2,5 kW COFDM - 3 kW ATSC - 5,2 kWps (Analog) - 3 kW DAB

P75-02/VHF

HIGH EFFICIENCY

HOT PLUG-IN POWER SUPPLY/PSU

MULTI-PLATFORM

MULTI INPUT

MULTI-STANDARD
DVB-T/T2 ATSC/ATSC 3.0
ISDB-Tb DTMB NTSC (analog)

MONITORING
SNMP, WEB BASED GUI, DRY CONTACTS

WIDE BAND

HOT SWAPPABLE AMPLIFIER

LIQUID COOLED

GNSS
(GPS, GLONASS, BEIDU, GALILEO)

FRONT VIEW

- ☐ Multistandard: ATSC (including ATSC3.0), ISDB-T, DTMB, DVB-T/T2, Analog, DAB.
- ☐ High energy efficiency to minimize consumption and OPEX .
- ☐ Fully frequency agile without need for any tuning or trimming.
- ☐ Automatic digital static or adaptive Linear and Non-Linear Pre-correction.
- ☐ Hot Pluggable Power Amplifiers.
- ☐ Power Amplifiers with triple redundant Hot Plug-in power supplies.
- ☐ Temperature-controlled closed liquid cooled system for better efficiency and performance equipped with Dual Redundant Pump plug-In (tool-free pump swap) and dual-blower heat exchanger.
- ☐ Multi input: 2x ASI seamless switch, 2x SAT (S2 with CAMSlot), 2x IP Ethernet, 2x ETI/EDI + 1xSFP (optical/electrical), A/V for analog broadcasting.
- ☐ USB input to fast save/load configurations.
- ☐ Built-in GNSS receiver (GPS, GLONASS, BEIDU, GALILEO) for SFN application.
- ☐ Remote control via SNMP, friendly web browser GUI, no need of plug-in or apps, dry contacts.

SYES

TV TRANSMITTER

The P75 Line is the multi amplifier liquid cooled Transmitter family from SYES.

P75-02 is equipped with Driver (Dual Driver Option) and N°2 plug-In Amplifiers.

It is equipped with High Efficiency Wideband UHF/VHF and Low VHF state-of-the-art amplifiers characterized by high-power density and excellent signal quality granting optimal parameters such as shoulder attenuation and MER.

The P75 amplifiers are hot pluggable and are equipped with 3x redundant Hot Plug-in power supplies each, assuring the maximum reliability and the easiest maintenance.

TV

LIQUID COOLED

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P75-02/VHF

TV

LIQUID COOLED

TECHNICAL SPECIFICATIONS	
RF OUTPUT	
Output power*	• 2500 Wrms COFDM • 3000 Wrms ATSC • 5200 Wp.s. ANALOG • 3000 Wrms DAB
Spurious / Harmonics	EN 302-296-2
Shoulders/MER	Typical: >48dB/>38dB
Connector	1 5/8", other available
Bandwidth	VHF Band BIII (170MHz-230MHz)
Frequency stability	1 Hz
Amplification Class:	Either High efficiency (Doherty type) or AB class available
Final Stage:	No. 2 Amplifiers each with No. 6 Pallets with 4 final transistors each (LDMOS latest technology).
GENERAL	
Mechanical	
Composition (Main components in one rack 44U)	• 1x Exciter • 2x P75-V Amplifier • 1x Tx control logic • 1x cooling drawer, close vase type, dual pump.
Dimensions (WxHxD mm)	600x2320x1100
Weight	340 kg
Cooling	
Cooling System	Liquid cooling, close vase type
Cooling redundancy	Single or dual pump / single or dual heat exchanger
Environmental	
Relative humidity	95% max. (non-condensing)
Operation temperature range Storage temperature range	0° to 50°C -20° to 70°C
Max. installation altitude	4.600 m a.s.l. (higher altitudes kit on request)
Power supply & Safety	
Voltage	208/ 400 Vac (three phase) 47 to 63 Hz (auto range p.s.) power factor > 0.98
Power Supply	3x Power supplies In hot plug-in configuration each amplifier. 2+1 PS redundancy configuration available
Efficiency** (typical value referred to OFDM modulation)	Up to 50%
Safety /EMC	EN 60215 (IEC 21S), EN301-489-53, FCC-73, IS09001-2010. RED 2014/53/UE, RoHS 2002/93/EC

*: 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.

**: Efficiency depends on several parameters such as operating standard and frequency, output power settings, spectrum performances, environmental conditions etc.

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P75-02/VHF

TV TRANSMITTER

DTV MODULATIONS	
ATSC 3.0	
Standard	ATSC 3.0: TG3/S32 Physical Layer. STL
Inputs ***	2xASI BNC (H) , ohm / 2x TSoiP 10/100/1000 RJ45.
FFT Size	8K, 16K. 32K.
Code rate	2/15, 3/15, 4/15, 5/15, 6/15, 7/15, 8/15, 9/15, 10/15, 11/15, 12/15, 13/15
Guard interval	192, 384, 512, 768, 1024, 1536, 2048, 2432,3072, 3648, 4096 and 4864
Constellation	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 Slze	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. 2S6QAM (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/S4. A/64. A/1S3. 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	420 Symbols/595 Symbols/ 945 Symbols
DAB	
Standard	DAB, DAB+ (Ref. Standards EN 3000401, EN 302077-2, EN 300799) DMB, TS 102428
Inputs	2xASI hitless switching (SFN), 2xGBE (EDI ProMPEG COP3) - Electrical + 1xSFP GBE (Opt./Elec)
DAB modes	I, II, III, IV
RF channel Bandwidth	1.536 MHZ blocks
DIGITAL ADAPTIVE PRECORRECTION	
Type	Linear / non linear; selectable
Clipping	12 dB
Operation mode	Continuous / Automatic (triggering: time/shoulder level)
PAPR	Provided

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

TV
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P75-02/VHF

TV

LIQUID COOLED

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	Mono IRT
Modulation /amplification	Common
Video input	1V pp (0.5 to 2 V) (OC component level in thè 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	
Type	SFN gap filler, transposer and MFN re-transmitler
RF input	
Rfm frequency range	146 to 861 MHz
Input levet	-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	
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)
Sgnal 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	
Internal clock	OCXO single oven or dual oven (optional)
External 10 MHz reference	BNC (F). Impedance: 50 ohm / high (selectable). Level: -5 to +10 dBm
External 1pps reference	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	
LCD Display	Local operation through LCD display and keyboard located on the front panel
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

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