

USER MANUAL
500 Series

Total Audio Control

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MID-SIDE ONE

Thank you for purchasing MID-SIDE ONE.

MID-SIDE ONE provides Mid-Side encoding and decoding as a standalone “500” rack module. The default set up with all the switches in OFF position is for encoding L-R signals to M-S.

The facilities available are:

- Selection of L-R or M-S input.
- Selection of M-S or L-R output.
- Switched insert points on both the Mid and Side paths.
- Mutes on both the Mid and Side paths
- Variable 80Hz to 3.3 kHz High pass filter on Side path.
- Metering switchable between input and output.
- +10dB meter gain switch.
- System “IN” switch

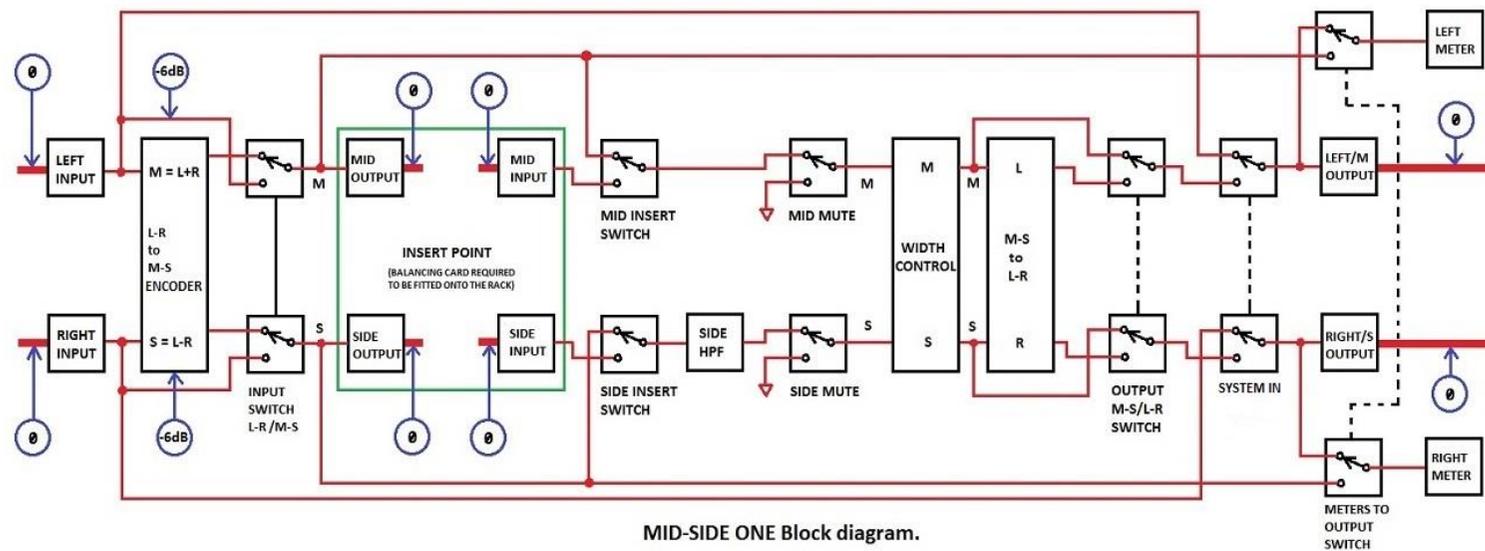
SPECIFICATIONS:

- Input impedance : 20k bridging
- Frequency response : +/- 0.5dB, 10Hz-80kHz
- Phase response (EQ out) : +/-5 deg., 20Hz-20 kHz.
- THD&N (+10dBu input signal): Better than 0.05%, 20Hz-20 kHz.
- Output noise, 22Hz-22kHz, RMS, 40 ohm source:
BYPASS: -99dBu.
L-R to L-R: -95dBu
L-R to L-R + WIDTH IN, set to stereo: -95dBu
L-R to L-R + WIDTH IN, set to stereo + FILTER IN @ 80Hz: -94dBu
- Maximum input level : +26.5dBu.
- Maximum output : +26.5dBu into 200k ohms, +26dBu into 600 ohms.
- Output impedance : 75 ohms

SPECIFICATIONS ARE SUBJECT TO CHANGE WITHOUT NOTICE.

OPERATION:

The block diagram of MID-SIDE ONE is shown below right. The operation starts with all the switches in OFF position. At this stage the SYSTEM IN, INPUT and OUTPUT switches are of first interest to us.



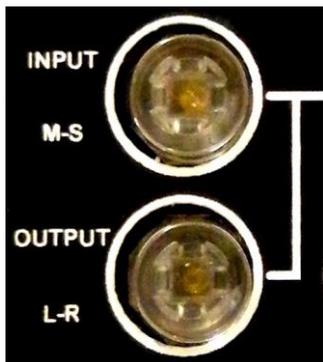


SYSTEM IN switch in OFF position all Encode/Decode processing is by-passed.

The insert sends can still be used to send an encoded/decoded signal as selected by the INPUT switch.



SYSTEM IN switch in ON position Encode/Decode processing is activated.



L-R to M-S ENCODING (INPUT OFF/OUTPUT OFF)

The outputs will become:

$$M = \text{mono} = L + R$$

and

$$S = \text{difference} = L - R$$

Then by adding and subtracting the M and S signals

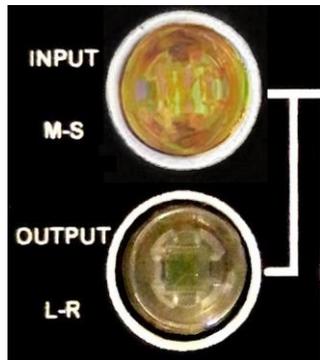
$$M + S = (L+R) + (L-R) = 2L$$

$$M - S = (L+R) - (L-R) = L + R - L + R = 2R$$

L-R to M-S	(L) INPUT	(R) INPUT	(M) OUTPUT	(S) OUTPUT
$M=L+R$	+10	+10	+16	Zero (see note)
$S=L-R$	+10	zero	+10	+10
	zero	+10	+10	+10 (-180deg)
	zero	zero	zero	zero

Expected results of signal based on a +10dBu 1kHz coincident source to both inputs.

Note: The S output level is the cancellation of L & R inputs. The actual level is therefore dependent on the matching of these signals.

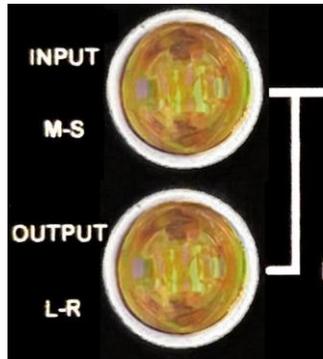


M-S to M-S (INPUT ON/OUTPUT OFF)

In this mode an M-S signal can still be processed if required by the filter and width functions.

M-S to M-S	(M) INPUT	(S) INPUT	(L) OUTPUT	(R) OUTPUT
	+10	+10	+10	+10
	+10	zero	+10	zero
	zero	+10	zero	+10
	zero	zero	zero	zero

Expected results of signal based on a +10dBu 1kHz coincident source to both inputs.



M-S to L-R (INPUT ON/OUTPUT ON)

The outputs will become:

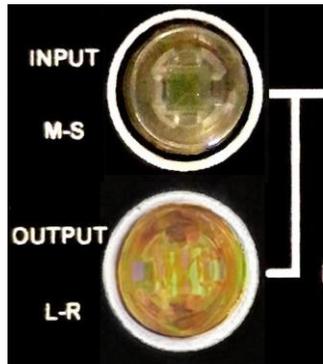
$$L = (M+S)/2$$

and

$$R = (M-S)/2$$

M-S to L-R	(M) INPUT	(S) INPUT	(L) OUTPUT	(R) OUTPUT
$M + L = 2L$	+10	+10	+10	zero
$M - L = 2R$	+10	zero	+4	+4
	zero	+10	+4	+4 (-180deg)
	zero	zero	zero	zero

Expected results of signal based on a +10dBu 1kHz coincident source to both inputs.



L-R to L-R (INPUT OFF/OUTPUT ON)

In this mode WIDTH control can be used on a conventional stereo signal.

L-R to L-R	(L) INPUT	(R) INPUT	(M) OUTPUT	(S) OUTPUT
	+10	+10	+10	+10
	+10	zero	+10	zero
	zero	+10	zero	+10
	zero	zero	zero	zero

Expected results of signal based on a +10dBu 1kHz coincident source to both inputs.



WIDTH CONTROL

In ON position WIDTH switch activates the stereo “width” control – mono/stereo/wide.

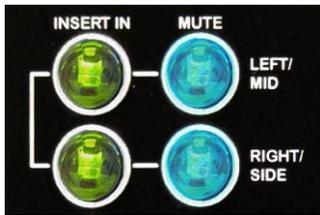
The MONO position combines all left and right signals. If there is a high amount of coincident signal, then the level will rise by up to 6dB. The STEREO position produces a normal stereo distribution. In WIDE mode the left and right signals are 180 degrees out of phase therefore any coincident signal will be cancelled.



SIDE HPF

In ON position SIDE HPF switch activates the variable 80Hz to 3.3 kHz High pass filter on Side path.

Low and mid frequencies up to 3 kHz are very important when it comes to signal positioning. Using a high-pass filter on the S channel enables selected low frequencies to be located in the center of the stereo image when re-combined to L and R. This improves mono compatibility.



INSERT IN - MUTE

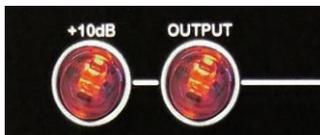
In ON position INSERT IN switches activates the insert points on both the MID and SIDE paths.

This allows the use of external EQ and different degrees and types of reverb on the M and S channels. This can produce spatial ambiance that is not easily possible to create by simple processing of the L-R stereo mix.

In ON position MUTE switches independently mute the MID and SIDE paths.

Please note that the insert points are only available if your 500 series rack supports these functions.

All of Total Audio Control 500 series racks naturally fully support these. Normally the insert points are unbalanced but can be converted to balanced using Total Audio Control BALANCING CARD



METER CONTROLS

In ON position the meters are assigned to the output.

In On position +10dB meter gain switch applies gain to the meters for additional sensitivity.

