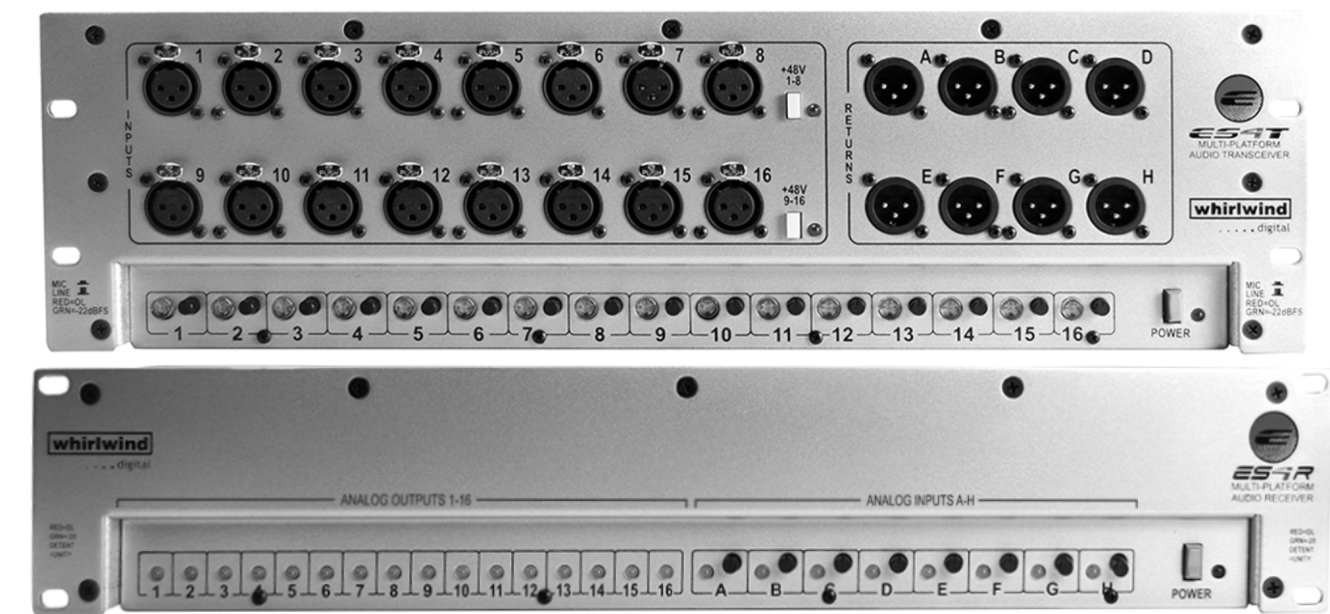


ES4

OPERATIONS MANUAL



ES4 MULTI-PLATFORM AUDIO TRANSPORT SYSTEM

Thank you for purchasing a Whirlwind ES4 digital snake module. The ES4T (transmitter) and the ES4R (receiver) modules comprise a system that offers sixteen channels of professional quality microphone preamplification and eight line level return channels via a choice of digital transport formats. The ES4T uses a studio quality mic preamp for the most demanding of professional applications, offering low noise and low distortion.

Each ES4T and ES4R can be configured for Cobranet® or Dante® formats by simply changing the network module in the unit. Exceptional performance, ease of use, and extreme flexibility make the ES4 products excellent I/O devices for any digital audio network. This manual will help you get the most from your system so please read it, keep it handy, and refer to it if you have problems. It also serves as a quick start guide for basic systems. Technical support is available at 800-733-9473 or techsupport@whirlwindusa.com.

Unpacking: Each ES4 snake module includes the device with the appropriate network card installed, an AC power cord, and this manual. For CobraNet® devices a disc with the CobraNet® Discovery routing software and an expanded manual is included. A disc with Dante routing software is also included with Dante enabled devices. Keep the packaging, in the unlikely event you need to return the unit for service, using the original packaging will help insure a safe trip.

Overview: The typical Whirlwind ES4 series digital snake system consists of two components: the ES4T transmitter module, which has sixteen balanced mic/line inputs and eight line level outputs. The matching ES4R receiver module has sixteen line level outputs and eight line level inputs. All inputs have variable gain controls and LED level monitoring.

WARRANTY

This product is guaranteed to be free from defects in materials and workmanship to the original purchaser for a period of 1 year from the date of purchase. Should service be required, return the unit postage prepaid along with the original sales receipt to:

whirlwind
Attention - Repair
99 Ling Road
Rochester, New York 14612

The warranty on this product shall not apply to defects or damage resulting from abuse, abnormal use or from repairs or modifications performed by anyone other than whirlwind. If it is determined a manufacturing defect has occurred, whirlwind will repair or replace the unit at our option and pay the postage back to you.

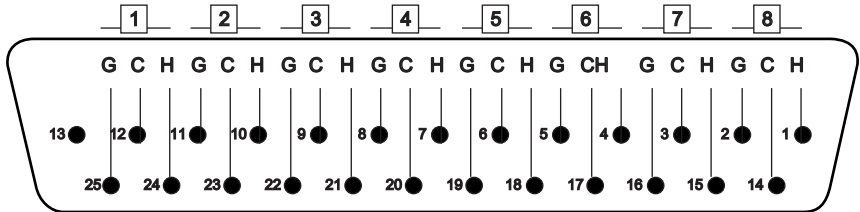
whirlwind
99 Ling Road - Rochester, NY 14612
800-733-9473 / 585-663-8820 Fax: 585-865-8930
www.whirlwindusa.com
sales@whirlwindusa.com

SPECIFICATIONS

MEASUREMENT	ES4T	ES4R
Input Frequency Response (Line)	±.2 dBV 20 Hz - 20 kHz	±.5 dBV 20 Hz - 20 kHz
Input Frequency Response (Mic)	±.2 dBV 20 Hz - 20 kHz	
Control in detent position		
Input THD + N Line Mode	<.0015% 20 Hz - 20 kHz	<.0012% 20 Hz – 20 kHz
Input THD + N Mic Mode	<.0022% 20 Hz - 20 kHz	
Mic Mode Equivalent Input Noise	-124.3 dBV	
Total Gain	50 dBV	20 dBV
Gain of Microphone Preamp	Mic/Line switch (in) +30 dBV	
Range of level pot	-40 to +20 dBV	-20 to +20 dBV
Common Mode Rejection of Input	>60 dB	>60 dB
Maximum Input level	Line +19 dBV; Mic –10 dBV	+19 dBV
Input Impedance	Mic and Line 2 kOhms	20 kOhms balanced
Noise at unity gain (potentiometer at center)	Line –101 dBfs Mic (30 dBV gain) –95 dBfs	Line –105 dBfs
Isolation between input channels	Line 126 dB @ 1 kHz Mic (40 dBV gain) 110 dB@ 1 kHz	122 dB
Digital conversion	24 Bit/48 kHz	24 Bit/48 kHz
Output Frequency Response	±.23 dBV 20 Hz - 20 kHz	±.1 dBV 20 Hz - 20 kHz
Output THD + N	<.0025% 20 Hz – 20 kHz	<.0024% 20 Hz – 20 kHz
Output channel noise	-89 dBV	-95 dBV
Maximum output level	+20 dBV balanced	+12 dBV balanced
Output Impedance	200 Ohms balanced	200 Ohms balanced
Isolation between output channels	124 dB	124 dB
LED thresholds	Red LED –2 dBfs; ± 1 dBfs Green LED –30 dBfs; ± 3 dBfs	Red LED –2 dBfs; ± 1 dBfs Green LED –30 dBfs; ± 3 dBfs
Phantom Power	48 VDC	None
Power consumption	.8 Amps AC at 120 VAC max. .31 Amps AC at 120 VAC min.	.47 Amps AC at 120 VAC max. .26 Amps AC at 120 VAC min.
Power requirements	100-240 VAC 50-60 Hz	100-240 VAC 50-60 Hz
Internal Mains fuse	2 Amp Slow Blow type 3AG	2 Amp Slow Blow type 3AG
AC dropout voltage	90 VAC	90 VAC
Size	5.25 H x 19.0 W x 12.5 D inches	3.5 H x 19.0 W x 12.5 D inches
Unit Weight	12 lbs	9.5 lbs
Shipping Weight	15 lbs	12 lbs

Specifications subject to change without notice.

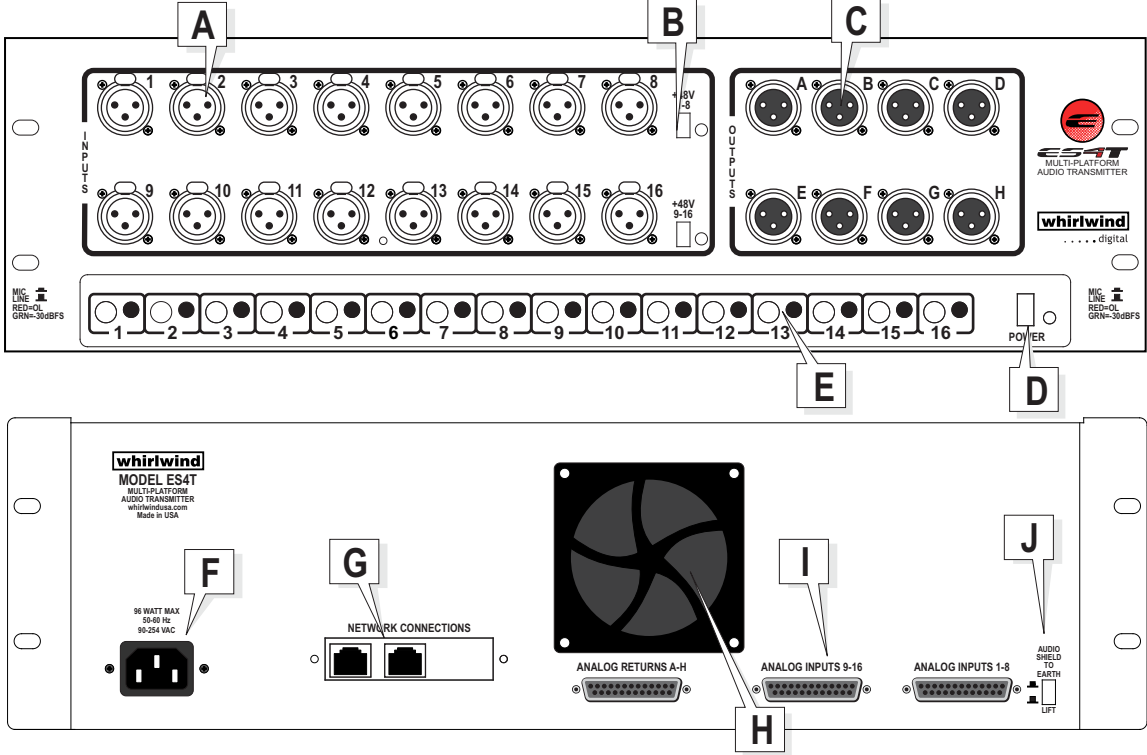
Pin-out for TASCAM DB25 8 Channel Balanced Connector



H = HOT C = COLD G = GROUND

ES4T Connections and controls: This section describes the 16 x 8 transmitter modules.

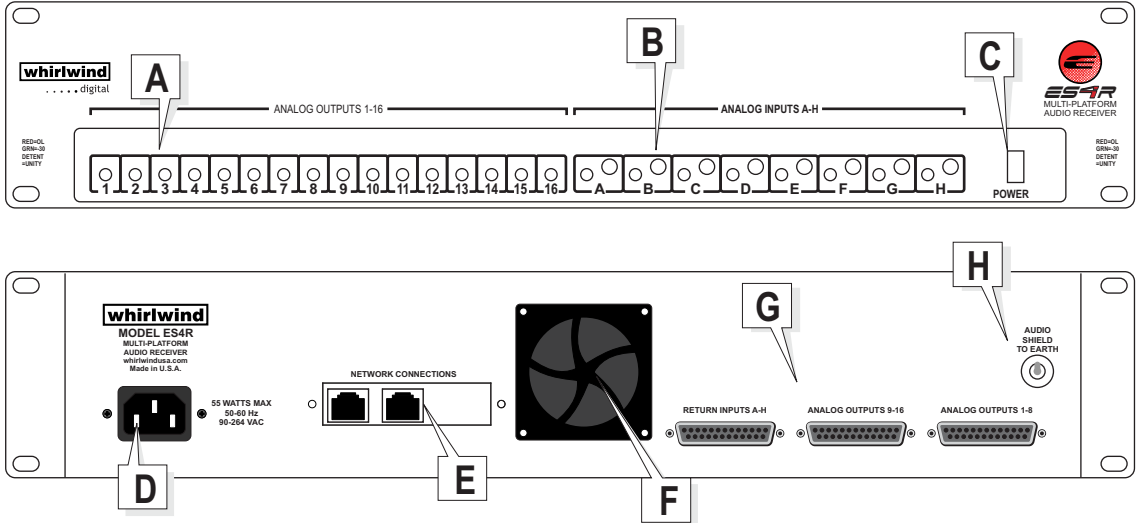
- A. Locking female XLR connectors are provided for each input channel.
- B. 48V (Phantom Power): Push the switch IN if you are using a condenser microphone or a direct box that requires 48 Volts of phantom power. Separate switches are provided for channels 1-8 and channels 9-16. Red LEDs indicate that phantom power is active. It is recommended that phantom power be turned off when you are patching, to prevent popping sounds in your system.
- C. Male XLR connectors are provided for each return (output) channel. Output level at 0 dBfs digital is +20 dBV balanced analog.
- D. Power: Push this switch IN to power the unit. The red LED indicates the unit is on.
- E. Input gain controls: The Mic/Line switch and the rotary gain control provide up to 50 dB of gain to the input signal. The Mic position of the switch adds 30 dB of gain and the pot has a range of -40 dBV to +20 dBV, allowing the use of a wide variety of inputs. Adjust the switch and gain control until the green LED in the switch just turns on. This setting allows about 30 dB of headroom, to minimize the possibility of digital clipping.



- F. AC power inlet: This universal power input accepts 100~240 VAC, 50~60 Hz and the unit is protected by an internal 2 Amp SLO-BLO fuse. A U.S. AC cable with the mating IEC connector is included.
- G. Network Connections: Digital audio network modules are available in Cobranet®, Dante®, MADI, or AVB® formats. The modules are interchangeable in the ES4T unit. Disconnect the AC connection and remove the top panel (12 screws). Then remove the 4 screws (2 on the back panel and 2 inside) holding the network card. Push the card ejectors down to remove the module. Return the card ejectors to the upright position and carefully align the pins on the motherboard with the sockets on the network card to ensure proper installation. Re-install the 4 network card screws, the top panel and its screws.
- H. Fan: Remove, clean and replace the fan filter frequently to maintain maximum airflow through the enclosure.
- I. Female DSUB25: These are paralleled to the XLR connectors on the front panel and are wired to the Tascam analog standard. These allow for an analog split to a monitor console from the ES4T units or as alternate input/output connections. Whirlwind cables from the DBF1 or DBM series are an excellent choice for this purpose.
- J. Audio Shield Lift Switch: This switch disconnects audio ground from earth ground, when required, to optimize signal quality.

ES4R Connections and controls: This section describes the 16 x 8 receiver modules.

- A. Analog Output signal LEDs: These LEDs show that audio (greater than –30 dBV) is being received by the ES4R and monitors the signal level being applied to the ES4T inputs. Green shows optimum signal presence (around –30 dBV) and red indicates ES4T input overload.
- B. Analog Input gain controls: The rotary pots can vary the line level inputs signals through a range of -20 dBV to +20 dBV, allowing use with a wide variety of inputs. Adjust the gain control until the green LED just turns on. This setting allows about 30dB of headroom to minimize the possibility of digital clipping.
- C. Power: Push this switch IN to power the unit, the red LED indicates the unit is on.



- D. AC power inlet: This universal power input accepts 100~240 VAC, 50~60 Hz and the unit is protected by an internal 2 Amp SLO-BLO fuse. A U.S. AC cable with the mating IEC connector is included.
- E. Network Connections: Digital audio network modules are available in Cobranet®, MADI, Dante®, or AVB® formats. The modules are interchangeable in the ES4R unit. Disconnect the AC connection and remove the top panel (12 screws). Then remove the 4 screws (2 on the back panel and 2 inside) holding the network card. Push the card ejectors down to remove the module. Return the card ejectors to the upright position and carefully align the pins on the motherboard with the sockets on the network card to ensure proper installation. Re-install the 4 network card screws, the top panel and its screws.
- F. Fan: Remove, clean and replace the fan filter frequently to maintain maximum airflow through the enclosure.
- G. Female DSUB25: These are the connections for analog outputs and line input returns and are wired to the Tascam analog standard. Whirlwind cables from the DBF1 or DBM series are an excellent choice for this purpose.
- H. Audio Shield Lift Switch: This switch disconnects audio ground from earth ground, when required, to optimize signal quality.