Digital TV Transmitter

Model： *Symphony-1500W*

Symphony-1500W is the most outstanding last engineering achievement from Digital Horizon.

In a compact 3+1U Rack, and with 2 power supplies Symphony-1500W delivers up to 1500W (wideband) or 1300W (broadband) rms of high efficiency Digital output power.

The system is composed by a 1 RU exciter and an RF amplifier (3 RU), which makes a DVB-T/H/T2, DAB/DAB+/T-DMB or ISDB-T/Tb complete transmitter with native adaptive pre-correction circuits, built in GPS receiver for accurate synchronization and SFN operations, and multiple input interfaces (Satellite Receiver, ASI, Gigabit Ethernet, or RF) so to be configured as Terrestrial or Satellite fed transmitter or even transposer.

Symphony-1500W final stage embeds 2 hot swappable power supply units, as well as a built in ASI and RF matrix, so 2 exciters can be connected to it to ensure a maximum level of redundancy and avoid the use of an additional external switch over unit.

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Main Features:

- Compact 3+1U 19" Rack chassis
- Up to 1500 W rms output power
- High efficiency broadband or wideband amplifier technology
- Built in ASI/RF matrix for automatic switch over, without the need of using an external switch over unit
- DVB-T/H/T2, ISDB-T/Tb, DAB/DAB+/T-DMB modulations fully supported
- Embedded Re-Multiplexer/BTS Adapter and Layer Combiner for ISDB-Tb
- Adaptive pre-correction circuits
- On-board high stability GPS receiver with battery
- Flexible input interfaces:
    - 1 x DVB-S/S2 Satellite Receiver input with integrated CAM
    - 4 x ASI inputs (TS, BTS, T2MI) + Analog input
    - 2 x ASI inputs and 2 x Gigabit Ethernet
    - 1 x RF input
- Easy connection to 1 or 2 exciters as main drivers

Technical Specification:

AMPLIFIER	
Wideband Output Power	1500 W rms @ MER ≥ 35 dB
Broadband Output Power	1300 W rms @ MER ≥ 35 dB
Configurations	Single or dual driver
RF output connector	7/8" (f), 50 Ohm
RF input connector	N (f), 50 Ohm
RF monitor connectors	SMA (f), 50 Ohm
ASI Matrix (dual) and RF	included in the amplifier in dual exciter configuration
ASI Matrix in/out connectors	BNC (f), 75 Ohm
EXCITER	
Single	1 x exciter
Dual	2 x exciter, ASI and RF matrix included in the amplifier
Frequency agility	UHF Band IV and V or VHF Band III
Frequency resolution	1 Hz
Pre-Correction	Adaptive
MODULATOR	
DVB-T/-H/-T2	
Standard	EN300744, EN302304, EN302755, TS101191, TS102773 (T2-MI), TS102034
Inputs	4x ASI BNC (f), 75 Ohm or 2x ASI BNC (f), 75 Ohm and 2x RJ45 TS oIP 10/100/1000 Switch seamless between ASI inputs Hierarchical and not hierarchical (DVB-T)
FFT	1K (DVB-T2), 2K, 4K, 8K, 8K ext. (DVB-T2), 16K & 16K ext.

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	(DVB-T2), 32K & 32K ext. (DVB-T2)
Code Rate	All modalities 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	4x ASI TS/BTS BNC (f), 75 Ohm or 2x ASI TS/BTS BNC (f), 75 Ohm and 2x RJ45 TS/BTS oIP 10/100/1000
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 Modulation	Up to 3 layers
Constellation	QPSK, 16QAM, 64QAM
Time interleaver	Fully supported
Partial reception	Supported
DAB/DAB+/T-DMB	
Standard	EN 300401, ETS 300 799
Inputs	4x ETI (NI[G703], NA5376[G704] or NA5592[G704]) BNC (f), 75 Ohm
Transmission Modes	Mode I, II, III, IV(Automatically detected from the ETI stream, or user selectable)
Operation	MFN or SFN operations
Analogue	
Standard	B, G, D, K, M, N, I
Inputs	Video BNC (f), 75 Ohm, audio Tini-QG "Mini XLR", 6 Pin (m), 600 Ohm
Color system	PAL, NTSC
Satellite Receiver	
Standard	ETSI EN 300 421 (QPSK) (DVB-S)
	ETSI EN 302 307 (QPSK, 8PSK, 16APSK) (DVB-S2)
	ETSI EN 50083-9 (ASI)
	ETSI EN 50221 (Common Interface)
DVB-S2	VCM, CCM, Multi Stream and Single Stream, Normal & Short FEC frames
Symbol Rate	1 - 45 Msym/s (DVB-S), 2 - 45 Msym/s (DVB-S2)
Constellation	QPSK, 8PSK, 16APSK
FEC	Automatic, all modalities available according to the standard

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	Block Short or Normal
	DVB-S: Reed-Solomon (204,188)
	DVB-S2: BCH, LDPC
Roll–Off	0.2, 0.25, 0.35
Input connector	F (f), 75 Ohm
Frequency	L–band 930~2250 MHz
LNB control voltage	Off, +13/18 Vdc, 22 kHz, 0.25 A (overload protection)
RF input level	40 ~ 100 db/µV (with attenuator)
Output connector	BNC (f), 75 Ohm
Modality	188 bytes
Max input bit rate	80 Mbps (CAM limit: 72 Mbps)
CAM interface	PCMCIA DVB-CI Common Interface
CA mode (Conditional Access)	Multicrypt, Simulcrypt
CAS support	Mediaguard,Viaccess, Irdeto, Conax, BISS with Professional multiprogram CAM (descrambling of up to 24 Elementary Streams) Betacrypt, Cryptoworks, Nagravision with standard consumer CAM(descrambling of up to 4 services)

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

MECHANICAL	
Amplifier	
Chassis	3U rack 19"
Width	482 mm
Height	132.5 mm
Depth	710 mm including fans and connectors
Weight	35 Kg
Exciter	
Chassis	1U rack 19"
Width	482 mm
Height	43.6 mm
Depth	460.5 mm without fans
Weight	7.5 Kg

ENVIRONMENTAL	
Operating Temperature Range	-5°C ~ 40°C
Max. relative Humidity	90% non condensing
Max. operating altitude	2500 m. a.s.l. (>2500 m. optional)

CONTROLS	
Controls	TFT touchscreen, Web GUI, SNMP, GPIO

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ELECTRICAL	
Power Supply	2 hot swappable power supplies feeding one half of the amplification stages each
Exciter	Single Phase 100~240 V~ 50/60 Hz, IEC320 C14 Plug
Amplifier	Single Phase 185~264 V~ 50/60 Hz, IEC320 C20 Plug
Average efficiency	35%

Ordering Information:

Model	Description
SYMPHONY-1500W HUD	1500W (WB) or 1300W (BB) rms UHF DVB-T2/T/H Digital TV transmitter
SYMPHONY-1500W HU2D	1500W (WB) or 1300W (BB) rms UHF DVB-T2/T/H Digital TV transmitter, dual driver version
SYMPHONY-1500W HUI	1500W (WB) or 1300W (BB) rms UHF ISDB-T Digital TV transmitter
SYMPHONY-1500W HU2I	1500W (WB) or 1300W (BB) rms UHF ISDB-T Digital TV transmitter, dual driver version
Options	
Opt. G	GPS receiver plug-in board
Opt. KA	26 dB LNA GPS antenna kit including mounting kit and 25 mt. coaxial cable
Opt. S	DVB-S/S2 receiver board, single and multistream, with integrated CAM
Opt. R	DVB-T receiver plug-in board
Opt. T2	Software upgrade for DVB-T2 modulation
Opt. L	Software upgrade for ISDB-Tb Remux/BTS adapter and Layer Combiner
Opt. P	Dual-cast option for analogue modulation (PAL)

Symphony-1500W with Single Exciter Back Panel

Symphony-1500W with Dual Exciter Back Panel

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