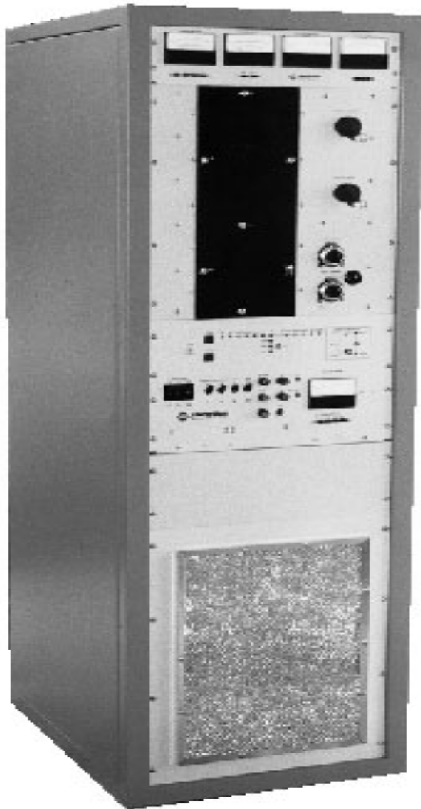


The **ECO** Series

**Economical ~ Single Tube ~ Grounded Grid
Medium Power ~ FM Broadcast Transmitters**

ECO-4 ~ ECO-6 ~ ECO-8 ~ ECO-10 ~ ECO-12



Features:

- ◆ Attractively priced
- ◆ Inexpensive, long life, triode tube in PA
- ◆ Never requires neutralization
- ◆ 80% PA efficiency
- ◆ Independent solid state IPA doubles as Emergency transmitter
- ◆ Simple reliable controller
- ◆ Field proven standard parts,
- ◆ VSWR Foldback and protection
- ◆ Automatic power output control
- ◆ Designed for local and remote control
- ◆ Built-in line surge protection

Application:

The ECO Series represents the final step in the evolution of Grounded Grid FM transmitters. Offering excellent quality and the highest level of reliability, the ECO Series is designed for budget minded broadcasters who need between 3KW and 12 KW of transmitter power to meet their ERP requirements.



ENERGY-ONIX

The Transmitter People

Box 801 • 1306 River Street • Valatie, New York 12184
VOICE: 518.758.1690 / 888.324.6649 • Fax 518-758-1476

[E-MAIL: energy-onix@energy-onix.com](mailto:energy-onix@energy-onix.com)

[WEB SITE: www.energy-onix.com](http://www.energy-onix.com)

1. FULL FINAL STAGE METERING — The ECO series transmitter design allows complete final stage metering for grid current, plate current, plate voltage, forward and reflected power.

2. OUTPUT TUNING & LOADING — These independent controls are the same heavy duty adjustments which Energy-Onix uses in its transmitters up to 50KW.

3. PA INPUT & LOADING CONTROLS — The convenient location of these controls, on the front panel directly under the Output Tuning and Loading Controls, ensures a quick and perfect match of the I PA with the PA Tube.

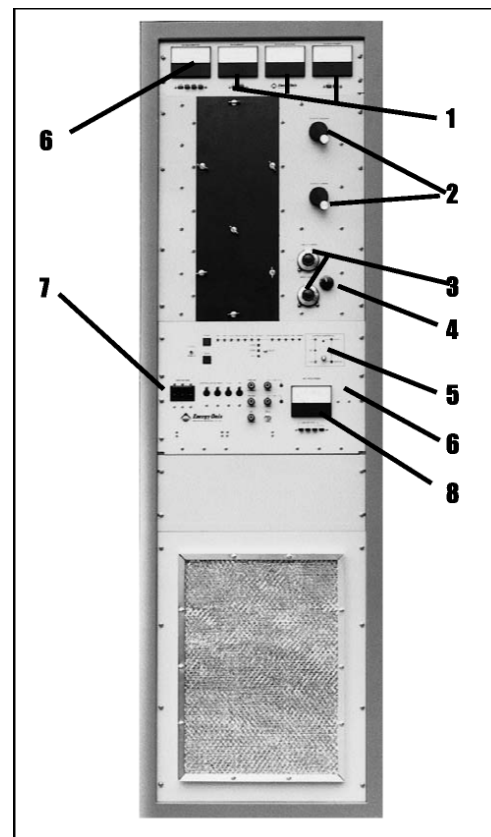
4. FILAMENT ADJUSTMENT KNOB — Maintaining proper filament voltage extends the tube life of the PA. This adjustment is located on the transmitter front panel to allow for ease in adjustment. The triode tube PA normally lasts 15,000 to 20,000 hours.

5. RELIABLE STRAIGHT FORWARD CONTROLLER — The ECO control center is designed for simplicity and reliability. A detailed description is featured on the back page of this literature sheet.

6. INDEPENDENT IPA — (*Not Shown*) Located for easy access behind the hinged "Control Center" panel the ECO solid state IPA is designed for years of trouble free performance. Energy-Onix incorporated the same SSA300M solid state modules used in our low and high power solid state transmitters in this independent IPA system. This broadband unit includes an independent power supply and it can be patched on the air as an emergency backup transmitter. IPA protection circuits include VSWR Foldback and Thermal Protection. A 300 watt IPA is used in the ECO 4, 6 and 8 while the ECO-10 utilizes a 500 watt IPA. IPA parameters are monitored on the Multimeter located on the transmitter's meter panel.

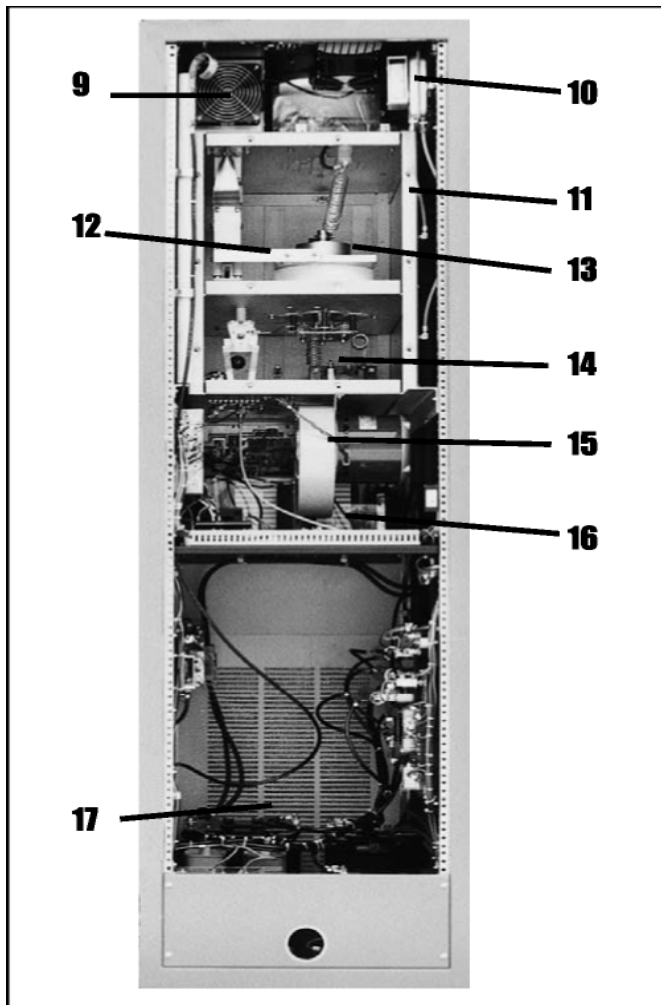
7. CIRCUIT BREAKER PROTECTION — Every major circuit in the ECO series is protected by fast acting circuit breakers. All circuit breakers are conveniently located for easy access on the ECO "Control Center." There are independent breakers for the blower, filament, IPA and PA Power Supplies as well as the main transmitter circuit breaker.

8. AC VOLTAGE METER — Incoming AC voltages are read on this multimeter located on the "Control Center Panel." These Voltages can be read even before the transmitter's main circuit breaker is actuated. This meter also monitors the PA Filament Voltage.



Grounded Grid Power Amplifier

- Energy-Onix ECO series transmitters use only one vacuum tube. This is a zero bias, high-mu triode tube.
- No neutralization is required.
- The power amplifier (PA) uses a true grounded grid configuration in which the control grid of the tube is connected directly to DC ground. This arrangement guarantees stability and freedom from oscillation under all conditions of tuning and loading.
- Our quarter wave design features full rear panel access for easy tube replacement.
- Realistic PA efficiencies of 80% are attainable in all Energy-Onix transmitters due to the overabundance of RF drive and unique loss-less circuitry.
- In addition Tube life in Energy-Onix transmitters historically averages between 3 to 5 years. Several factors aid in maximizing tube life including, adequate transmitter building cooling, proper power regulation, and cleanliness of the transmitter environment.



9.HARMONIC FILTER — Internally mounted the Energy-Onix three section filter ensures harmonic suppression well below FCC required parameters. This internal configuration also allows the ECO series to be placed in transmitter build-ings with floor space and height restrictions.

10.AIR PRESSURE SWITCH — This is a very reliable, modern method of measuring positive air pressure within the PA cavity. This switch interfaces with the air interlock which shuts down the transmitter if air pressure is impeded, thus preventing damage to the tube caused by overheating.

11.POWER AMPLIFIER CAVITY — Our quarter wave design features full accessibility for easy tube replacement. This design also results in maximum bandwidth

12.CAPACITANCE COUPLED BLOCKER — Even with these economy model transmitters Energy-Onix gives you the latest in proven technology. Our patented Capacitance coupled blocker system increases transmitter reliability and eliminates the downtime caused by traditional and now obsolete Teflon plate blockers.

13.ZERO BIAS HIGH-MU TRIODE TUBE — This is the heart of the ENERGY-ONIX design, which was pioneered and introduced to the broadcast community in 1962 by Bernard Wise, our company President. A special section below describes in detail the many features of the triode tube when used in Bernie's grounded grid circuit.

14.FILAMENT TRANSFORMER — To help extend tube life and to afford greater control over the tubes filament voltage, the ECO series features a separate Filament transformer with multiple primary taps. An optional filament voltage regulator is also available.

15.HIGH VOLUME BLOWER — The ECO's conservative design utilizes a Low Noise/High Volume blower which provides a maximum of air flow. This overabundance of cooling air ensures a low operating temperature and extended tube life of the PA tube.

16.REMOTE CONTROL CONNECTIONS — Connections for all remote control metering are easily made on the terminal strip conveniently located on the transmitter's center shelf.

17.POWER SUPPLY — Regulated power supplies are used for the ECO controller and IPA. Peter Dahl Transformers and Chokes are used in the full wave bridged rectified plate supply.

18.LINE SURGE PROTECTION — Energy-Onix offers this protection as a standard feature. Varistors installed on the incoming power line help prevent surges from damaging your transmitter. *(Not shown)*

The ECO Control Center

ECO Controller: — *Simple and Reliable*

Energy-Onix has gone to extremes to reduce the complexity of the ECO controller by eliminating all non essential circuitry which represented sophistication not desired by the budget conscious broadcaster. The result is a modern control system which contains no electronic memory or computer chips. The controller is designed to give transmitter status at a glance. LEDs are used to indicate status of the transmitter operation including Interlocks, VSWR and Automatic Power Control.

Single Button Operation:

One touch of the start switch, in either, local or remote position, turns the transmitter on. Once filament warm-up occurs the transmitter will automatically activate, provided all interlocks are closed.

Circuit Breaker Protection:

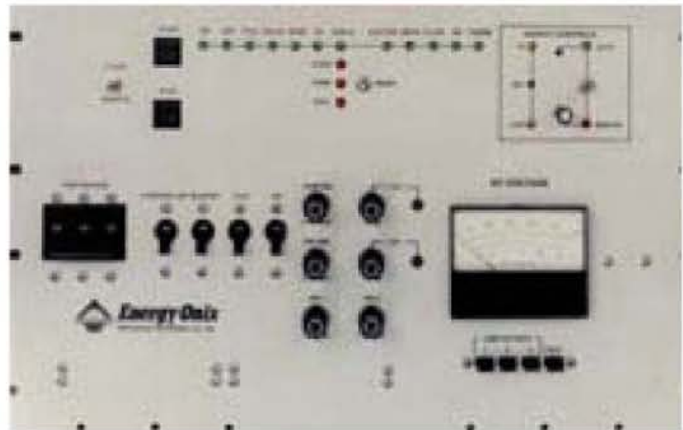
Every major circuit in the ECO series is protected by circuit breakers. Independent circuit breakers for the blower, filament, IPA and PA power supply are conveniently located on the ECO Control Center.

Remote Control:

The ECO series is designed for both local and remote operation. Start, stop, VSWR and overload reset, and metering are available at the remote control point.

SAFETY Interlocks:

Energy-Onix keeps *Safety* as a high priority. All panel and door access to the transmitter is protected by interlocks which shut down the transmitter if access panels are removed while the transmitter is operational. Interlocks are found on the rear door, the PA cavity front cover and the hinged "control center" panel. An interlock is also used for the cover of the ECO 10 and 12 single phase power supply vault. Interlock status is available on the ECO control system.



Exciter:

The ECO series transmitter is supplied with the Energy-Onix SST-30LCDS Exciter. Please see the Exciter literature for specifications and features.

Technical Specifications:

Model	Power Range	Power Consumption	Weight
ECO-4	1KW - 4KW	6,500 watts @ 4KW	950 lb.
ECO-6	1KW - 6 KW	9,595 watts @ 6KW	1,050 lb.
ECO-8	1KW - 8 KW	12,300 watts @ 8KW	1,150 lb.
ECO-10	1KW - 11KW	14,800 watts @ 10KW	1,350 lb.
ECO-12	1KW - 12KW	16,500 watts @ 12KW	1,500 lb.

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Frequency Range:

86 - 108 MHz (50-1 50 MHz optional)

Modulation Capability:

+ 100 KHz RF Harmonics:

At least 83db below carrier

AM Noise:

At least 55db below carrier

FM Noise:

Please see Exciter Specs

Line Voltage:

198 to 250 VAC, 50 or 60HZ, Single or Three phase

Audio Performance:

Please see Exciter Specs.

Output:

50 ohm; ECO-2 to ECO-2.5: 7/8" flange; ECO-4 to ECO-10: 1 5/8" EIA flange

Cabinet Size: 22-1/2" W x 73-1/2" H X 37"D

ECO 4 to ECO- 8-Only (1) cabinet required.

ECO-10 to ECO-12 - 3 phase only one cabinet.

ECO-10 to ECO-12 - 1 phase add power supply vault.

Power Supply Vault Size: 45" W x 36" H x 32"D

Tube Compliment:

ECO-4 to ECO-6: 3CX3000A7;

ECO-8 and ECO-12: 3CX6000A7 / YU148

ECO series transmitters including the solid state IPA are manufactured by Energy-Onix at our Valatie, NY factory.

Specifications listed in this brochure are subject to change without notice.