



Channel Strips

User Manual

N-closure 6

N-Trophy™
All Discrete Analog Console

N-closure 2



N-closure channels are taken directly from our N-Trophy All Discrete Analog Console.

Back to The Nature of Sound

www.hum-audio.com



Carefully handcrafted in Poland

Be a true Unhindered Maker...

Back to The Nature of Sound
N-closure² & N-closure⁶
N-Trophy Console Channel Strips

OWNER'S MANUAL

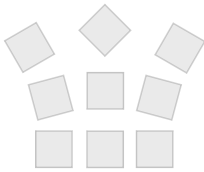
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N-Trophy

All Discrete Analog Console



Dear Customer,

Thank you for the confidence you have shown towards HUM Audio Devices by purchasing the N-closure channel strips. You have chosen unique high end tools which will help you to get excellent sonic results. N-closure strips are identical in terms of sound quality and have all creative and inspiring sound-shaping tools you can find in the channels of our exceptional N-Trophy All Discrete Analog Console.

We believe you will have as much fun using your N-closure as we did designing and building it for you. Be the true Unhindered Maker! Draw on true Inspiration and create your next masterpiece joyfully and without compromise, with a vital and full-of-life sound. This is the idea that guides us. Your hard work deserves that.

We wish you every success with your new N-closure channel strips!

Your HUM Audio Devices - Team



Krzysztof Tonn



Krzysztof Rudnicki

Follow us on Youtube, Vimeo, Facebook and our site:

www.hum-audio.com www.facebook.com/HumAudioDevices/

HUM Audio Devices N-closure was designed, developed and precisely handcrafted in Poland.

Back to The Nature of Sound

N-Trophy is a fully discrete, modular analogue in-line console designed to become the heart of a modern analog or hybrid studio, where the highest possible sound quality and fast, creative work is a key. Where you don't want to be overwhelmed by increasingly complex technology, but focus on the creative process itself. This is the way it should be. And all that you will experience with the N-Trophy console (and now with your N-closure channel strips) is just that.

A beautiful and inspiring classic look is combined with an innovative approach to working on analog console. N-Trophy is an exceptional console in so many aspects, like never before. It will remove digital 'junk', and brings back life, vitality, space and depth to your sound. It brings back the pleasant feeling of communing with what is close to every human being by nature: the beauty of analogue sound.

Now you have the essence of that in your new N-closure channel strips. Congratulations on your purchase and we wish you joyful work!

Operation Safety

Power the N-closure exclusively with the voltage rating specified for the country of purchase. N-closure is always factory prepared for use with that voltage. In case of doubt, or when it's necessary to change PSU voltage contact your local dealer. N-closure can be internally switched to other voltages if necessary.

Disconnect the N-closure from the electric power grid if you are not going to use it for a long period of time. Unplug the power cord from the mains to cut power supply to the unit.



Do not use N-closure anywhere near water (for example in a bath room, a damp cellar, near swimming pools, or similar environments). Otherwise you are dealing with an extremely high risk of electrical shocks! N-closure should also not be installed near equipment which produce strong magnetic fields or extreme heat.

Never allow any fluids to be spilled or sprayed on the N-closure. Such actions can lead to dangerous electrical shocks or fire!

If, during operation the sound is interrupted or LEDs no longer illuminate, or if abnormal odor or smoke is detected, or if liquids are spilled on the unit, immediately disconnect the power cord plug and contact your dealer.

Power Supply

A very high quality PSU is built into the N-closure housing. It is based on custom toroidal double shielded transformer with individual voltages for audio and control parts of the N-closure, and best Linear Technology voltage regulators. You have also soft start and protection during power cycle, so no thumps and other sound artefacts are present on your monitors. Although it is safe to turn on/off the N-closure on working monitors, it is good to get into the habit of muting the monitors output before making any substantial changes in any of your audio connections.

We strongly recommend using good quality, custom shielded AC cable included in the N-closure set to power the unit.



The unit is prepared to use with voltage adequate to a country of purchase. Always connect your N-closure to the AC outlet with that voltage, otherwise you may damage the device!

Be sure also to use correct fuse adequate to operating voltage !



How we did it? The secret behind the N-Trophy.

N-Trophy All Discrete Analog Console is a result of over three years of meticulous development, careful audiophile quality component selection, and hundreds of hours spent in our analog recording studio, testing every component during real sessions to get the final sound. The 25 years of sound engineering experience was invaluable here. We took maximum care to choose every single component in N-Trophy's audio path for the best possible sound quality and musicality. As with all of our devices - they are distinguished by an absolutely uncompromising approach to both quality and speed of work, as well as user comfort. That's why the N-Trophy and the N-closure are equally good when working on any musical genre.

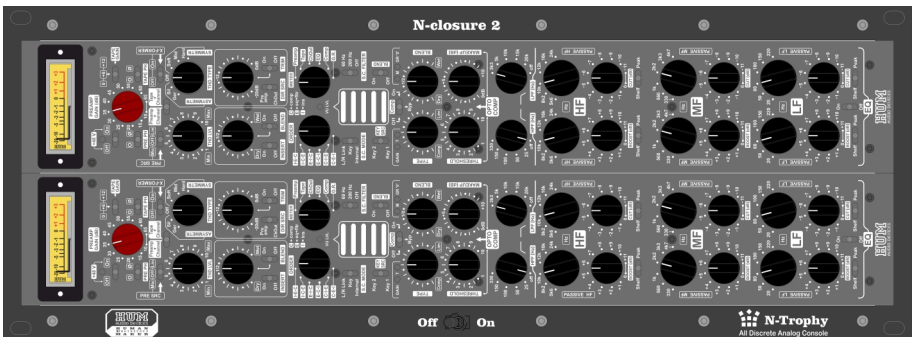
Working on N-Trophy and N-closure gives a lot of fun with creative freedom. And this is really the maximum sound quality we could achieve these days.

We designed High End discrete class A mic preamps, custom audio transformers and discrete opamps, as well as unique six-band passive EQ, THD Stage, Tube Optical Compressor with innovative detection and compression circuits that work differently than ones typically found in studio equipment. At the same time, we eliminated all points where classic analog consoles used to be weak or overcomplicated. The signal path is also as short as it can be, despite plenty of N-Trophy's and N-closure's creative sound shaping tools.

To complete the N-Trophy and N-closure design we have also taken special care to develop the classic linear power supply with a custom double shielded toroidal transformer acting as a power conditioner. It ensures large headroom and very low noise performance.

Now... you know why your new N-closure channel strips give you a 'Back to The Nature of Sound' experience:-) Let's go then to the detailed description of what creative tools you will find in N-closure channel strips.

Installation and connections



N-closure2 is a 4U device housing a maximum of two channels from the N-Trophy console mounted horizontally, and N-closure6 is a 11U unit prepared for up to six channels from the N-Trophy console mounted vertically. N-closure6 is the perfect solution if you wish to expand your setup with more than two channel strips and have a

console-like furniture. With channels mounted in a similar way to the N-Trophy's channel strips you will have great console-like experience.



On the rear panel of the N-closure's you will find an AC power socket and balanced XLR and Combo sockets - identical to sockets on the back panels of the N-Trophy console. The only difference is a number of connector sections, depending on whether it is N-closure2 or N-closure6 housing. The sockets are:

KEY1, KEY2 - global line inputs for an external sidechain compressor/limiter circuit. All installed channel strips have a switch to select which KEY input they use.

INS SEND, INS RET - line inputs/outputs for each channel's external insert loop.

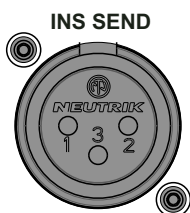
DIR OUT -channel line output. The output point can be selected on each channel strip: after the preamp or after all audio processing in the channel.

LINE IN - input for processing line-level signals. A typical scenario is that you use it when the N-closure is connected to other analog equipment in the chain.

TAPE IN - channel's second line level input. Selectable with a dedicated switch. This input is intended for use as a DAW audio signal input, without the necessity of switching cables between LINE and TAPE inputs.

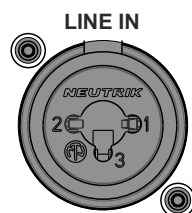
MIC IN - mic level input to the channel's preamp.

Wiring scheme (example of input and output on the back panel):



Pin1: GND (ground)
Pin2: + (hot)
Pin3: - (cold)

So this is a standard XLR pin configuration.



Creative tools you will find in N-closure channel strips:

HIGH END DISCRETE CLASSA Mic/Line/Instrument PREAMPS

They are based on legendary Jensen JE990 opamps. It's a similar topology to the preamps found in our flagship RP-2 preamp, and in practice one of the best sound you can get from a mic preamp anywhere: big, vital, pushed forward, full of life and with a lot of details. Perfectly balanced, bringing out the nuances of the sound beautifully, yet not exaggerated in any way. Equally good for clean, beautiful-sounding classic recordings, it also gives you a strong basis for coloring and tweaking the sound with N-closure tools when working with other musical genres.

CUSTOM MADE BEAUTIFULLY SOUNDING AUDIO TRANSFORMER

It adds class and size to the sound, enriching it, filling the space and giving even more analog taste. The same transformer is used in the N-Trophy Mastering Console.

THD SATURATION / DISTORTION STAGE

With level knob and plenty of colours and various harmonic additions: **German, Silicon (ASYMMETRICAL)** and **Soft, Mid, Hard (SYMMETRICAL)**. **Soft** mode is especially great for analog tape simulation.

TUBE OPTICAL COMPRESSOR / LIMITER

Our original design of a very creative and extremely effective dynamics section, equally good for keeping vocals in place and for 'crushing' drums and even for special effects purposes. It works great on everything, thanks to its continuously adjustable characteristics: from **compressor** (slower, gluey sound, LA-2A type) to **limiter** (fast, FET-like type 1176). All possible sidechain options are at your disposal, along with a High Pass Filter, external KEY inputs and stereo link for detection circuits.

Attack and Release are automatically changed along with the compression level, so the compressor is very quick and intuitive to use, and you will achieve the desired sound in seconds. The ECC88 tube is placed in the Gain Makeup stage, and you have option to bypass the compressor, but still use the tube to add a beautiful tone to your track.

SIX BAND PASSIVE EQ WITH WIDE SLOPES AND LPF/HPF FILTERS

Our original design of an amazingly musical sounding mastering grade equalizer. We have spent a great deal of time on the perfect selection of frequencies and how the bands overlap. The idea behind the equalizer is to find the right balance of your sound quickly and creatively. Once you start using it, you'll see how fast and intuitive it is, and how beautifully it brings out the 'life' and three-dimensional space of your recordings.

N-closure equalizer uses rotary switches just like all mastering equalizers. Its phase and characteristics are perfectly matched, so you can use it with confidence on multiple channels with the same settings, achieving identical sound.

ROUTING WITH VARIABLE ORDER OF BLOCKS: INSERT, COMPRESSOR, EQ

All audio signal routing is lossless, passive, based on relays with gold-plated contacts.

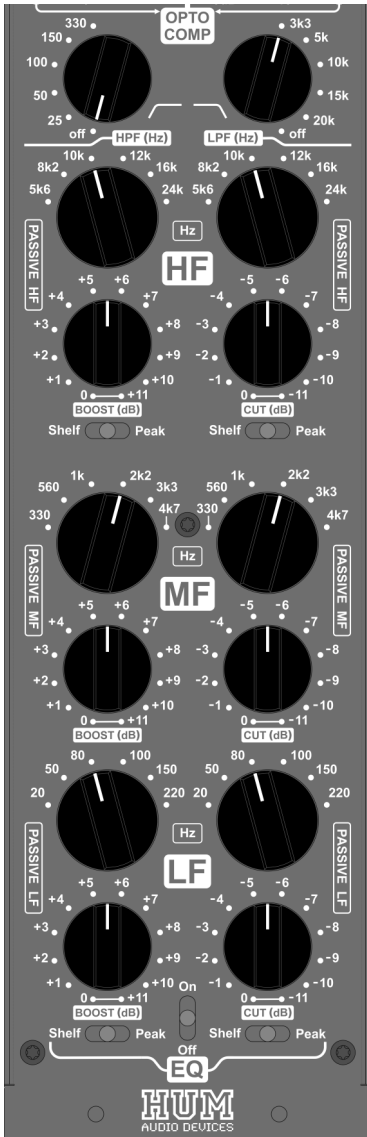
Detailed description of N-strip's features



- Top quality VU Meter with excellent ballistics.
- **PREAMP GAIN (dB)** Gain switch for the selected signal input.
- **+48 V** Phantom power switch for condenser mics.
- **TAPE GAIN** 0/+6/+12dB switch for **TAPE IN** signal.
- **PRE SRC** Input source for the preamp: **Mic/Off/Line**.
- **PRE PH** } Phase reverse switches for **Mic/Line/Instr**
- **TAPE PH** } inputs and **TAPE IN** (line level) signals.
- **Preamp Channel** } **Tape Channel** Select channel's physical input.

- **X-FORMER** Switch for interstage audio transformer located after the mic preamp.
- **THD LVL** } Select type and level of saturation.
- **THD TYPE** }
- **DIR SRC** Select audio output point for **DIR OUT**: **Preamp** - after the preamp, before processing **ChOut** - after all sound processing in the channel
- **TRIM** Pot for additional trim level of **DIR OUT** (direct output) signal, with **on/off** switch.
- **INSERT** } Insert switch and insert dry/wet blend pot
- **BLEND** } with switch. When **BLEND** switch is set to off, channel's insert point is 100% wet.
- **ORDER** Select processig order: **C** (Compressor), **E** (EQ + filters), **I** (Insert).
- **METER** Select metering point for the VU Meter. **G.R.** - Gain Reduction of the Compressor.

- **S.C. MODE** Compressor sidechain mode: **Internal**, **L/R Link** (stereo link), **Key** for external key inputs.
- **KEY SRC** Select **KEY1** of **KEY2** for sidechain inputs
- **S.C. FILTER** Cutoff frequency for detection circuit in **Internal** sidechain mode.
- **Comp** Switch in **OPTO COMPRESSOR**. In **Byp** mode the compressor is bypassed, but the tube is still active.
- **TYPE** Select compressor characteristics, from **Comp** (slow) to **Lim** (fast).
- **THRESHOLD** Compression depth. Attack and release depends on the gain reduction depth.
- **BLEND** dry/wet mix balance of compressed and uncompressed signal.



- **MAKEUP (dB)** Gain Makeup - signal level boost after compression. ECC88 Tube circuit.

- **LPF (Hz)** Low pass filter, frequency selection with stepped rotary switch. 6dB/oct slope.
- **HPF (Hz)** High pass filter, frequency selection with stepped rotary switch. 6dB/oct slope.
- **HF** High frequency passive EQ, independently selected frequencies for **BOOST** and **CUT**. Selection with stepped rotary switches. Gently overlapping (6dB/oct).
- **BOOST (dB)** Amount of boost (dB) for HF band.
- **CUT (dB)** Amount of cut (dB) for HF band.

- Shelf/Peak switches for HF **BOOST** an **CUT**
- **MF** Mid frequency passive EQ, independently selected frequencies for **BOOST** and **CUT**. Selection with stepped rotary switches. Gently overlapping (6dB/oct).
- **BOOST (dB)** Amount of boost (dB) for MID band.
- **CUT (dB)** Amount of cut (dB) for MID band.
- **LF** Low frequency passive EQ, independently selected frequencies for **BOOST** and **CUT**. Selection with stepped rotary switches. Gently overlapping (6dB/oct).
- **BOOST (dB)** Amount of boost (dB) for LF band.
- **CUT (dB)** Amount of cut (dB) for LF band.

- Shelf/Peak switches for **BOOST** an **CUT**.
- **EQ** On/Off switch for the channel EQ circuits (does not include HPF and LPF filters, they are switchable on their own).

Feature summary

N-closure channels are directly taken from our flagship N-Trophy All Discrete Analog Console. Audio quality and features are identical, except for those related to the N-Trophy's Center Section: Auxes, signal routing to Groups, Panning and MixB (inline section of the N-Trophy console).

- 4U chassis for a maximum of two N-Trophy's channel strips (N-closure2).
- 11U chassis for a maximum of six N-Trophy's channel strips (N-closure6).
- All discrete audio signal path.
- Very high headroom, wide band and very low noise (+/-24V int. powering).
- Highest quality switchable custom audio transformer.
- Jensen JE990 based HUM Audio Devices flagship mic preamp.
- Channel DIRECT OUTPUT with dedicated level trim knob.
- THD stage with many saturation characteristics and drive knob.
- OPTICAL COMPRESSOR/LIMITER with continuously variable characteristics.
- Tube make-up gain stage for the compressor/limiter. ECC88 (6N23P) tube.
- Tube can be left on, or switched off when you do not use the compressor/limiter.
- STEREO LINK for compressor/limiter detection circuits.
- External and Internal Sidechain modes for the compressor/limiter.
- Two selectable low cut frequencies for the internal sidechain circuit.
- Two selectable external KEY inputs for the compressor/limiter sidechain.
- External insert point with DRY/WET Blend knob.
- Selectable order of Insert/Compressor/EQ. All six possible combinations.
- Top class VU-Meter for Gain Reduction and signal level metering.
- Six selectable signal level measuring points for the VU Meter.
- LOW PASS/ HIGH PASS filters with selectable frequencies.
- Six-band PASSIVE EQ with broadband characteristics aimed for musicality.
- Rotary stepped switches for many knobs.
- Signal routing is loseless, based on relays with gold-plated contacts.
- All XLR balanced I/O identical to ones found in N-Trophy console's channels.
- Custom made shielded AC cord.

Service and Repairs

Unplug the N-closure from power and signal connections and contact your local dealer when you think repair is needed - or when moisture may accidentally have reached inside the N-closure box housing, or in cases when the N-closure may have fallen and shows any signs of damage. This also applies to any situation in which the unit has not been subjected to any of these unusual circumstances but still is not functioning normally or its performance is substantially altered. In cases of damage to the power supply and cord, first turn off the main circuit breaker before unplugging the power cord.

All repairs are done at HUM audio Devices lab or in some cases at authorized dealer's site.



Do not open the N-closure box ourselves -
- there are no user serviceable parts inside !



Replacement parts

Be sure that any authorized service technician uses original replacement parts or those with identical specifications as the originals. Incorrectly substituted parts can lead to fire, electrical shock or other dangers, including further equipment damage. HUM Audio Devices can only guarantee quality of performance if correct replacement parts are used.

Always be sure to ask a service technician to conduct a thorough safety check and ensure that the state of the repaired device is in all respects up to factory standards.

Cleaning

Do not use any solvents, as these can damage the chassis, switches, panel or enclosure finish. Use a clean, dry cloth (if necessary, with an acid-free cleaning liquid). Great for cleaning N-closure's front panels and housing is a dry micro fibre cloth. Disconnect the device from power source before cleaning.



Declaration of CE Conformity

The construction of these units is in compliance with the standards and regulations of the European Union.

Specifications

Measured with the Prism D-Scope III Audio Analyzer.

Audio voltage rail:	+/- 24V
Self Noise A-weighted:	-105 dBV
THD+N:	0.005% (1kHz / 1dBV)
Frequency Response:	20Hz - 30kHz (+/- 0.16dB) -0.3dB @ 50kHz -1.2dB @ 100kHz -3.8dB @ 200kHz -0.07dB @ 10Hz -0.3dB @ 5Hz
Phase L/R Matching:	max 0.8 deg (10Hz - 30kHz)
CMRR:	-65dB
Max Input Level:	+22dBV
Max Output Level:	+28dBV
Input XLR (LINE, TAPE, INS SEND)	balanced, impedance 10k Ohm
Output XLR (DIR OUT, INS RET)	balanced, impedance 75 Ohm
Mic Input	balanced, impedance 3.5k Ohm
AC Powering	(internally switchable 240V/120V) 50/60Hz
Power Consumption:	max. 50 Watt (N-closure2).
Weight: N-closure2	9.8kg (12kg shipping) - two channels fitted
N-closure6	15.5kg (19kg shipping) - two channels fitted, 4 blank panels 1.3kg - single channel strip (N-Strip) 0.3kg - single blank panel
Dimensions:	<u>N-closure2 (4U)</u> Width: 484mm Height: 177.6mm Depth: 314mm (housing with sockets & knobs) Shipping box Width: 620mm Height: 250mm Depth: 420mm <u>N-closure2 (11U)</u> Width: 484mm Height: 488.6mm Depth: 314mm (housing with sockets & knobs) Shipping box Width: 620mm Height: 570mm Depth: 420mm
Package contains:	- N-closure2 or N-closure6 according to the order. - Custom shielded AC cord.

Warranty

- 1) We provide full three (3) year Warranty for HUM Audio Devices N-closures against defects in material and workmanship. This Warranty relates to each original Customer of HUM Audio Devices product and is not transferable to other persons.
- 2) The period of this Warranty commences at the official receipt date of product purchase from authorized HUM Audio Devices Distributor or Dealer in given country, or directly from HUM Audio Devices for other countries. Within a period of Warranty, HUM Audio Devices will remove defects in materials and manufacturing faults adversely affecting warranted product performance, by repairing or replacing parts or replacing the product as we deem appropriate, free of charge.
- 3) This Warranty does not apply to any defect, failure, or damage due to any cause other than defects in materials or workmanship of the product. Slight variations in finish and anodized coating are normal in the manufacturing process and are not a defect.
- 4) HUM Audio Devices will not be responsible for damage to, or failure of, or need for repair or correction of any product, which occurs as a result of user abuse or misuse, including but not limited to the operation with wrong power supply or excessive voltage, or other wrong application or storage including unreasonable exposure to heat, cold, wind, water, or other elements, negligence or accident, and to material fatigue or degradation through very intensive normal usage.
- 5) Serial number removing or altering, actual or attempted correction, repair, service, modification or alteration of any HUM Audio Devices product by persons not authorized to do it automatically expires this Warranty.
- 6) Customer must contact his local HUM Audio Devices Distributor or Dealer, or in countries without Distribution - directly with HUM Audio Devices, to receive Product Return Authorization Number that will be used to track and identify the returned product.
- 7) After receiving Product Return Authorisation Number please deliver the complete product in the original packing or in such packing that is adequate to prevent damage to the product during the normal course of transport to your local HUM Audio Devices Dealer, or in case of direct purchase - to HUM Audio Devices. Transportation and insurance is the Customer's responsibility and is not covered by this Warranty.
- 8) In the interests of product development, the specifications, construction and appearance of all above products are subject to change without prior notice and without obligation to install these improvements in any product previously manufactured.



- 9) All remedies and the measure of damages are limited to the above services. It is possible that economic loss or injury to person or property may result from the failure of the product; however, even if HUM Audio Devices has been advised of this possibility, this limited warranty does not cover any such consequential or incidental damages. Some states or countries do not allow the limitations or exclusion of incidental or consequential damages, so the above limitation may not apply to you.

Limitations of Liability

In no event will HUM Audio Devices be liable for any damage, including loss of data, lost profits, cost of cover or other special, incidental, consequential or indirect damages arising from the use of the unit, however caused and on any theory of liability. This limitation will apply even if HUM Audio Devices or an authorised dealer has been advised of the possibility of such damage.

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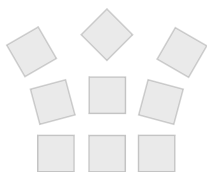
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