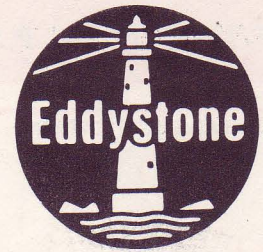


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HF / MF GENERAL PURPOSE RECEIVER

MODEL 1590 (PROVISIONAL)

GENERAL DESCRIPTION

Model 1590 is the designation for an HF/MF communication receiver intended for general purpose applications in the frequency band 150kHz to 30MHz, and is also suitable for low cost frequency measurement and mobile installations.

The receiver provides reception facilities for CW and AM signals, and also has provision for USB and LSB reception of A3A, A3H and A3J transmissions. Operation is from standard AC Mains Supply (100-120V and 200-250V, 40-60Hz) or 12V external supply.

The receiver has a 483mm panel to suit standard racking and is also available complete with cabinet for use in bench mounted installations: it can be equipped with shock-mounts for mobile use.

Added features include such facilities as unambiguous digital readout display of the tuned frequency, LED array indicator for the display of the selected range band, wide frequency range coverage of long, medium and four short-wave bands, an "S" meter for peaking-in on weak reception signals, and BFO and Product Detector for CW and SSB reception. 10 crystal positions are provided for high stability working.

A single conversion circuit is used and FET's and MOSFET's are used exclusively in the front-end stages which comprise of a cascode RF Amplifier and dual-gate MOSFET Mixer. The local oscillator arrangements have provision for disabling the normal free-running 1st. Oscillator to permit crystal control. Up to 10 crystals can be fitted at any one time, these being accessible from the front panel.

Selectivity is adjustable to suit signal mode, with separate USB and LSB filters for SSB reception. A product detector is used for CW and SSB, the associated beat oscillator being switched to serve as a carrier insertion oscillator for SSB reception. IF output is provided at 455kHz for use with ancillaries and separate audio outputs are available for loudspeaker, headset and 600 Ω line.

Crystal Control 10 Channel

Desensitizing Relay

FET/MOSFET Front End Withstands
30V rms

Separate USB and LSB Filters for SSB
reception



GENERAL SPECIFICATION

Frequency Coverage

150kHz to 30MHz in six ranges

Range 1	14	-	30MHz
Range 2	8.5	-	18MHz
Range 3	3.5	-	8.5MHz
Range 4	1.5	-	3.5MHz
Range 5	580	-	1500 kHz
Range 6	150	-	350 kHz

Reception Modes

A1, A2 & A2H telegraphy. A3 Telephony.
A3A, A3H & A3J with upper/lower sideband selection.

Intermediate Frequency

455kHz

Aerial Input

50/75Ω unbalanced on all ranges : BNC connector.

Aerial attenuator and desensitizing relay.

TYPICAL PERFORMANCE *

Sensitivity

AM	3μV for 12dB S/N
CW	1μV for 12dB S/N
SSB	1μV for 12dB S/N

Selectivity

AM	Narrow 4kHz at -6dB ; 12kHz at -40dB Wide 10kHz at -6dB ; 28kHz at -40dB
SSB	- 6dB 300Hz & 2.5kHz -60dB 500Hz & 3.7kHz

Image Rejection

AM 70dB at 2MHz : 25dB at 22MHz

Frequency Stability

(After 15 minutes warm-up with free running Osc:)
1 part in 10⁴/°C, (typically 5 parts in 10⁵/°C) with
free running Osc: Increased to 3 parts in 10⁶/°C
with crystal control.

Radiation : Less than 400pW (typically 20pW)

Blocking

With a wanted signal 60dB above 1μV, an unwanted
carrier 20kHz off-tune must exceed 100dB above 1μV
to affect the output by 3dB.

Cross Modulation

With a wanted carrier 60dB above 1μV, an unwanted
signal 20kHz off-tune must exceed 85dB above 1μV
to produce an output greater than 30dB below standard
output.

Environmental

Operating Temperature	::	0°C - 40°C
Storage Temperature	::	-20°C - +70°C
Relative Humidity	::	95% at +40°C

Power Supply

AC	:	100/120V or 200/250V, 40-60Hz
DC	:	12V negative earthed polarity.

Dimensions and Weight

Rack-mounting style:-

Panel	:	483mm x 133mm
Intrusion into rack	:	330mm
Weight	:	10kg

Cabinet Style:-

Width	:	502mm
Depth	:	330mm
Height	:	164mm (inc. mounting feet)
Weight	:	15kg

Headset : Low/medium impedance

Intermodulation

The level of third-order intermodulation products produced
by two signals of equal strength lying at carrier + 1kHz and
carrier + 1.6kHz will be at least 30dB below the level of
either signal. With a wanted signal 30dB above 1μV pro-
ducing standard output, two unwanted signals adjusted to
produce a third order intermodulation product at the wanted
frequency, must each be of a level 80dB above 1μV to pro-
duce standard output.

IF output (455kHz)

3μV at aerial input produces an IF output of at least
20mV across 75Ω.

IF Breakthrough : AM 70dB at 2MHz.

AGC Performance

Less than 8dB change in output for 80dB increase in
input.

AFC

Efficient control range of AM.

Audio Output

2.5 Watts max. into 40Ω; 1 watt at 1% distortion

10mW into 600Ω with preset level
10mW with headset.

* Not to be interpreted as a test specification.

As we are always seeking to improve our products, the information in this document gives only general indications of product capacity, performance and suitability, none of which shall form part of any contract. The information herein is subject to confirmation at the time of ordering.