Model 37-MAX

SPEC SHEET

Repeater Pal

The Model 37-MAX Repeater Pal is a high capacity, remotely programmable, community repeater controller. It provides individualized repeater service to up to 154 different customer groups using CTCSS tone and DCS digital coded squelch signaling.

The Repeater Pal connects to a receiver and transmitter providing CTCSS/DCS decode, regenerated CTCSS/DCS encode, repeat audio processing, selectable system and per-user functions. It will convert any station capable of duplex operation into a fully featured community repeater. The Repeater Pal is an ideal replacement for older tone panels, eliminating time consuming trips to remote repeater sites, as well as providing a high subscriber capacity growth path for the future.

The compact size of the Repeater Pal is ideal for low power repeater packages constructed from a pair of suitable mobile radios.

FEATURES

- Maximum capacity, 50 CTCSS and 104 DCS user groups
- ToneLock high performance decoding
- Remote programmable using DTMF radio
- Database and validation for 154 users
- Regenerated CTCSS/DCS and cross tone encode
- Vacant tones and codes can be reserved
- Selectable transmitter hold time and courtesy tone per user
- Programmable "stuck mic" repeater time-out
- Programmable Morse code station ID
- Repeat audio processing
- Proper operation with reverse burst and DCS turnoff code squelch tail elimination

PERFORMANCE APPLICATIONS

Up to 154 separate user groups may be placed on the channel, which is ideal for scan based trunking systems, roaming, or seasonal users.

ToneLock decoding, a Zetron exclusive, eliminates dropouts resulting from weak, fading signals, or high modulation levels. The usable range of the repeater will not be limited by the decode performance of the repeater tone panel when the Repeater Pal is in control.

The unit recognizes when a subscriber unkeys with reverse burst or DCS turnoff code, silently muting repeater receiver audio to prevent squelch tails. This ensures that listening radios are quieted instantly without an annoying noise burst.

High quality audio processing circuits in the Repeater Pal are designed to make the repeater sound its very best.

SPECIAL FEATURES

The Model 55D samples paging information directly from a receiver's discriminator circuitry. When POCSAG paging data is detected, the Model 55D begins to "record" the digital paging information into a large RAM buffer. Sophisticated error-correction software eliminates noise, interference, and falsing on non-POCSAG pages as the data is stored into the buffer. When the original transmission is complete, the Model 55D closes its PTT relay and retransmits the buffered paging data.

The Morse code Station ID feature automatically transmits the repeater call sign at the beginning of a transmission and at programmed intervals.

Courtesy beeps may be used to encourage unfamiliar radio users when to begin speaking.

The reserved user feature prevents a co-channel system operator from commandeering a temporarily unused tone or code. The Repeater Pal reserves a tone or code by transmitting an alert signal and muting repeat audio when it detects the tone or code.

Cross tone encoding gives the repeater added flexibility. This feature permits multiple repeaters at different locations to be placed on a single frequency. Mobiles may roam between two or more systems, accessing each individual repeater with a different tone or code and receiving on a common tone. The courtesy tone frequency may be set to a different pitch for each repeater to distinguish the repeater location or coverage.

PROGRAMMING AND CONTROL

Adding or removing customer groups is easily accomplished using a radio with DTMF encode, or a Zetron Model 8B Repeater Programmer/Timekeeper attached to a control station or mobile radio. Costly site visits to add or delete customers are eliminated with the Repeater Pal.

INSTALLATION AND SETUP

Easy installation and setup procedures ensure that a technician can install a Model 37-MAX in nearly any repeater or duplex station. Installers will appreciate the field proven application notes that take the guesswork out of the procedure. Application notes are included in the instruction manual for the most popular repeaters, some of which include:

- **GE**: MASTR III, MASTR II, Custom MVP, Exec II, MASTR PRO
- **ICOM**: IC-RP1510, IC-RP1520
- **EF Johnson**: Viking Universal Station, CR1010, CR1000
- **Kenwood**: TKR720, TKR820
- **Kyodo**: KG110
- **Midland**: Basetech Repeater
- **Motorola**: GR300/GR500, R100, MSF5000, MSR2000, MICOR
- **Repco**: Dimension
- **Regency/Wilson**: Microcomm
- **Standard**: RPT10, RPT21, RPT30
- **Tait**: T800 series, T300 series
- **Uniden**: ARU 251

Only seven connections are required in typical installations, and expert interface assistance is available from Zetron.

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Specifications

GENERAL

- **Power:** 11-16 Volts DC, 100mA nominal
- **Operating Temperature:** 0 to 60 Degrees Celsius
- **Size:** 5.5″W x 6.25″D x 1.4″H
- **Weight:** 1.0 pound
- **Indicators:** Status, Carrier, Transmit, Power
- **Programming:** Via DTMF radio
- **Data Retention:** Nonvolatile EEPROM

RADIO INTERFACE

- **Connections:** 12VDC, ground, Rx discriminator audio, Tx mic audio, Tx PTT, Rx carrier detect, CTCSS/DCS encode
- **PTT:** FET pull to ground
- **Carrier Detector:** External COR input with polarity and threshold adjustments
- **Tx audio:** -40 to +6 dBm. Hi/Lo range selector 1K ohm output impedance
- **Rx audio:** -40 to +10 dBm. Hi/Lo range selector. 25K ohm input impedance
- **CTCSS/DCS encode:** -40 to +3 dBm. Hi/Lo range selector 600 ohm output impedance
- **CTCSS slope:** Flat or de-emphasized output programmable items

GENERAL

- **Mode User:** Carrier repeat, or validated CTCSS/DCS
- **Station ID:** ID interval from 1 to 90 minutes. Call sign programmable up to 8 characters. Periodic ID or ID based on transmit activity.
- **Tx Timeout:** 1 to 9 minutes in 1 minute steps
- **Tx Hold Time:** 0 to 9 seconds in 1 second steps
- **Alternate Tx Hold Time:** 0 to 9 seconds in 1 second steps
- **Courtesy Tone Frequency:** 500, 1000, 1500 Hz selectable

USER SPECIFIC SELECTIONS

- **Number of users:** 155 database entries. User numbers are from a cross reference table based on CTCSS/DCS decode. 0 = Carrier repeat, 1-50 = CTCSS, 51-154 = DCS. Commands are available to program a single user, or globally all users.
- **User Status:** Disabled, enabled, or reserved. Reserved users will actuate the transmitter and generate the proper CTCSS/DCS for dispatch, but will not pass repeat audio. Valuable for no-pay customers.
- **Regenerated CTCSS/DCS:** Selectable encode may be any CTCSS or DCS per user
- **Tx Hold Time:** Normal or Alternate transmit hold time selection
- **Tone in Tail:** Enable or disable CTCSS/DCS encode during Tx hold time
- **Courtesy Tone:** Enable or disable

INSTALLATION AIDS

- **DCS Polarity:** Programmable data inverters for encode and decode
- **Program Mode Access Code:** Five digit DTMF password selectable
- **Clear:** Unit may be reset to all factory default settings
- **Tx Audio Test:** Generates 1KHz audio tone for transmit deviation adjustment
- **Repeat Audio Test:** Enables carrier repeat to adjust Rx audio for unity repeat gain
- **CTCSS Level Test:** Keys transmitter with CTCSS tone
- **CTCSS Pre-emphasis Test:** Verifies that CTCSS encode frequency response is flat

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