

Piezo Driver MTAD1015 (AC100 Type)



Instruction Manual(ver0.1)

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1 Overview

The Piezo Driver MTAD1015 is a compact but high-performance linear amplifier specially designed to drive piezoelectric actuators at a high dynamic range from static actuation to high speed actuation. The MTAD1015 is capable to supply peak current up to about 25A and average current up to about 100mA. Therefore, MTAD1015 is capable to drive the piezoelectric actuator with a pulse waveform. A built-in protector is also designed to protect the MTAD1015 from short circuit or average current overload. The MTAD1015 is supply by AC 100V power supply.

2 Structure

This device contains the following parts.

- 2.1 MTAD1015 -----1 pcs
- 2.2 Lug terminal ----- 4 pcs
- 2.3 Power supply cord (attached) -----1 pcs
- 2.4 Instruction manual -----1 pcs

3 Specifications

- 3.1 Output voltage range: 0-150V
- 3.2 Average output current: 100 mA max
- 3.3 Input signal: 0-10V Arbitrary waveform
- 3.4 Bias voltage range: 0-150V
- 3.5 Amplification range: 0-15 times
- 3.6 Power bandwidth: DC~50kHz
- 3.7 Output stability: $\pm 1 \times 10^{-4}$ (AC100V $\pm 10\%$)
- 3.8 Ripple noise: below 20mVp-p
- 3.9 Pulse response: within 20 μ s (Load capacity 5 μ F from 0V to 100V)
- 3.10 Monitor output: 1/10 of output Impedance 10K Ω
- 3.11 Protection circuit: Operates when the average current exceeds 110mA
- 3.12 Power supply required: AC100V 50/60Hz
- 3.13 External Dimension: 120(H)x 50(W) x210(D) mm
- 3.14 Mass: 1440g

4 Operating Method

4.1 The following are the operational parts on the front panel.

[POWER ON]: Connection switch between MTAD1015 and power supply AC100V.

[OVER L]: When the overcurrent protection circuit is activated, LED will light up.

[RESET]: Push button to reset when the overcurrent protection circuit light indicator is on. Make

sure output is not short circuit before push the reset button. Need a 5 minutes and above interval time before push the reset button again.

4.2 The following are the operational parts on the rear panel.

[AC 100V]: Connection outlet of 100V power supply.

[OUTPUT]: Output of MTAD1015

[0] : Ground for internal circuit board

[R]: If output require a series resistor of 4ohm(3W), connect the load to [R] instead of [Output]

[GND]: This is a case ground. By connecting the [GND] and [0], the case ground and the internal circuit ground will be connected.

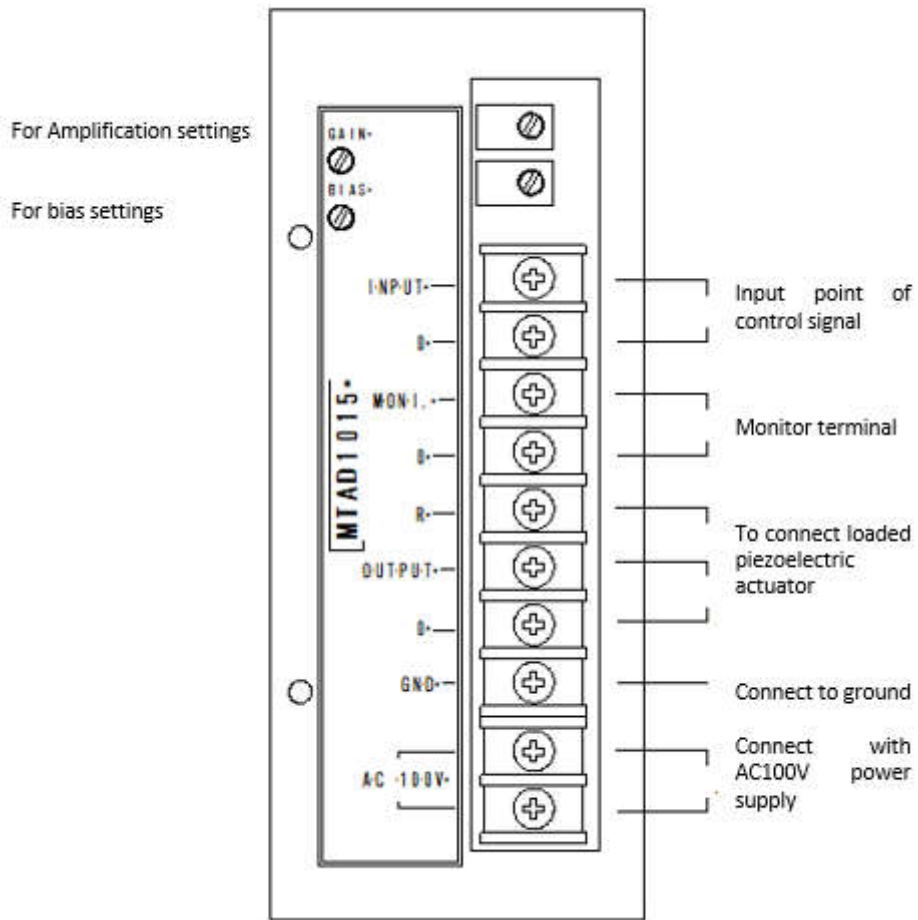
[MONITOR]: By using this terminal, output can be monitor at 1/10 of output actual voltage

[INPUT]: Signal input connection terminal

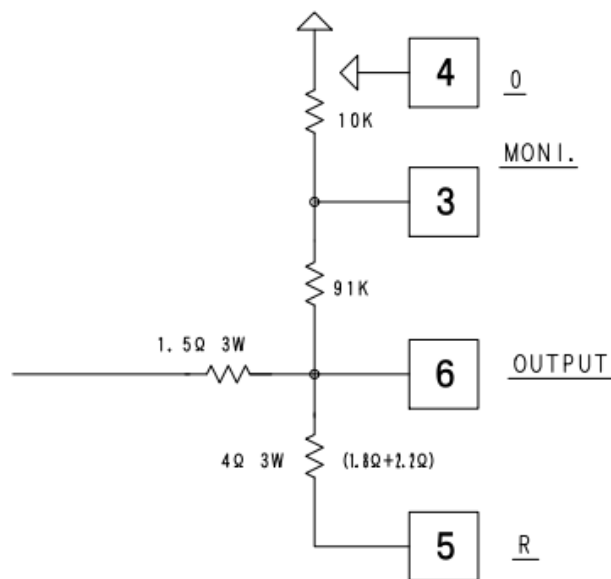
[BIAS]: To provide a bias voltage at output voltage. 0 is the original setting.

[GAIN]: The gain can be change. The original setting is 15 times.

Back panel terminal connection



Internal connection



Operation method

- 1) Make sure all wiring connection is done. For examples load is connected to MTAD1015. The control signal is connected to the [INPUT] of MTAD1015.
- 2) Turn the switch of [POWER ON] onward to switch on the MTAD1015.
- 3) Try to drive the load with small voltage and increase the output voltage to intended voltage gradually.
- 3) **【Regarding the overcurrent protection circuit】**

There is a protection circuit in the power supply part of this MTAD1015. The following settings were done to avoid short circuit caused by overload or malfunction due to operation miss.

Average current $\approx 120\text{mA}$

Peak current $\approx 25\text{A}$

When protection circuit is triggered, press the reset button after resolving the cause. Must not reset when the output is at short circuit situation. Must have a 5 minutes interval and above before resetting it. The protector may become faulty if the reset activation is done continuously repeated.

5 Operating precautions

- 1) It is important that a fan or any ventilation device is being used to reduce heat of MTAD1015. Please be noted that heat generation occurs under normal operation. Please use MTAD1015 with proper ventilation with a fan.
- 2) There is a 1.5Ω resistor installed internally at the Output terminal [OUTPUT].
When the capacitance of the piezoelectric actuator is small (below $5\mu\text{F}$) or the applied voltage is low, by connecting the load to the [OUTPUT], a fast actuation can be realized.
For load which its capacitance is above $5\mu\text{F}$, use [R] terminal (4Ω connected in series internally) instead of [OUTPUT] to prevent overload of current.

Please contact us (info@mechano-transformer.com) if any unexpected situation occurs regardless of the above.

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