ZÄHL IM1

M/S INSERT MASTER with stereo
input/output, stereo insert send and return
in the space of two 500 series modules

ZÄHL IM1
M/S INSERT MASTER

...another AM1 spin-off in the 500 series format

AM1 is our state-of-the-art pure analog mixing console delivering superb sound quality and comprehensive functionality. IM1 packs the functionality of the AM1 INSERT and STEREO stages and several added controls into a 2-slot 500 series module.

FEATURES

- Switchable stereo INSERT with optional MID/SIDE mode

- SEND BOOST up to +20 dB

- DRY/WET RETURN RATIO control

- Selectable impedance on RETURN (600R, 2k, line)

- STEREO BASE (width) control switchable between MID/SIDE and CONSTANT MID mode

- GAIN (±10 dB) and L/R BALANCE (±2.5 dB) compensation on INPUT and OUTPUT

- SIGNAL/OVERLOAD meter LEDs at INPUT and OUTPUT

- MONITORING of SEND and RETURN signals

- BYPASS

TYPICAL APPLICATIONS AND BENEFITS

IM1 provides extended options when inserting outboard analog signal processors into your audio chain for post-processing, mastering, mixing or recording – whether in an analog or digital environment (with ADDA conversion). In mid/side or conventional left/right stereo modes it offers control over gain, drive, impedance, stereo image and dry/wet balance for parallel processing at high end sound quality.

CONNECTIONS

IM1 is a 2-slot 500 series module with stereo input, stereo output and stereo insert send and return. When installed in a Zähl Rack500 a dedicated rear panel provides all connections (8 XLR connectors). As the 500 series standard provides only one balanced I/O per slot, the enclosed additional breakout panel with 4 XLR connectors is needed to operate IM1 in a standard 500 series rack – requiring one additional slot.

DELIVERY CONTENTS

- IM1 M/S Insert Master 500 series module (2-slot)

- Plastic bag with insert breakout panel (with 4 XLR connectors) and ribbon cable

- this User Manual

- Extracting tool (knurled head screw with M3 thread)

- 1 spare countersunk screw for extracting tool fixture (black, M3x8)

- 6 spare countersunk screws for rack mounting (silver, UNC 4-40 3/8)

- 6 spare countersunk screws for rack mounting (black, M3x6 for metric racks only)

IM1 must not be operated in environmental temperatures above 40°C or below 5°C.
Since 500 series racks can differ a lot in how they are constructed and ventilated, you just have to keep an eye on the temperature inside the rack while in operation.
• Operating a unit beyond the limits can cause severe damage.
• Never insert or remove IM1 while rack is powered - it may cause damage to IM1 and to the rack.

!

DESIGN FEATURES

- stereo design for mix & mastering as well as voices & instruments

- highly musical design

- intuitive, user-friendly, self-explaining layout

- lowest noise and distortion signal paths built with highest quality components

- no microprocessor, no clock pulses, sequential logic only

- individual power stabilization on each module, no switched power circuitry

All you can expect from an INSERT

Dedicated level BOOST, DRY/WET Ratio control, MID/SIDE stereo conversion, individual I/O MONITORING.

Impedance Select switch (Z) on Insert Return.

STEREO BASE Control

Classical circuitry based on MID/SIDE stereo technique, adapted to real-world applications.

Adaptable

Compatibility to standard 500 frames (1-slot breakout panel providing stereo insert I/Os included). Special rear panel covering all connectors when operated in Zähl Rack.

SETTING-UP OPERATION

## Installation in a Zähl Rack 500 equipped with IM1 rear panel

- Unpack IM1. (You do not need the bag with the breakout panel.)
- Make sure the power has been switched off or the mains cable has been removed.
- Carefully insert IM1 into the rack. Keep the unit well aligned until the connectors meet their counterparts.
- Firmly push IM1 into place without using excessive force.
- Mount the IM1 front panel with four screws supplied with your rack.

Installation in a standard
API 500 series rack

- You need three slots: two for IM1 and one for the breakout panel adjoining IM1 to the right.
- Unpack IM1.
- On the rear side of IM1 locate the two Philips head screws which hold a plastic cover on top of a 14pole connector. Unscrew the cover and put it aside.
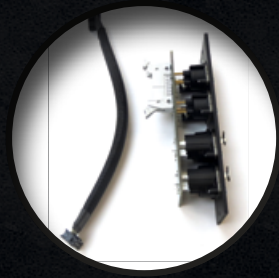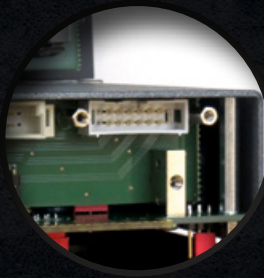
- Unpack the breakout panel.
- Plug one end of the enclosed ribbon cable into the mating connector at the rear of IM1 which you have uncovered before. It only fits one way. It may be necessary to pull back the isolation sleeve of the cable slightly in order to plug in the connector.
- Put the plastic cover back into place using the two Philips head screws. Make sure to mount it the right way around: The sharp-edged side with the crack marks must not face the cable!
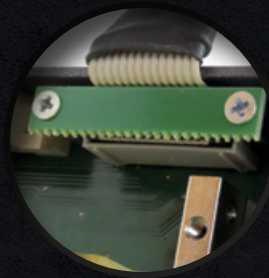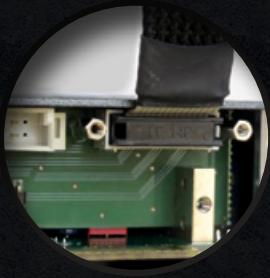
- Make sure the power of your rack has been switched off!

- Carefully insert IM1 into the rack. Make sure the ribbon cable faces to the right. Keep the unit well aligned until the board edge connectors meet their counterparts.

- Firmly push IM1 into place without using excessive force.

- Make the ribbon cable stick out of the free slot to the right of your IM1.

- Fix the IM1 front panel with four screws that come with your rack or our enclosed spare screws.

- Plug the free ribbon cable connector into the mating PCB connector on the breakout panel. It only fits one way. It might be necessary to move the strain-relief levers of the PCB connector outwards in order to insert the connector. When the connector is firmly plugged in the strain-relief levers should automatically snap back into place and prevent unintentional release.

- Mount the breakout panel with two screws that come with your rack or our enclosed spare screws.

Extracting Tool

In order to remove IM1 from the 500 series rack we recommend using the enclosed extracting tool.
Remove the M3 Philips head countersunk screw in the INSERT section on the front panel.
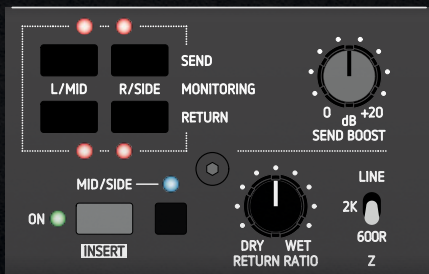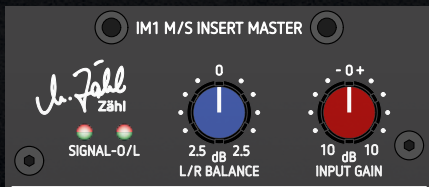In place of this screw, screw in the extracting tool gently without tightening it.

Then hold by the tool and carefully pull straight out – do not apply any force sideways!

When done, do not forget to put the M3 countersunk screw back into place.

OPERATION

I/O Stage

- Dedicated INPUT and OUTPUT level setting
  - GAIN ±10 dB
  - L/R BALANCE ±2.5dB

- Dedicated INPUT and OUTPUT level metering
  - SIGNAL (LED green): level present
  - O/L (LED red): overload warning reading multiple points in the signal chain

- BYPASS switch

INSERT

- INSERT on/off switch inserts the connected signal processors into the signal chain. (An internal jumper can be set to mute INSERT SEND when INSERT off, or to keep INSERT SEND always active, jumper setting see below.)

- MID/SIDE Switch encodes the INSERT SEND stereo signal from left/right to MID/SIDE and decodes the RETURN signal back from MID/SIDE into left/right. The normally left channel carries the MID signal (sum L+R) and the normally right channel the SIDE signal (difference L−R). Individual processing of MID and SIDE signals can be a powerful technique to be used in mastering, in a mix sum or in creative sound processing.

- SEND BOOST control adds gain of up to 20 dB to the INSERT SEND output. This allows you to drive your outboard gear to where it sounds best - especially useful for vintage/tube/transformer equipment.

- Z switch offers selection of impedance on INSERT RETURN: LINE (>20 kΩ), 2 kΩ or 600 Ω. Impedance matching affects the sound and is in some cases essential. With this switch you will easily find the best match.

- DRY/WET RETURN RATIO control balances between original signal (DRY) and processed signal (WET) at INSERT RETURN - also called parallel processing. This can be used for example to add a small amount of heavy processing while maintaining the overall integrity of the original signal - especially transients.

- MONITORING matrix with four switches allows you to check what is being sent to your inserted equipment and what is coming back - especially helpful in MID/SIDE mode. Push any button to set the unit to MONITORING mode. You can select INSERT SEND or RETURN for L/MID channel and for R/SIDE channel individually. LEDs next to each switch indicate what is being monitored. Push again to return to normal operation. Monitor signal is send to the main outputs.

STEREO BASE

This stage is based on MID/SIDE technology and can widen or reduce the stereo image.

- STEREO BASE on/off switch

- STEREO BASE potentiometer: In center position the signal is unaffected - normal STEREO. Turned towards MONO it reduces the stereo image. Turned towards DIFF it fades out the MONO portion and enhances the STEREO portion by 6 dB. The fader response is optimised for live use in a mix by compensating the typical output level increase when turning from STEREO to MONO.

- CONSTANT MID function keeps the MONO portion constant, thus avoiding loss of lower frequency content (due to phase cancellation) when the control is set past the STEREO (center) position clockwise towards the DIFF position. In the DIFF position (fully clockwise) the STEREO portion is enhanced by 6dB, resulting in a "supernatural" stereo image.

INSERT SEND Jumper

By default the INSERT SEND output remains active when INSERT is switched off. The INSERT on/off switch only affects the INSERT RETURN in this setting.

This behaviour can be changed via an internal jumper as shown below. In this optional setting the INSERT on/off switch also mutes the INSERT SEND output.
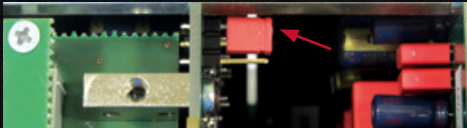
Standard:
INSERT SEND output is always active
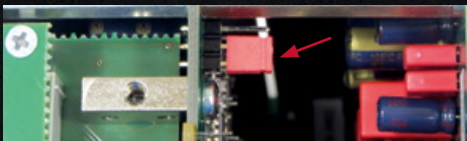
Optional:
INSERT SEND output is muted when INSERT is switched off

DATA

Inputs

technology	electronically balanced, transformer-like behavior (either hot or cold may be connected to ground)
impedance	> 20 kOhm
max. level	> +26 dBu
reference level	+6 dBu/+4 dBu

Outputs

technology	electronically balanced, transformer-like behavior (either hot or cold may be connected to ground)
impedance	50 ohms
max. level	> +26 dBu
reference level	+6 dBu/+4 dBu

Power

DC Voltage	+/- 15...17V from stablilized noisefree DC Supply (LDOs provided inside unit)
DC Current	< 250mA (i.e. 125mA per slot) - equal current pos/neg rail

Connector Pin-Out

Card Edge 15 pin 0.156" space - compatible to EDAC type 306-015-520-102 - contact no. 01 is located at top

01	Ground/Case	06	n.c.	11	n.c.
02	Bal. Audio Output +	07	n.c.	12	+15...+17VDC
03	n.c.	08	Bal. Audio Input –	13	0V / Common
04	Bal. Audio Output –	09	n.c.	14	-15...-17VDC
05	Shield	10	Bal. Audio Input +	15	n.c.

> **!**
>
> **IM1 occupies two slots in the API rack.**
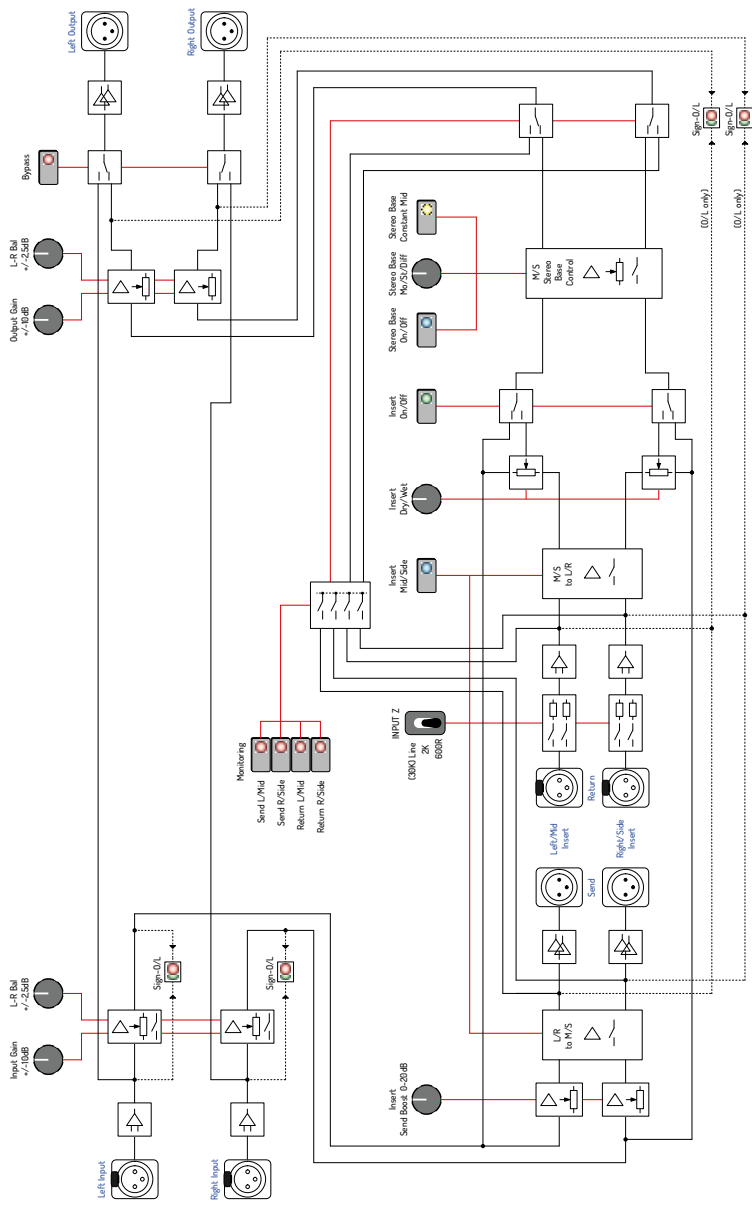>
> The left card edge connector – seen from the front – comprehends left channel connections.
> The right connector serves for the right channel.
>
> Supply Inputs incl. Ground/Case always have to be fed to both connectors even if only one channel is used!

Measures & Weights

Unit	76,2x133,4x169mm 1,2kg
Boxed	305x220x150mm 1,95kg (approx.)

ZÄHL IM1 M/S Insert Master
Block Diagram   14.04.2016

Left Output
Right Output

Bypass

L-R Bal +/-2.5dB
Output Gain +/-10dB

Stereo Base Constant Mid
Stereo Base Mo/St/Diff
Stereo Base On/Off

M/S Stereo Base Control

Insert On/Off

Insert Dry/Wet

Insert Mid/Side

M/S to L/R

Monitoring
Send L/Mid
Send R/Side
Return L/Mid
Return R/Side

INPUT Z
CINCH Line
2K
600R

Return
Left/Mid Insert
Right/Side Insert
Send

L/R to M/S

Insert Send Boost 0-20dB

L-R Bal +/-2.5dB
Input Gain +/-10dB

Sign-O/L
Sign-O/L

Left Input
Right Input

Sign-O/L
Sign-O/L
(O/L only)
(O/L only)

J. Zähl
Zähl

NOTES, SAFETY INSTRUCTIONS, WARRANTY

1. The equipment must only be used for the purpose described in this manual.

2. Keep the manual for further reference. When passing the equipment on, enclose the manual.

3. Do not operate the equipment at
   - very high air humidity (>85% relative humidity
   - high environmental temperature (>40°C) or near heat radiating equipment or objects
   - places which are exposed to solar radiation
   - very low temperatures (<5°C)

4. Ensure appropriate air ventilation.

5. Do not store the equipment at temperatures below -20°C or above +50°C.

6. Do never expose the equipment to environmental conditions which can lead to water condensation.

7. Do not expose the equipment to mechanical stress or shock.

8. Ensure that liquids cannot get into the equipment.

9. Ensure that foreign objects cannot get into the equipment.

10. Only operate the equipment on a safe, legally appro-ved, mains power supply

11. Only clean the equipment with smooth cleaning tissues and soft detergents.

12. Never open the equipment.

13. In case the equipment has been dropped or there is any external or functional damage, do not continue to operate the equipment. Have the equipment checked at your dealer's workshop or a person who is qualified to do such checks.

14. When shipping, use a package which protects the equipment from environmental impact such as mechanical shock or humidity.

15. The equipment applies to EU directives RoHS and WEEE. Dispose separately ac-cording to WEEE. Manufacturer WEEE register number: DE 90586269

16. Manufacturer's warranty covers the equipment to be free from defects of quality at the time of delivery for a period of 24 month presumed that
    - the equipment was treated properly according to its intended use
    - all information and safety instructions given in this manual have been fol-lowed
    - the equipment shows no external damage
    - the equipment is shipped to the manufacturer or to an authorised repair-shop free of charge
    - a proof of purchase is supplied
    - a detailed failure description is supplied

    The manufacturer accepts the costs of parts and labour incurred by repair. Any other costs including shipping and packaging will be charged.

17. We expressly exclude any liability for incidental or consequential damages which might arise from operating the equipment, including failure of the equipment.

18. All information in this manual has been carefully reviewed. It has been updated at the time of passing for press. Nevertheless we do not accept any liability for in-sufficiency or errors.

19. EEC Declaration of Conformity: The equipment applies to applicable EMC rules 2004/108/EEC.

CE