



Thank you for purchasing a Current Thinking Easy T series induction loop amplifier; please take a few moments to read this leaflet and the unit should give you many years of fault free service.

Unpacking the unit

Upon receipt of the amplifier, please inspect the unit for any damage, which may have occurred in transit. If damage is found, please notify your distributor and the transport company immediately, stating the date of delivery, the nature of damage and whether any damage was visible on the packaging prior to unpacking. If possible give the delivery note number and any courier tracking number available.

Planning The Loop System

The majority of problems with AFILS (audio frequency induction loop systems) occur when the installation has not been properly thought through, taking a little time at the beginning can save no end of time please see our guide to induction loops for more information.

Loop Survey

Before installing any loop system a survey should be undertaken to determine the construction of the building, and the location the loop cables can be placed in, certain materials, such as raised steel deck flooring or aluminium ceiling tiles will prevent the loop from being placed above or below these items, if you are in any doubt always lay a test loop before proceeding with the installation.

Audio Sources

Sometimes a public address or sound system may already be installed, or perhaps a more sophisticated arrangement may be planned with inputs from various sources.

Where a satisfactory sound system is already installed the loop amplifier can be fed from the mixer or pre-amplifier stage of the system. This will save on duplication of microphones if these have been well chosen and sited in the first place, but still give independent control of signal from the loop.

In the absence of an existing sound system it will be necessary to provide microphones and inputs to the loop amplifier for any other signals. When microphones are to be used it is vital that they are positioned to pick up sound, which is free from reverberation and other noises. If the microphones receive a poor signal then the signal transmitted to the listener will be poor no matter how good the design of the loop and other equipment. It is also necessary to ensure that the microphones are matched electrically to the amplifier so that it is 'driven' adequately when the loop is in operation.

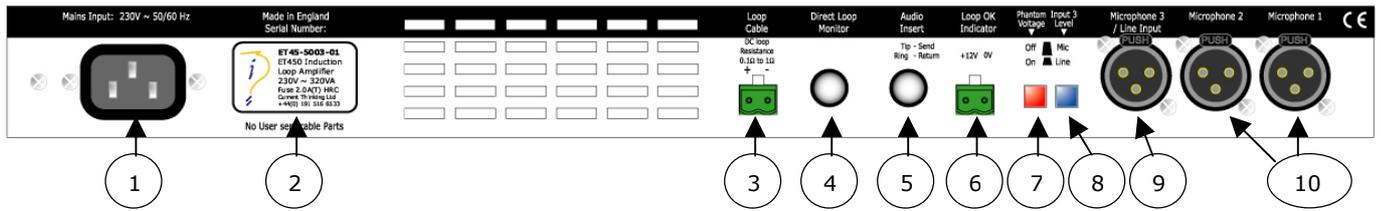
When positioning microphones in rooms, the microphones should be as close to the person speaking as is practicable, for example in a classroom if the microphone is placed in the ceiling in the room centre, the loop microphone will be further away from the speaker than the microphone in the hearing aid of someone sitting on the front row of the class!

Microphone cables must be run separately from the loop cable, under no circumstances should the cables be tied together for any distance, this will cause magnetic feedback and the unit will not perform correctly. It is good practice is to twist the loop feeder cable together between the start and end of the loop and the amplifier.

Locating the Amplifier

The ET Pro series AFILS amplifiers are convection cooled, so you should avoid placing items directly above them, when placing the units in a Rack with the ETRM wings, always leave at least 1u of rack space above the units (2u is recommended for the ET450 unless fan trays are used in the rack).

Connections



CAUTION

RISK OF ELECTRIC SHOCK

DO NOT OPEN

WARNING: SHOCK HAZARD - DO NOT OPEN

CAUTION: INDOOR USE ONLY

WARNING: TO REDUCE THE RISK OF FIRE OR ELECTRIC SHOCK, DO NOT EXPOSE THIS UNIT TO RAIN OR MOISTURE

WARNING: THIS UNIT MUST BE EARTHED

WARNING: NO USER SERVICABLE PARTS

1: Mains Inlet.

The ET150, ET300 and ET450 are supplied with a pre-wired IEC type mains lead, if however you wish to remove this and wire directly to a fused spur then a 5A fuse should be fitted to the spur. The mains plug should be cut away and the plug section disposed of immediately.

The lead should then be stripped back and connected as follows:

- Brown connects to Live (L)
- Blue connects to Neutral (N)
- Green/Yellow connects to Earth (E)

If you are in any doubt consult a qualified electrician.

2: Serial Number.

This contains important legal information regarding the unit; including a traceable serial number, the mains consumption of the amplifier, the internal mains fuse rating. Under no circumstances should this be removed.

3: Loop Connector.

The loop connects to the amplifier using this 2-part screw connector- allowing the loop to be terminated without the amplifier being present. The Ideal DC resistance of the loop should be around 1Ω (the impedance of the loop at 1.5KHz should always be below 2Ω for correct operation to IEC118-4).

if the run is over 10m always use the next gauge of cable as the feeder.

Cable recommendations are as follows for different cable lengths:

The coverage of each model are as follows:

Model	Area Covered		
	Square Room	Shortest side	Maximum area
ET150	150m ²	10m	200m ²
ET300	300m ²	15m	450m ²
ET450	450m ²	20m	800m ²

Amplifier	Maximum length (m) Vs Cable Size (mm ²)				
	1	1.5	2.5	4.0	ETCF*
ET150	70	80	90	100	90
ET300	90	105	120	140	140
ET450	90	105	140	160	140

**ETCF copper foil tape is equivalent to 1.8mm² cable but has a lower inductance per metre*

The Feed cable from the start and end of the loop should be twisted together to lower their inductance and reduce spill from the cables,

4: Direct Loop Monitor

This is a stereo ¼" Jack socket suitable for low impedance headphones and monitors the current flowing through the current sense resistor, allowing the installer to verify the audio quality of the current flowing through the loop- this should **NOT** be used as an output

5: Audio Insert Socket

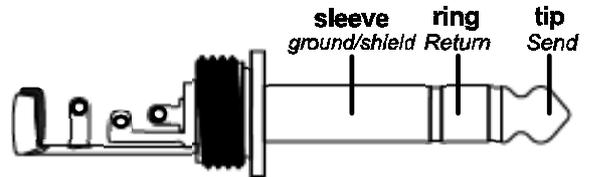
This stereo ¼" Jack connector allows the ET Professional units to be slaved together, or for connection to the ET PHASE de-correlator for use with low spillage loop systems.

The connector can also be used to take a feed to drive the input of a tape recorder, taking advantage of the high quality audio processing stage present within the amplifier.

To do this the tip and ring connections should be joined- providing the signal, and the cable screen should be connected to the sleeve of

the Jack- The cable is unbalanced and should be no more than 1m long.

This connector should **NOT** be used as a general-purpose input as it is placed between the compressor output and the input of the current amplifier, and incorrect use will damage the amplifier, voiding all warranties.



6: Loop OK Output

This socket provides power to the ETOK over door indicator to show the operation of the loop, and is driven by the loop OK LED on the amplifier front panel- Power is only provided when current is flowing through the loop cables- The output is 12V DC internally fused at 100mA.

7: Phantom Power Switch

This provides a global on/off for the phantom power available on the microphone sockets- this switch needs to be turned on (depressed) when using Electret type microphones. **Always** turn the drive control to zero before altering the settings of this switch. Phantom voltage is 12V DC, 2mA which works with all Current Thinking microphones, as well as the majority of products on the market from suppliers such as Audio Technica, AKG and Sure.

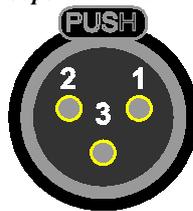
8: Input 3 Sensitivity

This allows the user to select the audio level expected by input 3, and can be either Microphone level (up) or 775mV balanced line level (depressed)- If line level is selected then the phantom power is removed from the input regardless of the setting the phantom switch (7). **Always** turn the drive control to zero before altering the settings of this switch.

9: Microphone 3/ Line Input

This input is on an industry standard 3 PIN XLR type connector; the sensitivity of this input is set using the Blue switch adjacent to the connector (item 8 above). The level of this input is set using the 'Mic 3/ Line' level control on the front panel.

Do not connect Pin1 to the shield of the XLR, as this will cause earth loops and hum.



Line Input connections:

Unbalanced	Balanced
Pin 1 Ground	Pin 1 Ground
Pin 2 Signal	Pin 2 Hot
Pin 3 Link to pin 1	Pin 3 Cold

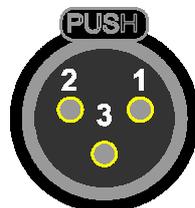
Microphone Input connections:

Balanced
Pin 1 Ground
Pin 2 Hot
Pin 3 Cold

10: Microphone Inputs 1 & 2

These inputs are on an industry standard 3 PIN XLR type connectors, fixed at microphone sensitivity. The mix level of these inputs is set using the 'Mic 1' and 'Mic 2' front panel controls respectively.

Connect the screen of the microphone cable to the shell of the connector for hand-held Mics to comply with the Safety directives.

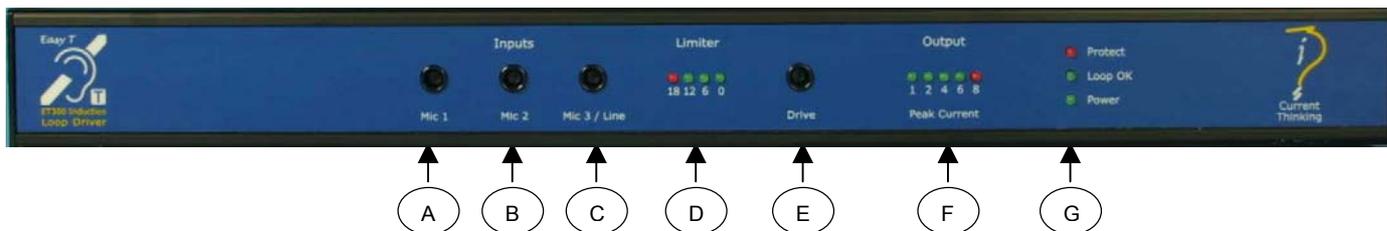


Microphone Input connections:

Unbalanced*	Balanced
Pin 1 Ground	Pin 1 Ground
Pin 2 Signal	Pin 2 Hot
Pin 3 Link to pin 1	Pin 3 Cold

*** Phantom power (7) must be turned off.**

Commissioning A Loop System



Setting to Work

Before applying power to the amplifier, turn all the inputs (A, B & C) and the Current Drive control (E) fully anticlockwise.

Apply Power, the power LED (bottom of stack G) and Protect LED (top of stack G) should light, after a few seconds the Protect light should go out, and a click will be heard as the output relay closes (if the light remains illuminated then the internal protection systems have detected a failure in one of the supply lines, an over temperature condition or failure of an output device- please refer to your supplier).

Initial setting

An audio signal should be sent to the loop amplifier, either by placing a speaker and sound source of 65dBA near the microphones or by playing calibrated pink noise through the system.

Using a screwdriver adjust the input level (A, B, C above) for the audio source until the limiter LED (D) moves from 0 dB to 6dB during peaks in speech, and so it never exceeds 12dB even when shouting. Repeat the above for each input (A,B and C). The peak current required for a room with the cable at floor level (or 2.8m height) can be approximated from the formula:

$$i = 4 * a / 9$$

Where *i* = peak current required & *a* is the length of the shortest side of the loop.

Next using a screwdriver adjust the Drive control (E) on the loop amplifier until the LED

representing the value of *i* lights. (This gives a good first approximation for the required current).

Final Setting

Using the ETFSM held vertically and at the listening height (ear level) loop users will be at (standing or sitting), measure the field strength in the centre of the room. This should be 0dB peaking at +3dB when the compressor LED blinks from 0dB to 6dB if this is not the case adjust the drive control on the amplifier to achieve this level.

Finally walk through the area covered and note the average level of the loop field, adjusting the loop amplifier if necessary so that the peak field strength is between -3dB and +3dB over as much of the area as possible. It is also wise to mark on a plan, areas of poor coverage or high background noise so hearing aid users can be directed away from these areas.

Once commissioned, we recommend listening to the loop signal with a receiver such as the ETRX to gain a qualitative measurement of loop audio performance. It may be wise to supply the responsible person a loop receiver so they can periodically assess loop operation and record this in a logbook.

Finally place the loop present sticker in a prominent location within the area covered, or on the door(s) leading to the area covered, additional sticker packs are available from your distributor (Part ETLF).

Technical Specification.

Voltage 230V ~ 50/60 Hz
 Plug top Fuse 5A

	ET150	ET300	ET450
Power	100VA Max	180VA Max	300VA Max
Internal fuse	2 off 3.15A(F)	2 off 5A(F)	2 off 6.3A(F)
Loop OK out	1 off 100mA(F)		
Output Stage	Current Mode		
Loop impedance	0.1Ω to 1 Ω		
Peak Current	>9A peak	>12A peak	>15A peak
125mS burst	>6A peak	>8A peak	>10A peak
RMS Current	2A @ 1KHz	3A @ 1KHz	4A @ 1KHz
Protection	DC, Thermal, Short circuit, soft start.		
Compressor	Variable ratio 1:1 to limit 20:1.		
Attack	10mS		
Release	Automatic from 500mS to 1500mS		

Dynamic Range	>60dB
THD	<0.25%
Audio inputs	3 (2 Mic, 1 Mic/Line)
Type	XLR
Phantom	Selectable, 12V 5mA
Sensitivity	-50dBV Microphone -10dBV Line Level 0dBV Insert Send
Dimensions (Extents)	
Height	44.5mm
Width	432mm (free standing) 485mm with Rack kit
Depth	165mm