

PARALLAX® V1

Medium & High Power Liquid Cooled Solid State Transmitters

The PARALLAX VHF Band 1 DTV transmitter series provides broadcasters with an efficient & rugged liquid cooled platform for digital TV requirements.

PARALLAX

Hitachi-Comark provides high performance and award winning television transmitters that are backed by more than 45 years of leadership in both inductive output tube (IOT) and solid-state broadcast technologies.

PARALLAX-V1 is targeted for the medium and high power digital TV market place, especially with DTV stations looking to maximize as a result of the FCC repack. The overall Tx design is simple, rugged, and reliable for the rigorous demands of commercial, national, and public broadcasters.

VHF by Design

PARALLAX-V1 is designed to support VHF band 1 (54-88 MHz). The transmitter architecture is simplified for operation in digital service; the technology of the device and the power rating is

tailored accordingly. The common architecture of the entire PARALLAX product line (UHF & VHF) provides support personnel with an easy task for regular maintenance and service.

Ultra Reliable Amplifier

RF final power amplifier modules are the heart of the PARALLAX-V1 transmitter. Banks of 4 PA modules are oriented vertically for easier handling. Each PA module weighs ~50 lbs. and is rated to deliver up to 1500W RF output power. RF PA's utilize the latest generation of 50VDC LDMOS device technology for the highest reliability and efficiency. Each amplifier uses 4x 600W class AB pallets in parallel, which are driven by a single class A pallet. Amplifiers are designed to be broadband and thus cover the entire VHF band 1 range.



Power Supply Unit

Each PA module is paired (1:1) with a separate power supply unit (PSU) to minimize PA weight. The PSU uses three commercial off-the-shelf air cooled AC to DC rectifiers. Individual PSU rectifiers can be hot-swapped. Rectifiers have variable fan speed control and output of 42-58VDC. The modules are 96% efficient, with a PF of >0.95 at full load. The PSU includes overvoltage, overcurrent, and short circuit protection.

KEY FEATURES

- ▶ VHF B1 Output Power Capability:
 - 5.4-21.5kW ATSC, single cab
 - Up to 41kW ATSC multi-cabs
- ▶ Liquid cooled amplifiers for simple install and maintenance
- ▶ Vertical PA modules with double-sided cold plate for max power
- ▶ Common system elements (cabinet, control system, user interface, etc.) for all versions of PARALLAX
- ▶ 50 VDC device technology; 1.5kW building blocks in ATSC
- ▶ Scalable architecture, simple output power upgrades possible
- ▶ Industry leading Digital Adaptive Precorrection (DAP)
- ▶ Simple yet powerful user interface via 15" front panel color high resolution touch screen
- ▶ Manufactured, serviced, and supported in the U.S.A.

DAP Technology Streamlines Performance

PARALLAX-V1 transmitters utilize the field proven EXACT-V2 DTV excitors with Digital Adaptive Precorrection (DAP) technology. DAP provides superior performance that is unattainable using any other signal correction technique.

DAP technology allows for simple setup and maintenance of a high performance transmitter system. DAP technology provides unsurpassed digital correction of all distortions created by a DTV transmitter system.

These distortions include nonlinear distortions created by active amplifier devices, such as amplitude and phase distortions, along with correction for memory effect. Additionally DAP corrects linear distortions created by the transmitter’s high-power, passive

RF system, such as group delay and frequency response distortions, maximizing the SNR performance.

Cabinet Configurations

PARALLAX-V1 transmitters are self contained in one or more equipment rack cabinets. Transmitters are configured with either single or dual drive excitors, redundant IPA’s, internal plumbing as well as the required RF hybrid combiners necessary for the PA’s. Separate indoor pump module and outdoor heat exchangers are used for the liquid cooling system.

Transmitter Control Logic

PARALLAX uses a distributed control system. Embedded within the transmitter is a field-proven, industrial CAN bus. Each major subassembly within the transmitter incorporates a microcontroller and functions as a “node”. Multiple nodes are used throughout the transmitter for control and protection.

Simple User Interface

PARALLAX provides both local and remote monitoring and control. Local control and monitoring is attained via the transmitter’s 15” color touch screen display, which is mounted in the front door of the cabinet. User menus are simple and intuitive. A built-in web GUI is available for remote access to the transmitter via the unit’s Ethernet interface. SNMP interface is also available.

ATSC Now and the Future

PARALLAX is fully compliant with the ATSC 1.0 A/53 DTV standard. EXACT-V2 excitors used in PARALLAX include powerful signal processing and can be field upgraded* with new firmware / software to support ATSC 3.0, preserving your investment today for use tomorrow. EXACT-V2 is provided with dual (A/B) transport stream inputs as well as multiple Gigabit Ethernet ports for ATSC 3.0.

GENERAL SPECIFICATIONS

Operating Frequency:

- VHF Band 1 (54 - 88 MHz)
- 6 MHz RF channel bandwidth

Modulation / Standard:

- ATSC 1.0 8VSB ~ ATSC A/53
- ATSC 3.0 ready ~ ATSC A/300*

Performance:

- RF Power – see table below
- SNR ≥ 32dB typical ATSC 1.0
- Shoulders >47dB ATSC 1.0
- RF Stability ±2%
- 4-1/16” EIA RF output, 50Ω

Amplifier Configuration & Power:

• Number of Amplifiers:	4	8	12	16	24	32
• VHF Output (kW):						
Amplifier ATSC 1.0	5.7	11.4	17.1	22.8	34.2	45.6
TPO ATSC 1.0 (after filter)	5.4	10.8	16.0	21.5	30.0	41.0
• Cabinet Configuration:	Single Transmitter Cabinet				2x Cabinets	

Note: higher RF power levels / configurations upon request

Electrical:

- Three phase AC Mains
- 208 VAC -11% / +15%
- 380 VAC +/-15%
- 480 VAC -15% / +8%
- 50/60 Hz
- > 0.98 power factor

Monitor/Control:

- Local 15” color touch screen
- Web: Ethernet via RJ-45
- Dry loop/TTL via DB-37
- SNMP v2 via Ethernet

Environmental & Safety:

- -0° to 45° C Temp range
- ≤ 90% non-condensing relative humidity
- Liquid cooled PA modules
- Indoor dual pump/sump assembly
- Outdoor dual fan heat exchanger
- ≤ 3000 M Maximum Altitude

Mechanical:

- 80” H x 30” W x 80” D per Equipment Rack Cabinet
- See chart below for configurations

* Depending on standard final approval

ORDERING INFORMATION

Please contact your authorized Hitachi-Comark representative.
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