

EGATEL® TUWH4000 Series

High Power UHF TV Transmitters

WHET® Wideband High Efficiency Transmitter

WIDEBAND - HIGH EFFICIENCY

Air - cooled & multistandard:
DVB-T/H, DVB-T2, ISDB-T/T_B, ATSC



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The new Wideband - High Efficiency TUWH4000 Series represents a step ahead in the technology of high power UHF air cooled transmitters. For the first time the Doherty technology becomes Wideband, meaning that it is applicable to the whole UHF band. Therefore, no modifications in the amplifiers are required when the operator needs to change the RF channel.

The TUWH4000 transmitters features a market-leading energy efficiency. They offer an efficiency up to 42%, providing broadcasters with a high economic benefit.

They are equipped with the most advanced technology in signal processing and the power amplifiers are based on LDMOS transistors - 50 volt. characterized by a high power density.

The customer oriented and extremely compact design provides full flexibility and multiple configurations per rack, saving a lot of space in the transmitter site. The rapid and easy straturp of the transmitter and the power of the Web Server ensures fast commissioning and easy operation. The different options for redundancy and optimal design of critical modules guarantee continuity of service throughout the life of the transmitter.

- Maximum power per rack (before the filter): 3.6 KWrms (DVB-T/-H/-T2, ISDB-T/-T_B), 6 KWrms (ATSC).
- Outstanding compact design that allows to integrate several transmitters with Dual Drive or N+1 redundancy in a single cabinet.
- High redundancy to ensure maximum reliability.
- High energy efficiency over the whole UHF band to minimize consumption and OPEX. Values up to 38% for COFDM waveforms and 42% for ATSC.
- Digital modulations: (DVB-T/-H/-T2, ISDB-T/-T_B, ATSC).
- N+1 redundancy ready.
- Power amplifiers based on LDMOS-50 volt. technology with high power density.
- Frequencies: from 470 MHz to 800 MHz.
- Digital Adaptive Precorrection.
- Multiple options for local operation: through the display of the exciter, a Control Unit or Web Server (opt.).
- Wide range of possibilities for remote monitoring: dry contacts and SNMP / Web Server (opt.).

TECHNICAL SPECIFICATIONS

EXCITER

DVB-T/-H/-T2	
Standard	EN300744, EN302304, EN302755, TS 102831, TS 102 773 (T2-MI)
Inputs	2xASI BNC (F), 75 ohm / 2xTSoIP 10/100/1000 RJ45.
FFT	1K (DVB-T2), 2K, 4K, 8K, 16K (DVB-T2), 32K (DVB-T2)
Code rate	1/2, 2/3, 3/4, 5/6, 3/5 (DVB-T2), 4/5 (DVB-T2)
Guard interval	1/32, 1/16, 1/8, 1/4, 19/256 (DVB-T2), 19/128 (DVB-T2), 1/128 (DVB-T2)
Constellation	QPSK, 16QAM, 64QAM, 256QAM (DVB-T2). Rotated and non rotated (DVB-T2)
ATSC	
Standard	ATSC A/53, A/54, A/64, A/153, A/110B, SMPTE-310M
Inputs	2xSMPTE BNC (F), 75 ohm - 2xASI BNC (F), 75 ohm
Constellation	8VSB
Symbol rate	10.76 Msymbols/s
Data rate	19.39 Mbits/s
Trellis coding	2/3
Reed-Solomon encoder	207 / 187 / 10
ISDB -T/-T _B	
Standard	ARIB STB-B31, TR-B14
Inputs	2xASI BNC (F), 75 ohm
FFT	2K, 4K, 8K
Code rate	1/2, 2/3, 3/4, 5/6, 7/8
Guard interval	1/4, 1/8, 1/16, 1/32
Carrier spacing	4 KHz, 2 KHz, 1 KHz
Hierarchical modulation	Up to 3 layers
Constellation	QPSK, 16QAM, 64QAM, DQPSK
Clock and synchronization	
Internal clock	10 MHz
External reference	10 MHz BNC (F). Impedance = 50 ohm / high (configurable). Level = -5 to +10 dBm
1pps reference	BNC (F). Impedance = 50 ohm / high (configurable)
SFN	Resolution SFN = ±100 ns. SFN configurable delay = ±500 ms
Local and remote control	
Display	Local operation through the display and keyboard located on the front panel
RJ-45	Remote network management and local operation interface (Web Server and/or SNMP agent)
Parallel interface	Floating contacts for messages and commands

UHF TRANSMITTER

Digital TV (*)	TUWH4601	TUWH4602	TUWH4603	TUWH4604	TUWH4605	TUWH4606
Output power before the filter: DVB-T/H/T2, ISDB-T/T _B	600 Wrms	1.2 KWrms	1.8 KWrms	2.4 KWrms	3 KWrms	3.6 KWrms
Output power before the filter: ATSC	1 KWrms	2 KWrms	3 KWrms	4 KWrms	5 KWrms	6 KWrms
Number of amplifiers (**)	1	2	3	4	5	6
Maximum number of TX per rack (Including dual drive redundancy)	6	3	2	1	1	1
Maximum N+1 systems per rack	4+1	2+1	1+1	N/A	N/A	N/A
N° of racks	1					
Output RF connector	7/16 or EIA 1 5/8"	EIA 1 5/8"			EIA 1 5/8" (DVB-T/H/T2, ISDB-T/T _B) EIA 3 1/8" (ATSC)	
General						
Frequency range	UHF: 470 - 800 MHz (resolution: 1 Hz)					
Channel bandwidth	6, 7, 8 MHz plus 1.7, 5 and 10 MHz for DVB-T2 ISDB-T/T _B , ATSC: 6 MHz					
Cooling	Air - cooled					
Power supply	Three - phase: 400VAC +/- 15%, 47 to 63Hz (other on request)					
Max. installation altitude	Up to 2500 m (> 2500 m on request)					

(*) The models are referenced according to standard: TUWH40xx - DVB-T/H/T2, TUWH40xxB - ISDB-T/T_B, TUWH40xxA - ATSC. Example: TUWH4004B - 2.4 KWrms ISDB-T/T_B

(**) Other configurations of output power and number of amplifiers, on request.

Remark: To comply with the out-of-band emissions regulations and with the required shoulder attenuation, the RF output of the transmitters must be connected to an appropriate filter.