



UHF TV TRANSMITTER AND TRANSLATORS 15 – 5000 WATTS DIGITAL ATSC TYPE AT7 SERIES



Type AT7350

FEATURES:

- Fully Solid State and Modular Construction
- Individual self air cooling drawers
- Complex Digital Modulation with no SAW Filter
- SNMP Interface and PC Configurable
- Advanced linear and non-linear pre-correction
- Soft-start and Power Factor Correction
- LDMOS Technology
- Fully self protected

LINEAR has 3 decades in the professional TV transmitter market and is now offering a new cost effective option for ATSC transmitters and translators, the ADVANCED TV SERIES. LINEAR is assembling and supporting the AT7 series in the USA for all North America.

LINEAR is a leading manufacturer of analog and digital transmitters with state of the art designs and world-class quality manufacturing. Linear's total DTV solutions consist of completely integrated transmission systems including LINEAR transmitters, along with analog and digital receiver decoders, DTV encoders, PSIP generators and editors, multiplexers, transmission line, antennas and power conditioning. Strong relationships with key manufacturers and industry partners for each system component allow LINEAR to provide the right solution for each broadcaster's specific needs. A wide range of DTV products is available for both VHF and UHF frequency bands and at power levels ranging from 15 watts to 5 kilowatts digital and 15 watts to 10 kilowatts analog. Translators models require additional receiver not shown on diagrams.

Expansion of the digital coverage of TV networks is now focusing on medium and low power transmitters. Operators will see this product as an ideal economic solution for expansion of coverage with quality, reliability and performance. The AT7 series product range integrates the benefits of a variety of friendly operational programmable features and state of the art correction techniques.

The ADVANCED TV line conforms to the FCC and ATSC A/53 specification. It incorporates many features including a unique technique for oscillator phase noise control which provides greater S/N stability and performance. The main RF amplification channel is composed of a 20W exciter, followed by multiple independent 220Wrms amplifiers, each with up to 14dB gain. A passive isolated RF splitter and combiner provides reliable impedance matching for RF power combining. ALC circuitry continually monitors and maintains stability of the output power at the programmed level.

These transmitters were designed for full unattended operation and to meet the most exacting of broadcaster's demands.

ADVANCED TV

ADVANCED TV

CONSTRUCTION

Exciters and transmitters of 125W or less are contained in one 19" rack mount chassis. A 19" rack or cabinet can be provided as an option. For transmitters of 350W and higher, all equipment including exciter(s), splitter(s), RF amplifier(s) and power supplies, combiner(s), low pass filter and band pass filter is contained in one, two or three 28" wide cabinets. No external enclosures for cooling, transformers or power supplies are necessary. The low noise cooling system is internal, with the air input at the front of each amplifier and the exhaust air at the top of the cabinet. The air outlet is delivered into the building or can be directed outside via an optional air duct optional system. The front panel includes an AC input control switch and an overload protection indication.

The exciter units with the inclusion of a band pass filter can provide powers of up to 125W, and can be used as a stand alone transmitter (125 W exciter shown below). For transmitters with a power level requirement above 125W a 28" wide



cabinet is included. See following pages for dimensions of each transmitter. At power levels above 125W a number of RF amplifier chassis are employed depending on the output power requirement. Each amplifier has its own power supply and cooling system. See specifications by model for the number of amplifiers for each power level.



CONTROL

The equipment is designed primarily for unattended operation under automatic or remote control. The control system includes status indication, manages the start sequence and maintains a continuous surveillance over the operation of the equipment. The transmitter is controlled via simple push buttons on the front panel assembly, allowing the equipment to be easily monitored and adjusted. The operation status is indicated via a simple 40 x 4 LCD screen. The control system will shut down the appropriate assembly if any power supply has

an over-current or over voltage problem, if there is excessive temperature or if there is too much reflected power. Additional protection against high VSWR is provided by a power fold back method.

All of the AT7 series of digital ATSC transmitters and translators include the ability to supervise and diagnose equipment through SNMP or web server.

RF AMPLIFIER CHASSIS

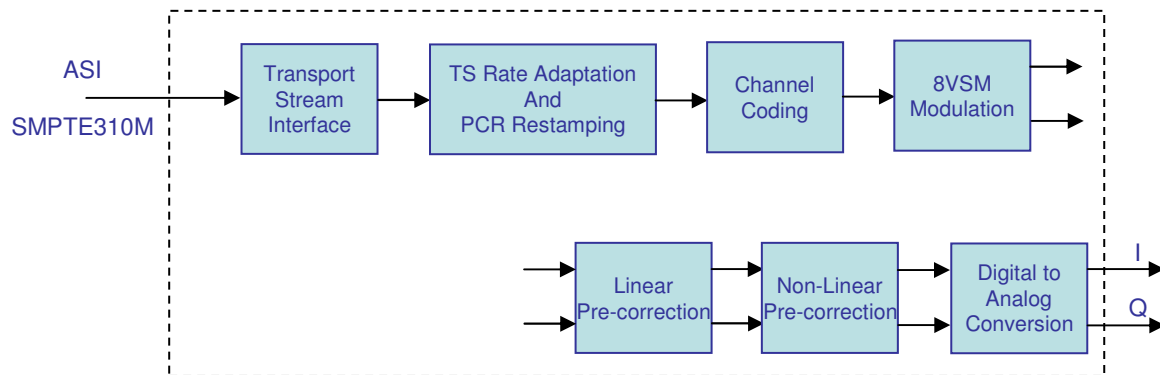
AT 7 series transmitters incorporate a high-gain high efficiency LDMOS transistor architecture, each RF amplifier chassis is a complete self contained easy-to-service assembly. The amplifier is common to all transmitter power levels allowing a common spares holding. Each amplifier contains a power supply and is self protected and cooled allowing the unit to be swapped without effecting the operation of the transmitter. The amplifiers are organized into four bands which optimizing the performance and efficiency compared to wide-band systems.

ADVANCED TV

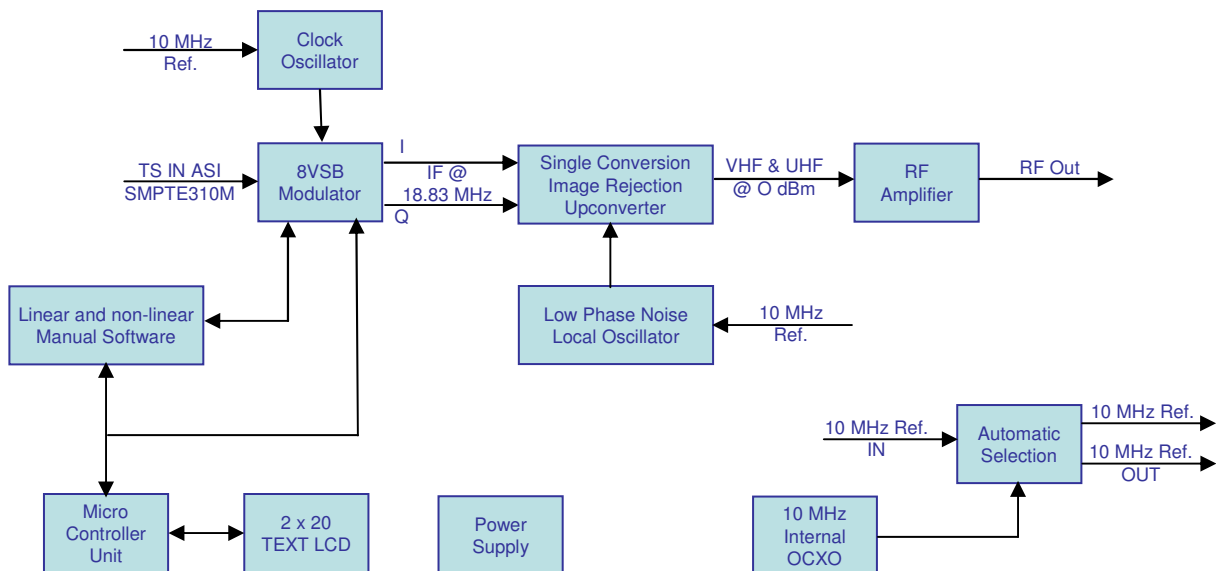
PERFORMANCE

An important and beneficial characteristic of the AT7 series equipment is its double conversion IF channel translation processes. This system eliminates the common problem of interference generated by the transmitter local oscillator. The AT7 series features a linear distortion equalizer for compensating distortions caused by output mask filtering. The output filter typically introduces group delay and amplitude distortion at the channel edges. The performance of the AT7 series meets and in most cases exceeds the FCC and ATSC A/53 specifications; particularly those of out of channel emissions, amplitude frequency response, group delay, modulation error rate, error vector ratio and carrier phase noise.

8 VSB MODULATOR

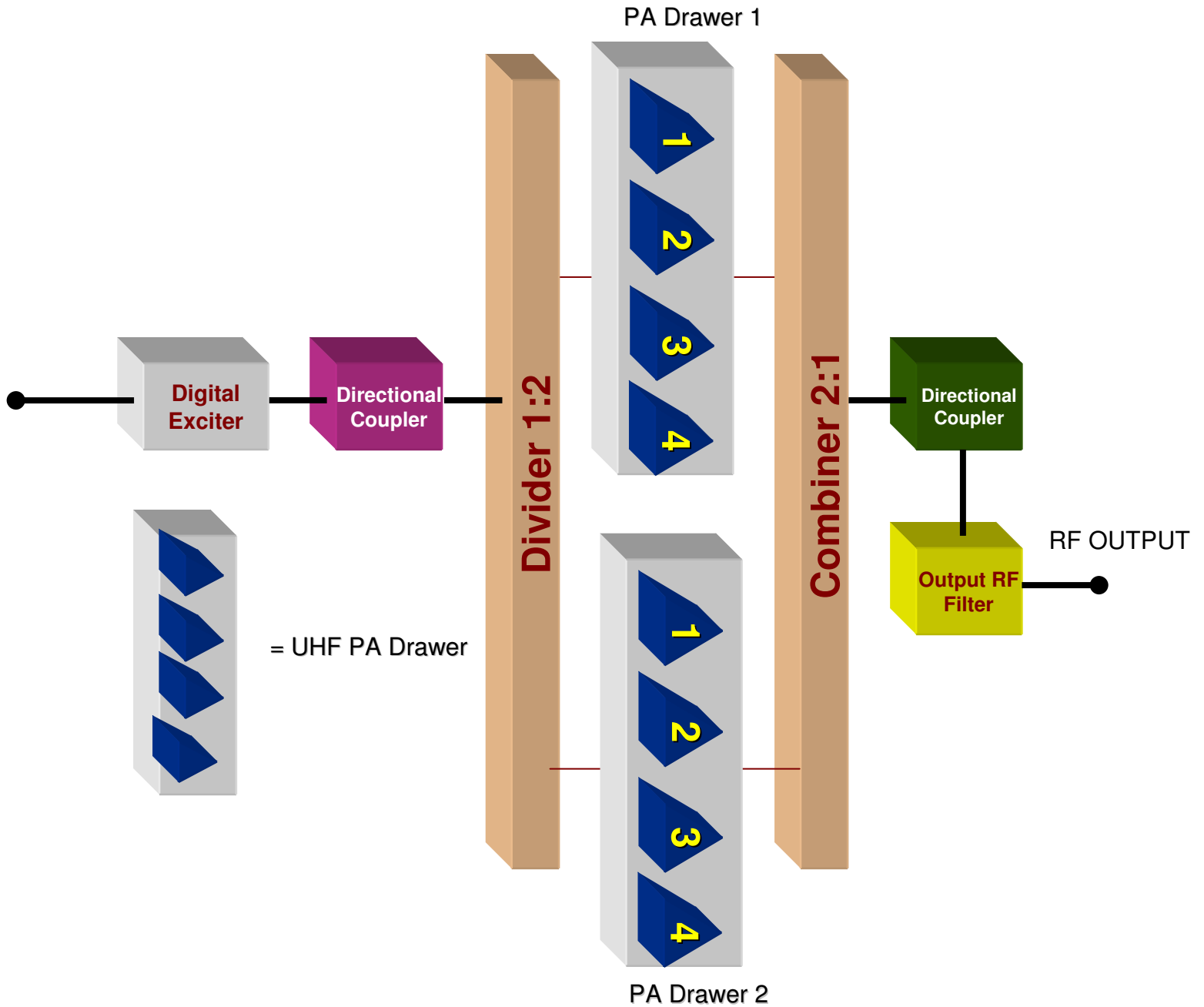


DIGITAL EXCITER



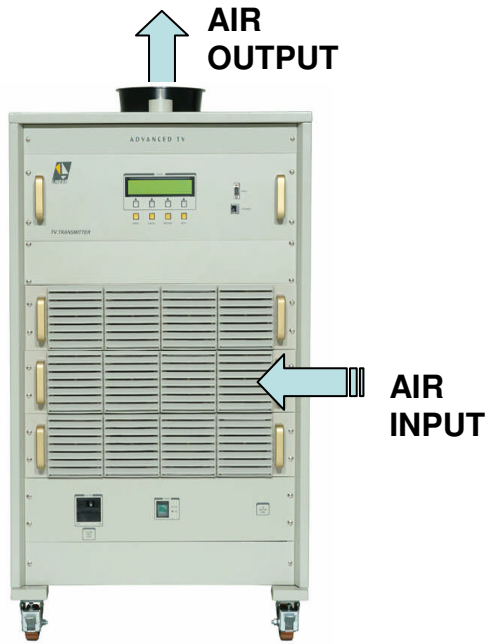
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TRANSMITTER STRUCTURE



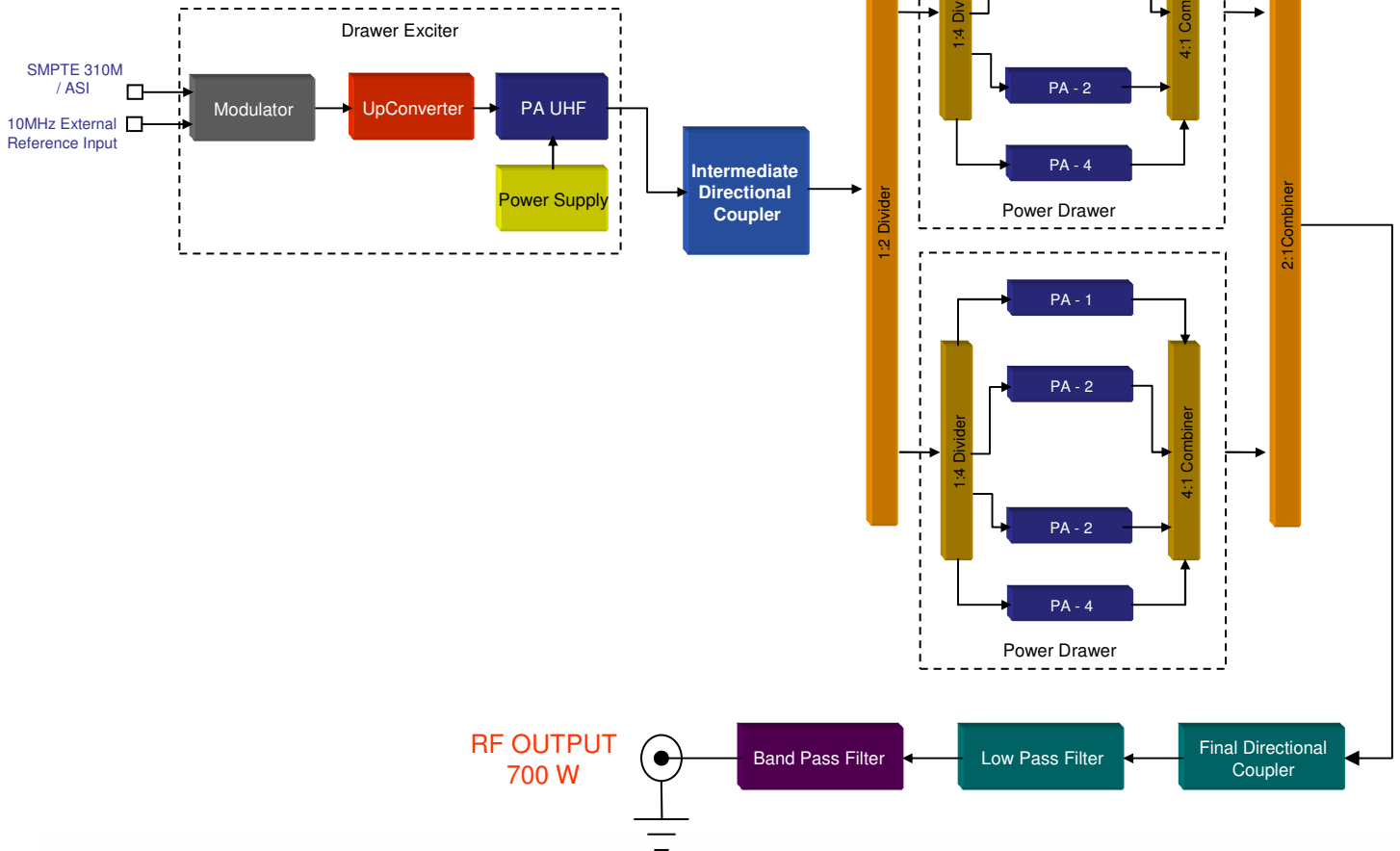
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TRANSMITTER STRUCTURE



ISOLATED COMBINERS / DIVIDERS

A Power Drawer can be completely removed without compromising the system's impedance match



ADVANCED TV



TRANSMITTER SPECIFICATIONS BY MODEL

LOW POWER MODELS

Transmitter/Translator Power Output (W)	15	25	60	125
Transmitter / Translator Type Number	AT715P	AT725P	AT760P	AT7125
Transmitter / Translator Size (H x W x D - Inches)	19" x 3 RU	19" x 3 RU	19" x 6 RU	19" x 6 RU
Number of PA's	0	0	0	0
RF Connector Type	7/8" Flanged	7/8" Flanged	7/8" Flanged	7/8" Flanged
Transmitter / Translator Weight (lbs)	54	54	54	58
Heat Load of each Transmitter/ Translator (BTU)	850	850	860	920
Power Consumption (Maximum) - W	< 500	< 500	< 500	< 1275
Operation AC Voltage / Frequency **	110/208 / 60Hz	110//208 / 60Hz	110/208 / 60Hz	110//208 / 60Hz
Phase *	1 / 2	1 / 2	1 / 2	1 / 2

* Rack for LP equipment optional extra

** Additional Operation voltages and number of phases available upon request

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TRANSMITTER SPECIFICATIONS BY MODEL

MEDIUM POWER MODELS

Transmitter/Translator Power Output (W)	350	700	1000	2500	5000
Transmitter / Translator Type Number	AT7350	AT770	AT71K00	AT72K5	AT75K0
Transmitter / Translator Size (H x W x D - Inches)	48"x28"x43"	48"x28"x43"	54"x28"x43"	60"x28"x43"	60"x84"x 43"
Number of PA's	1	2	3	7	14
RF Connector Type	1 5/8" Flanged	1 5/8" Flanged	1 5/8" Flanged	3 1/8" Flanged	3 1/8" Flanged
Transmitter / Translator Weight (lbs)	435	525	615	935	1515
Heat Load of each Transmitter/ Translator (BTU)	2,400	12,100	18,000	< 41000	82,000
Power Consumption (Maximum)	< 2500	< 5290	< 8675	<17,900	< 35,300
Operation AC Voltage / Frequency	208 / 60Hz	208 / 60Hz	208 / 60Hz	208 / 60Hz	208 / 60Hz
Phase	2 / 3	2 / 3	2 / 3	3	3

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TRANSMITTER SPECIFICATIONS GENERAL

Serial Interface	RS 232
Oscillator	Synth by PLL
Internal Time base	10MHz OCXO
Frequency Stability (including Power Factor Correction)	+/- 0.3 ppm
Cooling Air Flow Speed/Draw	400ft/Min
Ideal Room Temperature Range (degrees F)	40 to 90
Ideal Room Humidity Levels	0 - 80%

INPUTS

Transport Stream Input Compliant to ATSC/MPEG2 SMPTE 310	YES
Transport Stream Input - ASI	YES
Transport Stream Connector	75 Ohm BNC
Transport Stream Datarate -SMPTE 310	19.39 Mbps
Transport Stream Datarate - ASI	270 Mbps
External Time Base	10MHz (0-10dB)
External Time Base connector	50 Ohm BNC

OUTPUTS

Frequency Range (Channels)	14-69
Pilot Frequency Overall Stability	+/-0.3 ppm
Peak-to-peak Amplitude Frequency Response	<0.15dB
Peak-to-peak Group Delay	<15 nS
Phase Noise @20kHz Offset	<-104dBc/Hz
Conducted Spurious Emissions and Harmonics FCC Part 47, 74	<-60 dB
Radiated Spurious Emissions and Harmonics FCC Part 47, 74	<-80 dB
Modulation Error Ratio (MER)	>29 dB
Output Sample Connector	N Type
Frequency Adjustment Steps (in a range of 220kHz)	1Hz
Symbol Rate	10.76 MS /sec
Digital to Analog Converter	16 bit
Test Signal - PRBS Pseudo Random Bit Sequence	YES
Band A Frequency	14-25
Band B Frequency	26-38
Band C Frequency	39-53
Band D Frequency	54-69

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