

# How to interconnect your two-way radios ...



## to a new world of capability

# "PatchMaster 200 increases the value of all your radios"

**P**atchMaster interconnects your mobile and portable two-way radios to the public switched telephone network. But it does more than that — it improves your entire radio system by making communications more effective. Its principal capabilities are:

**Mobile Phone Patch.** Mobile and portable users can place and receive telephone calls.

**Base Radio Extender.** The dispatcher and others at the base or control station can operate the radio through their office phones.

**Voice Mailbox.** Mobile and portable radio users, the dispatcher, and telephone callers can exchange voice messages.

**Dial-Access Paging.** Telephone callers can signal mobile and portable radios and pocket pagers.

**Dial-Up Remote.** Telephone callers can operate the base or control station radio.

**Remote Control / Alarm.** Users can remotely control equipment and receive radio pages in case of an alarm.

**S**upports All Types of Radio Systems. PatchMaster supports simplex, half, and full-duplex radio systems — conventional and trunked. With your choice of sampling, VOX, duplex, and repeater controller modes.

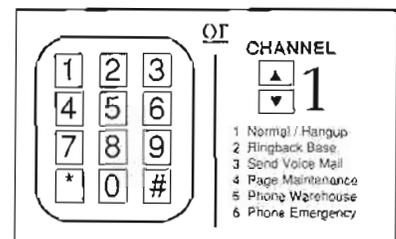
Digital *voice delay* improves simplex and control station VOX operation by eliminating chopped words caused by keying delays. In simplex sampling mode, *VOX enhancement* slows the sample rate while the person on the phone talks. *Full-duplex* patches can be made by mobiles with duplex radios. And PatchMaster can *control* a conventional duplex private repeater.

**C**ommand With DTMF Or Coded Squelch. Mobiles can activate all of PatchMaster's functions using conventional DTMF. But to save the cost of a fleet of DTMF mics (or keypads), some functions can also be activated by coded squelch. The mobile can either push DTMF keys, or "change channel" (actually change coded squelch) to activate various functions.

**H**igh Performance Phone Patch. You'll get the high level of performance you would expect in a

top-notch patch, from audio quality to feature set.

For small systems, two groups of mobiles can each have their own codes, calling privileges, and coded squelch, and even have access to their own phone



Functions can be activated by either DTMF or by channel selection of CTCSS. The cost of adding DTMF keypads and microphones can be avoided in many smaller systems.

line. For larger systems, ANI with call logging is available.

The Autodialer provides quick access to telephone numbers stored in memory. Each number can be accessed by both mobile groups or can be restricted to just one.

Call activity is logged and downloadable through the computer port or modem for recordkeeping and supervision of the radio system.

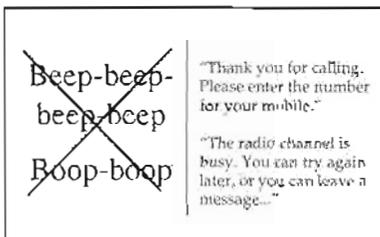
The mobile doesn't even need to hang up the patch. Automatic hangup can occur on busy, dial tone, or in many cases, *immediately* when the far-end party hangs up.

**O**perate the Base Radio from Convenient Locations. The Base Radio Extender frees the dispatcher from being tied to the radio. Ordinary office phones can become radio remotes.

The dispatcher can operate the radio by picking up an in-house office phone and punching up the "Radio" line. And the mobile can ring the office phones as well.

**V**oice Mail Improves Communications. Voice messaging between mobiles, telephone callers, and the base improves productivity by getting the message through when people aren't at their radios. Several messages can be stored totalling 60 seconds or more.

PatchMaster delivers the messages. The office phones ring when there is mail for the dispatcher. A call light can be lit in the mobile, or PatchMaster will announce that mail is waiting when the mobile returns to service. Or, it will ID periodically telling the mobiles that there's mail.



A built-in speech synthesizer and optional recordable voice prompts make the system easier to use.

**S**ignal Mobiles and Pocket Pagers. PatchMaster is a multi-format paging terminal available to callers, the dispatcher, and mobiles.

Users can signal ten units with easy single-digit reference. And for bigger systems, there's 1000-call two-tone and five-tone paging, and unlimited DTMF paging.

**R**emotely Control Equipment at the Base. An internal relay provides on/off or pulsed control. For more extensive control, the X-10 carrier-current system can be connected to PatchMaster's computer port.

Alarm sensing devices with contact closures to ground can signal pagers with voice messages warning users of emergencies.

**C**ontrol A Duplex Or Simplex Repeater. PatchMaster can add interconnect to your existing repeater. Or PatchMaster can control a duplex radio as a repeater, with repeat audio path, hang time, courtesy tone, timeout timer, and on/off code. And in *simplex* systems, its *simplex repeater* function can extend the range of mobiles.

**V**oice Prompts and Responses. Information is spoken in a synthesized voice — more friendly and meaningful than "beeps" and "boops".

Your own voice recordings

(in any language!) can also be made for special or personalized prompts, further tailoring the system and making it easy to use.

**L**et Mobiles Hear Themselves. Mobiles can verify that their radios are working properly and can confirm that they are within range using the DTMF Keypad Test and the Echo Test features.

**F**ully Programmable. PatchMaster is quickly and easily programmable with DTMF — *on-site* with a phone plugged into the back, and *off-site* over the air or over the telephone. Voice prompts and responses assist in reliable programming.

```
Menu 0 - PatchMaster V1... - Top Menu
1 - Read me first!
2 - Initial Setup
3 - Programming
4 - Autodial Numbers
5 - Programming Changes Log
6 - Telephone Call Log
7 - Upload/Download Selections
8 - Test Modes
9 - For technical assistance ...
Select menu number, L=Last, N=Next, H=Help
>
```

Simple menus with on-line help make it easy to program PatchMaster without referring to the manual. PatchMaster can also be programmed via DTMF with voice response.

And if you have a computer with a serial port, you can use PatchMaster's simple programming menus. Programmed selections can be viewed and printed out for hard-copy documentation.

## Specifications ( \* indicates Option required)

### Receiver

*Carrier Detection:* Internal dual time-constant squelch derived from discriminator; external logic signal (high or low true); receiver VOX.

*Coded Squelch Detection:* Two internal 38-tone CTCSS decoders\*; or external logic signals.

*Audio Input:* Discriminator or de-emphasized audio. Squelched or unsquelched. 100K input impedance. Adjustable 25mV - 5V p-p (10mV - 2V rms). High/low range-select switch.

*Channel Busy:* Receiver carrier detection or external logic signal.

### Transmitter

*PTT:* Open-drain power MOSFET (500 mA) or relay contacts.

*Audio Output:* Low (600Ω) or high (10K) source impedance, 0 - 5V p-p (0 - 2V rms). High/low range-select switch.

### Telephone Lines (2)

*FCC Part 68 registered.*

*Type:* Central office lines or PBX extensions (loop start); RJ-11C.

*Line-In-Use Detection Threshold:* 18V

*Call Progress Detection:* busy, dial tone, loop current interruption.

### Local Telephone Set

*Compatibility:* Ordinary telephone set, or keyset system with spare central office line input (loop start).

*Function:* Programming, recording digital voice prompts\*, and operation of the Base Radio Extender.

*Ring Voltage:* 90V rms, 30 - 60 Hz.

*Talk Battery:* 24V.

### Programming

*DTMF:* Local telephone set, phone line, over the air.

*Computer:* Serial port — 300 - 4800 baud; internal 1200 baud modem\*.

### Paging

*Two-tone Sequential:* 1000-call; Motorola, GE & Reach tones, timing.

*Five-tone Sequential:* 10,000-call; EIA, ZVEJ, CCIR.

*CTCSS:* 38 EIA tones\*.

*DTMF:* Unlimited call; 0-9, \*, #, A-D.

*Generic Audible Ringout:* 5 selections.

*Memories:* 10 (random format/address).

### Indicators

Power, Phone, Transmit, Receive, CTCSS, DTMF, Mail, Local.

### Controls

Connect / Disconnect (C/D) button.

### Connectors

*Transceiver:* 8 pin DIN (mating connector supplied, cables available).

*Phone Line (2):* RJ-11C (modular cables supplied).

*Local Telephone Set:* RJ-11C.

*Computer Port:* RS-232 (DB-25-S).

*Power:* coaxial DC power connector (cable supplied).

### Adjustments

*Receiver:* Squelch, Rx Level.

*Transmitter:* Tx Level, CTCSS Level.

*Telephone:* Hybrid Resistance, Hybrid Capacitance, Level.

*Telephone and Receiver VOX:* Self-adjusting, adaptive.

### Lightning Protection

*Telephone Lines:* 3-terminal gas-discharge tubes.

*Power:* Transorbs.

*Signal Inputs / Outputs:* MOVs.

### Power Requirements

+12 Volts DC (10 - 16V) @ 500 mA (1A when ringing local telephone).

### Size

7.5"W x 1.75"H x 10.5"D (desktop).

### Operating Temperature Range

-20 to +65 degrees C.

## Versions

PatchMaster 200 is available in two versions to accommodate your cost and performance needs. Either version can be "optioned up" as desired.

**PM-200:** The fully featured unit less options below.

**PM-200SL:** Offers all the features of PM-200 except it accesses a single telephone line, the local telephone set has a 12V talk battery and can't be rung, and it does not have a speech synthesizer.

## Options

**PCM Digital Voice Delay/Storage** (Select no more than one PCM option.)

**PCM1 (Voice Delay):** 0 - 500 ms delay. Recommended in VOX mode.

**PCM2 (Voice Delay and Prompts):** Voice delay + 8 seconds of recording time (16 seconds in extended mode) for recordable (in addition to synthesized) voice prompts and responses.

**PCM3 (Voice Delay, Prompts and Mailbox):** Voice delay + 32 seconds of recording time (64 seconds in extended mode) for prompts and voice mail, and for simplex repeater.

**Note:** Recording time is further expandable to two minutes (four minutes in extended mode) with two 4 megabit static RAMs (not supplied).

### CTCSS Encode/Decode (1 or 2)

Programmable 38 EIA tones. Encode requires one dedicated to encoding. Other or both available for decode.

### Internal 1200 Baud Modem

Allows remote access to computer port for programming and telephone call log. Accessible from Line 1 and/or Line 2.

### ANI and Call Logging

300-user automatic number identification validation. Clock/calendar, memory for storage of telephone call information. Real-time output to serial printer or downloadable from computer port or modem.

*All options are easy plug-in modules.*

*Specifications subject to change without notice.*



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