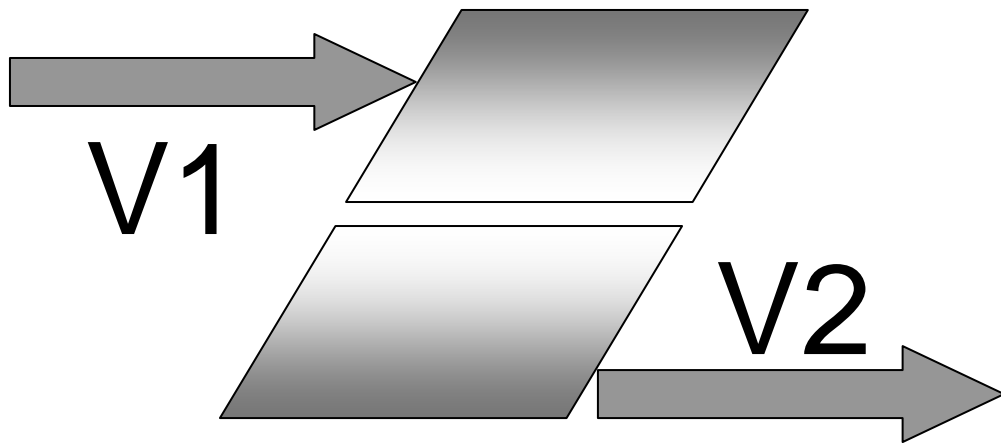


T-ISA001BZ

Wide Band Isolation Amplifier Board that supports from DC to 1 MHz

Operating Instruction Manual



Introduction

Thank you very much for purchasing the T-ISA001BZ. This product utilizes a method of generating the 5V power supply internally, thus making it far easier to use. The temperature drift has also been improved upon.

The product is an isolation amplifier that supports the wide band of from DC through to 1MHz. Use of the optical coupling linear method has resulted in basically no spike noise and the product can be used to transmit signals surprisingly quietly when compared with conventional isolation amplifiers.

The insulation withstanding voltage between input and output is also quite large, being 1500Vrms.

The product is available in the form of a board, thus enabling it to be easily incorporated into various types of equipment.

A dedicated series regulator type low noise power supply is also available as an option. Supports a wide range of uses, and is now fully RoHS compliant.

Specifications

Number of Channels: 1

Insulation Withstanding Voltage: 1500Vrms

Input Resistance: 100K Ω

Gain: 10 times (20dB) \pm 1% (against FS)

Input Voltage Range: approx. \pm 1.2Vp

Maximum Allowable Input Voltage: approx. \pm 12Vp

Maximum Output Voltage: approx. \pm 12Vp

Overall Frequency Property: DC ~ 1MHz (\pm 3dB, output 5Vp)

Linearity: \pm 0.5% (against FS)

Harmonic Distortion: 0.3% or less (10KHz, 10Vp output)

Output Noise Voltage: approx. 15mVpp (input short)

Temperature Drift Voltage of Input: approx. \pm 160 μ V/C (input short)

Output Resistance: 50 Ω (maximum output current of 10mA)

Power Supply Voltage and Consumed Current:

At input: +15V 23mA -15V 18mA

At output: +15V 23mA -15V 15mA

Dimensions: 55 x 95 x 15 (thickness of the parts and the board) mm

Accessories

Connectors for input/output and power supply: 5051-02/5150-04 (made by Molex) x 2 of each

Pins for the above connectors: Several included

How it Works

The insulation in the product of the optically-coupled devices is of a good level of linearity due to use of the optical feedback method. The input is composed of a voltage offset addition and gain circuit. The output after having passed through the optically-coupled devices consists of a voltage offset removal circuit and overall gain adjustment circuit.

While typical isolation amplifiers change DC voltage to a pulse wave, which then passes through the coupled devices, is commutated and smoothed out, before being changed back to DC, this circuit instead uses a different method, which is exactly why there are essentially no ripples or pulse noise. The circuit linearly insulates the light quantity in proportion to the input voltage and transmission signals.

Use of the Product

The board arrangement has the optically-coupled device in the center and the input and output separated from each other. A more than adequate distance therefore exists between the circuits, will full attention having been paid to the insulation and withstanding voltage.

The board includes three potentiometers on-board, with each of them having been adjusted before shipment. However, since a power supply voltage of +15V was used as the reference voltage for the offset adjustment, which therefore could result in a slight shift if the voltage differs to any degree.

If the offset voltage does differ to the degree that causes problems with the output when the input is zero V it can be adjusted by gently and slightly turning the VR2. The VR1 is an adjustable potentiometer that can be used to ensure the signals that pass through the photo-coupler do so with the least distortion, while the VR3 is used to adjust the overall gain. Both of the aforementioned get adjusted before shipment. The offset and gain, however, can change over time, in which case the VR2 and VR3 can be used to adjust the offset and gain, respectively.

Pin-out Table for Signal Connector

Signal Input (CN1)

Pin 1	Input Hot Side
Pin 2	Input GND Side

Signal Output (CN3)

Pin 1	Output Hot Side
Pin 2	Output GND Side

Pin-out Table for Power Supply Connector

Power supply connector at input (CN2)

Pin 1	+15V
Pin 2	NC
Pin 3	0V
Pin 4	-15V

Power supply connector at output (CN4)

Pin 1	+15V
Pin 2	NC
Pin 3	0V
Pin 4	-15V

Role of Potentiometer

VR1: Voltage Offset Adjustment of Input

Used to adjust the waveform when passing through the photo-coupler in ensuring the least amount of distortion.

VR2: Voltage Offset of Output

Used to adjust the output to zero volts at the termination with an input of 50Ω or short (input zero).

VR3: Overall Gain Adjustment

Connection Method

Ensure to correctly connect the power supply in accordance with the pin-out table for connectors or the product could be damaged. A good, isolated power supply of $\pm 15V$ is needed for both the input and output. Special attention needs to be paid to the insulation resistance and withstanding voltage between the power supplies.

If they are too low the product will not be capable of fully utilizing its withstanding voltage performance. Typical power supply transformers available on the market have an insulation withstanding voltage of $1KV_{rms}$ between the primary and secondary coils and the core and case.

Limited Warranty

The Turtle Industry (Turtle-Ind) warrants each product of its manufacture to be free from defects in material and workmanship subject to the following terms and conditions. The warranty is effective for half a year after the shipment by Turtle-Ind to the original purchaser.

The obligation of Turtle-Ind under the warranty is limited to servicing or adjusting any product returned to the head office of Turtle-Ind for this purpose and to replacing any defective part thereof. Such product must be returned by the original purchaser, transportation charges prepaid, with sufficient and detailed proof in writing of the defect. If the fault has been caused by misuse or abnormal conditions of operation, repairs must be paid for. Prior to repair, in this instance, a quotation will be submitted. Service or shipping information will be notified depending on the difficulty encountered. Model and serial numbers must be supplied by user. Batteries are specifically excluded under warranty.

If you think the product is not working correctly

Please contact us at the following if the situation and symptoms arise of a failure. We will ensure to promptly handle the issue.

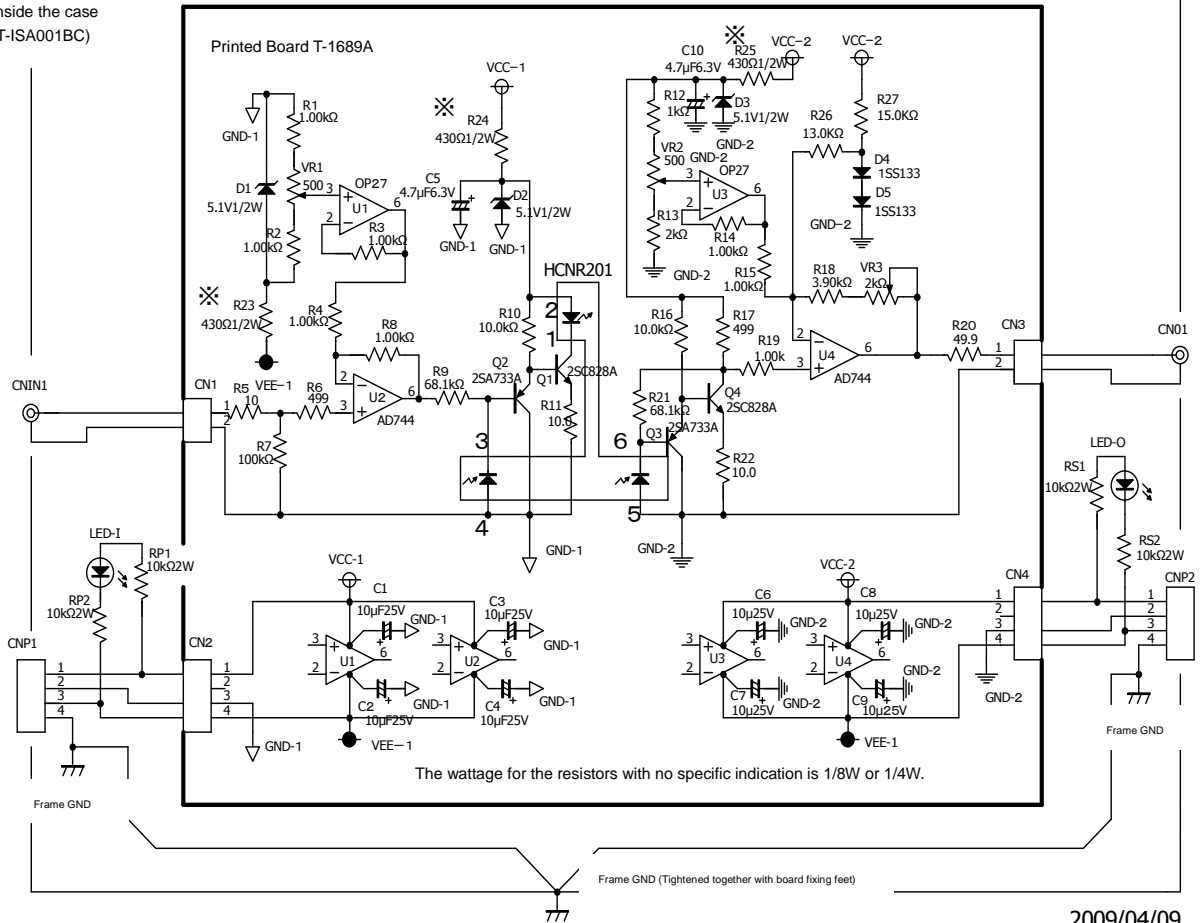
Turtle Industry Co., Ltd.
Service Support Section, Technical Division, Technical
Department
FAX: +81-29-843-2024
Email: tokyo@turtle-ind.co.jp

Appendix 1 Circuit Diagram

New Circuit Diagram for T-ISA001BZ

Ensure the parts marked with an * are raised from the board using heat resistant tubes of L = 5 mm

Inside the case
(T-ISA001BC)



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