
INTERFACES

MODEL 141/142/144

OWNER'S GUIDE



APHEX
SYSTEMS

Model 141 ADAT to Analog Converter
Model 142 Analog to ADAT Converter
Model 144 AES/ADAT Bi-directional Converter

1.0 Introduction

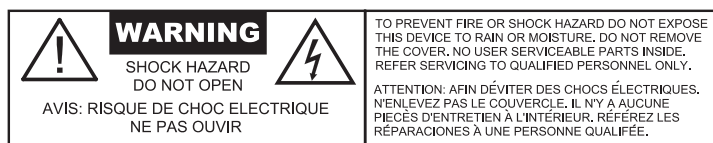
The Aphex Models 141, 142 and 144 were developed as interfaces between the Aphex Anaconda digital snake system and other devices. Each model was designed to do its job without any extra unnecessary bells or whistles. While they each fulfill that design specification, each model is an excellent, useful product in its own right.

Since the I/O of the Anaconda is ADAT, there is an ADAT connection in each model. The ADAT eight channel format has been a standard in the audio industry for years. It is a reliable, mature, cost effective technology albeit with limitations. The prime limitation is the distance that ADAT audio can be safely transmitted through 'Lightpipe' fiber. Some claim that it could be as far as 30 feet, but our experience shows that there can be significant audible artifacts at 20 feet. We strongly recommend that the distance be as short as possible, preferably less than 10 feet (3 meters).

The other limitation is that its maximum sample rate is 48kHz for eight channel operation. There is a technology called S-Mux that doubles the maximum frequency but halves the channel count. We have elected to stay with the sample rate of 48kHz in the Model 142, but Models 141 and 144 can work at 44.1 or 48kHz.

There are many other products on the market that do similar functions. But none as simply or as well or as cost effectively, as these units. You will enjoy many years of excellent uninterrupted performance.

Safety Declarations



CAUTION: For protection against electric shock, do not remove the cover. No user serviceable parts inside.

WARNING: This equipment has been tested and found to comply with the limits for a Class A digital device pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the operating guide, may cause interference to radio communications. Operation of this equipment in a residential area is likely to cause interference in which case the user will be required to correct the interference at his own expense.

The user is cautioned that changes and modifications made to the equipment without approval of the manufacturer could void the user's authority to operate this equipment.

It is suggested that the user use only shielded and grounded cables to ensure compliance with FCC Rules.



Model 141 ADAT to Analog Converter
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Model 144 AES/ADAT Bi-directional Converter

2.0 Installation and Interfacing

Rack Installation

All three models are 1.75” high (1RU), 8.25” wide and 7.25” deep. They can be rack mounted by using the Aphex accessory # 44-008SA rack kit. One kit can be used to mount a pair of units or a single unit in 1RU. Follow the instructions included with the rack kit for assembly.

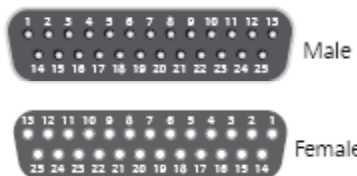
Make sure that there is sufficient airflow around the units. Do not mount them directly on top of equipment that generates excessive heat or near equipment that generates large magnetic hum fields.

AC connections

All the models have internal power supplies that are preset to a specific operating voltage. Make sure that the unit is set to the proper voltage for your area before connecting to AC power.

Audio connections

Analog audio connections in the Models 141 and 142 are through TASCAM analog standard 25 pin D-Sub. Both input on the Model 142 and output on the Model 141 are female D-Sub connectors on the chassis. D-Sub connections are as follows:



	CH1	CH2	CH3	CH4	CH5	CH6	CH7	CH8
(+)	24	10	21	7	18	4	15	1
(-)	12	23	9	20	6	17	3	14
GND	25	11	22	8	19	5	16	2

Balanced inputs

The analog audio input stages in the Model 142 are balanced. They can be driven by either a balanced or an unbalanced input. If unbalanced, connect the “Hot” to the “+” pin on the input connector. Connect ground to the “G” pin and “ - “ pin. Maximum input level, balanced or unbalanced is +24dBu.

Balanced outputs

The analog audio outputs of the Model 141 are impedance balanced. This is a true balanced circuit, however audio signals appear only on the “+” connector pins. If driving a balanced input connect the output pins “+” and “-” to the appropriate input connections. It is recommended that the ground be connected only at the receiving end. If driving an unbalanced input connect “+” to the “hot” input and connect “G” to the ground connection at the receiving end. You can leave the “-” unconnected or it can be tied to ground. Maximum output level is +24dBu.

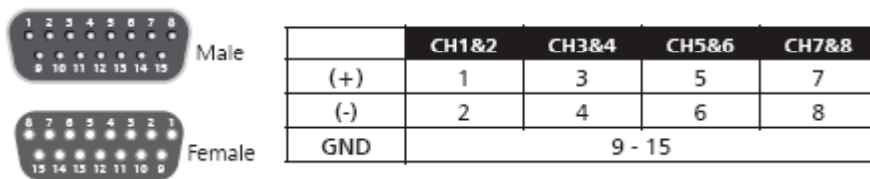
**Model 141 ADAT to Analog Converter
 Model 142 Analog to ADAT Converter
 Model 144 AES/ADAT Bi-directional Converter**

ADAT connections

ADAT connections use a standard TOSLINK optical transmitter and receiver on the Model 144, a receiver on the Model 141 and a transmitter on the Model 142. Keep ADAT connections as short as possible.

AES connections

AES connections use Apex standard 15 pin D-Sub. The AES output from the Model 144 is female and the AES input to the Model 144 is male. The connections are as follows:



Word clock

The Anaconda system is designed to work at 48kHz sampling frequency only. In order to achieve its unmatched performance, the clock must be within +/-5Hz of 48kHz. That is why the Anaconda has its own super stable and accurate clock generator and distribution system.

The Model 142 has a word clock input on a standard BNC with an internal 75Ω terminating resistor. If there is no word clock connected, the clock will be approximately 48kHz, but not exactly. It is highly recommended that a 48kHz word clock be connected to the Model 142 even if the unit is not part of an Anaconda system.

The Model 141 needs no clock as it converts whatever is on the ADAT input to analog. It can accept 44.1kHz or 48kHz.

The Model 144 has no separate clock input. However, the same word clock (either 44.1kHz or 48kHz) must be used for all the AES sources. Also, AES input channels 1 and 2 must be connected to the Model 144 in order for the clock to be derived for the ADAT output.

LED Indicators

Models 141 and 142 have a single bi-color red/green LED labeled "Power/Locked". The LED will be red when power is supplied but without any ADAT connected to the Model 141 or word clock connected to the Model 142. When there is a valid ADAT signal (either at 44.1kHz or 48kHz) connection to the Model 141 the LED will turn green.

Model 141 ADAT to Analog Converter
Model 142 Analog to ADAT Converter
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When there is a valid word clock connection to the Model 142 (at 48 kHz only), the LED will turn green. There is a red LED next to each input trimmer on Model 142. It illuminates when the input signal exceeds +24dBu to indicate clipping on that channel.

There are three green LED's on the Model 144. When power is applied the "Power" LED is lit. When a valid ADAT signal is present (either at 44.1kHz or at 48kHz) the "ADAT LOCKED" LED is lit.

When there is AES input (there must be the connection to AES Channel 1,2 at either 44.1 or 48kHz) the "AES LOCKED" LED is lit.

If there are any red LED's illuminated it indicates a problem somewhere in the system.

Note: The ADAT to AES circuit is completely independent from the AES to ADAT circuit.

Analog Audio Level

+24dBu is the maximum analog audio input level into the Model 142 and the maximum analog audio output level from the Model 141. This level corresponds to 0dBfs (full scale) in the digital domain.

There is a trimmer for each analog audio input to the Model 142 that adjusts the gain by 12dB. If the unit is being fed by a professional level device (0Vu = +4dBu) the gain trimmer should be set to "0". If the Model 142 is being fed by a consumer level device (0Vu = -10dBV) the trimmer should be set to "+12".

There is a trimmer for each analog audio output of the Model 141 that adjusts the gain by 12 dB. If the unit is feeding a professional level device (0Vu = + 4 dBu) then the trimmer should be set to " 0 " . If the Model 141 is feeding a consumer level device (0 Vu = - 10 dBV) the trimmer should be set to "- 12".

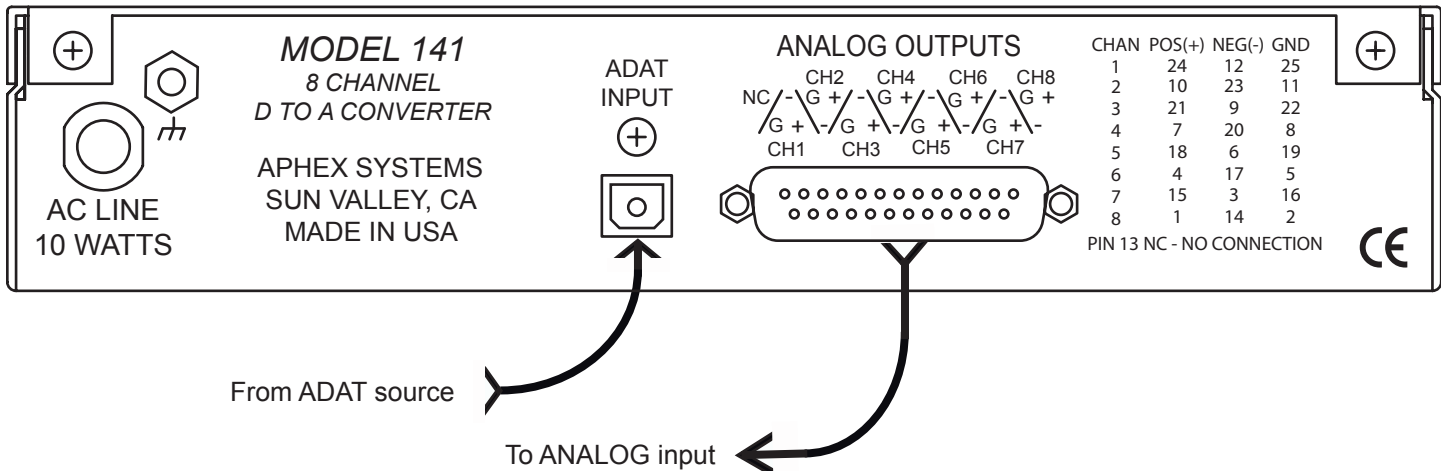
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3.0 specification

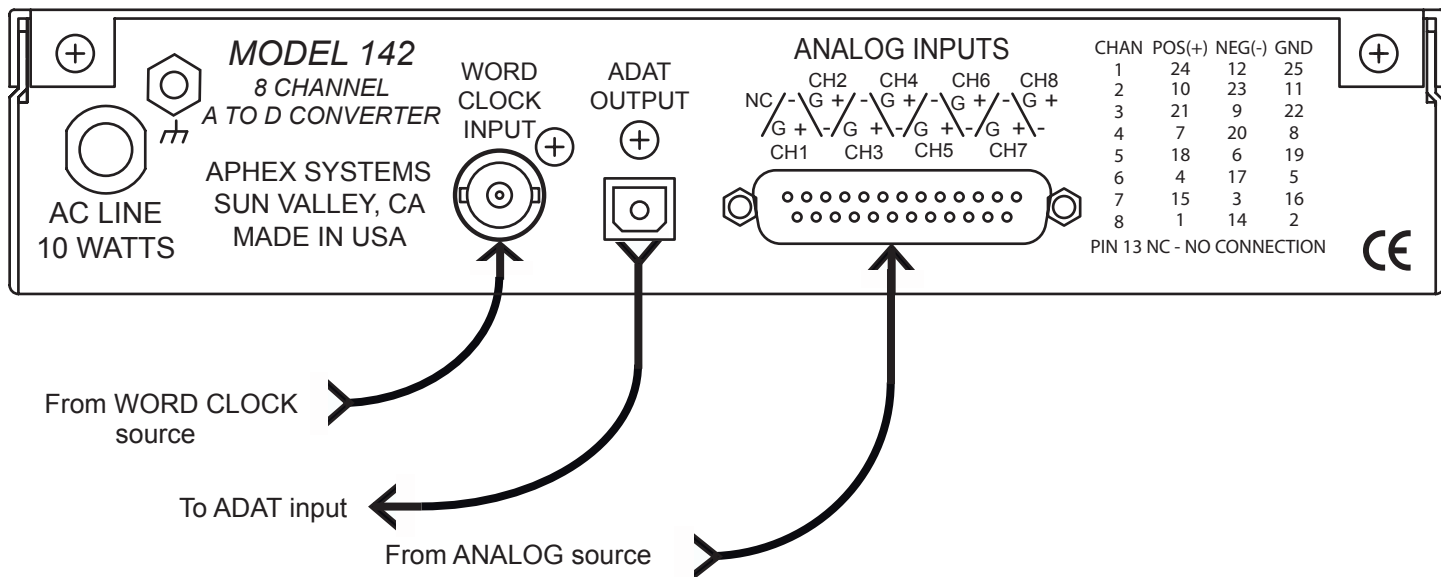
	Specifications			
Model	141	142	144	
Max Input	0dBfs	+24dBu	0dBfs	
Max Output	+24dBu	0dBfs	0dBfs	
THD+Noise	-100dB	-100dB	N/A	
Dynamic Range	114dB	114dB	N/A	
Trim Range	12dB	12dB	N/A	
Jitter	<1nsec	<1nsec	<1nsec	
Power Consumption	10 Watts			
Frequency Response	20Hz	20kHz	±0.5dB	N/A
Size	1RU	1/2 Rack Width	1.75"H x 8.25"W x 7.25"D	
Weight	3.5lbs	(1.6kg)	(44.5mm x 209.5mm x 184.2mm)	
Connectors	Toslink	Toslink	Toslink (2)	
	25 Pin D-sub Tascam Format	25 Pin D-sub Tascam Format	15 Pin D-sub Aphex Format (2)	
		BNC Word Clock		

All specifications are subject to change without notice.

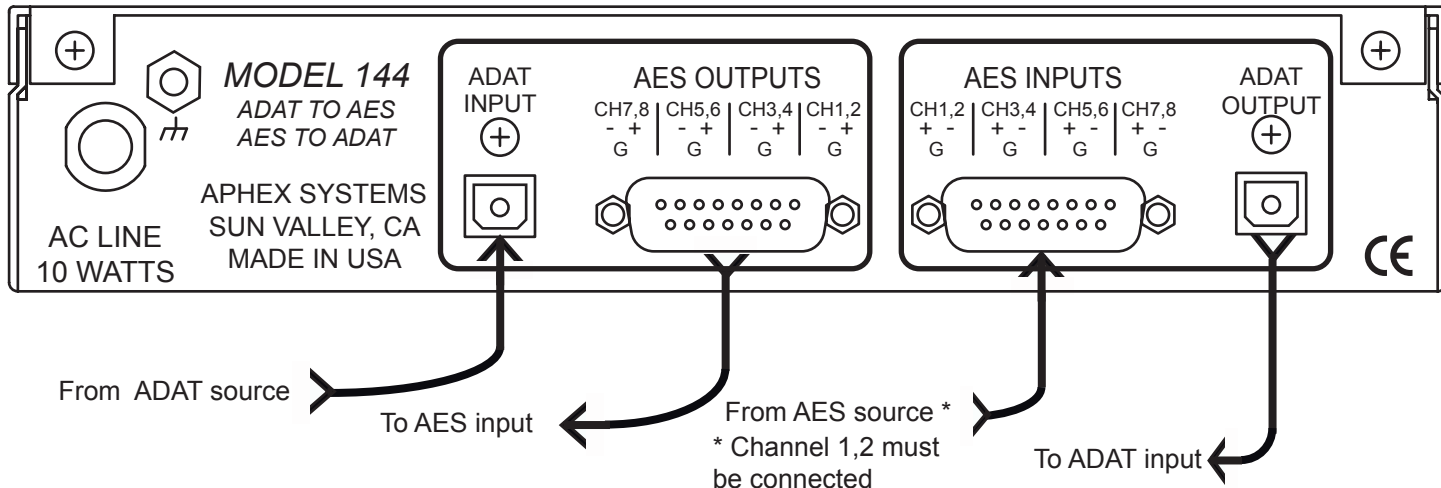
Model 141 ADAT to Analog Converter



Model 142 Analog to ADAT Converter



Model 144 AES/ADAT Bi-directional Converter



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