



## FEATURES:

- » True Floating Transformer Isolation for Unbalanced Line-Level Outputs
- » 4 Channels in Single Rack Space
- » Input, Output and Loop-Thru XLR and 1/4" (6.3mm) Phone Jack Connectors
- » Ideal for Portable and Permanent Sound Systems
- » High-Quality Transformer-Isolated Output
- » Rugged "Uni-Box" construction provides protection and EMI/RMI shielding
- » All Connectors Accessible From Front

## DESCRIPTION:

The Pro Co TradeTools IT4A Isolation Transformer Unit provides four high-quality 1:1 line-level output transformers for applications requiring the high degree of electrical isolation only transformers can provide. The primary applications for the IT4A are in sound reinforcement systems where it may be necessary to break ground loops between pieces of equipment connected with unbalanced lines. For instance, the IT4A can be used to float the unbalanced outputs of an active crossover unit that must drive long cables connected to power amplifier inputs. Transformer isolation in such situations minimizes interference from SCR lighting dimmers, radio transmitters and 60 Hz AC power wiring. Furthermore, the common-mode voltage range of a transformer makes it far more forgiving of improper connections or fault conditions than any electronically balanced or "differential" transformerless circuit. This makes transformer-floated outputs essential for safeguarding portable sound reinforcement systems and installations.

The IT4A is fitted with standard 3-pin XLR-type connectors and 3-conductor 1/4" (6.3mm) phone jacks for LINE IN and ISO OUT, so hookup typically requires only standard cables. The use of the Pro Co LOT-1 transformer allows the IT4A to

provide floating, low-impedance outputs with wide, flat frequency response, ultra-low distortion, and no ringing or overshoot to degrade transient response. The LOT-1's dual primary windings allow it to be reconfigured for 1:2 operation if required, providing 6 dB of voltage step-up. Individual GND/LIFT switches provide isolation and buzz-free operation in virtually any environment.

The IT4A's rugged 16-gauge steel and aluminum "Uni-box" construction enclosure is finished in a durable black texture powder coat finish with black anodized aluminum side channels. Easy-to-read control graphics are incorporated into the Lexan® front and back panel overlays. Inside, the specially designed transformers combine superb audio quality with unsurpassed noise rejection.

The IT4A can be mounted in any standard 19" (482.6mm) rack. Top quality connectors and switches provide trouble-free service even in abusive situations such as remote broadcast and recording operations. The rack-mounting design allows the user to assemble a conveniently packaged expandable isolation system that combines top quality audio performance with an economical price.

# ENGINEERING SPECIFICATIONS:

The output transformer isolation unit shall be suitable for interfacing each of four (4) unbalanced or electronically balanced low-impedance (0 ohm nominal) line-level signal sources to one (1) unbalanced, balanced, differential or floating low- or bridging impedance (600 ohm nominal) line level input. There shall be four (4) channels with features as follows: There shall be a 3-pin female XLR-type connector wired in parallel with a 3-conductor 1/4" (6.3mm) phone jack for input from the source. There shall be a transformer-isolated low-impedance output from a 3-pin male XLR-type connector wired in parallel with a 3-conductor 1/4" (6.3mm) phone jack. The transformer shall be a Pro Co LOT-1 Line Output Transformer. The phone jacks shall be of the insulated-bushing type. The XLR connectors shall be wired with pin 2 "in-phase" (paralleled to phone jack tip) and pin 3 "anti-phase" (paralleled to phone jack ring). There shall be a ground-lift switch to allow the input and output grounds (pin 1 and phone jack sleeve) to be connected together or isolated as required.

The enclosure shall be the Pro Co "Uni-box" rack design with 16-gauge steel black zinc finish top and bottom plates, 1/8" black anodized aluminum front plates, back plates and side channels. Control functions shall be identified by a printed Lexan® front and back panel overlay. Switches shall be of

the miniature "rocker" type and shall be flush-mounted. The enclosure shall be provided with 2 miniature handles mounted on the front plate. The enclosure shall be suitable for standard 19" EIA rack mounting. The dimensions of the unit shall be approximately 4-3/4" D by 19"W by 1-3/4" H. (120.7mm D by 482.6mm W by 44.5mm H).

The output transformer isolation unit shall be a Pro Co TradeTools IT4A Isolation Transformer Unit.

The LOT-1 is a carefully designed, custom-built line output transformer which is very useful in a variety of applications requiring truly floating transformer isolation of unbalanced or electronically balanced line-level outputs. The LOT-1 consists of four windings, with the primaries connected in series for 1:1 operation or in parallel to provide 1:2 (step-up) operation into 600 ohm loads. Its 48% nickel core lamination optimizes it for use with zero-ohm sources such as op-amp-based outputs. The LOT-1 provides a broad-band, low-distortion floating output with excellent transient response and minimal insertion loss.

# TYPICAL PERFORMANCE:

**NOTES:** All measurements made with 0 ohm source feeding LINE IN/OUT and 600 ohm load on ISO OUT to simulate typical "real world" source and load. LOT-1 transformers configured for 1:1 operation. 0 dBv ref. =.775 volt.  
Phase response and rise time measurements are essentially those of the driving amplifier used rather than those of the LOT-1 transformer.

**FREQUENCY RESPONSE:** 20 Hz-20 kHz, +/- .5 dB @ 0 dBv output.  
-3 dB @ approximately 85 kHz.

**TOTAL HARMONIC DISTORTION:** < .25% 20 Hz-20 kHz @ 0 dBv output.  
< .5% 30 Hz-20 kHz @ +18 dBv output.  
< 1% 20 Hz-20 kHz @ +18 dBv output.

**PHASE RESPONSE:** <-3 degrees @ 20 kHz (ref. 1.0 kHz).

**RISE TIME:** < 4.5 microseconds (2.0 kHz square wave, 10%-90%).

**INPUT IMPEDANCE:** > 680 ohm @ 1.0 kHz.  
> 680 ohm @ 10 kHz.  
Nominal source impedance is 0 ohm.

**OUTPUT IMPEDANCE:** < 120 ohm @ 1.0 kHz.  
< 120 ohm @ 10 kHz.  
Nominal output impedance is 600 ohm.

**VOLTAGE LOSS:** < 2.0 dB @ 1.0 kHz.  
**MAXIMUM INPUT LEVEL FOR 1% THD:**  
+20 dBv @ 20 Hz.  
+24 dBv @ 30 Hz.  
+30 dBv @ 50 Hz.

# CONTROLS:

**LINE IN:** Female 3-pin XLR-type connector or 3-conductor 1/4" (6.3mm) phone jack accepts signal from low-impedance (0 ohm nominal) line-level source. Input impedance (with 600 ohm load on ISO OUT): approx. 680 ohm.

**GND/LIFT:** GND position connects pin 1 (and jack sleeve) of LINE IN to pin 1 (and jack sleeve) of ISO OUT. LIFT position "floats" ISO OUT. Used to reduce hum and buzz by eliminating ground loops and providing proper grounding for various conditions.

**ISO OUT:** Male 3-pin XLR-type connector or 3-conductor 1/4" (6.3mm) phone jack provides floating transformer-isolated low-impedance output to feed line-level input. Recommended load impedance: 600 ohm

**PRO CO MODEL: IT4A**

(1) OF (4) CHANNELS

**DIMENSIONS ..... 4.75" D x 19" W x 1.75" H**  
**120.7mm D x 482.6mm W x 44.4mm H**

**WEIGHT ..... 4.40 lb/2.00 kg**

**SHIPPING WEIGHT ..... 5.00 lb/2.25 kg**

NOTE: ODD CHANNELS SHOWN EVEN CHANNELS MAGNETIC POLARITY REVERSED.