



DUT60

60 W DIGITAL UHF TRANSMITTER

DUT60 is a complete transmitter with output power 60 W rms or 150 W p.s. and multiple input interfaces in a single 3U 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), DUT60 natively offers adaptive pre-correction circuits and built in GPS / GLONASS receiver for accurate synchronization and SFN operations.



Main features:

- Compact 3U 19" Rack chassis
- Output Power up to 60 W rms in digital or up to 150 W 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 DUT60 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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TRANSMITTER

UHF digital output power:	60 W @ MER 40 dB typ.
UHF analogue output power:	150 W 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:	3U rack 19"
Width:	485 mm
Height:	135 mm
Depth:	580 mm without fans
Weight:	22 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:	Single Phase 100+240 V~ 50/60 Hz, IEC320 C14 Plug
Efficiency:	Up to 33% efficiency in digital (according to model and power)