MODEL 500C

MICROPHONE INTERFACE CARD

The Model 500C is one of the plug-in cards that make up the Model 500ACS System. It performs all functions necessary to interface 8 remotely located IED microphone stations or telephone interfaces to the 500ACS System. These functions consist of:

- Directing the audio from the microphone stations to the appropriate internal audio buses as determined by the software
- Supplying short circuit protected +30 VDC for phantom powering of its microphone stations
- Addressing and decoding as required for the microprocessor card
- Individually reading and controlling all functions of its microphone stations
- Buffering, isolating, and routing the up to 8 audio signals, each through one of eight 1 x 8 solid state switches to 8 internal audio buses
- Indication of microphone station status and activity via 8 green and 8 red LEDs

Each card has 9 green and 8 red LEDs, one of each for each channel through which a microphone station may be served. One green LED indicating the internal phantom power supply is functioning. A red LED lit means that the input to that channel is enabled in software, but that there is faulty or no communication with the microphone station. A green LED solidly lit means that the microphone station connected to that input is currently in use. If neither LED is lit the indication is that the microphone sta-

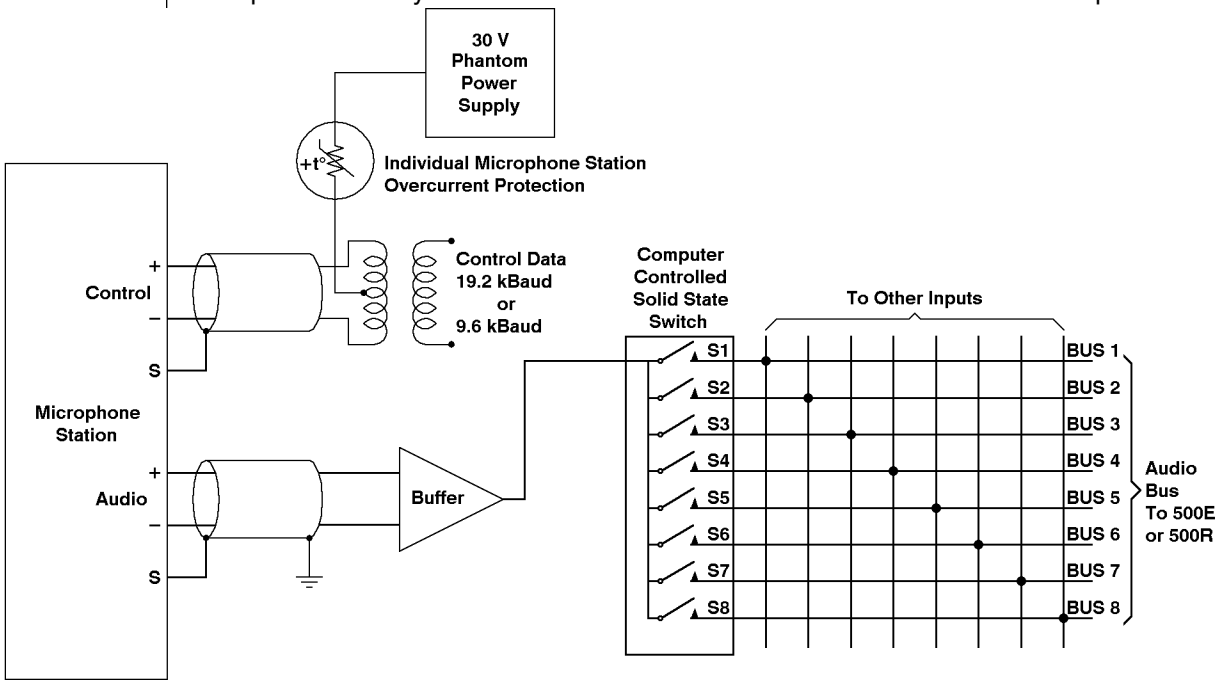

Figure 1 - 500C functional block diagram

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tion has been designated as unused (not enabled) by the software. A rapidly flashing green LED means that the input is enabled in software, but not currently in use.

The Model 500C card is designed to plug into a Model 500M or 500ME Mainframe using 2 card edge connectors. The 80 pin upper connector, which is mounted on the mainframe mother board, is used for connections to the microprocessor bus and to the DC power supplies. The 60 pin lower connector is mounted on the Model 500FT Microphone Interface Terminal Strip which is part of the 500M or 500ME Mainframe. It accepts microphone station audio and control cables through its compression type screw terminal connectors. The control cable carries digital control information to and from the microphone station superimposed on the +30 VDC from the ACS. Control data is transferred at a 19.2 kBaud rate.

The audio signals from the microphone stations are fed to buffer amplifiers (1 per channel) for buffering and isolation. They are then routed through one of the solid state switches to the audio bus connector located at the upper front of the card as viewed from the front of the mainframe. Audio from the 500ACS is distributed throughout the mainframe, as needed, using ribbon cable plugged into the audio bus connector and similar connectors on the other cards of the system.

Card address selection is accomplished by use of a seven position (14 pin) array located near the 80 pin upper card edge connector. An additive binary (powers of 2) code is used. Each position is numbered on the printed circuit board with its value. The card address is the sum of the values of all positions in which jumpers have been placed. With this arrangement there are 128 possible addresses (0 through 127) . The 2 additional jumpers are supplied for older ACS Systems and should not be used unless instructed by IED.

The block diagram, Figure 1, illustrates the audio and control functions of the 500C card. The control and audio should always be wired with separate `+', `–', and `S' (shield) terminals, as illustrated in sections 3 01 B and 3 02 B. **Do not use the same shield for both.** The screw terminals do not connect directly to the 500C card. They are mounted on the 500FT Microphone Interface Terminal Strip. The 500C card plugs into the 500FT and connections between the 500C and 500FT are made through card edge connectors.

SPECIFICATIONS

AUDIO

1. Number of Audio Inputs 8
2. Gain Controls. . . . . None
3. Gain . . . . . –6 dB
4. Total Harmonic Distortion (THD) . . . . . <.01%
   30 Hz - 20 kHz, +18 dBu, 10 Hz - 80 kHz filters
5. Frequency Response . . . . . ±0.05 dB
   300 Hz - 20 kHz, +18 dBu
6. Intermodulation Distortion (IM) . . . . . <.01%
   60 Hz + 7 kHz, +18 dBu
7. Bandwidth (B) . . . . . 30 Hz - 100 kHz
   –3 dB points
8. Noise Referred to the Input (NRI) . . . . . < –98 dBu
   20 Hz - 20 kHz, +18 dBu
9. Maximum input Level. . . . . +24 dBu
10. Input Impedance (Z_{IN}) . . . . . 24 kΩ
11. Common Mode Rejection Ratio (CMRR) . . . . . >80 dB
12. Number of Outputs (all internal) 8
13. Output Impedance (Z_{OUT}) . . . . . <0.5Ω

CONTROL

1. Number of Control Inputs. 8
2. Control Signal Data Transmission Rate
   - Standard . . . . . 19.2 kBaud
   - Optional . . . . . 9.6 kBaud
3. Modulation Level. . . . . ±1V
4. Carrier Frequency
   - Standard . . . . . 307 kHz
   - Optional . . . . . 150 kHz

POWER

1. 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
   - +5 V Supply . . . . . 4.75 V to 5.25 V

   Supply current
   (500C card, only. For current drain of microphone stations, see Table 1.)
   - V = +15 V . . . . . 50 mA
   - V = –15 V. . . . . 50 mA
   - V = +5 V . . . . . 140 mA
2. Phantom Power supplied to Microphone Stations . . . . . 30 V, ±5%
   `+' and `–' terminals are both positive with respect to `S' terminal
3. Phantom Power Supply Overload Protection Trip Point . . . . . 1.6 A
4. Individual Microphone Station phantom power protection trip point . . . 200 mA

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CONNECTORS

1. Audio Bus
   - Board-mounted connector (male) . . . . . AMP 102159-4
   - Mating ribbon cable connector (female) . . . . . AMP 499573-4
2. Address Selection Shunt . . . . . T&B TE5400N

MECHANICAL

1. Size (maximum overall dimensions as viewed from front)
   - Height . . . . . (23.6 cm) 9.31"
   - Width. . . . . (2.79 cm) 1.1"
   - Depth . . . . . (31.8 cm) 12.5"
2. Weight . . . . . (454 gm) 1 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

SUPPLY	TYPICAL 500 SERIES	TYPICAL 508 SERIES
+15 V	110 mA	110 mA
–15 V	110 mA	110 mA
+5 V	0 mA	0 mA

Table 1 - Added Load Current per Microphone Station

Note: Total Current = Supply Current (see POWER, page 3) + N x added load current, where N = the number of microphone stations connected, and the added load currents are values given in Table 1, above.

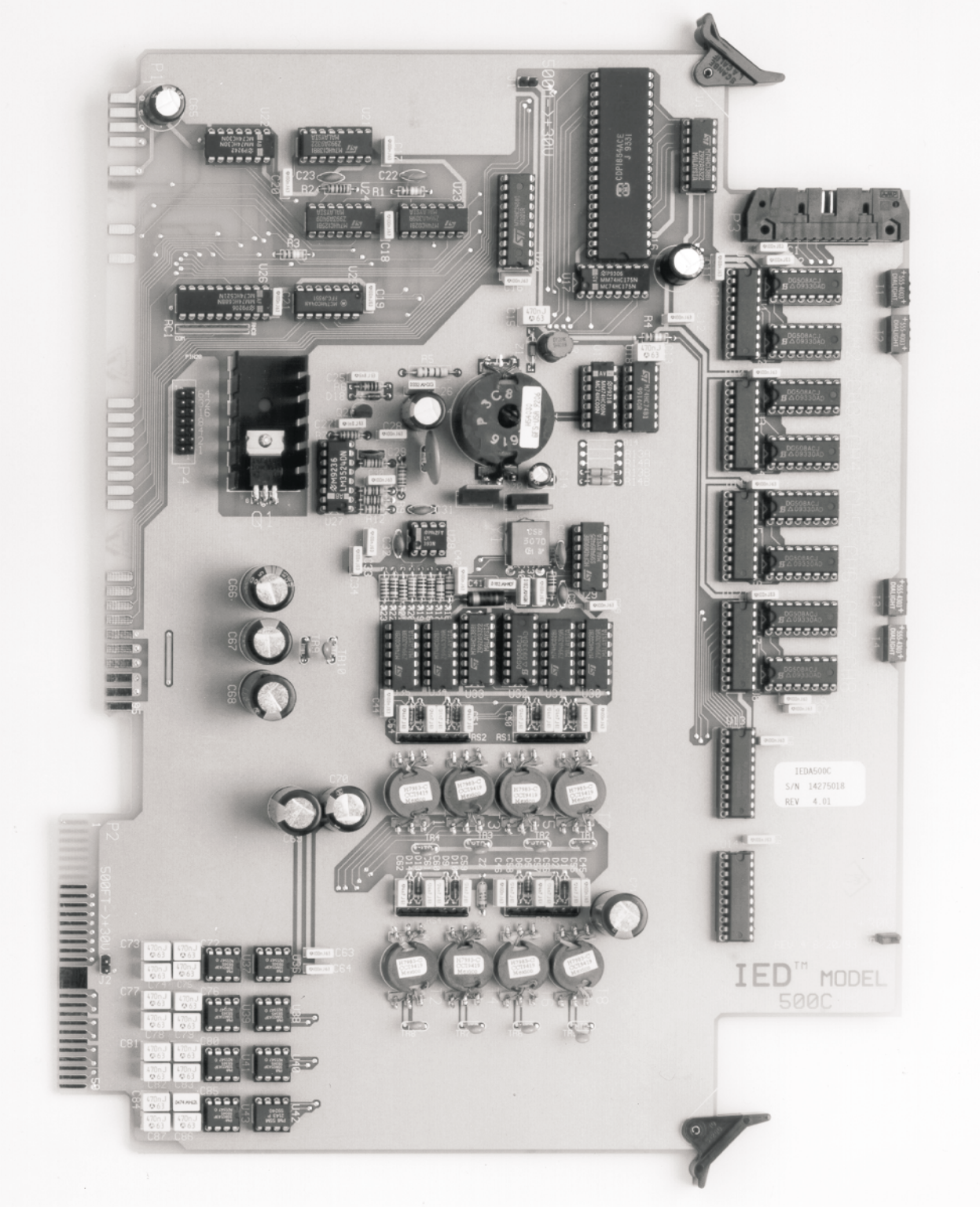

Figure 2 - 500C Microphone Interface Card

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