DuTCH.audio MC1.2 monitor-controller

DuTCH audio MC1.2 manual

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Thank you for purchasing the DuTCH audio MC1.2 monitor controller. In this manual we will explain how this device works and how to use it.

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.

Basics:

The MC1.2 is a 1u 19 inch monitor-controller with durability and easy control in mind.

The MC1.2 is based around a passive 64 steps, 1dB per step, parallel relay-based attenuator. Compared to a standard serial attenuator or even worse, a potmeter, a parallel attenuator keeps the same impedance throughout it's complete range. This means that it's way more transparent because of a constant load. Another plus is that because it has way less resistors in-line, it also reduces the Johnson noise to an absolute minimum.

The MC1.2 has 4 balanced inputs, 2 balanced outputs, a balanced pre directout (for example as a metering output) a class-A headphone amp and high quality dual color LED lightened pushbuttons for it's functions (dim, mute L/R, diff, mono, monitor 1/2)

Rearpanel:

On the rearpanel you will find 5 balanced inputs, 2 balanced outputs, a balanced buffered pre attenuator direct output and the AC input.

Input 1 and 2 are balanced Neutrik XLR's and input 1B, 3 and 4 have 6.3mm Neutrik jack inputs. Both outputs 1 and 2 and the buffered direct output are balanced Neutrik XLR's.

Below the AC input (100 to 240VAC) you will find the 800ma fuse.

Frontpanel:

On the left side of the frontpanel you will find the headphones output and level potmeter. Next to that you will find the AB function for input 1. In the middle you will find the LED display and rotary encoder. On the right you will find the 6 enlightened push-buttons.

Headphone amp:

The headphone amp is a powerful but clean transistor based amp. The amp is working pre-attenuator which means that the selected input is going directly into the amp and the attenuator between 01 and 64 will not affect the signal of the headphone. When the attenuator is set to 00, the headphone amp will be muted.

Input 1 AB function

Input 1 has 2 inputs on the back of the unit. An XLR which is passive and is send directly to the attenuator and input 1B (6.3mm jack) which is first sent to the active gain compensation circuit. When the *'input 1 ab'* pushbutton is set to off *(green)*, the passive input is used. When the button is pressed *(yellow)* input 1 switches to 1b and the active circuit becomes active. With the potmeter you can now AB between two sources with level-matched gain. The gain range of the active gain is +/-10dB.

Rotary encoder and display

Monitor level
In the centre of the panel you will find the multifunctional rotary encoder and the LED display. When you turn the encoder, you will change the monitor output level with a 64 steps range. Every step is ~1dB attenuation, 64 is no attenuation and the maximum attenuation at 01 is approximately ~-64dB, 00 means silence/muted (also the headphone amp will be muted).

Input selector
The input selection is done by pushing the encoder, the display shows the selected input (C1 to C4). After about 3 seconds the display reverts back to showing the attenuation value.

Balance control
When you push and hold the encoder and at the same time turn it to left or right you have a balance/pan control. The range goes from -9 (left) to 9 (right), centre is shown as 0.

Standby and soft start
When you push and hold the encoder for 2 seconds the attenuator goes in bypass and the display just shows a 'decimal dot' and all push-switches are off. When you push the encoder again, it comes out of standby with a soft start and shows 00 and after about 3 seconds it reverts the last known value again (just like when powering on).

IR Remote
It's possible to use the functions of the encoder with an IR remote control. By default it uses the Philips RC5, RC5X, RC6 and Sony SIRC protocol in its 12-bit and 15-bit version protocols. Other options are possible as well, please contact us for more info.

Push-buttons

Dim
When you push the 'Dim' button, the output signal is instantly attenuated by 15dB. The switch turns red for visual feedback. For more info on changing the 15dB attenuation, see the technical details.

Mute Left
When you push the 'Mute left' button, the signal cuts (Left) and the led in the switch becomes red showing that it's in mute.

Mute Right
When you push the 'Mute right' button, the signal cuts (Right) and the led in the switch becomes red showing that it's in mute.

Diff
When you push the 'Diff' button, the left side will be polarity flipped to check if things might be out of phase, but also when combined with the 'Mono' button you can listen to just the diff/side channel. The switch turns red for visual feedback. *Note: the diff function only works with balanced signals because of it's passive nature.*

Mono
When you push the 'Mono' button the left and right signals are summed to mono. The switch turns red for visual feedback.

Monitor 1 / 2
With the 'monitor 1/2' button you can select which monitor output is used. Green is monitor 1, yellow is monitor 2.

Technical:

Specifications:

Input resistance: 10Kohm
Output resistance: between 0 and 4.5Kohm (depending on attenuator setting)
Dynamic range: >110dB(A)
Input voltage 100 to 240VAC 50/60HZ.
Power consumption approx 5 watt
Unit size: standard 1u 19 inch, depth 25cm
Weight: approx 2kg

Some notes on passive circuitry:

This device is built around passive circuits (relays and resistors), basically meaning it's a straight wire. In most cases this works great and by nature 100% transparent. There could be the odd monitor/amp that 'doesn't like' this passive nature. In those rare cases it's possible to add an active buffer (balanced) stage at a small extra fee.

Dim attenuation:

The Dim function by default is set to an attenuation of 15dB, which could be changed by changing the resistors mounted on the sockets on the inside *(with dim adjust written next to it)*. There are 8 resistors in total, but in practice only 4 needs to be changed to change

the Dim attenuation. The ‘to gnd’ resistors are 3k3 and the ‘serial’ resistors are 10k (these can be changed).

Changing the ‘serial’ resistors to 5k1, changes the attenuation to -12dB.
Changing the ‘serial’ resistors to 18k, changes the attenuation to -20dB.

You can also change to other resistor values to find your attenuation level ‘sweetspot’.

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 misfunctioning 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.

Handmade in Holland on Solarpower

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