

HARRIS®



HPX®

High-Power Tube Transmitters for Analog FM and HD Radio™



Next-Generation, High-Power Tube Transmitters

Harris® HPX® high-power transmitters for analog FM and HD Radio™ offer FM power of 20 kW, 30 kW and 40 kW in a single configuration, and up to 80 kW in a dual configuration.

Easy-to-Use, Flexible Control

The HPX transmitter features dedicated meters and control circuits for solid, simple, flexible control. Other options include a user-friendly Web remote monitor and control system with a color touch screen graphical user interface (GUI).

Cost-Savings

The HPX tube-based transmitter outperforms all solid-state transmitters in the same class in dollars-per-watt, which delivers significant savings over the life of the transmitter, including regular tube replacement.

Easy Upgrade to HD Radio™

The HPX transmitter provides a smooth upgrade path to HD Radio. Add the FlexStar® HDx exciter and the HDE-200 exporter for HD Radio signal generation and the HDI-200 importer for supplemental audio channels and other advanced applications data services.

Let Harris Help

Harris offers every product needed to transition to digital radio—from source to transmission. Our Harris systems team can help customize a package of products that meets your broadcast needs—now and into the future.

HD Radio is a trademark of iBiquity Digital Corp.



HPX High-Power FM Transmitter Features

- Fully integrated RF and control interface with FlexStar, Digit® CD and MicroMax® exciters
- FlexStar HDX exciter is the source of both the HD Radio signal and the conventional analog FM signal, and creates a hybrid signal ready for amplification by the transmitter
- High-voltage power supply can be remotely located from the transmitter to fit the tightest transmitter sites
- IPA stage uses the field-proven Platinum Z/ZX® hot-pluggable PA modules and power supplies with the option for redundancy
- ¼ wave grounded cathode design offers stability and efficiency
- Backed by Harris factory support, including 24-hour technical assistance and parts and comprehensive training

System

- High-power FM/FM+HD tube-based transmitter in 20 kW, 30 kW and 40 kW with nominal nameplate (FM) power output rating

Mechanical

- Solid, welded-steel exterior cabinets, aluminum inner skins and chassis
- Hinged rear doors for normal access, easily removed for maintenance or installation
- Access panels are securely latched and easily removed with a hex head tool, which is supplied
- Top- or bottom-entry for all cabling

Cooling

- Direct drive three-phase blower in main power amplifier (PA) cabinet
- High-efficiency flushing fans

Power Amplifier Stage

- Common tube socket for all models, 4CX20,000C
- ¼ wave grounded cathode design for stability and efficiency
- Ability to bypass PA stage using FlexPatch™, to put exciter or IPA directly to air with blower shut down, without risk to technician whiler servicing PA cavity

Controller

- Basic transmitter controller provides control, automatic exciter switching and diagnostic functions on MIMIC panel without a microprocessor
- Enhanced transmitter controller option combines the basic controller functionality and ¼ VGA GUI for advanced control and diagnostics including TCP/IP connectivity, Web remote control and monitoring, and Simple Network Management Protocol (SNMP) communications
- Four, large front-panel analog meters: Forward/reflected power, PA volts, PA amps and multimeter for other operating parameters

Power

- High-voltage, three-phase linear supply with primary/secondary metal oxide varistor (MOV) protection; half tap on transformer and multiple voltage taps
- Rugged mains transformer provides reliable performance, easy to tap for specific installation requirements
- Redundant low-voltage power supplies

HPX

Affordable Power and Efficiency

Simple and Rugged

Depending on mode and power level, the Harris HPX transmitter achieves market-leading power levels up to 42 kW analog FM, using the 4CX20,000 or 4CX25,000 series rugged Radial Beam Power Tetrode tube. Systems can be combined into a dual unit for redundancy and power levels up to 84 kW analog FM. Unlike high-power solid-state transmitters, the HPX series can safely operate at higher power levels with elevated VSWR.

Superior HD Radio Operation and Performance

Combined with the Harris FlexStar HDx exciter and the advanced Real-Time Adaptive Correction (RTAC™) feature, the HPX transmitter provides superior analog and HD Radio performance, exceeding NRSC-5B mask compliance even at the highest power levels. Up to 24.1 kW FM+HD at -14dBc injection and 17 kW at -10dBc injection are available. For a complete HD Radio system, add the new FlexStar HDE-200 embedded exporter and the HDI-200 advanced services program importer.

Maximum Efficiency

The HPX system provides high operating efficiency, and can maintain peak efficiency over a wide range of power levels and operating modes. This efficiency is due to its tube-based ¼ wave, bandwidth-optimized cavity, grounded cathode design, a three-phase linear high-voltage power supply, switching power supplies for screen, grid and low voltage control circuits, and a single, high-efficiency three-phase blower.

Compact, Simple Installation

The compact, high-power HPX system's matching power amplifier (PA) and power supply cabinets measure only 32 in. (W) x 35 in. (D) x 78 in. (H). The small footprint and the internal low-pass harmonic filter simplify installation, and reduce shipping costs and space requirements. The high-voltage power supply cabinet and PA cabinet can be separated with the optional (standard 40-ft length) cable set. Other custom lengths are available upon request.

Control and Diagnostics

The basic controller option provides control, automatic exciter switching and fault diagnostic functions without a microprocessor. The enhanced transmitter control unit option combines the basic controller functionality with a microprocessor and ¼ VGA touch-screen graphical user interface (GUI) for increased control and diagnostics, including TCP/IP connectivity, Web remote control/monitoring and SNMP communications. A simple, parallel user interface connects to today's most popular remote transmitter control systems.

Reliability and Serviceability

The solid-state driver stage uses the Platinum Z/ZX IPA modules and ZX series switching power supplies in an optional redundant configuration. Modules and power-supplies are front-panel accessible and hot-swappable for ease of service, reliability and to simplify spares inventory. Maintenance technicians can easily and safely service the PA cavity because of the ability to bypass the PA stage using FlexPatch, and put the IPA or exciter directly to air with the blower and high-voltage shut down.

Common Components and Architecture

From the highest-power FM+HD systems to the lowest-power FM-only systems, the HPX transmitter line uses all the same major components, including the PA cavity, making parts sparing simple and straightforward.

Easy Upgradeability

The HPX transmitter features the world-class FlexStar HDx exciter, which can be field-upgraded to HD by adding an Engine™ card, Z/ ZX IPA components that switch modes on-the-fly, a universal transmitter control unit and additional components. With only minor component changes, upgrading the HPX to higher power or HD Radio is simple and inexpensive.

Power Amplifier Cabinet

HV Power Supply Cabinet



1 Customer Control Interface Compartment

2 Dual Main/Alt Exciters

3 Transmitter Control Unit

4 Screen and Bias Supply Compartment

5 IPA PS Compartment

6 IPA Compartment
1 or 2 Z/Zx Modules

7 Regulated Filament Supply Compartment

8 Analog Meter Panel

9 Primary Circuit Breakers

10 Primary Power Compartment

11 High-Voltage Compartment

HPX Configuration

FlexStar Exciter

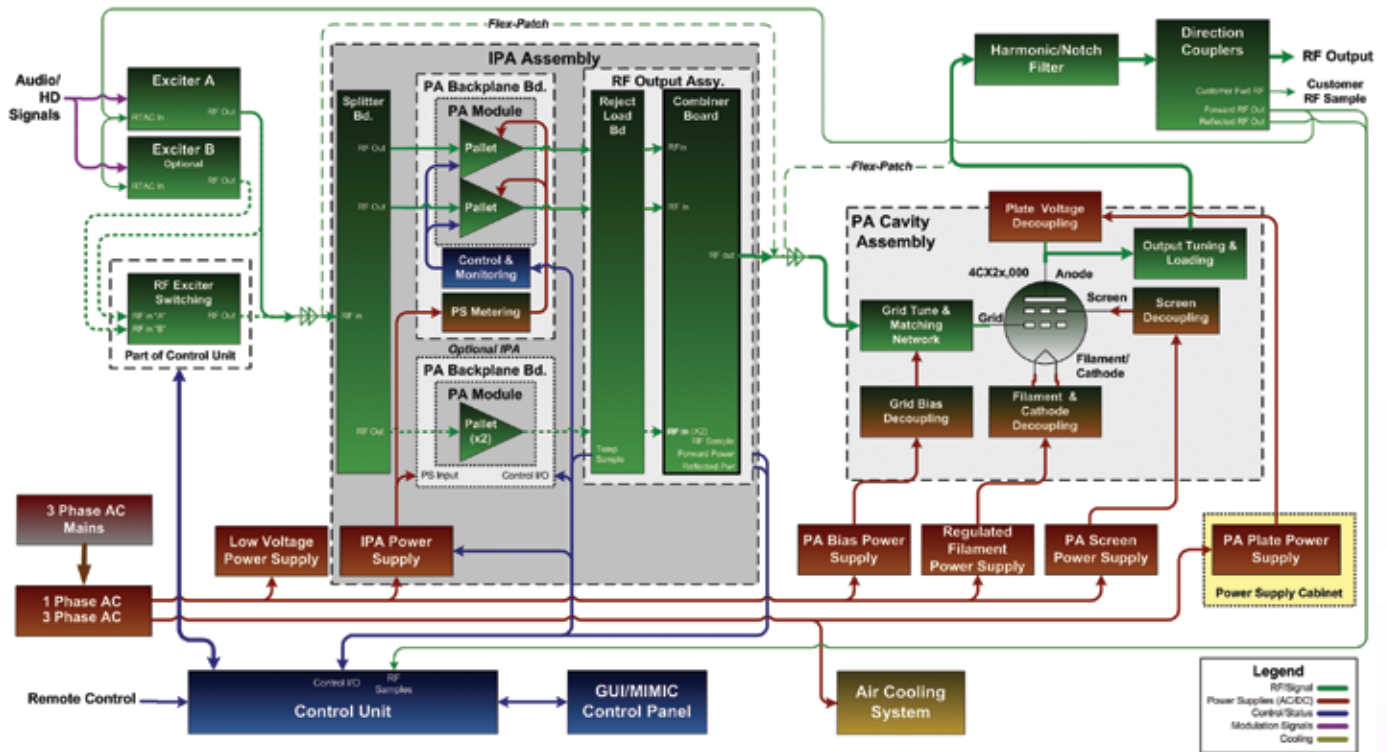


- 1 Front-Panel USB Port
- 2 RTAC Monitoring
- 3 User Control

Transmitter Control Unit



- 1 Basic MIMIC Panel
or
2 Optional Enhanced GUI
- 3 System Status/
Fault Indicators
- 4 Auto/Manual Main/Alt
Exciter Control
- 5 APC Control
- 6 Remote/Local Control
- 7 Power Control
- 8 Plate On/Off
- 9 Filament On/Off



HPX Rear View



- 1 Transmitter Control Unit
- 2 IPA Power Supplies
- 3 Low-Voltage Supplies
- 4 IPA Compartment 1 or 2 Z/Zx Style Modules
- 5 Transmitter Interface Logic
- 6 PA Tuning and Loading, Grid Tuning and Loading
- 7 Ancillary Circuit Breakers — Screen and Bias, Filaments Flushing Fans, PA Blower, Exciters
- 8 Solid State, Switch Mode, Screen and Bias Power Supplies

ONE Company for Workflow Solutions Throughout the Media Chain

Harris is the ONE company delivering interoperable workflow solutions across the entire media delivery chain — providing today's broadcaster with a single, integrated approach to capitalize on the benefits of IT and mobile applications. By providing unparalleled interoperability across our product portfolio, Harris is able to offer customers integrated solutions that improve workflows, save money, enable new revenue streams and provide a migration path to emerging media business models. To meet the evolving needs of broadcast, distribution, government agencies and entertainment businesses, Harris is the ONE answer for change.

Service And Support

At Harris, we are committed to customer service excellence. It is our goal to provide the highest level of support by applying a simple rule: We take ownership of helping our customers succeed. Our support teams consist of innovative technical experts who support all situations regarding product performance, integration and operational processing. We are adept at providing proven solutions, making workflows better and ensuring reliability of the product and system. At Harris, our experienced and dedicated teams stand ready to help you meet your goals for premium product performance, 100% up-time and reduced maintenance investment.

Warranty

Because we want to assure you that Harris stands beside its products and system solutions, our products carry a standard set of warranty services, which are competitive with — and in some cases outperform — others in the industry.

Service Packages

We offer value-add services that allow you to customize the level of services you need in meeting mission-critical performance levels. Our service package options offer many ways to upgrade your standard warranty by choosing the All-Inclusive OnePak, or by selecting individual services from our extensive portfolio. Our service and support advisors can assist in the selection of the individual services that best suit your requirements.

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For more information, please visit broadcast.harris.com/Radio.

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