

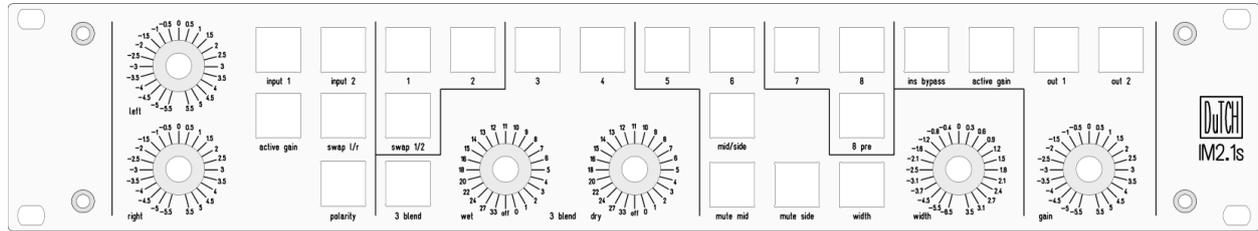


***DuTCH audio IM2.1(s) manual***

# DuTCH audio IM2.1(s) manual

(v1.6 29-06-2021)

## Introduction:



Thank you for purchasing the DuTCH audio Insert Machine IM2.1(s). In this manual we will explain how this device works and how to use it. Since this is not really a beginner's device, we will skip the basics and focus on it's functions. We will go from the inputs (left side), to the inserts (middle) and to the outputs (right side), basically how the device handles signals.

The IM2.1 is available in 2 versions, the IM2.1 and the IM2.1s. The only difference is the output section. More on this can be found in the output section of this manual.

## Important Safety Instructions:

**Please follow these precautions when using this product:**

- Read and keep these instructions.
- Heed all warnings and follow all instructions.
- Dangerous voltage lives inside this machine. Opening is only allowed by qualified service personnel.
- Unplug this machine during lightning storms or when unused for long periods of time.
- Do not use this machine near water or outside.
- Clean only with a dry, soft cloth. Do not spray any liquid cleaner onto the cabinet, as this may lead to dangerous shocks.
- Do not install near any heat sources such as radiators, heat registers, stoves, or other machines (including amplifiers) that produce heat. Avoid exposure to direct sunlight.
- This machine typically runs slightly warm when operated. Install in a normal ventilated area. If the product will be used in a rack, make certain there is sufficient air movement within the rack. Preferably offer some empty rack space above the unit and do not place it on top of hot equipment.
- Refer all servicing to qualified service personnel. Servicing is required when the machine has been damaged in any way, such as when the powersupply plug is damaged, liquid has been spilled or objects have fallen into the machine, the machine has been exposed to rain or moisture, does not operate normally, or has been dropped.
- **WARNING:** To reduce the risk of fire or electric shock, do not expose this machine to rain or moisture.

## Operation:

### Inputs:

#### Input 1 / input 2:

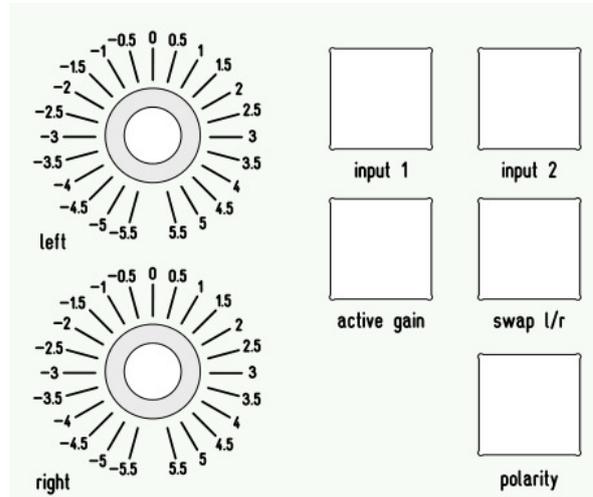
You can choose between the 2 inputs by pushing the corresponding button. It's also possible to use both inputs at the same time, but keep in mind that this could cause some impedance changes.

#### Swap L/R:

When you engage the 'swap l/r' button the left and right channel will be swapped in order. Sometimes this will bring things to the surface that you didn't notice before because of the new listening approach.

#### Polarity:

The 'polarity' button will swap the polarity of both Left and Right. Sometimes swapping polarity will give a better response, mostly in the low frequencies. In most cases swapping polarity is not needed, but in the cases where you want to, this button comes in very handy. Keep in mind that obviously this only works with balanced signals.



#### Active gain:

Both inputs are passive with just relays, but by pushing the 'active gain' button you will enable the active gain stage which enables you to change the input gain to your liking. In the mid/0 position, there is no gain applied though it passes the active gain circuit. You can change the gain in 23x0.5dB steps from +5.5dB to -5.5dB with stepped switches.

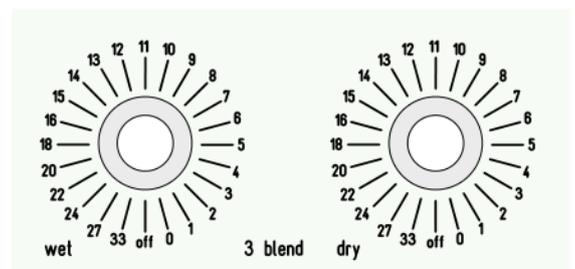
### Inserts:

#### Insert 1 and 2:

This is a 100% passive insert section with just relays. When disabled, it will directly pass the signal internally to the next stage. When you enable the insert (1 and/or 2), it will pass the signal to the corresponding send/return. It will first pass insert 1 and then it goes into insert 2. When you push the 'swap 1 /2' button, it will swap the order of the inserts. So instead of 1>2 the order will become 2>1.

#### Insert 3 (blend):

Insert 3 has an active parallel/blend function. With insert 3 you can blend the dry and wet signal together. Most parallel processing uses one control for blending from wet to dry and uses a potmeter. The IM2.1(s) uses two separate controls for wet and dry with stepped switches instead of a potmeter. This way you don't have channel imbalance, easy recall and way better control over what happens to the signal.



For instance you can choose to compress the signal and blend in just a bit of dry signal. But you also choose to use the dry signal and blend in a bit of quite aggressive compression. The first steps on the stepped attenuators have 1 dB per step and the last steps have more course steps, the lowest step is -33dB. The off position mutes the wet or dry signal.

### Blend 3:

With the blend 3 button you can switch between passive or blend/parallel mode.

*\* note: the first delivered IM2.1's didn't have this button.*

### Using wet/dry as active gain

*This is a hidden feature, 'the Bob Katz mod'. It's possible to activate the blend function even when insert 3 is not activated. The wet and dry knobs become gain knobs and they will behave like an active gain in between the inserts. Because the wet control is not passing the insert itself, you can combine the wet/dry gains to add up to 6dB gain.*

### Insert 4:

Insert 4 is a regular passive insert.

### Insert 5 and 6 (mid/side):

Insert 5 and 6 can be used for Mid/Side processing.

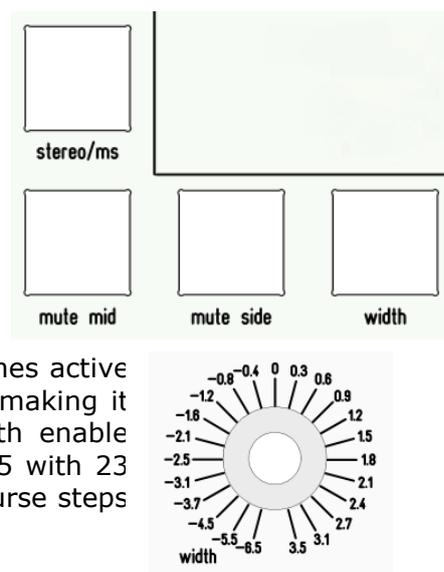
When set to stereo, it will be 100% passive, when set to MS, it will pass the active mid/side circuit.

### Mid Side:

When the 'stereo/ms' button is engaged, both inserts 5 and 6 will work in MS mode. Left channel is Mid (sum), Right channel is Side (diff).

### Width:

When you enable the 'width' button, the width circuit becomes active and you can change the gain of the side channel and so, making it more wide or narrow. We chose to use a dedicated width enable button for A/B purposes. The width gain range is -6.5/+3.5 with 23 steps. This way you have more precise control than with course steps and a big range you probably won't need.



### Mid / Side mute:

The 'mute mid' and 'mute side' buttons will let you mute mid or side so that you can listen to just the sum (mid) or the diff (side).

### Other MS functions:

*When you don't use inserts 5 and/or 6, you can still make use of the mid/side functionality. When the 'stereo/ms' button is set to MS, it passes through the active MS circuit. This way you can change the gain of the side channel and you can also listen to just the mid or side channel by muting mid or side.*

### Insert 7:

Insert 7 is a regular passive insert.

### Insert 8:

With insert 8 you can swap the order of insert 8 from insert 8 to pre insert 1, so it basically becomes insert 0. When you push the '8 pre/post' button, this is what will happen:

8 pre/post **off**: inputs > 1>2>3>4>5>6>7>**8** > outputs

8 pre/post **on**: inputs > **8**>1>2>3>4>5>6>7 > outputs

## Outputs:

### Outputs:

You can choose between the 2 outputs by selecting the corresponding button. It's also possible to use both outputs at the same time, but keep in mind that this could cause some impedance and so level changes.

### Ins bypass:

When you engage 'ins bypass' all inserts will be bypassed. You will see that all lights on the insert switches will go out, giving you extra visual feedback. Simply said, the input section will go directly to the output.

### IM2.1

#### Bypass offset Out 1:

Out 1 and 2 are passive output selectors with just relays, so no active circuit. So basically, it's passing the signal from the inserts straight into the output. But when you push the 'out 1 bp offset', it will bypass all inserts and the active gain stage 'out 1 offset' comes active. The monitor offset will allow you to change the bypass gain to make up for the processing of the inserts. This way you can A/B between the analog processing and level-matched bypassed signal. The gain range is set from -10dB to +10dB \* done with a potmeter instead of a stepped switch for a more precise adjustment. And since this is just an AB function no recall is needed. Internally the gain range of the monitor trim can be calibrated with 2 multitrurn trimmers.

*\* note: the bypass gain range on earlier revisions was -2dB to +8dB*

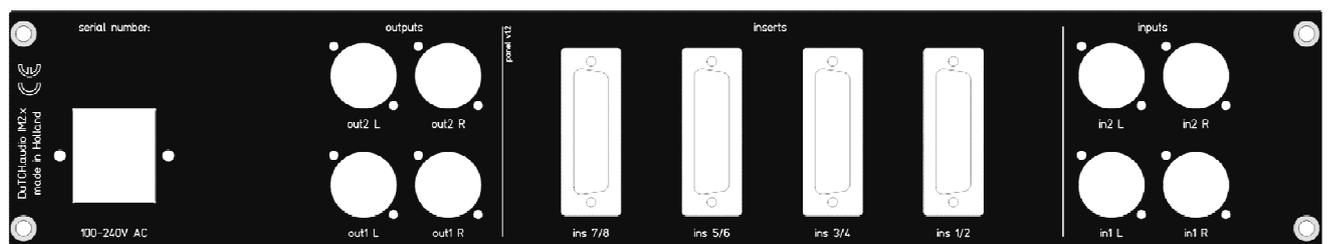
### IM2.1s

#### Active output gain:

The output is passive with just relays, but by pushing the 'active gain' button you will enable the active gain stage which enables you to change the output gain to your liking. In the mid/0 position, there is no gain applied though it passes the active gain circuit. You can change the gain in 23x0.5dB steps from +/-5.5dB\* with stepped switches.

*\* note: the gain range for the 0.25dB per step output gain is +/-2.75dB. It's also possible to order the IM2.1s with a gain range toggle switch. That way you can choose between 0.25 and 0.5dB per step.*

## Rearpanel:



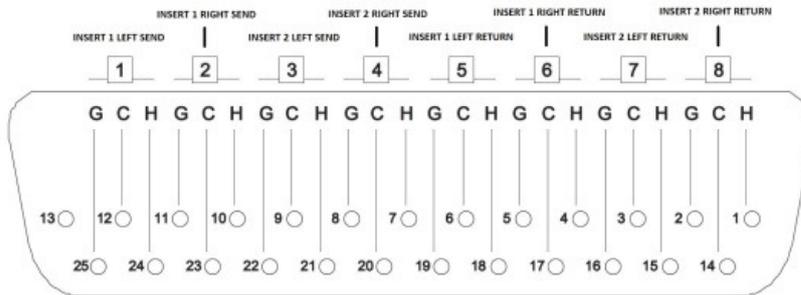
### Inputs:

The IM2.1(s) has two balanced inputs. Both inputs consist of gold-plated Neutrik XLR's.

### Inserts:

The IM2.1(s) has 8 balanced inserts connected on the back with industry standard Tascam DB25 analog connections. Each connector holds 2 inserts corresponding with the frontpanel numbering.

## Pin-out for TASCAM DB25 8 Channel Balanced Connector



\* *Note: Be careful with DB25 tascam standard/premade cables. The digital AES/EBU cables have their inputs and outputs swapped compared to the analog version.*

### **Outputs:**

On the rearpanel you will find 2 outputs with balanced gold-plated Neutrik XLR's.

### **Power:**

Power is provided by a standard grounded IEC input connector with a build-in fuse. Input voltages are automatically selected from 100-250VAC 50/60hz.

## **Technical:**

### **Hardware:**

This device is built around mostly passive circuits, but some sections need to be active, but always with transparency in mind. The sturdy frontpanel-switches have, depending on their function, 2 color leds for visual feedback. All relays are high sensitive, long-life (15.000.000 cycles) Omron Relays.

Stepped switches are military grade Blore Edwards for long life and really nice mechanical feel. In and output connectors are gold-plated Neutrik, DB25 inserts are gold-plated wurth connectors. Active circuits make use of analog devices and THAT drivers. The mid/side circuit is based on the well-known circuit from Wayne Kirkwood, but with additions/modifications.

The internal PSU section is build around industrial-grade Meanwell SMPS's which run way more silent and are way more efficient then old-school linear PSU's. Both the relays/leds and active circuit PSU's are running on their own separate PSU.

When this device is used in passive mode, so without active stages, it's 100% passive and only relay-contacts are inline. This means it's basically a straight wire.

### **Pushswitch labeling:**

To have some extra visual feedback on the push-switches you can put labels under the switch-covers. You can simply, but carefully, remove the switch cover with a small screwdriver and put something like a transparent dymo letratag sticker on the white plastic piece inside the switch-cover. *More info and a manual can be found on our website.*

**Specifications:**

Maximum gain passive: >+24dBu  
Maximum gain active gain: +24dBu  
Noise level passive: >118dB(a)  
Noise level active: >116dB(a)  
Stereo crosstalk: >110dB(a)  
Stereo crosstalk mid/side: >80dB(a)  
THD passive: 0.00042% (AD/DA limitations)  
THD active: 0.00045%

Input voltage 100 to 240VAC 50/60HZ.  
Power consumption minimum 5 watt  
Power consumption maximum 30 watt  
(Power consumption depends on the amount of inserts, input, output etc activated)  
Unit size: standard 2u 19 inch, depth 25cm  
Weight: approx 4kg

*Specifications subject to change because always improving*

## **Service and warranty:**

- We offer a standard 2 year limited warranty on all of our products.
- In the event that you or a third party has (partly) altered or repaired anything, the warranty will expire, and you will be held responsible for the damages caused by any possible malfunctioning of the product. Warranty repairs are only made by us or by a workshop we agree upon.
- We are not responsible for any malfunction of or damage caused by parts that are not produced by DuTCH.audio.
- If you choose to ship back a faulty unit to us you must contact us before you do so. We need the serial number (located on the back of the unit) to handle the repair and if warranty is still valid.
- The product should be returned in it's original package or packed in such a way that it is not damaged during the shipment with extra support for the rack ears. We are not to be held responsible for any damages during the shipment.
- The customer always pays the shipping cost to us.
- The customer is responsible for the product until it is delivered to us
- If we find that the product is flawless the customer will be charged 200 euro to cover our costs for examination and handling. The return costs will also be charged.



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