Model 30 Worldpatch

SPEC SHEET

The Model 30 Worldpatch is a compact, telephone interconnect that allows a group of two-way radio users to place and receive telephone calls. It efficiently interfaces a telephone line (or analog PBX line) to a simplex base station, control station, or conventional repeater. It can also be used as a repeater maker to convert a pair of mobile radios, or a full-duplex base station, into a carrier-operated repeater.

The Model 30 is available both as a single-group interconnect as well as a selective-calling interconnect. The selective calling version provides 100-call and 1000-call two-tone and DTMF paging. For ordering convenience, the Model 30 Worldpatch is available in three different versions:

1. **Basic with APO (901-9416)** — recommended for half-duplex repeater operation, includes Advanced Programming Option (APO)
2. **Basic with APO & Digital Voice Delay (901-9417)** — as (1) above with digital voice delay for simplex operation on base stations or control stations
3. **Basic with APO, Digital Voice Delay, and Selective Calling (901-9540)** — as (2) above, but recommended for applications requiring selective calling on repeater or base stations

Any version can be changed into another by ordering a field upgrade kit. Other options include a 19-inch rack mount bracket, Deadbolt surge arrestor, and various interface cables for the connection to the radio.

An assortment of connection diagrams explains the hookup to the most popular radios. A responsive technical support department is also available to provide expert assistance over the telephone.

FEATURES

- Simplex and half-duplex interconnect for base stations, control stations, and repeaters
- Compatible with end-to-end telco lines and analog PBX extensions
- Remote-programmable from DTMF radio or Touch-Tone telephone
- Convenience features include Morse ID, toll restrictions, timers, DTMF regeneration, programmable ANI codes, courtesy tones
- Simplex audio control via VOX, sampling, or combined sampling with VOX
- Half-duplex operation with privacy mode
- Digital voice delay available for simplex
- Fits in small repeater enclosures such as Motorola Radius GR300, GR500, GR1225
- 19-inch rack-mount bracket available
- Connection diagrams for many radios
- Expert and responsive technical support
- Special, custom features available

SELECTIVE CALLING OPTION

- 100- and 1000-call two-tone paging
- DTMF paging
- Dial-up remote operation (*to key, # to unkey)

APO (ADVANCED PROGRAMMING OPERATION)

- 4-click PTT autodial for non-DTMF mobiles
- Auxiliary FET output
- Direct-access security code
- Hookflash from mobile via *0
- Autodial access only
- Repeat courtesy tone
- Call-alert beeps
- Unkey to hear 2nd dial tone
- Ring out from connect button

Radio-to-Phone Calls

To place a telephone call, a radio user keys up and enters the valid access code from the keypad of a DTMF microphone or hand-held radio. Upon receiving dial tone, the user then dials into the public telephone network. Programmable toll restrictions can prevent long-distance dialling. Radio users can even be limited to dialling certain pre-programmed autodial numbers only (APO feature). Authorized personnel can bypass restrictions by entering the toll-restrict bypass code.

The Model 30 can also provide limited telephone access to radio users who don't have DTMF keypads on their radios via the four-click autodial feature (APO feature). By clicking the PTT button four times, a radio user can cause the Model 30 to activate autodial #1.

All calls are terminated when the radio user enters the disconnect code (separately programmable from the access code). The phone party may also disconnect a call by entering #0 on the telephone keypad. Conversation timers, busy tones, and dial tone can also terminate a call.

Phone-to-Radio Calls

If a telephone party (landline) wants to call a radio user, the phone party first dials the normal telephone number of the phone patch. This may be a standard seven-digit telephone number, or perhaps a 3-digit extension if the Model 30 is on a PBX system. After a number of rings before answer (programmable), the Model 30 picks up the line, keys up the transmitter, and broadcasts a ringing tone over the radio channel to alert the radio user(s) that a call is pending. The Model 30 can either ring once on the channel, or ring repetitively. When ringing repetitively, the Model 30 matches the ringing cadence of the local telephone system.

A radio user can answer the call by keying up and entering the valid access code. Or, the Model 30 can be programmed to allow radio users to answer a call by just keying up (COR to answer), which allows non- DTMF radios to answer calls.

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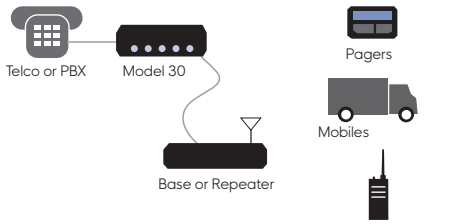
For selective-calling versions, the sequence of events is somewhat different. After the Model 30 picks up the line, it prompts the phone party with a beep. The phone party then overdials the number of the desired radio (typically two or three digits) to be called. The Model 30 keys up the transmitter and broadcasts the corresponding paging tones, unsquelching the appropriate radio only. Other radios on the system are not disturbed.

The Model 30 also has a direct-channel access mode. This puts the phone party on the air immediately, without ringing tones or overdial, as soon as the phone party dials the telephone number of the phone patch. The phone party may then voice-hail directly over the channel to gain the attention of radio users. To prevent unauthorized access, the phone party can be required to first enter a direct-access security code (APO feature).



The Model 30 is ideal for connecting a standard telco line, or an analog PBX extension to a radio base station, control station, or repeater.

Base Station Installations

When connected to a simplex base station or control station, a phone patch is responsible for changing the station from receive to transmit at the right moments. The Model 30 can use VOX (voiceoperated transmit), sampling, or various mixtures of the two, depending on the demands of local conditions.

In simplex installations, a Model 30 with the digital voice delay is recommended. This feature is a digital memory that delays the phone party's audio for a fraction of second (programmable 0.2-0.9 sec), allowing ample time for the transmitter to key up. The delay prevents clipping of the phone party's first syllable.

Repeater Installations

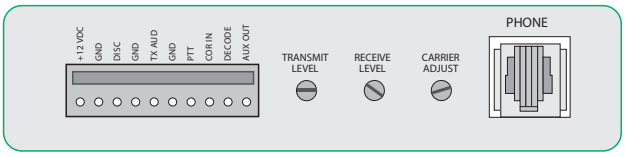
The Model 30 Worldpatch can be added to an existing, full-duplex repeater to allow radio users to make and receive phone calls. Or, the Model 30 can be used to create a repeater out of a separate transmitter and receiver, such as a pair of low-cost mobiles, or a full-duplex base station.

To create a degree of privacy during interconnected calls, a half-duplex privacy mode can be enabled. When the radio user is talking to the phone party, the Model 30 will transmit a masking tone (instead of the radio user's audio) so eavesdropping mobiles will be discouraged from monitoring the conversation.

With selective-calling versions of the Model 30, radio users can be allowed to selectively call other two-way radios and pagers. After keying up and entering the sign-on code, the user enters a steering digit to indicate whether he wants to place a selective call or an interconnect call into the telephone system.

There are many features to assist with repeater conversations. A courtesy beep can be enabled, so every time a user finishes talking and releases the PTT button, the Model 30 transmits a quick beep to let the other user know to talk. The repeat hold timer can be set from 0 to 9 seconds to prevent other PL tones from interrupting a conversation. To alert conversing The Model 30 is ideal for connecting a standard telco line, or an analog PBX extension to a radio base station, control station, or repeater. Mobiles that a call is coming in over the phone line, a call-alert beep can be transmitted at the same cadence as the telco ring cycle.

If it is desired to have encode/decode of a single PL tone on the repeater, it's best to enable that capability in the repeater itself. If it's desired to have encode/decode of several PL tones or DPL codes–that is, to divide the repeater into different work groups–it's best to use an interconnected tone panel like the Zetron Model 48jr Repeater Patch rather than the Model 30.



Dial-up Remote

The dial-up remote feature allows a phone caller to have positive control of a base station from afar. The phone party can dial the telephone number of the Model 30, enter a security code, and immediately begin listening to the radio channel without the radio users being notified. If desired, the phone party can press * to transmit, and release the transmitter by pressing #. The dial-up remote feature allows a phone party to physically control the transmitter without having to rely on a VOX circuit.

PBX Applications

The Model 30 is often installed on an analog line of a PBX telephone system. This lets PBX users reach field radios simply by dialing the extension occupied by the Model 30. Several programmable items help support PBX applications. Radio users can generate hookflash signals into the PBX if necessary to control PBX features. A radio user generates a hookflash signal by pressing *0 during a call. Radio users can also unkey their radios and verify a second dial tone when requesting an outside line.

Manual Operators

A parallel telephone may share the line with a Model 30. This gives a manual operator the opportunity to personally answer a call before the call is put onto the radio system. The Model 30 can be programmed to wait for up to 10 rings before answering the line.

After answering a parallel telephone, an on-site operator can use the connect button on the front panel of the Model 30 to manually connect the telephone party to the radio system. If the Model 30 has the APO feature set, then the connect button can even be used to transmit a ringing tone over the radio channel to alert the mobile users to take the call.

Installation & Mounting

The Model 30 is compact enough to fit in the industry's smallest repeater enclosures, including the Motorola Radius GR300, GR500, and GR1225. Radio-specific cables are available to make the interface as quick and easy as possible.

For proper installation in standard, 19-inch rackmount enclosures, an optional 19-inch rack mount bracket is available.

The phone line connection on the rear of the Model 30 is a simple RJ-11 phone jack. The radio interface is a 10-pin modular plug with crimp pins provided. Level settings for transmit, receive, and carrier adjust are accessible on the back panel.

All programming settings may be changed by remote control, without visiting the site. Programming takes place from a Touch-Tone telephone or keypad-equipped radio. Access to the program memory is protected by a programming access code. The installer may restore the unit to the factory default settings at any time.

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Standard Programmable Items

MOBILE-TO-PHONE CALLS
ANI for access (1-9 digits)
ANI to disconnect (1-9 digits)
Validation for single digit ANI (y/n)
Mobile dialing timer (0-60 sec)
1st digit toll restricts (up to 4)
2nd digit toll restricts (up to 4)
Toll-restrict bypass code (1-8 digits)
Regenerated dialing (DTMF or pulse)
Busy tone disconnect (y/n)
Dial tone disconnect (0-9 sec)

PHONE-TO-MOBILE CALLS
Rings before answer phone (1-10)
Ringing to radio (once or repetitive)
Mobile answer method (ANI or PTT)
Direct phone-to-radio access (y/n)
Dial-up remote (* = key, # = unkey)

CONVERSATION CONTROL
Call limit timer (0-10 min)
Call timer reset via mobile * (y/n)
COR hold time (0.0-0.5 sec)
Mobile activity timer (0-60 sec)
Morse ID (0-8 digits)
Morse interval (10 min time or activity)
Phone courtesy tone (y/n)
Programming access code (5 digits)

REPEATER SETTINGS
Half-duplex repeater operation (y/n)
Half-duplex privacy (y/n)
Repeat audio (y/n)
Repeat hold time (0-5 sec)

SIMPLEX STATION SETTINGS
VOX voice-operated transmit (y/n)
VOX with pre-key (y/n)
Sampling (y/n)
Sampling & VOX-extended interval (y/n)
VOX & sample between words (y/n)
VOX before dial tone (y/n)
VOX hold time (0.5-1.5 sec)
Sample rate (0.5-1.5 sec)
Sample window size (.01-sec steps)

A.P.O. Programmable Features
Allow unkey to hear 2nd dialtone (y/n)
Autodial access only (y/n)
Autodials 0-49 (1-16 digits each)
Call-alert beeps (y/n)
Direct-access security code (1-9 digits)
FET output turn-on code (1-9 digits)
FET output turn-off code (1-9 digits)
Hookflash from mobile via *0 (y/n)
Repeat courtesy tone (y/n)
Ringout from connect button (y/n)
4-Click PTT sends autodial #1 (y/n)

Selective Calling Programmable Features

PAGING FORMAT CHOICES
0. None
1. DTMF
2. 100-call 2-tone
3. 1000-call 2-tone
4. DTMF & 100-call two-tone
5. DTMF & 1000-call two-tone

TWO-TONE PAGING PARAMETERS
Tone groups (Mot 1-6,10,11,A,B,Z; GE A-C)
Code plan (Mot B-Y,MT; GE X-Z)
Timing (Mot; GE std; NEC A-D,L,M)
Group or diagonal (replaces A or B)

DTMF PAGING PARAMETERS
Digits entered by caller (1-8)
Strapped digits (1-5)
Strapped location (precede or follow)

OTHER
Mobile-to-mobile paging (y/n)
Note: the digital voice delay is adjustable 0.1-2.0 seconds on the delay board.

Specifications

GENERAL
Power: 11-16 VDC, 150 mA
Temperature: 0-65 degrees Celsius
Size: 5.9 x 7.4 x 1.7 inches
Weight: 2.5 lb
Data Retention: Nonvolatile EEPROM, no batteries
Secondary Protection: Telco high voltage clamps with protective fusing elements

TELEPHONE INTERFACE
Connector: RJ11-C modular jack for one end-to-end (B1) phone line
Incoming Call: Ring detection on tip-ring pair. Programmable number of rings to answer.
Call Answer: Off-hook, tip-ring current draw
Call Disconnect: Busy tone, dial tone, call limit, mobile activity timers
Approvals: FCC Registration Part 68; Industry Canada

RADIO INTERFACE
PTT: FET pull to ground
COR: External or internal carrier detector with squelch control
Tx Audio: -40 to +6 dBm. Hi/lo selector 1Kohm output
Rx Audio: -40 to +10 dBm. Hi/lo selector. 50Kohm input. 25 mV to 6 V P-P
Tone Validation: Contact closure input from CTCSS decoder
Auxiliary Output: FET pull to ground

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