

### FEATURES

- Full-featured evaluation board for the AD7484
- Compatibility with the EVAL-CONTROL BRD2 evaluation board controller
- Standalone capability
- On-board analog buffering and reference
- Various linking options
- PC software for control and data analysis when used with the EVAL-CONTROL BRD2

### GENERAL DESCRIPTION

This data sheet describes the setup and use of the AD7484 evaluation board. The AD7484 is a high speed, low power, 14-bit successive approximation ADC that operates from a single +5 V supply and features throughput rates of up to 3 MSPS. Full details on the AD7484 are available in the AD7484 data sheet, which is available from Analog Devices, Inc., and should be consulted in conjunction with this data sheet when using the evaluation board.

On-board components include the following:

- AD780 pin programmable +2.5 V or +3 V ultra high precision band gap reference
- AD829, AD8022, and AD711 op amps
- ADM809 reset generator
- Two 7S04 inverters
- 16-bit FCT245 type digital buffer.

Various link options are explained in detail in the Link Options section.

### FUNCTIONAL BLOCK DIAGRAM

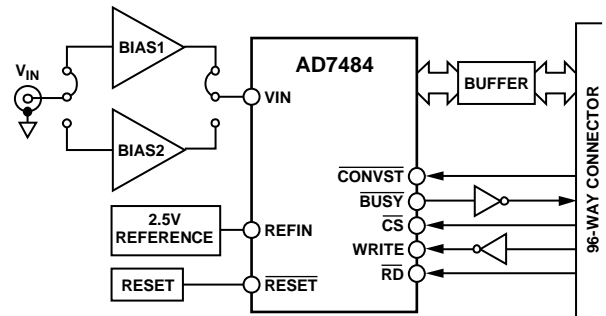


Figure 1.

Interfacing to this board is through a 96-way connector. This 96-way connector is compatible with the evaluation board controller [EVAL-CONTROL BRD2](#), which is also available from Analog Devices. External sockets are provided for  $\overline{\text{CONVST}}$ ,  $\overline{\text{RD}}$ ,  $\overline{\text{WR}}$ , and  $\overline{\text{CS}}$  signals, a bipolar analog input signal, a biased up unipolar signal, optional external reference, and offset voltages.

#### Rev. 0

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## REVISION HISTORY

10/07—Revision 0: Initial Version

## EVALUATION BOARD HARDWARE

### POWER SUPPLIES

When using this evaluation board with the EVAL-CONTROL BRD2, all supplies are provided from the EVAL-CONTROL BRD2 through the 96-way connector. When using the board as a standalone unit, external supplies must be provided.

This evaluation board has nine power supply inputs:

- $AV_{DD}$
- AGND
- +12 V
- -12 V
- AGND
- $DV_{DD}$
- DGND
- $V_{DRIVE}$
- DGND

If the evaluation board is used in standalone mode, a +5 V supply must be connected to both the  $AV_{DD}$  and  $DV_{DD}$  inputs. The +12 V and -12 V supplies are required for the op amps.

The  $V_{DRIVE}$  input can be connected to a supply from +2.7 V to +5 V, allowing the evaluation board to be connected to both +3 V and +5 V systems. The supplies are decoupled to the ground plane with 10  $\mu$ F tantalum and 0.1  $\mu$ F multilayer ceramic capacitors at the point where they enter the board. Noise on the supplies is further reduced with the use of EMC filters and ferrite beads. The supply pins of all the op amps and the reference are also decoupled with 10  $\mu$ F tantalum and 0.1  $\mu$ F ceramic capacitors, as are the  $V_{DD}$  pins of the AD7484.

This evaluation board consists of four layers. One of these layers is used as a dedicated ground plane, which allows for good decoupling and shielding.

### LINK OPTIONS

There are 25 link options that must be set according to operating setup requirements before the evaluation board can be used. These link options and their functions are listed in Table 1. There is no Link 25.

**Table 1. Link Options and Functions**

Link No.	Function
LK1	Selects the source of $\overline{CONVST}$ input. In Position A, sources $\overline{CONVST}$ from the external connector, J9. In Position B, connects $\overline{CONVST}$ to the 96-way connector.
LK2	Selects the source for the bias up voltage. In Position A, connects the bias up voltage to the reference voltage (divided down by R6 and R8). In Position B, connects the bias up voltage to $AV_{DD}$ . In Position C, connects the bias up voltage to the external connector, J10.
LK3	Shorts out the 1 k $\Omega$ series input resistor on the analog input.
LK4	In conjunction with LK5, selects the op amp to use in the analog input bias up circuitry. Both links must be set to the same position. In Position A, selects the AD829. In Position B, selects the AD8022.
LK5	See LK4.
LK6	Puts the AD7484 in standby mode. In Position A, connects the STBY (standby) pin to $DV_{DD}$ , putting the part in standby mode. In Position B, connects the STBY (standby) pin to GND for normal operation.
LK7	Puts the AD7484 in nap mode. In Position A, connects the NAP pin to $DV_{DD}$ , putting the part in nap mode. In Position B, connects the NAP pin to GND for normal operation.
LK8	Selects whether the clip input is tied high or low. See the AD7484 data sheet for additional details. In Position A, ties the CLIP pin to $DV_{DD}$ . In Position B, ties the CLIP pin to GND.
LK9	Selects whether the MODE1 input is tied high or low. See the AD7484 data sheet for additional details. In Position A, ties the MODE1 pin to $DV_{DD}$ . In Position B, ties the MODE1 pin to GND.
LK10	Selects whether the MODE2 input is tied high or low. See the AD7484 data sheet for additional details. In Position A, ties the MODE2 pin to $DV_{DD}$ . In Position B, ties the MODE2 pin to GND.
LK11	Configures the AD7484 for use with an internal or external reference. With this link in position, the part is configured for use with an external +2.5 V reference.

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Link No.	Function
LK12	Selects the source for the $V_{DRIVE}$ voltage. In Position A, connects $V_{DRIVE}$ to $DV_{DD}$ . In Position B, takes $V_{DRIVE}$ from the external connector J5.
LK13	Selects the source for the external reference. In Position A, selects the on-board AD780. In Position B, selects the external connector J4.
LK14	When using an external reference, LK14 and LK15 should be in place to connect the reference pins to the external reference source.
LK15	See LK14.
LK16	Selects the source for the $DV_{DD}$ supply. In Position A, selects the 96-way connector (EVAL-CONTROL BRD2) as the source. In Position B, selects the external connector J7 as the source.
LK17	Selects whether the analog input is taken from the on-board op amps or directly from the external connector J3. In Position A, selects the op amps. In Position B, selects J3.
LK18	Inserting LK18 terminates the analog input applied to J2 with a 50 $\Omega$ resistor.
LK19	Selects the source for the $AV_{DD}$ supply. In Position A, selects the 96-way connector (EVAL-CONTROL BRD2) as the source. In Position B, selects the external connector J6 as the source.
LK20	Selects the source for the +12 V supply. In Position A, selects the 96-way connector (EVAL-CONTROL BRD2) as the source. In Position B, selects the external connector J8 as the source.
LK21	Selects the source for the -12 V supply. In Position A, selects the 96-way connector (EVAL-CONTROL BRD2) as the source. In Position B, selects the external connector J8 as the source.
LK22	Selects the source of $\overline{CS}$ input. In Position A, sources $\overline{CS}$ from the external connector J11. In Position B, connects $\overline{CS}$ to the 96-way connector.
LK23	Selects the source of $\overline{RD}$ input. In Position A, sources $\overline{RD}$ from the external connector J12. In Position B, connects $\overline{RD}$ to the 96-way connector.
LK24	Selects the source of $\overline{WR}$ input. In Position A, sources $\overline{WR}$ from the external connector J13. In Position B, connects $\overline{WR}$ to the 96-way connector.
LK25	N/A
LK26	Inserting LK26 terminates the analog input applied to J3 with a 50 $\Omega$ resistor.

## INITIAL SETUP CONDITIONS

Care should be taken before applying power or signals to the evaluation board to ensure that all link positions support the required operating mode. Failure to do this could result in damage to the evaluation board.

The positions in which all the links are set when the evaluation board is shipped are given in Table 2. The board is also set up for use with the EVAL-CONTROL BRD2 when shipped.

**Table 2. Initial Link Positions**

Link No.	Position	Function
LK1	B	CONVST input is connected to the 96-way connector.
LK2	A	The bias up voltage is connected to the reference voltage (divided down by R6 and R8).
LK3	IN	The 1 k $\Omega$ series input resistor on the analog input is shorted.
LK4	A	AD829 is used in the analog input bias up circuitry.
LK5	A	AD829 is used in the analog input bias up circuitry.
LK6	B	The STBY (standby) pin is connected to GND for normal operation.
LK7	B	The NAP pin is connected to GND for normal operation.
LK8	A	The CLIP pin is tied to DV <sub>DD</sub> . See the AD7484 data sheet for additional details.
LK9	B	The MODE1 input is tied to GND. See the AD7484 data sheet for additional details.
LK10	A	The MODE2 input is tied to DV <sub>DD</sub> . See the AD7484 data sheet for additional details.
LK11	IN	The AD7484 is configured for use with an external +2.5 V reference.
LK12	A	V <sub>DRIVE</sub> is connected to DV <sub>DD</sub> .
LK13	A	The AD780 is selected as the source for external reference.
LK14	IN	The reference pins are connected to the external reference source.
LK15	IN	The reference pins are connected to the external reference source.
LK16	A	The DV <sub>DD</sub> supply is sourced from the 96-way connector (EVAL-CONTROL BRD2).
LK17	A	Analog input is taken from the on-board op amps.
LK18	OUT	No 50 $\Omega$ termination on the analog input is applied to J2.
LK19	A	The V <sub>DD</sub> supply is sourced from the 96-way connector (EVAL-CONTROL BRD2).
LK20	A	The +12 V supply is sourced from the 96-way connector (EVAL-CONTROL BRD2).
LK21	A	The -12 V supply is sourced from the 96-way connector (EVAL-CONTROL BRD2).
LK22	B	$\overline{\text{CS}}$ is connected to the 96-way connector.
LK23	B	$\overline{\text{RD}}$ is connected to the 96-way connector.
LK24	B	$\overline{\text{WR}}$ is connected to the 96-way connector.
LK25	N/A	
LK26	OUT	No 50 $\Omega$ termination on the analog input is applied to J3.

































