

THE RC-850 REPEATER CONTROLLER



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The Third Wave

The **RC-850 Repeater Controller** has brought a new *dimension* to repeater control and operation. Nowhere else can you get state-of-the-art technology that's *designed for the future* and has an established record of reliability and customer satisfaction. The **RC-850** will always be "**The Standard**" in high performance repeater control.

Now with Version 3 Firmware, the **RC-850 controller** enters its "**Third Wave**" of innovation.

A SHORT HISTORY

The original RC-850 controller with Version 1 Firmware, introduced in 1982, broke new ground with fundamentally new concepts in repeater control—**synthesized speech**, **remote programming**, and **upgrade through software**. Version 2 Firmware, in 1983, brought further innovation—fully automatic **scheduled operation**, a **user mailbox**, and **paging capabilities**. Now Version 3, the "Third Wave", brings computer to computer communication! And major enhancements that open a whole new window in capability and ease of use.

ACC listens to what repeater owners and users want most, and we respond! Everyone benefits—from the first customer to the next.

COMPUTER INTERFACE—NEW WINDOWS INTO YOUR REPEATER

Now the RC-850 controller can talk with computers, through serial I/O ports on the Computer Interface Board. Connect one port to a modem, and use your home computer to remotely program the controller. Or view the operation of your repeater's activities on your computer or terminal with the controller's ASCII status output. Even record information that's stored in the controller for processing in your home computer to construct activity reports for your group. The computer interface capability opens new windows into *management* of your repeater!

SPEECH—THE NATURAL WAY TO COMMUNICATE

Your repeater, built around the RC-850 controller, communicates with you and your users in its own voice. Highly natural sounding male and female voices give your repeater *personality*. And they know "ham talk", with their own custom ham radio repeater vocabulary. **What can your repeater say?** It can automatically remind you of nets and meetings, tell your signal strength, and describe the weather at the site (with external sensors). It can warn you of intrusions, read you your mail, and confirm your commands. With all it knows, the RC-850 controller has a lot to say. The *voice* is the controller's way of communicating with you. Your repeater also communicates with its **courtesy tones** that act like "color codes" for your ears. Is the repeater on battery power? Are you weak into the system? The courtesy tone can *tell* you without a single word. And the tones that you design make your controller unique.

REMOTE PROGRAMMING

Back in the old days, repeaters were "programmed" with diodes, DIP switches, and custom wiring. Then came the microcomputer, and the repeater was programmed in PROM. That was okay, but changes meant a trip to the hill, or to the factory. (Suddenly, PROM programmers were on everyone's wish list.) Then along came ACC with the RC-850 controller, which is

remotely programmable with its own simple, high level Touch-Tone command language. Reprogrammable, non-volatile Electrically Erasable PROM means convenient, reliable changes and no down time. Your commands are even confirmed in voice. You can reprogram practically anything such as ID's, autodial numbers, command codes and much more from anywhere, with a Touch-Tone radio or telephone. Informative ID and tail messages, enhanced security, and customized operation are standard features. No more trips to the hill for "one little change" because the programming comes from you, even while you sit in your favorite armchair. Now our Version 3 Firmware supports remote programming with our **Computer Interface** option. Your home computer lets you travel to the hill via modem and really see what all the talk's about.

THE SCHEDULER—PUTS YOUR REPEATER ON AUTOPILOT

The RC-850 controller's built-in clock/calendar combined with highly sophisticated software lets you schedule your repeater's operation. Acting as an "**Automatic Control Operator**", the Scheduler selects operational modes based on time and day of week. The extensive scheduling capability can remind users of nets and meetings, bring up and take down links, and secure your system at night. *Automatically.*

Scheduler "Events", new in Version 3 Firmware, can wake you up, generate on-the-hour announcements, and even kick off your net! Hands free operation means that the drudgery of being a control operator no longer exists.

AUTOPATCH—UNLIKE ANY OTHER

The Autopatch is an important part of most repeaters. The RC-850 controller maximizes the convenience provided to your users, and the public service benefits to your community. Features including 190 user programmable autodial numbers, 10 emergency numbers with message readback ("SC Police" for example), as well as conventional autopatch. Phone number readback and regenerated DTMF or rotary signalling eliminate wrong numbers because the controller dials the phone number for you.

The "**Antidialer**" blocks out phone numbers or blocks of numbers you don't want dialed. And telephone exchange tables for multiple area codes allow you to define your own "toll-free dialing area". Then there are extras like full duplex capability, cover tone for semi-private patches, and extensive programmable timer. **Even storage of credit card numbers and MCI/Sprint access codes for easy toll calling.**

The **reverse patch** screens incoming calls by requiring an access command. The controller actually calls you by your call sign, or with your pager code if you aren't listening.

TELEMETRY—REMOTE METER READING

Analog measurement capability combined with unique “**Meter Faces**” in the controller’s firmware allow readback of a variety of meter readings. Users can interrogate signal strength, quieting, deviation, and more with Touch-Tone commands. Check the repeater’s output power, battery voltage, and other equipment at the site. The controller even uses the correct *unit name* for you, such as “degrees”, “volts”, and “amps”. And now with Version 3 Firmware, direct support of low cost Heathkit **weather instrumentation** lets you read back current weather conditions. Plus peak wind speeds and high and low temperatures, tagged with time and date.

Now meter readings can be included in programmable messages. An ID can say “75 degrees, at WA6AXX, Repeater.” And certain analog channels can set **Internal alarms** when programmable limits are exceeded—such as charging voltage or temperature.

REMOTE BASE—LINK UP

Your repeater becomes a communications *system*, rather than an isolated relaying station. The RC-850 controller will control several synthesized transceivers connected to your repeater in response to user commands and scheduled changeovers. Work other frequencies *through* your repeater. Now the ‘850’s cross-linking capability allows linking two or more frequencies through your repeater. The controller accepts commands entered from the links for the ultimate in flexibility.

Link your repeater to others for nets and special events, and to simplex frequencies to extend coverage range. Carry around one radio to work more than one band and benefit from the elevation of your repeater site. Even work DX from your handheld!

PAGING and MAILBOX—PERSONAL SERVICE TO HUNDREDS OF HAMS

The RC-850 controller introduced the benefits of paging to amateur repeaters. With large numbers of surplus pagers available, you don’t have to be listening to be available—your friend can activate your pocket pager with Touch-Tone commands. Pag-

ing is also perfect for public service oriented groups.

Version 3 Firmware supports additional paging formats, allows paging sequences to be stored in programmable messages (such as the site alarm), and supports **display paging**. Someday these capabilities will be included in common two-way radios, but you can benefit from them today with a pager and your RC-850 controller!

A Touch-Tone activated **mailbox** lets a caller contact you when you’re really just not around. When you return, the controller can tell you if there are any messages and you can read your mail. Call in from over the air or the phone for great versatility. And because the controller can store over 100 user call signs, and ten speech messages, individualized service becomes available to your whole club (or a selected part of it!).

STATE-OF-THE-ART, INNOVATIVE HARDWARE

What you first notice about the RC-850 controller is how pleasant listening to it is. Innovations in hardware eliminate squelch tails and completely mute your Touch-Tone.

Low power operation is a standard feature by using high speed CMOS instead of TTL or LSTTL. Even the CPU is CMOS! Low power 12 volt operation lets you get power from your existing power supply and battery. And we planned for the future by leaving room for new hardware technology as well, so your controller will never become obsolete. As your group grows, and your needs grow, the controller’s capabilities grow with you.

And it’s modular, so you can buy what you need and can afford now, knowing you can easily add-on later.

EASY TO INTERFACE

RC-850 controllers are in operation with just about every type of repeater equipment imaginable. From the latest commercial repeaters to homebrew equipment. Our **universal interface** means it takes just minutes to connect. Transmitter PTT and audio, and receiver COS and audio are all that are required. Connect twelve volts and the phone line and you’re done! If you’re building a completely new system we’ll even interface it all for you.

PROVEN RELIABILITY

In designing a repeater system, the overriding concern should be reliability. The **RC-850 controller** achieves its *enviable* reliability record through excellence in engineering, outstanding workmanship, extensive burn-in, and use of the best quality components. With field proven reliability like this, we back it with a **two-year warranty!**

We recently asked all our **RC-850 controller** owners “If you had it to do all over again, would you buy an RC-850 Repeater Controller from ACC?” **100%** of those responding **answered YES!**

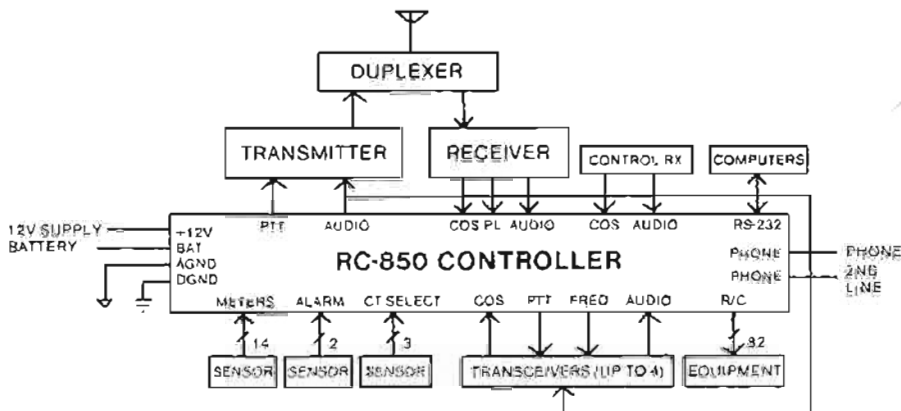
Pick the proven winner.

The **RC-850 Repeater Controller**—nothing else comes close!

Ride the wave!

Features & Specifications

REPEATER BLOCK DIAGRAM



- Microprocessor: 80C85 or NSC800
- Memory: Total up to 100K bytes
 - EPROM—32K, expandable to 64K using memory segmentation
 - E²PROM—4K, expandable to 8K
 - RAM—2K, expandable to 8K
 - Speech ROM—20K
- Logic Inputs: Low < 8 volts
 - High 2.4 - 15 volts
 - Impedance 10K
 - Programmable active high/low
- Logic Outputs: VMOS power transistors (open drain)
 - 60V/100mA
 - Programmable active high/low
- Audio Inputs: 100K impedance, adjustable levels
- Audio Outputs: 5V p-p transmitter audio
 - 5V p-p link audio
- Power: +12.6V ±10%, 175 mA
- Cabinet size: 17"W x 14.5" D x 2.5"H, 19" rack mountable
- Weight: Approximately 4 lbs.

Standard Features

- Main board is a complete standalone controller
- Remotely programmable with Touch-Tone commands or terminal (with Computer Interface Option):
 - Messages—over 200 (ID's, tails, mailbox, etc.). May include CW, paging tones, DTMF tones, external device, synthesized speech (w/VRT option), and Digital Voice Recorder tracks (w/DVR)
 - Morse code parameters
 - Speed—5-35 WPM
 - Pitch—dc-3000 Hz
 - Level—4 steps
 - Control Op and user command codes (20 prefix groups, up to 7 characters each)
 - Courtesy tone parameters (10 sets—pitch, durations, spacings)
 - Timers—20 sets, 0-30 minute with 1 second resolution
 - Autodialer numbers (200)
- Autopatch / Autodial*
 - Store/forward, DTMF or rotary (2 speeds each)
 - Optional phone number readback
 - User Loadable Autodial (190 numbers)
 - Emergency Autodial (10 numbers) with message readback
 - Antidialer—traps 5 numbers, permits wildcards and globals for blocks of numbers
 - Toll restrict—leading 1/0 and digit count, exchange tables for 800 telephone exchanges for 2 area codes
 - Full or half duplex
 - Cover tone for semi-private patches
 - Activity timer with warning warble
 - Storage of credit card / MCI / Sprint access codes
 - Offhook and ring detect for 2nd line

- Reverse patch*—general or directed at over 100 stored user call signs
- Paging—two-tone, 5/6 tone, HSC display, DTMF, commandable or may be included in any programmable messages
- Mailbox—Touch-tone activated, addressed by user call sign slot, 10 stored messages, over 100 user call signs
- Remote base control—up to 4 transceivers, commandable frequency and mode (BCD type transceivers)
- PL access and control modes
- Touch-Tone access mode with programmable timeout
- Remote control logic outputs—8 expandable to 32
- Audio delay line to mute squelch tails and fully mute Touch-Tone
- Courtesy tone
 - 10 sets to convey information
 - Selectable by Control Op or logic inputs
 - Programmable pitch, delay, and spacing of 3 segments per tone set
- Low distortion computer synthesized tone generation, single and dual frequency, programmable to 1 Hz resolution, 4 levels
- Noise and kerchunker filtering
- Control receiver provisions
- Fully integrated CMOS 16 digit DTMF decoder
- Intelligent ID algorithm—automatically selects from up to 14 programmable ID's
- Tail messages—13 selectable/scheduled, selectable rate
- Command acknowledgement with unique messages
- Built-in E²PROM programmer/eraser for remotely programmed parameters
- Low power, single supply operation with built-in battery backup circuitry

Voice Response Telemetry Option

- Natural sounding speech synthesizer for effective user/repeater interface
 - Custom ham/repeater oriented vocabulary of over 300 words
 - Speech "run time variables" programmable in messages including time, date and meter readings
 - Male and female voices, sound effects
- Clock/calendar
 - Scheduling capability
 - 10 "Setup States" storing over 75 parameters each
 - 20 Time/day of week changeovers
 - 4 Events which generate messages

- Commandable readback of time
- Time, date, and morning/afternoon/evening available as run time variables in programmable messages
- Analog metering
 - 16 channel analog measurement
 - Firmware defined talking meter faces for voltage, current, S-meter, deviation, temperature, quieting and more
 - Two built-in sensors for temperature and voltage
- Alarm inputs (2)

Computer Interface Option

- Four RS-232 serial I/O ports
- Selectable baud rates
- Firmware supports remote programming via external modem, real-time operation display, and logging information download
- Memory expansion to 64K bytes EPROM

Telephone Interface Option

- FCC registered or non-registered board available
- Electronic hybrid
- Agc

Front Panel Display Option

- Internal and I/O status
- 55 LED indicators, one digit
- Off, on, blink, wink indicator states
- Display on/off switch to minimize power consumption
- Local microphone jack (for HM-8)
- Local speaker jack, volume control

* Telephone Interface option required

See price list for described options

Specifications subject to change without notice

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