

PARALLAX[®] Compact

Medium Power Liquid Cooled Solid State Transmitters

PARALLAX Compact 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 50 years of leadership in both inductive output tube (IOT) and solid-state broadcast technologies.

PARALLAX Compact is a medium power DTV transmitter that minimizes floor space requirements. The compact form factor comes in a very efficient 27RU cabinet. The overall Tx design is simple, rugged, and reliable for the rigorous demands of commercial, national, and public broadcasters.

Digital by Design

PARALLAX Compact is designed to support either VHF B3 or UHF bands. 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 Compact transmitter. Banks of 3 PA modules are oriented vertically for easier handling. Each PA module weighs ~50 lbs. and is rated to deliver up to 2kW UHF or 1.6kW VHF RF output power. RF PA's utilize the latest generation of 50VDC asymmetric Doherty LDMOS device technology for the highest reliability and efficiency. Amplifiers are designed to be broadband and thus cover the entire 14-36 (UHF) or 7-13 (VHF) channel range without any tuning.



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 1.5kW up to 10kW 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
- ▶ External unitized RF system with mask filter, output switch, and load
- ▶ Common system elements (cabinet, control system, user interface, etc.) for all versions of PARALLAX
- ▶ 50 VDC device tech; providing the highest density and efficiency
- ▶ Industry leading Digital Adaptive Pre-correction (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 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.

Cabinet Configuration

PARALLAX Compact transmitters are self contained in a single 27RU equipment rack cabinet for up to 10kW TPO. Each transmitter is configured with 1 or 2 excitors and IPA’s as well as the required RF hybrid combiners and RF loads necessary for the PA’s. A separate cooling system with pumps, sensors, and coolant tanks is supplied with each transmitter. 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. The 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 / NextGenTV.

GENERAL SPECIFICATIONS

Operating Frequency:

- VHF Band 3 (174 - 216 MHz)
- UHF Band (470 - 608 MHz)

Modulation / Standard:

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

Performance:

- RF Output 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 Power Amplifier Modules:	1x PA	2x PAs	3x PAs	4x PAs	5x PAs	6x PAs
• UHF Output in ATSC 1.0 / 3.0 (kW):						
Cabinet Output	2.0	3.8	5.4	7.2	9.5	11.0
TPO (after filter)	1.8	3.4	5.0	6.5	8.6	10.0
• VHF B3 Output in ATSC 1.0 / 3.0 (kW):						
Cabinet Output	1.6	3.0	4.6	6.1	7.6	9.1
TPO (after filter)	1.5	2.7	4.1	5.5	7.0	8.2

Electrical:

- Three phase AC Mains
- 208 VAC -11% / +15%
- 240 VAC -11% / +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:

- 54” H x 24” W x 52” D UHF
- 54” H x 24” W x 57” D VHF B3
- External Cooling & Heat Exchanger

ORDERING INFORMATION

Please contact your authorized Hitachi-Comark representative.
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