

**MODEL 8040NS**

**AMBIENT NOISE SENSOR INTERFACE AND LEVEL DETECTOR CARD**

The Model 8040NS Noise Sensor Interface and Level Detector Card is a component of the IED 8000 Series™.

The 8040NS has 4 inputs to accept the outputs of any type of the IED 540S Ambient Noise Sensor modules which are DC levels proportional to the sensed ambient sound pressure levels (SPL) in a given location. These voltages are scaled and sent to an A/D converter and then to the on-board microcontroller (MCU) to be measured and processed.

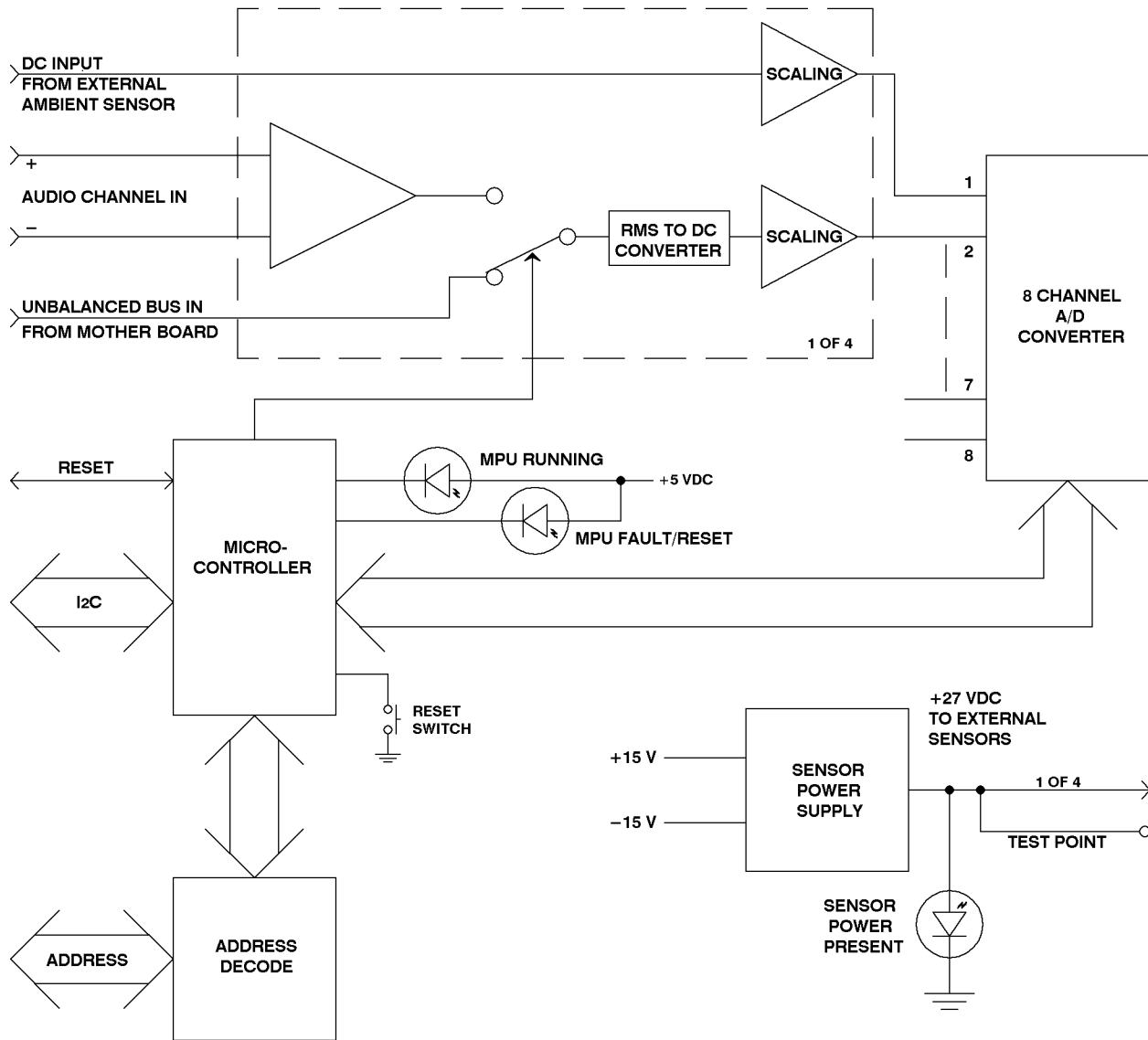


Figure 1 - 8040NS Ambient Noise Sensor Interface and Level Detector Card - Block Diagram



The 8040NS has 4 audio inputs for signals that can receive the inputs of an external balanced source, or from one of the 4 unbalanced internal audio buses. Source selection is controlled by the MCU.

The audio inputs are fed through a speech bandpass filter and to an RMS to DC Converter which produces DC voltages proportional to the input audio levels. These voltages are scaled and sent to an A/D converter and then to the on-board microcontroller (MCU) to be measured and processed.

To initialize the system, a calibration is performed for a given physical area or space. The calibration information (ambient and signal levels) is stored in non-volatile memory. By comparing the current levels with the calibration levels, the MCU determines the amount of gain or attenuation required to compensate for the change in ambient noise level.

The gain or attenuation information is communicated to the 8001CPU via the I<sup>2</sup>C bus on the mother board. The 8001CPU in turn directs the card which routs audio into that area to make the calculated changes in output level.

To power the noise sensing modules, the 8040NS includes a voltage converter circuit which produces +27 VDC at 25 mA from the  $\pm 15$  V supplies. Test points for the 27 VDC supply are located on the front edge of the card. The positive test point is red and the ground point is green.

There are three LED indicators on the front edge of the card. The upper LED which is red indicates an MCU fault or a reset in progress. The center LED (green) indicates the presence of +27 V when lit. The bottom green LED indicates that the MCU is running.

A reset line on the mother board makes it possible for the MCU to be reset by the 8001CPU. A momentary push switch located above the LEDs on the front edge of the card provides for a manual reset, when necessary.

**SPECIFICATIONS**

**ELECTRICAL, ANALOG**

1. Number of Inputs from Sensors- . . . . .	4
2. Number of Balanced Audio Inputs . . . . .	4
3. Maximum Input Level, Balanced Audio Inputs . . . . .	+18 dBu
4. Number of Unbalanced Audio Bus Inputs . . . . .	4
5. Maximum Input Level, Unbalanced Audio Inputs . . . . .	+18 dBu
6. Sensor Power Supply	
Sensor Power Voltage. . . . .	+27 V
Sensor Power Current, Max.. . . . .	25 mA
7. Power Supply	
Supply Voltage Range	
+15 V Supply . . . . .	+14.25 V to +15.75 V
- 15 V Supply . . . . .	- 14.25 V to - 15.75 V
Supply current	
V= +15 V . . . . .	135 mA
V= - 15 V. . . . .	65 mA

**CONTROLS**

1. MCU Reset . . . . .	Momentary Push Switch
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**INDICATORS**

1. MCU Fault/Reset . . . . .	Red LED
2. Sensor Power Present . . . . .	Green LED
3. MCU Running . . . . .	Green LED

**CONNECTORS**

1. 32-pin Euro Connector, male, right-angle (2 each). . . . .	Hirose PCN10-32P-2.54DS
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**MECHANICAL**

1. Size (maximum overall dimensions as viewed from the front)	
Height . . . . .	(11.43 cm) 4.50"
Width . . . . .	(2.03 cm) 0.80"
Depth . . . . .	(20.42 cm) 8.04"
2. Weight . . . . .	(160 gm) 0.352 lb

**ENVIRONMENTAL**

1. Operating Temperature Range . . . . .	(+32 °F - +104 °F) 0 °C - +40 °C
2. Storage Temperature Range . . . . .	(-40 °F - +158 °F) -40 °C - +70 °C



PIN	FUNCTION	PIN	FUNCTION
1	Channel 4 +27 V Out	17	Channel 4 Sense In –
2	Channel 3 Shield	18	Channel 4 Shield
3	Channel 3 +27 V Out	19	Channel 3 Sense In –
4	Ground	20	Ground
5	Channel 2 +27 V Out	21	Channel 2 Sense In –
6	Channel 1 Shield	22	Channel 2 Shield
7	Channel 1 +27 V Out	23	Channel 1 Sense In –
8	Ground	24	Ground
9	Ground	25	Ground
10	Channel 4 Audio In +	26	Channel 4 Audio In –
11	Channel 3 Shield	27	Channel 4 Shield
12	Channel 3 Audio In +	28	Channel 3 Audio In –
13	Ground	29	Ground
14	Channel 2 Audio In +	30	Channel 2 Audio In –
15	Channel 1 Shield	31	Channel 2 Shield
16	Channel 1 Audio In +	32	Channel 1 Audio In –

Table 1 - Pin Connections, Upper Euro Connector

PIN	FUNCTION	PIN	FUNCTION
1	Address Line 4	17	Address Line 3
2	Address Line 2	18	Address Line 1
3	Address Line 0	19	I <sup>2</sup> C Bus Interrupt Line (Inverted)
4	I <sup>2</sup> C Serial Data	20	I <sup>2</sup> C Serial Clock
5	+5 V	21	Master Reset Line
6	–15 V	22	–15 V
7	+15 V	23	+15 V
8	Spare 2	24	Spare 3
9	Ground	25	Ground
10	Ground	26	Ground
11	Ground	27	Ground
12	Audio Test Bus +	28	Audio Test Bus –
13	Audio Monitor Bus +	29	Audio Monitor Bus –
14	Audio Test Signal Bus +	30	Audio Test Signal Bus –
15	Internal Audio Routing Bus 2	31	Internal Audio Routing Bus 4
16	Internal Audio Routing Bus 3	32	Internal Audio Routing Bus 1

Table 2 - Pin Connections, Lower Euro Connector

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