



ND-1 Nova Delay

USER'S MANUAL

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INTRODUCTION

Nova - Your tone is everything

The sensation of weight, the grandiose design and overall build quality instinctively tell you these aren't just ordinary stompboxes. They're so much more – the essence of your tone!

Built upon the legacy and knowledge of TC's world-renowned effects processors the Nova pedals raise the bar for guitar effect pedals and redefine what it means to be "state-of-the-art". The ND-1 Nova Delay offer uncompromised studio quality effects in a compact floor-based design.

With 6 different stereo delay types and the option to store up to 9 presets customizable by an array of style parameters ranging from vintage tape to digital delay this pedal easily serves all delay requirements of modern guitar players who want to create unique sounds.

The ND-1 Nova Delay pedal features 6 different delay types: Delay Line, Dynamic, Reverse, Ping-Pong, Pan and Slap-back.

Three different types of modulation (light, medium and heavy) can be applied to any of the delay types. The modulation is applied to the delay repeats only which

makes the Nova Delay unique compared to setups where a delay pedal is used in conjunction with a chorus pedal.

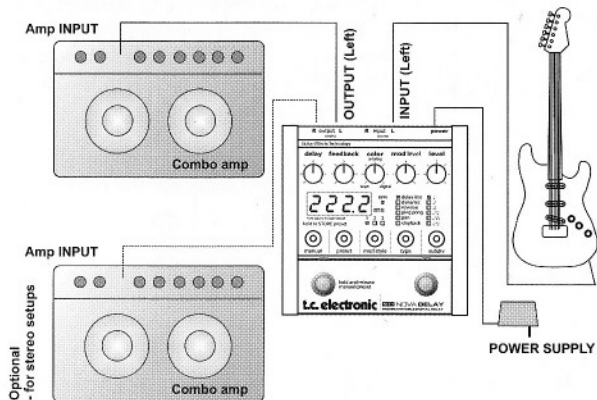
The all-new Audio Tapping™ technology enables you to set the tempo of the delay by playing a rhythm into the pedal while holding down the TAP TEMPO switch.

Nova Delay Features:

- 6 studio-quality delay types
- Up to 9 storable user presets plus manual mode
- Easy switching between modes and presets
- Audio Tapping™ - audio-generated tap tempo
- Modulated delay
- True delay spill-over
- Easy color control
 - from tape style over analog to digital

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ULTIMATE SOUND MACHINES

SETUP EXAMPLE - MONO/STEREO

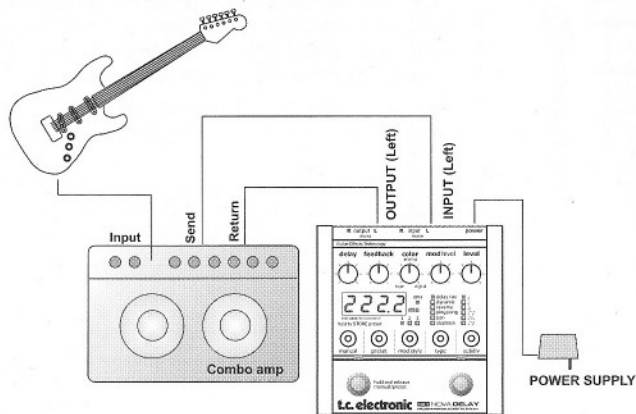


This setup illustrates how to use the Nova Delay pedal in a mono setup (one amp only) or stereo setup (two amps). Effects as reverb or delay are usually placed as the last effects before the amplifier. Therefore, - place all drive and modulation effects prior to the Nova Delay pedal.



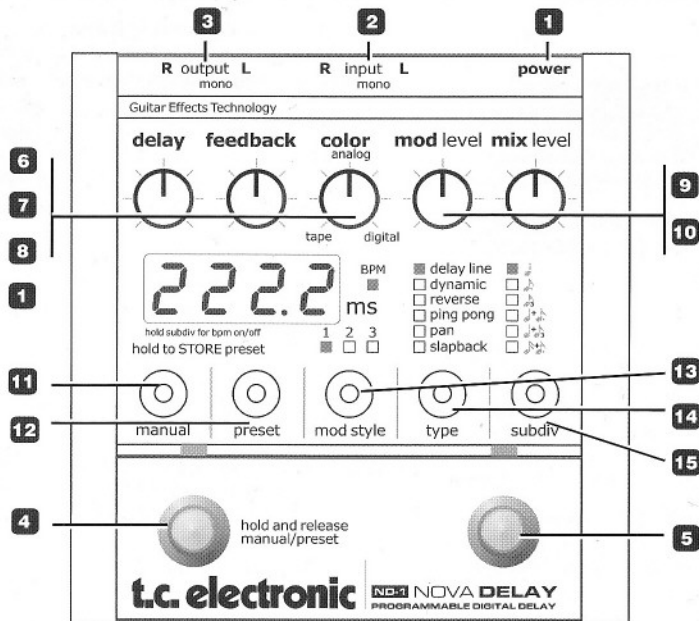
If you use the amp/amps to create overdrive see the "SEND/RETURN" example on the following page.

SETUP EXAMPLE - SEND/RETURN



This example illustrates how to connect your Nova Delay pedal as a send/return effect in an effects loop. This is the correct placement of the Nova pedal if you use the pre-amp section of the amp for overdrive sounds.

Expand this setup to stereo by connecting the Nova pedal right output to the return of a second amp.



OPERATION

Connections

1 - Power

The Nova Delay require 12V DC 300 mA. Use the power supply provided in the product box or a power supply with similar specifications.

2 - Inputs

1/4" mono jack connections for signal input. Use left input for mono signal or use both left and right inputs for connecting a stereo signal.

3 - Outputs

1/4" mono jack connections for signal output. Use left output for mono or both outputs for stereo.

Switches

4 - On/Off

This switch has two functions.

- Press and release immediately for standard on/off function.
- Hold and release for 2 seconds to switch between manual and preset modes.

5 - Tap Tempo & Audio Tap Tempo

The delay time is always calculated using the current global tempo and the selected subdivision.

The global tempo can be entered in different ways:

- as dialed using the DELAY knob
- as tapped by tapping the TAP TEMPO switch
- as tapped using the Audio Tap Tempo™ feature

Audio Tapping:

Audio tapping is entered by holding down the TAP TEMPO switch and feeding audio to the input e.g. by hitting guitar strings.

See also the example in the chapter describing "Subdivision".

Example - Tap Tempo using the TAP TEMPO switch

- Tap 1/4 notes on the TAP TEMPO switch.
The TAP TEMPO LED will indicate the tapped tempo.

This can be done in both "off" and "on" mode.

Example - Tap tempo by audio

- Press and hold the TAP TEMPO switch. When the outputs are muted, play steady short 1/4 notes on your instrument. The TAP TEMPO LED will indicate the tapped tempo.
- Release the switch again.

That's it - you have now entered the global tempo by audio.

Knobs

6 - Delay

Adjusts the delay time. When the DELAY knob is in 12 o'clock position the delay time is not altered.

Turn counter-clockwise to reduce the delay time and clockwise to increase the delay time. The maximum delay time vary depending on the selected delay type.

<u>Delay Type</u>	<u>Max Delay Time</u>
Delay Line	2290ms
Dynamic	2290ms
Reverse	1000ms
Ping Pong	2290ms
Pan	2290ms
Slapback	300ms

7 - Feedback

The FEEDBACK knob sets the amount of delay returned to the input of the delay line. The higher the setting the more repeats.

8 - Color

Full control and perfect replica of the the source signal may be the advantage of a digital delay. However, the delay repeats may at times blend much better if the high-end frequencies of the repeats are colored.

OPERATION

The complex Nova Delay color filter allows for shaping of the delay repeats in styles ranging from tape drive over analog to digital.

9 - Mod/Level

In addition to the coloration of the delay repeats controlled by the COLOR knob, you may also add more or less pitch modulation to the delay repeats. Pitch modulation on delay repeats is typically known from older tape-echoes. Three styles of modulation can be selected pressing the MOD STYLE button.

10 - Mix Level

Sets the overall mix between the dry signal and the delay repeats.

Selectors

11 - Manual - In manual mode the pedal plays exactly according to the position of the controls.

12 - Preset - In preset mode the pedal plays according to the recalled preset. Therefore, if you come from manual mode the position of the knobs may not match the currently recalled values.

- Press PRESET once to enter preset mode. The current preset number is shown. E.g. "P1"
- Press again immediately after to scroll through the presets: P1, P2, P3.....P9, P1, P2 etc.*



When going from manual mode to preset mode, the position of the knobs probably does not match the current values.

** It is also possible to scroll through presets using the TAP TEMPO and ON/OFF switches. Please refer to the manual section "Additional Features"*

Preset Store function:

To edit and store a preset:

- Scroll through the 9 preset locations P1 to P9 by pressing PRESET several times.
- Edit the preset.
- Press and hold the PRESET button until LEDs 1, 2 and 3 blink rapidly one after the other. The preset is now stored at the current location.



When you store a preset from manual mode, this preset will overwrite the preset that was recalled the last time you were in preset mode.



When storing a preset from manual mode, all parameters are stored according to the position of the knobs and LEDs. When storing a preset from preset mode only the edited parameters are stored.

13 - Mod Style

Three different styles of modulation on the delay repeats can be selected. The level of the modulation is adjusted using the Mod Level knob.

14 - Type

Delay Line: Standard high quality delay line.

Dynamic: The Dynamic Delay is a feature that was initially introduced in the legendary TC 2290. It allows the dynamics of the input level to reduce the delay output level while you play and increase the delay level when you stop playing. The result can be a clear and undisturbed source signal while you play and a significant delay level when pausing.



For optimal performance of the dynamic delay the Nova Delay should be calibrated according to the input signal. Please refer to the step-by-step guide on calibrating the input sensitivity.

Reverse: The Reverse delay is a great effect when a more mysterious, exotic delay style is required. The input signal is sampled and played in reverse.



With a long delay time (e.g. 1000 ms), try setting the MIX knob at 100% and the FEEDBACK knob at 0. This will give you a true feeling of playing "backwards"

OPERATION

PingPong:

The PingPong delay causes the delay to alternate between the left and right channels, resulting in a very nice stereo feel.

Pan:

In Pan mode the delay repeats shift between left and right output channels. The time it takes to pan the delay repeats depends on the set delay time. The pan-position shifts from 100% left to 100% right in 5 repeats.

Slap-Back:

Slap-back is the characteristic short delay type. Use delay times from 80 to 140 ms and go back 50 years in time or use even shorter delays with a minimum of feedback to cover the funky sound from the late seventies to the early eighties.



Try adding one of the modulation styles on a slap-back delay.

15 - Subdiv - Subdivision

The subdivision options relate to the tapped tempo. Tap the tempo in quarter notes and then select the subdivision of your choice.

In the following a few suggestions are added. Take these as an inspiration, then be innovative and find your own.

- ♪ Quarter note - Delay repeats play quarter notes according to the tapped tempo. E.g. tap quarter notes at tempo 120 BPM. The delay time of the repeats is now 120 BPM or 500 ms.
- ♪ Dotted eighth note - A subdivision type often used when the delay repeats add to the actual guitar rhythm. Try playing quarter notes with the delay level set relatively high.
- ♪ Eight note triplets - Excellent for fifties style rhythm in 6/8 where you play only on the fourth beat.

CALIBRATING THE INPUT SENSITIVITY

Dual Delay mode

With dual delay mode it is possible to have different subdivisions for left and right outputs. Three combinations are available.

 Left output: Quarter notes
Right output: Dotted eights

 Left output: Quarter notes
Right output: Eight note triplets

 Left output: Sixteen notes
Right output: Dotted eights

If only left output is connected and dual delay mode is used, then left and right delay outputs are summed.

Subdivision example

Tap 500 ms (120 BPM measured in 1/4 notes) with the Subdivision set to 1/8.

The delay time is now recalculated to 250 ms.

Input Level Calibration

Your Nova Delay pedal is per default set up to work well right out the box - just as any other stomp box pedal. However, you can optimize the performance of the Nova Delay pedals AD/DA converters by calibrating the input sensitivity. Follow this step-by-step guide:

- Calibration of the input sensitivity should be done to the max. expected input level. Therefore begin by turning on boosters etc. that are placed prior to the Nova Delay pedal in the signal chain.
- Press and hold the MANUAL button until the 6 delay type LEDs are lit.
- Play with your loudest* sound for a few seconds and watch some of the 6 LEDs turn off one by one. How many that are turned off, depend on the output of your guitar. When no further changes seem to appear, the pedal is calibrated.
- Press any key to exit.
- The pedal is now calibrated

* By your "loudest" sound we mean the sound with the highest dynamic content. This is most likely a clean sound as overdrive sounds per nature are compressed.

DELAY SPILL-OVER



To mute the outputs of the Nova pedal while calibrating you can press and hold the TAP TEMPO switch.

Delay Spill-over

The Nova Delay features true delay spill-over. With true delay spill-over, delay repeats will continue when changing to manual or preset mode, when changing to a different preset and also when going to bypass mode.

This feature gives numerous musical possibilities. As an example you may switch from a long delay with a high level of feedback to a short slap-back type and still hear the long delay repeats ring out across your new delay setting.

Delay spill-over can be set individually for manual mode and for all individual presets:

- Select manual or preset mode.
- If preset mode is selected, then recall the preset for

which you would like to enable or disable delay spill-over.

- Press and hold "MOD STYLE" to toggle between delay spill-over modes.
 - In delay spill-over mode - LEDs 1, 2 and 3 will flash slowly one at a time.
 - In delay mute mode (no spill-over) - LEDs 1, 2 and 3 will rapidly flash one time each.

These indications are also given when changing between manual and preset modes.

ADDITIONAL FEATURES

Tap Tempo Modes

The Nova Delay always has one global tempo. This tempo is either tapped in via the TAP TEMPO switch, audio tap or or dialed in via the DELAY knob.

Manual mode

In manual mode it is always the global tempo that applies.

Preset mode

When switching from manual mode to preset mode you can set up whether it is the delay time stored in the preset or the global tempo, that should apply.



As explained earlier the actual delay time also depends on the selected sub-division.

To switch between using the stored delay time or the global tempo when entering preset mode:

- Go to preset mode by pressing PRESET.
- Press and hold "TYPE" for 1 second.
 - Steady PRESET key LED indicates that you are using the global tempo.

- Flashing PRESET key LED indicates that you are using the stored delay time.

Cool Features via ON/OFF and TAP TEMPO switches

Tap tempo and on/off are the main functions assigned to the ON/OFF and TAP/TEMPO switches. However, several other features can be accessed using these switches thus giving you even more control at the tip of your feet.

See current preset number

What is the current preset-number? As explained earlier you can press the PRESET button to see the current preset number. You can also see the current preset number following this procedure:

- Press TAP TEMPO once immediately followed by pressing the ON/OFF switch.

ADDITIONAL FEATURES

Change presets

You may step between the 9 presets (1-9) by pressing the PRESET button several times. However, you can also step between presets following this procedure:

- Press TAP TEMPO once and tap the ON/OFF switch repeatedly to step between presets 1-9.



As opposed to stepping through presets using the PRESET button, you can change the preset also from manual mode when using this method. The advantage using this method is that the preset will not be recalled/activated until you go to preset mode.

Preset Range Limitation

Assuming that you never use more than 3 presets, you may prefer not to step through all nine presets 1-9 when going from e.g. preset #3 to #2.

(#3, #4, #5, #6, #7, #8., #9, #1, #2)

Assume that you want to use only presets 1, 2 and 3.

- Press and hold MANUAL until calibration mode is entered.

- Turn MOD LEVEL and select P3.
- Press any key to exit the menu.

You are now only able to toggle through presets 1, 2 and 3.

To return to using all 9 presets: Follow the procedure described above and select P9 instead of P3.



Note that limiting the range of presets to scroll through will NOT delete presets located outside the selected range.

Delay Time in BPM or Milliseconds

The delay time can be displayed in either milliseconds or BPM (beats per minute).

To alternate between BPM and ms, press and hold the SUBDIV button.

TECHNICAL SPECIFICATIONS

Analog Inputs

Connectors:	1/4" phone jacks w. mono-sense
Input type	Single ended
Impedance:	1 MOhm
Max. Input Level:	16 dBu @ 12V supply

Analog Outputs

Connectors:	1/4" phone jacks w. mono-sense
Max. Output Level:	16 dBu @ 12V supply
Output type	Balanced/Single ended w. ground sense
Impedance	0 Ohm
Sense input impedance	225 ohm

Overall data

D to A Conversion	24 bit, 128 x oversampling bitstream
A to A delay	1.65 ms
Dynamic range	106/98 dB, 20 Hz to 20 KHz @ Input level 16/-2 dBu, not A-Weighted < -90 dB (0.0032%) @ 1 kHz, I/O Level 16 dBu, Load > 2400 Ohm
THD	+0.1/-0.2 dB, 20 Hz to 20 KHz
Frequency Response	< -100 dB, 20 Hz to 7 KHz, < -94 dB, 7 kHz to 20 KHz
Crosstalk	

EMC

Complies with:	EN 55103-1 and EN 55103-2 FCC part 15, Class B, CISPR 22, Class B
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Environment

Operating Temperature:	32° F to 122° F (0° C to 50° C)
Storage Temperature:	-22° F to 167° F (-30° C to 70° C)
Humidity:	Max. 90 % non-condensing

General

Finish:	Anodized aluminum front Plated and painted steel endcaps
Dimensions:	130 x130 x 55mm
Weight:	765 g
Mains Voltage	100 to 240 VAC, 50 to 60 Hz (auto-select) AC wall adapter. AC adapter supplies 12VDC minimum 0.3A to pedal.
Power Consumption	<5 W
Warranty Parts and labor	1 year

Due to continuous development,
these specifications are subject to change
without notice.

PRESETS

The Nova Delay is delivered with the following presets in locations P1 to P9. When storing your own favorite settings these presets will be overwritten.

Preset #1 - Dynamic

Delay time	-	Tap Tempo	Global
Feedback	30%	Spill-over	On
Color	80%	Mod Style	#0
Mod level	0%	Type	Dynamic
Mix	25%	Sub-div	

Preset #2 - Tape

Delay time	350ms	Tap Tempo	Preset
Feedback	40%	Spill-over	Off
Color	0%	Mod Style	#3
Mod level	100%	Type	Delay Line
Mix	40%	Sub-div	

Preset #3 - UT00

Delay time	-	Tap Tempo	Global
Feedback	0%	Spill-over	On
Color	100%	Mod Style	#3
Mod level	100%	Type	Delay Line
Mix	50%	Sub-div	

Preset #4 - Slap

Delay time	120	Tap Tempo	Preset
Feedback	0%	Spill-over	Off
Color	50%	Mod Style	#0
Mod level	0%	Type	Slapback
Mix	30%	Sub-div	

Preset #5 - PingPong

Delay time	-	Tap Tempo	Global
Feedback	63%	Spill-over	On
Color	75%	Mod Style	#1
Mod level	50%	Type	PingPong
Mix	20%	Sub-div	

Preset #6 - Mod Pan

Delay time	2290ms	Tap Tempo	Preset
Feedback	80%	Spill-over	On
Color	100%	Mod Style	#3
Mod level	100%	Type	Pan
Mix	50%	Sub-div	

Preset # 7 - Analog Solo

Delay time	-	Tap Tempo	Global
Feedback	15%	Spill-over	On
Color	50%	Mod Style	#2
Mod level	75%	Type	Dynamic
Mix	28%	Sub-div	



Preset # 8 - Spacey

Delay time	527ms	Tap Tempo	Preset
Feedback	38%	Spill-over	On
Color	100%	Mod Style	#2
Mod level	100%	Type	Delay Line
Mix	50%	Sub-div	



Preset #9 - Reverse

Delay time	1000ms	Tap Tempo	Preset
Feedback	0%	Spill-over	Off
Color	100%	Mod Style	#0
Mod level	0%	Type	Reverse
Mix	100%	Sub-div	

