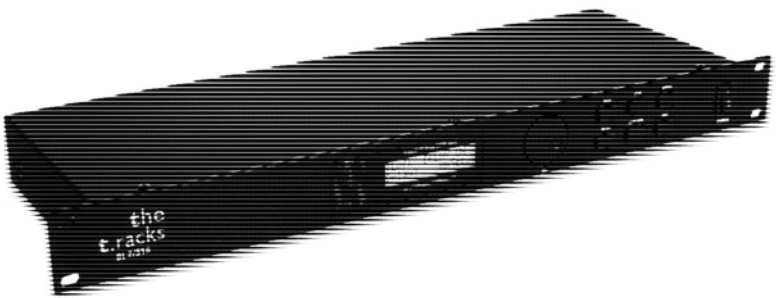
the t.racks

DL 2/918

delay line controller



th•mann
MUSIC IS OUR PASSION

user manual

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1 General notes

This user manual contains important information on safe operation of the device. Read and follow all safety notes and all instructions. Save this manual for future reference. Make sure that it is available to all persons using this device. If you sell the device to other users, be sure that they also receive this manual.

Our products are subject to a process of continuous development. We therefore reserve the right to make changes without notice.

Symbols and signal words

This section provides an overview of the symbols and signal words used in this user manual.

Signal word	Meaning
DANGER!	This combination of symbol and signal word indicates an immediate dangerous situation that will result in death or serious injury if it is not avoided.
NOTICE!	This combination of symbol and signal word indicates a possible dangerous situation that can result in material and environmental damage if it is not avoided.

Warning signs	Type of danger
	Warning – high-voltage.
	Warning – danger zone.

2 Safety instructions

Intended use

This device is intended to be used for time alignment of audio signals in sound reinforcement systems. Use the device only as described in this user manual. Any other use or use under other operating conditions is considered to be improper and may result in personal injury or property damage. No liability will be assumed for damages resulting from improper use.

This device may be used only by persons with sufficient physical, sensorial, and intellectual abilities and having corresponding knowledge and experience. Other persons may use this device only if they are supervised or instructed by a person who is responsible for their safety.

Safety

DANGER!

Danger for children

Ensure that plastic bags, packaging, etc. are disposed of properly and are not within reach of babies and young children. Choking hazard!

Ensure that children do not detach any small parts (e.g. knobs or the like) from the unit. They could swallow the pieces and choke!

Never let children unattended use electrical devices.

DANGER!

Electric shock caused by high voltages inside

Within the device there are areas where high voltages may be present. Never remove any covers.

There are no user-serviceable parts inside.

DANGER!

Electric shock caused by short-circuit

Always use proper ready-made insulated mains cabling (power cord) with a protective contact plug. Do not modify the mains cable or the plug. Failure to do so could result in electric shock/death or fire. If in doubt, seek advice from a registered electrician.

NOTICE!

Risk of fire

Do not cover the device nor any ventilation slots. Do not place the device near any direct heat source. Keep the device away from naked flames.

NOTICE!

Operating conditions

This device has been designed for indoor use only. To prevent damage, never expose the device to any liquid or moisture. Avoid direct sunlight, heavy dirt, and strong vibrations.

NOTICE!

Power supply

Before connecting the device, ensure that the input voltage (AC outlet) matches the voltage rating of the device and that the AC outlet is protected by a residual current circuit breaker. Failure to do so could result in damage to the device and possibly injure the user.

Unplug the device before electrical storms occur and when it is unused for long periods of time to reduce the risk of electric shock or fire.

3 Installation and operation

Unpack and carefully check that there is no transportation damage before using the unit. Keep the equipment packaging. To fully protect the device against vibration, dust and moisture during transportation or storage use the original packaging or your own packaging material suitable for transport or storage, respectively.

Establish all connections as long as the unit is switched off. Use the shortest possible high-quality cables for all connections.

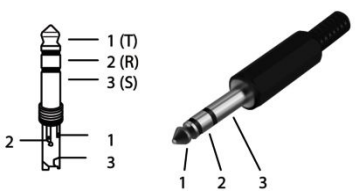
XLR connectors for signal inputs and outputs

Balanced female XLR panel connectors are used for the signal inputs. Male XLR panel connectors are used for the signal outputs The figure and the table show the XLR pin assignment.

1	Ground
2	Signal (+)
3	Signal (–)

Jack plug for signal inputs and outputs

The figure and the table show the pin assignment of a balanced ¼-inch (6.35-mm) jack plug.



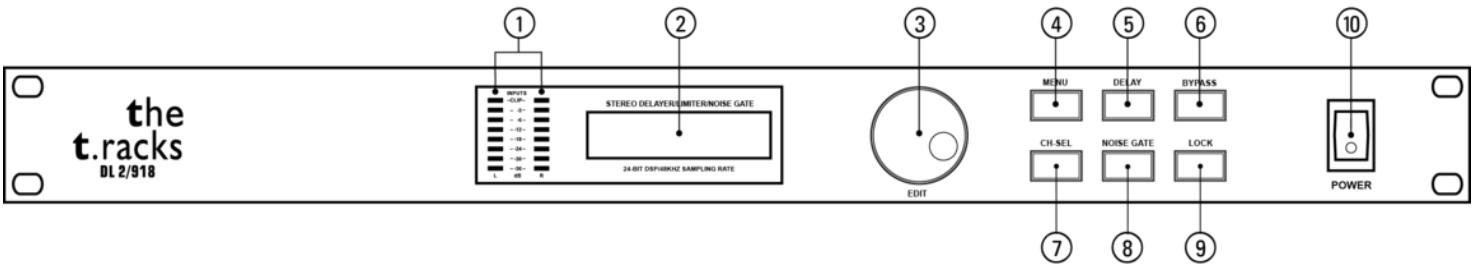
1 (Tip)	Positive signal (+)
2 (Ring)	Negative signal (–)
3 (Sleeve)	Ground, shielding

Rack mounting

The unit has been designed for rack mounting in a standard 19-inch rack; it occupies one rack unit.

4 Connectors and controls

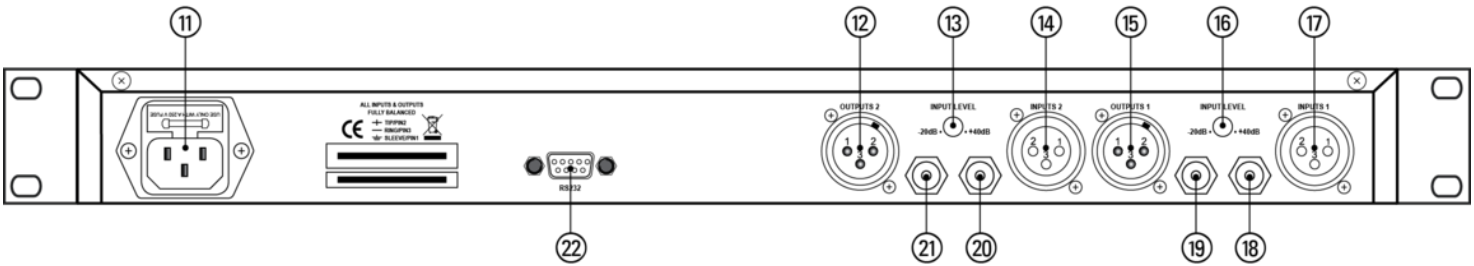
Front panel



1	INPUTS Level meter LEDs for left and right channels. The top-most "CLIP" LEDs light up when the unit's input level is too high. In this case, decrease the input level at the signal source or use the corresponding "INPUT LEVEL" controls (13, 16) on the rear panel.
2	Display Shows menu options and values set.
3	EDIT Jog wheel for convenient value setting.
4	MENU Calls up the menu for setting up delay options (units, steps).
5	DELAY Enables setting up the delay with the jog wheel.

6	BYPASS Enables or disables the delay function.
7	CH-SEL Calls up the menu for channel selection.
8	NOISE GATE Calls up the menu for setting the noise gate threshold.
9	LOCK Locks the current settings and protects against unintentional changes.
10	POWER Power on/off switch. Switches the unit on and off.

Rear panel



11	Plug for mains cable with fuse holder
12	OUTPUTS2 Male XLR panel connector as signal output for channel 2 for direct connection with a mixer, power amplifier, or a recording device.
13	INPUT LEVEL Control for adjusting the input sensitivity for channel 2 in the range from –20 dB to +4 dB

14	INPUTS2 Female XLR panel connector as signal input for channel 2
15	OUTPUTS1 Male XLR panel connector as signal output for channel 1 for direct connection with a mixer, power amplifier, or a recording device.
16	INPUT LEVEL Control for adjusting the input sensitivity for channel 1 in the range from –20 dB to +4 dB
17	INPUTS1 Female XLR panel connector as signal input for channel 1
18	¼-inch (6.35-mm) jack as signal input for channel 1
19	¼-inch (6.35-mm) jack as signal output for channel 1 for direct connection with a mixer, power amplifier, or a recording device.
20	¼-inch (6.35-mm) jack as signal input for channel 2

21	¼-inch (6.35-mm) jack as signal output for channel 2 for direct connection with a mixer, power amplifier, or a recording device.
22	Serial interface, no function

5 Operation

Power on

When all connections have been established, turn on the device using the main switch (10). The display shows the last set delay value and the last used unit. You can adjust the delay time by turning the jog wheel.

The delay time can be set separately for either channel in the range from 0 to 2730 ms (corresponding to 936.4 metres or 3074 feet).

Select options

The delay can be set as delay time (in milliseconds) or as the corresponding distance (in metres or feet). Based on the speed of sound, a delay time of 1000 ms corresponds to a distance of 343 metres (1126 feet). The delay time can be set in steps of 1 ms or 100 ms.

To select the delay options, press the *[MENU]* button. Using the jog wheel, select the *'Delay Tune'* option to select the step width or the *'Del Count Sel'* option to set the unit. Then press the *[MENU]* button. The corresponding submenu opens.

Select between either *'100ms'* and *'1ms'* or *'ms'*, *'metres'*, and *'feet'*. Confirm your selection with the *[DELAY]* button.

Bypass delay

If you temporarily want to switch off the set delay without having to change the value, press the *[BYPASS]* button. The text *'DELAY OFF'* appears in the top line of the display.

To switch on the delay again, press the *[BYPASS]* button again. The text *'DELAY ON'* appears in the top line of the display.

Select channel

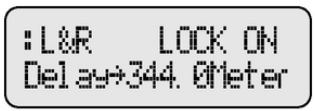
The set delay may affect either both channels or only one of them. To change the setting, press the *[CH-SEL]* button twice. Using the jog wheel, you can select between *'Left'*, *'Right'*, and *'L&R'*. Confirm your selection with the *[DELAY]* button.

Set noise gate threshold

The noise gate threshold specifies the level below which the output signal is muted. To change the setting, press the *[NOISE GATE]* button.

Using the jog wheel, you can select a value between –66 dB and –24 dB. Confirm your selection with the *[DELAY]* button.

Lock settings



To prevent unintentional changes of your values set, you can lock the settings of the unit. To this end, press the *[LOCK]* button. The text *'LOCK ON'* appears in the top line of the display.

To unlock, press the *[LOCK]* button again. The display shows the normal state again.

6 Technical specifications

Input	Female XLR panel connector, ¼-inch (6.35-mm) jack (balanced)
Input impedance	40 kΩ (balanced) 20 kΩ (unbalanced)
Input level	–20 dB…+4 dB
Output	Male XLR panel connector, (balanced) ¼-inch (6.35-mm) jack
Output impedance	66 Ω (balanced) 33 Ω (unbalanced)
Power consumption	10 W
Frequency response, ±1 dB	20 Hz…20 kHz
Dynamic range	> 110 dB, 20 Hz … 20 kHz
Signal-to-noise ratio	> 95 dB, 20 Hz … 20 kHz
Distortion	< 0.01 %, 1 kHz, 0 dB

AD/DA converter	24-bit Sigma-Delta
Sampling rate	48 kHz
Voltage supply	100 V … 240 V ~, 50/60 Hz
Fuse	5 mm × 20 mm, 1 A, 250 V, slow-blow
Dimensions (W × H × D)	482 mm × 45 mm × 152 mm (18.98 in. × 1.77 in. × 5.98 in.) (1 rack unit)
Weight	3 kg (6.61 lbs)

7 Protecting the environment

Disposal of the packaging material

For the transport and protective packaging, environmentally friendly materials have been chosen that can be supplied to normal recycling.

Ensure that plastic bags, packaging, etc. are properly disposed of.

Do not just dispose of these materials with your normal household waste, but make sure that they are collected for recycling. Please follow the notes and markings on the packaging.

Disposal of your old device

This product is subject to the European Waste Electrical and Electronic Equipment Directive (WEEE). Do not dispose with your normal household waste.

Dispose of this device through an approved waste disposal firm or through your local waste facility. When discarding the device, comply with the rules and regulations that apply in your country. If in doubt, consult your local waste disposal facility.

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