on the Hum 2.

To change the selected LFO, *short press* the **DEST** button to scroll through LFO 1-4. Current LFO is indicated by a green Led.

22. RATE

Sets the LFO frequency of the selected LFO.

Tempo Sync: To tempo sync the LFO rate, go to **Settings > FX > Lfo syn** On/Off.

23. DEST

(Destination) Maps the selected LFO to specific knobs.

Short press the button to change selected LFO.

Enable/Disable Mapping: Hold **DEST** and slightly turn the **Knob(s)** you wish to modulate. The display will confirm the connection.

Clear All Mappings: Double-tap **DEST** to reset all current LFO assignments.

24. MIX

Sets the overall depth (intensity) of the selected LFO modulation.

25. SHAPE

Selects the LFO waveform: Sine, Triangle, Sawtooth, Reverse Sawtooth, Square, or Random (S&H).

FX

The Hum 2 includes three dedicated effects: Delay, overdrive and reverb. FX amount can be set per voice or globally depending on whether a voice button is held or not.

<u>Action</u>	<u>Result</u>
Turn FX Knob	Adjusts Master Mix (Global level for all voices).
Hold Voice Button + Turn FX Knob	Adjusts FX Send (Amount of effect for that voice only).

26. DEL MIX

Sets the volume of the delay signal.

27. DEL TIME

Sets the delay speed. This can be free-running or synced to tempo in **Settings > FX > Dly Syn.**

28. DRIVE

Adjusts the amount of harmonic saturation and distortion.

29. REVERB

Sets the dry/wet mix of the reverb processor.

Advanced FX Settings

For deeper control, the following parameters are available in **Settings > FX**

<u>Effect</u>	<u>Available Parameters</u>
<u>Delay</u>	Dly FB (Feedback), Dly Lp (Low-pass filter), Dly Hp (High-pass filter)
<u>Reverb</u>	Rev Size (Room size), Rev Lp (Low-pass filter), Rev Hp (High-pass filter)

SETTINGS

To navigate the settings, rotate the SEL (select) encoder and press to enter/exit menus and settings. All settings are stored through power cycles.

<u>Menu</u>	<u>Parameter</u>	<u>Description</u>	<u>Range (Min-Max)</u>
PRESET	SAVE	Stores the current state to internal memory.	1 - 500
	LOAD	Recalls a saved preset from internal memory.	1 - 500
FX	Rev Size	Sets the size of the room/reverb tail.	1 - 10
	Rev Lp	Low-pass filter for the reverb signal.	100 - 20,000 Hz
	Rev Hp	High-pass filter for the reverb signal.	10 - 8,000 Hz
	Dly Fb	Delay Feedback; sets the number of repetitions.	5 - 200 %
	Dly Lp	Low-pass filter for the delay taps.	100 - 20,000 Hz
	Dly Hp	High-pass filter for the delay taps.	10 - 8,000 Hz
	Dly Syn	Syncs Delay time to the internal/external tempo.	On / Off
SOUND	V1-V3 Bend	Maximum pitch bend range in semitones.	0 - 12
	V1-V3 Pan	Position of the voice in the stereo field.	0 - 100 (L-R)
	T-sens	Adjusts the sensitivity of the Touch pads.	1 - 10
	V-sens	Adjusts the overall Velocity sensitivity of the Touch pads.	1 - 10

CV	Out 1-3	Destination assignment for CV outputs.	Assignable
	In 1-2	Source assignment for CV inputs.	Assignable
MIDI	V1-V3 CH	MIDI channel assignment for individual voices.	1 - 16
	GLOBAL CH	MIDI channel for master control and clock.	1 - 16
SYNC	PPQN	Sets the Pulses Per Quarter Note resolution.	1 - 24
	SYNC IN	Selects the clock source (CV In or Sync port).	CV In / Sync
	Swing	Adds rhythmic shuffle to the sequence.	0 - 100
	Lfo1/2/3/4 Syn	Syncs LFO rate to the internal/external tempo.	On / Off
MISC	Led Brt	Sets the overall brightness of the LEDs.	1 - 10
	Tune	Global master tuning offset (in cents).	-100 - +100
	TILTER!	???-??*??/□?	
	DODGER	??!?!?!?D!"?"?	
	FW	Shows the current firmware version	

PRESET MANAGEMENT

The HUM 2 features 500 internal memory slots. A preset is a complete "snapshot" of the instrument at the moment of saving.

LOAD: Select a slot (1-500) to recall a stored sound.

Note: When you load a preset, the physical knobs will no longer match the sound. Press the **PANEL** button at any time to "snap" the sound back to the physical knob positions.

Saving & Naming

When saving a preset, you can assign a custom 6-character name (A-Z and 0-9).

Select Slot: Navigate to SAVE in the menu and select a slot (1-500).

Enter Name: The first character will be underlined.

Scroll: Rotate the SEL encoder to change the character.

Confirm/Next: Press the SEL encoder to move to the next character slot.

Finish: After the 6th character is set, the preset is saved to the selected slot.

INPUTS + OUTPUTS

30. PHONES

Stereo headphone output. Adjust volume using the VOL knob.

31. OUT L/R

Dual mono 1/4" line out jacks.

32. CV OUT 1 / 2 / 3

[0-5V] Sends control voltage. These are assignable in the CV menu.

33. CV IN

[0-10V] Accepts external control voltage input. tolerant up to 10V.

Note that it does not accept negative voltage input.

34. SYNC IN / CV IN 2

[0-10V] A multi-purpose input. Can be used as a second CV input or as a clock input. Configure the resolution in **Settings > SYNC > PPQN**.

35. SYNC OUT

Sends a clock signal to synchronize external hardware. Resolution is configurable in the **SYNC** menu.

36. MIDI IN / OUT

[3.5mm TRS Type A] Standard MIDI communication.

midi channels are configurable in **Settings > MIDI**

37. POWER SWITCH

Turns the HUM 2 on or off.

38. POWER INPUT

[5V USB-C] Powers the device via a standard USB-C cable.

HUM 2 to can also send audio over USB.

MIDI IMPLEMENTATION

The HUM 2 features MIDI integration, allowing for external control and automation of most parameters.

Data Support

Notes: Responds to and transmits MIDI Note On/Off.

Expression: Supports **Velocity**, **Channel Aftertouch** and **Pitch Bend**.

Channels: Individual voices (V1-V3) and the Global engine can be assigned to specific channels in **Settings > MIDI**.

Sync: Supports MIDI clock and transport control. Configurable PPQN in **Settings > SYNC**.

MIDI CC Mapping

The HUM 2 both sends and receives MIDI CC messages. Use the table below to map your external controllers or DAW.

CC #	Parameter	Value Range	Channel Type
1	LFO MIX	0-127	Global
14	LFO RATE	0-127	Global
15	RYTM	0-127	Global
16	DELAY MIX	0-127	Global
17	DELAY TIME	0-127	Global
18	DRIVE	0-127	Global
20	DECAY	0-127	Voice (V1/V2/V3)
21	RAND	0-127	Voice (V1/V2/V3)
22	TONE	0-127	Voice (V1/V2/V3)
23	CUTOFF	0-127	Voice (V1/V2/V3)
24	FREQ	0-127	Voice (V1/V2/V3)
30	Distance (Sensor 0)	0-127	Global

31	Light (Sensor 1)	0-127	Global
32	Tilt X (Sensor 2)	0-127	Global
33	Tilt Y (Sensor 3)	0-127	Global
34	Touch 1 (Sensor 4)	0-127	Global
35	Touch 2 (Sensor 5)	0-127	Global
80	CHORD	0-63 (Off) / 64-127 (On)	Voice (V1/V2/V3)
81	LOOP	0-63 (Off) / 64-127 (On)	Voice (V1/V2/V3)
91	REVERB MIX	0-127	Global

TECHNICAL SPECIFICATIONS

Dimensions: 305 x 195 x 42 mm

Weight: 950 grams

Power: 5V DC, 200mA (1W). USB-C