

Relay Attenuator

Innovative relay attenuator with IR remote, UART control and display options SOFTWARE RELEASE 3.6

Features

- Ladder type, 6-stage stereo attenuator with constant input impedance
- Selectable between 33 and 64 attenuation positions
- Populated with SMT resistors or THT resistors populated by customer
- Encoder or motorized potentiometer control, with IR remote input
- UART control option with selectable node address
- Optional display module

Possible Customization

- Resistor values and tapers
- IR protocol, function and cabling

Applications

- Mixing desks and studio consoles
- High-end home and theater audio





Relay Attenuator (w/o resistors)

RoHS (2011/65/EU)

Description

The Relay Attenuator is an extremely versatile ladder type, 6-stage stereo attenuator with constant input impedance featuring 33 (with infinite) or 64 (w/o infinite) attenuation positions. The tiny module can be locally operated by encoder or motorized potentiometer and IR remote option, while also providing direct UART control (local mode). It can also be UART bus controlled by a host system (host mode) for distributed multi-module operation, featuring 16 selectable node addresses. The attenuator comes with either prepulated SMT resistors or it can be populated by the customer using THT resistors. The on-board DIP switch is used to configure various functions in the local mode or to select the node address in the host mode. For position indication, especially when operated by an encoder, a display module is also available.





Relay Attenuator system (featuring power cable, IR receiver, encoder with knob, display module and IR remote unit)





Specifications

Attenuator type:	_6-stage ladder type with constant input impedance
Operating voltage:	6 to 13 VDC (9 VDC nominal), on-board voltage; 5 VDC regulated
Current consumption:	<u>50 mA peak max., 10 mA continuos max. (per module, no external load)</u>
Input impedance:	. 10k ohms standard value
SMT resistors:	_0805 package, thin-film, +/- 0.1%, TCR; +/-25 ppm/°C
dB Attenuation:	.33 pos. mode; off (infinite attenuation), followed by 31 equal steps with 2.5 dB, ranging from -77.5 to 0 dB
	64 pos. mode; 63 equal steps with 1.4 dB, ranging from -88.2 to 0 dB.
	Use the free excel resistor calculator for individual THT resistor population.
Relay type:	Panasonic, DPDT, single coil latching, 4 ms max. operate time, AgPd plated contacts
UART interface:	38.4k baud, 1 byte non-inverted, even parity, 1 stop bit, 1m max. cable length
Local mode protocol:	Data byte 0dec to 32/63dec (corresponds to attenuation positions)
Host mode protocol:	Two byte communication; address byte (100dec to 115dec corresponding to DIP switch addresses 0 to 15),
	2 ms wait, followed by data byte 0dec to 32/63dec (corresponds to attenuation positions).
5VDC output:	. 120 mA max. continuous load, 200 mA max. peak load (including motor and display module supply)
Motorized potentiometer:	1038 http://www.communication.com/likework/like
Encoder:	Incremental type, A leads B in clockwise direction, 2 detents per pulse cycle
IR remote:	NEC protocol compliant. IR receiver; Sharp GP1UX311QS (cable length shall not exceed 300 mm)
FFC connector:	_FCI, P/N HFW6R-2STE1LF (6 positions, 1 mm pitch, top contacts)
Operating temperature:	<u>.</u> 0 to 40°C max.

Local Mode (DIP switch#1 is on)

In the local mode the module is directly controlled by an encoder or a motorized (or standard) potentiometer, with IR remote option, or by UART (simultaneous use is possible).

Power and UART connection can be established either via soldering eyelets or by the red micro match connector. When using the micro match a regulated 5V supply is provided for local purposes. Please consider the current limitation specified above.

The number of attenuation steps can be selected between 33 or 64, whereas 33 include infinite attenuation. For IR teach-in (start/stop switch), please follow the procedure described below.

When using the module in a balance configuration, left and right channels have to be attenuated with two independent modules, each with its own encoder (or potentiometer), and display module, while sharing the same IR receiver. Set the corresponding left or right channel per each module.

IR Teach-In Procedure

- 1. Set DIP switch #6 to position "start".
- 2. Quickly operate the buttons on the IR remote unit in the exact sequence of volume up, volume down, mute, balance left and right (with each pressed button the LED briefly flashes to acknowledge).
- 3. The LED flashes for approx. 500 msec. (confirming end of procedure).
- 4. Immediately switch DIP switch #6 to position "stop" to complete the teach-in procedure

If the teach-in procedure fails, briefly disconnect/reconnect power and repeat the procedure. An instruction video showing the teach-in procedure is available upon request.

Host Mode (DIP switch# 1 is off)

The number of attenuation steps can be selected between 33 or 64, whereas 33 include infinite attenuation.

In the host mode the modules are controlled by UART only, whereas the node address can be selected with 4 bits in order to individually control up to 16 modules in a stacked or distributed multi-module configuration.

The modules can be individually mounted and connected to the same bus (daisy-chain the red micro match connector using a 4-wire ribbon cable) or they can be stacked (using standoffs and three wires going thru the designated soldering eyelets GND, +9V and UART in; these pins are hard wired to the micro match and thus are equal).



Ordering Code

 Relay Attenuator (w/o Display Module)

 Relay Attenuator w/o resistors:
 RELATT-000

 Relay Attenuator 10k:
 RELATT-010

Accessories

IR remote kit (including receiver): Display module (w/o flex cable): IR receiver (spare part): Free Excel resistor calculator: Available from elma.com



Host

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