Futhura

COST-EFFICIENT, HIGH-POWER DIGITAL TRANSMITTER

A reliable transmission solution, which promises a high return on investment

Thomson Broadcast provides high-performance television transmitters backed by more than 30 years of leadership in solid-state broadcast technologies.

Capitalizing on continuous industry leading research and development, Thomson Broadcast is an industry pioneer, which has deployed, through its Elite GreenPower series of digital television (DTV) products, the first sustainable transmitter systems. With the Futhura family of DTV transmitters, Thomson Broadcast once again offers the most innovative transmitter technology available today, combining high-energy effectiveness and cost efficiency.

Based on more than 30 years of experience in solid-state broadcast technologies, the Futhura family comprises all of Thomson's field-proven developments, including real-time digital adaptive pre-correction (DAP), and power supply voltage optimization. This combination of high performance and leading-edge transmitter design guarantees easy maintainability and scalability, and brings an optimal return on investment to the transmission network.

New design for the lowest cost of ownership

To meet the ever-increasing efficiency, availability and serviceability demands of today's broadcasters the Futhura series features an advanced cooling system.

In addition, the implementation of the latest generation of 50-V LDMOS transistor technology combined with managed peak-to-average power ratio (PAPR) technology allows for maximum power and high efficiency, while maintaining exemplary RF performance over the entire UHF band.

Boasting efficiency up to 29 percent — with an optimized cooling system — and power density up to 11.6 kW DVB in a single 19-inch cabinet, the system permits major energy savings and a low carbon footprint.

Capable cooling system

As a key factor in energy savings and reliability, the cooling system has been designed to distribute the transmitter cooling liquid by bus, thus eliminating the need for unreliable flexible hoses.

The suppleness of this system is ensured by the compact hydraulic cabinet, which permits environmental temperatures between -25°C and 45°C. It is also safeguarded by the dual pump option with automatic switchover in case of failure.

Particular attention was paid to the heat exchanger driven by EC motors equipped with speed adjustable fans. This speed variation guarantees major energy savings and noise reduction. A reserve capacity allows the failure of one exchanger without compromising dissipation performance. Overall availability of the transmission system is then enhanced thanks to both the reserve capacity and the longer-life EC motors.

KEY FEATURES

- Cost-efficient transmitter
- Energy efficiency up to 29 percent
- New cooling system design
- DVB-T/DVB-T2 modulation
- UHF wideband
- True real-time DAP provides effective correction for system variation such as:
  - Temperature
  - Component Aging
  - Subassembly failure
- Embedded Web server and SNMP agent included as standard
- Ready for HD/3D and any future standard development
Ready for advanced development

The introduction of the latest generation of Thomson multitask exciter allows the Futhura transmitter series to be ready for any current or future DVB development. With a built-in design, the flexibility and reactivity to any software upgrade is optimized. Thomson Broadcast has proven its involvement in advanced developments. The multiple physical layer pipes (MPLP) standard supported by Thomson Broadcast products means that it is possible to deploy mobile television, fixed television and digital radio services within a single broadcast channel.

Outstanding performance

The use of the latest generation of RF power transistors allows for increased reliability. The leading-edge availability on Futhura transmitter design has been carried forward including the required parallel amplification architecture. The use of power supply units, already a standard application for telecom operators, with high immunity against VSWR, reinforces continuous signal availability.

Guaranteed performance using DAP processing

As the pioneer of Digital Adaptive Precorrection (DAP) technology, recognized with many awards, Thomson continues to improve exciter features and performance.

Thomson has introduced successive signal-quality monitoring, real-time pre-correction, and automatic linear equalization (ALE), all of which provide the highest RF performance in the current generation of DTV transmitters. Real-time DAP technology compensates for performance variances due to changes in environmental conditions, component aging, and reduction of output power. Optimal RF signal quality and stability are guaranteed at all times without the need for user intervention. This feature is particularly valuable in the case of single frequency networks using repeaters where a consistently high level of performance is critical.

Additionally, the exciter includes a complete set of advanced features including dual ASI inputs, optional IP input, IP/ASI backup, optional internal GPS, and detailed adjustment of the output power via AGC.

Unique architecture for optimized maintainability

As the result of years of experience, the Futhura product line benefits from Thomson Broadcast expertise in terms of modularity and simplified maintenance procedures. The first level of maintenance is still as easy as replacing a module while keeping the signal on air. Moreover, no fine-tuning is required, thus shortening replacement time.

High power, flexibility

With a base building block of 880 W DVB amplifiers, TV transmitters are easily scalable to fit just about any power requirement. Futhura transmitter cabinets can be equipped with up to 14 amplifiers running in parallel for an industry unmatched 11.6 kW average DVB power, all from a single cabinet.

Advanced monitoring

For an unparalleled view into operation, the Futhura exciter offers a new frontpanel LCD screen for an immediate diagnosis and rapid maintenance. As standard the Futhura exciter provides an embedded Web server and SNMP agent to deliver a real-time and comprehensive display of the transmitter’s status.

First step for green HD or 3D television networks

The Futhura family represents a huge opportunity for broadcasters, whether for initial or further digital television deployments. The Futhura family allows broadcasters to benefit from the latest energy efficiency technologies for huge operational cost savings. Thanks to the support of the latest advanced spectrum-efficient standards such as DVB-T2 combined with managed PAPR efficient technologies, initial or additional 3D/HD TV services can be offered for new revenue generation.
SPECIFICATIONS

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<tbody>
<tr>
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<td>Cabinet Dims</td>
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**Frequency Range**

UHF 470 to 800 MHz

**Signal Bandwidth**

**DVB-T/H:**
- 7.61 MHz (channel 8 MHz)
- 6.66 MHz (channel 7 MHz)
- 5.51 MHz (channel 6 MHz)

**DVB-T2:**
- 7.78 MHz extended carrier mode

**Input Signal**

Dual A and B-ASI
- Dual T/S changeover without broadcast interruption
- DVB-T/H, DVB-T2: ASI MPEG-2 or MPEG-4
- IP Input: RJ 45
- GPS Antenna
- External Frequency Reference
- External Timing Reference

**Connectors**

- Impedance: 50Ω
- Connectors unflanged:
  - 1” 5/8 EIA up to 4.1 kW RMS
  - 3” 1/8 EIA from 5.0 kW up to 11.6 kW RMS

**Power Supply Specification**

- AC Mains power supply:
  - Three (3) phases AC: 3 phases, non-floating neutral, earth
  - Standard voltages: 208 V/220 V/240V/380V/400V/440V, ±10%
  - Frequency: 50 or 60 Hz (±3 Hz)
  - Power factor at nominal operation: > 0.9

**Environmental Compliance**

- RoHS compliant

**OPTIONS**

**FUTHURA Series**

- Internal GPS receiver
- Antenna for internal GPS receiver: GPS antenna drive kit mask
- IP input: RJ 45 connector
- Dual-cast DVB-T/DVB-T2: DVB T & DVB T2 modulations embedded
- RF filter: Filter for critical mask or non-critical mask
- External cooling system: Single or dual pump configuration

**ORDERING INFORMATION**

Please contact your authorized Thomson Broadcast representative.