Flexiva™ FLX with PowerSmart® 3D
High-Efficiency FM Liquid-Cooled Transmitter
GatesAir efficiently leverages wireless spectrum to maximize performance for multichannel TV and radio services, offering the industry’s broadest portfolio to help broadcasters wirelessly deliver and monetize content. With nearly 100 years in broadcasting, GatesAir’s exclusive focus on the over-the-air market helps broadcasters optimize services today and prepare for future revenue-generating business opportunities. All research, development and innovation is driven from the company’s facilities in Mason, Ohio and supported by the long-standing manufacturing center in Quincy, Illinois.

GatesAir’s turnkey solutions are built on three pillars: Create, Transport and Transmit. The company is best known for powering over-the-air analog and digital radio/TV stations and networks worldwide with the industry’s most operationally efficient transmitters. Groundbreaking innovations in low, medium and high-power transmitter reduce footprint, energy use and more to establish the industry’s lowest total cost of ownership. Support for all digital standards and convergence with mobile networks ensure futureproof systems.

GatesAir’s unrivalled legacy in over-the-air radio reaches new heights with the Flexiva™ transmitter family. The Flexiva range symbolizes decades of broadcast innovation and engineering experience, offering the industry’s most complete and reliable solutions to suit all over-the-air power and coverage requirements in FM, AM, and digital radio. Truly groundbreaking strides in operational efficiency make high-quality broadcasting and low total cost of ownership a reality in equal measure.

Award Winning Service

From experienced installation and field service engineers to responsive factory experts, GatesAir provides the strongest service team in the broadcast transmission industry. Couple that team with reliable products, responsible service parts inventories and a demonstrated commitment to the industry, and you have a service offering that’s perfectly matched to your equipment and your operations.
We did it again.
GatesAir is once again shattering the expectations of what is possible with high-power, solid-state liquid cooled transmitters.

**High-efficiency and the best analog and proven HD radio performance**

**Separate, hot-swappable, compact power supply for each PA**

**Proven reliability with highest redundancy of any transmitter design**

**Optimized Real-Time Adaptive Correction (RTAC™) - best on market**

**Lighter power amplifier (PA) module - 1/10 of the weight of other products currently available**

More services usually means higher expenses. Higher operating expenses challenge the bottom line. Flexiva Flexiva FLX liquid cooled FM transmitters with PowerSmart 3D technology drive down total cost of ownership while allowing broadcasters to get the most out of their spectrum. Efficient modular designs that lower total cost of ownership while simplifying maintenance. Superior power density that maximizes FM coverage while reducing transmitter size and weight. Unparalleled performance that enhances quality while lowering utility bills. GatesAir is once again shattering the expectations of what is possible with high-power, solid-state transmitters from a cost versus performance ratio.
The GatesAir Flexiva™ FLX with PowerSmart® 3D is a Liquid-Cooled FM solid-state transmitter family that provides today’s broadcaster with a single transmission platform capable of analog and digital. Built on the next generation of GatesAir’s ground-breaking green transmission architecture, Flexiva transmitters offer today’s FM analog or digital broadcaster compact, energy-efficient solutions to reliably deliver high performance and reduce Total Cost of Ownership.

The core PowerSmart®3D technology of Flexiva FLX assures low cost of ownership through reduced size, weight and energy use while improving performance.

Flexiva is designed for mid to high-power requirements, up to 88 kW, while utilizing the most compact design on the market today. Flexiva continues the legacy of the highly successful line of GatesAir FM transmitters and combines innovative, new quadmode RF amplification and software-defined exciter technology to take FM transmission to the next level.

The Flexiva FLX transmitter utilizes the latest 50-Volt LDMOS amplifier devices, new compact high-efficiency power supplies and the Flexiva FAX exciter with real-time adaptive correction (RTAC) for outstanding signal performance.

This powerful blend of new technologies provides best-in-class performance with respect to transmitter power efficiency, physical size, performance and features. The modular design allows for simpler installation, infrequent maintenance requirements together with dramatically reduced total cost of ownership over the life of the transmitter.

Not only can customers count on GatesAir for implementation, the company offers a range of support options from standard 24/7 telephone technical assistance, parts to installations, training, full system design and field maintenance contracts.
Savings You Can Count On!

The Flexiva™ FLX with PowerSmart® 3D is the highest efficiency transmitter on the market. This all-new design includes energy saving components.

Savings in The Details!

- Fully broadband, 87.5 to 108MHz — requires no tuning or adjustments.
- New high-efficiency, hot-swappable compact DC power supplies
- Hot-swappable light-weight PA modules
- Redundant high-efficiency pump system
- Incorporates field-proven Flexiva™ exciter providing best on-air sound quality
- Unrivaled digital power levels utilizing hybrid crest factor reduction
- Support for all worldwide digital modulation standards
- Modular & upgradeable architecture
- Rugged, reliable design and construction
- Ideal for N+1 configurations since all transmitters are identical and use the same PA’s, minimizing spares requirements

New PowerSmart® 3D amplifier technology provides a market-leading combination of efficiency and broadband operation.

87% Floor Space and Volume Savings

- Lowest energy usage
- Minimum operating cost

EFFICIENT COMPACT
SOFTWARE DEFINED EXCITER
SIMPLER Servicing

AC to RF efficiency up to 72%
### Additional Options

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<tr>
<th>Options</th>
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<td>Automatic backup audio switching</td>
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<tr>
<td>Two SCA subcarrier inputs</td>
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<tr>
<td>Integrated RDS Generator</td>
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<tr>
<td>Professional Spectrum Analyzer*</td>
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<tr>
<td>Digital MPX over AES</td>
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<tr>
<td>Fast acting non-linear Real Time Adaptive Correction (RTAC), for optimum performance at all times*</td>
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<tr>
<td>Advanced second generation Hybrid Crest Factor reduction to enable highest HD radio powers*</td>
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<tr>
<td>IP enabled web remote interface with SNMP</td>
<td>•</td>
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<tr>
<td>Parallel Remote Control</td>
<td>•</td>
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<tr>
<td>Dual exciters and switcher (requires a second exciter)</td>
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<tr>
<td>Supports external UPS on Exciters</td>
<td>•</td>
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<tr>
<td>Internal GPS/GLONASS receiver for SFN timing</td>
<td>•</td>
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<tr>
<td>Local touch-screen GUI</td>
<td>•</td>
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<tr>
<td>N+1 systems and multi-transmitters per rack</td>
<td>•</td>
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<tr>
<td>Extended warranties and Service Level Agreements (SLA) to suit any requirement</td>
<td>•</td>
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<tr>
<td>Exciter Internal Orban 5500 multi-band audio processor</td>
<td>•</td>
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<tr>
<td>Exciter Internal 4th Generation Exgine digital modulator for HD Radio</td>
<td>•</td>
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*Standard with Exgine digital modulator
Real-Time Adaptive Correction
GatesAir’s exclusive Real-Time Adaptive Correction (RTAC) technology, standard in Flexiva transmitters, keeps your station within compliance while maximizing coverage. Featuring simultaneous linear and nonlinear adaptive pre-correction, RTAC interoperates with the Flexiva™ FAX exciter to continuously monitor transmitter output and performance while automatically adapting for system nonlinearities — delivering the optimal level of correction for your digital over-the-air signal.

Advanced Global Monitoring and Control
In addition to local control, the Flexiva FLX transmitter can be controlled from anywhere in the world with an intuitive, browser-based graphical user interface (GUI) over TCP/IP via a telecom or network connection with password protection. A rear RJ-45 jack is provided for LAN/WAN connection.

Flexiva™ Compact — Low Power - 50 W to 3.5 kW
The new GatesAir Flexiva™ FAX exciter provides broadcasters with a powerful, software-defined platform, enabling the ultimate in performance, stability and durability. Featuring unparalleled signal processing power, a smaller footprint and advanced IP capabilities, Flexiva FAX builds upon a strong legacy of groundbreaking technological advances, pioneered by several decades of GatesAir innovations. Dramatically increased processing power together with new, advanced Real Time Adaptive Correction techniques, provides optimum signal performance over a wide variety of modulations and RF amplifier topologies.
Full Simple Network Management Protocol (SNMP) facilities are provided for network management of the entire transmission system using industry-standard MIB protocols.

Remote Communication
The following remote interfaces are available:
- GUI
- Ethernet network connection RJ-45 (10/100Base-T) with TCP/IP protocol
- Automated remote alarms in the event of a fault, which are sent via SNMP or e-mail with the connection to a network
- Simple, parallel interface and legacy remote control systems

Multi-System Controller (MSC)
To support greater redundancy, the Multi-System Controller (MSC2) supports a range of backup options, including 1+1, full N+1 and dual-transmitter installations. The MSC2 monitors and controls the transmitter systems and controls RF switching.
TCO is the total cost to own and operate the transmitter system over time. This includes the initial equipment cost, installation/commissioning cost, routine and unscheduled maintenance costs, and ongoing repair and operational costs — and don’t forget, rising energy costs. In fact, the lifetime operational expense of a transmitter is estimated at greater than five times the initial product cost.

While power to the transmitter is the biggest item, other factors can also adversely affect the system efficiency. These include:

- AC transformers and voltage regulators ahead of transmitter
- Heat load to the room (affects HVAC costs)
- RF system losses
- RF feeder loss to antenna
- Antenna gain and pattern

Flexiva FM transmitters now incorporate GatesAir PowerSmart 3D technology to help broadcasters save money and reduce carbon footprints. PowerSmart 3D technology delivers superior operational efficiency through fully broadband, single-amplifier designs that simplify installation, improve performance, and streamline ongoing operation – including maintenance. This comes courtesy of a modular design that eliminates tuning, reduces weight, enhances redundancy through separate power supplies, and minimizes overall labor.

PowerSmart 3D technology also lowers monthly bills through sharp power efficiency increases (up to 50 percent), and slashes rack space requirements (exceeding 50 percent) through a dramatic increase in power density. These industry-leading strides in performance and physical size reduction combine to deliver the best possible total cost of ownership over the life of the transmitter – and return money to the pockets of our customers.
Broadband Amplification
GatesAir PowerSmart 3D Technology
Inside. The Flexiva liquid cooled
transmitter offers superior power density
and by far the highest available system
efficiency on the market.

This new amplifier design utilizes the
latest 50 volt LDMOS device technology
to deliver a dramatic increase in power
density, lower operating costs and
reduced cost of ownership over the life
of the transmitter.

Compact Footprint
As the most compact liquid-cooled
FM transmitter, the Flexiva FLX is ideal
for crowded, shared transmitter sites.
The Flexiva FAX50 exciter drive further
reduces rack space requirements.
The Flexiva FLX transmitter reduces
facility space requirements, simplifies
installation, lowers shipping costs and
allows for easier maintenance.

Highest Power Density
Flexiva FLX provides the highest power
density with up to 10kW power block in
only 16 rack units.

Improved Uptime and Costs
Hot-pluggable, redundant power
amplifier (PA) and universal power supply
(PS) modules make on-air servicing
easy and eliminate costly service
interruptions. Light-weight universal
PA pallets and universal PS modules
facilitate overnight/same-day shipping
for simple, cost-effective spares holding.
With lightweight subassemblies, the
Flexiva FLX eliminates any two-person lift
requirements for routine maintenance
and troubleshooting.

Smooth Upgradeability
The Flexiva FLX system features the new
FAX G4 Exgine technology, allowing for
a seamless transition from analog FM to
digital standards such as HD Radio™
DRM+ or China Digital Radio.

Global Monitoring and Control
The Flexiva FLX transmitter can be
controlled from anywhere in the world
with an intuitive browser-based GUI
or SNMP over TCP/IP via a telecom or
network connection with password
protection.
**High-Efficiency Liquid-Cooling System**

All Flexiva FLX systems feature a high-efficiency liquid-cooling system that has been carefully engineered for maximum efficiency over a wide range of ambient conditions and operating power levels.

The closed-loop liquid-cooling system utilizes a pump module with fully redundant cooling pumps and auto-changeover capability. The liquid-to-air outdoor heat exchanger also includes dual fans for maximum redundancy. The pump motor speed is controlled based on coolant requirements, with the heat exchanger fan motors speed controlled to provide the optimum cooling performance over a wide range of ambient weather conditions. These design features translate to maximum reliability at the lowest energy consumption in a small footprint.

The Flexiva FLX cooling system has been carefully engineered to allow for on-air servicing or replacement of pumps and fans, further maximizing on-air availability and minimizing revenue loss.
Flexiva™ FLX Block Diagrams

FLX 10K Dual Drive
Specifications
Specifications and designs are subject to change without notice

General

<table>
<thead>
<tr>
<th>Transmitter Type</th>
<th>Solid State VHF Power Amplifier for FM, HD Radio, DRM+, and China Digital Radio</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cooling System</td>
<td>Closed-loop, pressurized liquid coolant, Coolant: 50/50 Ethylene Glycol or Propylene Glycol and distilled water</td>
</tr>
<tr>
<td>Exciter</td>
<td>External FM Exciter. Support for dual exciters with automatic changeover</td>
</tr>
<tr>
<td>Frequency Range</td>
<td>87.5 to 108.0 Mhz, 10 kHz steps</td>
</tr>
<tr>
<td>Operating Modes</td>
<td>&quot;Quad-Mode&quot; on-the-fly switching between FM HD only, FM+HD or DRM+</td>
</tr>
<tr>
<td>Frequency Stability</td>
<td>±150 Hz</td>
</tr>
<tr>
<td>Power Stability</td>
<td>≤ ±0.25 dB</td>
</tr>
<tr>
<td>Asynchronous AM SNR</td>
<td>&gt;60 dB</td>
</tr>
<tr>
<td>Synchronous AM SNR</td>
<td>&gt;50 dB</td>
</tr>
<tr>
<td>RF Harmonic and Spurious Suppression</td>
<td>Meets or exceeds FCC, IC, CE, CCIR IRTU and IEC215 requirements</td>
</tr>
<tr>
<td>VSWR</td>
<td>Protected against open or short circuit, all phase angles. Capable of operation into infinite VSWR with proportional foldback above user adjustable threshold of up to 1:5:1</td>
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</table>

Output Power - Max Watts

<table>
<thead>
<tr>
<th></th>
<th>FLX10K</th>
<th>FLX20K</th>
<th>FLX30K</th>
<th>FLX40K</th>
</tr>
</thead>
<tbody>
<tr>
<td>Analog Only</td>
<td>Max Power</td>
<td>11,000</td>
<td>22,000</td>
<td>33,000</td>
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<tr>
<td></td>
<td>Typically Efficiency</td>
<td>72%</td>
<td>72%</td>
<td>72%</td>
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<tr>
<td>Analog @ -20dBc HD</td>
<td>Max Power</td>
<td>10,396</td>
<td>20,792</td>
<td>31,188</td>
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<tr>
<td></td>
<td>Typically Efficiency</td>
<td>56%</td>
<td>56%</td>
<td>56%</td>
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<tr>
<td>Analog @ -14dBc HD</td>
<td>Max Power</td>
<td>9,616</td>
<td>19,232</td>
<td>28,848</td>
</tr>
<tr>
<td></td>
<td>Typically Efficiency</td>
<td>56%</td>
<td>56%</td>
<td>56%</td>
</tr>
<tr>
<td>Analog @ -10dBc HD</td>
<td>Max Power</td>
<td>7,455</td>
<td>14,909</td>
<td>22,364</td>
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<tr>
<td></td>
<td>Typically Efficiency</td>
<td>52%</td>
<td>52%</td>
<td>52%</td>
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<tr>
<td>HD-Only -20 dBc</td>
<td>Max Power</td>
<td>4,000</td>
<td>8,000</td>
<td>12,000</td>
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<tr>
<td></td>
<td>Typically Efficiency</td>
<td>42%</td>
<td>42%</td>
<td>42%</td>
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<tr>
<td>HD-Only -14 dBc</td>
<td>Max Power</td>
<td>3,700</td>
<td>7,400</td>
<td>11,100</td>
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<tr>
<td></td>
<td>Typically Efficiency</td>
<td>42%</td>
<td>42%</td>
<td>42%</td>
</tr>
<tr>
<td>HD-Only -10 dBc</td>
<td>Max Power</td>
<td>3,100</td>
<td>6,200</td>
<td>9,300</td>
</tr>
<tr>
<td></td>
<td>Typically Efficiency</td>
<td>42%</td>
<td>42%</td>
<td>42%</td>
</tr>
</tbody>
</table>

Electrical

AC Input Voltage, VAC 47-63Hz
Single Phase & 3-Phase (3-Wire) Delta: 3-Phase (4-Wire) Wye: 190-264 330-460
Power Factor: 0.99% Typical

Mechanical

<table>
<thead>
<tr>
<th></th>
<th>FLX10K*</th>
<th>FLX20K</th>
<th>FLX30K</th>
<th>FLX40K</th>
</tr>
</thead>
<tbody>
<tr>
<td>Width</td>
<td>23.5 in. (59.7 cm)</td>
<td>23.5 in. (59.7 cm)</td>
<td>47 in. (120 cm)</td>
<td>47 in. (120 cm)</td>
</tr>
<tr>
<td>Depth</td>
<td>45 in. (115.3 cm)</td>
<td>45 in. (115.3 cm)</td>
<td>45 in. (115.3 cm)</td>
<td>45 in. (115.3 cm)</td>
</tr>
<tr>
<td>Height</td>
<td>37RU 71 in. (181 cm)</td>
<td>44RU 83 in. (211 cm)</td>
<td>44RU 83 in. (211 cm)</td>
<td>44RU 83 in. (211 cm)</td>
</tr>
<tr>
<td>Weight (approx w/ modules installed)</td>
<td>588 lbs, 267 kg</td>
<td>1002 lbs, 455 kg</td>
<td>1,700 lbs, 771 kg</td>
<td>2,200 lbs, 998 kg</td>
</tr>
</tbody>
</table>

Environmental

Altitude: 15,000 ft. (4,572 m) AMSL
Ambient Temperature Range: 0° to 45° C (32° to 113° F) at sea level (upper limit derated 2° C (3.6°F) per 300 m (984 ft) elevation AMSL
Humidity: 95%, non-condensing
Cooling Method: Liquid-cooled, using 50/50 mix of ethylene or propylene glycol and water

*NOTE: Dimensions for the FLX10K reflect transmitter installed in 37RU deluxe rack.
Award Winning Service -- Global Locations

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Ordering Information

Our GatesAir experts will help you determine the most efficient solution to meet your requirements. Visit www.gatesair.com/contact to find your representative.