



## Television Systems Products

### Platinum Series®

HT EL Model

VHF TV Transmitters

Platinum HTEL transmitters utilize the same field proven amplifier modules as the high power Platinum Series of analog VHF TV transmitters. The HTEL Series offers high performance and reliability in a compact package. Low power HTEL systems utilize a single cabinet to house the exciter, control system, and amplifiers. Higher power systems use a control cabinet and one or two power amplifier cabinets. The control cabinet houses the system controller, exciter, monitoring, control panel and an optional second exciter and driver with automatic changeover.

#### Features/Benefits

- ▶ Externally diplexed design for best performance.
- ▶ Passive and active reserve systems available.
- ▶ Minimal routine maintenance required.
- ▶ Conservative design for highest reliability.
- ▶ Available for all worldwide television systems.



next level solutions

HT EL5LS/HS

## Harris Platinum Series® HT EL Specifications

Transmitter Model	Visual Power Output (peak, diplexer out)	Aural Power Output (diplexer out)	At Cabinet Output		Physical Size W x D x H	Weight	Power Consumption (Typical)	
			Visual Connector Size (50 ohms)	Aural Connector size (50 ohms)			Average	Black
HT EL500LS/HS	500 Watts	50 Watts	Type N	Type N	26" x 35" x 45" (66 x 89 x 114 cm)	430 lbs 195 kg	-	2.7 kW
HT EL1000LS/HS	1 kW	100 Watts	Type N	Type N	26" x 35" x 45" (66 x 89 x 114 cm)	450 lbs 205 kg	-	3.8 kW
HT EL2000LS/HS	2 kW	200 Watts	1-5/8"	Type N	26" x 44" x 72" (66 x 112 x 183 cm)	800 lbs 363 kg	-	7 kW
HT EL5LS/HS	5 kW	500 Watts	1-5/8"	Type N	57" x 61.3" x 72" (145 x 156 x 183 cm)	2,000 lbs 909 kg	10 kW	13 kW
HT EL5MSLS/MSHS	5 kW	500 Watts	1-5/8"	Type N	91" x 61.3" x 72" (231 x 156 x 183 cm)	3,560 lbs 1,618 kg	10 kW	13 kW
HT EL10LS/HS	10 kW	1000 Watts	1-5/8"	Type N	57" x 61.3" x 72" (145 x 156 x 183 cm)	2,640 lbs 1,200 kg	20.5 kW	26 kW
HT EL10MSLS/MSHS	10 kW	1000 Watts	1-5/8"	Type N	91" x 61.3" x 72" (231 x 156 x 183 cm)	4,840 lbs 2,200 kg	20.5 kW	26 kW
HT EL10DLS/DHS	10 kW	1000 Watts	1-5/8"	Type N	91" x 61.3" x 72" (231 x 156 x 183 cm)	3,560 lbs 1,618 kg	20.5 kW	26 kW
HT EL20DLS/DHS	20 kW	2000 Watts	1-5/8" <small>3 1/8" at Combiner output</small>	Type N	91" x 61.3" x 72" (231 x 156 x 183 cm)	4,840 lbs 2,200 kg	41 kW	52 kW

### Visual Performance

Frequency Range: LS MODEL: 47-88 MHz (Band I)  
 HS MODEL: 170-230 MHz (Band III)  
 Carrier Frequency Stability<sup>(1)</sup>: ±100 Hz (maximum variation over 30 days)  
 ±2 Hz with optional precise frequency control  
 Regulation of Output Power<sup>(2)</sup>: 3% or less relative to peak sync  
 Variation of Output<sup>(3)</sup>: 2% or less  
 Frequency Response vs. Brightness<sup>(5)</sup>: ±0.75 dB  
 Modulation Capability: 0%  
 Differential Gain<sup>(6)</sup>: 3% or better  
 Differential Phase<sup>(6)</sup>: 1° or better  
 Incidental Carrier Phase Modulation<sup>(6)</sup>: ±1.5° or better relative to blanking  
 Differential Gain vs APL<sup>(7)</sup>: ±5% or better (10% to 90% APL)  
 Luminance Non-Linearity<sup>(8)</sup>: 0.5 dB or better  
 Signal to Noise: -55 dB RMS or better relative to sync peak  
 (Total random and periodic noise unweighted.)  
 2t K-Factor: CCIR-M 1.5%; 2.0% for other systems  
 20t Gain and Delay Response: 3% or less total baseline distortion  
 Equivalent Envelope Delay: Per CCIR system standard  
 Video Input Level: 0.7 to 2.0 volts, 75 ohm, -32 dB return loss  
 Harmonic Radiation: -70 dB RMS, relative to peak of sync

### CCIR System B

-1.25 MHz and below . . . -20 dB or better  
 -0.75 to +4.8 MHz . . . -23 dB or better  
 +4.8 to +5.0 MHz . . . +0.5 to -1.5 dB  
 +5.50 MHz . . . -30 dB or better

### CCIR System D/K

-1.25 MHz and below . . . -20 dB or better  
 -0.75 to -0.5 MHz . . . +0.5 to -2.0 dB  
 -0.5 to +5.5 MHz . . . ±0.5 dB  
 +5.5 to +6.0 MHz . . . +0.5 to -3 dB  
 +6.5 MHz . . . -30 dB or better

### CCIR System I

-1.75 MHz and below . . . -20 dB or better  
 -1.25 to -0.75 MHz . . . +0.5 to -2.0 dB  
 -0.75 to +5.0 MHz . . . ±0.5 dB  
 +5.0 to +5.5 MHz . . . +0.5 to -2.0 dB  
 +6.0 MHz . . . -30 dB or better

### CCIR System K1

-1.75 MHz and below . . . -20 dB or better  
 -1.25 to -0.75 MHz . . . +0.5 to -2.0 dB  
 -0.75 to +5.0 MHz . . . ±0.5 dB  
 +5.5 to +6.0 MHz . . . +0.5 to -3.0 dB  
 +6.5 MHz . . . -30 dB or better

### Visual Sideband Response:<sup>(4)</sup>

#### CCIR System M/N

-3.58 MHz . . . -42 dB or better  
 -1.25 MHz and below. . . -23 dB or better  
 -0.75 to +3.58 MHz . . . ±0.5 dB  
 +4.18 MHz . . . ±0.5 to -1 dB  
 +4.50 MHz . . . -30 dB or better  
 +4.75 to +7.75 MHz . . . -40 dB or better

### Aural Performance

Frequency Stability: ±20 Hz, relative to visual carrier frequency  
 Modulation Capability: ±120 kHz peak deviation (at any modulation frequency)

### Wideband Performance (At ±75 kHz deviation)

Input Level: 1 volt RMS nominal into 75 ohms  
 Frequency Response: ±0.1 dB, 50 Hz to 50 kHz  
 ±0.5 dB, 50 kHz to 110 kHz  
 FM Noise: -70 dB or better after de-emphasis  
 Distortion (THD): 0.25% or less, 50 Hz to 15 kHz  
 0.75% or less, 15 kHz to 50 kHz  
 Distortion (IMD): 0.5% or less, (SMPTE 4:1 test signal)

### Monaural Performance (At ±50 kHz deviation system B/I/K1/D At ±25 kHz deviation system M/N)

Input Level: 0 to +16 dBm (adjustable) into 600 ohms  
 Pre-emphasis: Flat, 50 (µs or 75 (µs selectable)  
 Frequency Response: ±0.5 dB, 30 Hz to 15 kHz  
 Distortion (THD): 0.2% or less, 30 Hz to 15 kHz, after de-emphasis  
 FM Noise: -60 dB or better, after de-emphasis  
 AM Noise: -55 dB relative to 100% modulation  
 AM Synchronous Noise: -40 dB or better, relative to 100% amplitude modulation<sup>(4)</sup>  
 Subcarrier (2 inputs)  
 Input Level: 1 volt RMS nominal (adjustable) into 75 ohms  
 Frequency Response: ±0.5 dB, 20 kHz to 110 kHz

### Multichannel Audio Sound Systems

	BTSC	Dual Carrier	NICAM
Frequency Response:	±0.1 dB (A)	±0.5 dB (B)	±0.5 dB (B)
Harmonic Distortion:	0.5%	0.5%	0.5%
Input Impedance:	75 ohm	600 ohm	600 ohm
Input Level:	1 volt peak	+10 dBm	(C)
Stereophonic S/N (D):	55 dB	(C)	(C)
Signal to Noise:	N/A	60 dB	(C)
(Either Channel)			
Stereo Separation:	40 dB (E)	40 dB typical; 32 dB minimum	(C) (C)
Main to Sap Crosstalk:	50 dB	N/A	N/A
Stereo to Sap Crosstalk:	50 dB	N/A	N/A
Sap to Stereo Crosstalk:	60 dB	N/A	N/A
Channel Crosstalk:	N/A	60 dB	60 dB
Carrier Levels (F):	-10 dB	-13, -20 dB	-13, -20 dB
Aural Intermodulation Products (G):	N/A	-60 dB	-60 dB

NOTES:  
 (A) Wideband 50 Hz to 50 kHz; (B) 30 Hz to 15 kHz; (C) Encoder/decoder dependent  
 (D) Measured in left or right channel; (E) Equivalent mode; (F) Relative to peak visual carrier; (G) Relative to peak visual carrier. Measured using 2-tone test with carrier levels indicated above.

### Service Conditions

Transmitter Model	Ambient Temperature Range <sup>(9)</sup>	Electrical Requirements
HT EL500LS/HS	32 to + 113 deg F 0 to + 45 deg C	208/240 volts, ±10%, single phase, 50/60 Hz
HT EL1000LS/HS	32 to + 113 deg F 0 to + 45 deg C	208/240 volts, ±10%, single phase, 50/60 Hz
HT EL2000LS/HS	32 to + 113 deg F 0 to + 45 deg C	208/240 volts, ±10%, single phase, 50/60 Hz
HT EL5LS/HS	32 to + 122 deg F 0 to + 50 deg C	208/240 volts, ±10%, 3-phase, 50/60 Hz 380/415 volts, ± 10%, 3-phase, 50/60 Hz
HT EL5MSLS/MSHS	32 to + 122 deg F 0 to + 50 deg C	208/240 volts, ±10%, 3-phase, 50/60 Hz 380/415 volts, ± 10%, 3-phase, 50/60 Hz
HT EL10LS/HS	32 to + 122 deg F 0 to + 50 deg C	208/240 volts, ±10%, 3-phase, 50/60 Hz 380/415 volts, ± 10%, 3-phase, 50/60 Hz
HT EL10MSLS/MSHS	32 to + 122 deg F 0 to + 50 deg C	208/240 volts, ±10%, 3-phase, 50/60 Hz 380/415 volts, ± 10%, 3-phase, 50/60 Hz
HT EL10DLS/DHS	32 to + 122 deg F 0 to + 50 deg C	208/240 volts, ±10%, 3-phase, 50/60 Hz 380/415 volts, ± 10%, 3-phase, 50/60 Hz
HT EL20DLS/DHS	32 to + 122 deg F 0 to + 50 deg C	208/240 volts, ±10%, 3-phase, 50/60 Hz 380/415 volts, ± 10%, 3-phase, 50/60 Hz

Ambient Humidity Range: 0 to 95% relative humidity, non-condensing  
 Altitude: Sea level to 10,000 feet 3,048 meters

(1) After initial aging of 60 days  
 (2) Variation of peak output power with a change in average picture level from black to white (0% to 100%)  
 (3) Peak to peak variation of peak sync voltage during one field using a flat field test signal, per EIA-508  
 (4) Response specified for transmitter operating into a resistive load of 1.05:1 VSWR or better  
 (5) Measured using a 20% peak to peak amplitude swept video modulation with pedestal set at 10%, 50% and 90% APL. All percentages relative to a blanking to white excursion  
 (6) Measured with a 5 step staircase signal from 75% to 12.5% of peak sync level. Subcarrier modulation level at 12.5% peak to peak  
 (7) Average picture level defined as the pedestal level over 4 horizontal lines set to 10%, 50% & 90% of maximum white level with every 5th line activated with standard linearity signal of note (6)  
 (8) Measured with 5 step staircase signal. Test signal #3 CCIR REC. 421-3  
 (9) Derate 2° C per 1000 ft. (305 m.) above sea level

### Features/Benefits

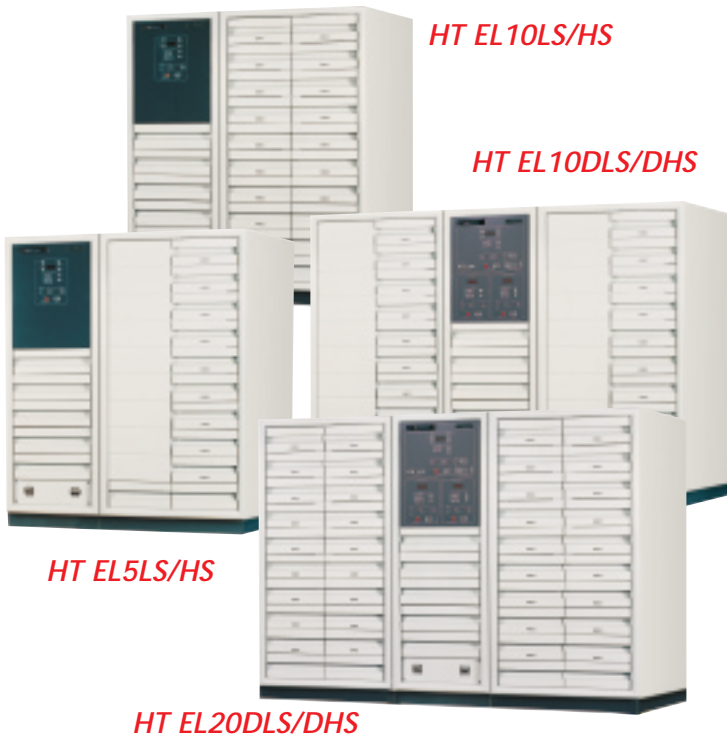
- ▶ Simple, straightforward compact solid state design for reliable, unattended operation.
- ▶ Field repairable MOSFET power amplifier modules engineered for long life and reliable performance.
- ▶ Regulated power supplies capable of handling  $\pm 10\%$  variation of incoming AC line voltage.
- ▶ Advanced cooling system provides equal volume of air at an ambient temperature to each module.
- ▶ Exciter ensures high quality visual and aural performance.
- ▶ Engineered for easy operation and minimal maintenance.



**HT EL500LS/HS**

**HT EL1000LS/HS**

**HT EL2000LS/HS**



**HT EL10LS/HS**

**HT EL10DLS/DHS**

**HT EL5LS/HS**

**HT EL20DLS/DHS**

### Features/Benefits

- ▶ Main-standby configuration features parallel redundancy of all components for maximum on-air reliability.
- ▶ Power amplifier modules with demonstrated MTBF > 500,000 hours.
- ▶ Regulated power supplies capable of handling  $\pm 10\%$  variation of incoming AC line voltage.
- ▶ Designed for unattended operation with simple plug-in connections for remote control.
- ▶ Meets ANSI C62.41 6 kV mains transient standards and IEC 215 safety standards.
- ▶ Models for any CCIR system with NICAM and IRT dual carrier sound versions available.

### Features/Benefits

- ▶ Parallel redundancy of power amplifier modules (all components for DLS/DHS models) for maximum on-air reliability.
- ▶ Power amplifier modules with demonstrated MTBF > 500,000 hours.
- ▶ Regulated power supplies capable of handling  $\pm 10\%$  variation of incoming AC line voltage.
- ▶ Designed for unattended operation with simple plug-in connections for remote control.
- ▶ Meets ANSI C62.41 6 kV mains transient standards and IEC 215 safety standards.
- ▶ Models for any CCIR system with NICAM and IRT dual carrier sound versions available.



**HT EL10MSLS/MSHS**

**HT EL5MSLS/MSHS**



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