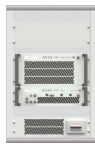


Alcatel-Lucent 9600 DTH Fixed and Mobile TV Transmitter

HIGH/MEDIUM POWER DIGITAL TERRESTRIAL REPEATERS FOR DVB-T/H

The Alcatel-Lucent 9600 Digital Transmitter (DTH) broadcasts digital television to handheld or fixed terminals based on the Digital Video Broadcasting — fixed Terrestrial/Handheld (DVB-T/H) European Telecommunications Standards Institute (ETSI) standard, in the ultra-high frequency (UHF) bands. There are four versions of the 9600 DTH high/medium power available: the 9600 DTH 250, the 9600 DTH 500, the 9600 DTH 1000, and the 9600 DTH 2000 (according to the power transmitted: 250, 500, 1000 and 2000 watts of output power respectively). They are available in 3 different sized cabinets with similar telecom features. This family of transmitters is ideal for implementing DVB-T/H networks in the UHF band to cover large outdoor surfaces. The 9600 DTH high/medium power is optimized for low power consumption and low cost of operations and maintenance. It presents a complete set of configurations with optional redundancy and outdoor installation, which are most adapted to telecom environment.



9600 DTH 250
9600 DTH 500



9600 DTH 1000



9600 DTH 2000

Features

- A high-performance digital Coded Orthogonal Frequency Division Multiplexing (COFDM) modulator adapted for cellular low-power Single Frequency Networks (SFNs)
- Core equipment enclosed in a standard 19-inch rack for easy indoor or outdoor installation
- Fault-tolerant configuration, providing full redundancy of core functionality
- Flexible input-stream interfaces
- Local and remote operations and maintenance (O&M) features through web browser and Simple Network Management Protocol (SNMP) support
- Truly redundant SNMP agent and single IP address in double drive
- A variety of backhauling interfaces
- A broad range of support services, including network design, hotline, repairs and on-site visits
- Single network manager for the whole 9600 DTH family
- Same exciter driver for all versions (including low power)

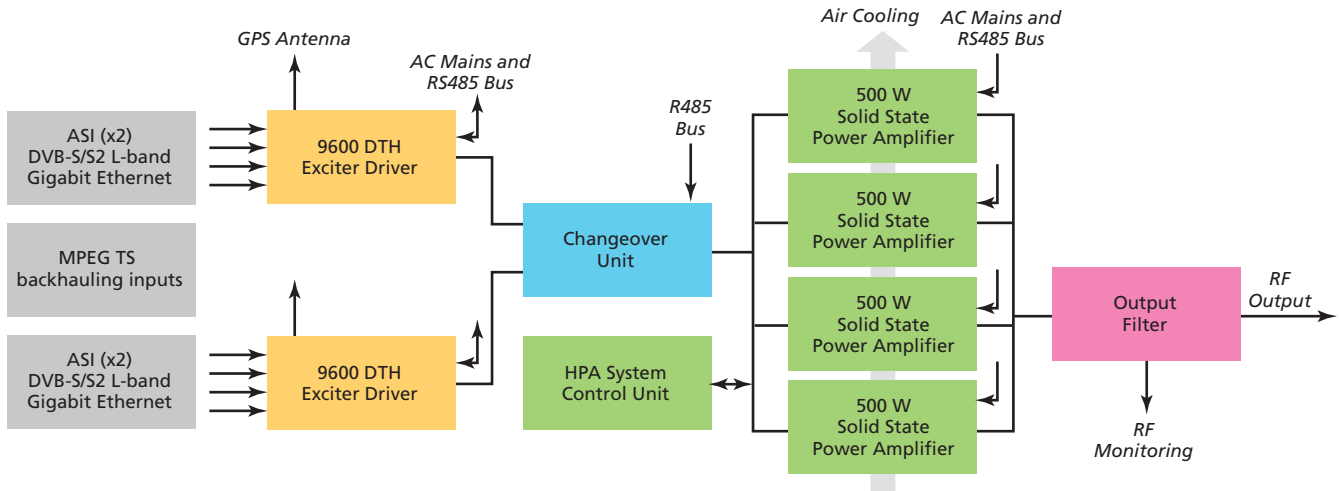
Benefits

- Easy installation and commissioning
- Complete set of configurations with optional redundancy and outdoor installation, fully adapted to telecom environment
- High-performance COFDM modulator with high Modulation Error Ratio (MER) to provide a high-quality video signal to mobile and fixed users
- High reliability with Dual Drive or Passive Standby configuration to reduce downtime
- Reliable performance, backed by Alcatel-Lucent customer support

Applications

- DVB-T and DVB-H UHF fixed and mobile TV coverage of large areas
- Provides outdoor coverage, and is complemented by low-power DTH product range (50/100 watts) for indoor and dense urban coverage

Figure 1. The main architecture, signal interfaces and control functions of the 9600 DTH 2000 (2 kW) double drive



Technical specifications

Transmitter

- Output power (6-cavity standard filter)
 - 9600 DTH 250: 250 W (+0/-1 dB)
 - 9600 DTH 500: 500 W (+0/-1 dB)
 - 9600 DTH 1000: 1000 W (+0/-1 dB)
 - 9600 DTH 2000: 2000 W (+0/-1 dB)
- Single drive (SD) or double drive (DD) configuration (1 kW and 2 kW)
- Air cooling
- Output connectors (standard, others on demand):
 - 250 and 500 W: 7/16
 - 1 kW: Electronic Industries Alliance (EIA) 7/8 in.
 - 2 kW: EIA 1+5/8 in.
- Output frequency range
 - UHF 470 MHz to 770 MHz in 1 Hz steps
 - Option: Up to 860 MHz
- TV standard: DVB-T/H (EN 300 744)
- Output frequency stability
 - ± 500 Hz with high-stability reference oscillator
 - Option: Higher stabilities, including global positioning system (GPS) locked reference oscillator
- MER: ≥36 dB
- Shoulder at $F_0 \pm 4.2$ MHz: ≤38 dB (without output filter)
- Spurious and harmonic emissions (with RF output filter option): ≤-60 dBc

- Same exciter driver and change-over unit for all configurations

COFDM modulator specifications

- Inverse Fast Fourier Transform (IFFT): 2K, 4K and 8K selectable
- Bandwidth: 5, 6, 7 and 8 MHz
- Guard intervals: 1/4, 1/8, 1/16 and 1/32
- Code rates: 1/2, 2/3, 3/4, 5/6 and 7/8
- Interleaver: Native or in-depth
- Data scrambling: Per ETSI 300 744
- Modulation scheme: Quaternary phase shift keying (QPSK), 16 quadrature amplitude modulation (QAM) and 64-QAM selectable (16-QAM and 64-QAM hierarchical or non-hierarchical, all modes supported)
- Bit rate: Up to 31.67 Mb/s (according to bandwidth, constellation, guard interval and code rate settings)
- Network mode: Multi-Frequency Network (MFN) or SFN selectable
- Modulator settings in SFN mode: Manual or automatic from MIP (Mega frame Initialization Packet) data + adjustable additional delay in 0.1 μs steps
- Digital pre-correction
- Linear (amplitude and group delay) and non linear (AM/AM and AM/PM)
- Up to eight stored presets
- Output level clipping: Adjustable

- Inputs: Up to four Moving Picture Experts Group (MPEG)/DVB transport streams with manual or automatic switching
- Transport stream output: Input transport streams monitoring through Asynchronous Serial Interface (ASI) output

Modulator input interface options

- ASI: MPEG transport stream
 - 75 Ω BNC – 270 Mb/s ± 100 ppm
- DVB-S receiver
 - Input: -25 to -65 dBm – 75 Ω F female – 950 to 2150 MHz with LNB power supply
 - Symbol rate: 2 to 45 Mbd/s
 - Code rate: 1/2 to 7/8 – automatic or manual
 - Roll-off: 35%
- Gigabit Ethernet
 - MPEG transport stream over IP (encapsulation as per ProMPEG code of practice #3, Release 2)

Power supply

- 230 V AC
 - Monophase (for up to 500 W)
 - Three phase (for 1 and 2 kW)
- Efficiency:
 - 12% typical
 - 10% guaranteed

Dimensions

- 9600 DTH 250 (SD)
 - Width: 57 cm (22.4 in.)

- Depth: 63 cm (24.8 in.)
- Height: 82 cm (32.3 in.)
- Weight: 120 kg (264.5 lbs)

- 9600 DTH 500 (SD)
 - Width: 57 cm (22.4 in.)
 - Depth: 63 cm (24.8 in.)
 - Height: 82 cm (32.3 in.)
 - Weight: 145 kg (319.7 lbs)
- 9600 DTH 1000 (DD)
 - Width: 57 cm (22.4 in.)
 - Depth: 90 cm (35.4 in.)
 - Height: 127 cm (50 in.)
 - Weight: 275 kg (606.2 lbs)
- 9600 DTH 2000 (DD)
 - Width: 57 cm (22.4 in.)
 - Depth: 103 cm (40.5 in.)
 - Height: 190 cm (74.8 in.)
 - Weight: 400 kg (881.8 lbs)

Operating environment

- Temperature
 - Indoors: 0°C to 45°C (32°F to 113°F)
 - Outdoor cabinet: -33°C to +55°C (-27.4°F to 131°F) (for 250 W SD and 500 W SD on request)

Standards compliance

- EMC-EMI
 - EN 302 296
 - EN 301 489-14
- Safety: EN 60950
- Ecological ECMA TR/70

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