

PARALLAX[®] AIO

Medium Power Liquid Cooled Solid State Transmitters

PARALLAX All-in-One “AIO” DTV transmitters provide broadcasters with an efficient, compact, and 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 AIO is a medium power DTV transmitter that minimizes floor space requirements. It integrates the cooling system as well as the entire RF system including 8-pole mask filter, output switch, and system load within the transmitter cabinet. The overall Tx design is simple, rugged, and reliable for the rigorous demands of commercial, national, and public broadcasters.

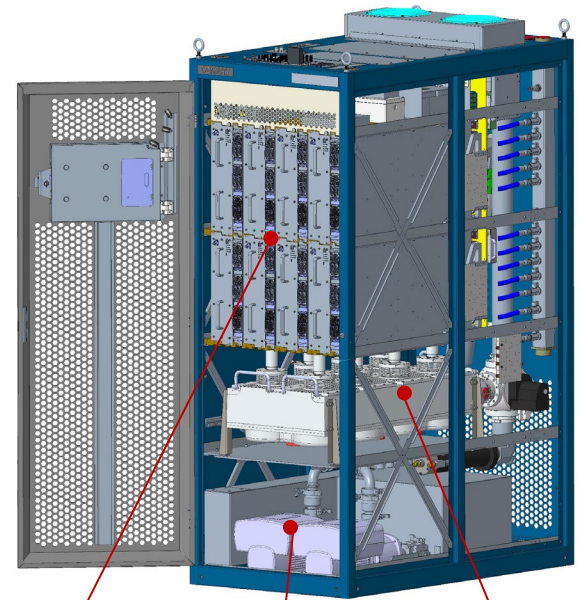
UHF by Design

PARALLAX AIO is designed to support UHF band. 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 AIO transmitter. Banks of 3 or 4 PA modules are oriented vertically for easier handling. Each PA module weighs ~50 lbs. and is rated to deliver up to 2kW RF output power. RF PA's utilize the latest generation of 50VDC asymmetric Doherty LDMOS device technology for the highest reliability and efficiency. Each amplifier uses 16 pallets in parallel in the final stage. Amplifiers are designed to be broadband and thus cover the entire 14-36 channel range without any tuning.



3 to 8 RF Amplifier Modules

Redundant Cooling Pumps & Tank

Internal RF Mask Filter System

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 over-voltage, overcurrent, and short circuit protection.

KEY FEATURES

- ▶ UHF Output Power Capability from 5kW up to 13kW ATSC 1.0 or 3.0 in a single cabinet
- ▶ Liquid cooled amplifiers for simple install and maintenance
- ▶ Vertical PA modules with double-sided cold plate for max power
- ▶ Internal RF system including 8-pole mask filter, output switch, and load
- ▶ Common system elements (cabinet, control system, user interface, etc.) for all versions of PARALLAX
- ▶ 50 VDC device technology; 2kW building blocks in ATSC 1.0 / 3.0
- ▶ 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 AIO transmitters utilize 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 Configuration

PARALLAX AIO transmitters are self contained in a single equipment rack cabinet for up to 13kW TPO. Each transmitter is configured with dual drive excitors, redundant IPA’s, internal redundant cooling pumps, coolant storage tank, as well as the required RF hybrid combiners necessary for the PA’s. A separate outdoor heat exchanger is 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 is controlled by its own microcontroller based “node”. “Multiple nodes communicate via that CAN bus to create the distributed control system.

Simple User Interface

PARALLAX provides both local and remote monitoring and control. Local control and monitoring is performed using 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. An 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:

- UHF Band (470 - 608 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%
- 3-1/8” EIA RF output, 50Ω

Amplifier Configuration & Power:

• Number of Amplifiers:	3	4	6	7	8
• UHF Output (kW):					
Amplifier ATSC 1.0 / 3.0	5.4	7.2	11.0	12.6	14.4
TPO ATSC 1.0 / 3.0 (after filter)	5.0	6.5	10.0	11.3	13.0
• Cabinet Configuration:	Single Transmitter Cabinet				

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
- Internal dual pump/sump assembly
- Outdoor liquid-to-air heat exchanger
- ≤ 3000 M Maximum Altitude

Mechanical:

- 80” H x 30” W x 56” D Single 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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