

## Digital TV Transmitter

*Model: Symphony-130W*



Symphony-130W is Digital Horizon's most amazing achievement, as it combines a complete transmitter with output power up to 130W rms and multiple input interfaces in a single 1U 19" rack chassis. This astonishing engineering is today a unique and unequaled solution in the market.

Supporting DVB-T/H, DVB-T2, ISDB-T/Tb, DAB/DAB+/T-DMB, PAL and NTSC modulations (dual-cast Analog and Digital is also supported), Symphony-130W natively offers adaptive pre-correction circuits and built in GPS receiver for accurate synchronization and SFN operations.

Whether you need a Terrestrial or Satellite fed transmitter, an on channel repeater, a re-transmitter or even a transposer, then Symphony-130W is the required solution as it can be equipped and configured with different input interfaces (Satellite Receiver, ASI, Gigabit Ethernet, or RF).

For the South American ISDB-Tb market, Symphony-130W is today the only solution in the market combining Satellite Receiver, Re-Multiplexer /BTS Adapter and up to 130W Transmitter in a single box 1U 19" rack!



### Main Features:

- Compact 1U 19" Rack chassis
- Output Power up to 130W rms
- High efficiency wideband amplifier technology
- 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
- Powerful echo canceller when Symphony-130W is used as an on-channel repeater
- On-board high stability GPS receiver with battery
- Flexible input interfaces:
  - 1 x DVB-S/S2 Satellite Receiver input
  - 4 x ASI inputs (TS, BTS, T2MI) + Analog input
  - 2 x ASI inputs and 2 x Gigabit Ethernet
  - 1 x RF input
- SNMP, Web Interface and Touch Screen display

### Technical Specification:

TRANSMITTERS	
Digital output Power	20 W, 50 W, 80 W and 130 W rms @ MER > 36 dB
Analogue output power	50 W, 100 W, 220 W p.s.
Frequency agility	UHF Band IV and V or VHF Band III
Frequency resolution	1 Hz
Pre-Correction	Adaptive
RF Connector	N(f), 50 Ohm
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 TSoIP 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. (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)

[www.dh-tv.com](http://www.dh-tv.com)



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MISO Processing	Supported
<b>ISDB-Tb</b>	
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
<b>DAB/DAB+ /T-DMB</b>	
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
<b>Analogue</b>	
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
<b>Satellite Receiver (Option)</b>	
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 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)

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**Address:** No.3 Feng Zhi East Road, Xi Bei Wang Town, Hai Dian District, Beijing, 100094, China

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RF input level	40 ~ 100 db/ $\mu$ V (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)

## REPEATER/GAP FILLER

### RF Input

Signal type	One DTV channel (DVB-T/H/T2, ISDB-T/Tb, ATSC)
Frequency range	170 ~ 862 MHz (agile tuning)
Sensitivity	-75~ -15 dBm
Selectivity	> 60 dB $\pm$ 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 $\mu$ sec
Doppler cancellation	yes
Maximum echo level	+15 dBc (over the main signal), typical
Total delay	< 10 $\mu$ sec

## GPS (Option)

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 $\mu$ s after 5 hours (optional 1 $\mu$ s after 24 hours)

## MECHANICAL

Chassis	1U rack 19"
Width	482 mm
Height	43.6 mm
Depth	460.5 mm without fans
Weight	7.5 Kg

## CONTROLS

Controls	TFT touchscreen Web GUI
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SNMP  
GPIO

### 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)d

### ELECTRICAL

Power Supply	Single Phase 100~240 V~ 50/60 Hz, IEC320 C14 Plug
Maximum consumption	196 W @ 20 W rms (Symphony-20W) 215 W @ 50 W rms (Symphony-50W) 290 W @ 80 W rms (Symphony-80W) 470 W @ 130 W rms (Symphony-130W )

## Ordering Information:

Model	Description
Symphony-20W UD	20 W rms UHF DVB-T2/T/H Digital TV transmitter, 1RU
Symphony-50W UD	50 W rms UHF DVB-T2/T/H Digital TV transmitter, 1RU
Symphony-80W UD	80 W rms UHF DVB-T2/T/H Digital TV transmitter, 1RU
Symphony-130W UD	130 W rms UHF DVB-T2/T/H Digital TV transmitter, 1RU
Symphony-20W UI	20 W rms UHF ISDB-T/Tb Digital TV transmitter, 1RU
Symphony-50W UI	50 W rms UHF ISDB-T/Tb Digital TV transmitter, 1RU
Symphony-80W UI	80 W rms UHF ISDB-T/Tb Digital TV transmitter, 1RU
Symphony-130W UI	130 W rms UHF ISDB-T/Tb Digital TV transmitter, 1RU
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)
Opt. N	Dual-cast option for analogue modulation (NTSC or PAL-M)

Symphony-130W back panel



Symphony-130W back panel + GPS

