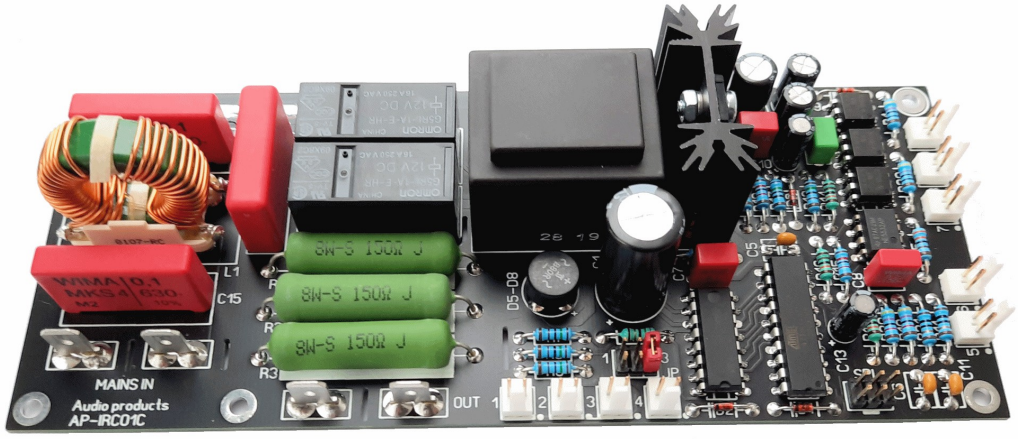
AUDIO PRODUCTS

Audio products
Moriaanseweg west 97
3222AC, Hellevoetsluis, the Netherlands
phone 0654242021
email info@audio-products.nl

IRC01B
IRC01C

Power supply controller with current limiter for power amplifier



IRC01C picture

Highlights

1 Netfilter option available
2 Low power in standby

Features

1 Micro controller based
2 Inrush current limiter
3 Audio detection circuit
4 12V trigger input circuit

Applications

1 Power amplifiers

Introduction

The IRC01B and IRC01C modules are designed to fully control mono or stereo power amplifiers with power transformers up to 1000VA.

A single push button with PWM LED indicator controls the module with inrush current limiter, dual audio detection circuits and is controllable by 12V trigger.

The module has the ability to monitor the power amplifier fault status and acts upon it by turning off the power to the amplifier.

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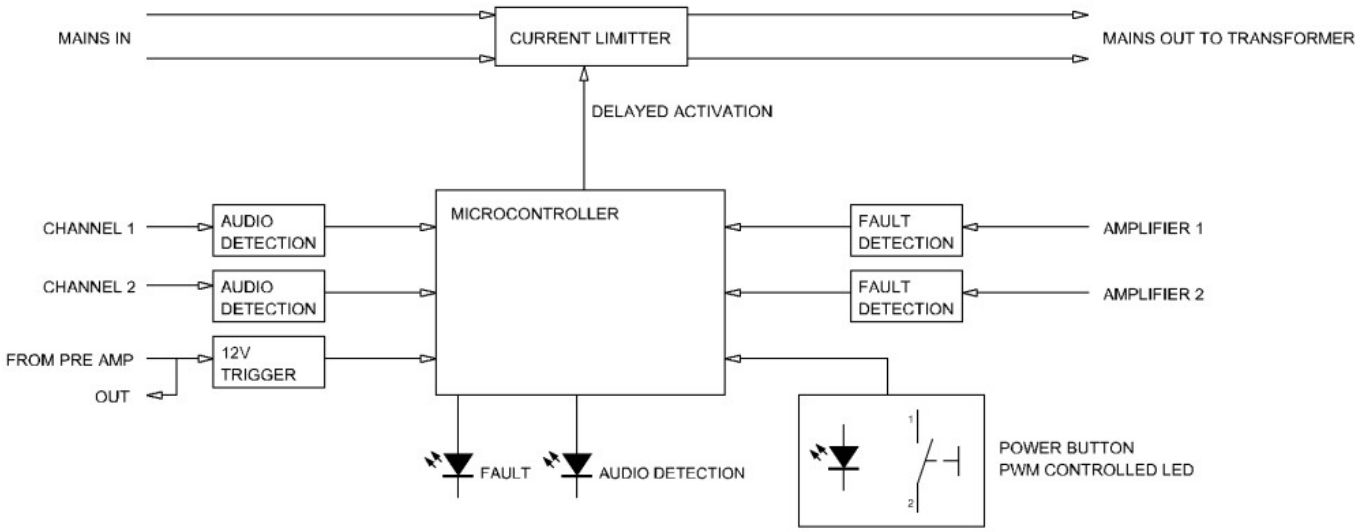

Block diagram

Description of operation

Setting audio detect and 12V trigger functions.
When mains power is applied the module it will go to the sleep mode and power to the output is turned off. The illuminated power button will indicate this state by a dimmed illumination.

To set the audio detect mode or 12V trigger mode function press the power button for 3 seconds in the power off state;

1 blink of the power button LED indicates both audio detect mode and 12V trigger mode are disengaged and the power must be turned on manually by pressing the power button.

2 blinks of the power button LED indicates that the audio detect mode is engaged and power will be turned on and of by the audio detect circuit. When the power is turned on manually this function is disabled temporarily until the power is turned off manually.

3 blinks of the power button LED indicates that the 12V trigger mode is engaged and power will be turned on and off by the 12V trigger circuit. When the power is turned on manually this function is disabled temporarily until the power is turned off manually.

When the audio detect function is selected on the audio detection indicator LED will blink short every couple of seconds to indicate this.

When the 12V trigger mode function is selected on the 12V trigger mode indicator LED will blink short every three seconds to indicate this.

Note that audio detect function and 12V trigger function cannot be enabled at the same time.

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Power on by push button.
When the power button is pressed shortly the module will go to the active mode. The illuminated power button will indicate this by slowly going to full illumination. Power to the power output will be activated and power is then applied to the connected power supply stage of the amplifier and the controller will wait 3 seconds for the connected power supply to stabilize.

Power on and of by 12V trigger (option activated).
When a 12V AC or DC signal is detected on the 12V trigger input the module will go to the active mode. The illuminated power button will indicate this by slowly going to full illumination.

Power to the power output will be activated in two stages to protect against power surges. First stage will apply power to the transformer via a set of series resistors and in the second stage the resistors will be bypassed an full power is applied to the power transformer.

The module will turn off the power output by removing the 12V on the trigger input.

Power on and off by audio detect (option activated).
When a audio signal is detected on one of the audio detect inputs the module will go to the active mode. The illuminated power button will indicate this by slowly going to full illumination.

Power to the power output will be activated in two stages to protect against power surges. First stage will apply power to the transformer via a set of series resistors and in the second stage the resistors will be bypassed an full power is applied to the power transformer.

When the module set to the active mode a 20 minute countdown timer is started to automatically go to sleep mode. This counter is reset every time an audio signal is detect on one of the audio detect inputs resulting in the module going to sleep mode when no audio is detected for 20 minutes.

Note that when the audio detection function is activated and the module is turned off manually by pressing the power button the audio detection function is temporary turned off until the power is restored manually by pressing the power button.

Going to sleep mode.
The module is put in sleep mode manually by pressing the power button, releasing the 12V trigger input or by the audio detect function and power to the output is turned off. The illuminated power button will indicate this state by slowly going to a dimmed illumination.

When the audio detect function is turned on the audio detection indicator LED will blink short every 10 seconds to indicate this.

When the 12V trigger function is turned on the 12V trigger indicator LED will blink short every 10 seconds to indicate this.

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IRC01B
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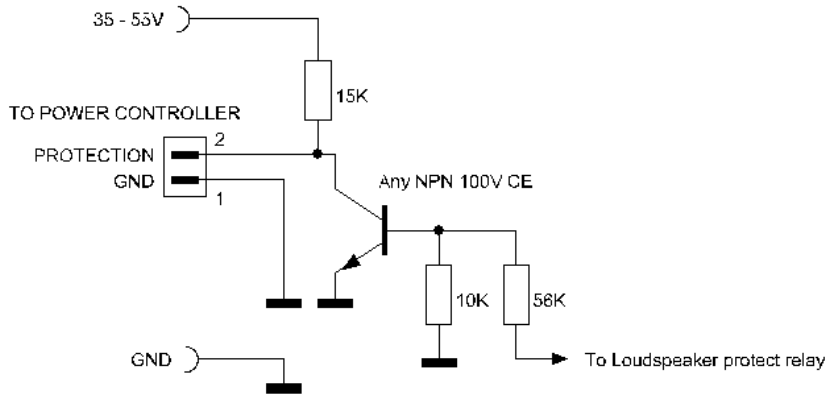
Interface circuit for amplifier to error input.



The module has dual error inputs with opto couplers to control mono or stereo power amplifiers. When the amplifier powers UP the relay will be turned OFF and a signal 'high' will be applied to the controller input, this way the controller knows it has to monitor the input for 'error'. When the amplifier is stable the relay will be turned on and a signal 'low' will be applied to the controller input. If an error situation occurs on the output of the amplifier the relay will be turned OFF again and a signal 'high' on the error input of the controller will signal the error state of the amplifier to the controller. In this case the power to the amplifiers transformer will be cut immediately and the module will signal the error state by illuminating the error LED indicator.

The error state can be reset by powering on the module with the power button.

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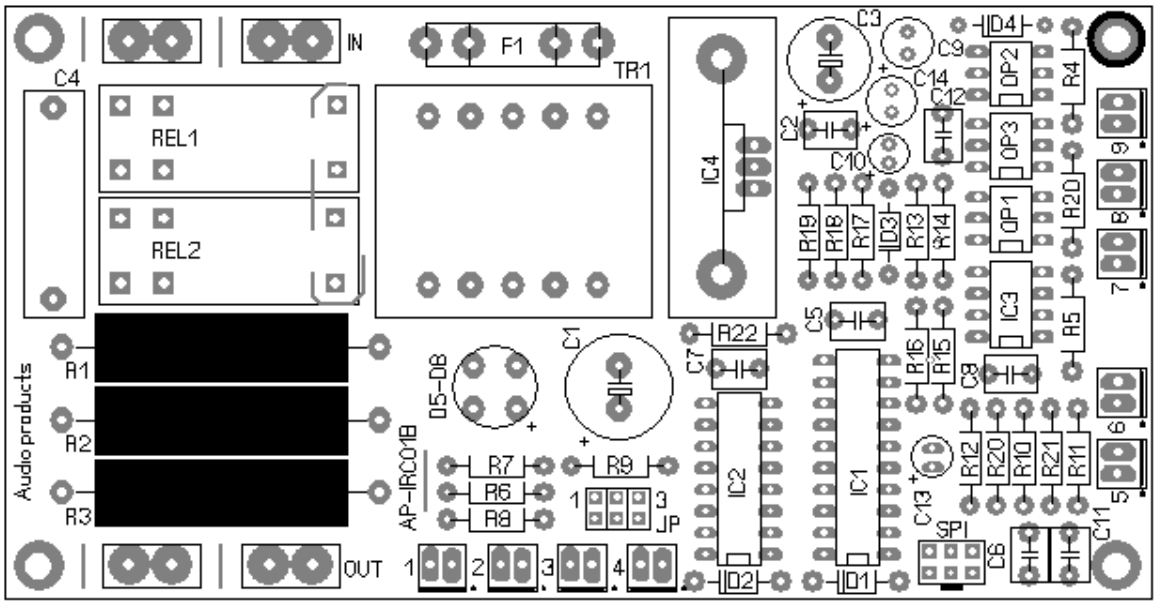
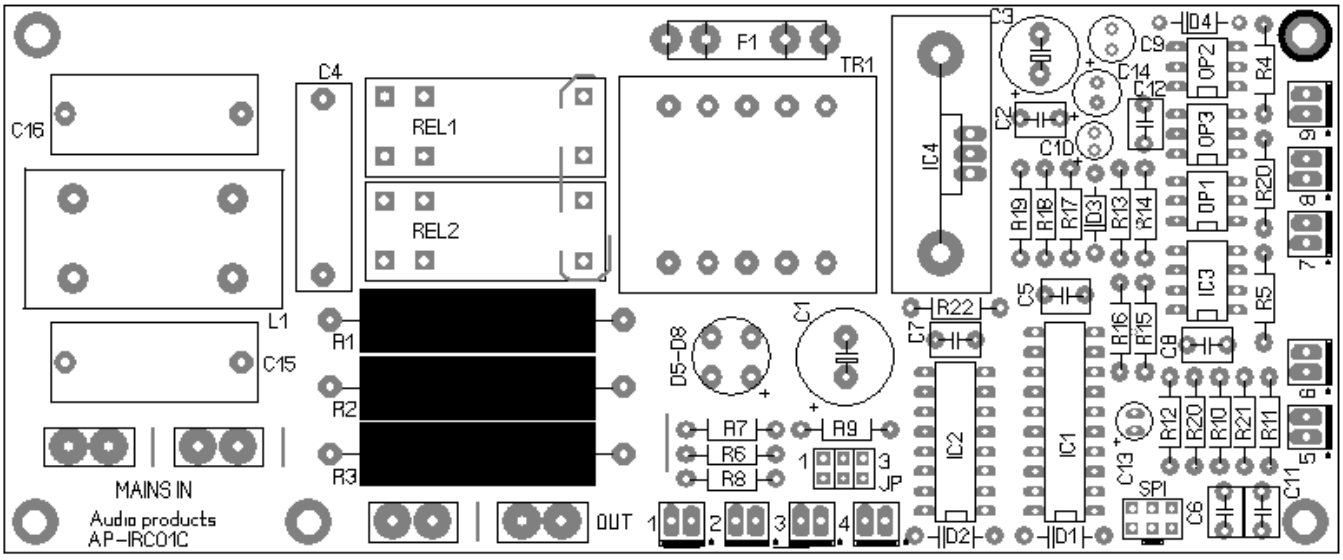
PCB layout



IRC01B



IRC01C

Connections

IN	Mains input
OUT	Mains output
Header 1	Audio detect mode LED (pin 1 pos, pin 2 neg)
Header 2	12V trigger mode LED (pin 1 pos, pin 2 neg)
Header 3	Power LED (pin 1 pos, pin 2 neg)
Header 4	Power button
Header 5/6	Audio detect (pin 1 GND, pin2 signal)
Header 7/8	Amplifier fault detection
Header 9	12V trigger in (pin 1 neg, pin 2 pos)

Note that the white dot indicates pin 1 of the header

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Electrical specifications.
Supply voltage 230VAC.
Max output load on mains switch 16A.
Power consumption in standby about 1 watt.
Load on 12V trigger input about 3mA.
Audio detect inputs sensitivity about 20mV.

Safety.
Some parts of the circuit are connected to the mains voltage at all time, remove the mains power before handling!