

Digital TV Transmitter

Model: Symphony-400W



Symphony-400W is an all-in-one transmitter, fully 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), able to provide an output power up to 400W rms.

Symphony-400W comes as an ultra compact chassis available in 2U 19" rack (single power supply) or 3U 19" rack (double redundant power supply), with adaptive pre-correction circuits natively offered, and built in GPS receiver for accurate synchronization and SFN operations.

Different input interfaces can be configured (Satellite Receiver, ASI, Gigabit Ethernet, or RF), which makes Symphony-400W the perfect flexible platform to cover the different applications of any Digital TV network (terrestrial or satellite fed transmitter, re-transmitter, on channel repeater, transposer, etc.).

For the South American ISDB-Tb market, Symphony-400W is today the only solution in the market combining Satellite Receiver, Re-Multiplexer/BTS Adapter and Transmitter in a single box.



Main Features:

- Compact 2U 19" Rack chassis or 3U 19" Rack chassis
- Output Power up to 400W rms in digital and up to 1200W p.s. in analogue
- 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-400W 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	Up to 400W rms @ MER > 36dB
Analogue Output Power	Up to 600W p.s.(version H), up to 1200W p.s.(version R)
Frequency agility	UHF Band IV and V(470-809MHz), or VHF Band III
Frequency resolution	1Hz
Pre-correction	Adaptive
RF Connector	7/16(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)



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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/BTSoIP 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 (Option)	
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

www.dh-tv.com

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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/ μ 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)

GPS(Optional)

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 μ s after 5 hours (optional 1 μ s after 24 hours)

MECHANICAL

Chassis	2U rack 19" (Symphony-400W H) 3U rack 19" (Symphony-400W R)
Width	482 mm
Height	87.1 mm (Symphony-400W H) 130.8 mm (Symphony-400W R)
Depth	460.5 mm without fans
Weight	14 Kg (Symphony-400W H) 21 Kg (Symphony-400W R)

CONTROLS

Controls	TFT touchscreen Web GUI SNMP GPIO
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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)

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ELECTRICAL

Power Supply	Single Phase 100~240 V ~ 50/60 Hz, IEC320 C20 Plug
Average consumption	Up to 40% efficiency in digital

Ordering Information:

MODEL	DESCRIPTION
Symphony-400W HUD	UHF DVB-T2/T/H Digital TV transmitter, 2RU, single power supply unit
Symphony-400W RUD	UHF DVB-T2/T/H Digital TV transmitter, 3RU, double power supply unit
Symphony-400W HUI	UHF ISDB-T/Tb Digital TV transmitter, 2RU, single power supply unit
Symphony-400W RUI	UHF ISDB-T/Tb Digital TV transmitter, 3RU, double power supply unit
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-400W H back panel



Symphony-400W H + GPS back panel



Symphony-400W R back panel



Symphony-400W R + GPS back panel



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