ANC - 7030
Marquee/Page/Clock
Controller

Antona Corporation, Los Angeles, CA

Antona Corporation

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Features

♦ Two button Marquee message control
♦ Page function with audio and multiple visual outputs
♦ Time-of-Day output for driving remote mounted ANC-7020 blue LED clock(s)
♦ LCD display of current marquee message, pager input and time-of-day
♦ Simple user interface for time and message setting
♦ Battery backed time-of-day operation for 5 years
♦ Help button for operational instructions
♦ External pager antenna input

Overview

  The ANC-7030 provides three functions in one rack-mounted unit normally associated with the operation of a modern multimedia conference, auditorium or meeting room. The unit controls a wall mounted marquee type alphanumeric status display, a pager type RF signaling device for projection-room/auditor presentation coordination and a synchronized battery backed clock signal output decodable by an external large format 4" X 12" time-of-day clock (Antona ANC-7020). The internal chassis hardware consists of an Antona ANC-7852 8052 microcontroller card and an ANC-7332 real time clock input/output card. An ANC-6090 RS422 output adapter handles transmitting the differential signal to the external wall mounted clocks. The RS422 converter and both cards have separate manuals detailing their hardware. An external UL listed power supply provides all three voltages used by the chassis.

Mechanical Specifications

Chassis size: = 1-3/4"H X 17-1/2"W X 12"D (NEMA chassis - 1 unit height)

Connectors: 1 - DB-9 female RS422 port
                     1 - DB-9 male RS232C port
                     1 - 5-pin DIN power input connector
                     1 - RCA tone line-out connector
                     1 - BNC pager antenna input
                     1 - 1/8" stereo mini phono tone output connector

Electrical Specifications

Power requirements = 1000 ma @ +5v
                     200 ma @ +12v
                     200 ma @ -12v

RS232 output drive = short proof output, operation to 50 feet.
                     Specifications to meet and/or exceed EIA-RS232C.

RS422 output drive = short proof output, terminated operation to 4000 feet.
                     Specifications to meet and/or exceed EIA-RS422.

Installation

Chassis Mounting

Turn off any other equipment to be connected to the ANC-7030 including any remote equipment before performing the installation. **Never install/remove the chassis, or any of the attached equipment, with the power applied. This _could_ result in permanent damage to the chassis or other connected equipment due to static discharge.**
Install the ANC-7030 chassis into any empty 1 unit high rack mount opening and secure the chassis to the enclosure. Connect any external cabling for serial output, RF antenna, powering or audio output before applying power.

LCD viewing Angle Adjustment

Depending upon the height the chassis is mounted at and the user's normal viewing angle, the LCD may need to be adjusted for the best possible display contrast. There is a small 1/8" diameter hole just below, and left, of the LCD mounting screw in the upper left hand corner of the display. The operator may use a small single blade (slotted) type screwdriver (metal or plastic) to adjust the potentiometer to suit the installation. Be careful not to force the adjustment beyond the mechanical stops on both ends of the potentiometer

1.0 Marquee Operation

There are currently three (3) fixed single word messages that the remote marquee can display. They are displayable by pressing a numeric key (1-3) on the chassis front panel keypad and then pressing the 'ENTER' key as follows:

Desired Marquee Display	Keypad input
SECRET	1, ENTER
CONFIDENTIAL	2, ENTER
UNCLASSIFIED	3, ENTER

Table 1

The unit will beep whenever the 'ENTER' key is pressed as feedback to the operator that a message has been sent to the remote marquee. Pressing the 'ENTER' by itself will retransmit the message to the marquee *provided* no other key has been pressed that is not supported (*i.e. any key other than 1,2,3*). The 2 line LCD display on the Marquee/Page/Clock chassis will indicate the message currently being displayed on line two under the line one title "Marquee". Upon powering up the chassis, or after a powerfail, the message 'SECRET' will be transmitted by the chassis to the remote marquee. **The user should visually verify the proper message on the marquee**, or retransmit it upon a powerfail occurrence. If power is applied to the chassis first and then to the marquee, **the marquee will display the last message it received before being turned off**.

2.0 Page Operation

   The hand held key-chain type transmitter sends an encoded 318-MHz signal to the pager antenna that is connected to the rear of the chassis by way of a 50-ohm coax cable. Pressing any of the four buttons on the hand held transmitter causes a 1,200 Hz tone to be transmitted to the front 1/8" stereo phono type jack and to the rear mounted RCA type connector. The transmitter's signal is encoded to minimize false signals to the receiver. The factory default device code for both transmitter and receiver is "oooooooo" - all 8 encoder lines open. The hand held transmitter should run for one (1) year before battery replacement is necessary. The pager receiver is a model RF304RM based on a single chip 4-bit encoded 318 MHz signal. The mating hand held pager transmitters are a model RF304XT. Additional hand held transmitters are purchasable through A-VIDD Electronics. Appendix C gives more information on both the RF receiver and transmitter.

   The front mounted stereo phone connector also has an associated level control to adjust output for use with a stereo headset or powered stereo speakers.

   The green power-on LED, located at the left-hand front of the chassis, will turn red as a hardware indication of pager reception. The LED color change is _not_ driven by software, and so will tell the operator if a valid, _decodable_ input has been detected by the RF receiver. If the LED changes to the red color and the LCD displays one of the decoded button input status states (see next page) when any pager button is pressed, but no sound is heard, check that the level control is not in the full counter-clockwise off position and that the speaker is powered and plugged into the chassis output connector. The LCD will display a one or two letter indication on line two under the line one title "Pg". The possible displays and interpretations are as follows:

LCD display	Meaning
R	Red button pushed
G	Green button pushed
Y	Yellow button pushed
B	Blue button pushed
RG	Red and Green button pushed
RY	Red and Yellow button pushed
RB	Red and Blue button pushed

Table 2

   These may be used by the person paging to tell the operator further detail on what action he/she would like taken. This arrangement provides 7 different signals. In addition, the user may press and hold down any of the buttons to produce a short or long tone to the operator at the chassis location as an additional signal type.

3.0 Remote Reading Clocks

   If the unit is equipped with one or more ANC-7020 remote reading large format clocks, the ANC-7030 chassis will transmit the currently set time displayed on the LCD in military format (00:00 to 23:59). The remote clocks are all updated with time information each second. In addition, every 4 seconds a brightness value is resent to

each individual clock display according to a user set, and stored, value from the ANC-7030. The internal clock frequency is a compensated crystal controlled oscillator running at 32,768 Hz.   When compared to GMT (Universal Time), it should keep time accurate to within 10 minutes / year.   The time may be reset quickly from the front panel as described in section 4.23 to eliminate any short-term drift by the internal clock.

4.0 Chassis Operation and Settings

4.1 Chassis Connections

4.11 - Powering the Chassis

  The chassis is powered from a source of 110 VAC through an external power supply that provides the +5V, +12V and -12V used by the chassis. The power supply is plugged into the 5-pin DIN type connector on the rear of the chassis labeled "POWER". To the right of the DIN connector is the power on/off toggle switch that connects/disconnects *all three* power supplies to the chassis. When the chassis is first powered up, a green LED (light emitting diode) on the front panel and the yellow-green backlight for the LCD (liquid crystal display) should both light. A short tone output should sound through any externally connected audio receiver and a sign-on message should appear on the LCD indicating the unit title and software revision running. After 2 seconds, the unit will begin displaying time-of-day information, display any hand held pager button(s) being pressed, output the default message "SECRET" to the marquee and begin transmitting time and brightness information to any optional external clocks.

4.12 - Chassis Outputs

  There are three output connectors on the rear of the chassis. Starting from the rear left hand side of the chassis, the first DB-9 female connector, labeled "CLOCK", is an RS485 differential serial interface for controlling the ANC-7020 remote mounted clock(s). The next DB-9 male connector, labeled "MARQUEE", is an RS232C level serial port which controls the remote mounted marquee display. Both of these DB-9 connectors have adapters which change the pinouts from the D-shell connections to a 6-pin RJ-11 modular phone type connector for CAT-5 cabling to the peripherals.
  The RCA connector, the second connector from the chassis rear right hand side, provides a fixed line-out level tone to feed into a computer auxiliary sound card input if needed (labeled "LINEOUT"). This same 1,200 Hz tone output is available on the front of the chassis by way of a 1/8" stereo mini-phono connector, labeled "TONE", for use with a standard pair of headphones or externally powered speakers. Tone volume level may be user set for this connector output with the "LEVEL" control potentiometer located just to the right of the mini-phono connector.

4.13 - Chassis Inputs

  Aside from the power supply detailed in 4.11, the only other input connector is located on the rear right hand side of the chassis labeled "PAGE ANT" for connection of the external pager antenna by way of a BNC type connector. The antenna input

impedance is 50 ohms for use with RG-59U type coax. This is the type of coax commonly used for office ethernet installations.

4.2 Chassis Software Operation

4.21 LCD/keypad User Interface

  For setting time, marquee message and external clock brightness a simple user interface is provided by way of the 2-line LCD status display and a 16-button keypad on the front right side of the ANC-7030 chassis

  At any time, the user may press the "Help" button to review how to use any of the ANC-7030 settings. In help mode, use the "Up Arrow" and "Down Arrow" to scroll through the instructions on the LCD. Use the number buttons to get specific instructions on the various modes. Pressing the "2nd" key will return the user to the first level of the help mode. Pressing "Help" again will return the LCD to normal display status operation. Pressing the "Clear" button also returns the unit to normal operation from any data entry mode. If the user goes to either a setting or help mode, and no button is pressed for sixty (60) seconds, the unit returns to normal operation.

4.22 Marquee Setting

.   Changing marquee messages requires just 2 key presses as described above in section 1.0 - Marquee Operation. Press 1 (secret), 2 (confidential) or 3 (unclassified) then the "Enter" button.

4.23 Time-of-Day Setting

  To set time-of-day press the following sequence: "Up arrow", "Enter". The flashing digit indicates which value shall be changed by pressing a number key. The user may advance or move back to any position by simply pressing the "Up Arrow" or "Down Arrow" buttons. The user presses "Enter" to set the system clock after all digits are set. Setting a new time to the clock will reset the internal non-displayed seconds count to 00 also.

4.24 Clock Brightness Setting

To set an individual clock brightness press the following sequence: "Up arrow", "Up arrow", "Enter". The flashing digit indicates which clock shall be changed by pressing a number key. The user may advance or move back to any position by simply pressing the "Up Arrow" or "Down Arrow" buttons. The LCD displays which clock number is to be effected and the current brightness setting. The user can select any value between 00 *to turn the clock display off*, 01 for the dimmest setting and 15 for the brightest. The number range represents LED "on" time in fractions of 1/16. Note that when the clock is set for 00 - display off, *it will appear as if the clock is not working* when actually it is just being set for 0 "on" time.   As in setting the time, the user presses "Enter" to complete the new brightness setting. The user need only set the desired brightness setting once for each clock. Upon system power up all brightness values will be

restored from an EEROM (electrically erasable read only memory) installed within the chassis and retransmitted to each clock at a four (4) second interval. This also means that when the clocks and/or chassis is first powered up, it may take up to four (4) seconds for the current brightness setting to be received by the remote clock.

4.25 Clock LED Test

  This mode is mostly for factory use. Its purpose is to turn all LEDs on for one (1) minute, and then return to normal clock display operation. Once this mode is entered, the user may return to normal operation by pressing the "Clear" button.

Appendix A - Clock Protocol

The RS422 serial output to the remote mounted clock(s) is fixed at 2400 Baud, 8 data bits, one stop bit and no parity. Transmission of time-of-day to all clocks is synchronized at 1 second intervals. Individual brightness settings are transmitted addressed to each clock 1/2 second after a time-of-day transmission. Data, whether time or control information is fixed at 6 bytes as follows:

Byte #	Description
1	Sync Code (CCH)
2	Unit Address - 00H to 08H (All=80H)
3	Control Code*
4	Data byte 1 (hours/brightness)
5	Data byte 2 (minutes)
6	Checksum - sum of bytes 2-5 modulo 8, 1's compliment

 * - the control codes are as follows:
21H = set clock time of day with bytes 4/5 (packed BCD)
20H = set clock brightness with byte 4 lower nibble (binary)
31H = set clock test LED mode - turn all LEDs on

A typical serial transmission of time data would be as follows:
```
 CCH 80H 21H 12H 34H 0AH
```

This would display "12:34" on all connected and powered ANC-7020 units.

Appendix B - Chassis Schematics

The following page(s) contain the schematics for the ANC-7030 chassis. The schematics are included to aid the end user in configuring the chassis, or for competent technical service personnel to use in maintenance or repair.
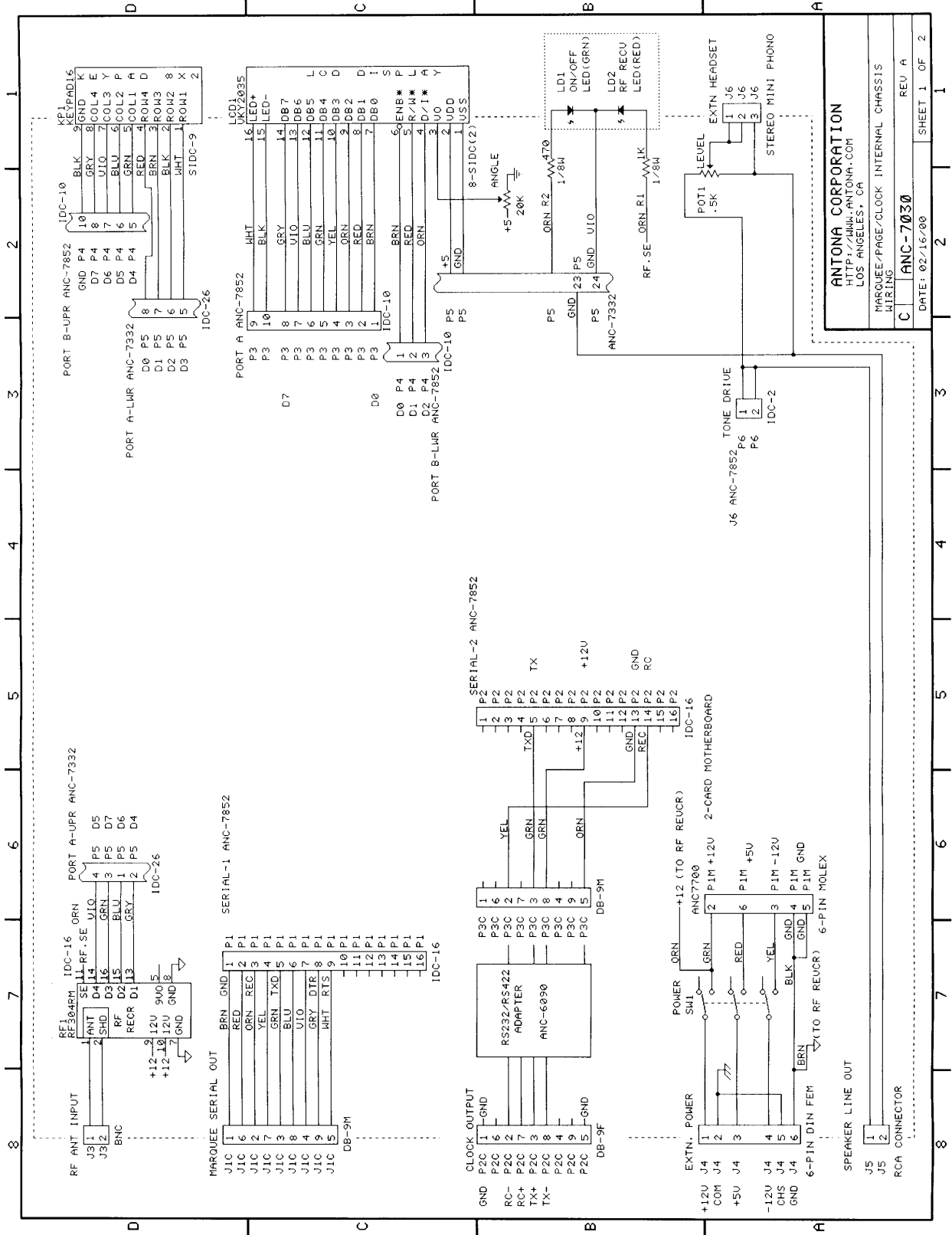
Appendix C - RF Transmitter and Receiver

The pager function uses a matched set of a hand held 4 button 318MHz encoded transmitter and an match-coded 4 signal-line output 318MHz receiver. There is an externally mounted 50-ohm RF antenna that plugs into the BNC connector on the back of the ANC-7030 chassis marked "ANTENNA".

The following page(s) contain the product technical data for the 318MHz hand held key-chain transmitter and the mating RF receiver used with the ANC-7030 chassis.

This information is available to current owners of the ANC-7030 by FAX or in PDF format by e-mail. A specific e-mail with the subject: "ANC-7030 RF318" should be requested to: man7030@antona.com. Please include the chassis serial number located on the rear of the chassis near the power input connector.