Product Overview

ATU 2CH-B WAT21H Audio Isolation Transformer Unit with 6.35 & XLR I/O

The PIZZICS™ Audio Isolation Transformer Unit is a dedicated galvanic isolation module designed for professional audio signal integrity. At its core is the WAT21H audio isolation transformer, which physically breaks the electrical ground connection between audio source and destination equipment to eliminate hum, buzz, and ground loop interference. The unit's configurable impedance matching via front-panel rotary encoders for both input and output allows adaptation to a wide range of sources and load impedances, ensuring minimal signal loss and optimal level matching. This combination of galvanic isolation and flexible interfacing makes it a critical solution for achieving pristine, noise-free audio in studio, Hi-Fi, broadcast, automotive, and installed sound applications.

Features

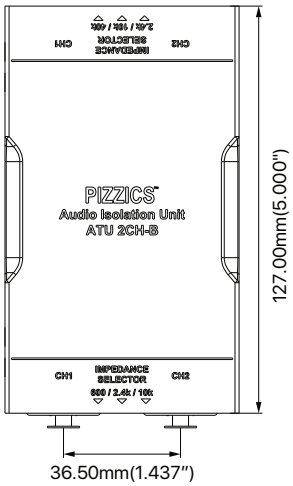
- Galvanic isolation via WAT21H transformer.
- Dual rotary encoders allow selection of both input and output impedance options for optimal signal transfer:
  - Input (600Ω, 2.4kΩ, 10kΩ)
  - Output (2.4kΩ, 10kΩ, 40kΩ).
- Wide frequency response: The transformer operates within the full audio spectrum:
  - 20Hz - 20kHz (1kHz – 20kHz, ±0.1dB, measured with a 10kΩ:10kΩ coil at -6dBu input).
- Compliant with RoHS, REACH, UL94 V-0.

Specifications

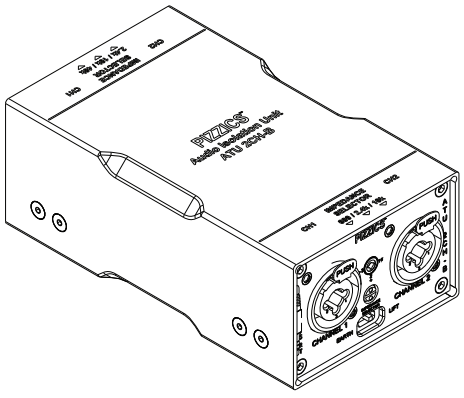
Core Component	:	WAT21H Audio Isolation Transformer
Primary Functions	:	Ground Loop Isolation & Impedance Matching
Breakdown Voltage	:	250Vrms (Primary-to-Secondary)
Frequency Response	:	20Hz – 20kHz
Total Harmonic Distortion (THD)	:	0.0041% at 1kHz, 400mVrms (Permalloy)
Dimensions	:	127.00mm(5.000") x 73.00mm(2.874") x 47.63mm(1.875") *Dimensional Tolerance: ± 0.50mm*
Net Weight	:	461g ±5%/16.26oz ±5%
Typical Applications	:	Hi-Fi Systems, Industrial Instrumentation, Ground Isolation for Amplifiers/Converters

Mechanical Drawings (Nominal Dimensions, mm (inches))

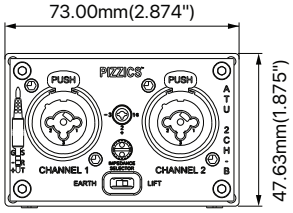
Top View



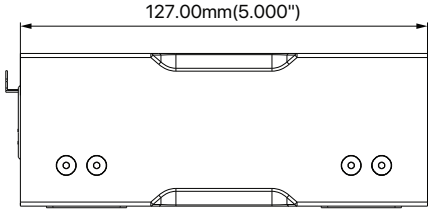
Perspective View



Front View



Side View



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Ports Layout and Control

(1) (2) **Line Input (XLR Female Ports)**
- Connector type: XLR female.
- Accepting unbalanced line-level audio input from source equipment (e.g., preamp, DAC, mixer).
- Isolating the signal path via the WAT21H transformer after impedance selection.

(3) (4) **Line Output (XLR Male Ports)**
- Connector type: XLR male.
- Providing the isolated, impedance-matched audio signal to destination equipment (e.g., power amp, recorder, active speaker).
- Galvanically isolating the signal from the input.

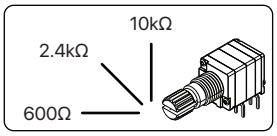
(5) **Input Impedance Value Selection (Rotary Encoder)**
- Rotary encoder with detented positions.
- Selecting input impedance values: 600Ω, 2.4kΩ, 10kΩ.
- Matching the input stage to the source's output impedance for optimal voltage transfer and minimal loading.

(6) **Output Impedance Value Selection (Rotary Encoder)**
- Rotary encoder with detented positions.
- Selecting output impedance values: 2.4kΩ, 10kΩ, 40kΩ.
- Matching the output stage to the load's input impedance for maximum power transfer and minimal signal reflection.

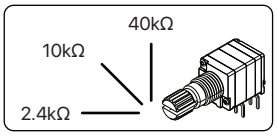
(7) (8) **Earth/Lift Switches (Line 1 & Line 2)**
These switches allow for independent control of the ground connection between the input and output stages for each channel.
- Switch 7: Controls ground isolation for Line 1.
- Switch 8: Controls ground isolation for Line 2.

Switch Positions:
- LIFT (Separate): Disconnects the ground path between the input and output. This setting is primarily used to eliminate Ground Loops, which often cause unwanted humming or buzzing noises when multiple pieces of equipment are connected to different power sources.
- EARTH (Connect): Physically links the input ground to the output ground. This is the standard setting used when no ground-related interference is present and a common ground reference is required across the signal chain.

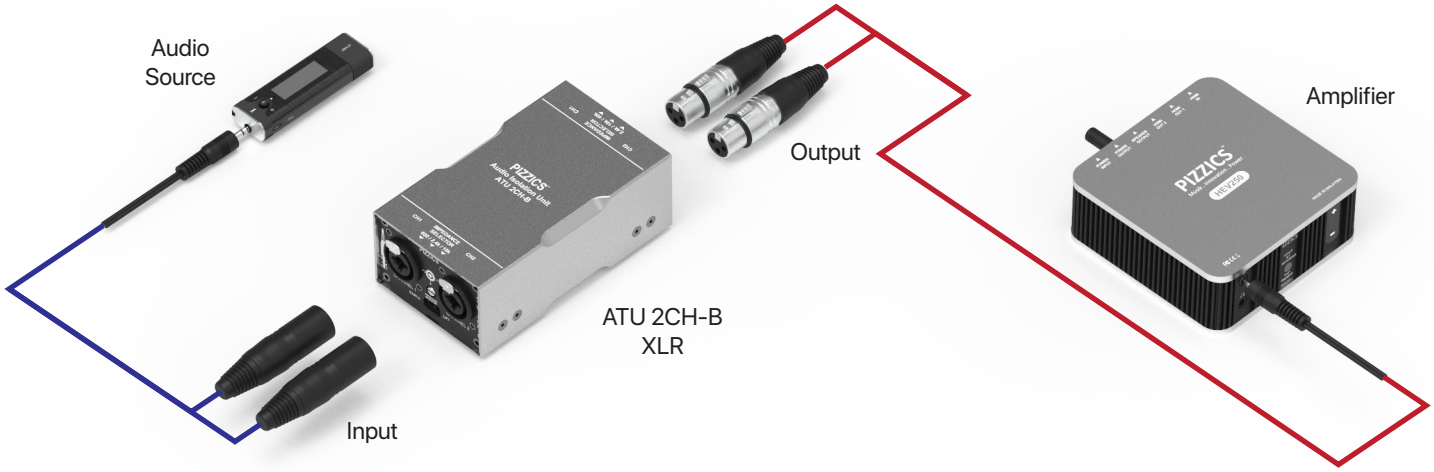
Input Impedance Value Selection (Rotary Encoder)



Output Impedance Value Selection (Rotary Encoder)



Wiring Example Diagram



Electrical Characteristics

WAT21H Impedance at Pin Terminals

Terminal	Impedance 1kHz / 0.25V	DC Resistance at 25°C / RH65±20%	Capacitance 1kHz / 0.25V
1-2	600Ω typ.	37.5Ω Max.	Between primary windings and secondary windings 20.0pF typ.
2-3	2.4kΩ typ.	37.5Ω Max.	
4-5	2.4kΩ typ.	26.7Ω Max.	
10-9 & 9-8	2.4kΩ typ.	137.3Ω Max.	
8-7	9.6kΩ typ.	137.3Ω Max.	

Note: The ATU 2CH-B audio isolation transformer unit has been tested and its parameters are consistent with the WAT21H audio isolation transformer. The WAT21H characteristics may be used as reference.

Audio Characteristics

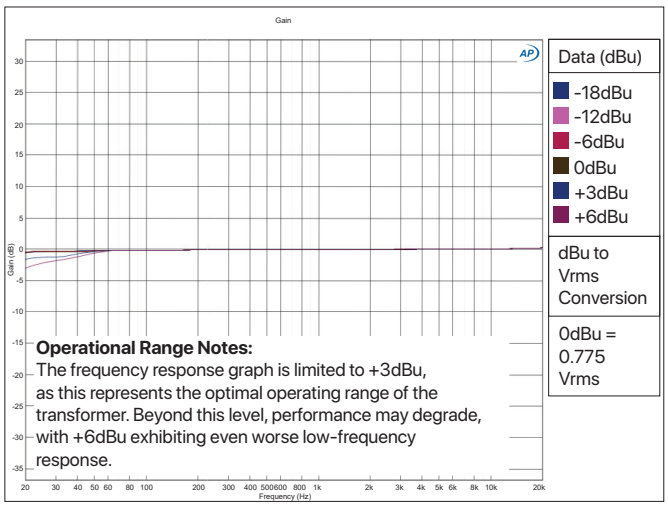
WAT21H Audio Characteristics. Typical Measurement with 10kΩ : 10kΩ Coil

Parameter	Conditions	Min.	Typ.	Max.	Units
Output Level (Ns as output)	1kHz, when applying 0dBu at Np	-0.41	-0.11	0.19	dBu
Distortion + Noise (THD+N)	1kHz, 100mVrms	-	0.0121	-	%
	1kHz, 2Vrms	-	0.0050	-	%
Capacitance	Winding to winding. 100Hz, 1kHz, 10kHz.	21.2	24.5	25.2	pF
Breakdown Voltage	Winding to winding, 60Hz, 1min duration	250	-	-	Vrms
It is recommended that the temperature of the component does not exceed +65°C under worst case conditions					
Operating Temperature	-20°C - +65°C				
Storage Conditions (Packaging)	0°C - +45°C ; < 75 % RH				

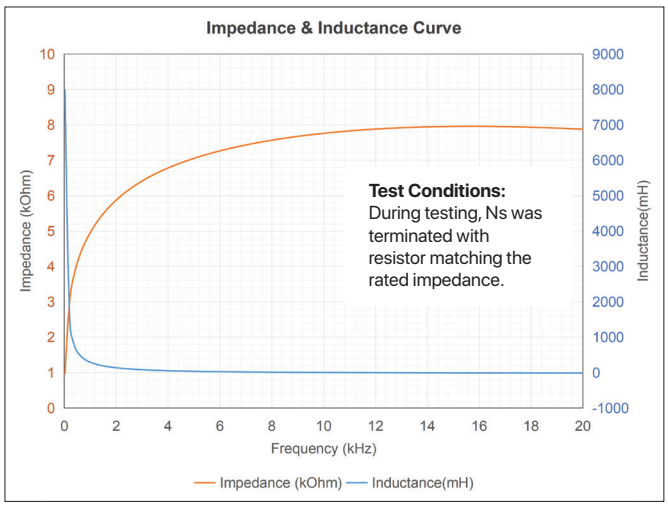
Note: All minimum and maximum characteristics are guaranteed. Unless noted otherwise, all characteristics apply at 25°C. Characteristics subject to changes without notice. However, no responsibility is assumed for its use nor for any infringements of patents which may result from its use.

Performance Graphs

Frequency Response (Gain vs Frequency)[1]



Impedance & Inductance Curve (Test applied to Np Only)[2]



Note: dBu (Decibels Unloaded) is a voltage reference unit, where 0dBu = 0.775Vrms, independent of load impedance. It is used to measure signal levels in audio systems, including transformers. Higher dBu levels indicate stronger signals but may impact low-frequency performance.

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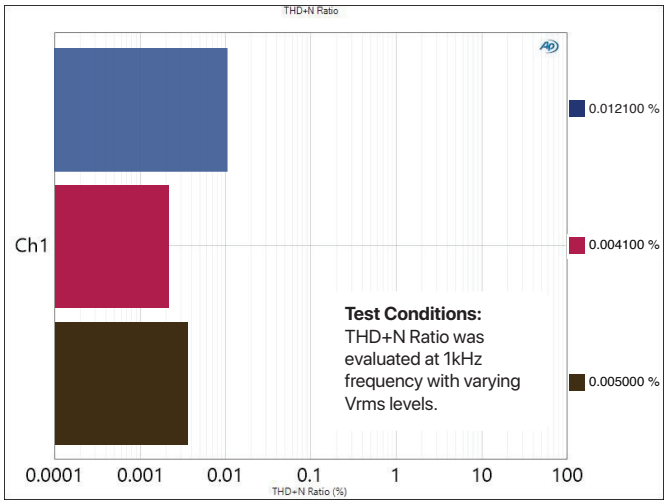
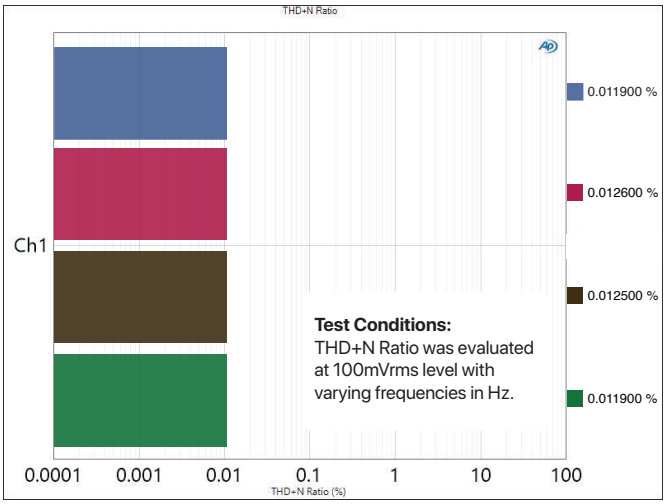
Performance Graphs *(continue)*

THD+N Ratio (100mVrms, 400mVrms, 2Vrms) at 1kHz[1]

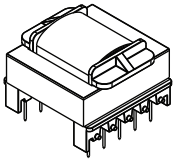


THD+N Ratio (1kHz, 4kHz, 10kHz, 20kHz) at 100 mVrms[1]



Notes:
[1] Our testing procedure employs the APx515 Audio Analyzer instrument in conjunction with APx500 v4.3 software installed on a PC to ensure thorough evaluation and analysis.
[2] The impedance and inductance curves are obtained using a GW Instek LCR-6100 meter. During testing, the secondary winding (Ns) was shorted with a resistor of the same rating as the load impedance. The results are presented as curves plotted using Microsoft Excel.

Disclaimer about Graphs



The performance graphs displayed on this page represent measurements taken under a 10kΩ : 10kΩ impedance configuration (input : output). This is the nominal reference condition for the WAT21H transformer. Performance characteristics—including THD+N Ratio and frequency response—will vary with different impedance settings selected via the front-panel rotary encoders.

For detailed performance data across all configurable impedance options (600Ω, 2.4kΩ, 10kΩ Input / 2.4kΩ, 10kΩ, 40kΩ Output), please contact **info@pizzics.com** to request the complete test report.

Legal Disclaimers & Warranty

About the Manual

This manual displays general installation guidelines. However, please note that proper installation of wired cables for the Audio Isolation Transformer Unit requires qualified experience. If you do not have the knowledge and tools to successfully perform this installation, we strongly recommend consulting an authorized PIZZICS™ dealer about your installation options. Keep all instructions and sales receipts for reference.

Documentation & Updates

Product specifications are subject to change without notice.
For the latest documentation, visit **www.pizzics.com**.

Warranty Terms and Product Usage Restrictions

PIZZICS™ warrants its industrial-grade hardware against defects for 12 months from the date of purchase, contingent upon operation within the specified -20°C – +65°C thermal envelope. This warranty is strictly invalidated by any integration-level modifications—including, but not limited to, solder pad tinning or mechanical deformation—or electrical abuse such as overvoltage and reverse polarity. All logistics costs for returns are borne by the purchaser, and bulk-order returns are not permitted.

Disposal

This product is subject to the Directive 2012/19/EC on Waste Electrical and Electronic Equipment (WEEE) of the European Parliament and of the Council. It may not be disposed of in normal household waste. For disposal, please contact your dealer or the manufacturer. Any appliances that are infected, infectious or contaminated with materials hazardous to health are excluded from return. Please also observe all other regulations applicable in this context.