

**E-Compact**

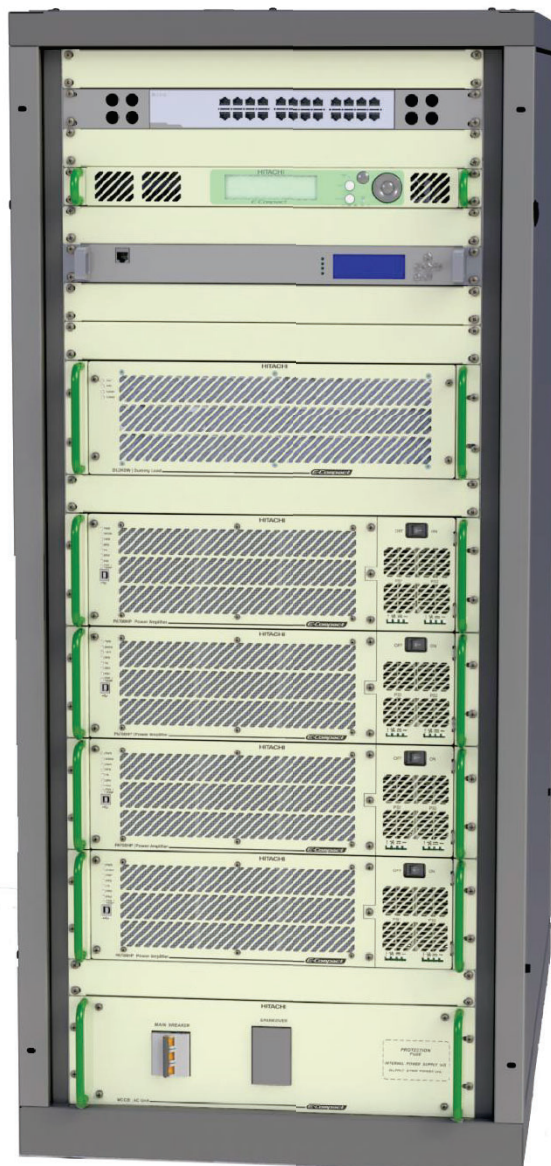
*Less energy. More power.*

## HP-BB3 Series

**E-Compact Broadband 3<sup>rd</sup> Generation  
High Efficiency VHF Transmitters**

**ATSC 3.0 Digital TV: 1000 to 4000 Watts RMS**

**ATSC 1.0 Digital TV: 1150 to 4600 Watts RMS**



## HP-BB3 Series

E-Compact Family 3<sup>rd</sup> generation of High Power Broadband VHF Digital TV Transmitters features fully solid-state drivers, air-cooled and is structured on standard 19" cabinets. The simplicity of its configuration and operation allows a fast startup and its high robustness ensures a smooth and safe operation.

Its compact design combines high power density per amplifier module and efficient energy consumption, features the option of Dual Exciter drivers, providing automatic redundancy to the equipment by a separate control module.

Based upon Doherty topology Broadband Power Drawer delivers High performance with efficiency up to 40% <sup>5</sup>, with two power supplies as standard thus assuring high reliability against power failures.

## Highlights

- Full Equipment control, including Power Drawers, performed by the Control Module.
- High versatility. Compatible with ATSC 1.0 / ATSC 3.0 Exciters. Excellent response to any pre-adaptive signal correction and high performance in SFN network transmission or MFN retransmission;
- Allowing upgrade from ATSC 1.0 to 3.0 through software update.
- Broadband Power Drawers with high efficiency Doherty topology, operating with up to 1130W RMS for ATSC 3.0 and 1270W RMS for ATSC 1.0. Excellent power density on Power Drawer, 3RU high.
- Automatic fan speed control: low noise levels, energy savings and longer device life.
- High reliability against failures. Two power supplies for each Power Drawer. Operate in share mode, ensuring redundancy.
- "Easy Maintenance" concept offering, among others, Plug-In connection for Power Supplies and Power Drawers.
- Insulated RF<sup>2</sup> combiners enabling Hot Swap<sup>1</sup>.
- MCCB (Molded Case Circuit Breaker), AC distribution module with SPD protection circuit (Surge Protection Devices) and Circuit Breaks.
- Compatible with TeamCast Exciter.

## Available resources

<b>Control Module Drawer</b> All equipment Management and control	STANDARD
<b>MCCB (Molded Case Circuit Breaker)</b> AC distribution module with load capacity from 8kW to 40kW consisting of circuit breakers, In-Rush limiting system, phase loss protection, mains overvoltage protection, under voltage protection (<180VAC), auxiliary +50VDC, +15VDC and +8VDC power supplies and safety interlock input for equipment power cut off.	STANDARD
<b>Easy Maintenance concept</b> Power Supplies and Power Drawers with plug-in connection, does not require the use of cables and wiring, allowing quick and safe replacement.	STANDARD
<b>Embedded WEB Server</b> Remote access <sup>3</sup> of the settings and management of the transmitter through the Ethernet <sup>4</sup> port is possible, using a PC or Smartphone browser, without the need to install drivers or applications.	STANDARD
<b>Passive Elements</b> Low Pass Filter, RF probe before mask filter <sup>2</sup> , RF probe after mask filter.	STANDARD
<b>Insulated RF<sup>2</sup> combiners enabling Hot Swap<sup>1</sup>.</b> RF hybrid combiner with Unbalance Load Module <sup>2</sup>	STANDARD
<b>Control Module Drawer</b> One 1 RU Control Module present.	STANDARD
<b>Digital manuals in English.</b>	STANDARD
<b>Plug-in 2000W Power Supply</b> Two 2000 Watt power supplies model GE CP2000AC54TE per power drawer. Operation in share mode, ensuring power redundancy. Power Supplies with plug-in type connection ("Easy Maintenance" concept), eliminates the use of cables and wiring.	OPTIONAL
<b>SPD (Surge Protection Devices)</b> Extra protection against power grid overvoltage surges.	OPTIONAL

<b>Ethernet<sup>4</sup> Switch standard cabinet 19"</b> Standard with the Double Excitement option.	<b>OPTIONAL</b>
<b>Dual exciter operation</b> Two Control Module Drawers (Main and Backup) for automatic redundancy operation.	<b>OPTIONAL</b>
<b>Remote telemetry over GPRS</b> Transmitter remote monitoring using the GPRS cell phone network.	<b>OPTIONAL</b>
<b>Manuals printed in English.</b>	<b>OPTIONAL</b>
<b>Interface color LCD touch screen display<sup>5</sup>.</b> Full access to the equipment's functionalities, thanks to the complete and friendly web interface	<b>OPTIONAL</b>

## General features

Mounting in standard 19" cabinet;

Fully solid state;

1130 Watt RMS @ ATSC 3.0

1270 Watt RMS @ ATSC 1.0

Doherty Power Drawers with LDMOS Transistors;

Air cooled. Power amplifier cooling: Forced ambient air, front-to-rear flow through high-volume integral fans. Washable fan air filters;

Automatic restart in case of power failure;

All equipment controlled and managed by firmware;

Access to settings and management of parameters via display interface on the front panel of the Exciter or remote<sup>3</sup> via Ethernet<sup>4</sup> (WEB server or SNMP);

Alarm signaling LEDs present on the front panel of the Control Module and Power Drawer;

Access the list of current or occurred alarms via display interface on the CM front panel or remotely<sup>3</sup> via WEB interface;

VSWR and Overpower protection via hardware and software, with automatic power reduction;

Software protection against module temperature increase, with alarm signaling and power reduction;

Automatic fan rotation speed control;

Automatic quiescent bias current compensation of power transistors as a function of temperature;

Transistor AGING compensation adjustment via Exciter front panel display;

USB communication drivers;

Automatic and programmable input switching in hold on and hold off modes;

Power supply with PFC (Power Factor Correction) and soft starter with In-Rush limitation.

RF interconnections between equipment parts with rigid line.

## Models features

	EC601HP-BB3	EC602HP-BB3	EC603HP-BB3	EC604HP-BB3
<b>Power Drawers</b>	1	2	3	4
<b>Rack Units (19")</b>	10 RU	20 RU	24 RU	28 RU
<b>Width</b>	600 mm (23 5/8 in)			
<b>Length</b>	900 mm (35 7/16 in)	1100 mm (43 5/16 in)		
<b>Weight</b>	70 Kg (154,32 lb)	170 Kg (374,79 lb)	210 Kg (462,97 lb)	250 Kg (551,16 lb)
<b>Output Connections <sup>6</sup></b>	EIA 1-5/8" : Impedance 50Ω			

## ATSC 3.0

	EC601HP-BB3	EC602HP-BB3	EC603HP-BB3	EC604HP-BB3
<b>Output power after filter</b>	1000 W	2000 W	3000 W	4000 W
<b>Output power before filter</b>	1119 W	2237 W	3356 W	4475 W
<b>AC consumption <sup>5</sup></b>	3280 W	6500 W	9720 W	12940 W
<b>Thermal dissipation <sup>5</sup></b>	7780 BTU/h	15355 BTU/h	22930 BTU/h	30505 BTU/h
<b>Efficiency before filter <sup>5</sup></b>	34,1 %	34,4 %	34,5 %	34,6 %
<b>Mask filter efficiency</b>	93%	93%	93%	95%

## ATSC 1.0

	EC601HP-BB3	EC602HP-BB3	EC603HP-BB3	EC604HP-BB3
Output power after filter	1150 W	2300 W	3450 W	4600 W
Output power before filter	1270 W	2530 W	3800 W	4900 W
AC consumption <sup>5</sup>	3638 W	7250 W	10890 W	13800 W
Thermal dissipation <sup>5</sup>	8490 BTU/h	16880 BTU/h	25380 BTU/h	31372 BTU/h
Efficiency before filter <sup>5</sup>	34,9%	34,9%	34,9%	35,5%
Mask filter efficiency	93%	93%	93%	95%

## Technical Characteristics

RF	
Standard	ATSC 3.0 A/300 ATSC 1.0 A/53
Operation frequency	174 MHz to 216 MHz (Chanel 7 to Chanel 13)
Bandwidth	6 MHz / 8 MHz
Minimum operating power	10 % of rated power
RF Output Regulation	≤±0.1 dB
Power stability	±2 %
RF input level	0 dBm
Typical MER	≥34 dB @ ATSC 3.0 ≥36 dB @ ATSC 1.0
Out-of-channel spurs and harmonic distortions	Better than -60 dBc

Environment Features	
Operating altitude	Up to 2500 meters <sup>7</sup> (8200 ft) <sup>7</sup> above sea level
Environment temperature range	0°C (32°F) to + 45°C (113°F) +25°C (77°F) recommended
Environment humidity range	0 to 95 % non-condensing

### Notes:

<sup>1</sup>The Power Drawers can be removed or inserted with the Transmitter in operation, however the Power Drawer to be removed or inserted must have the AC switches on its front panel in the OFF position.

<sup>2</sup>Except EC701HP-BB3 model.

<sup>3</sup>Consult factory to use transmitter Web Interface access on the same network with multicast stream.

<sup>4</sup>Ethernet is a trademark of Xerox Corporation.

<sup>5</sup>Measurements in channel and optimized environment, may vary according to operating frequency and MER.

<sup>6</sup>Consult factory for other types of output connections.

<sup>7</sup>Rated power up to 2500 meters (8200 ft). Above 2500 meters (8200 ft), consult factory.

## Electrical Characteristics

Mains (Factory Configured)	Single-phase 220VAC (M220) Biphasic 220 VAC (B220) Three-phase 220 VAC (T220) Three-phase 380 VAC (T380)
AC input voltage	185~277 VAC
AC frequency	47~66 Hz
PFC	0.95 (typical), 0.9 (minimum)

## Interfaces (Control Module)

Equipment local control interface	256X64 pixels graphic display cursor navigation keys
Signaling leds	Alarm LEDs on the Control Module and power drawers
Remote access	Connector RJ45 (front panel) Format IEEE802.3u 10 Base-T /100Base TX
Communication interfaces	Ethernet <sup>4</sup> WEB server SNMP Interface GUI8001

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