



BACK OF UNIT

FRONT OF UNIT

## FEATURES:

- » True Floating Transformer Isolation for Unbalanced Line-Level Outputs
- » Input, Output and Loop-Thru XLR and 1/4" (6.3mm) Phone Jack Connectors
- » Can Be Used As Line-Level Direct Box
- » Ideal for Portable and Permanent Sound Systems
- » High-Quality Transformer-Isolated Output
- » Rugged "Uni-Box" construction provides protection and EMI/RMI shielding

## DESCRIPTION:

The Pro Co IT1 Isolation Transformer Unit provides an easy-to-use, high-quality solution for interface problems that demand the high degree of electrical isolation that only a transformer can provide. Transformer isolation minimizes interference from SCR lighting dimmers, radio transmitters and 60 Hz AC power wiring with a common-mode voltage range that 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.

Sound system technicians can use the IT1 to break ground loops between pieces of equipment connected with unbalanced lines (for instance, to float the unbalanced output of a mixer that must drive long cables connected to power amplifier inputs). For musicians, the IT1 is a line level direct box for connecting line-level sound modules, samplers and the like to "live" or recording mixers, providing a floating output without the voltage stepdown of a high-to-low impedance conversion. For broadcast and ENG, the IT1 is a handy unit for deriving a remote feed from a press conference or meeting room public address system.

Male and female XLR-type connectors in parallel with two 3-conductor 1/4" (6.3mm) phone jacks for LINE IN/OUT provide nearly universal loop-through capability. Parallel jack and male XLR connectors deliver the ISO OUT to balanced or unbalanced loads. The use of the Pro Co LOT-1 transformer allows the IT1 to provide a floating, low-impedance output with wide, flat frequency response, ultralow distortion, and no ringing or overshoot to degrade transient response. (Note: The LOT-1's dual primary windings allow an IT1 to be rewired for 1:2 operation if required, providing 6 dB of voltage stepup.) The GND/LIFT switch provides isolation and buzz-free operation in virtually any environment.

The IT1's "Uni-box" construction enclosure is formed of extruded aluminum side channels and 16-gauge steel top, bottom and end plates and is designed to protect switches and connectors from accidental damage. The use of steel also provides excellent magnetic shielding for the transformer from 60Hz AC hum fields. Top-quality connectors and switches provide trouble-free service even in abusive situations such as remote broadcast and recording operations.

# ENGINEERING SPECIFICATIONS:

The signal-splitting/transformer isolation unit shall be suitable for interfacing one (1) unbalanced or electronically balanced lowimpedance (0 ohm nominal) line-level signal source to one (1) unbalanced, balanced, differential or floating low- or bridging impedance (600 ohm nominal) line level input. There shall be 3-pin male and female XLR-type connectors wired in parallel with (2) 3-conductor 1/4" (6.3mm) phone jacks for input from the source and loop-through (direct) output. There shall be a transformer-isolated lowimpedance 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 "antiphase" (paralleled to phone jack ring). There shall be a ground-lift switch to allow the the input/loop-through 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" with 16-gauge steel black zinc finish top and bottom plates, 16-gauge black texture powder coated steel end plates and black anodized aluminum side

channels. Control functions shall be identified by a printed Lexan® top panel overlay. Switches shall be of the miniature "rocker" type and shall be flush-mounted. The enclosure shall be provided with two (2) miniature handles at each end (front and back) and four (4) non-conductive feet. The dimensions of the unit shall be 4.875" D x 4.375" W x 1.75" H (123.8mm D x 111.1mm W x 44.4mm H).

The output transformer isolation unit shall be a Pro Co TradeTools IT1 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:

**PARALLEL LINE IN/OUT:** Male and female 3-pin XLR-type connectors wired in parallel to two 3-conductor 1/4" (6.3mm) phone jacks accepts signal from low-impedance (0 ohm nominal) line-level source to provide simple connection and loop-through for any combination of XLR connectors and 2- or 3-conductor phone plugs. Input impedance (with 600 ohm load on ISO OUT): approx. 680 ohm.

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

**GROUND/LIFTS:** GND position connects pin 1 (and jack sleeve) of LINE IN/OUT 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.

**PRO CO MODEL: IT1**

**DIMENSIONS .....4.88" D x 4.38" W x 1.75" H**  
**123.8mm D x 111.1mm W x 44.4mm H**  
**WEIGHT.....1.00 lb**  
**.45 kg**  
**SHIPPING WEIGHT.....2.00 lb**  
**.91 kg**