

HF / V·UHF ALL MODE TRANSCEIVER

# FT-847

EARTH STATION

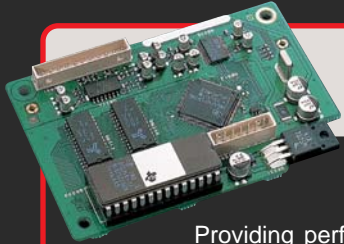


**YAESU**  
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# Enjoy the full spectrum of Amateur Radio excitement with the FT-847 Earth Station!

Ready for action on SSB, CW, HSCW, AM, FM, Packet, SSTV, and RTTY, the FT-847 expands your operating horizon beyond HF to the 6-meter, 2-meter, and 70-centimeter bands, featuring DSP and full-duplex satellite operation, all within a super-compact package!

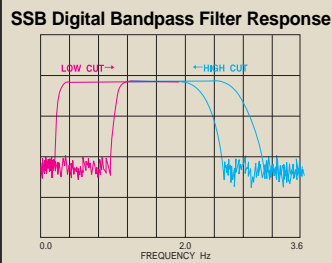


## The FT-847 Earth Station: A masterpiece of high-tech design and operating know-how!

### Leading-Edge Receiver Design!

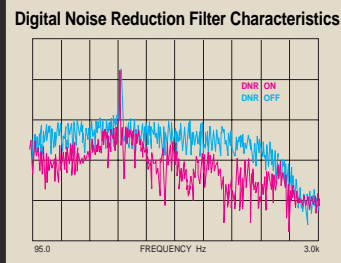
Providing performance optimized on each operating band, the FT-847's high-performance receiver section carefully blends excellent sensitivity, low noise, and outstanding strong-signal-handling capability. The front end's low-noise-figure preamplifier (HEMT device on 70 cm!) is followed by a quad-FET first mixer, providing outstanding rejection of Intermodulation.

The net result of the FT-847's advanced design is a receiver with wide frequency coverage, yet easily capable of hearing moonbounce (EME) signals with a single Yagi and no external preamplifier!



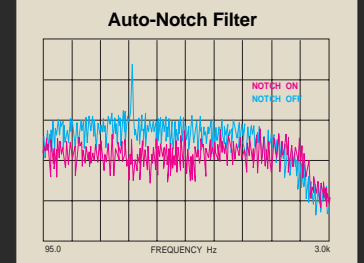
### Advanced Digital Signal Processing (DSP) System!

The Yaesu engineering team has crafted an outstanding DSP system for the FT-847, providing significant enhancements to receiver performance. The DSP Bandpass filter provides independently-adjustable Low- and High-Cut filter elements, ideal for reducing QRM on SSB, while the CW Bandpass Filter provides fixed selectivity selections of 400 Hz, 200 Hz, 100 Hz, and even 25 Hz, ideal for EME and other weak-signal work. The DSP Noise Reduction circuit provides 16 different noise-reduction algorithms, for enhancement of signal-to-noise ratio. And the Automatic Notch Filter will seek out and null unwanted carrier signals, with minimal distortion of desired voice waveforms.



### Optional Collins® SSB/CW Mechanical Filters!

Renowned for their excellent frequency response and fidelity, Collins® Mechanical Filters in 2.5 kHz and 500 Hz (-6 dB) bandwidths are available for the FT-847 (separate TX and RX SSB filter slots available). The Collins® SSB filter provides a very "flat" passband response which faithfully reproduces both voice and data signals. The Collins® CW filter is ideal for CW or RTTY work, with Wide/Narrow selection available from the front panel.



# The FT-847 Earth Station: The All-in-One Solution to Your Operating Needs!

The FT-847's compact size and wide frequency coverage make it ideal for serious base station use, as well as a variety of portable and mobile applications, including Field Day, DX-peditions, VHF/UHF "Rover" operations, and RV installations.

## Unmatched Satellite Operation Capability!

The FT-847 provides 12 "Satellite" VFOs, automatically configured for crossband full duplex (simultaneous TX and RX) operation, with "Normal" and "Inverted" VFO tracking so you can tune across a satellite transponder downlink without having to make manual uplink frequency adjustments.

The FT-847 is ready for operation on Mode A (TX: 145 MHz, RX: 29 MHz), Mode B (TX: 435 MHz, RX: 145 MHz), Mode J (TX: 145 MHz, RX: 435 MHz), and Mode T (TX: 21 MHz, RX: 145 MHz). Independent display of both uplink and downlink frequencies is provided, and each satellite VFO may be labeled with an Alpha-numeric name,



## Innovative Receiver Features Enhance Your Operating Experience!

- **EXPANDED RECEIVE FREQUENCY RANGE:** 37-76, 108-174, and 420-512 MHz. So you can check propagation below 6 meters, monitor the 4-meter band, download images from weather satellites, or follow the action on public safety frequencies!
- **IF SHIFT:** For adjustment of IF passband to avoid interference.
- **IF NOISE BLANKER:** For reduction of automotive ignition noise.
- **INPUT RF ATTENUATOR:** For more comfortable reception of extremely strong signals.
- **FIXED-LEVEL AF OUT JACK:** For connection to tape recorder, WeatherFax decoder, sound card, etc.

## High-Reliability Transmitter Design!

Utilizing carefully specified and selected bipolar power transistors, the FT-847's rugged transmitter takes advantage of the low noise characteristics of the DDS (Direct Digital Synthesizer) local oscillator circuitry to produce a reliable, clean transmitted signal. Power output is 100 Watts on HF and 6 meters, and 50 Watts on 2 meters and 70 cm. Twin cooling fans ensure efficient dissipation of heat, ensuring reliable operation on digital modes or during contests.



## Leading-Edge Features for Today's Active Amateur!

- **CW OPERATING FLEXIBILITY:** Besides the ultra-narrow DSP filtering for weak signal work, the FT-847 includes a built-in iambic keyer with weight control, and either USB or LSB-side injection may be used for CW reception, thanks to the "CW Reverse" feature. And the ultrafine tuning steps as small as 0.1 Hz provide a tuning "feel" as smooth as that of an analog VFO!
- **SSB EXCELLENCE:** The FT-847's "talk power" is enhanced by the built-in RF clipping type Speech Processor, which increases average SSB output by approximately 6 dB. And the transmitted IF passband frequency may be adjusted, via Menu, to match or enhance the frequency characteristics of your voice pattern.
- **EASY DATA-MODE OPERATION:** Convenient interface jacks are provided for interfacing to TNCs, sound cards, or other modem devices. For SSB-based data modes, the three-pin DATA IN/OUT jack supports AFSK input and output, plus PTT control. And for 1200/9600 bps packet work, the PKT jack provides optimized input and output lines, plus PTT and squelch status lines.
- **OUTSTANDING FM FEATURES AND FLEXIBILITY:** Included are independently programmable repeater shifts for 29, 50, 144, and 430 MHz, Automatic Repeater Shift (ARS) on 144/430 MHz, FM Wide/Narrow modes for 29 MHz or crowded VHF/UHF environments, built-in CTCSS/DCS Encoder/Decoder circuits, and a Discriminator Center Meter, for precise tuning on Doppler shifted FM satellite signals.

## COMPATIBILITY WITH ATAS-120 AUTO-TUNE ANTENNA:

The patented ATAS-120 (Active-Tuning Antenna System) provides automatic resonating adjustments when used with the FT-847, utilizing a control voltage fed to the ATAS-120 from the antenna jack of the FT-847. No other "antenna tuner" or control cable is required! The ATAS-120 may be used on the 7/14/21/28/50/144/430 MHz bands, and it is compatible with many common mobile mounts, which are available from your Yaesu dealer. Coaxial cable is not included.



Motor Drive Auto-Tuning Antenna System ATAS-120

## Superb Ergonomics for Efficient Operation

- **SHUTTLE-JOG™ TUNING ENHANCEMENT** The SHUTTLE-JOG™ tuning ring provides rapid frequency change for quick sweeping of a band. Just lean the rig slightly to the left or right to begin manual scanning to lower or high frequencies, respectively. The separate Sub-VFO tuning knob may be used as a Clarifier ( R.I.T. ) control, for initial setup of the uplink/ downlink relationship during satellite operation.



- **HIGH-CONTRAST MULTI-FUNCTION DISPLAY** The large (7.9" x .79") blue LCD provides high resolution and contrast for easy viewing over a wide range of angles and light levels. Dozens of status indicators keep you informed of every aspect of your FT-847's operational characteristics.



- **OPTIONAL VOICE FREQUENCY ANNOUNCEMENT MODULE (FVS-1A)** For operators with impaired vision, the FT-847 includes provision for the optional FVS-1A Voice Synthesizer, which gives you an audible announcement of the current operating frequency (with resolution to the nearest 100 Hz step).

## Popular Memory and Scanning Features

The FT-847 provides 78 regular memories, plus upper/lower band scanning limit memories, a CALL channel, and a HOME channel on each band. A two-channel Quick Memory Bank (QMB) allows instant recall of urgently-needed frequencies, and twelve special Satellite VFO memories with 8-character Alpha-Numeric labels allow you to note the satellite name or transponder mode (e.g. AO10B ). Versatile scanning capabilities of the FT-847 include band scanning, memory channel scanning, Priority Channel scanning, and SMART SEARCH™, whereby the transceiver will sweep the band, automatically loading a special memory bank with up to 20 frequencies where activity is encountered.



## SPECIFICATIONS

### General

Frequency Range : Receive 100 kHz ~ 30 MHz  
 36 ~ 76 MHz  
 108 ~ 174 MHz  
 420 ~ 512 MHz

Transmit 160 ~ 10 Meters  
 2 Meters  
 70 Centimeters (Amateur bands only)  
 5.1675 MHz (USA only)

Emission Modes : USB, LSB, CW, AM, FM  
 F1 (9600 bps Packet), F2 (1200 bps Packet), AFSK

Synthesizer Steps (Min.) : 0.1 Hz (CW/SSB)  
 10 Hz (AM/FM)

Antenna Impedance : 50Ω, Unbalanced

Operating Temp. Range: 14 F ~ 122° F (-10° C ~ +50° C)

Frequency Stability : Better than ± 2 ppm (0° C ~ +40° C) SSB/CW/AM/AFSK  
 Better than ± 5 ppm (10° C ~ +50° C) SSB/CW/AM/AFSK  
 Better than ± 5 ppm (< ± 1 kHz) FM

Power Requirements : DC 13.8 V ± 10 % Negative Ground

Current Consumption : Receive (Squelched) : 1.5 A  
 Receive (Max. Audio) : 2.0 A  
 Transmit : 2.2 A (@ 100 W RF output)

Case Size (WHD) : Rugged Design with Cooling Fan  
 10.24" x 3.39" x 10.63" (260 x 86 x 270 mm)

Weight (approx.) : 14.4 lbs. (7 kg)

### Transmitter

Power Output : 160 ~ 6 m : 100 Watts (25 Watts AM carrier)  
 2 m/70 cm : 50 Watts (12.5 Watts AM carrier),

Modulation Types : SSB: Balanced Modulation  
 FM: Variable Reactance  
 AM: Early Stage (Low-Level)

FM Maximum Deviation : ± 5 kHz (± 2.5 kHz on FM-N)

Spurious Radiation : Harmonics : At least 40 dB down (1.8 ~ 29.7 MHz)  
 At least 60 dB down (50/144/430 MHz)  
 Non-harmonic : At least 50 dB down (1.8 ~ 29.7 MHz)  
 At least 60 dB down (50/144/430 MHz)

Carrier Suppression : At least 40 dB

Opp. Sideband Suppression: At least 40 dB

3rd-Order IMD: At least 31 dB down (14 MHz, 100 W PEP output)  
 Slightly higher on 430 MHz

SSB Frequency Response : 400 Hz ~ 2600 Hz (-6 dB)

Max. Occupied Bandwidth : SSB : Less than 3 kHz  
 CW : Less than 0.5 kHz  
 FM : Less than 16 kHz

Microphone Impedance: 200Ω ~ 10 kΩ (Supplied microphone : 600Ω)

### Receiver

| Sensitivity :     | SSB/CW   | AM-N  | FM      |
|-------------------|----------|-------|---------|
| 500 kHz ~ 1.8 MHz | -        | 20 μV | -       |
| 1.8 ~ 28 MHz      | 0.25 μV  | 2 μV  | -       |
| 28 ~ 30 MHz       | 0.25 μV  | 2 μV  | 0.5 μV  |
| 50 ~ 54 MHz       | 0.20 μV  | 1 μV  | 0.25 μV |
| 144/430 MHz       | 0.125 μV | -     | 0.2 μV  |

(Above specifications are worst-case, SSB/CW/AM-N figures are for 10 dB S/N, 12 dB SINAD, on FM)

| Squelch Sensitivity : | SSB/CW/AM | FM      |
|-----------------------|-----------|---------|
| 500 kHz ~ 1.8 MHz     | 20 μV     | -       |
| 1.8 ~ 28 MHz          | 2 μV      | -       |
| 28 ~ 30 MHz           | 2 μV      | 0.25 μV |
| 50 ~ 54 MHz           | 1 μV      | 0.20 μV |
| 144/430 MHz           | 0.5 μV    | 0.16 μV |

Image Rejection : better than 60 dB

IF Rejection : better than 60 dB

Selectivity (-6/-60 dB) : SSB/CW : 2.2 kHz/4.5 kHz  
 CW-N : 0.5 kHz/2.0 kHz (Optional YF-116C installed)  
 AM : 9 kHz/20 kHz  
 AM-N : 2.2 kHz/4.5 kHz  
 FM : 15 kHz/30 kHz  
 FM-N : 9 kHz/20 kHz

Audio Output: At least 1.5 W into 8Ω @ 10 % THD

Audio Output Impedance: 4Ω ~ 16 Ω

Specifications are subject to change, in the interest of technical improvement, without notice or obligation.

## OPTIONAL ACCESSORIES

|   |   |  |  |   |  |  |   |
|---|---|--|--|---|--|--|---|
| <br><b>MD-200A8X</b><br>Ultra-High-Fidelity Desktop Microphone  | <br><b>MD-100A8X</b><br>Desktop Microphone       | <br><b>MH-31B8</b><br>Hand Microphone<br><b>MH-36D8</b><br>DTMF Hand Microphone | <br><b>YH-77STA</b><br>Lightweight Stereo Headphone | <br><b>FVS-1A</b><br>Voice Synthesizer Unit  | <br><b>YF-115C</b><br>455 Hz Collins® Mechanical CW Filter   | <br><b>YF-115S-02</b><br>2.5 kHz Collins® Mechanical SSB Filter | <br><b>MMB-66</b><br>Mobile Mounting Bracket |
| <br><b>FP-1023</b><br>Compact Switching Power Supply (USA only) | <br><b>FP-1030A</b><br>Base Station Power Supply | <br><b>G-5500</b><br>Azimuth/Elevation Rotator System                           | <br><b>G-550</b><br>Elevation Rotator               | <br><b>FC-20</b><br>Automatic Antenna Tuner | <br><b>SPECIFICATIONS</b><br>Frequency Range: 7/14/21/28/50/144/430 MHz Amateur Bands<br>Height (Approx.): 1.4-1.6 meters (4.59-5.24 feet)<br>Weight (Approx.): 900 g (1.98 lbs.)<br>Input Impedance: 50Ω<br>Maximum Input Power: 120 W (A3J)<br>Matched SWR: (less than 2.0 : 1 with proper counterpoise)<br><b>ATAS-120</b><br>Motor Drive Auto-Tuning Antenna System<br><b>ATBK-100</b><br>Antenna Base Kit for ATAS-120 |  |   |

About this brochure: we have made this brochure as comprehensive and factual as possible. We reserve the right, however, to make changes at any time in equipment, optional accessories, specifications, model numbers, and availability. Some accessories shown herein may not be available in some countries. Some information may have been updated since the time of printing; please check with your Authorized Yaesu Dealer for complete details.

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