

DELTA

the notable change
in hf transceivers



all new and all **9** hf bands

DELTA

The transceiver for changing times. With the power, the size, the styling, the coverage you've wanted, and at the right price.



DELTA — the symbol of change—the name of a great new TEN-TEC transceiver. A change in features, in performance, styling, size—and in value. Study it—you will find the DELTA change is what you want in your shack.

STYLED FOR TODAY'S OPERATING. Functional human engineering with controls logically grouped in clusters. Neat, smaller size to go anywhere, desk or mobile (just 4¾" h x 11⅝" w x 15" d). Easy-on-the-eyes warm dark front panel. Convenient "clamshell" aluminum case with textured finish has lighter weight, great strength, and thorough shielding. Built-in front-elevating bail.

ALL SOLID-STATE. From the leaders in the field. For long life, less heat, and stable, proven performance.

ALL 9 HF BANDS. First new rig since WARC. 160 meters through 10, including the new 10, 18 and 24.5 MHz bands! With everything incorporated except the plug-in crystals for 18 and 24.5 MHz segments (available when bands open to amateurs).

BROADBAND DESIGN. No receiver front end or final amplifier adjustments. From the pioneer in broad-band design, TEN-TEC.

DIGITAL READOUT. Six 0.3" red LED numerals. Easy to see and readable to 100 Hz.

OPTIMIZED RECEIVER SENSITIVITY for an ideal balance between sensitivity and dynamic range. Typical figure is 0.3 microvolts for 10 dB S+N/N.

DYNAMIC RANGE THAT WORKS FOR YOU. 85 dB or better to reduce overload possibility. And a built-in, switchable 20 dB attenuator for extreme situations.

8-POLE MONOLITHIC SSB FILTER. 2.4 kHz bandwidth with 2.5 shape factor at 6/60 dB points.

OPTIONAL 250 Hz or 500 Hz CW FILTERS. Six-pole crystal ladder types cascaded with the standard 8-pole filter to give the CW passband window steep skirts to cut out strong adjacent signals.

FOUR-POSITION SELECTIVITY SWITCH. In SSB use, Position 1 selects the standard 2.4 kHz filter. Position 2 adds one section of the 4 stage active audio filter. With one of the optional CW filters installed, Position 3 selects the CW filter in cascade with the 2.4 kHz standard filter for 14 poles of filtering. Position 4 cascades the 2.4 kHz and the optional CW filter with 4 stages of audio filtering.

BUILT-IN NOTCH FILTER. Variable from 200 Hz to 3.5 kHz to notch out interfering carriers or CW signals to a depth of 50 dB or more.

OFFSET TUNING. Moves the receiver frequency up to ±1 kHz to reach that DX or to fine tune.

OPTIONAL NOISE BLANKER. For clean operation in that noisy location, fixed or mobile.

"HANG" AGC. For smoother, cleaner, receiver operation.

"S"/SWR METER. For monitoring received

signal strength and antenna system during transmissions. Electronically switched.

EXTRA RECEIVER ANTENNA JACK. For use with separate antennas, full break-in linears, or transverters.

FRONT PANEL HEADPHONE & MICROPHONE JACKS. For convenience.

WWV RECEPTION at 10 MHz.

200 WATTS INPUT on all bands including 10 meters (with 50 ohm load). High SWR does not automatically limit output to a few watts. With a proven, conservatively rated final amplifier whose solid-state output devices are fully warranted the first year and pro-rata warranted for an additional five years.

100% DUTY CYCLE. For all-mode operation with confidence, without failure. 20 minute maximum key down time.

INSTANT BAND CHANGE. No tune-up needed. Just fast, enjoyable operation.

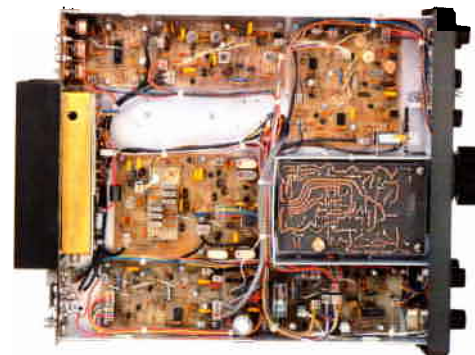
QSK — INSTANT BREAK-IN. Full and fast. To make CW operation a real conversation.

BUILT-IN VOX AND PTT. Smooth VOX action and PTT control built right into DELTA to make your operating easier. VOX is not a part of keying circuitry so it need not be readjusted when changing modes.

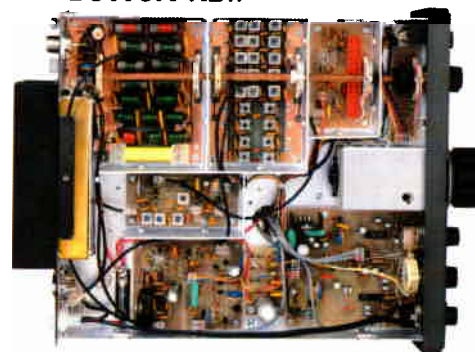
ADJUSTABLE THRESHOLD ALC AND DRIVE. Adjust output from low levels to full output and still retain ALC control. ALC gives you maximum power without careful readjustment of drive and without overdriving into



TOP VIEW



BOTTOM VIEW



REAR PANEL



distortion. LED indicator for easy adjustment.

ADJUSTABLE SIDETONE. Both pitch and volume are adjustable so you can listen to CW the way you like it, without fatigue.

SUPER AUDIO. Shaped audio gives smooth, clean, natural reproduction with low harmonic and intermodulation distortion (HD is less than 2%). Both SSB and CW sound better—a trademark of TEN-TEC transceivers.

HIGH STABILITY. The DELTA permeability tuned VFO is like a rock—less than 15 Hz frequency change per F° change over 40° range after 30 min. warm-up and less than 10 Hz change for 20 volt AC line change using a TEN-TEC power supply. You can count on DELTA to stay put.

VERNIER TUNING. Typically 18 kHz per revolution.

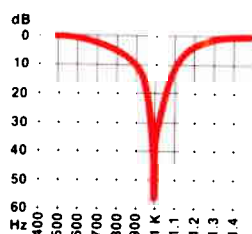
13 VDC CIRCUITRY. Operates directly from vehicle battery for easy mobile use in cars, trucks, boats, campers, aircraft, etc. For 117/230 VAC use, external supply is required.

VERSATILE REAR PANEL CONNECTIONS. Two connectors for 12 VDC, plus external VFO, separate receiver antenna, T/R relay for linear operation, power and antenna input, keyer, and ground strap.

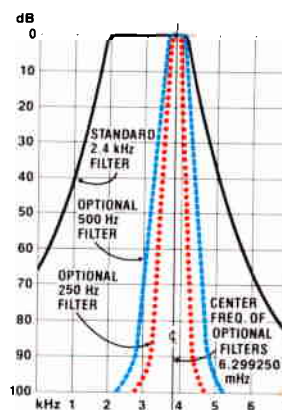
MODULAR/MASS-TERMINATION CONSTRUCTION TECHNIQUES. That means individual circuit boards are easily removed, should servicing ever become necessary. And individual boards are available if needed.

FULL ACCESSORY LINE. All the options you could want. Model 289 Noise Blanker, Model 282 250 Hz CW Filter, Model 285 500 Hz CW Filter, Model 283 Remote VFO, Model 287 Mobile Mount, Model 280 18A Power Supply with over-current and over-voltage protection. Other matching accessories include Model 645 Dual Paddle Keyer, Model 670 Single Paddle Keyer, Model 247 Antenna Tuner, Model 234/214 Speech Processor and Microphone, Models 215P and 215PC Ceramic Microphones.

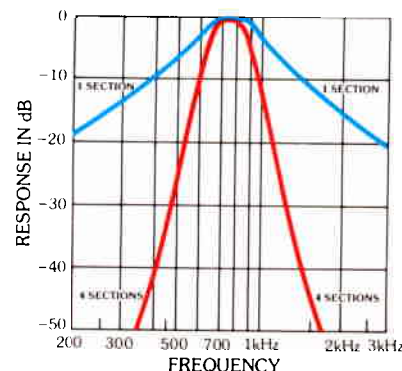
EXPERIENCE THE NOTABLE CHANGE IN HF PERFORMANCE, EXPERIENCE DELTA. SEE YOUR TEN-TEC DEALER



NOTCH FILTER PERFORMANCE
ADJUSTED TO 1 kHz POINT.



DELTA I-F RESPONSES WITH
STANDARD AND OPTIONAL FILTERS.



CW AUDIO FILTER RESPONSE

Accessories

SPECIFICATIONS — MODEL 580 DELTA

GENERAL

FREQUENCY BANDS—1.8-2.3, 3.5-4.0, 7.0-7.5, 10.0-10.5, 14.0-14.5, 18.0-18.5, 21.0-21.5, 24.5-25.0, 28.0-28.5, 28.5-29.0, 29.0-29.5, 29.5-30.0 MHz (18.0 and 24.5 MHz bands require optional crystals) (VFO provides approximately 40 kHz over run on each band edge)

PERMEABILITY TUNED VFO.

VERNIER TUNING—18 kHz per revolution, typical.

READOUT—Six digit, 0.3" LED numerals. Least significant digit indicates 100 Hz.

STABILITY—VFO frequency change less than 15 Hz per °F, averaged over a 40° change from 70° to 110°, after 30 minute warmup. Less than 10 Hz change from 105 to 125 VAC line voltage when using TEN-TEC power supply.

PROVISIONS FOR REMOTE VFO—Model 283.

POWER SWITCH—remotely controls power supply.

OPERATING MODES—USB, LSB, CW.

SEMICONDUCTORS—69 Transistors, 19 Integrated Circuits, 79 Diodes, 6 Pin Diodes, 1 Large Scale Integrated Circuit, 6 LED readouts, red.

POWER REQUIRED—12-14 VDC, 850 mA receive, 18 A maximum transmit.

SIZE—HWD 4 $\frac{3}{4}$ " x 11 $\frac{1}{2}$ " x 15"

WEIGHT—12 $\frac{1}{2}$ lb.

RECEIVER

WIDEBAND NO-TUNE RF AMPLIFIER.

SENSITIVITY—0.3 μ V for 10 dB S+N/N, typical.

RF ATTENUATOR—20 dB resistive.

DYNAMIC RANGE—85 dB minimum.

METER—automatically switches to "S" meter when receiving.

WWW—reception at 10 MHz.

SELECTIVITY—8 pole monolithic ssb filter. 2.4 kHz bandwidth with 2.5 shape factor at 6/60 dB points. Four position selectivity switch selects standard ssb filter, standard ssb filter with one section of audio filter, optional 250 Hz or 500 Hz cw filter, or cw filter with four additional audio active filters.

AUDIO FILTER SELECTIVITY—Center frequency 750 Hz. One section has 450 Hz bandwidth, down 10 dB at 400 Hz and 1500 Hz. Four sections have 150 Hz bandwidth, down 40 dB at 400 Hz and 1500 Hz.

NOTCH FILTER—Greater than 50 dB notch, tunable between 200 Hz and 3.5 kHz.

OFFSET TUNING—Receiver, $\pm$ 1 kHz, typical.

Built-in 8 ohm speaker.

Less than 2% audio harmonic distortion.

Optional noise blanker, Model 289.

TRANSMITTER

MAXIMUM INPUT POWER—200 watts, ssb and cw. 100% duty cycle for up to 20 minutes, all bands.

INSTANT BAND CHANGE—No tune-up required.

INSTANT BREAK-IN.

8 pole monolithic ssb filter.

Automatic Level Control with LED indicator. Adjustable threshold.

Automatic cw offset of 750 Hz.

Meter indicates SWR when transmitting.

Built-in VOX or PTT.

High impedance microphone input.

Cw sidetone fed into audio amplifier when in cw mode. Sidetone adjustable for tone and volume, independent of af control.

Front panel MIC and PHONES jacks.

RF OUTPUT IMPEDANCE—50 ohms, nominal.

CARRIER SUPPRESSION—50 dB, minimum.

UNWANTED SIDEBAND SUPPRESSION—50 dB, minimum at 1 kHz tone.

SPURIOUS OUTPUT—Less than -45 dB.

MODEL 283 Remote VFO. An exact duplicate of the DELTA VFO, in a matching enclosure, with 6 modes of dual frequency operation. Ten LED indicators behind the analog dial provide expanding red bar or single red dot patterns (switch selectable) which move along the dial in accordance with tuning knob movement for graphic display of frequency position and easier readability. Each LED indicates 50 kHz segment of the 500 kHz range. Four LEDs indicate the six operational modes: DELTA transmit and

receive, REMOTE transmit and receive, DELTA transmit-REMOTE receive, REMOTE transmit-DELTA receive, DELTA transmit-both receive, REMOTE transmit-both receive. Four crystal positions also provided (out-of-band frequencies, with some limitations, are possible). Includes cables and bail, less crystals. Power is obtained from the DELTA system. **SIZE:** HWD 4 $\frac{3}{4}$ " x 7 $\frac{1}{4}$ " x 9" WT.: 3 lbs.

MODEL 280 Dual Primary Power Supply. Ideal for powering DELTA or OMNI transceivers on either 115 or 230 VAC, 50-60 Hz. Easy to change for either primary voltage. Regulated output, over-voltage and over-current protected, and can be switched from transceiver or power supply. Styled to match DELTA and OMNI colors.

Specifications: INPUT: 105-125 VAC, 50-60 Hz or 210-250 VAC, 50-60 Hz. OUTPUT: 13.5 VDC $\pm$ 0.5 VDC. REGULATION: Better than 1% no load to full load at 117 VAC. OUTPUT CURRENT: 18 amperes, full load, 20 amperes, maximum. RIPPLE: Less than 60 mV peak-to-peak at 18A at 117 VAC. CIRCUIT BREAKER: Electronic latching. Factory set at 20A. OVER-VOLTAGE PROTECTION: Trips above 16V output. PANEL METER: 0-25 amperes. CONNECTORS: One 4-pin AMP MATE-N-LOC, two phono jacks for low current. **SIZE:** HWD, 5 $\frac{1}{2}$ " x 7" x 12". WT. 15 lbs.

MODELS 215P and 215PC Microphones. Ceramic types for hand held or desk top operation. Include cable, 3-circuit plug, PTT switch, and separate desk stand. Offer optimum articulation, free of power peaks, impervious to temperature and humidity changes. High impedance; 200-4000 Hz response; -50 dB level; die cast zinc and Cylolac[®]; 8 $\frac{1}{2}$ "h; 4' cable, single conductor shielded, two conductors unshielded. 3-circuit phone plug included. 215P has 4' regular cable; 215PC has 4' coiled cable.

MODELS 214/234 Microphone & Speech Processor. Extends operating range of ssb transmitters under adverse and low propagation conditions. Converts audio signal into ssb signal, clips and processes it through 4-pole monolithic filter for greater average envelope power and converts signal back into audio. Adjustable levels of processing and output plus disable switch and passband adjustment. Powered through the Delta or by calculator type plug-in AC adapter which supplies 12 VDC @ 75 mA. Model 214 Electret Microphone is designed specifically to be used with Model 234 Processor.

MODEL 645 Dual Paddle Electronic Keyer. The 645 keyer uses transistor switching and is powered by the transceiver. Adjustable magnetic paddle return. Paddle force 5-50 gms. Speed 6-50 wpm. Weighting ratio 50-150% of classical dit length. Self completing characters. Dit and dah memories with defeat switches. Torque drive paddles with 4 ball bearing pivots.

MODEL 670 Single Paddle Electronic Keyer. Uses transistor switching and is powered through the Delta. Speed 6-50 wpm. Self-completing characters. Preset weighting for optimum articulation in the most used speed range (dit length increased approx. 10% at 20 wpm).

MODEL 227 Antenna Tuner. Matches 50 ohm unbalanced output of Delta to variety of balanced or unbalanced antenna impedances. 46-tap inductor allows vernier adjustment. 200 watts intermittent, 100 watts continuous.

MODEL 282 250 Hz 6-Pole Crystal Ladder CW Filter

MODEL 285 500 Hz 6-Pole Crystal Ladder CW Filter

MODEL 289 Noise Blanker.



**MODEL 283
Remote VFO**



**MODEL 280
Dual Primary Power Supply**



**MODELS 215P and 215PC
Microphones**



**MODELS
214/234
Microphone
& Speech
Processor**



**MODEL 645
Dual Paddle
Electronic
Keyer**



**MODEL 670
Single Paddle
Electronic Keyer**



MODEL 227 Antenna Tuner