

## NEURAL Series

DDS Direct Digital Synthesis FM Transmitter  
30-50-100-150-300-600-1200W



TX-DDS Exciter/Transmitter is a Family of DDS Direct to Channel Digital FM stereo Exciters/Transmitters that guarantees a superior transmission quality and top performances. Output power from 30 W to 1200W using High Efficiency last LDMOS technology is housed into an ultra-compact cabinet of only 2U height.

TX-HE is available also in JPN and OIRT frequencies.

TX-HE can be used as ultra-compact stand alone station, as well as driver in complex high power transmitters and N+1 systems.

For any application TX-DDS is the ultimate solution that meets most demanding customer' requirements and guarantees professional features at affordable price.

- High Efficiency last generation LDMOS technology up to 80%
- Very LOW SIGNAL TO NOISE MORE THAN 90 DB v
- Very LOW DISTORTION and HIGH STEREO SEPARATION
- TOTAL SPECTRAL PURITY: > -100 DBC SPURIOUS, > - 84 DBC HARMONICS
- SEVEN SELECTABLE COMPLETE SET-UP: READY FOR USE IN 7+1 SYSTEM
- FULL- RANGE POWER SUPPLY: 90-260 VAC MAINS VOLTAGE
- COMPLIANT WITH ALL THE STANDARD: ETSI – CCIR - FCC.
- DIGITAL STEREO CODER: SUPERIOR STEREO QUALITY
- UP TO 75% LDMOS HIGH EFFICIENCY AMPLIFIERS
- EXTERNAL 10MHz and 1PPS SYNCHRONIZATION FOR USE ON SFN APPLICATIONS
- HIGHEST RF SIGNAL QUALITY
- PERFECT AUDIO FIDELITY
- REMOTE CONTROL BY TCP/IP: WEB + SNMP OF ALL SIGNAL PARAMETERS
- CLEAR CRISTAL AUDIO SOUND
- DYNAMIC RDS ENCODER with TMC Function
- FULL UECP Protocol to control remotely all functions of the RDS
- SFN-Single Frequency Networks
- ASC-Automatic Audio Source Changer

# TECHNICAL CHARACTERISTICS

## EXCITER 30W TO 1200W ANALOG HE AND DIGITAL DDS SERIES

Frequency Range: 87.5 ÷ 108.00 MHz, Programmable in 10 KHz steps  
On request 66 ÷ 74 MHz (OIRT), 76 ÷ 90 MHz (JPN) Bands.  
Frequency Stability: better than  $\pm 150$ Hz from -10 to +50°C  
Max deviation:  $\pm 150$ KHz.  
Reference: TCXO 12.8 MHz. Can be synchronized by 1-2-2.5-5-10 MHz self select external clock (optional).  
Frequency Control: Synthesizer  $\mu$ processor control.  
E Power Output: 30W, 50W, 100W, 150W, 300W, 600W, 1200W. Adjustable from 0W to maximum power.  
Output Impedance: 50 ohm.  
Display: forward/reflection power and modulation indicator  
Type of Modulation: Direct frequency modulation of carrier frequency, F3E Stereo with Subcarrier and Mono .  
Lock in Time: Typ. 4 second.  
Off Lock Attenuation:  $\geq -80$  dBc.  
Modulation Capability:  $\pm 150$  KHz.  
Modulation Mode: Mono, Stereo, Multiplex, SCA, RDS, Aux.  
Preemphasis: Flat(0)/50/75  $\mu$ s selectable from front panel.  
Asynchronous AM S/N Ratio: -60 dB below reference carrier with 100% AM modulation @ 400 Hz, without FM modulation.  
Synchronous AM S/N Ratio: -60 dB below reference carrier with 100% AM modulation @ 400 Hz with FM modulation  $\pm 75$  KHz @ 400 Hz.  
RF Harmonics: Exceeds ETSI/EBU/CCIR/FCC requirements. better than 84 dbc  
RF Spurious: Exceeds ETSI/EBU/CCIR/FCC requirements. better than 84 dbc  
Output Connectors: 30W to 600W N type connector, 1200W DIN 7/16 type connector  
Output power on/off and adjustable from front panel and remotely.  
Overall Efficiency up to 80%.  
Monitor RF: -60 dBc, BNC connector  
VSWR: 1.5:1 Maximum with automatic fold-back at higher VSWR

## MONAURAL OPERATION

Audio Input Impedance: 600 ohm balanced, 15 Kohms unbalanced.  
Audio Input Level: -12 to +12 dBm. (Other range on request)  
Input Connector: XLR female.  
Audio Frequency Response:  $\pm 0.15$  dB, 30 Hz to 15 KHz.  
Total Harmonic Distortion + Noise: 0.03% @ 400 Hz

Intermodulation Distortion: 0.03%, 1 KHz/1.3 KHz, 1:1 ratio  
Transient Intermodulation Distortion: 0.03%, 2.96KHz square wave and 14 KHz sine wave.  
FM S/N Ratio: -89 dB RMS detector, -85 dB below  $\pm 75$  KHz deviation, 50  $\mu$ s de-emphasis, weighted.

## MULTIPLEX OPERATION

Composite Input Impedance: 5 Kohm unbalanced.  
Composite Input Level: 3.5Vp-p for  $\pm 75$ KHz deviation.  
Input Connector: BNC female.  
Composite Amplitude Response:  $\leq \pm 0.1$ dB, from 30Hz to 53kHz  
Total Harmonic Distortion + Noise: 0.03% @ 400 Hz  
Intermodulation Distortion: 0.03%, 1 KHz/1.3 KHz, 1:1 ratio  
Transient Intermodulation Distortion: 0.03%, 2.96 KHz square wave and 14 KHz sine wave.  
FM S/N Ratio: -89 dB RMS detector, -85 dB below  $\pm 75$  KHz deviation, 50  $\mu$ s de-emphasis, weighted.

## STEREO OPERATION

Audio Input Impedance: 600 ohm balanced, 15 Kohm unbalanced.  
Audio Input Level: -12 to +12 dBm.  
Input Connector: XLR female.  
Audio Frequency Response:  $\pm 0.15$  dB from 30 Hz to 15 KHz.  
Total Harmonic Distortion + Noise: 0,03% @ 400 Hz  
Intermodulation Distortion: 0,02%, 60Hz /7kHz 4:1 ratio +4dBu  
Transient Intermodulation Distortion: 0.03%, 2.96 KHz square wave and 14 KHz sine wave.  
FM S/N Ratio: -85 dB RMS detector, -82 dB below  $\pm 75$  KHz deviation, 50  $\mu$ s de-emphasis, weighted.  
Stereo Separation: 30÷80 Hz  $\geq -53$  dB, 80Hz÷15 KHz  $\geq -65$  dB (Typ. 70 dB).

Crosstalk attenuation: Main to Sub -55 dB 30 Hz to 15 KHz  
38 KHz Suppression:  $\geq -70$  dB (typ. -85 dB).  
Pilot Frequency: 19 KHz  $\pm 1$  Hz  
Phase Pilot:  $\pm 2^\circ$  adjustable  
Output Pilot: 1 Vpp., BNC female  
Audio Filter Attenuation:  $\geq -55$  dB @ 19 KHz,  $> -45$  dB 20 KHz to 100 KHz.  
Modes: Stereo, Mono L+R, Mono L, Mono R.

## AES/EBU OPERATION

Input Level: -10dBfs to 0dBfs  
Input Connector: XLR female, optical TOS-LINK.  
Input Impedance: 110 ohm.  
Data Format: S/PDF,AES/EBU, IEC958, EIAJCP340/1201.  
D/A Converter: 24 bit.  
Sampling Frequency: from 32 to 96 KHz with automatic selection  
Stereo separation (crosstalk):  $\geq 50$ dB,100Hz to 5kHz  
Amplitude response:  $\leq \pm 0.1$ dB, from 30Hz to 15kHz

FM S/N Ratio: -85 dB below  $\pm 75$  KHz deviation, 50  $\mu$ s de-emphasis, weighted.

## SCA, RDS, AUX OPERATION

Input Connector: BNC female

Input Impedance: 3 Kohm.

Input Level: -3 to +6 dBm.

Frequency Response:  $\pm 0.2$  dB, 40 KHz to 100 KHz.

Input Connector: BNC female. Most SCA, RDS, AUX, performance parameters are determined primarily by the generator used.

## AUXILIARY CONNECTIONS

USB: connector Type B female front panel.

N°2 RS485: Serial Interface connector RJ45 back panel.

Telemetry Interface: connector DB25F back panel.

External Clock: connector SMA female (optional).

## OPTIONS

External clock: for PLL synchronization purpose 1-2-2.5-5-10 MHz external reference oscillator with self selection of the incoming frequency.

DOUBLE EXCITER WITH AUTOMATIC CHANGEVER SYSTEM

SNMP TELEMETRY INTERFACE

GSM AND PSTN TELEMETRY

TCP/IP TELEMETRY INTERFACE

SINCH-MODULE FOR SFN APPLICATION

OIRT & JPN VERSION

DIGITAL AUDIO INPUTS

LPFM CODE STATION:FCC IDENTIFICATION CODE

RDS CODER : EASY PROGRAMMABLE BY PC

SCA Encoder

Digital Composite 192kHz Input

## ELECTRICAL (for 10kW to 40kW Transmitter)

AC Input Power: 230/400 VAC  $\pm 15\%$ , 50/60 HZ(+/- 3HZ) single phase or 3-phase+N

Power factor > 0.99

Cooling: Forced air

MTBF > 20.000 Hours

## ENVIRONMENTAL

Operating temperature: -10°C to +50°C.

Max Operating Altitude: 4000 mt.

Relative Humidity Range: 0 to 95% non condensing.

Protection against Lightening, Dust and Corrosion

## PHYSICAL DIMENSIONS (For typical 10kW Transmitter)

Mounting: 2 unit cabinet

Size: 88mm. (H) x 484mm. (W) x 478mm. (D)

Weight: ~ 11 Kg.