



AUTO CHORUS



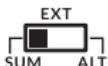
Gamechanger Audio's AUTO Series M-Type pedals redefine classic audio effects with cutting-edge parameter automation - carefully designed to become part of your performance. Rather than overwhelming you with a variety of pre-made, quirky sounds, we provide you with the essential toolset: three nuanced algorithms, four vital parameter controls, two exceptionally precise dynamics & pitch tracker engines, and a set of patching accessories.

With these building blocks and the knowledge contained in this booklet - you will be able to explore an endless array of sound possibilities. The combinations are virtually limitless, allowing you to continuously breathe new life into the AUTO CHORUS and create soundscapes that naturally evolve with your playing, offering a unique musical experience every time.

Dive into this expansive world of creativity, where every patch and every performance reflects your personal artistry, imagination and technical ability.

STARTING POSITION:

Automation mode set to SUM



All automation knobs centered



FRONT PANEL:

LEVEL knob with mode switch:

IN: Amount of signal sent into engine
WET: Amount of signal sent into engine;
DRY: output muted
MIX: Mix between fully DRY output and fully WET output

DEPTH knob:

Modulation/detune depth - zero at min.

PATCHBAY:

One input for each parameter & two identical outputs per tracker

DYNAMICS knob
 Adjust DYNAMICS THRESHOLD & RELEASE values

DYNAMICS MODE switch:
 FAST-RISE-GATE

AUTO footswitch:
 Toggles all incoming and outgoing CV

MOD SHAPE switch:

SAW-SINE-RAMP

ALGORITHM switch:

CHORUS-ENSEMBLE-FLANGER

RATE knob:
 Modulation speed - zero to audible range

CV IN LEDs:
 Indicate incoming CV for each parameter - Blue for negative and red for positive CV

FEEDBACK knob:
 Enhances effect with feedback & resonance

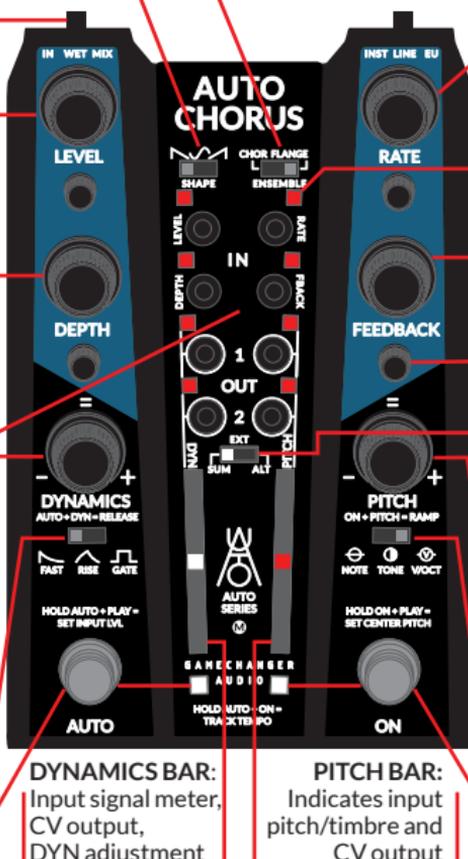
AUTOMATION knobs:
 Adjust and attenuate incoming CV to set automation range & direction

AUTOMATION MODE switch:
 SUM-EXT-ALT

PITCH knob:
 Adjust Pitch tracker and RAMP value

PITCH MODE switch:
 NOTE
 TONE
 VOLT PER OCTAVE

ON/OFF footswitch
 Toggles main effect



DYNAMICS BAR:
 Input signal meter, CV output, DYN adjustment

PITCH BAR:
 Indicates input pitch/timbre and CV output

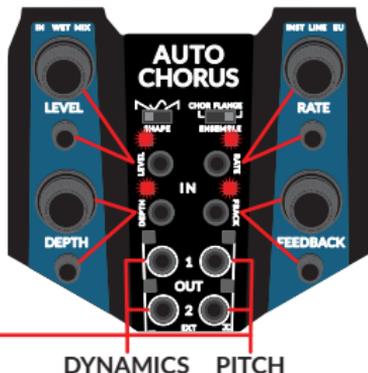
PATCH-BAY & AUTOMATION CONTROLS:

Each of the pedal's four parameters has a dedicated Automation input socket with a corresponding indication LED, and a mini-knob (AUTO knob) used for adjusting the amount and direction of the incoming Control Voltage (CV).

AUTOMATION is achieved by sending a CV into the according parameter's CV Input, and attenuating the CV with the AUTOMATION mini-knob.

The pedal offers two on-board tracker engines - designed to generate CV based on your playing DYNAMICS & PITCH. Each tracker has **two IDENTICAL Outputs on the patch-bay**.

Alternatively - you can use any external CV source to AUTOMATE parameters - including LFO's, Sequencers, Envelope generators and even audio rate signals.



AUTOMATION MODES:

The relationship between the main parameter knobs and the AUTO knobs depends on the currently selected AUTOMATION MODE:

SUM MODE:

Positive CV will move the parameter value in the direction of the AUTO knob:



Negative CV will produce an equally strong offset in the opposite direction.

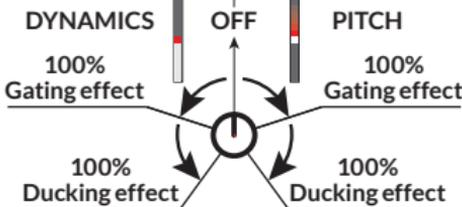
EXTERNAL MODE:

Allows you to apply the the DYNAMIC or PITCH trackers' outputs onto any external CV source, to create a variety of ducking and gating effects.



AUTO knob centered = incoming CV is bypassed

Turning the AUTOMATION knob Counter-Clockwise will use the DYNAMIC tracker to gate or duck the incoming Control Voltage.

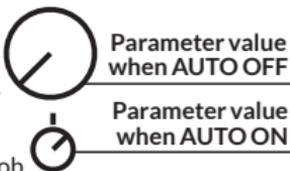


Turning the AUTOMATION knob Clockwise will use the PITCH output to gate or duck the incoming Control Voltage.

ALT MODE:

Allows you to use AUTO knobs to set up Alternative parameter values.

When **AUTO footswitch** is engaged - all parameters that have a patch cable inserted - will instantly jump to the value dialed in with the AUTO knob.



Positive CV will move parameter towards main knob value

Negative CV will increase offset



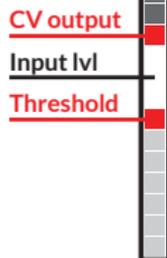
DYNAMICS BAR:

White LED bar displays your instrument's level within the pedal's headroom at all times.

The **THRESHOLD point** is a bright segment that can be moved across the bar with the DYNAMICS knob.

Control Voltage (CV) will be produced when the input signal reaches and crosses the THRESHOLD point, turning it red.

CV Out value is indicated by a moving Red segment from 0 to +5 Volts (at the top of the DYNAMICS BAR).



SET DYNAMICS INPUT LEVEL:

For best results and most detailed control over CV Output - begin your session by CALIBRATING the DYNAMIC tracker's sensitivity to your instrument's output level:

Press & Hold the AUTO footswitch and play a loud strum - this will display the maximum input level on the LEFT Dynamics BAR. Once you release the AUTO footswitch, the input level is set and input signal will be correctly displayed across the whole range of the DYNAMICS BAR.

The last-calibrated INPUT LVL is stored by the pedal even after power-off and re-calibration can be performed as often as desired - for both technical and experimental reasons.

SIGNAL BRIGHTNESS COMPENSATION:

During INPUT LVL CALIBRATION - the pedal will also register the instrument's tone/brightness and display the result on the RIGHT LED BAR (PITCH BAR). While the AUTO footswitch is still held down, you can manually adjust the PITCH knob to make the DYNAMICS tracker more sensitive to either brighter or darker input signal.

DYNAMICS MODES:



FAST

FAST MODE - finetuned to react to strums and sudden note onsets - producing a sharp increase in CV once the threshold is crossed. The RELEASE parameter determines the rate at which the CV value will fall during note sustain parts.



RISE

RISE MODE - responds gradually to your playing dynamics - produces a continuous increase in CV whenever the input signal is exceeding the threshold value. The RELEASE parameter determines the rate at which the CV value will fall.



GATE

GATE MODE - is designed to produce rapid ON/OFF automations - as soon as the input level crosses the threshold the CV jumps to the maximum output value. The RELEASE parameter adjusts the duration of the ON state.

DYNAMICS RELEASE parameter:

HOLD the AUTO footswitch and turn the DYNAMICS knob to adjust the DYN tracker's Release time - represented by YELLOW segments on the DYNAMICS BAR.

When centered at 12 o'clock the CV output produced by the DYNAMICS tracker will precisely reflect how the input signal crosses the threshold.

Decreasing RELEASE time will let the CV Output drop faster - even while the input signal is above the threshold;

Increasing RELEASE time will make the CV Output drop slower.

When turned up all the way the CV value will not decay until a new note is played.



PITCH BAR & PITCH MODES:

The PITCH tracking engine analyzes the tonal content of the input signal at all times and displays it as a moving WHITE moving CURSOR on the PITCH LED Bar. Depending on the PITCH MODE and settings - the cursor will move in and out of CV ZONES - indicated as RED or BLUE LED segments on the PITCH BAR - the brightness shows output CV strength - up to 5V.

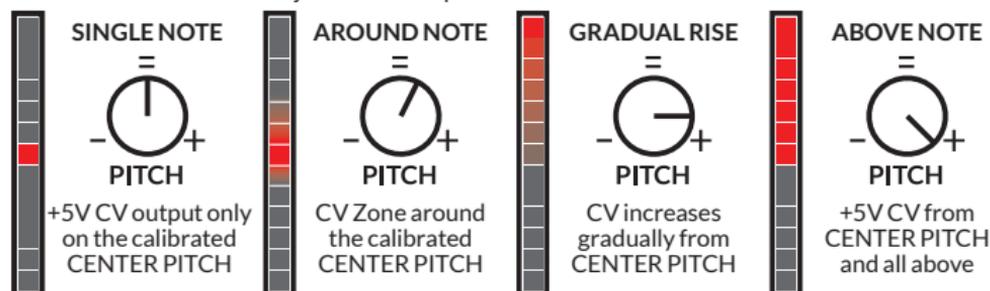


NOTE MODE:

NOTE Produces **Positive CV** using any single note (CENTER PITCH) as the reference point. **SET CENTER PITCH** - press & hold the ON footswitch and play the desired note.

Once you release the ON footswitch - this note will be saved as the CENTER PITCH and placed in the middle of the PITCH BAR. All new input signal within a two-octave range will be displayed on the PITCH Bar as a moving white cursor - input signal outside the two-octave range will be indicated at the outer edges of the PITCH BAR with a blinking white cursor.

Use the PITCH KNOB to adjust how CV is produced in NOTE MODE:



Turn the PITCH KNOB counter-clockwise to create zones below CENTER PITCH.



TONE

TONE MODE:

Rather than tracking specific notes - TONE Mode analyzes the input signal frequency spectrum, allowing you to generate a CV based on your instrument's tonal characteristics, such as moving between note registers (position on the fretboard, etc.), adjusting the instrument's brightness, switching between pickups, etc.

SET the CENTER TONE value by **HOLDING** the ON footswitch & playing a sound/note/chord: this will serve as the tonal reference point for the tracker engine.

Turning the PITCH knob counter-clockwise will produce an increasingly stronger positive CV output when the incoming signal is darker than the calibrated value.



Turning the PITCH knob clockwise will make the tracker sensitive to any incoming signal that is brighter than the calibrated value and a positive CV output will be produced.



V/OCT

V/OCT MODE:

Uses the pitch-tracker to generate a precise bipolar CV output - the calibrated note will produce a 0 Volt output, notes above or below the calibrated value will produce positive and negative CV output respectively. Positive and negative CV output is indicated on the LED Bar with red and blue segments.

For example - E4 = 0 Volts; E3 = -1Volt (blue), E5 = +1Volt (red).

Perfectly suited for controlling external synthesizers, as well as controlling parameters in both directions - CV is represented by red & blue on the LED bar

The PITCH knob adjusts the V/OCT scaling:



1 Volt per octave



0.2 Volts per octave



6 Volts per octave

PITCH RAMP parameter:

Hold the ON footswitch and turn the PITCH knob to adjust the RAMP parameter - represented by YELLOW segments on the PITCH BAR.

When turned all the way down, the PITCH tracker will follow your input pitch with maximum speed, whereas increasing the RAMP bar will make the PITCH tracker's output smoother by introducing a "glide" time between different output CV values.

The RAMP time applies to all PITCH MODES and is indicated on the PITCH BAR by the WHITE input CURSOR fading into YELLOW as you move in and out of CV ZONES.



VOLT PER OCTAVE FINE-TUNE:

When using the AUTO PEDAL'S PITCH CV OUTPUT to control a Synthesizer it is important to perform a FINE-TUNING procedure to ensure a precise VOLTAGE OUTPUT across a multiple Octave range - compensating for Voltage drops that occur due to impedance and signal loss.

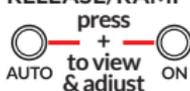
FINE-TUNING the PITCH OUTPUT is done either **by ear** (when connected to sound source), or by measuring the PITCH OUTPUT with a dedicated **Voltage measuring device**.

1. Hold the AUTO footswitch and toggle the PITCH MODE into the V/OCT MODE, to open the V/OCT TUNING view, indicated by PINK&BLUE points on the LED BAR.
2. Turn the DYNAMICS knob to FINE-TUNE the 0V output point (+/- 150 millivolts)
3. Turn the PITCH knob to FINE-TUNE the +3V output point (+/- 150 millivolts)
4. Exit the FINE-TUNE mode by pressing the AUTO footswitch or by toggling the PITCH MODE.

RELEASE & RAMP VIEW:

Short-pressing both ON & AUTO footswitches simultaneously will display the DYNAMIC RELEASE and PITCH RAMP parameters on both LED BARS. Both LED BARS will return to the regular INPUT tracking view after a short time-out.

RELEASE/RAMP



TRACK TEMPO:

Press & Hold both footswitches to engage TRACK TEMPO mode - the pedal's RATE parameter will adjust to match the incoming signal's tempo. The change will lock in place once both footswitches are released.

TRACK TEMPO



MIDI /CLOCK IN:

Whenever an analog or MIDI clock is sent into the pedal - the RATE knob will snap to subdivisions of incoming tempo. MIDI CC Table online.

MIDI IN
/CLK IN



MIDI CLOCK IN -
24 PPQ;

ANALOG CLOCK -
4PPQ;



RATE

ADJUST SUBDIV
with RATE KNOB
(1/1 - 1/16)

Change MIDI CHANNEL:

1. Power off the pedal.
2. Hold down the ON footswitch and connect the pedal to power.
3. Keep holding the ON footswitch, and change the MIDI channel with PITCH potentiometer. Current MIDI channel will be displayed on the pitch LED bar:
4. Release the ON footswitch.

Reset to DEFAULT SETTINGS:

1. Power off the pedal.
2. Hold down the AUTO footswitch and connect the pedal to power.
3. Continue holding the AUTO footswitch for approx. 5 seconds until the orange bar fills up.
4. Release the AUTO footswitch.

FIRMWARE UPDATE:

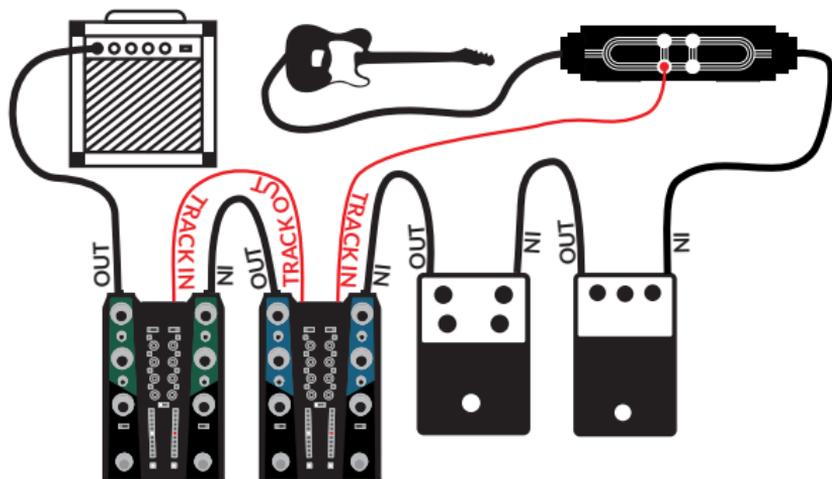
Download latest firmware from www.gamechangeraudio.com and follow update instructions published on download page.

IMPORTANT!

TRACK INPUT & SIGNAL CHAIN:

To ensure precise signal tracking and CV generation - each AUTO Pedal needs to receive a CLEAN INPUT signal from your instrument. Any effects before the AUTO Pedal (modulation, gain, pitch, time-based, etc.) will affect the TRACKER's ability to analyze input and produce CV.

For best results - send a copy of the CLEAN SIGNAL into each AUTO Pedal's TRACK Input. Use the Included AUTO Splitter to create copies of your CLEAN SIGNAL at the beginning of the signal chain - and use the provided cables to route the CLEAN SIGNAL into each AUTO Pedal's TRACK Input! Use the AUTO Pedal's TRACK OUTPUT to pass on a copy of the CLEAN SIGNAL to the next AUTO Pedal in the chain.



BACK PANEL:

INPUT LEVEL switch:

Adjust pedal headroom (and output level):
INSTR: +0 dB
LINE: +5 dB
EU + 10 dB

INPUTS:

For stereo input use 2X MONO cables or single TRS cable to input R/TRS

TRACK INPUT:

Separate input for tracking (clean signal);
When unconnected - tracker engine analyzes main mono input signal;
When no main input connected - can be used as main input

DC POWER INPUT:

Standard 250mAh DC 9V, Center Negative barrel connector

MIDI / CLK IN:

Accepts analog clock signal via 3.5 mono jack cable

Accepts MIDI Input via Type B 3.5 TRS

OUTPUTS:

For stereo out use 2X MONO cables or single TRS cable from output R/TRS

TRACK OUTPUT:

Passes out a copy of TRACK IN

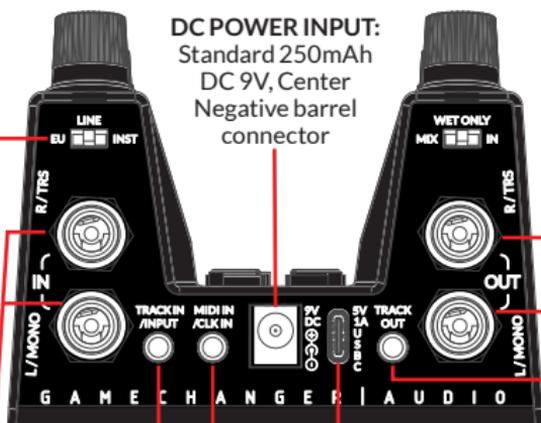
When TRACK In unconnected - sends out copy of input signal

USB C Input:

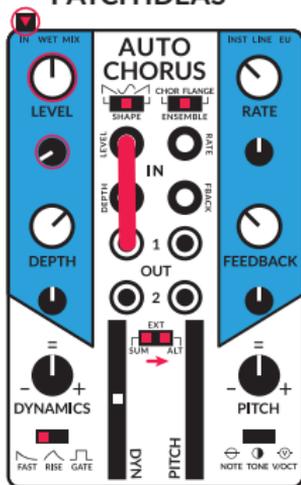
Power over USB (5V, 1A)

MIDI IN over USB

Connect to device for Firmware Update

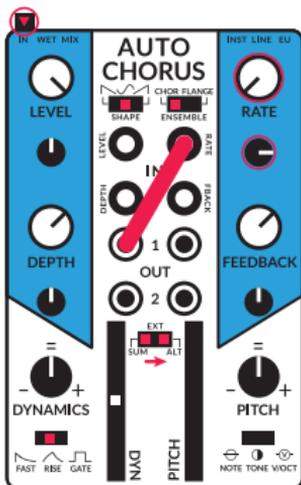


PATCH IDEAS



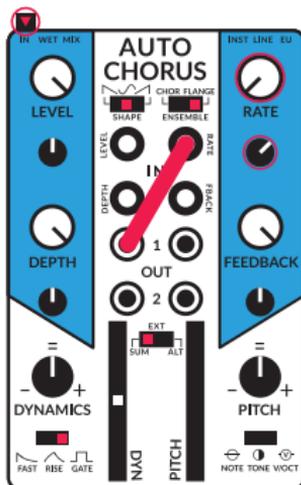
DUCKING ENSEMBLE

Use DYNAMICS tracker in FAST MODE to remove modulation from loud plucks/stums + adjust with RELEASE & THRESHOLD. Use ALT mode to invert effect!



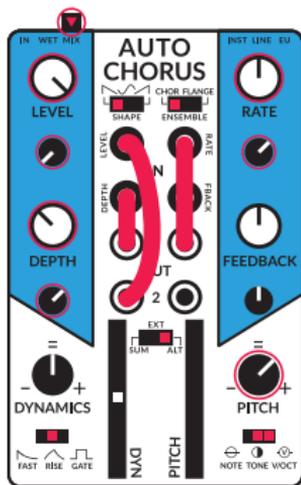
RISING RATE

Use DYNAMICS in RISE mode to increase Chorus rate gradually; THRESHOLD & RELEASE adjust depth and timing of increase. ALT mode will invert effect. Try all three shapes!



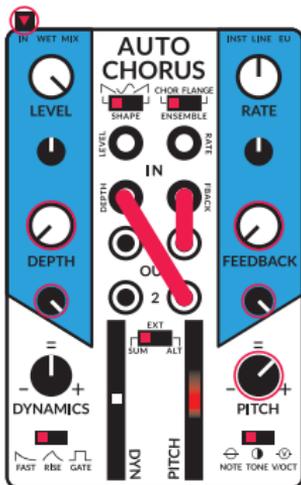
TALKING FLANGE

Use DYNAMICS in GATE Mode to budge the RATE control on note attacks only - This will produce a resonant "talking effect".



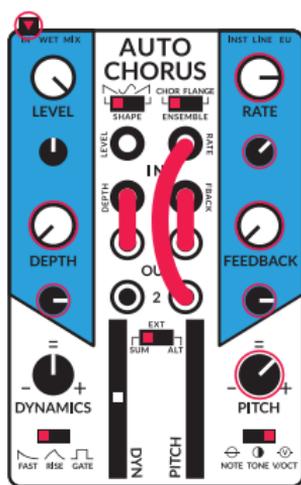
ANIMATED VIBRATO

When AUTO is off, produces a slow VIBRATO; When AUTO ON, morphs from clean to chorus to vibrato with varying DEPTH and RATE.



TARGETED MOD

SET desired CENTER PITCH and use PITCH KNOB to create different CV ZONES. Try re-calibrating CENTER PITCH during performance!



RINGMOD FOLLOW

SET CENTER PITCH in the lower register and fine-tune DYNAMICS CV to add ringing accents to notes. Try all three shapes and engines!

WARNING:

Do not connect the TRACK OUT output to the PARAMETER Inputs, if you don't like surprises.

VISIT: GAMECHANGERAUDIO.COM

More Patch Diagrams, Blank Patch-Sheets, MIDI CC Table, PDF Manual, Updates, Tutorials

SAFETY INFORMATION

FOR THE US:

This equipment has been tested and found to comply with the limits for a class B digital device, pursuant to part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with these instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures: - reorient or relocate the receiving antenna. - Increase the separation between the equipment and receiver. - connect equipment into an outlet or a circuit different from that to which the receiver is connected. - consult the dealer or an experienced radio / TV technician for help. This device complies with part 15 of the FCC rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation. Unauthorized changes or modifications to the system can void the user's Authority to operate this equipment. This equipment requires shielded interface cables in order to meet FCC Class B limit.

FOR EUROPE:

This product complies with the requirements of Electromagnetic Compatibility Directive 2014/30/EU.

FOR CANADA:

This class B digital apparatus meets all requirements of the Canadian Interference-Causing Equipment Regulations. AVIS: cet appareil numérique de la classe B respecte tout les exigences du règlement sur le matériel brouilleur du Canada.

WARRANTY & RETURNS

You have a 30 day return period when you may return the product and receive a full refund. You will only be responsible for return shipping charges. Each AUTO Series pedal manufactured by Gamechanger Audio is warranted to be free from defects in materials and workmanship for one year from the date of shipping or longer if required by the relevant legislation. This warranty shall not apply to any unit which in the opinion of the manufacturer has been used improperly or has been mechanically or otherwise damaged by accident, misuse or negligence or has been altered or repaired in such a way to impair performance, nor shall it apply to cosmetic defects (considered normal wear and tear). Other parts, such as knobs, rubbers, cables, cable connectors, are non replaceable. The manufacturer reserves the right to make changes in the design or construction of this equipment without obligation to install similar changes in equipment already sold.

MANUFACTURER ADDRESS:

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No user servicable parts inside

MIDI CC

CC	NAME	MSB value range	MSB and LSB value range (CC[n] = MSB, CC[n+32] = LSB)
8	LEVEL	[0...127] = [0...1]	[0...16383] = [0...1]
9	RATE	[0...127] = [0...1]	[0...16383] = [0...1]
10	DEPTH	[0...127] = [0...1]	[0...16383] = [0...1]
11	FEEDBACK	[0...127] = [0...1]	[0...16383] = [0...1]
12	DYN TIME	[0...127] = [0...1]	[0...16383] = [0...1]
13	DYN THRES	[0...127] = [0...1]	[0...16383] = [0...1]
14	PITCH SENS	[0...127] = [0...1]	[0...16383] = [0...1]
15	PITCH SLEW	[0...127] = [0...1]	[0...16383] = [0...1]
16	Attenuverter for CV in 1	[0...63] = [-1...0], [64...127] = [0...1]	[0...8191] = [-1...0], [8192...16383] = [0...1]
17	Attenuverter for CV in 2	[0...63] = [-1...0], [64...127] = [0...1]	[0...8191] = [-1...0], [8192...16383] = [0...1]
18	Attenuverter for CV in 3	[0...63] = [-1...0], [64...127] = [0...1]	[0...8191] = [-1...0], [8192...16383] = [0...1]
19	Attenuverter for CV in 4	[0...63] = [-1...0], [64...127] = [0...1]	[0...8191] = [-1...0], [8192...16383] = [0...1]
20	Dynamics mode	[0...42] = FAST, [43...84] = SLOW, [85...127] = GATE	[0...5461] = FAST, [5462...10922] = SLOW, [10923...16383] = GATE
21	Pitchtrack mode	[0...42] = NOTE, [43...84] = TONE, [85...127] = V/OCT	[0...5461] = NOTE, [5462...10922] = TONE, [10923...16383] = V/OCT
22	Effect type	[0...42] = CHORUS, [43...84] = ENSEMBLE, [85...127] = FLANGER	[0...5461] = CHORUS, [5462...10922] = ENSEMBLE, [10923...16383] = FLANGER
23	SHAPE	[0...42] = SAW, [43...84] = SINE, [85...127] = RAMP	[0...5461] = SAW, [5462...10922] = SINE, [10923...16383] = RAMP
24	CV mode	[0...42] = SUM, [43...84] = EXT, [85...127] = ALT	[0...5461] = SUM, [5462...10922] = EXT, [10923...16383] = ALT
25	Mix mode	[0...42] = IN, [43...84] = WET, [85...127] = MIX	[0...5461] = IN, [5462...10922] = WET, [10923...16383] = MIX
26	Signal level	[0...42] = INST, [43...84] = LINE, [85...127] = EU	[0...5461] = INST, [5462...10922] = LINE, [10923...16383] = EU
27	EFFECT ON	[0...63] = OFF, [64...127] = ON	[0...8191] = OFF, [8192...16383] = ON
28	AUTO ON	[0...63] = OFF, [64...127] = ON	[0...8191] = OFF, [8192...16383] = ON

TECHNICAL SPECIFICATION

Connections		
Inputs	L/MONO	6.35mm (1/4") TS socket
	R/TRS	6.35mm (1/4") TRS socket
	TRACK IN/INPUT	3.5mm (1/8") TRS socket - Track signal insert (L/R)
	CV IN 1 ... 4	3.5mm (1/8") TS socket, Control Voltage inputs for effects parameter control
Outputs	L/MONO	6.35mm (1/4") TS socket
	R/TRS	6.35mm (1/4") TRS socket
	TRACK OUT	3.5mm (1/8") TRS socket – L/R input or track signal buffered output
	DYN CV OUT 1&2 PITCH CV OUT 1&2	3.5mm (1/8") TS socket, Control Voltage outputs: Dynamics and Pitch output from AUTO pedal's tracking algorithm
Data	USB-C	MIDI & Firmware update
	MIDI/CLK IN	3.5mm (1/8") MIDI B-Type or TS Trigger input Input impedance 200 Ohm, buffered 5V clock signal expected
Indication		
	DYNAMICS LED bar	11 RGB LED bar for Dynamics tracking & status
	PITCH LED bar	11 RGB LED bar for Pitch tracking & status
	CV in & out LEDs	8x RGB for CV input & Output monitoring
Signal specification		
Signal levels	INST	4Vpp max
	LINE	8Vpp max
	EU	12.5Vpp max
	CV IN 1...4	+/- 5V
	DYN CV OUT 1&2 PITCH CV OUT 1&2	-5V ... +5V
Impedance	Audio Input impedance	500 kOhm
	Audio Output impedance	1 kOhm
	CV Input impedance	10 kOhm
	CV Output impedance	300 Ohm
Digital Audio		
	ADC/DAC	24b/32b, 44.1kHz sample rate
Power		
	9V DC in	9V, 250mA, center negative 2.1 x 5.5 mm plug
	USB-C	5V, 1A (500mA mean) (C-C or A-C cable)
Weight & Dimensions		
	Dimensions	97 x 150 x 75 [mm] / 3.8" x 5.9" x 3" (W x L x H)
	Weight	600g / 1.32lbs