

## **RX-340 HF DSP Receiver**



**RX-340 HF DSP RECEIVER**  
\$ 4250.00

The Ten-Tec RX-340 is a multi-mode, general coverage synthesized receiver utilizing extensive Digital Signal Processing. DSP brings the performance and repeatability of expensive military grade communications receivers into the price range of top end commercial receivers for shortwave listeners. Tunable from 5 kHz to 30 MHz, it provides tuning steps and display resolution of 1 Hz. All three displays are blue/green vacuum fluorescent and provide unparalleled contrast and readability.

RX-340 is Digital Radio Mondiale ready! See details below.

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The performance level of receivers in this class is possible only through extensive use of Digital Signal Processing.

These designs utilize fewer analog circuits than traditional receivers.

Powerful, specialized DSP microprocessors replace many of the discrete circuits with intensive software containing over 60,000 lines of code.

High dynamic range analog stages provide 1st, 2nd and 3rd I.F.s (and 80 dB of AGC) where signals then pass through analog to digital converters.

Everything else is accomplished in DSP including all mode detection, I.F. filters, AGC (remaining 40 dB), adjustable BFO, passband tuning and noise blanker.

An astounding 57 I.F. bandwidths from 100 Hz to 16 kHz are included.

All filters have shape factor of 1.5:1 or better (6 to 60 dB). USB, LSB, ISB, CW, AM, Synchronous AM and FM are built-in. Four AGC modes are provided.

Conventional Fast, Medium and Slow modes are familiar but the "Programmable" mode is groundbreaking.

User may build their own personal AGC characteristic by selecting attack, hang and decay rates.

Manual control from front panel is also adjustable over 120 dB range.

A tunable notch filter rejects unwanted signals in the passband.

Receiver front end incorporates built-in preselector with eight 1/2 octave bandpass filters.

Switchable 10 dB preamp and 15 dB attenuator are also provided.

Signal strength meter is calibrated in both s-units and dBm.

Ten-Tec has been supplier of commercial/government grade receivers for some years now.

Our RX-331 was previously available only in a "black box" version for remote control.

That model is used in government/military applications worldwide where multiple units run 24 hours/ 7 days a week without interruption.

RX-340 uses these field proven circuits (the PC boards are identical) brought together in a new cabinet with a comprehensive front panel.

This provides conventional operation from the panel while retaining all of the remote control aspects of its predecessor.

A built-in multi-drop RS-232 interface permits remote operation at baud rates from 75 to 38,400.

Accessed from rear panel DB-25 connector, the interface can be configured for single or multiple receiver applications.

The complete command language is published in the manual so enterprising users can write their own remote control software.

RX-340 also includes Built-in Test or "BITE".

This self-test capability will identify virtually all faults to the board level.

Memory and scan features fall into four categories: a scratchpad memory, 100 memory channels, memory scan and F1 to F2 scan.

Each memory channel retains the frequency along with mode, I.F. bandwidth and BFO setting.

Dwell time is programmable, Channel lockouts are provided and a pause feature lets you interrupt scan momentarily. Squelch works in all modes and adjusts over a 150 dB range.

RX-340 has built-in TCVCXO to provide +/- 1 ppm frequency stability across the entire operating range of 0 to 50 degrees C. Audio is delivered to built-in speaker on the top panel,

external speaker jack on rear and front panel headphone jack.  
Separate volume controls provided for speaker and headphone.  
Fixed level 600 ohm audio is also provided on rear panel.  
Front panel is a Lexan graphics overlay designed to last a lifetime.  
Chassis is aluminum with alodine plating on all parts to protect finish in less than ideal environments.  
Measuring 5.25"x19"x12.5"(HWD), RX-340 can be mounted in a standard 19" opening rack and weighs 12.5 lbs.  
One year warranty.  
Made in U.S.A.

RX-340 was recently endorsed by noted receiver design engineer, Dr. Ulrich L. Rohde, KA2WEU:

"In testing the RX-340, I find that this is the only affordable, totally DSP-based receiver where the digital AGC is as good, if not better than analog AGC systems. The intercept point for reasonable spacing is very impressive, better than +35 dBm in all cases."

What about DRM (Digital Radio Mondiale) decoding?

RX-340 is ready to use for DRM - all you need is the decoding software available from DRM. Instructions for using the RX-340 to decode DRM can be read by [clicking here](#).

WorldStation, a sophisticated software package to operate the RX-340 under computer control, is now available from DXTra, Inc. [Click here to access the DXTra website at www.dxtra.com](#) -  
DXTra, Inc. is a Ten-Tec authorized value-added reseller of Ten-Tec receiver products.

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## RX-340 SPECIFICATIONS

**FREQUENCY COVERAGE:** 50kHz - 30 MHz at typical sensitivity.  
Tunable down to 0 MHz with degraded performance (see Sensitivity tables) **MODE:** USB, LSB, ISB, CW, AM, Synchronous AM, FM; all standard.

**TUNING RESOLUTION:** 1 Hz steps.

**FREQUENCY STABILITY:** using built-in TCVCXO, provides +/-1 PPM over entire operating range 0 - 50 degrees C.

**ACCURACY:** All internal oscillators are locked to either internal or external frequency standard.

**EXTERNAL FREQUENCY REFERENCE:** 1, 2, 5, or 10 MHz ( +/- 1 PPM, 200 mv p-p into high impedance load). Receiver automatically switches to this reference upon application, at power up or after any serial link activity.

**SPURIOUS RESPONSES:** All spurious less than -119 dBm equivalent input - preamp on.

**IMAGE REJECTION:** 90 dB typical, 80 dB minimum

**BFO:** Tunable in CW mode only, +/- 8 kHz. Tuning in 10 Hz steps. Fixed frequency in SSB/ISB, disabled in AM and FM.

**SYNTHESIZER LOCK TIME:** 10 msec typical

**ANTENNA INPUT :** 50 ohm, unbalanced, BNC connector. 2.5:1 VSWR max @ receiver's tuned frequency.

**SELECTIVITY :** 57 bandwidths selectable from .1 kHz - 16.0 kHz. Shape factor 1.5:1 or better. (6 to 60 dB) Bandwidth is fixed at 3.2 kHz in ISB mode, and at 4 kHz - 16 kHz in SAM mode. Minimum bandwidth is 600 Hz in FM mode.

**GROUP DELAY :** no more than .1 ms variation over passband of 300 Hz to 3050 Hz.

**ULTIMATE REJECTION:** 70 dB minimum regardless of filter selected. L.O.

**PHASE NOISE:** -120 dBc/Hz @ 20 kHz offset typical, -110 dBc/Hz maximum.

**IF REJECTION:** 90 dB typical, 80 dB minimum.

**MEMORIES:** 100 memory store and recall.

**OPERATING TEMPERATURE RANGE :** 0 - 50 degrees C @ full specification. -10 to 60 degrees C with degraded performance.

SENSITIVITY:

Mode	BW	SINAD	(PREAMP OFF)		(PREAMP ON)	
			Typical dBm/uV	Min dBm/uV	Typical dBm/uV	Min dBm/uV
AM (50% mod @400 Hz)	6.0 kHz	10 dB	-103/1.6	-101/2.0	-112/.56	-108/.9
FM (6 kHz dev @ 1 kHz mod)	16.0 kHz	16 dB	-102/1.8	-100/2.2	-108/.9	-104/1.4
USB/LSB/ISB	3.2 kHz	10 dB	-112/.6	-107/.7	-119/.25	-115/.4
CW	.3 kHz	16 dB	-116/.35	-114/.45	-124/.14	-120/.22

SENSITIVITY: LOW FREQUENCY RANGE (PREAMP OFF)

Mode	Frequency	Typical dBm
CW @ 300 Hz BW SINAD - 16 dB	>500 kHz	-116 dBm/.35 uV
	100 kHz	-115 dBm/.4 uV
	50 kHz	-114 dBm/.45 uV
	20 kHz	-107 dBm/1 uV
	15 kHz	-104 dBm/1.4 uV
	10 kHz	-94 dBm/4.5 uV
	5 kHz	-82 dBm/18 uV

DYNAMIC RANGE:

Mode	Noise Figure (dB) Typ Min	3rd Order Intercept (dBm) Typ Min
10 dB PREAMP ON	10 14	20 15
PREAMP OFF	17 19	30 25
15 dB ATTEN	32 34	45 40

2nd ORDER INTERCEPT: 75 dBm typical, 60 minimum.

WIDEBAND OUTPUT, 1ST MIXER: 45.455 MHz center frequency

IF OUTPUT, POST DSP: 455 kHz center frequency, bandwidth determined by filter selection

SIGNAL MONITOR OUTPUT, DELAYED AGC: 455 kHz, 16 kHz bandwidth, AGC delayed 40 dB

SIGNAL MONITOR OUTPUT, 2ND MIXER, NO AGC: 455 kHz, 16 kHz bandwidth

AGC: Fast, medium, Slow, Programmable. Manual gain setting is provided in all four modes, adjustable over 120 dB range. DUMP feature provided in all modes.

MODE	ATTACK (dB/ms)	HANG (sec)	DECAY (dB/sec.)
FAST	0.8	0	1200
MEDIUM	0.8	0	100
SLOW	0.8	0	25
PROGRAMMABLE	0.01-1.0	0.01-99.9	0.01-99.9

AUDIO LINE OUTPUT: 0 dBm (+/- 3 dBm) Two 600 ohm outputs (one for each sideband in ISB mode ) to DB-15 connector, ungrounded center tap.

In all other modes, signal is mono.

Terminals may be grounded or shorted together without damage.

Two additional mono outputs are provided, one AC coupled, one DC coupled.

HEADPHONE OUTPUT: 1/4" stereo phone jack.

Stereo in ISB mode, switchable to LSB, USB or both.

Mono in all other modes. 10 mw maximum into 600 ohms.

Front panel volume control.

DIGITAL DATA OUTPUT: Provides post DSP IF and audio information in both serial and parallel data streams.

POWER REQUIREMENTS: 90-264 VAC, 48-440 Hz @ 30 watts nominal. Removable six foot line cord included.

DIMENSIONS: 5.25"H x 19"W (3U). Chassis depth 12.5" ( including front panel knobs, handles and rear panel connectors ).

WEIGHT: 12.5 lbs.

ADDITIONAL FEATURES:

Squelch: all mode

Passband Tuning: +/- 2 kHz in USB, LSB and CW

Mute: for use in transmit/receive applications, mutes audio and IF outputs. (revised 3/6/00)