11-75-0000
SYNTHESIZED UHF 4 WATT
PAGING TRANSMITTER

OPERATOR'S
MANUAL

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11-75 POCSAG
PAGING TRANSMITTER

1.0 DESCRIPTION

The 11-75 is a stand-alone 4 watt POCSAG paging transmitter with an in-built encoder. The unit can be controlled via an RS232 serial interface to provide numeric, alphanumeric and tone-only POCSAG encoding. This enables a user to call a pager (over 2,000,000 codes), append an appropriate priority level (1 of 4), and add a numeric or alphanumeric message. Messages are limited to 120 characters by the 11-75 buffer size, and to 240 character pre-defined messages by the Product Support Disk (PSD) programming software. Serial control is achieved using ASCII character commands.

The unit supports 12 discrete inputs with a different pre-programmed message on high and/or low transition, plus a low voltage detection message on the power input.

The inputs can be configured for a number of options. They can be configured to act as 12 individual inputs or binary code inputs to select pager number, pager message and level. Provision to transmit a message more than once is also catered for as well as a variable time between transmissions.

In addition to the SALCOM propriety protocol, the RS232 serial port can be used to initiate paging transmissions using the Paging Entry Protocol (PET) or Telocator Alphanumeric Protocol (TAP) PG1 protocol. For dial-up applications, a HAYES compatible modem is also supported.

1.1   Over temperature cutout: When the unit transmits at full power in a hot environment, a protective cutout may operate. This will reduce the output power to a safe level, and will reset when the unit temperature has fallen to below 40 deg. This cutout is designed to avoid permanent damage to the transmitter.

1.2   Year 2000 compliance statement: SALCOM has made every effort towards year 2000 compliant systems and software. However, as our products are often used as system integration tools or rely on other systems, we cannot fully determine their behaviour in every environment.

Full Y2K Compliance can be defined as follows:

(1)   No value for current date will cause any interruption in operation
(2)   Date based functionality must behave consistently for dates prior to, during and after year 2000
(3)   In all interfaces and data storage, the century in any date must be specified either explicitly or by unambiguous algorithms or rules (like a 'pivot' date)
(4)   Year 2000 must be recognized as a leap year

The 11-75 has no internal time or date reference. It is therefore inherently Year 2000 compliant.

2.0 WARRANTY

Our Products are warranted for a period of 12 months from date of purchase against faulty materials and workmanship. Should any fault occur the unit should be returned to the vendor, freight pre-paid. Please include a description of the fault to assist with prompt return. Any unauthorized alterations or repairs will invalidate the

warranty.

3.0   DISCLAIMER

All information provided in this document is carefully prepared and offered in good faith as a guide in the installation, use and servicing of our products. Installers must ensure that the final installation operates satisfactorily within the relevant regulatory requirements. We accept no responsibility for incorrect installation.

We reserve the right to change products, specifications, and installation data at any time, without notice.

4.0   MECHANICAL DESCRIPTION

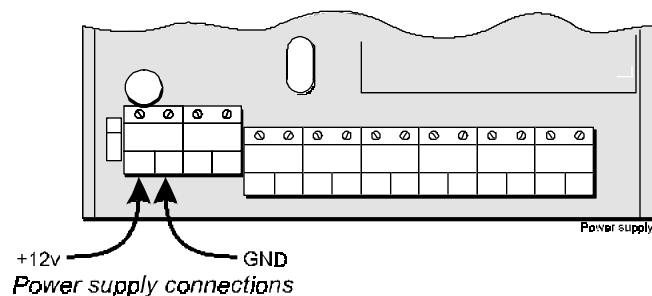The 11-75 is enclosed in a pressed aluminium box.

The lid will unclip to reveal 16 screw terminals, and adjustment for the low supply detector. The lid can also be used for mounting the unit on a wall, and the overhang can be cut or modified to allow cable entry as required. It is advisable to mount the unit away from sources of heat, damp or vibration.

5.0   INSTALLATION

The power supply should be connected as illustrated on page 5, at a voltage shown in the specification. The supply input is protected against reversed connection. The aerial connection is via the BNC connector, and should present a nominal load of 50 Ω, with a VSWR of better than 1.8:1. It is recommended to site the aerial a few metres away from the 11-75 to avoid RF feedback causing problems with the transmitter operation. An outside aerial is preferable, as it will provide better radio coverage.

External indicators consist of a power indicator GREEN LED, normally ON with very brief flashes to indicate healthy micro-controller operation. After a de-bounce period, the green LED will flash rapidly if the low supply detector is activated.

The RED LED will indicate when the unit is transmitting. A flashing RED LED indicates the unit cannot transmit as either the synthesiser is out of lock or the *channel busy* input is active.

+12v — — GND
Power supply connections

6.0   OPERATION

The 11-75 can transmit three types of POCSAG message, with any one of four function levels:
- Alphanumeric transmissions. Message can contain any alphanumeric 'ASCII' character.
- Numeric transmissions. Message contains only Numeric characters and some symbols.
- Tone Only transmissions (Alphanumeric or numeric with no message)

6.1   Alphanumeric transmissions

Messages can contain any alphanumeric character. The 11-75 will accept the standard ASCII 7 bit character set.

6.2   Numeric transmissions

Messages can contain numeric characters and some symbols. These can convey a telephone number, or other numerically coded information. The transmitted message is shorter, and therefore there is a smaller chance of errors received by the pager.

The numeric character set is as follows:
0 1 2 3 4 5 6 7 8 9 [ ] - E U <space>
Note. The E may be displayed as P or * on different pagers

6.3   Tone Only transmissions

Any numeric or alphanumeric paging message without an actual text message is also considered 'Tone Only'. A function level will control the number of beeps on the receiver (four different function levels can be sent).

7.0   INITIATING TRANSMISSIONS
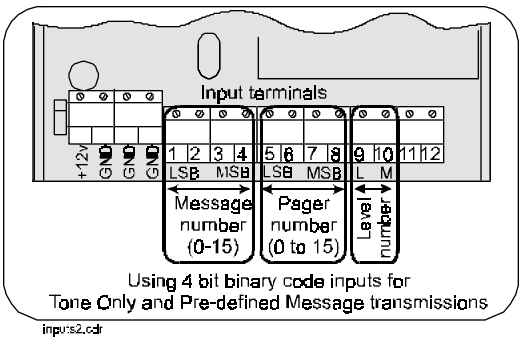
There are four ways of initiating a paging message transmission:
(1)   Using the external discrete inputs (action)
(2)   Low supply detector threshold (action)
(3)   Watchdog (action)
(4)   RS232 Serial commands

An action is defined as a paging message, RIC (Receiver Identification Code or capcode) and flags. These flags are discussed in the PSD (product support disk) section.

7.1   External Discrete Inputs

An action can be initiated from the twelve external inputs with an input transition to LOW (connection to GND) and/or HIGH (input floating or connection to >+3.5v).

7.2   Low supply message

After a de-bounce period, the low-supply detector can initiate an action for both "supply going high" and "supply going low" conditions.

7.3   Watchdog

The watchdog feature will initiate an action after a predetermined period. The watchdog timer can be restarted (optionally) by any other action.

7.4   Using the RS232 Serial Commands

Serial commands can be "manually" issued to an 11-75 using a terminal program such as PROCOMM or Hyper-terminal. Tone only, numeric and alphanumeric pagers can be called using serial commands. These commands will be processed in parallel with other inputs actions for transmission. Some basic commands are described in section 7.4.1. Information on the full protocol command set is available in request.

7.4.1   Protocol Command Set

CA
Usage: CA<pager#>[<space>]<level>[<space>/<cr>]<message><CR>
Description: Call alphanumeric pager
Example: CA119358 1 Please return to reception<CR>
Response: CA01193581<CR>
              <SPACE>Page Sent<CR>
Example 2:   CA119358 1<CR>
              Please return to reception<CR>
Response 2:   CA01193581<CR>
              MSG?<echos each character of message><CR>
              <SPACE>Page Sent<CR>

CN
Usage: CN<pager#>[<space>]<level>[<space>/<cr>]<message><CR>
Description: Call numeric pager
Example: CN119358 1 777<CR>
Response: CN01193581<CR>
              <SPACE>Page Sent<CR>
Example 2:   CN119358 1<CR>
              777<CR>
Response 2:   CN01193581<CR>
              MSG?<echos each character of message><CR>
              <SPACE>Page Sent<CR>

CP
Usage: CP<pager#>[<space>]<level><CR>
Description: Call tone-only pager
Example: CP01193581<CR>
Response: CP01193581<CR>
<SPACE>Page Sent<CR>

HELP
Usage: HELP [topic]<CR>
Description: Shows available commands or help on a particular command
Example: HELP CP<CR>
Response: CA<pager#>[ ]<level><cr>
              Call alphanumeric pager

MAP
Usage: MAP<CR>
Description: Show details of current configuration
Example: MAP<CR>
Response: <details of current configuration>

RES
Usage: RES<CR>
Description: Reset 11-75 microcontroller
Example: RES<CR>
Response: SALCOM Data Transmitter 11-75<CR>
              ATS0=0<CR>   (Optional HAYES initialisation string)

SN?
Usage: SN?<CR>
Description: Retrieve unit serial number and firmware revision
Example: SN?<CR>
Response: SALCOM Data Transmitter 11-75-9999 100 9811 A<CR>

7.4.2   Error Codes/Reports

ER1 SYNTAX   You entered an invalid command
ER3 OPERND   You entered a valid command with invalid values

8.0   TROUBLE SHOOTING

If the 11-75 does not perform as required, the following points may lead to solving the problem.

Fault	Check
No illumination of Green LED	Bad power supply connection
Input activated but no transmission	PSD configuration incorrect
Unit transmits but nothing received	Poor aerial. Wrong frequency, RIC, baud-rate. Power too low. Unit too hot. Too much vibration
No RS232 serial communication	Comport connections, baud-rate (1200-9600) no parity, eight data bits, one stop bit
No synthesizer lock. Red LED flashes rapidly	VCO loop, Channel busy active.
Green led flashes rapidly	Low supply detector threshold
Unit starts, but does not complete transmission	Poor supply volts, RF interference.

9   PROGRAMMING

9.1   Preparations for Connecting the Programming Software:
To change the field programmable options, the unit must be connected to the serial port of a IBM PC compatible computer running the appropriate Product Support Disk (PSD) containing the software (S1175WE1.EXE) to program the 11-75.

The diagram on page 9 shows the cable connections for both 9 pin and 25 pin serial ports. The serial communication port has connections to match the standard DB9 RS232 pin-out

To run the PSD, place the disk into floppy drive A. At a DOS prompt, type A: <enter> S1175WE1 <enter>.

Correct communication between the 11-75 and the PC comm port is indicated by the ID and product numbers appearing in the bottom right hand corner of the screen. If these fail to appear, check the baud rate setting in File/Preferences.

9.2   USING THE PROGRAMMING SOFTWARE: The PSD software allows the user to configure the following characteristics:
- Input actions, watchdog, low supply detector, GPS transmission and POCSAG transmission settings
- Pre-defined messages
- RF frequency and output power
- RS232 configuration
-                               100 pager numbers
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Once the program is running, the opening screen appears . Use the arrow keys or mouse to select various application layers and the configuration fields for each feature. At any time context sensitive help is available by pressing F1.

10   SPECIFICATIONS

Power Supply	+11.5 V to 15.2 V nom 13.8 V
RF Frequency	450-470 MHz
Channel Spacing	25 KHz
Output Power	4 Watts +/- 1 dB 50 Ω
Power Consumption	Standby : 45 mA Low power standby - 15 mA Transmit: 1.0A approx
Modulation	Carrier FSK with NRZ data
Deviation	+/-4.5kHz
Baud rate	512, 1200 Baud
Message format	POCSAG
Spurious Outputs	-30dBm or less
Serial input/output	RS-232 (DCE), 1200-9600 baud no parity, 8 data bits, 1 stop bit
Serial paging command protocols	SALCOM proprietary, PET (PG1) GPS (NMEA $GPGGA)
Discrete inputs	Pulled up to +12v (47K), ground to activate
Discrete outputs	+12v on P5 pin 1 (200mA max). +12v switched P5 pin 9 (200mA max) PTT & Data on P7 pins 5 and 9 (20mA sink with 47K pull-up to 5 V)
Case Dimensions	140 x 105 x 32mm
Type Approvals	New Zealand - Australia AS4295
Transmit duty cycle	Up to 50%

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