



ADVANCED TV

DIGITAL UHF ATSC Medium and Low-Power Transmitters **Model: AT7400**

LINEAR has 3 decades in the professional TV transmitter market and now is offering a new cost effective option for ATSC transmitters, the ADVANCED TV SERIES. LINEAR is assembling and is supporting this product line in the U.S. for all North America.

Expansion of the digital coverage of TV networks is now focusing on medium and low-power transmitters. Operators will see on this product a solution for the expansion of coverage with quality, reliability and low cost. This product integrates the benefits of a variety of friendly operational programmable features.

ADVANCED TV line meets the FCC and ATSC A/53 specification. It incorporates the most recent techniques for oscillators phase noise control. We also offer a menu of suitable hardware options leading to increase the operational efficiency under a specific TV network or local TV station demand.

The main RF amplification channel is composed of a 20W exciter, followed by 2 independent 220Wrms amplifiers, with minimum 14dB gain. Passive isolated RF splitter and combiner provides reliable impedance matching for the RF power combination. ALC circuitry continually monitors and keeps stability in the output power on the programmed level.

These transmitters were designed to attend the wide variety of broadcasters demands, as well as the majority of the international needs. They make use a highly reliable solution of air refrigeration.

ADVANCED TV

ADVANCED TV

AT7400

FEATURES:

- ✓ SNMP interface for use in global management system, easily integrate to network.
 - Remotely Controlled
- ✓ Configurable by simple PC software
 - System Configuration and alarms
 - Line Up modifications
 - Operational records log
 - Power levels
- ✓ Performance:
 - Shoulder Level: 47dB or better
 - MER: 39dB or better
- ✓ Protections:
 - Power Supply; Over-Current, over voltage
 - Excessive temperature
 - Excessive Reflected Power
- ✓ Self-cooling drawers
- ✓ Built-in RF power filters
- ✓ LD MOS technology
- ✓ IF Complex Modulation
- ✓ Power Factor Correction
- ✓ Soft Start
- ✓ Modular construction

OPTIONAL:

- ✓ External reference input allows optional GPS synchronization
- ✓ WEB interface LAN

INCLUDED:

- ✓ Remote control
- ✓ Control software
- ✓ Internal output mask filter
- ✓ All digital linear pre-correction
- ✓ English manual

INPUTS:

Transport Stream Input	ATSC/MPEG2, compliant to SMPTE310M or ASI
Transport Stream connector	75Ω BNC
Transport Stream data rate	19.39Mbps (SMPTE310M) / 270Mbps (ASI)
External time base	10MHz (0 to +10dBm)
External time base connector	50Ω BNC

OUTPUT:

RF Output Power	400Wrms
RF output connector	EIA 7/8" flanged
Modulation Mode	8VSB. All-Digital Complex IF modulation
IF	18.833916MHz.
Channel Bandwidth	6MHz
Test Signal	PRBS, Pseudo Random Bit Sequence
Frequency Range	UHF, Ch14 to Ch69 (4 bands)
Frequency Step	1Hz, in a range of ±220kHz
Symbol Rate	10.76 MSymbol/sec.
Digital/Analog Converter	16 bit
Pilot frequency overall stability	±0.3 ppm
Peak to peak frequency response	0.15dB
Peak to peak group delay	15ns
Phase noise	-104dBc/Hz @20kHz offset
Conducted spurious and harmonics	< -60 dBc, FCC 47 Part 74.
Radiated spurious and harmonics	< -80dBc, FCC 47 Part 74
MER (Modulation Error Rate)	39dB (modulator output) typical 39dB (exciter output) typical 29dB (transmitter output) typical
Output sample connector	N

GENERAL:

Serial interface	RS 232 communication
Oscillator	Synthesized by PLL
Internal time base	10MHz OCXO
Frequency stability	±0.3 ppm
Power Supply(50/60Hz)	208/240Vac, biphasic, 3 wires
AC consumption	3,200W
Power factor correction	Included
Air refrigeration	Drawer air speed: 400 ft/minute overall air flow:21ft ³ /sec.
Room temperature range	from 40°F to 90°F
Humidity range	from 0 to 80%
Operational altitude	up to 2,000m
Dimensions (inches)	48 H, 28 W, 43D
Weight (lb)	NET: 525, Gross: 640
Foot print (inches)	28 W, 84 D

LINEAR INDUSTRIES, INC.

2531 Technology Drive, Suite 310. Elgin IL, 60124 - USA

+1 (847) 380 9111 - +1 (847) 428 5785 - broadcast@linear-tv.com - www.linear-tv.com



ISCHIO

IS74K1 is a transmitter for Digital TV ISDB-Tb signals, totally assembled in LDMOS solid state, offering excellent linearity in the UHF band.

This transmitter was developed with state-of-the-art technology, to meet both the great variety of requirements and specificities of the Brazilian radio broadcaster as well as the innovations of the Digital TV. It makes use of the widely approved solution of air refrigeration.

A modern frequency-agile up-converter with great steps as great as 1Hz is the base for the high performance of the transmitter, guaranteeing a very low phase noise of the local oscillator.

For greater stability, the time base of the transmitter and the modulator can be the same, internal or external. For sync, a time base from the GPS or rubidium can be used.

A modern linearization solution allows reaching the necessary masks in an optimized way.

All transmitter's measurements are shown in the frontal monitor.

The software allows complete telesupervision of the equipment through GPRS protocol of a cell phone or Ethernet, for remote control or alarm in the case of an eventual failure.

To be digital it has to be Linear.

ISCHIO

ISCHIO

4.1kW UHF Transmitter for ISDB-T_B

IS74K1

HIGHLIGHTS:

- ✓ Output amplifying drawers with LDMOS
- ✓ One power-supply in each drawer
- ✓ Power-supplies with Power Factor Correction (PF > 0,92)
- ✓ I-rush circuit, for start current control
- ✓ Isolated combiner, allowing hot swap
- ✓ Video measurements and alarms, available on a 12" touch screen
- ✓ Assembly in SMD technology
- ✓ Management through microcontrollers
- ✓ VSWR protection by reducing the directed power
- ✓ Timebase through GPS
- ✓ IF digital pre-correction for ISDB-T_B

INCLUDES:

- ✓ Control software
- ✓ External low-pass and channel filters
- ✓ English manual

OPTIONS:

- ✓ Telesupervision via Ethernet, GPRS and RS232 Cable

INPUTS:

- BTS or TS

Formate	DVB-ASI
Connector	Female BNC
Impedance	75

OUTPUT:

Power	4.1kW _{rms}
Impedance / connector	50Ω / 3 1/8" EIA Flange
	VSWR 1.15
Channels	from 14 to 69
TV standards	ISDB-T _B Brazil
Intermodulation (*)	-36dB @ ±3.15MHz
	-43dB @ ±3.15MHz
	-50dB @ ±3.15MHz
Harmonic / spurious	better than -62dBc
Ripple in the channel	0.5dB, excluding the filter

GENERAL:

Serial communication interface	RS232
Oscillator	synthesized by PLL
Frequency stability	±1Hz
Power supply (50 / 60Hz)	220Vac triphasic (Y or) or 380Vac triphasic (Y)
Consumption	33kVA (220Vac)
Power factor	> 0.92
Dissipation in the environment	90,000 BTU (recirculate)
Room temperature range	from +5°C to +40°C
Room humidity Range	from 0 to 80%
Operation altitude	up to 2.000m
Dimensions (mm)	1.795(H) x 2.109(W) x 1.160(D)

* Emission mask according to the client's project.

LINEAR EQUIPAMENTOS ELETRÔNICOS S.A

Praça Linear, 100 - CEP 37540-000 - Santa Rita do Sapucaí - MG - Brasil
☎ (5535) 3473 3473 - 📠 (5535) 3473 3474 - linear@linear.com.br - www.linear.com.br



PRIMUS

PR715K is a transmitter for TV analog signals, developed based on the 30-year experience of Linear, totally LDMOS solid state, offering excellent linearity in all UHF band.

This transmitter was developed to attend the wide variety of demands from the radio-broadcaster as well as the majority of international needs. It makes use of the simple, efficient and widely approved air-refrigeration solution.

The amplification is combined to protect the investment, the equipment uses state-of-art technology in exciter.

DigiAna is used for the modulator. This modulator converts analog audio and video signals to digital. Once that is done, it will perform the linear and non-linear corrections on the video signal, and also includes the IF pre-correction. After the digital modulation process, the IF signal is converted back to the analog format. DigiAna is ready to receive BTSC encoder signal.

The modern up-converter design is frequency agile with low phase noise. It also carries two options for time base operation; synchronization, internal with OCXO and external input. These features are the guarantee of high broadcasting performance.

Regardless of the main digital control, all transmitter measurements are shown in its frontal monitor.

The software allows yet the telesupervision of the equipment through telephone line, for remote control or alarm in case of eventual failure.

The standard double-exciter, for automatic redundancy, and the amplifiers - each one with its own power-supply - guarantee total redundancy in the output and a higher level of reliability.

PRIMUS

PRIMUS

15kW UHF Transmitter for TV analog signals

PR715K

HIGHLIGHTS:

- ✓ DigiAna is digital for analog signals
- ✓ Output amplifying drawers with LDMOS
- ✓ One power-supply per drawer
- ✓ Power-supplies with Power Factor Correction (FP > 0.92)
- ✓ Controlled start-up, allowing the use of No-Break
- ✓ Isolated combiner, allowing hot swap
- ✓ Measurements and alarms, available on a 12" touch screen
- ✓ Double excitation with automatic redundancy
- ✓ Assembled in SMD technology
- ✓ Managed by microcontrollers
- ✓ VSWR protection by reducing the direct power
- ✓ IF double-conversion for TV channel
- ✓ OCXO time-base and external time-base input
- ✓ Digital IF pre-correction
- ✓ Combined audio and video

INCLUDES:

- ✓ External low-pass and channel filters
- ✓ Manual in English

OPTIONAL:

- ✓ Telesupervision through Cell phone, Modem or Ethernet Web Server

INPUTS:

• Audio and Video

Impedances	balanced audio = 600Ω video = 75Ω
Levels	audio = 0dBm video = 1Vpp / 34dB return loss
Frequency responses (±1dB)	audio = 30Hz to 15kHz video = 25Hz to 4.2MHz (M/N)

OUTPUT:

Power	15kWps (video) 1.5kW (audio)
Impedance / connector	50Ω / EIA 3 1/8" Flange
Channels	from 14 to 69
TV Standards	M/N
Intermodulation	better than -52dB @ with modulated ramp
Harmonics / spurious	better than -62dBc, with modulated ramp
Differential Gain (DG)	better than 3%
Differential Phase (DP)	better than 3°
Low-frequency linearity	better than 10%
Sync Compression	0%

GENERAL:

Serial communication interface	RS232
Oscillator	Synthesized by PLL
Time-base	10MHz OCXO or external
Frequency Stability	±0.3ppm (better than ±500Hz any channel) OCXO type oscillator.
Power (50 / 60Hz) (± 10% variation)	triphasic 220Vac (Y or) or triphasic 380Vac (Y)
Consumption	50kVA @ black video
Power Factor (PFC)	> 0.92
Acoustic Noise	< 70dBA
Ambient heat dissipation	< 130,000 BTU (recycled)
Room-temperature range	from +0°C to +40°C
Room-humidity range	from 0 to 70%
Operation altitude	up to 4,000m
Dimensions (mm)	1,915(H) x 2,109(W) x 1,074(D)
Net weight (kg)	1,350

LINEAR EQUIPAMENTOS ELETRÔNICOS S.A

Praça Linear, 100 - CEP 37540-000 - Santa Rita do Sapucaí - MG - Brasil
☎ (5535) 3473 3473 - 📠 (5535) 3473 3474 - linear@linear.com.br - www.linear.com.br



VIGOUR

VIGOUR RELIABILITY AT YOUR REACH

Linear technological leadership and on field experience, aquired since 1977, this time came with operational and maintenance easiness.

The design of VIGOUR, the new TV transmitters line, was focused in the small communities and reaches the market with a very good cost/benefit ratio.

All models are fully micro controlled and are very easy to install due availability of both IF and audio and video input.

Mains fluctuations are surpassed by the power supply, that works from 90Vac to 240Vac.

The union of high technology and simplicity is made possible with VIGOUR.

VIGOUR

VIGOUR

VI220P | VI320P

HIGHLIGHTS:

- ✓ Amplifier with LDMOS transistors
- ✓ Assembled with SMD components
- ✓ Internal reference frequency (OCXO of the 4MHz)
- ✓ PLL synthesized
- ✓ Total intercarrier stability, due to the use single time base
- ✓ Combined Audio and Video modulation
- ✓ SAW filter
- ✓ Automatic shutdown by VSWR level and over temperature
- ✓ Automatic shutdown by lack of IF or video
- ✓ RF monitoring via RF output sampling
- ✓ Auxiliar IF output (optional)
- ✓ Low cost, in EIA 19" standard aluminum rack
- ✓ Simplicity with confiability

INCLUDED:

- ✓ Control software
- ✓ External output filter
- ✓ Installation kit containing 1m RGC-08 cable with two N male connectors
- ✓ English manual

INPUTS:

• IF

Impedance / connectors	50Ω N female
Input level	- 65 to - 15dBm
Frequency range	41 to 47MHz
Return loss	20dB

• Audio and Video (with internal modulator)

Connectors / impedance (unbalanced)	audio = BNC or RCA female /1kΩ video = BNC or RCA female /75Ω
Levels	audio = 0dBm (adjustable from 0.1 to 1Vpp) video = 1Vpp
Frequency response (±1dB)	audio = 30Hz to 15kHz video = 25Hz to 4.2MHz
Audio pre-emphasis	75μs (M/N or B/G), 50μs others

OUTPUT:

	VI220P	VI320P
Power	20Wps video and 2W audio,adjustable	
Impedance / connector	50Ω / N female	
AGC (with IF input)	±0.5dB at output, for variations of 50dB at input	
Channels	2 to 6 (BI)	7 to 13 (BIII)
TV standard	M/N	
Intermodulation	better than -52dBc	
Differential gain	better than ± 4%	
Differential phase	better than ± 3°	
Sync. Compression	< 5%	
Intercarrier ratio	10dB	
Signal to video noise ratio	60dB	
Signal to audio noise ratio	65dB	
Ripple	±0.5dB (SAW filter)	
Spurious emission	better than -60dBc, out of band	
Harmonics emission	better than -60dBc	

OPTIONAL ACCESSORY

• Tower Down Converter

Impedance / connector	50Ω / N female
Level	-70 to -30dBm

GENERAL:

Oscillator	PLL synthesized
Time base	4MHz OCXO
Frequency stability	±0.3ppm (better than ±500Hz any channel) OCXO type oscillator.
Squelch	turns off in the absence of video, or when IF < -60dBm
Supply: Standard	90 to 240Vac, 50/60Hz
Optional	+36Vdc
Consumption	150VA
Ambient dissipation	<220 BTU
Ambient temperature range	from -5°C to +40°C, with over temperature protection
Ambient humidity range	from 0 to 95%
Operation altitude	up to 5000m
Dimensions (mm)	133(H) x 483(W) x 501(D)
Net weight (kg)	11

LINEAR EQUIPAMENTOS ELETRÔNICOS S.A

Praça Linear, 100 - CEP 37540-000 - Santa Rita do Sapucaí - MG - Brasil
☎ (5535) 3473 3473 - 📠 (5535) 3473 3474 - linear@linear.com.br - www.linear.com.br