TUBE-TECH MMC 1A
Mic-preamplifier and Multiband Compressor

Description:

The **TUBE-TECH Mic-preamplifier and Multiband Compressor MMC 1A** is a combined microphone and DI preamplifier, a separate balanced line input and a three-band optical compressor intended for recording directly to any recording media.

Mic -preamplifier:

The microphone preamplifier consists of a microphone input transformer (with a static screen) with a step-up of +10 dB, two dual tube preamplifiers with a stepped gain switch, with 10dB/step (+20 dB - +60 dB) giving a total gain range of +20dB to +70dB.
The microphone input is provided with a switchable -20dB attenuation (PAD), switchable +48V phantom-power, a phase reverse and has swithable input impedance (600, 1200, 2400 Ohm).

The high impedance **DI** input is unbalanced and placed in the circuit directly after the input transformer. The gain range for this input is +10dB to +60dB. When in use, the microphone input is disabled.

A high pass filter for the microphone, DI and line input is switchable between off, 20 Hz and 40 Hz.

All inputs have a common stepped gain switch with 2dB/step (-10dB - +10dB).

Compressor:

The signal is fed to the two x-over networks, each made with a single RC circuit thereby preserving optimum summation of the three bands at the output.
The x-over frequency between the low band and the mid band is variable from 60Hz to 300Hz or 240Hz to1200Hz and the x-over frequency between mid band and the high band is variable from 1,2kHz to 6kHz.

The signals from the three bands are then fed to the three separate side chain circuits, each common for left and right channel. After processing, the three signals are fed to a gain control, separate for each band and thereafter summed and send to the output gain, controlling the entire output level for all three bands.
The compressors are of the optical device type. It has controls for ratio, threshold, attack and release.

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MIC-PREAMPLIFIER CONTROLS:

GAIN: The gain switch has a range from **+20dB** to **+60dB** in steps of 10dB.

IMPEDANCE: There are a selecting of three input impedances: 600, 1200 or 2400 Ohms.

PHASE: Reverses the phase of the mic input only.

PAD: This switch selects between 0dB or -20dB attenuation in front of the microphone transformer.

PHANTOM: The +48V DC is supplied to the microphone input via two 6,81 KΩ resistors.

DI: The **D**irect **I**nput is an unbalanced, high impedance input intended for various instruments.
It goes directly into the mic-preamplifier (bypasses the input transformer) and has a gain range of +10dB to +60dB

MIC/LINE: Switches between Mic/DI and the separate line input on the rear panel

LOW CUT: The highpass filter is selectable between **off**, **20 Hz** (12dB/octave) and **40 Hz** (6dB/octave).

MIC/LINE GAIN: All input have a commen gain switch with 2dB/step (-10dB - +10dB)

COMPRESSOR CONTROLS:

X-OVER LOW: Controls the frequency between the low band and the mid band.
Continuously variable from 60 Hz to 300 Hz

x4: Multiplies the “x-over low” frequency by 4, giving a frequency of 240Hz to 1200Hz

X-OVER HIGH: Controls the frequency between the mid band and the high band.
Continuously variable from 1,2 kHz to 6 kHz

RATIO: The ratio control varies the ratio by which the input signal is compressed.
If the ratio selected is 2:1, and the input signal increases 10 dB, the output signal is only increased by 5 dB.
The ratio control is continuously variable from 1,5:1 to 10:1.

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THRESHOLD: The threshold is the point where the compressor begins to respond.
It is defined as the point where the gain is reduced by 1 dB.
The threshold is continuously variable from off to -20 dBU.

ATTACK: The attack control chooses how fast/slow the compressor responds to an increase in the input signal.
The attack control is continuously variable from 1 to 100 milliseconds.

RELEASE: The release control chooses how fast/slow the compressor responds to a decrease in the input signal.
The release control is continuously variable from 0,07 to 2,5 seconds.

GAIN: The gain control is used to "make up" for the gain loss, which takes place when the unit is compressing. The gain control is continuously variable from off to +10 dB.

OUTPUT GAIN: The gain control is used to "make up" for the gain loss, which takes place when the unit is compressing. The gain control is continuously variable from off to +10 dB.

COMP in/out: This switch bypasses the whole compressor section.

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ADJUSTMENT PROCEDURE:

CAUTION:
Before making any adjustment let the unit heat-up at least 10 min.

Always check the DC voltages at the power supply.

1) The DC voltage in TP201 shall be +280V (265-295).
2) The DC voltage in TP203 shall be +15,0V (14,7-15,3).
3) The DC voltage in TP204 shall be -15,0V (14,7-15,3).
4) The DC voltage in TP207 shall be +238V (236,5-239,5)

ADJUSTMENT OF PSU:

1) The DC voltage in TP202 shall be +240V.
   Adjust with P202.

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ADJUSTMENT OF BASIC GAIN:

1) Set the bypass switch in **"off"**.
2) Set the "OUTPUT GAIN" on "+10".
3) Set the Low-Mid and High **"Gain"** on **"+10"**.
4) Apply a signal of 1 kHz, -10,0 dBU to line input.
5) Adjust the preset **"Gain"** P1 (on amp/psu PCB) to an output reading of 0,0 dBU .
6) Set the bypass switch in **"on"** and adjust P2 (marked as R34 on the amp/psu PCB) to an output reading of +10,0 dBU.

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ADJUSTMENT OF COMPRESSION:

LOW BAND:

1) Turn all the **THRESHOLD**-controls fully counter-clockwise.

2) Turn the **LOW BAND GAIN**-control fully clockwise.

3) Turn the **MID BAND and HIGH BAND GAIN**-control fully counter-clockwise.

4) Set the **X-OVER LOW at** 300.

5) Set the **X-OVER LOW** multiplier at x4.

6) Apply a signal of 100 Hz, (approx. -20 dBU) to the input and adjust the input level for an output reading of 0,0dBU.

7) Move the jumper on the low band side chain PCB to “ADJUST” and observe that the output level has dropped to -10,0 dBU.

8) If this is not the case, adjust the gain reduction with P1, to obtain a drop of -10,0 dB.

9) Adjust the low band display with P2 so the green -10 LED turns on and the green -7 LED just turns off.

MID BAND:

1) Turn all the **THRESHOLD**-controls fully counter-clockwise.

2) Turn the **MID BAND GAIN**-control fully clockwise.

3) Turn the **LOW BAND and HIGH BAND GAIN**-control fully counter-clockwise.

4) Set the **X-OVER LOW at** 60.

5) Set the **X-OVER LOW** multiplier at x1.

6) Set the **X-OVER HIGH at** 6k.

7) Apply a signal of 1KHz, (approx. -20 dBU) to the input and adjust the input level for an output reading of 0,0dBU.

8) Move the jumper on the low band side chain PCB to “ADJUST” and observe that the output level has dropped to -10,0 dBU.

9) If this is not the case, adjust the gain reduction with P31, to obtain a drop of -10,0 dB.

10) Adjust the mid band display with P32 so the green -10 LED turns on and the green -7 LED just turns off.

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HIGH BAND:

1) Turn all the **THRESHOLD**-controls fully counter-clockwise.

2) Turn the **HIGH BAND GAIN**-control fully clockwise.

3) Turn the **LOW BAND and MID BAND GAIN**-control fully counter clockwise.

4) Set the **X-OVER HIGH at** 1,2k.

5) Apply a signal of 10 kHz, (approx. -20 dBU) to the input and adjust the input level for an output reading of 0,0dBU.

6) Move the jumper on the high band side chain PCB (top most PCB) to “ADJUST” and observe that the output level has dropped to -10,0 dBU.

7) If this is not the case, adjust the gain reduction with P61, to obtain a drop of -10,0 dB.

10) Adjust the high band display with P62 so the green -10 LED turns on and the green -7 LED just turns off.

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