

Classic Radio

The EICO 723: A Classic Novice Transmitter

The EICO 723 was a popular Novice transmitter during the 1960s. There was a demand for inexpensive transmitters at that time, when many of us baby boomers obtained our Novice licenses. Back then, Novice operators were limited to 75 W RF power, CW was the only mode approved for HF operation, and there were only crystal-controlled transmitters. Because it met these requirements, the 723 became a successful product for EICO. I made many CW contacts on 40 and 15 meters with the 723 when I was a Novice in 1962 and 1963.

The Electronic Instrument Company (EICO) was formed in 1945 and was originally located in Brooklyn, New York, but later moved to Long Island City. Along with amateur radio equipment, their products included oscilloscopes, tube testers, signal generators, and other test equipment. Many electronics students in the '60s and '70s used EICO oscilloscopes in their labs. EICO also manufactured quality hi-fi audio components. Their amateur radio products included the 60 W EICO 723 CW transmitter and the upgraded EICO 720 transmitter that produced 90 W CW or AM. All of their amateur radio products were available factory-built or in kit form.

Specifications

The 723 used three vacuum tubes, an oscillator, a final amplifier, and a rectifier. It covered five bands — 80, 40, 20, 15, and 10 meters — and used quartz crystals to control its frequency. With the proper crystal, it could transmit on the small slices of the CW spectrum that were allocated to Novice operators (3700 – 3750 kHz, 7150 – 7200 kHz, and 21,100 – 21,250 kHz).

The 723's power output was specified as an optimistic 60 W on CW. It could also provide 50 W of plate-modulated AM using the EICO 730 — a high-level universal modulator driver that was sold separately as a kit for \$49.95 or assembled for \$79.95. There was no built-in variable frequency oscillator (VFO), but the EICO 722 was an accessory VFO model that was available for \$44.95 as a kit and \$59.95 wired.

While most radios at this time had a horizontal form factor, the 723 was smaller and squarer at 8.5 × 6 × 11.25 inches — it didn't take up much room on a small operating desk. Most rigs were black or gray, but the 723's case was



The EICO 723 transmitter. [Photo courtesy of www.radiomuseum.org]

brown with a tan surround. The front control panel was brown with tan knobs and white edging, and the numeric and lettered control settings were also marked in white. The meter was tan with a white faceplate. The entire cabinet had small holes on the top and sides of the case for additional ventilation (a cooling fan wasn't required). It weighed 15 pounds with its iron power supply transformer. In 1961, it cost \$49.95 as a kit (about \$512 today) and \$79.95 factory-assembled (about \$820 today). Its discrete components were mounted on a copper chassis, a signature feature of most EICO amateur radio products.

Power Supply

The 723's power supply required 117 V ac and consumed 140 W. The power supply used a transformer with separate secondary windings for the 6 V tube filaments, the 500 V B+, and a 5 V filament winding for the GZ34 rectifier tube that was a ruggedized version of the 5AR4 rectifier. The B+ rectifier's filter network consisted of a swinging choke with two 40 mF electrolytic capacitors in series after the choke. The octal accessory socket in the rear of the radio was provided with 6.3 V, and there were 117 V ac available at the rear socket to activate an external relay that switched the antenna between the separate transmitter and receiver.

**your choice of
2 GREAT *EICO*[®]
TRANSMITTERS...**

**90-WATT
CW TRANSMITTER* #720**
Kit \$79.95 Wired \$119.95
*U.S. Pat. #D-184,776
"Top quality"—ELECTRONIC
KITS GUIDE
Ideal for veteran or novice.
"Clean" 90W CW, 85W AM-
phone with EXT plate modu-
lation. 80 through 10 meters.

**60-WATT
CW TRANSMITTER #723**
Kit \$49.95 Wired \$79.95
"Compact, well-planned lay-
out. Clean-sounding, abso-
lutely hum-free carrier;
stable." — ELECTRONICS
WORLD.
Perfect for novice or ad-
vanced ham needing low-
power standby rig. "Clean"
50W CW, 50W AM-phone with
EXT plate modulation. 80
through 10 meters.

**TRANSISTOR CODE PRACTICE
OSCILLATOR #706**
Complete with battery
Select variable
tone, flashing light,
or both together.
Phone jack for private
use. Efficient speaker;
clean loud signals.
Kit \$8.95 Wired \$12.95

**NEW!
VARIABLE
FREQUENCY
OSCILLATOR
(SELF-POWERED)
#722**
Approaches
crystal stability.
80 through
10 meters.
Kit \$44.95
Wired \$59.95

**CITIZENS BAND
TRANSCIVERS
770 Series**
Superhet, pre-
aligned xmitter
osc; match an-
tennas by variable
"pi" network. Single
& multi-channel models.
From Kit \$79.95 Wired \$109.95

**HIGH-LEVEL
UNIVERSAL
MODULATOR-
DRIVER #730**
Kit \$49.95 Wired \$79.95
Delivers 50W undistorted audio for
phone operation. Can plate-modu-
late transmitters having RF inputs
up to 100W. Unique over-modu-
lation indicator. Cover E-5 \$4.50.

**GRID
DIP
METER
#710**
Kit \$29.95 Wired \$49.95
Includes complete set of coils
for full band coverage. Continu-
ous coverage 400 kc to 250 mc.
500 ua meter.

**PEAK-TO-PEAK
VTVM #232**
& exclusive
*UNI-PROBE[®]
Kit \$29.95
Wired \$49.95

**VACUUM TUBE
VOLTMETER #221**
Kit \$25.95 Wired \$39.95

**DC-SMC
LAB & TV 5"
OSCILLOSCOPE
#460**
Kit \$79.95
Wired \$129.95

5" GENERAL PURPOSE SCOPE #427
Kit \$69.95 Wired \$109.95

**DYNAMIC
CONDUCTANCE
TUBE
& TRANSISTOR
TESTER #666**
Wired \$109.95

TUBE TESTER #625
Kit \$34.95 Wired \$49.95

**RF SIGNAL
GENERATOR
#324**
(150kc-435mc)
Kit \$26.95
Wired \$39.95

**TV-FM SWEEP GENERATOR
& MARKER #368**
Kit \$69.95 Wired \$119.95

EICO, 3300 N. Blvd., L.I.C. 1, N. Y.
☐ Send free Catalog & name of
neighborhood distributor.
☐ Send free "Short Course for
Novice License." ☐ Send
36-page STEREO HI-FI GUIDE;
25c enclosed for postage
& handling.

Name _____ **QST-12**
Address _____
City _____ **Zone** _____ **State** _____
Add 5% in the West.

ELECTRONIC INSTRUMENT CO., INC.
3300 NO. BLVD., L.I.C. 1, N. Y.
Export Dept., Roburn Agencies, Inc.
431 Greenwich St., N. Y. 13, N. Y.

ENGINEERS: Excellent career opportunities in creative electronics design. Write to the Chief Engineer.

This ad appeared in the December 1962 issue of *QST* and in the 1963 edition of *The Radio Amateur's Handbook*.

Oscillator

The 723's oscillator used a 6CL6 pentode vacuum tube as an electron-coupled Colpitts crystal oscillator that produced stable frequency control. At this time, a Novice CW operator transmitted only on the specific frequency of the crystal that was plugged into a socket on the front panel. According to EICO, the oscillator design had a high harmonic output that allowed a single crystal to be used for multiple bands. Operators could use 80-meter crystals for 80-, 40-, and 20-meter operation, and 40-meter crystals could be used on 40, 20, 12, and 10 meters. However, it wasn't as easy as EICO's manual implied, because multiplying a crystal's frequency didn't always put the transmit-

ter in the correct portion of the higher-frequency band.

Final Amplifier

The final amplifier used a rugged 6DQ6-B vacuum tube in a class-C configuration. Along with its use in amateur radio transmitters, 6DQ6s were commonly used as horizontal deflection tubes in black and white televisions. The 6DQ6-B was used as a straight-through RF amplifier on all bands, except for on 10 meters, where it also functioned as a frequency doubler. The 723 manual states that "a variable-tuned, band-switching pi-network tank circuit is used to match the final amplifier to the various loads. . . A variable 900 mmf capacitor is connected across the output of the pi-network for controlling the degree of loading the antenna or other load." There was a slide switch on the rear that could add a 0.001 mF capacitor if more capacitance was required. EICO claimed that this circuit could match output impedances from 50 to 1000 Ω — a very wide range.

Operating the Transmitter

Operating the 723 was a little more complicated than today's modern transceivers. After setting the band switch to the proper band and plugging in a key, an antenna, and a crystal, the operator moved the four-position rotary switch to the **TUNE** position, pressed the key, and adjusted the grid current to no more than 2 mA with the **GRID TUNING** control. The meter was then set to **PLATE**, which read the plate current of the final amplifier. The function switch was then set to **TRANSMIT**. After pressing the key, the operator then repeatedly dipped the **PLATE TUNING** for minimum current, while gradually increasing the **ANTENNA LOADING** until the plate current increased to a maximum of 120 mA, indicating full power.

This process was actually easier than it sounds because the transmitter made a humming noise and vibrated slightly when the final amplifier was not properly matched to the antenna.

In Conclusion

With its simple design, low cost, and ease of operation, the EICO 723 met the needs of many Novice operators in the 1960s, but it appears that EICO abandoned the amateur radio market by 1970. They most likely couldn't compete with the influx of the Japanese transceivers that were coming on the market.