

USER'S MANUAL



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PRECAUTIONS

WARNING - THIS APPARATUS MUST BE EARTH-ED

Use only a three wire grounding type line cord, like the one supplied with the Finalizer.

Be advised that different operating voltages require the use of a different type line cord and attachment plug. In doubt contact your TC distributor.

Check the voltage in your area and use the correct type.

Voltage	Line plug according to standard
110-125V	UL817 and CSA C 22.2 no. 42
220-230V	CEE 7 page VII, SR section 107-2-D1/IEC 83 page C4
240V	BS 1363 of 1984. Specification for 13A. fused plugs and switched and un-switched socket outlets

See table below:

CAUTION - Do not open the Finalizer.

Risk of electric shock inside. There are no user-serviceable parts inside. Refer servicing to qualified service personnel only.

Mount the Finalizer with a little space above and below in a well ventilated rack. Don't block the top or bottom.

To prevent electrical shock or fire hazard, do not expose the Finalizer to rain or moisture.

Do not rely solely on the front screws when mounted in touring rack. Support the back of the Finalizer as well.

Please report any shipment damage or equipment malfunctions to your dealer, TC distributor or the TC head office in Denmark.

WELCOME

Congratulations on the purchase of your new Finalizer. We hope that you will have as much pleasure using it as we had making it.

The general control is accomplished by moving the cursor using the PARAMETER keys.

Jumping between bands using the BAND keys.

Changing block by using the BLOCK keys.

Change page using the MENU keys and decrease/increase values by turning the ADJUST wheel.

The rest is simple. You select the area that you wish to control by pressing the function keys on the front of the Finalizer; i.e., if you want to recall, you press the RECALL key.



About this Manual

Many people in the music business have an aversion to reading manuals. We understand that. So, if you feel like starting without reading the whole manual, simply Plug & Play. You can always use the manual for checking out areas that you have questions about, or if you want to dig deeper into the unit, refer to the Table of Contents for further information.

On the other hand, you might want to know a little more about the Finalizer before you start pressing keys. The manual will take you step by step through all of the Finalizer's functions. If you want to read about a specific function, please refer to the Table of Contents.

FRONT PANEL

Electronic power switch

»Easy touch«

Keep pressed for more than
1 second to turn device off.

Output PPM

High resolution meters

SoftClip LED

Indicates that output is clipped



PC Card slot

Presets may be copied
to/from a standard memory
card.

INDICATORS

Overload

Lights up if internal overload
occurs.

Sample Rate Indicator

48000 Hz
44100 Hz
32000 Hz

MIDI In

MIDI receive indicator.

Card

Indicates presence of a valid
memory card.

Working

Indicates that some calcula-
tion is going on.

Edited

Preset has been edited.

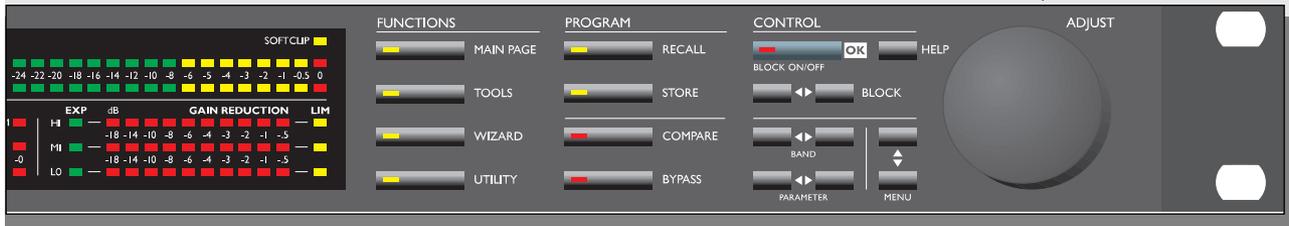
Input PPM

Expander
Active
Indicators

Gain
Reduction
Meters

Limit
LED's

Adjust wheel
Sets parameter values and preset numbers.



FUNCTIONS SECTION

Main Page

This button gives you access to edit the entire signal flow, from input to output.

Tools

This key gives you access to a lot of useful tools for optimizing your material.

Wizard

The Wizard will do some of the hard work for you.

Utility

MIDI, Security, Memory management and much more is located here.

PROGRAM SECTION

Recall

Recall presets.

Store

Store and name presets.

Compare

Compare the sound you have right now with either a leveled bypass or the original preset.

Bypass

Bypass the signal processing.

CONTROL SECTION

OK

Confirm operations and switch individual blocks on/off.

Help

Get help on selected display function

Block < >

Select which block to edit on the main page.

Menu up/down

Vertically oriented menu selector.

Parameter < >

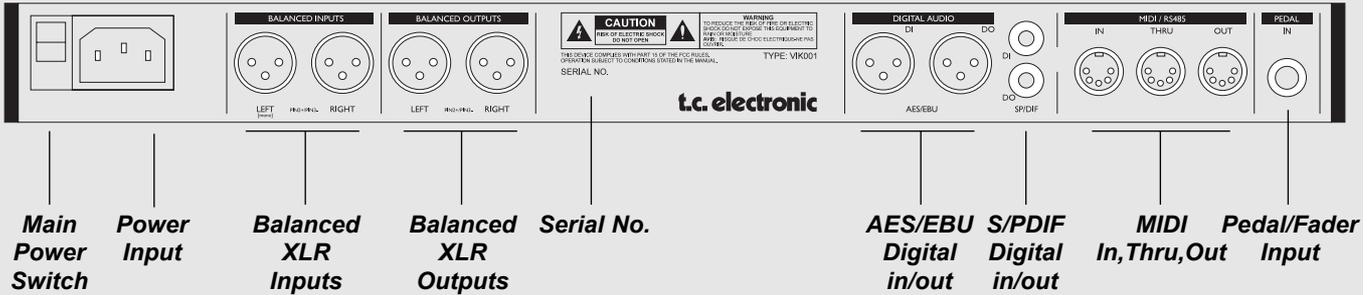
Moves horizontally for selection of parameter to be modified.

Band < >

Select between the three bands on the com/lim/exp pages.

On the EQ page, it selects which of the six bands/level are displayed and ready for modification.

REAR PANEL



NOTES:

To accommodate international regulations, we have also added a rear panel power switch. You don't need to use the power switch on the rear panel. Use the front panel power switch instead.

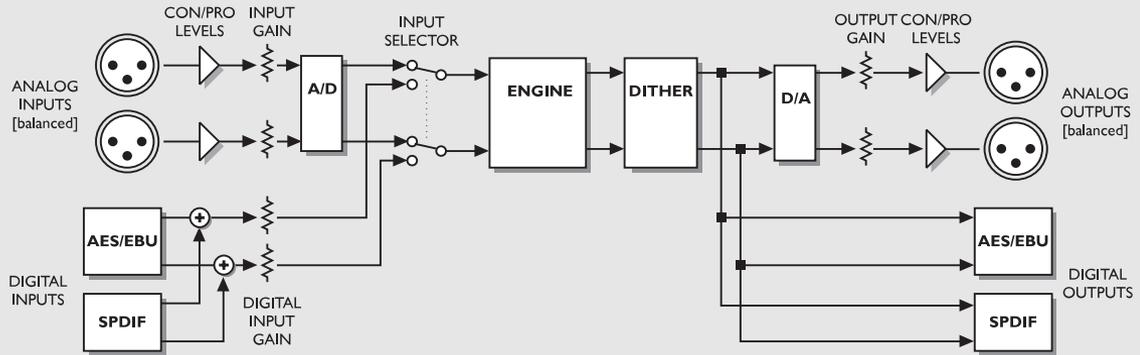
Pin 2 is »hot« on all XLR's (IEC and AES standards).

If you are connecting the Finalizer to unbalanced equipment, you must tie pins 1 and 3 together in the cable ends away from the Finalizer.

We have reserved the two unused pins on the MIDI connectors for an optional RS485 interface. Therefore, if you are connecting the Finalizer to other equipment that use these pins, please make sure the cable is a 3-wire standard MIDI type (not a five wire MIDIPLUS type).

If you want to use the pedal input, make sure it is a momentary »make« type.

SIGNAL FLOW



Notes regarding the signal flow:

The AES/EBU and the SPDIF inputs are connected internally. Therefore, do not connect cables to both AES/EBU and SPDIF inputs at the same time.

As you can see from the block diagram, signals are present on all outputs, all of the time. To make the dithering circuit work appropriately, you must tell the system whether your main output is analog or digital (the I/O menu).

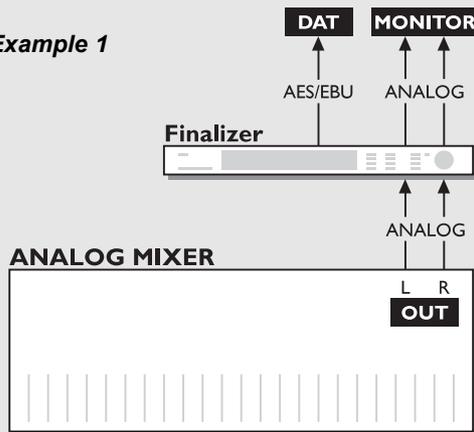


Finalizer Setup

The Finalizer is carefully designed to optimize the overall level and enhance the energy in your mix. The use of the three band compressor, limiter and expander makes the dynamics section of the Finalizer very flexible, while maintaining the fidelity of the original material. The dynamics section, in a combination with a normalizer and a five band equalizer, gives you a very powerful tool, to finish the last details of your mix.

Because the Finalizer can be used in different applications, we propose a couple of different setups.

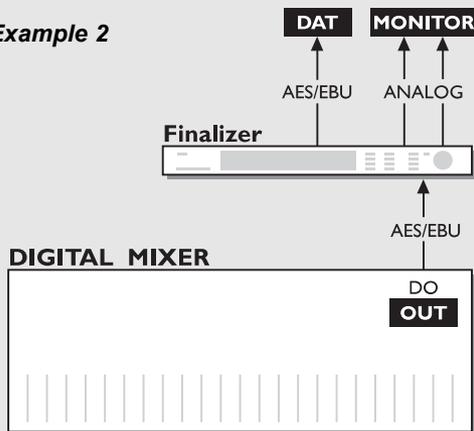
Example 1



Setup with an analog mixing console and a digital recording device.

1. Connect the analog output of your mixer to the analog input of the Finalizer.
2. Connect the digital output of the Finalizer to your digital recording device.
3. Connect the analog output of the Finalizer to your monitor system.

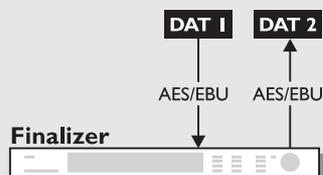
Example 2



Setup with a digital mixing console and a digital recording device

1. Connect the digital output of your mixer to the digital input of the Finalizer.
2. Connect the digital output of the Finalizer to your digital recording device.
3. Connect the analog output of the Finalizer to your monitor system.

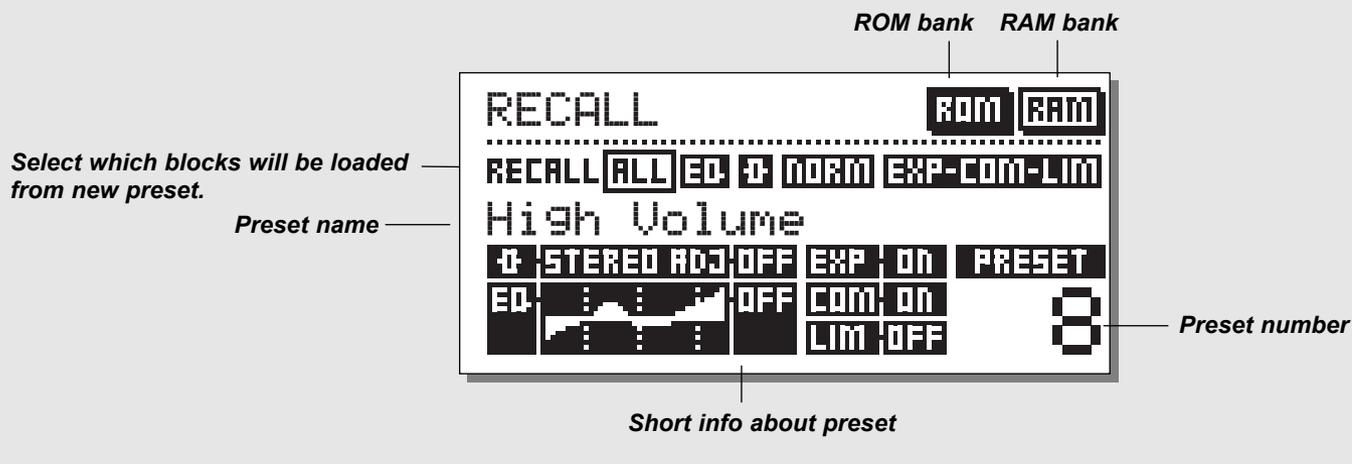
Example 3



Mastering from DAT to DAT

1. Connect the digital output of DAT #1 to the digital input of the Finalizer.
2. Connect the digital output of the Finalizer to the digital input of DAT #2.

RECALL



Recall

When you wish to recall a preset, simply use the ADJUST wheel to scroll through the presets and press OK to recall.

The OK key will be blinking while you are previewing, indicating that the shown preset is not recalled yet.

It is also possible to recall separate sections of a preset. Select the desired section, using the PARAMETER keys, and press OK.

The Recall Display

In the Recall display, you will see an information section at the bottom of the screen. In this section you are able to see which blocks are turned on in the current preset, and also a small EQ preview with a miniature icon of the EQ setting.

In the upper right corner, you see an indication of which bank you are previewing.

Factory/User Presets

Factory Presets



Your own Presets



Preset banks

The Finalizer contains two different preset banks.

The RAM bank can hold up to 128 presets.

The RAM preset bank is located after the ROM bank. This means that you scroll through the ROM presets to enter the RAM bank.



For fast RAM/ROM access use the BLOCK keys to switch between the two banks.

Note: When previewing in the RAM bank you will not see the empty RAM space.

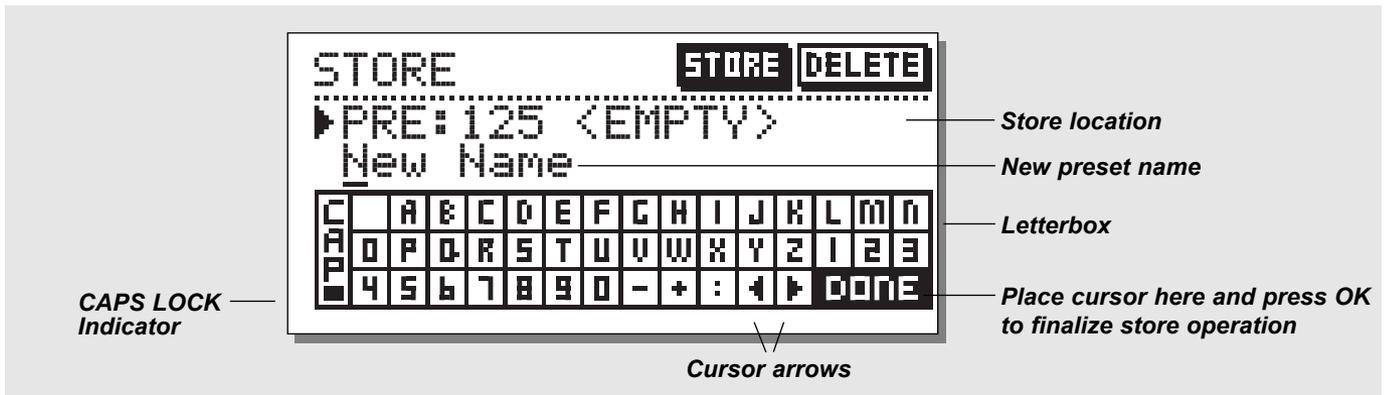
STORE

Store a New RAM Preset

- Press the **STORE** button
- Select a location for your new preset *[dial between preset 1 to 128]*
- Move the cursor to the new name line and dial in the new preset name *[find letter with ADJUST and confirm with OK]*
- Move the cursor to **DONE** and press **OK** to finalize store operation.

Store with the same name:

If you want to store the preset with the existing name, simply select the RAM location to store it in by using the ADJUST wheel and press OK (the OK key will be blinking while you search for a suitable RAM space). The Finalizer will now tell you “STORED” in a pop-up window and return to the main page.



The Letterbox

When you want to change the name of the preset to store, press the MENU down key. You are now able to write a new name using the letterbox. Simply dial the ADJUST wheel and press OK to select new letters.

Select CAP, by pressing OK, to change case.

When you have changed the name, select **DONE** in the Letterbox and press OK to Store.



You can use the PARAMETER keys to move the cursor.

Delete a Preset

When you want to delete a preset, simply select Delete using the BLOCK keys, select the preset to be deleted, and press OK.

Using a Memory Card:

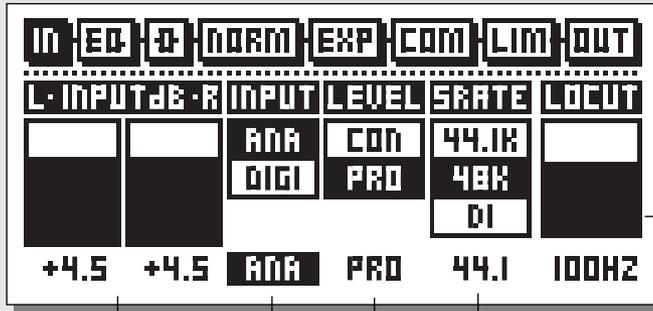
When you wish to use a memory card, simply insert the card in the Finalizer. The Finalizer will now autodetect your card and the Store and Recall facilities will be attached to the memory card. The Finalizer will now use the memory card as a normal RAM bank. When you remove your memory card, the Finalizer will switch back to the internal RAM.

If the format of the memory card is not correct, the Finalizer will detect this immediately.

Card types

Type 1 PC Cards with minimum 64 KBytes of SRAM.

MAIN PAGE *Input*



Set input levels Select input Select between con/pro analog input levels.

LowCut Filter

Sample Rate:
44.1kHz, 48kHz
or from Digital Input

Select the IN section on the Main page by pressing the BLOCK keys.

These global level controls should be set to optimize the performance of the 20 bit A to D converter in the Finalizer.

Basic operation

Press the PARAMETER keys to move the cursor, and turn the ADJUST wheel to change values.

Left & Right

The input bars can be operated individually or in common. Highlight both bars for common operation by pressing the PARAMETER keys. The range of the input bars depends on the input type (Analog/Digital) and the input level (Professional/Consumer).

Note: The input bars are always common when digital input is selected.

Ranges

Analog Inputs

Consumer (-10 dBu): -16 dB to +10 dB
Professional (+6 dBu): -6 dB to +16 dB

Digital Inputs

-16 dB to +6 dB

Sample Rate (Srate):

Select master clock
44.1 kHz/48 kHz/DI

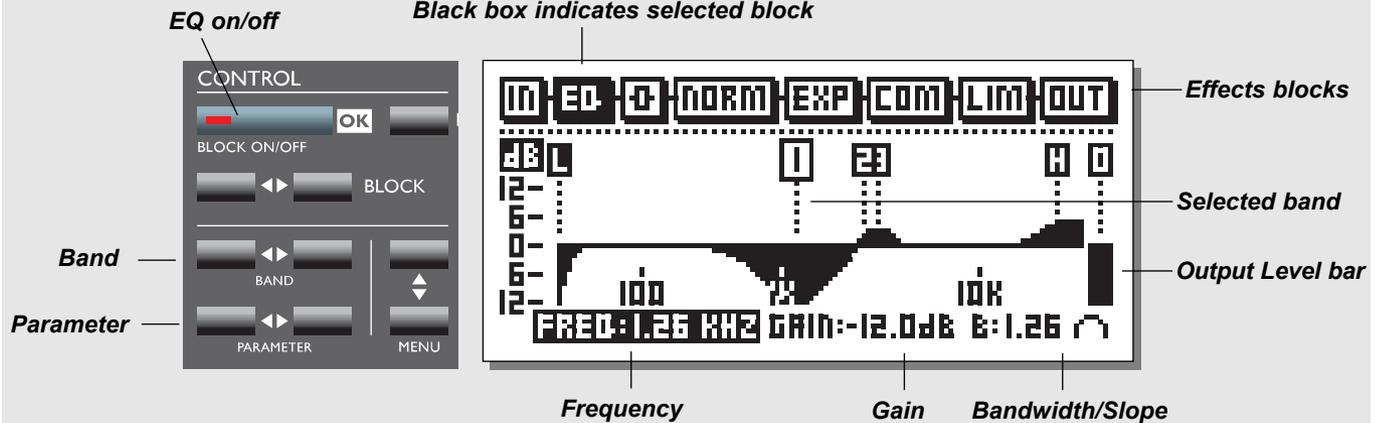
When Digital Input is selected, the external clock frequency will be displayed by the three LEDs on the left hand side of the display. If the Finalizer can not lock, none of the LEDs will be lit.

Note: When changing the input to digital, the sample rate parameter is automatically set to DI.

LowCut

The lowcut filter is global, and is used to filter out any sub-bass frequency or DC contents in the current signal.

MAIN PAGE EQ



EQ

Select EQ by pressing the **BLOCK** keys.

Basic operation

Press **PARAMETER** keys to select frequency/gain/bandwidth/slope.

Turn **ADJUST** wheel to change values.

Press **BAND** keys to jump between the five bands.

EQ Ranges

	Frequency	Gain	Bandwidth/Slope
Low Shelf	19.95 Hz to 5.01 kHz	+/- 12 dB	3, 6, 9, 12 dB/Oct
Bell-shaped filter 1	19.95 Hz to 20 kHz	+/- 12 dB	0.1 Oct to 4.0 Oct
Bell-shaped filter 2	19.95 Hz to 20 kHz	+/- 12 dB	0.1 Oct to 4.0 Oct
Bell-shaped filter 3	19.95 Hz to 20 kHz	+/- 12 dB	0.1 Oct to 4.0 Oct
High Shelf	501.2 Hz to 20 kHz	+/- 12 dB	3, 6, 9, 12 dB/Oct
Output Gain	-	+/- 12 dB	-

EQ Bypass

Press the blue **BLOCK** on/off key to bypass the EQ section.



Reset all filters by pressing both page keys simultaneously.

MAIN PAGE *Inserts*



DIGITAL RADIANCE GENERATOR

Insert type selector

Select between:

- None
- Digital Radiance
- Stereo Adjust
- De-essing

Insert selected

IN	EQ	+	NORM	EXP	COM	LIM	OUT
INSERT:			DIGITAL RADIANCE GENERATOR			DRIVE	CURVE
NONE							+
DRG™							-
STEREO ADJ							
DE'ESSING						5	-

STEREO ADJUST

IN	EQ	+	NORM	EXP	COM	LIM	OUT
INSERT:			STEREO				
NONE			LEFT RIGHT				
DRG™			-----				
STEREO ADJ			MONO				
DE'ESSING			MS: NORMAL LR: CENTER				

This parameter determines the drive of the Radiance Generator.

If your material is asymmetric (percussion/speech etc.) this parameter will change the sound.

Move cursor up to increase the stereo width. Move cursor down to make the signal more mono. Center position is normal.

Move the cursor right/left to adjust center (balance)

DE-ESSER

IN	EQ	+	NORM	EXP	COM	LIM	OUT
INSERT:			THR	RAT	ATH	REL	FREQ
NONE			dB	%:1	mS	S	KHZ CRU
DRG™							~
STEREO ADJ							~
DE'ESSING			-30	4.0	20	.14	4.87

FREQUENCY sets the cutoff freq. of the de-esser.

CURVE sets the frequency characteristics of the dynamic damping filter.

THRESHOLD
RATIO
ATTACK
RELEASE

Inserts

Select Insert by pressing the BLOCK keys

The Finalizer has various insert possibilities. Choose between DRG, Stereo Adjust or De-essing by pressing the MENU up/down keys.

Note: You can use only one insert function at a time.

Basic operation

- Use MENU keys to select insert effect.
- Press the PARAMETER keys to select parameter.
- Turn the ADJUST wheel to change values.

Stereo Adjust

With Stereo Adjust, you can change the stereo information of the signal. Turn the MS parameter clockwise to increase stereo width and counter clockwise to make the signal more mono-like.

You can change the left/right balance with the LR parameter.

De-esser

This algorithm removes unwanted »esses« from vocal material by dynamically reducing the level of high frequencies.

Threshold

Use the ADJUST wheel to change the threshold of the de-esser.

Attack

Use the ADJUST wheel to change the attack time of the de-esser.

Release

Use the ADJUST wheel to change the release time of the de-esser.

Ratio

Use this parameter to adjust the damping ratio of the de-esser.

Frequency

The frequency sets the cut-off frequency of the de-esser.

Curve

With the curve parameter, you select whether the de-esser should work with a bell-shaped or shelving filter.

Digital Radiance Generator

The DRG (Digital Radiance Generator) adds second harmonic distortion to the signal. This kind of distortion is very analog-like, and will add a certain warmth to your material.

Drive

The DRG drive is adjustable from 0 to 10.

Curve

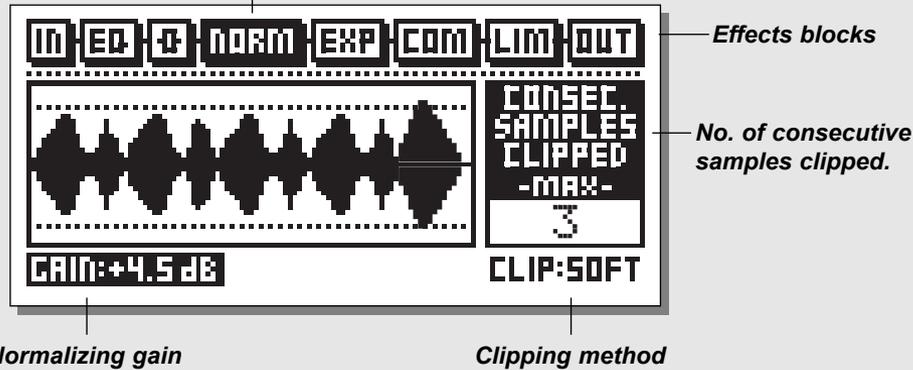
If your material is asymmetric (percussion/speech, etc.), the plus/minus parameter will change the sound of the DRG.



MAIN PAGE *Normalizer*



Black box indicates selected block



Normalizer

Optimizing the level of your material starts in the Normalizer.

Here you have a graphical presentation of the incoming signal, shown as 1 second pictures.

By increasing the gain, you decrease the headroom, shown as two dotted lines.

You should set the gain such that the signal peaks are just hitting the dotted headroom lines.

The Normalizer is capable of gaining +18 dB.

The Clipper

The Normalizer has a build-in limiter, which can be either soft or hard. When the Normalizer limiter is active, it is indicated on the Normalizer LIM LED above the Input Meters.

The Clip Counter indicates the maximum number of consecutive samples clipped within the last second.

If the clips only occur occasionally, and only few samples are clipped per test interval, you do not necessarily have to reduce the gain of the Normalizer.

MAIN PAGE *Expander*

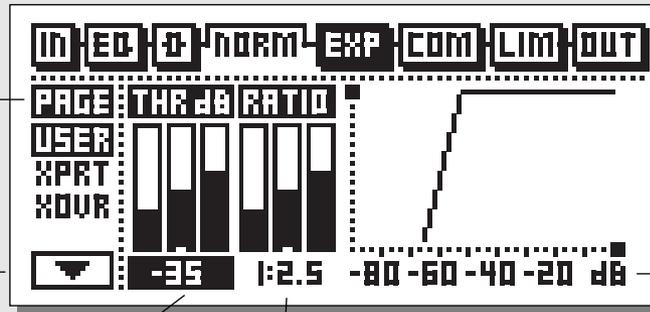


USER PAGE

PAGES

- User page
- Expert page
- Cross-over frequency page

Arrow direction indicates whether the parameter value has been increased or decreased since last recall.



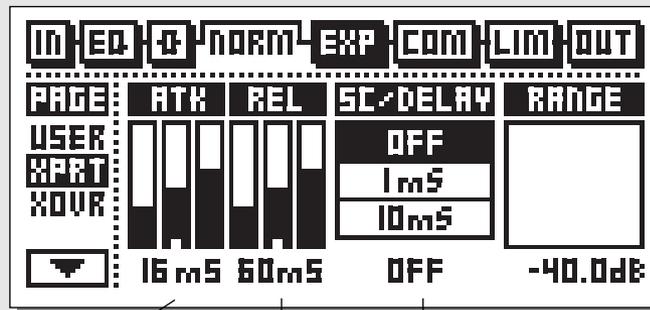
Y-axis is output level.

X-axis is input level.

Expander threshold low/mid/high
Ratio low/mid/high

Use band select cursors to access individual bands.

EXPERT PAGE



Attack time low/mid/high

Release time low/mid/high

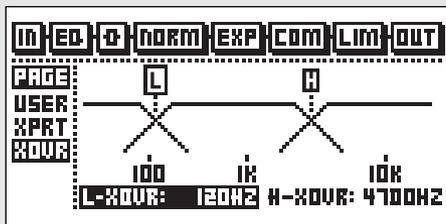
Side chain / delay

This parameter inserts the indicated delay in the main signal path.

The side chain will therefore be able to look ahead on the input signal, enabling it to respond faster to sudden signal changes.

This parameter is common for expander/compressor/limiter.

CROSS-OVER FREQUENCY PAGE



Expander

Select **EXP** by pressing the **BLOCK** keys

Basic Operation

- Press the **PARAMETER** keys to select parameter.
- Turn the **ADJUST** wheel to change values.
- Press the **BAND** keys to select between the three bands.
- Press the **MENU** keys to select User/Xpert/Xover.

User Menu

Threshold

Use the **ADJUST** wheel to change the thresholds of the three bands.

Ratio

Use these parameters to adjust the ratios of the three expander bands.

Expander Monitor

The Expander Monitor gives you a graphical picture of the ratio and threshold settings.

Expert Menu

Press **MENU** keys to enter expert mode (**XPRT**)

Attack

Use the **ADJUST** wheel to change the attack time of the three bands.

Release

Use the **ADJUST** wheel to change the release time of the three bands.

Side Chain / Delay

This parameter adjusts the “look-ahead” delay. This means that your audio signal is delayed, i.e., 10 ms.

By slightly delaying the audio signal, you give the processor a chance to look ahead at the present signal, and will therefore react more accurately than a standard compressor/limiter/expander.

The actual look-ahead delay time is scaled with the attack time individually on all three bands.

Note: This delay time parameter is common for the compressor, limiter and expander.

Cross-over Menu

Press **MENU** keys to enter the cross-over frequency page (**Xovr**)

L-Xovr/H-Xovr

With the L-Xovr and H-Xovr you set the cross-over points of the three bands in the dynamics section.

Note: The cross-over points are common for the compressor, limiter and expander.

The Edit Guide

The symbol in the lower left corner of the display is an edit guide. This indicator will help you get back to parameter values of the latest recalled preset.

Arrow direction indicates whether the parameter value has been increased or decreased since last recall.

Example:

If you have been working on various parameters within a preset and would like to get the original ratios back without changing the attack/release times, simply select the ratio parameters one by one and follow the edit guide.

Expander Bypass

Press the blue **BLOCK** on/off key to bypass the expander section.

MAIN PAGE *Compressor*

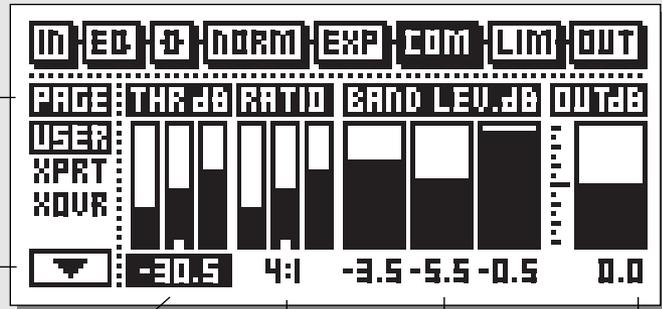


USER PAGE

Page select:

1. User page
2. Expert page
3. Cross-over page

Arrow direction indicates whether the parameter value has been increased or decreased since last recall.



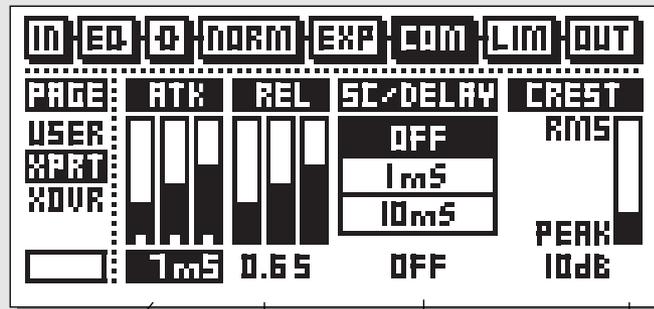
Threshold
low/mid/high

Ratio
low/mid/high

Band levels
low/mid/high

Output level

EXPERT PAGE



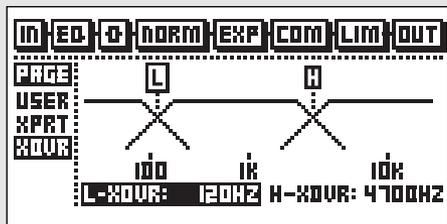
Attack
Times
low/mid/high

Release
Times
low/mid/high

Side chain / Delay
(same as under
expander)

Crest
This parameter determines whether the compressor should react to peaks, RMS (average), or something in between.

CROSS-OVER FREQUENCY PAGE



The Compressor

Select COM by pressing the BLOCK keys

Basic operation

- Press the PARAMETER keys to select parameter.
- Turn the ADJUST wheel to change values.
- Press the BAND keys to select between the three bands.
- Press the MENU keys to select User/Xpert/Xover.

About the Compressor

The compressor section of the Finalizer is divided into three bands. This means that you are able to compress the low/mid/high frequencies separately.

To optimize the output gain and energy in your material, the Finalizer uses auto-makeup gain, meaning that the three bands are gained individually and automatically, depending on how hard the current band is compressed.

User Menu

Threshold

Use the ADJUST wheel to change the thresholds of the three bands.

Ratio

Use these parameters to adjust the ratios of the three compressor bands.

Band Level

The three band levels are used to adjust the spectral balance in the compressor. You are able to change the level of the low, mid and high bands individually, simply by selecting the current band and turning the ADJUST wheel.

Out Level

With this parameter you can adjust the overall output of the compressor.

Expert Menu

Press MENU keys to enter the expert page.

Attack

Use the ADJUST wheel to change the attack time of the three bands.

Release

Use the ADJUST wheel to change the release time of the three bands.

Side Chain / Delay

This parameter adjusts the look-ahead delay. This means that your audio signal is delayed, i.e., 10 ms.

By slightly delaying the audio signal, you enable the processor to look ahead at the present signal, and it will, therefore, react more accurately than a standard compressor/limiter/expander.

The actual look-ahead delay time is scaled automatically with the attack time, individually on all three bands.

Note: This delay time parameter is common for the compressor, limiter and expander.

Crest

This parameter determines whether the compressor should react to peaks, RMS (average), or something in between. For example if the crest parameter is set at 6 dB, the compressor is reacting to RMS values and to peaks 6 dB higher than the current RMS value.

Cross-over Menu

Press MENU keys to enter the cross-over frequency page (Xovr)

L-Xovr/H-Xovr

With the L-Xovr and H-Xovr you set the cross-over points of the three bands in the dynamics section.

Note: The cross-over points are common for the compressor, limiter and expander.

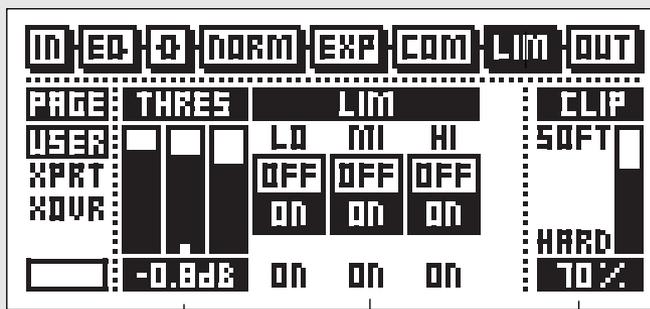
Compressor Bypass

Press the blue BLOCK on/off key to bypass the compressor section.

MAIN PAGE *Limiters*



USER PAGE



Expert mode on/off

Arrow direction indicates whether the parameter value has been increased or decreased since last recall.

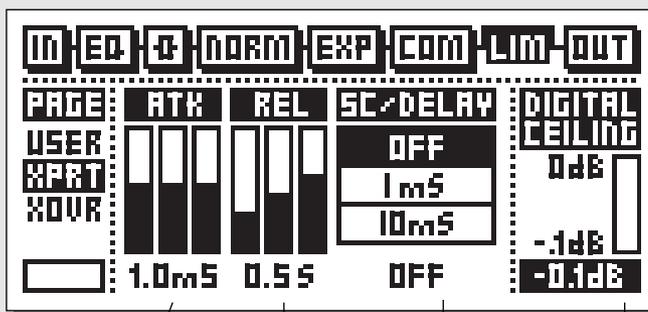
Limiters threshold
low/mid/high

Bypass individual limiter bands.

Clipping method

The clip function smoothly kills any overshoot that might occur after heavy compression or limiting. The higher the percentage, the softer the clip.

EXPERT PAGE



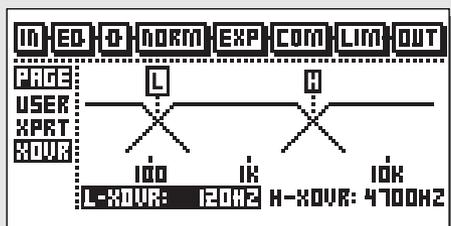
Attack Times
low/mid/high

Release Times
low/mid/high

Side chain / Delay
(same as under compressor / expander)

Digital ceiling
This parameter reduces the full scale (0dB) signal level on the output.

CROSSOVER FREQUENCY PAGE



The Limiter

Select LIM by pressing the BLOCK keys

Basic operation

- Press the PARAMETER keys to select parameter.
- Turn the ADJUST wheel to change values.
- Press the BAND keys to select between the three bands.
- Press the MENU keys to select User/Xpert/Xover.

User Menu

Threshold

Use the ADJUST wheel to change the thresholds of the three bands.

On/Off

Use these parameters to enable/disable the three limiter bands.

Clip

The clip function smoothly kills any overshoot that might occur after heavy compression or limiting. The higher the percentage, the softer the clip.

Expert Menu

Press MENU keys to enter the expert page.

Attack

Use the ADJUST wheel to change the attack time of the three bands.

Release

Use the ADJUST wheel to change the release time of the three bands.

Side Chain / Delay

This parameter adjusts the look-ahead delay. This means that your audio signal is delayed, i.e., 10 ms.

By slightly delaying the audio signal, you enable the processor to look ahead at the present signal, and it will, therefore, react more accurately than a standard compressor/limiter/expander.

The actual look-ahead delay time is scaled automatically with the attack time, individually on all three bands.

Note: This delay time parameter is common for the compressor, limiter and expander.

Digital Ceiling

With the digital ceiling you can adjust the digital maximum output, i.e., if you receive an overload indication on the device connected to the DI/out of the Finalizer, you are able to reduce the output level down by 0.01 dB increments.

Cross-over Menu

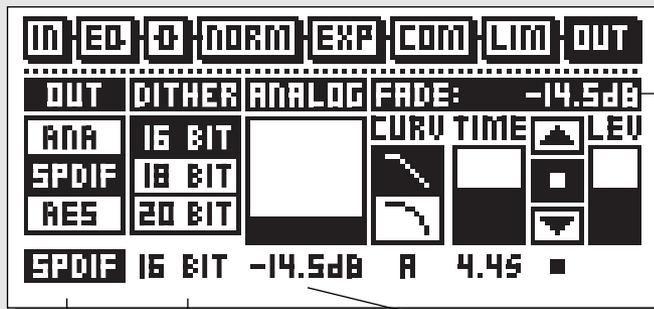
Press MENU keys to enter the cross-over frequency page (Xovr)

L-Xovr/H-Xovr

With the L-Xovr and H-Xovr you set the cross-over points of the three bands in the dynamics section.

Note: The cross-over points are common for the compressor, limiter and expander.

MAIN PAGE *Output*



FADE SECTION

CURVE sets the fade-out curve
TIME sets the fade-out time
FADE up/down/stop
LEVEL set fader level manually.

Note:

If an external fader is connected, all of the above parameters are disabled.

Select primary output
Select no. of bits dithered to:
8 bit
16 bit (default for SPDIF)
18 bit
20 bit (default for analog out)
24 bit (default for AES)

Analog output level
(left and right)

Select the OUT section in the main page by pressing the BLOCK keys

Primary Output

When selecting your primary output, the Finalizer automatically selects a suitable dither.

If you select ANALOG, the Finalizer dithers to 20 bit (the D to A converters are 20 bit).

If you select S/PDIF, the Finalizer dithers to 16 bit.

If you select AES/EBU, the dither is off, meaning that 24 bit raw data is sent out of the Finalizer digital outputs.

Note: There is always signal present on both analog and digital outputs.

Dither

With the dither parameter you can select the desired dither type yourself. Select between: 8, 16, 18, 20, 22, 24 (off).

Note: The dither parameter is always reset when changing the primary output.

Analog

Use the output bar for adjusting the analog output gain.
Range: -16 dB to +6 dB

Auto Fade

The Finalizer is capable of auto-fades up to 60 seconds.

Select the fade curve and the fade time.

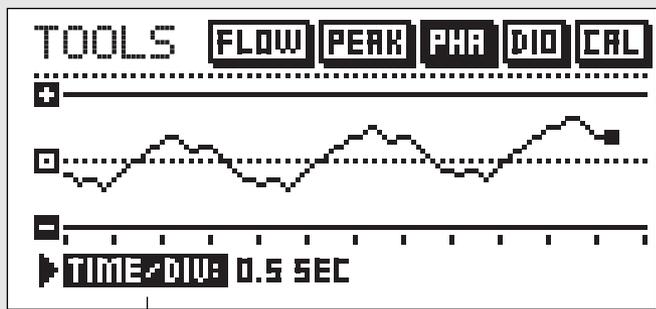
To start the fade, select the fade up/down parameter and turn the ADJUST wheel.

You also have the possibility of a manual fade, simply by selecting the LEV parameter and turning the ADJUST wheel. The manual fade function can also be controlled by the TC Master Fader.

Note: The pedal function in the Utility menu must be set to Fader for external control.



TOOLS *Phase Meter (correlation)*



Time/division
Curve speed

Phase Meter

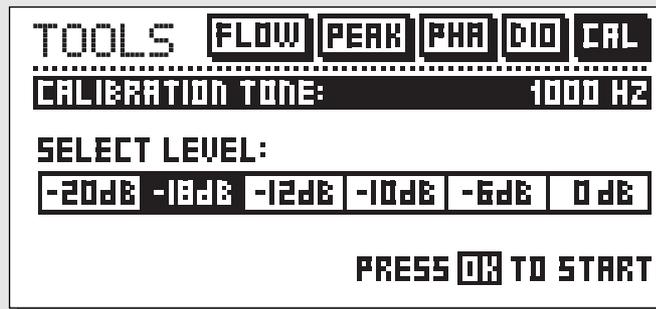
The phase meter show you the phase relationship between the two stereo channels.

*Plus means that the two channels are in phase.
Minus means that the two channels are in anti-phase.*

Time/division

Sets the curve drawing speed.

TOOLS *Calibration Tone*

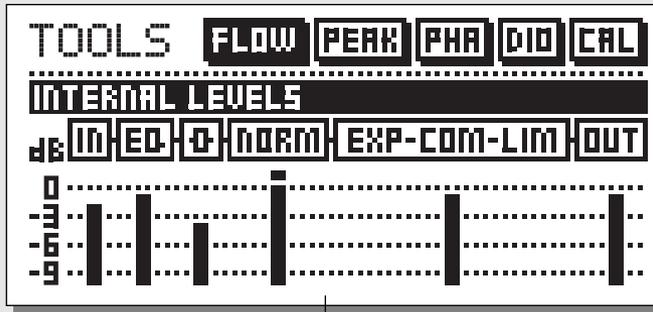


Calibration tone

In the calibration display you have a 1000 Hz test-tone, which will be sent out on the Finalizers outputs at the selected level.

Set the level by using the ADJUST wheel and press OK to activate.

TOOLS *Flow*



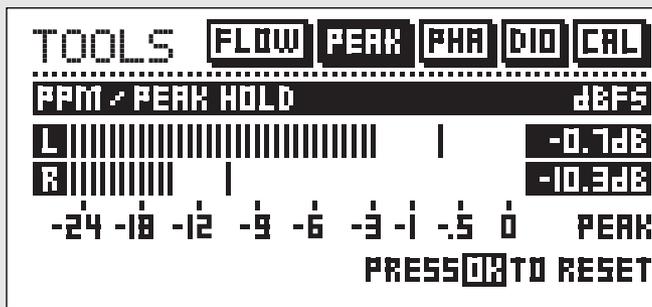
Internal levels (ppm)

Flow

In the Flow Meter, you have six small peak meters, representing the level in the different sections of the Finalizer.

This can be very helpful in a number of situations. I.e. you have an overload indication on the front, but you do not know in which section the overload is located: now you simply press TOOLS and select the Flow meter, and you have instant view of all levels and possible overloads in the Finalizer.

TOOLS *Peak-Hold Meter*



Peak

The Peak-Hold Meter is an output meter with infinite hold. It is possible to see the level of the maximum peak in 0.10 dB precision.

Press OK to reset the meter.

Numeric readout of peak values

TOOLS *Digital I/O (DIO)*

RECEIVED STATUS BITS

TOOLS		FLOW	PEAK	PHA	DIO	CAL
PAGE: RECEIVED STATUS BITS:						
IN	PRE-EMPHASIS:	OFF				
OUT	SOURCE DEVICE:	DAT				
	AUDIO DATA:	16BIT				
	COPYRIGHT:	ONE COPY ONLY				

Pre-emphasis indicator: on/off

Source device: DAT, CD, mixer etc.

Numbers of audio bits received.

Copyright: None, One copy only, Infinite copies

DIGITAL OUT STATUS BITS

TOOLS		FLOW	PEAK	PHA	DIO	CAL
PAGE: COPY ENABLE STATUS BIT OUT						
IN	NO COPY	AES/EBU				
OUT	1 COPY	SPDIF				
	INFIN. COPY	FROM INPUT				
	NO COPY	AES/EBU				

Status bits on digital output:

AES/EBU: Professional usage of status bits.

S/PDIF: Consumer usage of status bits.

FROM INPUT: Status bits received on input are fed through to the digital output.

Copyright

Here you can set the copyrights on the outgoing digital audio.

IN

On this display you have various indicators that tell you what kind of digital signal you are receiving.

Pre-emphasis

This parameter tells whether the incoming signal is pre-emphasized or not.

Source device (Category code).

The device status of the received signal is shown in this indicator.

Audio data

The number of received audio bits is indicated here.

Copyright (Copy inhibit).

Status of the copybits.

OUT

On this display you set up how the Finalizer should send out your material.

COPY ENABLE

Set the copyrights of your material:

- No copies
- 1 copy only
- Infinite number of copies.

Note: The copy protection is only valid with S/PDIF signals.

STATUS BITS OUT

AES/EBU

When AES/EBU is selected the Finalizer will send out its own professional set of status bits, meaning that any incoming ID will be lost. However, in order to take full advantage of the Finalizer's 24 bit resolution you should select AES/EBU to make sure that the receiving device after the Finalizer will accept all 24 bits.

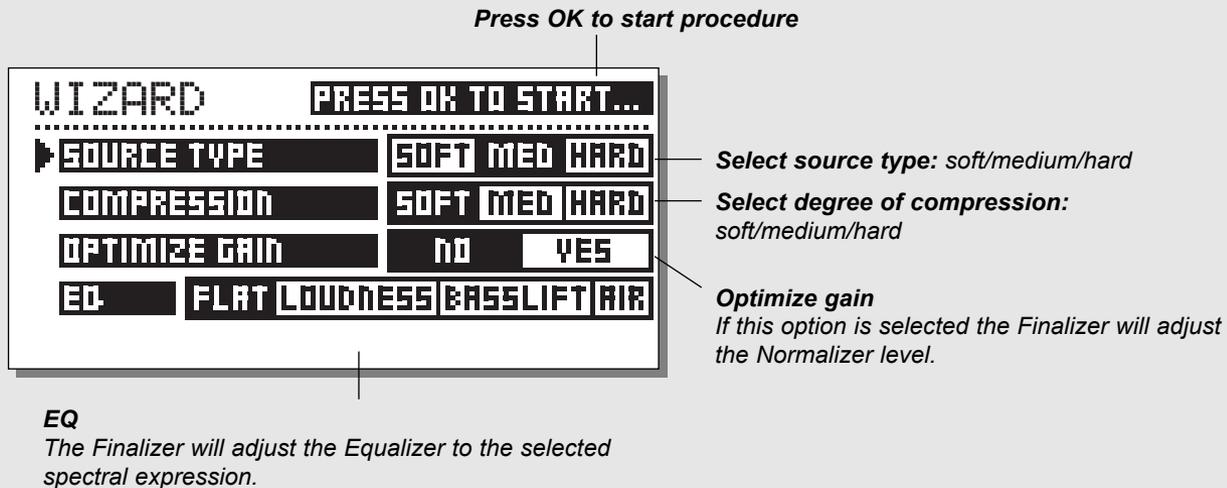
S/PDIF

When S/PDIF is selected, the Finalizer will send its own consumer status bits out, meaning that any incoming ID will be lost. The Finalizer's S/PDIF output carries up to 20 bits. Only the S/PDIF signal contains copy protection information.

From Input

When this setting is selected the Finalizer will send the same information out as it received. However, you still have the possibility to change the copy status.

WIZARD



Wizard - Making the whole thing very simple

Press the WIZARD key.

With the Wizard you set a couple of terms, and the Wizard will select the optimal settings for you: the Normalizer, Compressor, Limiter and EQ.

Select whether your source type is soft, medium or hard, using the ADJUST wheel.
Select which kind of compression you like: Soft, medium or hard.

Do you want your material to be gain optimized? Yes or no.

*Note: If you use auto-gain, the Wizard will be measuring until you stop it.
This means that you can run all of your material through the Wizard to get the optimum level.*

Select which EQ setting you would like: Flat (no EQ), Loudness, Bass-lift or Air.

Press the OK key to carry out the settings of the Wizard.

Press any key to stop the Autogain function.

COMPARE



Listen to original preset

If you place cursor here, you will hear the original preset.

Listen to your edited sound

If you place the cursor here, you will hear the edited sound.

Bypassed signal

Same function as the BYPASS key.

Use the ADJUST wheel to adjust this level for better comparison with the bypassed signal.

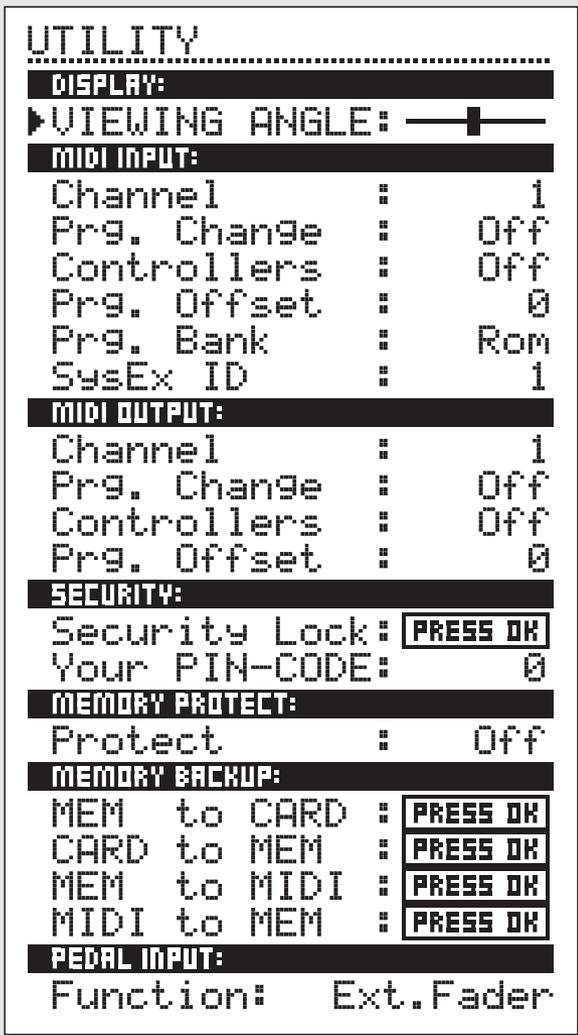
Compare

The reason for adding this compare function is that it can be difficult to estimate what the EQ/dynamics is doing to the sound of your material. Because of the extra gain of the Normalizer and the compressor in-circuit and out-of-circuit comparisons are often difficult to make using the BYPASS key.

That is why we made it possible to reduce the level of your processed setting when comparing it with the bypassed sound. You can even compare with the last recalled preset.

Press the COMPARE key and use the ADJUST wheel to lower the level of your setting.

Then use the PARAMETER keys to compare these different sounds: one, the original; two, your edited preset; or three, the bypassed signal.



How to move around

In the **UTILITY** menu you always move by pressing the **MENU** keys and change values by dialing the **ADJUST** wheel.

Display

Viewing Angle

Adjust for best contrast on the LCD display.

MIDI In

Channel

Sets the receive channel of the Finalizer.

When set to Omni the Finalizer will respond to all channels.

When set to Off no MIDI will be received.

Prg. Change

Sets whether the Finalizer should respond to MIDI program changes or not.

Controllers

Sets whether the Finalizer should respond to MIDI controllers or not.

Prg. Offset

This number is added to the incoming program number.

Example:

If the incoming program number is 10, and the offset is set to -1, the Finalizer will change to program 9.

Program Bank

If this parameter is set to RAM, all received MIDI program changes will recall user (RAM) presets.

If set to ROM, received MIDI program changes will recall factory (ROM) presets.

System Exclusive ID (SysEx ID)

System exclusive ID number of the Finalizer.

MIDI Out

Channel

MIDI transmit channel.

Prg. Change

Sets whether the Finalizer should transmit MIDI program changes or not.

Controllers

Sets whether the Finalizer should transmit MIDI control changes or not.

Offset

This number is added to the outgoing program number.

Security

To security-lock the Finalizer, press OK while this parameter is selected.

When locked, you will have to dial the PIN-code shown below to access the Finalizer.

PIN-code

Sets your PIN-code for the security lock by dialing the ADJUST wheel (See page 36).

If you should forget your PIN-code, please enter the Reset page. This will release the Finalizer from the locked state. (You do not have to run any of the reset functions).

Memory Protect

Protect

This parameter sets the memory protection on or off. When protect is on, the RAM presets between the high and low limits are write protected.

Memory Backup

Mem > Card

Insert a PC Card in the card slot and press OK. All RAM presets of the Finalizer will now be backed up to the memory card.

Card > Mem

Insert the PC Card containing your presets and press OK. All presets will now be stored back into the Finalizer RAM.

Warning:

This action will destroy all existing RAM presets of the Finalizer.

Mem > MIDI

Connect your Finalizer's MIDI output to another Finalizer, a sequencer or any other MIDI recording device. Press OK and the Finalizer will perform a MIDI bulk dump of all RAM presets.

MIDI > Mem

Connect the storing device to the Finalizer's MIDI input and press OK. The Finalizer is now ready to receive a MIDI bulk dump containing RAM presets.

Warning:

This action will destroy all existing RAM presets of the Finalizer.

Pedal Input

Select between: External Fader/Fade up-down/Bypass.

RESET PAGE

Store and load your own
default settings

Enter User data page

Reset system parameters

Clear all user presets

Test Programs

```
RESET
-----
▶ LOAD USER DEFAULT  OK
  STORE USER DEF.    OK
  SET USER NAME      OK
  RESET SYS PARAM.   OK
  CLEAR ALL PRESETS  OK
  RUN TEST PROGRAM   OK
```

Type your name here

and your phone number

```
USER DATA
-----
▶ NAME: Albert E
  PHONE: 123456789

C  A B C D E F G H I J K L M N
A  O P Q R S T U V W X Y Z [ ]
P  4 5 6 7 8 9 0 - + : ◀ ▶ DONE
```

Place cursor here
and press OK to
finalize session.

How to enter the Reset page:

Hold the BYPASS key pressed while powering up.

Move the marker using the MENU keys and press OK to select reset type.

Load User Default

This will reset all system parameters back to a default setup made by you (see Store User Def.). This reset will NOT delete the user presets of the Finalizer.

Store User Def.

When you have a perfect setup of your Finalizer, you are able to store this as your own default setup. This function is very useful, for example when you have finished a special production and want to go back to normal. When you have the perfect setup of your Finalizer, simply select this parameter and press OK to store your default settings.

The User Default includes all system parameters.

Set User Name

This function makes it possible to write your name and phone number into the Finalizer. Press OK to access the user data menu. Use the ADJUST wheel and the MENU keys to write your name and phone number into the Finalizer. Press OK to accept. Your name and phone number will be displayed during power-up.

Reset System Parameters

This will reset all system parameters back to the factory default. This reset will NOT delete the user presets of the Finalizer.

Reset all Presets

This will clear all RAM presets.

TECHNICAL SPECIFICATIONS

Analog Input

Connectors: XLR balanced (pin 2 hot)
Impedance: 15 kOhm
Max. Input Level: +22 dBu
Sensitivity: @ 12 dB headroom: -22 dBu to 10 dBu
A to D Conversion: 20 bit (4 bit, 64 times oversampling)
Dynamic Range: > 105 dB
THD: < 0.003% @ 1 kHz, +10 dB
Frequency Response: 10 Hz - 20 kHz: +0/-0.2 dB
Crosstalk: -60 dB max, 10 Hz to 20 kHz

Analog Output

Connectors: XLR balanced (pin 2 hot)
Impedance: 100 Ohm (active transformer)
Max Output Level: +22 dBu
Output Gain Range: 0 to -32 dB
D to A Conversion: 20 bit (1 bit 128 times oversampling)
Dynamic Range: > 96 dB
THD: < 0.008% @ 1 kHz, +10 dB
Frequency Response: 10 Hz - 20 kHz: +0/-0.3 dB
Crosstalk: -60 dB max, 10 Hz to 20 kHz

Digital Inputs and Outputs

AES/EBU In/Out: XLR
S/PDIF In/Out: Coaxial, RCA Type
Formats: EIAJ CP-340, IEC 958, S/PDIF (20 bit)
AES/EBU (24 bit)
Sample Rates: 32 kHz, 44.1 kHz and 48 kHz

PC-CARD Interface

Connector: Type 1 PC Cards
Standards: PC-CARD 2.0, JEIDA 4.0
Card Format: Supports up to 2 MB SRAM

Control Interface

MIDI: In/Out/Thru: 5 Pin DIN
Pedal: 1/4 inch phone jack

General

Finish: Black anodized aluminum face plate
Painted and plated steel chassis
Dimensions: 19" x 1.75" x 8.2" (485 x 45 x 195 mm)
Weight: 5.2 lbs (2.35 kg)
AC Power: 90 - 240 VAC without switch settings
3 Pin IEC power connector
Battery Life: >10 years

Radio Frequency Immunity/Interference

RFI/ESD: Conforms to FCC Class B,
EN55103-1 (CE), EN55103-2 (CE)

Environment

Operating Temperature: 32°F to 122°F (0°C to 50°C)
Storage Temperature: -22°F 167°F (-30°C to 70°C)
Humidity: Max. 95% non-condensing

All specifications are subject to change without notice.

TROUBLESHOOTING

You press the POWER switch but there is no light.

- The power switch on the rear panel is switched off.

The input PPM meters don't peak out.

- You are using analog inputs, but the input selector in the I/O menu is set to digital in.
- The analog input level is set too low.

No sound through the Finalizer

- You are using analog inputs, but the input selector in the I/O menu is set to digital in.

You cannot turn the power off.

- Hold the power switch pressed for at least 3 seconds.

MIDI IMPLEMENTATION CHART

STUDIO MASTERING PROCESSOR: Finalizer - JUNE 24, 1996 Version 1.0

Function		Transmitted	Recognized	Remarks
Basic Channel	Default	1	1	
	Changed	1-16	1-16	
Mode	Default			
	Messages Altered	X	X	
Note Number		X	X	
	True Voice	X	X	
Velocity	Note ON	X	X	
	Note OFF	X	X	
After Touch	Key's	X	X	
	Ch's	X	X	
Pitch Bend		X	X	
Control Change		0	0	
Prog Change		0	0	
	True#	0-127	0-127	
System Exclusive		0	0	
Common	:Song Pos	X	X	
	:Song Sel	X	X	
	:Tune	X	X	
System real time	:Clock	0	0	
	:Commands	X	X	
Aux Messages	:Local ON/OFF	X	X	
	:All Notes OFF	X	X	
	:Active Sense	X	X	
	:Reset	X	X	
Notes				

O: YES Mode 1: OMNI ON, POLY Mode 2: OMNI ON, MONO
X: NO Mode 3: OMNI OFF, POLY Mode 4: OMNI OFF, MONO

SELF TEST

PRESS ONE OF THE 3 BYPASS KEYS, WHILE POWERING UP, TO ACCESS THE SELF-TEST AND SELECT »RUN TEST PROGRAM«

Turn the ADJUST Wheel to scroll through self tests

Key test

Select Key test by pressing OK.
The keys must be pressed in the order they are requested by the Finalizer to pass the test.
Press OK key again to exit test.

Adjust Wheel test

Select Adjust Wheel test by pressing OK
Turn the Adjust Wheel to 30 and back to 0 to pass test.
Press OK key again to exit test.

LED test

Select Led test by pressing OK
Turn Adjust Wheel to test the LEDs. The test is “ok” when all LEDs are lit.
Press OK key again to exit test.

Display test

Select Display test by pressing OK
Press OK to check that all pixels are lit. Press any key to leave the pixel test.
Press OK key again to exit test.

Analog I/O test

Select Analog I/O test by pressing OK
Connect an analog output to the analog input, which has to be tested and press OK.
Use a balanced cable.
PPM must show -12 dB to pass test.
Press OK key again to exit test.

Digital I/O test

Select Digital I/O test by pressing OK
Connect a digital output to the digital input, which has to be tested and press OK.
The AES/EBU output can also be connected to the S/PDIF input and vice versa.
PPM must show 0 dB to pass test.
Press OK key again to exit test.

MIDI I/O test

Select MIDI I/O test by pressing OK
Connect MIDI out to MIDI In.
Prg. change 1-128 is send out on MIDI thru. Connect this socket to a MIDI compatible device and confirm the Prg. changes.
Press OK key again to exit test.

Pedal test

Select Pedal test by pressing OK.
Connect a momentary pedal to the pedal socket.
When pressing the pedal, the result should be OK.
When released, the result should be NOT OK.
Press OK key again to exit test.

PC Card test

Select PC Card test by pressing OK
Insert PC Card. Note that all data on the PC Card will be destroyed.
Press OK to test.
Result reads:
Low battery - Time to change battery in your PC Card.
Not Ok - Try the test using another PCMCIA card.
Press OK key again to exit test.

Battery test

Select Battery test by pressing OK
Confirm that result is OK.
Press OK key again to exit test.

System test

Select System test by pressing OK
Confirm that result is OK.
Result reads:
EEPROM Not OK - The unit will most likely work ok, the message is for service matters only.
DSP Not OK - Contact your local dealer.
Press OK key again to exit test.

Power Off - On to start standard software.

GLOSSARY

AES/EBU

Professional digital in/out standard, using balanced XLR cables.

S/PDIF

Consumer digital in/out standard, normally using coaxial phono-type cables.

DITHERING

Dithering is a method to optimize the quality of a digital audio signal at low levels. A small amount of filtered noise is added to the signal, giving you a less distorted low level signal.

To make the dithering circuit work optimally, you need to tell the system which output you use. If you are using the analog outputs, dithering should always be set to 20 bits. If you are using digital outputs, the equipment you feed determines the number of bits. A DAT or CDR recorder should always be dithered to 16 bit.

PRO/CON LEVELS

Depending on which equipment you are using along with the Finalizer, you must set the PRO/CON parameters correctly in the I/O setup menu.

Finalizer Analog Inputs:

Consumer range: -16 dB to +10 dB, nominal level = -10 dB

Professional range: -6 dB to +16 dB, nominal level = +4 dB

Finalizer Analog Outputs:

Consumer range: -10 dB to +16 dB

Professional range: -16 dB to +6 dB

The levels are either listed in the technical specifications or printed on the rear panel of the connected devices.

DE-ESSING

An algorithm that removes unwanted »esses« from a vocal material.

SYSTEM EXCLUSIVE MIDI COMMANDS

Device-dependent MIDI commands, normally used for remote controlling machines.

APPENDIX *Tutorial*

Finalizer Tutorial

The basic idea with the Finalizer is to touch up the last details of your mix and enhance the energy and level, in order to make it sound punchier and louder.

As there are different approaches to the Finalizer, we created this tutorial to familiarize you with the Finalizer.

The mainpage of the Finalizer shows you the signal flow, and the actual order of the processor you are working.

The Input

Select your type of input: Analog or digital. If you are working with an analog input you should use Pro/Con and the level bars to optimize the performance of the A to D converter. Remember to choose the right sample rate, i.e. if you targeting on CD you should always choose 44.1 kHz.

Now recall the CD-Master preset, by pressing the RECALL key, select CD-Master and press OK to recall.

The EQ

In the EQ you have the possibility, of changing the spectral shape of your material.

Inserts

Select between Stereo adjust, De-essing or DRG.

Normalizer

Optimizing the level of your material starts in the Normalizer. Here you have a graphical presentation of the incoming signal. By increasing the GAIN, you decrease the headroom, shown as two dotted lines.

You should set the GAIN such that the signal peaks are just below or above the dotted headroom lines.

The Expander

The Expander is a great help in cleaning up the basic mix, either as a soft expander or as a sharp gate.

Try to listen to the start of your mix, do you have any tape or recording noise ?

If you have and you want to remove it, use the expander as follows:

Set the Ratio's to 1:32, this is the steepness of the expander.

Now adjust the THRESHOLD so the expander only works when the music is not there.

Play the music from the top a couple of times, and confirm that the start is silenced.

If you only want to remove tape noise, it might be enough to use the high band expander only.

The Compressor

The Compressor is the heart of the Finalizer. This section adds that extra "punch" to your material.

When you are doing multiband compression, you have to do a survey of the program material, i.e. Is there too much or too little top-end or low-end? Is the midrange well defined? A standard situation could be that you have a mix which sounds good, but lacks tightness and could use more of that "in your face" sound.

Now put the Finalizer in bypass, and recall the "CD-Master" preset. Start your mix and de-activate the Bypass. You will hear an immediate change in the sound of your mix, because the "CD-Master" preset was designed to tighten up on almost all types of rhythmic music that you hear today. In most cases, you will only have to adjust the input level by using the Normalizer.

If you want to make changes to the overall relationship of the low, mid, high bands using the Compressor, you have two paths that you may take to accomplish this task. The first way is to alter the bandlevels, using them like a three band equalizer. The second way is to individually compress the three bands. It is here, in the multi-band Compressor, where you will here the big difference.

A good Compressor will always tighten up a mix, but it will also remove some of the dynamic expression. Key to the operation of any Compressor is the attack and release times. These two parameters greatly influence how "tight" the mix is going to be or how "open" the material will sound after compression.

As a rule-of-thumb the low-band works best with fast attack times and rather slow release times because low frequencies have a long wavelength. In the mid-band you can use roughly the same attack time, but the release time should be a bit faster since the human ear is very sensitive in this area. If you set the mid-band release too long it will sound unnatural. The hi-band works best with an attack time that is a bit slower than the other two bands because it will let high frequency transients to pass the Compressor. Letting these peaks through the Compressor prevents that stressed and over-compressed sound. The release time of the hi-band should be fast, like the mid-band, for the same reasons, to increase the "openness" of the Compressor.

The Limiter

The limiter is placed after the Compressor. This means that if you drive the Compressor too hard, you hit the limiter too hard. Give the limiter some room to do its intended job, to hold down the level once in a while. If you run the Compressor block output levels too close to the Limiter “ceiling” your mix will sound “squashed”. Conservative use of the Limiter, especially using the softer ratios will keep the mix sounding natural. Using the soft clipper with adequate “look-ahead” time will prevent any overshoot from the Finalizer.

The Crossover

A last thing to remember about the Finalizer’s dynamic section is that the adjustable crossover frequencies are critical to the unit’s proper operation. By changing the crossover setting to match the program material you can change the sound dramatically, so you should experiment with this feature and find the setting that makes your mix sound best.

This tutorial is only as a brief description of a few possibilities in the Finalizer. It does not replace the experience you can achieve by working with the Finalizer.

Use and trust your ears

NOTE

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 installations.

This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the 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 the equipment into an outlet on a circuit different from that to which the receiver is connected.*
- *Consult the dealer or an experienced radio/TV technician for help.*

The user may find the following booklet, prepared by the Federal Communications Commission, helpful:

"How to identify and Resolve Radio/TV interference Problems."

This booklet is available from the US. Government Printing Office, Washington, DC 20402, Stock No. 004-000-0034-4.

Caution:

You are cautioned that any change or modifications not expressly approved in this manual could void your authority to operate this equipment.

For the customers in Canada:

This Class B digital apparatus meets all requirements of the Canadian Interference-Causing Equipment Regulations.

Cet appareil numérique de la classe B respecte toutes les exigences du Règlement sur le matériel brouilleur du Canada.

Certificate Of Conformity

TC Electronic A/S, Grimhøjvej 3, 8220 Brabrand, Denmark, hereby declares on own responsibility that following product:

Wizard Finalizer, Studio Mastering Processor

That is covered by this certificate and marked with CE-label conforms with following standards:

EN 60065 (IEC 65)	Safety requirements for mains operated Electronic and related apparatus for household and similar general use
EN 50081-1	Electromagnetic compatibility - Generic emission standard - Part 1: Residential, commercial and light industry.
EN 50082-1	Electromagnetic compatibility - Generic immunity standard - Part 1: Residential, commercial and light industry.

With reference to regulations in following directives:
73/23/EEC, 89/336/EEC

Issued in Brabrand, February 27 1996

*Anders Fauerskov
Managing Director*

MASTER FADER

Congratulations

Congratulations on your new Master Fader. The Master Fader is carefully designed to remote control the Digital fader of the Finalizer. We hope you will have as much pleasure using it as we had making it.

Why make a Master Fader?

If a fade is performed before the Finalizer, the Compressor will try to increase the level as the fader decreases. To avoid this problem, fades must always be done after the Finalizer. The Master Fader makes it possible to perform a hand-fade on the very output of the Finalizer enabling you to keep your fade in digital domain and ensuring perfect tracking of left and right.

Connecting and Calibrating the Master Fader

In order to work the Master Fader accurately, the Finalizer must be calibrated, here is what to do:

- Connect the Master Fader to the “Pedal In” jack of the Finalizer.
- Press and hold the Bypass key of the Finalizer while powering up.
- Scroll down to “Fader Calibration” using the Menu keys, and press the OK key.
- Move the Master Fader to maximum position. To compensate for mechanical tolerances draw back the Master Fader slightly.
- Move the Master Fader to minimum position. To compensate for mechanical tolerances draw back the Master Fader slightly.

The Master Fader is now Calibrated. Power On/Off.

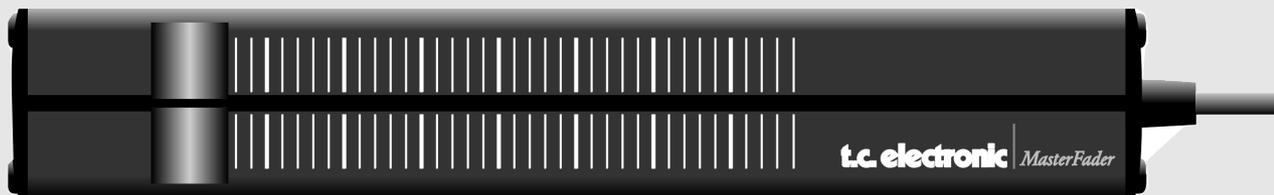
Activating the Master Fader

To activate the Master Fader, enter the Utility menu and scroll down to “Pedal Input, Function” using the Menu keys. Dial the Adjust wheel to choose “Ext. Fader”.

The Master Fader is now controlling the Digital fader of the Finalizer. The Fader located in the Finalizer output section will now follow and display the movement and the exact level of the Master Fader.

Cables and lengths

The Master Fader uses standard mono jack cables. The cable can be extended using the jack to jack adapter and can run at cable lengths up to 25 meters. Remember to recalibrate after extending the cable.



Master Fader