MODEL 8088SM

8-INPUT/8-OUTPUT AUDIO SWITCH MATRIX CARD

The Model 8088SM 8-Input/8-Output Audio Switch Matrix Card is a component of the IED 8000 Series™. The 8088SM makes use of a stacked board configuration which occupies 2 function card slots in the 8000 Series Mainframe.

The 8088SM includes 8 electronically balanced inputs and 8 balanced line driver outputs. Each output has its own digitally controlled amplifier (DCA) which sets the audio output gain. The gain control has a range of 31.5 dB gain to 95.5 dB attenuation in 0.5 dB steps. The DCA is controlled by the on-board microcontroller (MCU) which receives gain

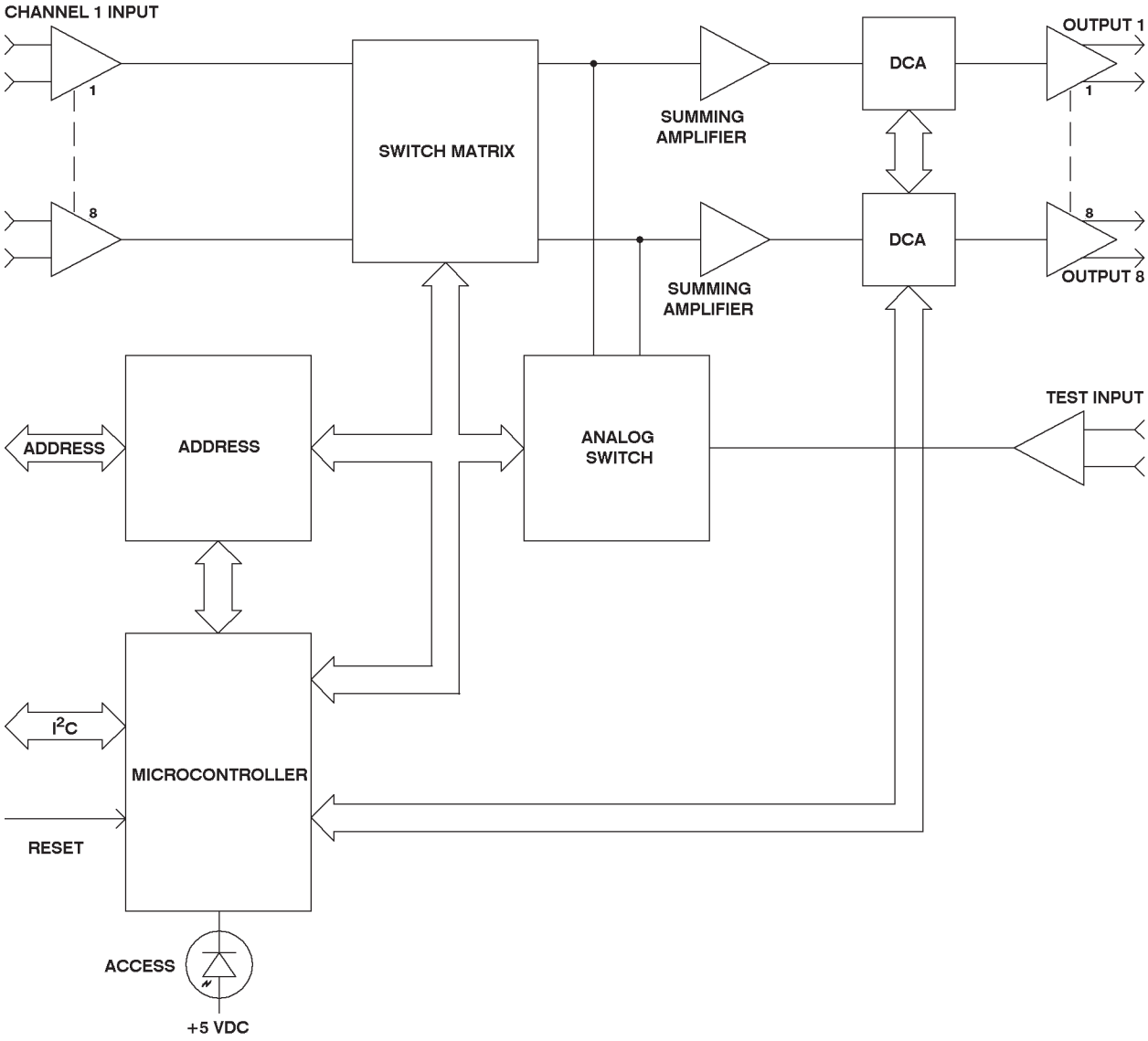

Figure 1 - 8088SM Block Diagram
8-Input/8-Output Audio Switch Matrix Card

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commands from the 8001CPU over an I²C bus on the 8000 Series Mainframe mother board.

The MCU controls a 64 X 8 switch matrix which allows routing of any number (1 - 8) or combination of the 8 balanced inputs to any number (1 - 8) or combination of the 8 balanced outputs. When more than one input is routed to the same output(s), they are automatically mixed. Because of the excellent isolation, an input can be used in several mixes simultaneously. Any number of combinations can be mixed and routed simultaneously until all inputs and outputs are used.

If input gain control is required, then routing the audio through the 8044AIO Audio Input/Output Card prior to the 8088SM is suggested. This arrangement would permit both input and output gain control.

The test signal bus is also routed to a balanced input on the 8088SM. The test signal input can be switched to any of the 8 outputs for testing of the gain controls and line driver outputs on the card. It also allows for a test tone to be injected into the audio path of the system. Normally, the tone input would come from an 8001SA Signal Analysis Card, and the output would be routed to an 8081MT Monitor/Test Card for testing. Other configurations can be made, depending upon system requirements.

The MCU communicates with the 8001CPU and the 8001SA through an I²C bus on the mother board. A reset line from the mother board allows the MCU to be reset from the 8001CPU.

A green LED is located on the front of the top board and flashes when the MCU is running.

SPECIFICATIONS

ELECTRICAL, ANALOG, V_S = +15 V, –15 V, DCA gain set to 0 dB, any input to any output

1. Frequency Response . . . . . +0, –0.1 dB
   20 Hz - 20 kHz
2. Total Harmonic Distortion, THD . . . . . <0.02%
   20 Hz - 20 kHz, 10 Hz - 80kHz filters
3. Intermodulation Distortion, IMD . . . . . <0.03%
   60 Hz/7 kHz
4. Signal-to-Noise Ratio, S/N . . . . . > 90 dB
   Referenced to +4 dBu, 20 - 22 kHz filters
5. Crosstalk . . . . . < –60 dB
   Between any 2 audio paths, 20 Hz - 10 kHz
6. DCA Control
   - Range . . . . . 127 dB
   - Steps . . . . . 0.5 dB
   - Max. Gain . . . . . 31.5 dB
   - Max. Attenuation . . . . . 95.5 dB

8. Maximum Input Level . . . . . +18 dBu
9. Maximum Output Level . . . . . +18 dBu
   $R_L \geq 600\ \Omega$
10. 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
        - No audio input . . . . . 160 mA
        - Audio inpu18 dB, unity gain, R_L = 600 Ω. . . . . 165 mA
      - V= –15 V
        - No audio input . . . . . 140 mA
        - Audio input = 18 dB, unity gain, R_L = 600 Ω. . . . . 145 mA

INDICATORS

1. MCU running . . . . . Green LED

CONNECTORS

1. 32-pin Euro Connector, male, right-angle, 4 each . . . Hirose PCN10-32P-2.54DS
   (2 on top card, 2 on bottom card)

MECHANICAL

1. Size (maximum overall dimensions as viewed from the front)
   - Height . . . . . (11.43 cm) 4.50"
   - Width . . . . . (4.06 cm) 1.60"
   - Depth . . . . . (20.42 cm) 8.04"
2. Weight . . . . . (340 gm) 0.75 lb

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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	CH 8 IN +	17	CH 8 IN –
2	CH 8 SHIELD	18	CH 7 SHIELD
3	CH 7 IN +	19	CH 7 IN –
4	GROUND	20	GROUND
5	CH 6 IN +	21	CH 6 IN –
6	CH 6 SHIELD	22	CH 5 SHIELD
7	CH 5 IN +	23	CH 5 IN –
8	GROUND	24	GROUND
9	GROUND	25	GROUND
10	CH 4 IN +	26	CH 4 IN –
11	CH 4 SHIELD	27	CH 3 SHIELD
12	CH 3 IN +	28	CH 3 IN –
13	GROUND	29	GROUND
14	CH 2 IN +	30	CH 2 IN –
15	CH 2 SHIELD	31	CH 1 SHIELD
16	CH 1 IN +	32	CH 1 IN –

Table 1 - Pin Connections, Upper Euro Connector
Top Board

PIN	FUNCTION	PIN	FUNCTION
1	CH 8 OUT +	17	CH 8 OUT –
2	CH 8 SHIELD	18	CH 7 SHIELD
3	CH 7 OUT +	19	CH 7 OUT –
4	GROUND	20	GROUND
5	CH 6 OUT +	21	CH 6 OUT –
6	CH 6 SHIELD	22	CH 7 SHIELD
7	CH 5 OUT +	23	CH 5 OUT –
8	GROUND	24	GROUND
9	GROUND	25	GROUND
10	CH 4 OUT +	26	CH 4 OUT –
11	CH 4 SHIELD	27	CH 3 SHIELD
12	CH 3 OUT +	28	CH 3 OUT –
13	GROUND	29	GROUND
14	CH 2 OUT +	30	CH 2 OUT –
15	CH 2 SHIELD	31	CH 1 SHIELD
16	CH 1 OUT +	32	CH 1 OUT –

Table 2 - Pin Connections, Upper Euro Connector
Bottom Board

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^2C Bus Interrupt Line (Inverted)
4	I^2C Serial Data	20	I^2C 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 1
16	Internal Audio Routing Bus 3	32	Internal Audio Routing Bus 4

Table 3 - Pin Connections, Lower Euro Connector
Both Top and Bottom Boards

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