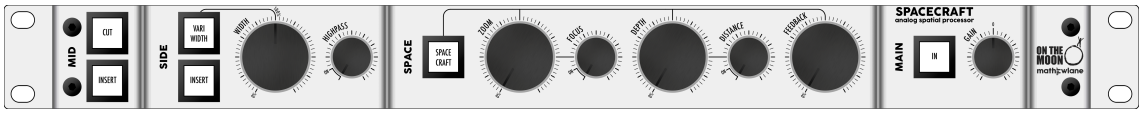
SPACECRAFT
analog spatial processor



Owner's Manual

v1.0

OnTheMoon
Luchterenstraat 25A
9031 Drongen
Belgium

www.onthemoon.be
www.mathewlane.com

INTRODUCTION

The **OnTheMoon SPACECRAFT** is a revolutionary stereo analog spatial processor, based on Mathew Lane's spatialising technology. This unique control of the stereo field is now possible in the analog domain.

The **OnTheMoon SPACECRAFT** is a mid/side based processor with unique extra controls, offering new and different stereo manipulation possibilities in a 1U hardware unit. It offers a wide range of applications for mixing, mastering and post production - going from simple MS (mid/side) encoding/decoding, over stereo field width and depth enhancement, to fixing mono compatibility issues and more.

CONNECTIONS - Back panel

The **OnTheMoon SPACECRAFT** uses a standard IEC inlet with an on/off switch on the back panel.
Using the voltage switch next to the IEC inlet, the unit can be set for 230V or 115V.
230V requires the use of 400mA slow blow fuses, while 115V requires the use of 800mA slow blow fuses.
Make sure the voltage switch is in the right position and the correct fuses are used before powering up.
The **OnTheMoon SPACECRAFT** is pre-set correctly for the region it originally ships to.

The **OnTheMoon SPACECRAFT** has stereo analog inputs and outputs, plus insert sends and returns for the ***MID*** and ***SIDE*** sections.
All inputs and outputs are balanced on Neutrik XLR sockets, operating at professional +4dBu line levels.

OVERVIEW & USE - Front panel

The **OnTheMoon SPACECRAFT** has 4 sections: ***MID***, ***SIDE***, ***SPACE*** and ***MAIN***.

MID

The ***MID*** section contains the sum of the Left and Right inputs.
This is the mono info of the stereo input signal, the center of the stereo image.

The *CUT* button allows to mute the ***MID*** signal.
This is useful for listening to ***SIDE*** and/or ***SPACE*** in solo, or simply to replace the existing ***MID*** signal with a new signal using the ***SPACE*** section (see further).

The *INSERT* button activates a send/return on XLR on the back panel to insert an outboard unit of choice (EQ, compressor, …) for further processing of the ***MID*** signal.

SIDE

The ***SIDE*** section contains the difference of the Left and Right inputs.
This is the true stereo information of the stereo input signal.

The *VARI WIDTH* button activates the *WIDTH* knob, to change the width of the stereo signal by boosting or attenuating the ***SIDE*** signal level.
When the *WIDTH* knob is straight up (marked 100%), or when *VARI WIDTH* is not activated, the original stereo width is maintained.

The *INSERT* button activates a send/return on XLR on the back panel to insert an outboard unit of choice (EQ, compressor, …) for further processing of the ***SIDE*** signal.

The *HIGHPASS* filter allows to remove low frequencies from the ***SIDE*** signal, to ensure mono low frequencies in the stereo output signal. When turned all left, it is inactive. Turned all right, it goes up to around 300Hz with a gentle 6dB/oct slope.

SIDE can be muted by activating *VARI WIDTH* and turning *WIDTH* all down to 0%, this is useful for listening to ***MID*** and/or ***SPACE*** in solo.

SPACE

The ***SPACE*** section is what really sets the **OnTheMoon SPACECRAFT** apart.

The ***SPACECRAFT*** button activates this whole section. When not active, this whole section is mute. Muting (de-activating) the ***SPACE*** section can also be useful to listen to ***MID*** and/or ***SIDE*** in solo.

ZOOM allows to create new stereo information, based on existing mono information.

Using ***ZOOM*** results in a unique way to widen the signal, to zoom in on a certain part of a stereo signal, and to improve the definition and spatial perception of a complex stereo mix.

ZOOM is additive. Its neutral position, not adding anything to the signal, is turned all left (0%).

The related ***FOCUS*** parameter defines which frequencies are focused on for zooming, and changes the interaction of this component with the ***MID***, ***SIDE*** and *DEPTH* signals.

FOCUS uses a digitally controlled analog delay circuit. Turned all left, the analog delay is completely out of the circuit. Turning up to the ON position will relay-switch in the analog delay circuit. From then on short delay times (from 1ms up to 10ms) can be chosen in small digitally controlled steps.

DEPTH bases itself on existing stereo information, and creates new mono information.

Using ***DEPTH*** results in more depth perception but can be also used to improve mono compatibility and add mix glue, or even to replace existing mono information (with ***MID*** CUT active) for remix and creative applications.

DEPTH is additive. Its neutral position, not adding anything to the signal, is turned all left (0%).

The related ***DISTANCE*** parameter adds even more depth, and can be tweaked to change the interaction of this component with the ***MID***, ***SIDE*** and *ZOOM* signals.

DISTANCE uses a digitally controlled analog delay circuit. Turned all left, the analog delay is completely out of the circuit. Turning up to the ON position will relay-switch in the analog delay circuit. From then on short delay times (from 1ms up to 10ms) can be chosen in small digitally controlled steps.

FEEDBACK is a cross feed between ***ZOOM*** and ***DEPTH***. It will only have effect when both ***ZOOM*** and ***DEPTH*** are in use.

Using ***FEEDBACK*** results in more fullness but can also be used for creative effects and even reverb creation when combined with adequate ***ZOOM*** and ***DEPTH*** levels and respective use of ***FOCUS*** and ***DISTANCE*** analog delays.

FEEDBACK is additive, its neutral position, not adding anything to the signal, is turned all left (0%).

Analog Delay Notes:

Due to the nature of analog delays, higher delay times will add some noise.
Shorter delay times however, as used in most situations, will hardly raise the noise floor.
When both FOCUS and DISTANCE analog delays are active, clock cross modulation (below the noise floor) between the delays is possible at certain setting combinations. Sometimes it might then be preferred to slightly tweak (or switch off) one of the delays.

MAIN

The ***MAIN*** section has an ***IN*** button to activate or bypass the whole **OnTheMoon SPACECRAFT**. ***GAIN*** allows for exact level matching between processed signal and bypassed (original) signal, with a range from -6dB to +10dB. When straight up, ***GAIN*** is at 0dB (calibrated position).

TECHNICAL SPECIFICATIONS

THD+N < 0.005%	(ref +4dBu, unity gain, 22kHz BW)
S/N = 88dB	(ref +4dBu, unity gain, 22kHz BW)
Dynamic Range = 106dB	(ref +22dBu, 22kHz BW)
Maximum Input Level = +22dBu	(balanced, <1% THD)

Concept & system design:	Mathijs Indesteege aka Mathew Lane
Electronics design:	Wim De Roeck
Project support:	Raf Lenssens