



TV TRANSMITTER

The SLIM4-01/VHF-4 is the Syes Compact AIR Cooled TV transmitters SLIM Line.

Fully wide band high efficiency with a system efficiency up to 50%.

Composed by one PCM driver (Dual Driver Option) and one (1) SLIM4 amplifiers.

Low Consumption, Compact and Easy to maintain, with a clear and intuitive design, it is Syes next generation of air cooled transmitters, available in band I, III and IV-V.

The SLIM family is designed to be the most efficient, robust and high performance amplifiers in the DTV era.

TV
AIR COOLED

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360W COFDM, 400W ATSC, 600W_{ps} 360 W VHF-BIII TV TRANSMITTER



FRONT VIEW



- ☐ Multistandard: ATSC (including ATSC3.0), ISDB-Tb (ABNT NBR 15.601), DTMB, DVB-T/T2, Analog.
- ☐ 2x ASI with Hitless switch, 2x IP Ethernet, A/V for analog broadcasting.
- ☐ The most advanced manual, automatic and adaptive linear and nonlinear pre-corrector.
- ☐ Fully frequency agile without need for any tuning or trimming.
- ☐ ON Board GNSS receiver (GPS, GLONASS, BEIDU, GALILEO).
- ☐ USB input to fast save/load configurations.
- ☐ Highest performances in terms of MER, BER and shoulders.
- ☐ Nr. 2 Independent temperature controlled low-noise fans.
- ☐ Use of tools is reduced almost to zero including pallets replacement.
- ☐ Remote control via SNMP, friendly web browser GUI, no need of plug-in or apps, dry contacts.
- ☐ Over temperature protection.
- ☐ VSWR and overpower protection by hardware and software with automatic power reduction.
- ☐ Automatic reboot in case of electricity failure.
- ☐ Alarm history available on web interface and through SNMP.
- ☐ Fully solid-state power amplifier module.

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TECHNICAL SPECIFICATIONS	
RF OUTPUT	
Output power*	• Up to 360 Wrms COFDM • Up to 360 Wrms ISDB-Tb • Up to 400 Wrms ATSC • Up to 600 W p.s ANALOG
Spurious / Harmonics	EN 302-296-2
Shoulders/MER	Typical: >50dB/>37dB after the filter (ABNT NBR 15.601)
Connector	7/8" or other specified in the project
Bandwidth	VHF Band BIII (170MHz-230MHz)
Frequency stability	+/-1 Hz
Amplification Class:	HE class / Doherty Technology
Output Impedance	50 Ohms
GENERAL	
Mechanical	
Composition	Exciter + n. 1 SLIM4 HPA Stand Alone
Dimensions (WxHxD mm)	482 mm / 204 mm / 600 mm
Weight	36 kg
Cooling	
Cooling System	Air Cooled
Cooling redundancy	Dual fan for driver and dual fan for Power Amplifier
Environmental	
Relative humidity	95% max. (non-condensing)
Operation temperature range	0° to 50°C
Storage temperature range	-20° to 70°C
Max. installation altitude	4.800 m a.s.l. (higher altitudes kit on request)
Power supply & Safety	
Voltage (options)	- 100 to 240 VAC - 90-264 Wide Range @ 47 to 63 Hz (auto range p.s.) power factor > 0.98
Safety /EMC	EN 60215 (IEC 215), EN301-489-53, FCC-73, IS09001-2010. RED 2014/53/UE, RoHS 2002/93/EC
Power Supply	3x power supplies in hot plug-in configuration 2+1 power supply redundancy configuration available
Additional Information	Total power capacity of the power supplies > 20% of the consumption of the transmitter operating in maximum power Input over voltage and power surge protection system Output over voltage and power surge protection system

*: Power outputs are subject to change due to out-of-band regulations and the required shoulder attenuation / MER, voltage, channel of operation and type of RF output filter.

** : HE High Efficiency Syes transmitting platform are WIDE BAND native, without any need for software or hardware change, tuning or other setting. Efficiency depends on several parameters such as operating standard and frequency, output power settings, spectrum performances, environmental conditions etc.

SYES

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DTV MODULATIONS													
ATSC 3.0													
Standard				ATSC 3.0: TG3/S32 Physical Layer. STL									
Inputs ****				2xASI BNC (H) , ohm / 2xTSolP 10/100/1000 RJ45.									
Guard interval				192, 384, 512, 768, 1024, 1536, 2048, 2432,3072, 3648, 4096 and 4864									
Code Rate/ Constellation	2 / 15	3 / 15	4 / 15	5 / 15	6 / 15	7 / 15	8 / 15	9 / 15	10 / 15	11 / 15	12 / 15	13 / 15	
QPSK	✓	✓	✓	✓	✓	✓	✓	✓		✓			
16QAM			✓	✓		✓	✓	✓		✓			
64QAM		✓	✓	✓	✓	✓	✓	✓	✓	✓			
256QAM			✓			✓	✓	✓	✓	✓			✓
1024QAM				✓		✓	✓	✓	✓	✓	✓		✓
4096QAM						✓		✓		✓	✓		✓
DVB-T/H-T2													
Standard				EN300744. EN302304. EN302755. TS 102831. TS 102 773 (T2-MI)									
Inputs ****				2*ASI BNC, 75 ohm / 3xTSolP 10/100/1000 RJ45.									
FFT Size				1K (DVB-T2), 2K, 4K, 8K, 16K (DVB-T2), 32K (DVB-T2) incl. ext. carrier modes									
Code rate				1/2. 2/3. 3/4. 5/6. 3/5 (DVB-T2). 4/5 (DVB-T2) plus 1/3, 2/5 for T2 Lite									
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 no rotated (DVB-T2)									
ISDB-Tb													
Standard				ARIB STB-B31, TR-B14									
Inputs ****				2xASI BNC, 75 ohm / 3xTSolP 10/100/1000 RJ45									
FFT Size				2K, 4K, 8K									
Code rate				1/2, 2/3, 3/4, 5/6, 7/8									
Guard interval				1/4, 1/8, 1/16, 1/32									
Hierarchical Transmission				Up to 3 layers									
Constellation				QPSK, 16QAM, 64QAM									
ATSC													
Standard				ATSC A/53. A/54. A/64. A/153. A/110B. SMPTE-310M									
Inputs ****				2xASI BNC (F)>. 75 ohm /2xTSolP 10/100/1000 RJ45.									
Constellation				8VSB									
Symbol rate				0.76 Msmblos/s									
Data rate				19.39 Mbits/s									
Trellis coding				2/3									
Reed-Solomon encoder				207 / 187 / 10									
DTMB													
Standard				DTMB (GB20200/2006)									
Inputs ****				2xASI BNC (H), 75 ohm /2xTSolP 10/100/1000 RJ45									
FFT Size				Single carrier/ 3780									
Constellation				64 QAM, 32 QAM, 16QAM, 4QAM, 4QAM NR									
Code rate				0,4-0,6-0,8									
Data rate				24,365 Mb/s									
Frame header				420Symbols/595 Symbols/ 945 Symbols									
DIGITAL ADAPTIVE PRECORRECTION													
Type				Linear / non linear; selectable									
Clipping				12 dB									
Operation mode				Continuous / Automatic (triggering: time/shoulder level)									
Precorrection status				Running/Stopped									
PAPR				Provided									

*** Type and number of inputs depends on Exciter HW configuration

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ANALOGUE MODULATIONS

Standard	PAL std. B/G, H, K, 1, 11, M, N - NTSC Std. M - SECAM D/K
Ref. Standard	ITU-R BT.470-6
Audio	Stereo or Mono IRT
Modulation /amplification	Common
Video input	1V pp (0.5 to 2 V) (OC component level in the range -5 to 5 V) - Ret. loss better than -30 dB (0 to 6 MHz) (75 W)
Audio input	6 dBm ± 6 dB (Df= 25 to 50 kHz) - Ret. loss: better than -30 dB (40 Hz to 15 kHz) (600 W, bai.)
Video Connector	1xBNC female. 75 Ohm
Audio Connector	DB9 with patch cable for 2xXLR female, 600 W (IRT config.: 2 inputs)

REPEATER AND TRANSPOSER

Type	SFN gap filler, transposer and MFN re transmitter
RF input	N-Connector
Rfm frequency range	146 to 861 MHz
Input level	-10dBm to -60dBm (SFN Gap filler) -20dBm to -70dBm (QEF reception)
Input ret. Loss	better than -16 dB
RF in connector	N type . 50 Ohm
Echo cancellation	Resilient to static and dynamic echoes
Residual echo suppression	up to more than 30 dB (30dB are obtained at 0dB input echo)
Noise figure	max 10 dB (SFN Gap filler) max 8 dB (Transposer)
Immunity to other channel	
N+1	OFDM/OFDM > 30 dB
others	OFDM/OFDM > 40 dB

SATELLITE TRANSPOSER

SatTV standard	DVB-S - DVB-S2 - EN300421
Frequency range	950 - 2150 MHz (Ku band)
Signal level	-65 to -25 dBm
Connector	SMA f - CAM slot (Cond. Access)
LNB control	Available through RF input. PS, polarity / band selection: by standard 13/18VDC and 22kHz signaling

CLOCK AND SYNCHRONIZATION

Interna clock	OCXO single oven or dual oven (optional)
External 10 MHz reference Input	BNC (F). Impedance: 50 ohm / high (selectable). Level: -5 to +10 dBm
External 1pps reference Input	BNC (F). Impedance: 50 ohm / high (selectable)
SFN	SFN resolution 1100 ns SFN configurable delay ±500 ms
Stability	time: max ±10-7 /year - temperature: max ±2.5 10-8 (-20°C to +70 °C)

MONITORING

LC Display (LCD)	Local operation through LCD display front panel keyboard measurements (forward power, reflected power, voltage, current, temperature, amplifier power and others) and controls in the menu.
Front RJ-45	Local operation through a Web Server Graphical User Interface, Remote Network management (via SNMP)
Rear RJ-45	Local operation through a Web Server Graphical User Interface, Remote Network management (via SNMP)
GUI	Web Server Graphical User Interface xHTML based
SNMP	V2c / V3 provided
Communication Interface	USB, ETHERNET
Others	Forward and reflected power monitoring, analogic output with female conector DB type with 50mV to 7V range.