Flexiva™ LX

Low Power FM Exciter - Transmitter
10 W to 1 kW

The Flexiva™ LX FM solid-state transmitter family provides today's broadcaster with a no compromise, cost effective transmission platform with features previously only found in top of the line products. Incorporating field proven GatesAir technology, Flexiva LX transmitters deliver world-class performance, reliability and quality.

Flexiva LX is ideal for low power requirements, up to 1 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 RF amplification and software-defined exciter technology including powerful integrated multi-band audio processing to make your station stand out on a budget.

Featuring PowerSmart® technology, the Flexiva LX continues the legacy of unmatched efficiency that makes it ideal for all FM applications. The 50-volt LDMOS device technology delivers a dramatic increase in power density, lowers operating costs and reduced cost of ownership over the life of the transmitter.

Customers can count on GatesAir for implementation. The company offers a range of support options from standard 24/7 telephone technical assistance and parts to installation, training, full system design and field maintenance contracts.

Product Features

Flexiva LX FM Transmitter Family Features:

- Power levels up to 1050 W
- Broadband, frequency agile design 87.5 to 108 MHz requires no tuning or adjustments
- Hot pluggable power supplies
- Best-in-class power efficiency for lowest operating costs
- Compact, space-saving, 2RU design
- State-of-the-art, direct-to-carrier digital modulator
- Integrated digital multi-band audio processor and stereo encoder with composite clipper
- ITU-R BS412 peak program/multiplex power limiter
- Dynamic RDS generator
- AES, analog L/R and 2 configurable composite program inputs and outputs
- Digital MPX/Composite input over AES192
- Operation over a wide range of voltage and power stability conditions
- Operation at up to 1.5:1 VSWR with proportional fold-back
- Full remote control capability including:
  - Web-based HTML GUI interface
  - SNMP
  - RS 232
  - Parallel control/monitoring
  - Extensive Fault, Warning and Operational parameter logging
- Optional Powerful DSP based re-broadcast receiver

Product Details

Cost Effective without Compromise

In a world of trade-offs and tough choices, the Flexiva LX simplifies the process by delivering rocks solid performance, the market leading features you need all at a price you can afford. Smart broadcasters look beyond price and focus on value to make their decisions, Flexiva LX maximizes both value and your stations signal. As broadcasting's radio transmission leader, GatesAir has a solid track record of top products, great people and outstanding service all focused on enabling you to delivery great radio. Put the power of GatesAir to work for you with Flexiva LX.

GatesAir PowerSmart Technology Inside

Featuring GatesAir PowerSmart technology, Flexiva LX offers superior power and efficiency. New 50-volt LDMOS device technology delivers a dramatic increase in power density, lower operating costs and reduced cost of ownership over the life of the transmitter. Higher efficiency and cutting-edge thermal design means less wasted heat and lower cooling demands.

Compact Footprint and Lightweight Design

Flexiva LX is the most compact FM transmitter on the market, with a significantly reduced size compared with other products in its power class. Ideally suited to fit in crowded, shared transmitter sites, Flexiva LX reduces the cost and space required in the facility, simplifies installation, lowers shipping costs and allows for easier maintenance.

Built-In GUI Interface

The simple to use graphical user interface (GUI) in the Flexiva LX transmitters works with only a web browser, with no software to install and no reliance on flash support. The interface enables in-depth control and monitoring and easy setup from anywhere in the world. Flexiva LX also supports SNMP monitoring and RS 232 connectivity to deliver real-time status to your network management system.

Multiple Program Inputs Including Digital Composite over AES192

Flexiva LX has the input flexibility you need, featuring AES3 audio or composite/MPX over AES192, analog left and right, and 2 configurable composite (MPX) program inputs and outputs. Composite inputs and outputs can be configured as mpx, sca, rds or pilot sync.

Robust Operation and VSWR Protection

With ruggedized power amplifiers, robust combiners and sophisticated power control systems, Flexiva LX provides protection against antenna system short-circuits, opens and high VSWR while maximizing its ability to stay on the air. Flexiva can operate up to full rated power at up to a 1.5:1 VSWR with proportional fold-back into infinite VSWR. For added protection, a separate fast acting analog VSWR protection circuit which mutes the transmitter instantly in the event of a sudden shorted or open antenna or line, to protect the transmitter and prevent sustaining arcing conditions.

Digital Modulator

Continuing the GatesAir market leading legacy of world class FM exciters new Flexiva LX Direct Digital Synthesis (DDS) modulator produces direct-to-carrier digital modulation of uncompromising precision and sonic clarity. Unleash your stations full potential with great sounding audio you can only get with a GatesAir exciter.

Powerful Audio Processor - Standard

The Flexiva LX features a market leading DSP based multi-channel audio processor designed to give you a major market signature sound on a budget. Featuring both four band and wide band AGC with intelligent gating, four band program dependent limiting, parametric equalization and shelf bass enhancement, multi band distortion controlled clipper and a powerful composite clipper with pilot protection all allow you to tailor your sound for maximum impact. Integrated ITU-R 812 MPX power limiter ensures you meet modulation regulations.

Integrated Dynamic RDS

Present your stationing the best light without any compromise. Listeners now expect to see RDS data on their radios featuring impactful station, music and advertise related information. Flexiva LX includes a powerful dynamic RDS system allowing you to maximize the impact on your listener and deliver value for your advertisers and underwriters all while eliminating costly external boxes.

Translator Ready

The Flexiva LX is designed out of the box for translator or rebroadcast applications. No longer do you have to string together multiple boxes to extend your coverage, Flexiva LX has you covered all in one simple to deploy system. Built in Translator ID generator simplifies the station identification process. The optional DSP based re broadcast receiver card provides a sensitive yet extremely selective receiver with extensive configuration control so you can pull in even the hardest to receive stations with clarity.

Power Supply Module

Hot-pluggable, simple to replace 50 Volt switch-mode power supply features an extremely wide AC input range and 96% ACDC efficiency. Flexiva LX combines rock solid reliability, performance and simple maintainability to keep you on the air.

RF Power System

Market leading 50-volt LDMOS-FET power amplifier device technology coupled with GatesAir's innovative "PowerSmart" amplifier design delivers a dramatic increase in power density. Rugged amplifiers and low-loss combining provide protection against lightning, antenna system short-circuits, opens and high VSWR while maximizing Flexiva LX's ability to stay on the air, lower operating and maintenance costs, thus reducing the cost of ownership over the life of the transmitter.

Cooling System

Flexiva LX's air cooling system features redundant, continuously variable speed fans to provide quiet, efficient

cooling over the transmitter's operating temperature range with plenty of headroom for abnormal conditions such as VSWR or high ambient temperatures. Critical component temperatures are monitored and fan speeds are adjusted continuously in order to maintain optimum operating temperatures. Cool air is pulled from the front panel through a removable, washable air filter, allowing exhaust to exit through the rear of the transmitter.

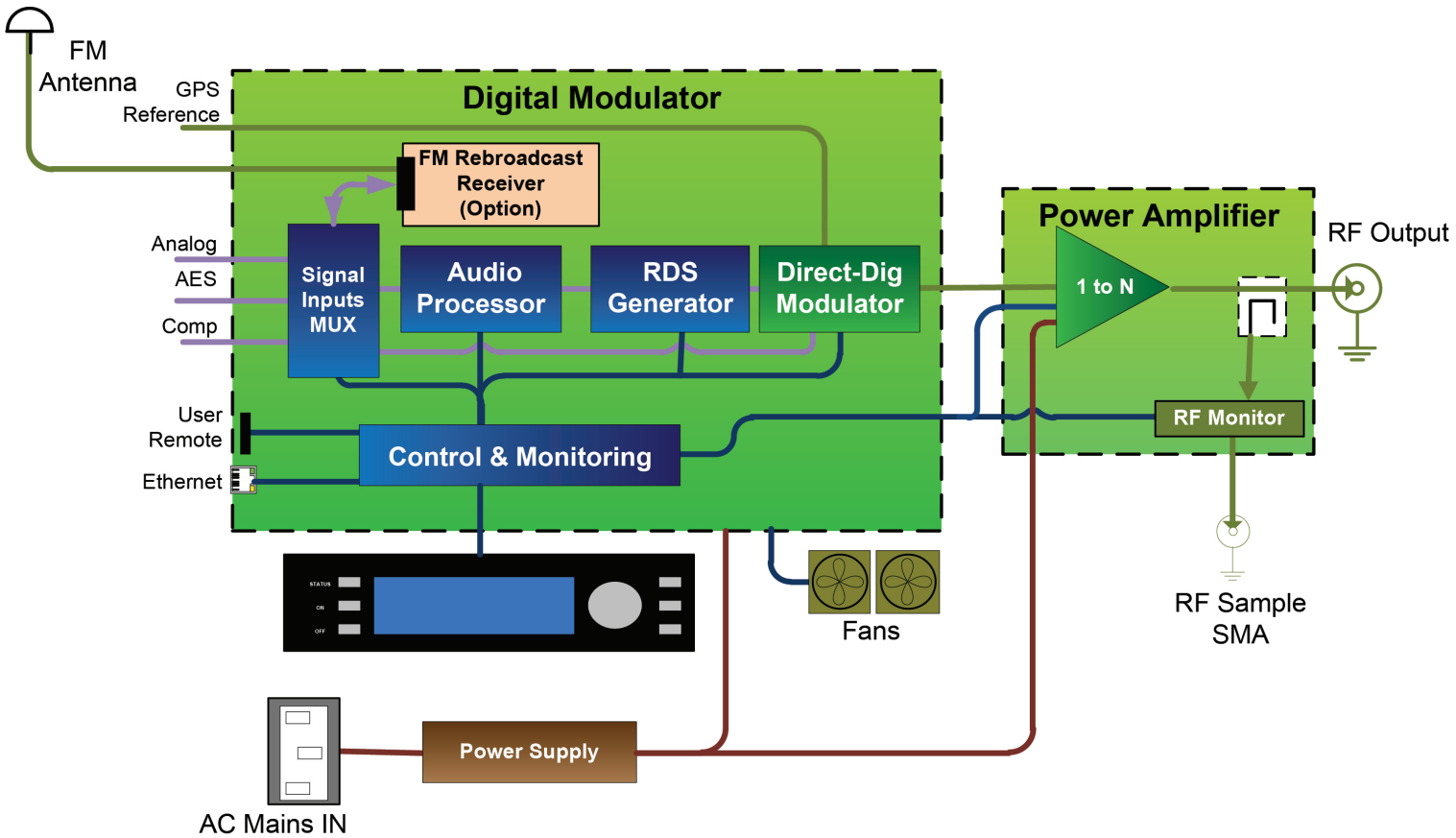
Multiple systems can be integrated into cabinets to support ducted air input plenums.

Control System

Flexiva LX's control system provides overall system management along with extensive monitoring, logging and control capabilities with fast-acting protection for maximum reliability. A front panel control screen, navigation buttons and bright LED indicators allow easy review, setup and recall of all operational parameters and easy diagnosis of any potential equipment problems. Built in Ethernet connection allows instant access with any laptop, tablet or smart phone with a Web browser for detailed diagnostics, control and monitoring through the feature-rich and intuitive Graphical User Interface from anywhere in the world via the World-Wide-Web. Full Simple Network Management Protocol (SNMP) and RS 232 facilities are also provided for network management of the entire transmission system using industry-standard MIB protocols.

A standard, configurable parallel GPI/O interface is also provided for interfacing to station remote control equipment.

Images/Diagrams



1. LCD Status Display — LCD screen provides a quick view of transmitter status and power level.

2. LCD Navigation Controls — Tactile push-buttons provide navigation of LCD screens to access set-up screens, status and power metering.

3. Front-Panel Controls — Fast-access front-panel pushbuttons and status indicators for on/off and faults.

4. RF Sample Port — Convenient front panel RF sample for quick connection to test equipment as needed.

5. Summary Status LED — Indicators provide quick visual indication of the transmitter's operational status.

6. Removable Front Panel — Provides access to the hot-pluggable power supplies and washable air filter.

7. RF Output — RF output connector. Power and connector are model dependent.

8. External Reference Input/Output — Support for single-frequency networks (SFNs) is included with every Flexiva LX system. Supports both 10 MHz and 1 PPS inputs.

9. RS-232 serial connection allow direct interface

10. Parallel Remote Control — DB-9 type connectors provide standard interfacing for transmitter control system connections.

11. Ethernet Port — Rear RJ45 connector provides fully configurable 100Base-T Ethernet for LAN/WAN connectivity

12. Program Audio Inputs — 1) AES-EBU,

13. Program Audio Inputs — 1) L/R Analog.

14. Configurable Program Composite (MPX) — 2) Composite baseband inputs & 2) Composite baseband outputs

15. AC Connection — See model data sheet (Voltage power requirements are model dependent).

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Specifications

Specifications and designs are subject to change without notice

Output Power Watts	LX100	LX300	LX600	LX1000
Nominal	100	300	600	1000
FM Analog Range	10-110	30-330	60-660	100-1050
50 ohms RF Output Connector	N	N	N	7/16 DIN
Electrical				
AC Input 50-60Hz Single Phase	90-277 VAC	90-277 VAC	90-277 VAC*	90-277 VAC*
			* 50% power limit for voltages under 200VAC	
Power Connector	IEC 13A	IEC 13A	IEC 13A	IEC 13A
Power Consumption Typical Watts	Typ 185 @nom power	Typ 510 @nom power	Typ 775 @nom power	Typ 1275 @nom power
Analog AC-RF Efficiency Typical	55%	59%	77%	78%
Number of Fans	2	2	2	2
Number of Power Supplies	1	1	1	2
Width	19″ (48.3 cm)	19″ (48.3 cm)	19″ (48.3 cm)	19″ (48.3 cm)
Depth	17.7″ (45 cm)	17.7″ (45 cm)	17.7″ (45 cm)	17.7″ (45 cm)
Height	2RU 3.5″ (8.9 cm)	2RU 3.5″ (8.9 cm)	2RU 3.5″ (8.9 cm)	2RU 3.5″ (8.9 cm)
Weight: (approx w/ modules installed)	17.16 lbs 7.8 kg	17.16 lbs 7.8 kg	17.16 lbs 7.8 kg	18.48 lbs 8.4 kg

General Specifications	
Transmitter Type	Solid-state FM stereo analog broadcast transmitter
Exciter	Direct-digital Synthesis, direct-to-channel modulator
RF Output Frequency Range	VHF Band II, 87.5-108.0 MHz, 50 kHz steps
Frequency Stability	150 Hz <10-6 0° to 50° C using high accuracy internal TCXO. 10 MHz input for synchronization to external (GPS) reference.
FM Modulation Capability	Adjustable nominal (100%) deviation to 200 kHz, default 75 kHz 320 kHz maximum deviation
Modulation Indication	Front panel UI Display to 140% Web GUI modulation display with peak hold auto-ranging (14%/140% full scale)
Pre-emphasis	Selectable 0, 50, or 75 microseconds
Power Stability	≤± 0.25 dB
Asynchronous AM S/N Ratio	65 dB minimum (>70 dB typical) below equivalent 100% amplitude modulation @ 400
Synchronous AM S/N Ratio	60 dB rms minimum (>70 dB typical) below equivalent 100% amplitude modulation @ 400 Hz with 75 uS deemphasis and 400 Hz high-pass filter (FM deviation ±75 KHz by a 1 KHz sine wave). Measured at wide-band input
RF Harmonic and Spurious Suppression	Meets or exceeds ETSI Requirements
VSWR Operation	Up to 1.5:1. Proportional fold-back threshold from 1.5:1. Continued operation (with fold-back) up to infinite VSWR. Protected against sudden short and open circuit conditions with mute to remove sustained arcing conditions, at all phase angles.

Environmental	
Altitude	15,000 Ft. 3,000 (4,572m) AMSL
Ambient Temperature Range	0 to +45° C Inlet air temperature must not exceed 45° centigrade at sea level, de-rated at 2° C per 1000 ft (300 m) AMSL
Humidity	95%, non-condensing
Stereo Performance	
Modes	Selectable: Stereo, Mono L+R, Mono L, and Mono R
Pre-emphasis	Selectable 0, 50, or 75 microseconds
Audio Low Pass Filter	80db at 19kHz
Stereo Pilot Tone	19 kHz ± 0.1 Hz; injection adjustable injection level
38 kHz, 57 kHz, 76 kHz, 95 kHz Suppression	>70 dB below ±75 kHz deviation
Stereo Separation	>80 dB AES, >75 dB analog 10 Hz to 15 kHz
Stereo Signal to Noise Ratio	>90 dB AES, 86 dB analog below 100% modulation at 400 Hz; measured in a 10 Hz to 15 kHz bandwidth with 75 µs de-emphasis and DIN "A" weighting
Stereo Total Harmonic Distortion	<0.03% THD+N, 10 Hz to 15 kHz, with 75 us de-emphasis

Audio Processing	
AGC stage	Four-band and wide-band AGCs, both with intelligent gating
Limiter stage	Four-band, program-dependent limiter
Equalization	Parametric and shelf bass enhancement
Clipping	Multi-band distortion-controlled clipper and composite clipping with pilot protection
Processing Modes	Multiple user adjustable pre-sets
Program Inputs	
Audio Inputs - Digital	RJ-45 110 ohms balanced Range -15 dBfs to 0 dBfs , up to 192 kb/s, 16, 24, 32 bits (MPX over AES ready)
Audio Inputs - Analog	1 Analog L/R, XLR, 10 K ohms balanced Range 0 dBu to +15 dBu max
Analog MPX/Composite Input	2 BNC Analog floating-unbalanced 1.8k K ohms Range -10 dBu to +12 dBu max, can be configured as mpx, sca, rds or pilot sync
Analog MPX/Composite Output	2 BNC Analog floating-unbalanced >600 ohms Range 0 dBu to +12 dBu max. can be configured as mpx outputs or pilot outputs
Internal RDS Generator	Internal Dynamic RDS/RBDS generator
Reference I/O	
External 10 MHz Clock Input	BNC female, unbalanced, 50 ohms TBD
External 1 PPS Clock Input	BNC female, unbalanced, 50 ohms, TTL level TBD
RF sample outputs	1 x front panel. Level TBD – not suitable for harmonic measurements
Remote I/O	
Ethernet Port	RJ-45 100 Mb Ethernet/IP port rear panel with static or dynamic IP address for LAN/ WAN access to Web GUI and SNMP
RS-232	Telnet control
Parallel GPI/O	DB9-female standard remote control GPI/O with user selectable command inputs and status outputs; Active-low, 5v 100 ma

Internal Options	
FM Rebroadcast Receiver	Input frequency range 87.5-108.0 MHz, 50 kHz steps Adjustment of over 50 parameters, Control of blending levels and attack & release times, Factory presets and user stored settings, RDS PI code checking to prevent hijacking or jamming of repeater

Compliance	
Compliance/Standards	RoHS 2002/95/EC R&TTE 1999/5/EC ETSI EN 60215 (Safety) ETSI EN 302 018 (ERM) ETSI EN 300 384 (Radio) FCC Part 73 (LP FM Type Acceptance) Industry Canada (IC)