

LND150 FX-Loop

Serial FX-Loop

Kit for Tube-Amps
July 2024

FX-Loop Module LND150

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Introduction

The Tube-Town FX-Loop is an active effect loop designed as retrofit kit for tube amplifiers for guitar or bass guitar.

The module works with the typically high supply voltage in a tube amplifier (DANGER TO LIFE) and is powered by the power supply of the amplifier. By using two LND150, the power consumption is very low.

The module is neutral and universally designed, as good as possible, so it can be installed and operated in a variety of amplifiers. On the following pages a few examples are outlined how and where in the circuit an integration can be realized. Due to the large number of amplifiers, it is not possible to provide guides or installation instructions for all models.

Warnings and Safety Information

- 1) **Scope** This safety notice applies to all of these kits

kit-fxloop – FX-Loop LND150
kit-fx6112 – FX-Loop 6112

- 2) **General Notice** Before this kit went into production, it was assembled and tested multiple times as a prototype. It will only be released for mass production once optimal quality in terms of function and operational safety is achieved.
- 3) **Intended Use** In accordance with the current product safety regulation, this kit is designed for knowledgeable individuals familiar with the basics of electronics and specific safety requirements of electronic devices to build an active effects loop for tube guitar and bass amplifiers (FX Loop) and to install the module in existing tube amplifiers. Intended use includes assembly according to the provided circuit and layout plans, adherence to all safety precautions during assembly and operation, and use of the module within its technical specifications. The fully assembled module should only be operated in tube amplifiers. Any use other than as specified is not permitted!
- 4) **Safety Instructions for Assembly** Assembling the amplifier kit requires basic electrical knowledge, including experience working with high voltage and the ability to read circuit diagrams and use measuring instruments properly. Before starting the assembly, you must:
- Carefully read and understand all safety instructions and the provided circuit and layout plans.
 - Ensure a well-ventilated, dry, and free of flammable materials work area.
 - Use the correct tools for assembly.

The startup of the completed kit is only permitted after a thorough check of all electrical connections and confirmation of compliance with safety regulations. Any modifications to the kit or use of components outside the specified specifications are not allowed and can compromise the module's safety and void warranty claims.

Before operation, all components, assemblies, or devices must be securely installed in a case to avoid contact with live parts.

Additionally, make sure all components are free of voltage during installation. All live cables and wires connected to the device must be checked for insulation damage and breaks. If any defects are found, the device must be immediately taken out of service and should only be used again after the defective wires have been replaced.

- 5) **Important Soldering and Assembly Instructions** Extreme care is required during soldering and wiring.
Avoid acid-core solder and flux to prevent cold solder joints or dirty connections. Such defects can lead to extensive troubleshooting and even damage components. A careful and accurate assembly process significantly reduces the likelihood of malfunctions.
- Double-check each connection and step. Follow the instructions precisely and do not skip any steps.
- Use a small soldering iron with a maximum power of 30 watts for soldering. A clean and oxidized soldering tip is essential to ensure effective heat transfer.
- Perform soldering quickly to avoid damaging components, and do not move the soldered part for a few seconds to secure a stable connection.
- After each soldering process, clean the soldering tip from excess solder and dirt to ensure the quality of the solder joints.
- Also, trim the connecting wires directly above the solder points.
- After inserting all components, check if they are correctly positioned and aligned.
- Ensure there are no unintentional short circuits caused by solder, as they can lead to malfunctions and damages.
- Note that errors due to improper solder joints, incorrect connections, or mishandling are beyond our responsibility. Thorough work minimizes the effort for potential troubleshooting.
- Basic knowledge of electronics and experience with electronic components and soldering techniques are required for successful assembly.
- Individuals assembling a kit or completing it through modifications are considered manufacturers according to DIN VDE 0869 and must include all relevant documents and personal contact information when passing it on.
- DIY constructions from kits must comply with the safety standards of industrial products.
- If unsure about electrical specifications, external circuits, or connecting additional components, it is advisable to consult a professional.
- Before operation, verify the device's suitability for the intended use. In case of doubt, contact qualified personnel or component manufacturers.

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Our customer service is available for assembly questions or uncertainties. Your safety and compliance with product safety regulations are our top priorities.

- 6) **Operating Safety Instructions** Adhere to the relevant VDE regulations when handling electrical devices, especially VDE 0100, VDE 0550/0551, VDE 0700, VDE 0711, and VDE 0860, to ensure safe operation.
- The assembly should only be used within the specified voltage requirements.
 - Use the device only in dry and clean environments.
 - Protect it from moisture, water splashes, and excessive heat.
 - Prohibit use near flammable or combustible materials.
 - Keep assemblies and components out of the reach of children.
 - Follow accident prevention regulations in commercial establishments. Monitoring by qualified personnel is required in educational institutions and hobby workshops.
 - In case of repairs, use only original spare parts to avoid damage and risks. Repairs should only be carried out by qualified technicians.
- 7) **Warranty Conditions** We provide a two-year warranty on this kit, which includes defect rectification or replacement of components due to material or manufacturing defects.

Warranty exclusion criteria:

- Independent modifications or repair attempts on the device
- Deviations from the specified circuit
- Use of components not included in the delivery
- Damage to tracks or solder eyes
- Incorrect mounting resulting in damage
- Overload of the electronic assembly
- Damage due to external interventions
- Disregard of the instructions and circuit diagram
- Connection to an incompatible power source or type of current
- Incorrect polarity
- Improper operation or damage due to mishandling
- Damage from bypassed or faulty fuses

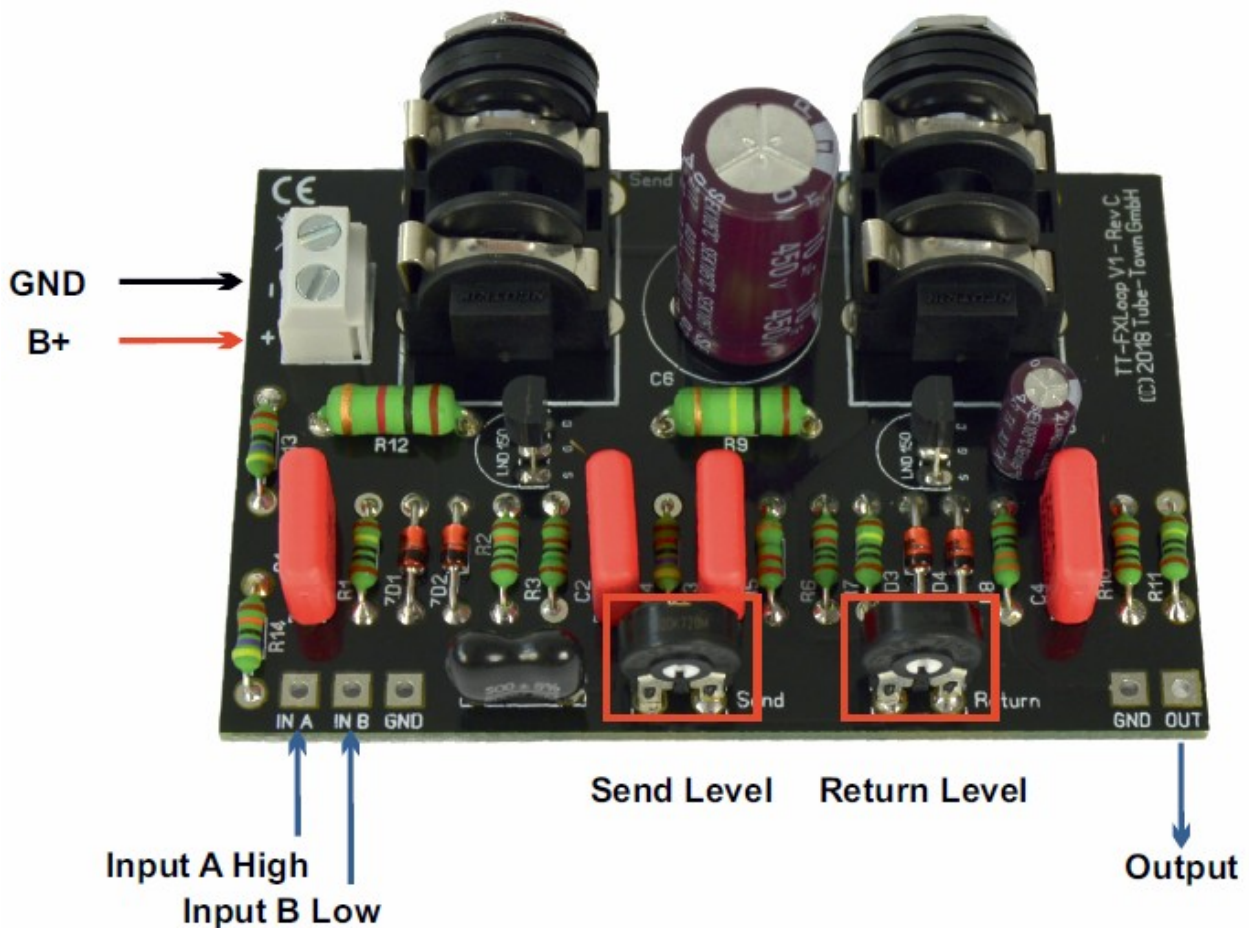
In these cases, the cost responsibility lies with the end consumer.

A careful and precise approach to assembly and operation minimizes the effort for future troubleshooting. Always follow the safety instructions to ensure the device's operational safety.

Specification

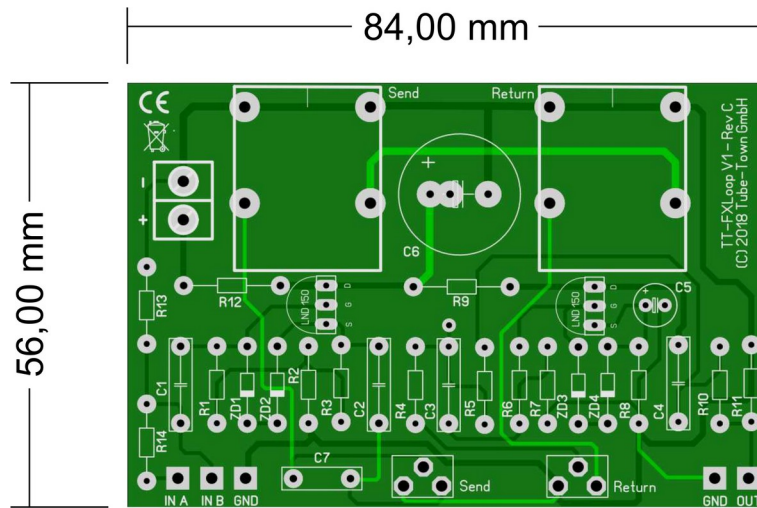
InB input signal level: 1 - 15 Vpp
InB maximum input: 20 Vpp
InA input signal level: 20 - 40 Vpp
InA maximum input: 40 Vpp
Supply voltage: 250 - 400 VDC

Layout and Connections

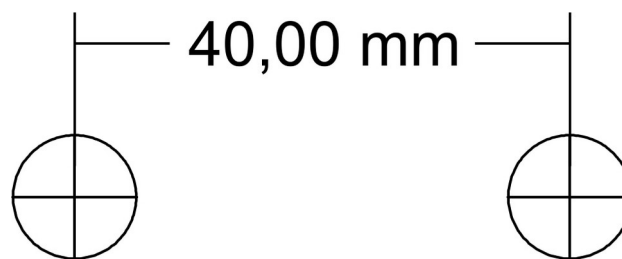


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PCB Size



Mounting



List of Components

C5:	22 μ F / 63V
C6:	10 μ F / 450V
C7:	500 pF / 500V
Q1, Q2:	LND150
R1, R7, R11:	1 MOhm
R2, R10:	100 kOhm
R3:	1,5 kOhm
R4:	47 kOhm
R5:	2,2 MOhm
R6:	10 kOhm
R8:	330 Ohm
R9:	100 kOhm / 2W
R12:	1 kOhm / 2W
R13, R14:	Depending on use, see the following paragraph „input voltage divider“
ZD1 - ZD4:	BZX85C18
P1 (Send):	100 kOhm
P2 (Return):	500 kOhm

Capacitors for Tight-Setup

C1, C2, C3, C4: 0,022 μ F / 400V

Capacitors for Fat-Setup

C1, C3, C4: 0,47 μ F F / 250V

C2: 1 μ F / 100 V

General hints for integration

Capacitor Setups

Starting from the kit version of July 2024, the kit will include various capacitors that should be used depending on the required or desired setup.

Tight-Setup: This capacitor combination enables a tight and clear bass reproduction.

Fat-Setup: With this capacitor combination, the frequency spectrum reaches much further down and should be chosen to achieve a fuller bass reproduction, especially when used with effects pedals with low input impedance.

The component list at the front can be consulted to see which components belong to which setup.

C7 is optional. If the effect sounds too high-frequency-heavy, this capacitor can be removed.

Input Voltage Divider

Depending on the circuit the loop is integrated in it may be necessary to adjust the input voltage divider (R13/R14). As a starting point a ratio of 1:10 is recommended for testing if the loop or the effects distort in an unpleasant way. If the signal level is too high the next higher resistor value for R14 can be tested.

The following table shows an overview of possible resistor combinations for the input voltage divider and the resulting ratio. The needed resistors for the listed combination are included in the kit (since batch 19.06.2019).

R14	R13	ratio
470 kOhm	100 kOhm	ca. 1:5
1 MOhm	100 kOhm	ca. 1:10
1,5 MOhm	100 kOhm	ca. 1:15
2,2 MOhm	100 kOhm	ca. 1:22

Send and Return Level Potentiometer

The potentiometers for adjusting the send and/or return levels can be either installed on the board with preset values or mounted on the housing for manual adjustment, accessible to the user. A combination of both options is also possible.

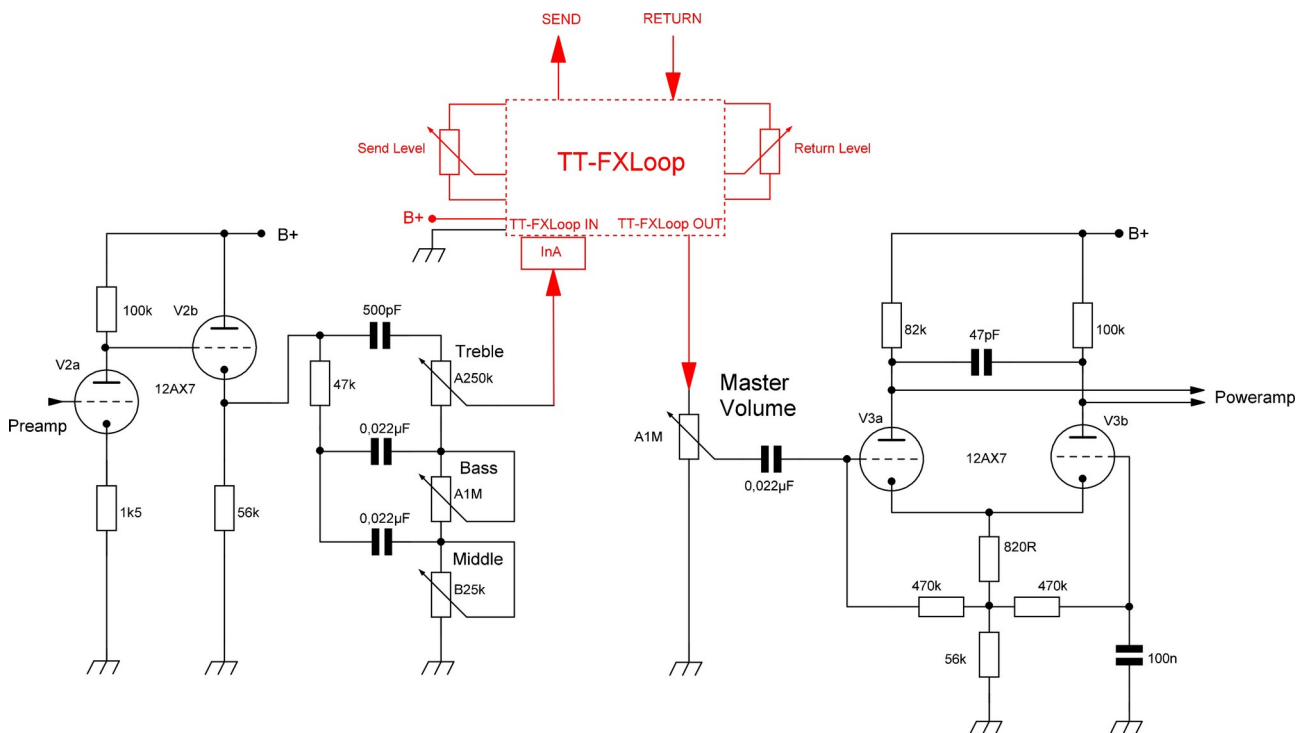
Both types of potentiometers are included in the kit.

Insert Example I

Installation Example: FX-Loop between tonestack and master volume in an 18 Watt style amplifier. Other configurations are possible as long as the maximum signal level is not exceeded.

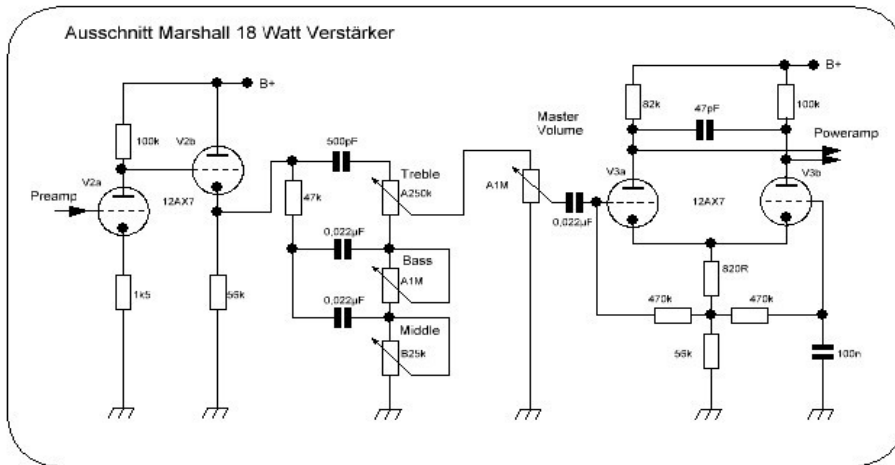
Input:

Use Input InA for Signal levels from 20 - 40 Vpp or Input InB for signal levels from 1 - 15 Vpp.



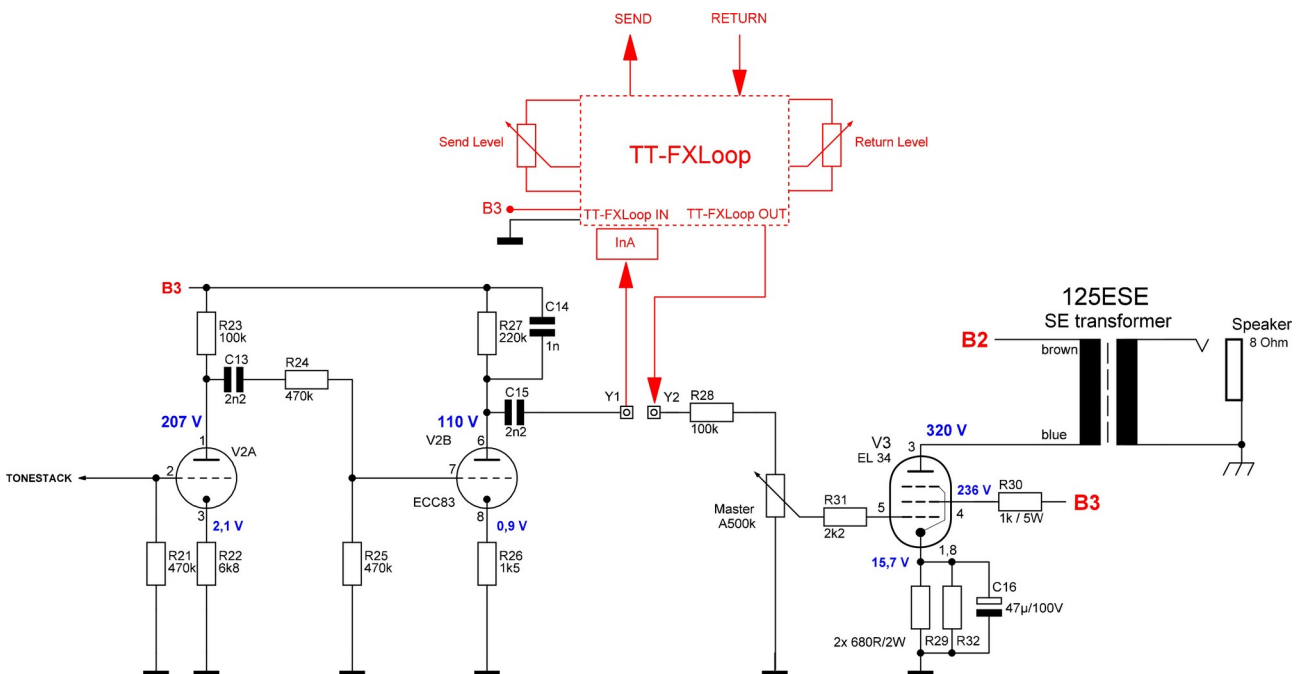
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Schematic without loop as reference:



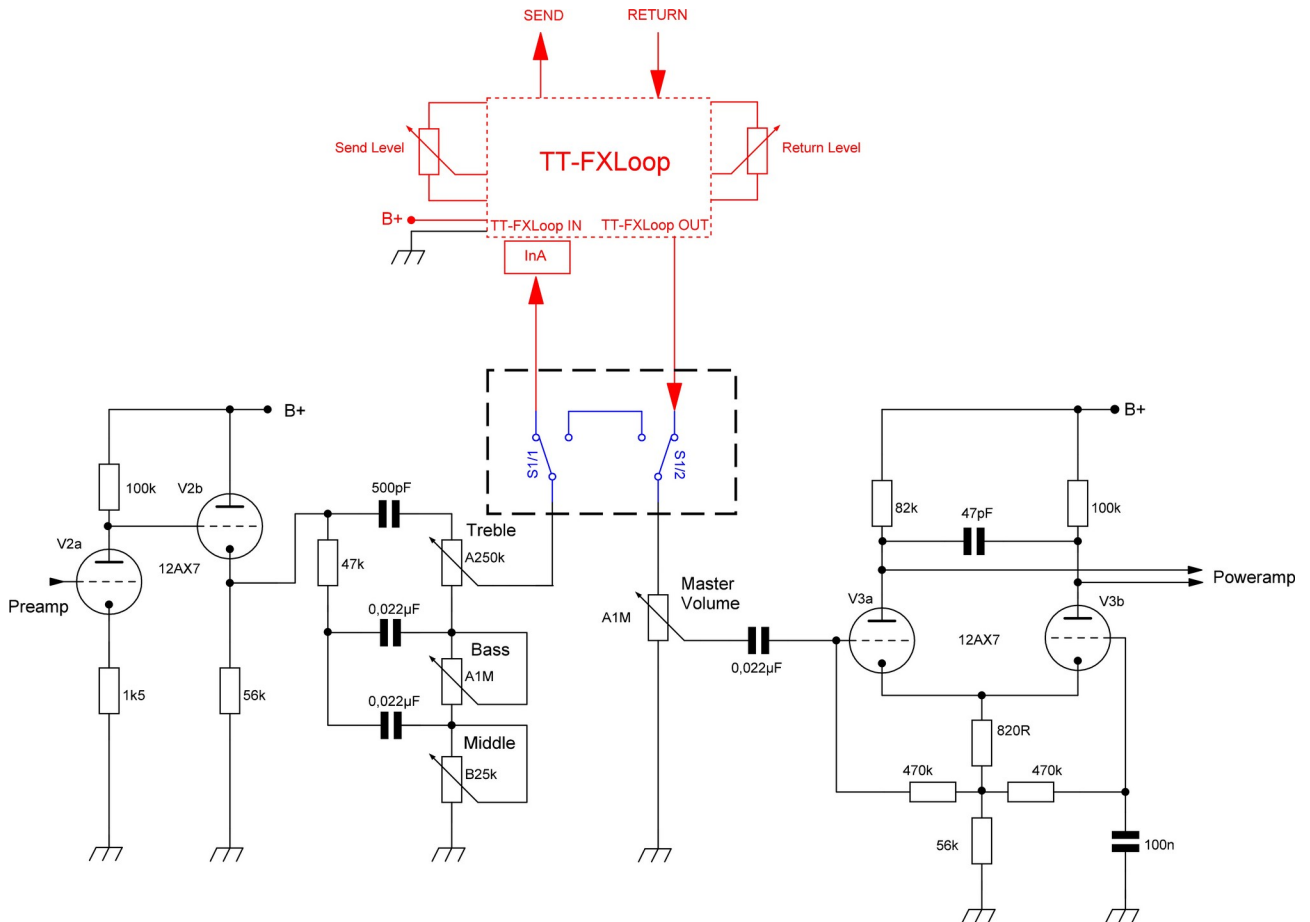
Insert Example II

FX-Loop before the master volume in a Jim HP amplifier. Other configurations are possible as long as the maximum signal level is not exceeded. We recommend a value of 1,5 MOhm - 2,2 MOhm for R14 on the loop pcb in this configuration.



True Bypass

With an optional switch it is possible to install a true bypass for the effect loop and take it out of the signal chain when not in use. This can also be realized with a relay, for example with the relay switching kit with the article number kit-chsw2-6.

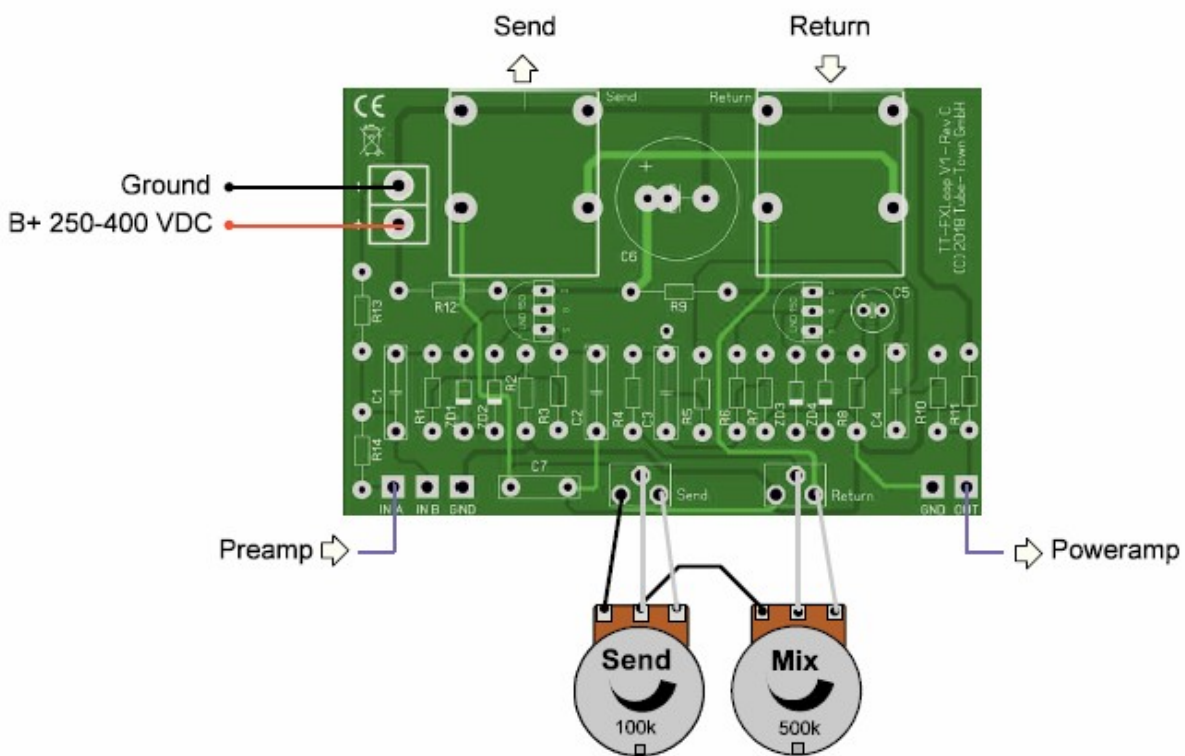
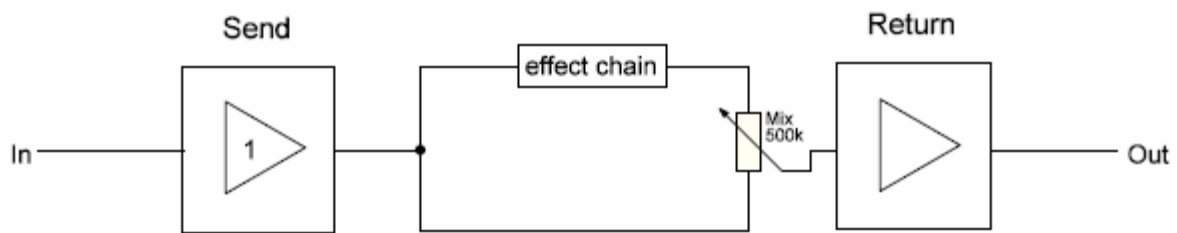


Loop in parallel mode

Through simple rewiring the loop can also be used in parallel mode, where a portion of the dry signal gets mixed with the effect signal.

Please note:

Some effect units change the phase of the signal. This can lead to phase cancellations if the effect signal is out of phase with the dry signal.



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Test Points

Example measurements with a supply voltage of 370 VDC applied.

