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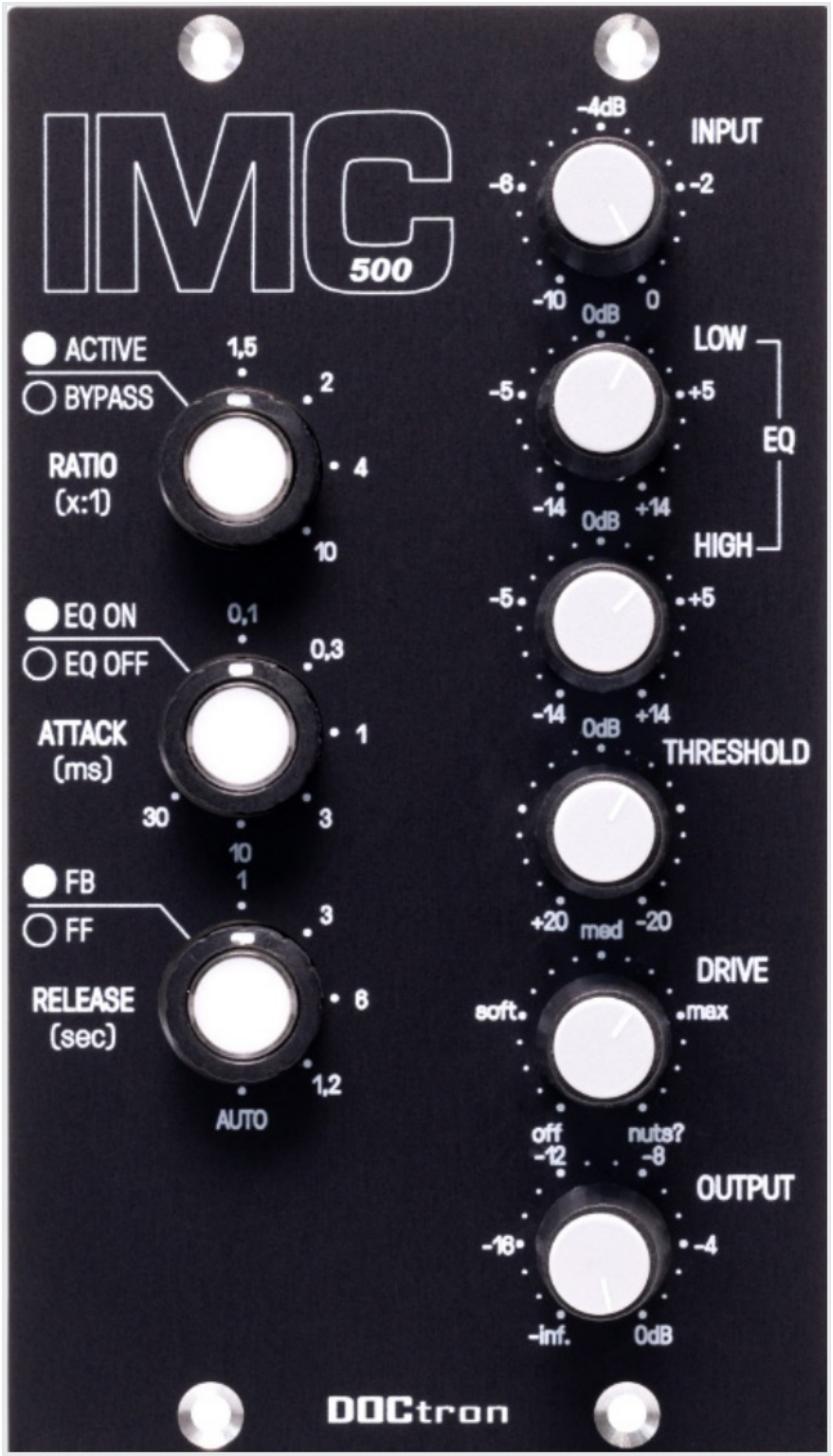
DOCtron IMC-500 Instant Mastering Chain Owner's Manual

DOCtron

SET-UP AND OPERATING INSTRUCTIONS
IMC-500
v. 6.1. 7s



HANDMADE IN GERMANY

CE

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IMC-500 Instant Mastering Chain

	
MARTIN STIMMING	MICHAEL SCHNEIDER DOCtron

INTRODUCTION

IMC is an idea and commissioned work of one of Germany's most credible techno artists: Martin Stimming. The original idea behind IMC is to create a device that is small, light and handy, allowing a liveshow to sound loud and thick without a computer on stage. While being tied to the studio in 2020 and 2021 Stimming found out how useful it is there as well.

The IMC-500 is a downsized model made to fit in a system-500 frame. The signal path is consistently analog. In the course of development, the operation was then digitized and the circuit itself continuously expanded and supplemented, based on Martin Stimming's experience with the prototype devices in tough live use around the world.

From working together on this device, a friendship arose that spurred each other on to make IMC accessible to everyone. The result is a device that represents a milestone in technical and practical terms. IMC-500 is also elaborately crafted by hand. The „inner values" are excellent but some features of the „great" IMC are left out to meet all specifications for a system-500 unit. Some features, like Sidechain-filter, Headamp, and GR-/VU-Meter will be represented by the arising IMC-EXP module. The EXP module is in production at the moment and will soon be available.

IMC5 is a sound-shaping device used as a replacement for a classic mastering chain. Included here is a British-style low and high-shelf EQ with dedicated bypass and a VCA based bus compressor with FF/FB detector path.

The following instructions will now introduce the device in detail. The manual also represents the current state of development.
In this tutorial we're scratching the surface. In the depth you have to go yourself…

WHAT'S NEW
The latest revision of the IMC-500 has received a lot of innovations but there are also some differences to the IMC:

- In-/Outputs are now fully balanced which results in +3dB more headroom
- IMC-500 can now also be used as a DI box which saves the use of an external DI box interfacing to front-of-house
- New combined switches with integrated, illuminated push-buttons
- True Bypass optimized with new circuit. Now independent of any present voltage.
- new circuit without DOA, Headamp and external sidechain. This was necessary to meet the system-500 specs
- new bus-connector-system to connect upcoming IMC-EXP and several other modules (coming up soon)

And now have fun with IMC-500!

SAFETY

The listed safety regulations should be carefully observed. Please observe the following instructions and read this manual. In fact this device is only a module please take this notes for the used system-frame.For further questions please feel free to contact us.

1. ALWAYS USE THE PROVIDED POWER SUPPLY / FRAME
    Please select the proper AC-PLUG before using the power supply. NEVER USE A DAMAGED PLUG. If the power supply or one of the plugs is damaged, please contact us to get spare parts.
2. WHEN INSTALLING INTO A RACK, BE SURE TO PROVIDE ADEQUATE VENTILATION.
    The top and bottom ventilation slots are not decoration and should never be covered during operation. The main reason for technical defects are mostly heat problems. In non-ventilated cabinets, use ventilation panels (1H) between units (even if they don't look very beautiful) to prevent heat build-up.
3. AVOID PLACES WITH STRONG MAGNETIC FIELDS.
    The housings of the device are designed to protect the sensitive electronics from EMI and RFI. For rack mounting, be sure to place devices with large power supplies or power amplifiers as far away from the unit as possible in the rack. A separate routing of signal and power lines can also help to suppress EMI and RFI as much as possible.
4. PROTECT YOUR DEVICE FROM MOISTURE AND WATER SPLASHES.
    If water has entered the housing, disconnect it immediately from the mains and send it to us for inspection to prevent major damage.
5. IF YOU FEEL UNSURE ABOUT HAVING TO OPEN THE DEVICE
    There are no more controls, fuses or jumper inside the current device. Usually there is no need to open the box. Please contact our support team if you are unsure. We're here to help.
6. BEFORE YOU OPEN THE DEVICE
    Be sure to unplug the power adapter before opening the case. Disconnect the device from the mains! Make

sure that no foreign parts remain in the device after completion of the work.

THE RED EXCLAMATION MARK IS AN INDICATION TO THE USER ABOUT SAFETY-RELEVANT FACTS AND FACTS RELEVANT TO SERVICE IN THIS MANUAL.

OVERVIEW

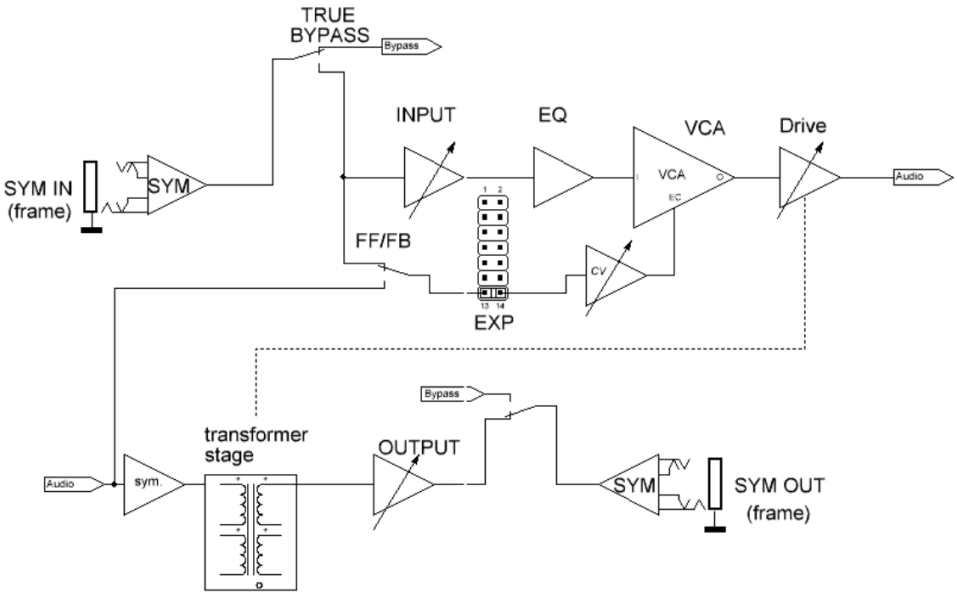


FIG. 01 – BLOCK DIAGRAM

THE GENERAL CIRCUIT DESCRIPTION IS INITIALLY LIMITED TO THE AUDIOPATH.

THE INDIVIDUAL PARTS OF THE CIRCUIT WILL BE DESCRIBED LATER IN DETAIL.

Since both channels are identical, only the left channel is described here, as shown in the block diagram. IMC-500 has a so-called „true-bypass“, which means that the audio signal in the de-energized state is passed uninfluenced from input to output. The audio signal goes from the input (backplane frame) to the treble and bass EQ. Then the audio signal reaches a sound-forming, dioperational amplifier. Now the signal reaches the VCA compressor. The out- put stage of the compressor reaches a further amplifier stage, which later determines the saturation for the output transformer. The signal conditioned in this way now reaches a balancing driver stage and finally the LUNDAHL out- put transformer. At the output of the transformer, the signal is routed to the adjustable Output-Stage
The remaining circuit parts work exclusively with control voltage and are not in the audio path. Thus, no interference can enter the signal path. The separation between audio path and control voltages is also made by using 6-way multilayer boards with their own ground layers. This reduces interference enormously. New in IMC-500 is 14-pin Connector (bus-system) with a set jumper over pin 13 and 14. This connector is used to combine the IMC-500 with otherdevices, like the IMC-EXP. If you connect an external device the jumper has to be removed! If you remove the jumper without connecting an extention device the compressor won‘t work!

INSTALLING THE UNIT

YOUR SYSTEM500 FRAME

IMC-500 fits in almost every system-500 frame.
We‘ve tested a lot of system frames without any issues.
The unit will occupy two slots (stereo-device). BE SURE TO SWITCH OFF THE UNIT BEFORE INSTALLING THE MODULE.
Secure the module with four screws.
If you want to connect an extended device, please remove the jumper before connecting the flatcable.
Install the internal cabling before you connect the modul into the slots.

Please read the manual of the connected module before Installation.
In general, all audio connections should be made before power is supplied to the device.

INSTALLING – ORDER

If you have more modules in your frame, IMC-500 should be the last module in the audiopath.

POWER CONSUMPTION

- The module meets all specifications for a system-500-frame.
- The unit is fuse-protected (self-resetting)
- In case of a failure the internal fuses will disconnect power from the module to the frame
- In case of a failure disconnect the frame from power and wait at least five minutes before restoring power

SECURE FEATURES

- Every In- and Output is prtected against overvoltage, e.g. Phantom-Power
- Please switch of phantom power if you don‘t need it.

THE INDIVIDUAL CIRCUIT PARTS IN DETAIL

THE ACTIVE-BUTTON

IMC-500 has a „true bypass“ circuit. This circuit makes it possible for the device to remain in the signal path even without a power supply. In this case, the applied audio signal is switched to the output directly and lossless. The push-button in the middle allows manual switching of true bypass. A red LED is signalizing an active unit.

THE EQ-BUTTON

The push-button in the middle switches the EQ in the audio-path. A pressed switch causes a red LED to light up and is signalizing an active EQ. Use this switch for a quick check of the defeat signal against the EQ signal.

THE FF/FB-BUTTON

This knob defines the working character of the compressor. There are two types of signal tap for the sidechain: The feed forward (= FF) is the signal before the compressor tapped, with feed backward (= FB) after the compressor. Newer compressors work almost exclusively with „Feed Forward“ (FF). Many „classics“ (such as 1176 or 660) used the Feed Backward (FB) method. The difference between the types: FF intervenes much „harder“ in the signal. FB allows a much „gentler“ method of compression.
If the FF/FB-LED lights red the compressor is working in FB-mode. A dark LED means that the compressor is working in FF-mode.

INPUT
The INPUT potentiometer is an attenuation of the input signal. It reduces the input signal in a range from -10 dB to 0 dB. Because IMC is a grateful amplifier it needs some “headroom” to work. Also, one can reduce the pending signal before reaching the EQ.
THE EQ
The EQ allows to rearrange the pending signal in a wide range. It is a shelving EQ changing the low signals (approx 60 Hz) and high signals (approx 12 kHz). The range is from -14dB to +14 dB for each frequency range. By toggling the EQ-switch one can switch direct both bands from 0dB (linear) to the selected range.

THRESHOLD

The THRESHOLD determinate s the threshold where the compressor starts to work. In full left position (+20 dB) the compressor won‘t work. A full right position (-20 dB) means that all signals louder than -20 dB will be compressed. With THRESHOLD one can establish how much compression should be present in the audio-signal. Threshold determines from which signal threshold the compressor should be present in the audio-signal.

THE COMPRESSOR

RATIO / ATTACK /

Ratio determines the ratio of uncompressed to compressed signal. 1: 1.5 is therefore a slight compression, while 1:10 can be described as a very strong compression. For sum compression in mastering, a slight compression of 1: 1.5 or 1: 2 is preferred.

ATTACK

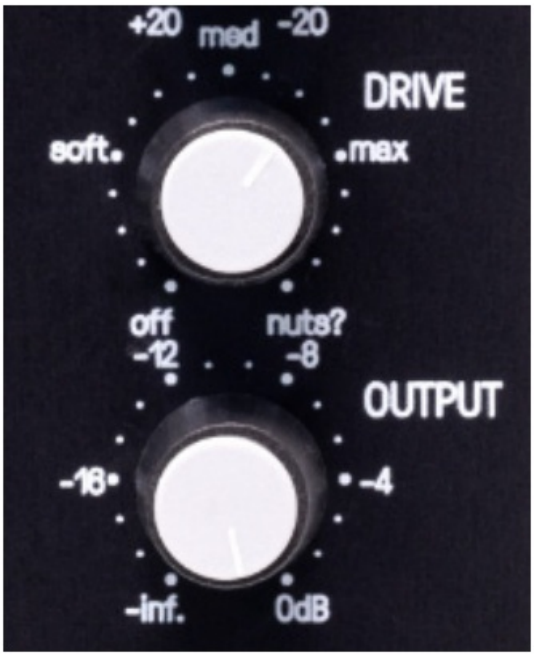
Attack determines how fast the compressor should react. The shorter the selected time, the faster the compression will affect the signal. The indicated time for the ATTACK switch is measured in milliseconds (msec).

RELEASE

Release determines the time after which the compressor „releases“ the signal again. The longer the release, the longer it takes for the compressed level to return to an uncompressed state. A special feature is the setting „AUTO“. In this setting, the release time is automatically determined by the applied signal. The compressor then adjusts the release time to the program material. The indicated time for the REALEASE switch is measured in seconds (sec).

Note: The rotating switches have eight positions with no stop- or end-position. if you switch over the last signed position, the last position remains selected until you reach the first position again. For example: If you switch through RATIO you‘ll have 1,5 – 2 – 4 – 10 – 10 – 10 – 10 – 10.

DRIVE & OUTPUT



These two potentiometers are the most important parameter for the unique IMC-circuit.
They determinate how “fat” the output signal will sound. DRIVE determinates how much the integrated transformer will be driven in saturation and with OUTPUT one can regulate the signal back into “real world”. With DRIVE you put your audio signal right before the distortion limit and with OUTPUT you can handle the amount of “coloring” the transformer output while also reducing the output level. To say it clear: IMC is a pure analog machine. There are no “parental controls”! If you choose to put DRIVE to the nuts?-position you will get a horrible distorted signal.

TECHNICAL SPECIFICATIONS

Here are the mandatory technical data of the device.

Frequency response:	+0.13 dB, -0.18 dB
Noise level:	-104 dB (A)
Dynamic range:	108 dB (A)
THD:	0,0099 %
Stereo cross-talk	-101,3 dB (A)
IMD at 10 kHz	0,0186 %
Input Voltage Range	27,5 dBu
Input Impedance	47 kΩ
PSRR	90 dB
Max. Output Level	+24 dBu@20Hz (load 600Ω)
Cable length:	For operation within the CE / FCC certification, the audio cables used must be shielded and must not exceed a maximum length of three meters
Form-factor:	API Series 500 (needs two slots)

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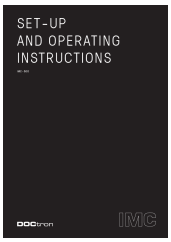
Documents / Resources

	DOCtron IMC-500 Instant Mastering Chain [pdf] Owner's Manual IMC-500 Instant Mastering Chain, IMC-500, Instant Mastering Chain, Mastering Chain, Chain

References

- User Manual

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