



# DUT1K

## 1KW UHF DIGITAL TRANSMITTER



DUT1K is a complete transmitter with output power 1 KW rms or 2.5 KW p.s. and multiple input interfaces in a single 21U 19" rack chassis.

Supporting DVB-T/H/T2, ISDB-T/Tb, DAB/DAB+/T-DMB, ATSC, PAL and NTSC modulations (dual-cast Analog and Digital is also supported), DUT1K natively offers adaptive pre-correction circuits and built in GPS /

### Main features:

- Compact 21U 19" Rack chassis
- Output power up to 1 KW rms in digital or up to 2.5 KW p.s. in analogue
- High efficiency broadband amplifier technology
- DVB-T/H/T2, ISDB-T/Tb, DAB/DAB+/T-DMB, ATSC, PAL, NTSC, NICAM modulations fully supported
- Embedded Re-Multiplexer/Layer Combiner/TS to BTS (188 to 204 byte) converter for ISDB-Tb
- Adaptive pre-correction circuits
- Powerful echo canceller when DUT1K is used as an on-channel repeater
- Optional internal demodulator with equalizer for regenerative transposers
- Equalized Digital On-Channel Repeater (Spectrum Restorer) configuration available
- On-board high stability GPS / GLONASS receiver with battery
- Flexible input interfaces:
  - 4 x ASI inputs (TS, BTS, T2MI, SMPTE-310M) + Analog input
  - 2 x ASI inputs and 2 x Gigabit Ethernet
  - 4 x ETI or 2 x ETI + 2 x EDI inputs
  - 1 x DVB-S/S2 Satellite Receiver input
  - 1 x RF input
- SNMP, Web Interface and Touch Screen display



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## 1KW UHF DIGITAL TRANSMITTER

### TRANSMITTER

UHF digital output power: 1 KW @ MER 40 dB typ.  
UHF analogue output power: 2 KW p.s.  
Frequency agility: UHF Band IV and V  
Frequency resolution: 1 Hz  
Pre-correction: Adaptive  
RF connector: N(f), 50 Ohm

### MODULATOR

#### DVB-T/H/T2

Standard: EN300744, EN302304, EN302755 V1.3.1  
(DVB-T2-Lite), TS101191, TS102773 (T2-MI), TS102034  
Inputs: 4x ASI BNC(f), 75 Ohm or 2x ASI BNC(f)  
75 Ohm and 2x RJ45 TSolP 10/100/1000  
Seamless switch between any input  
Hierarchical and not hierarchical (DVB-T)  
FFT: 1K (DVB-T2), 2K, 4K, 8K, 8K ext. (DVB-T2), 16K & 16K ext.  
(DVB-T2), 32K & 32K ext. (DVB-T2)  
Code rate: All modes available according to the standard  
Block Short or Normal  
(DVB-T2) DVB-T: Reed-Solomon (204, 188)  
DVB-T2: BCH, LDPC  
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)  
MISO processing: Supported

#### ISDB-Tb

Standard: ABNT NBR 15601, ABNT NBR 15603  
Inputs: 4xASI TS/BTS BNC(f), 75Ohm or 2xASI TS/BTS BNC(f),  
75 Ohm and 2x RJ45 TS/BTS oIP 10/100/1000  
Seamless switch between any input  
FFT: Mode 1 (2K), Mode 2 (4K), Mode 3 (8K)  
Code rate: 1/2, 2/3, 3/4, 5/6, 7/8  
Guard interval: 1/4, 1/8, 1/16, 1/32  
Hierarchical mod. : Up to 3 layers  
Constellation: QPSK, 16QAM, 64QAM  
Time interleaver: Fully supported  
Partial reception: Supported

#### ATSC

Standard: A/53, A/110  
Inputs: 4x ASI/SMPTE-310M BNC(f), 75Ohm or 2x ASI/SMPTE-310M BNC(f),  
75Ohm and 2xRJ45 TSolP 10/100/1000 Seamless switch between any input  
Modulation: 8-VSB  
Input bit rate: 19.39 Mbit/s  
Bandwidth: 6 MHz  
Max processing delay: Up to 1 second (programmable)

#### Analogue

Standard: B, G, D, K, M, N, I  
Inputs: Video BNC(f), 75Ohm, audio Tini-QG "Mini XLR", 6 Pin(m), 600 Ohm  
Color system: PAL, NTSC  
Integrated NICAM encoder: Available

### REPEATER/GAP FILLER

#### RF Input

Signal type: One DTV channel  
(DVB-T/H/T2, ISDB-T/Tb, ATSC)  
Frequency range: 470 ÷ 862 MHz (agile tuning)  
Sensitivity: -75 ÷ -15 dBm  
(-75±0 dBm on regenerative transposers)  
Selectivity : > 60 dB ± 4.2 MHz  
NF (Pi=-50 dBm): < 6 dB  
Conversion type: Direct Base Band Conversion (Zero IF)  
Return losses: > 15 dB  
Connector: N (f), 50 Ohm

#### Echo Canceller

Cancellation level: 40 dB, typical  
Cancellation window: 20 µs  
Selective cancellation window: 2.4 µs  
(time shift from 10 to 500 µs)  
Doppler cancellation: yes  
Maximum echo/signal ratio: +15 dB  
(over the main signal), typical  
Total delay: < 10 µs

### GPS / GLONASS (Option)

Input connector: N (f), 50 Ohm  
Input/Monitor output 10 MHz: BNC (f), 75 Ohm  
Input/Monitor output 1 PPS: BNC (f), 75 Ohm  
Phase noise: -140 dBc/Hz @ 10 kHz  
-150 dBc/Hz @ 100 kHz  
Stability: 1e-12 / 24H with disciplined OCXO  
Hold-over stability: 5 µs after 5 hours  
(optional 1 µs after 24 hours)

### MECHANICAL

Chassis: 31U rack 19"  
Width: 600 mm  
Height: 1380 mm  
Depth: 1150 mm without fans  
Weight: 245 Kg

### CONTROLS

Web GUI , SNMP , GPIO

### ENVIRONMENTAL

Operating temp. range: -5°C ÷ 40°C  
Max. relative humidity: 90% non condensing  
Max. operating altitude: 2500 m. a.s.l. (>2500 m. optional)

### ELECTRICAL

Power supply: 3 Phases 380 V~ 50/60 Hz,  
IEC320 C14 Plug  
Efficiency: Up to 33% efficiency in digital  
(according to model and power)