

fot

analogue transmitters

TYPES

Air cooled

FOT98A AVx/CH 2 W
 FOT98A AVx/CH 5 W
 FOT98A AVx/CH 10 W
 FOT98A AVx/CH 20 W
 FOT98A AVx/CH 50 W
 FOT98A AVx/CH 100 W
 FOT98A AVx/CH 200 W
 FOT98A AVx/CH 500 W
 FOT98A AVx/CH 1 kW
 FOT98A AVx/CH 2 kW
 FOT98A AVx/CH 4 kW
 FOT98A AVx/CH 5 kW
 FOT98A AVx/CH 10 kW
 FOT98A AVx/CH 20 kW

Liquid cooled

FOT98A AVx/CH 1 kW LC
 FOT98A AVx/CH 2 kW LC
 FOT98A AVx/CH 4 kW LC
 FOT98A AVx/CH 5 kW LC
 FOT98A AVx/CH 8 kW LC
 FOT98A AVx/CH 10 kW LC
 FOT98A AVx/CH 16 kW LC
 FOT98A AVx/CH 20 kW LC

x=m (mono)

x=s (stereo)



Elti has developed ...

... the FOT 98A series solid state transmitters engineered for total broadcast reliability

The Elti FOT 98A series are the product of many years experience. All models from the low-power compact design to medium power are modular and built in a 19" rackmount. The units service various television standards. Featuring LDMOS technology, microprocessor operated controls and totally redundant power supply they guarantee maximum on-air reliability. The range also includes configurations that can operate in dual drive, or via a 1+1 system. The transmitter is fitted with remote software upload through internet or WEB server for management and control.

Transmitter FOT are air cooled or liquid cooled.



the Elti advantage

- DVB-T ready
- Mono/stereo/dual sound version
- Modular construction
- LDMOS technology
- 3/5 slope linearity precorrection
- AGC & ALC
- SAW IF filters and built-in precorrection circuits
- Compact models from 5 W-20 W feature built-in the same 20 W power amplifier (possible reduction of power)
- Full OFFSET in output channel
- NICAM input (optional)
- External reference oscillator frequency controlled by GPS precision 10^{-9} (optional)
- Local/remote management and control

exciter

The exciter consists of modulator, up-converter, power supply, filter, CPU and power amplifier providing 0,5 W of output power. The built-in IntelStrongARM based CPU and control system manages the entire exciter and can control amplifiers. All important parameters are available on LCD display and can be managed via the front panel keyboard. Integrated 5 slope linearity precorrection guarantees optimised transmitter performance.

compact versions

Compact versions of the transmitters are available in 2U up to 20 W and in 5U up to 200 W of output power. Compact transmitters perform to the same level as the exciter and include internal amplifier and output filter. Compact models from 5 W-20 W feature a built-in 20 W power amplifier, allowing for power reduction.

power amplifier

External power amplifiers are available in versions of 500 W and 1 kW, and can be stacked to service as transmitters in range from 1kW up to 20kW. All amplifiers are DVB-T ready, using LDMOS technology to offer high performance linearity across the entire operating band.

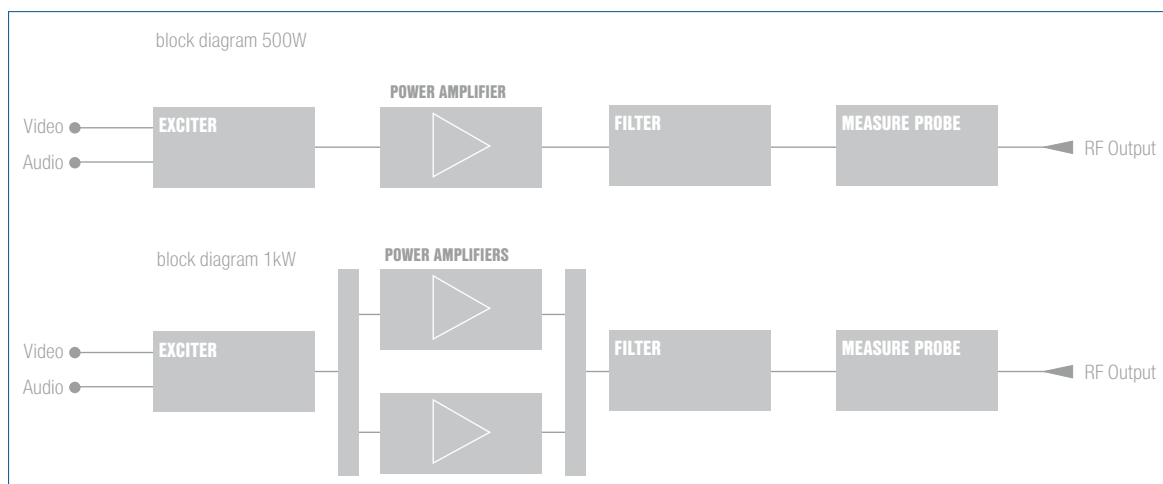
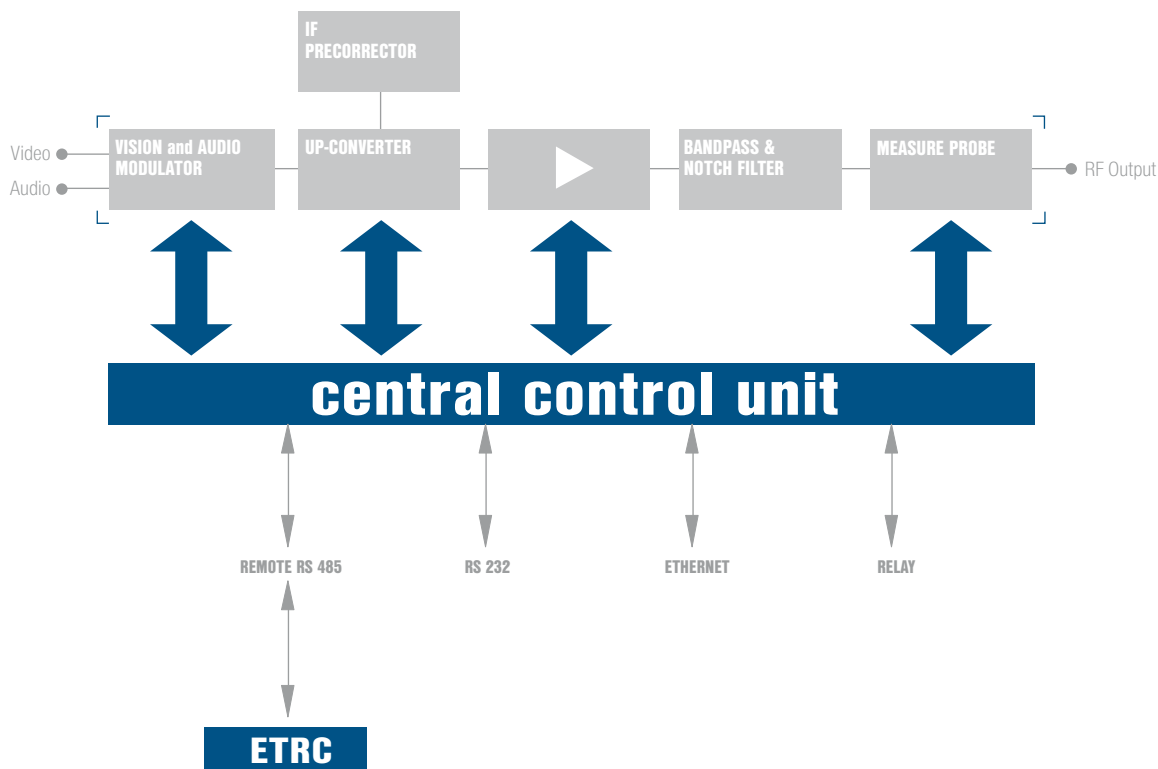
control and monitoring

The integrated control unit provides full control over the assembly and additional options. It features:

- Control of all parameters related to operation
- Password protection and access control
- Measurement and display of power, voltage, current, temperature
- Alarm history
- Save and restore function

External connections are provided by:

- Ethernet LAN/WAN for local/network access
- RS 232 or RS 485 for local access
- Other/custom specific serial connection



specifications

FOT analogue transmitter

RF CHARACTERISTICS	
Frequency range	VHF (170 - 230 MHz), UHF (470 - 862 MHz)
Output power (W)	2, 5, 10, 20, 50, 100, 200, 500, 1.000, 2.000, 4.000, 5.000, 8.000, 10.000, 16.000 and 20.000
Vision/sound amplification	common
Vision/sound power ratio	10/1 or 20/1/0,2
Intermodulation distortion (with precorrection) (V.C. -8 dB; C.Sb. -16 dB; S.1C -10 dB)	-58 dB ref. to peak sync
TV standard	B, D, G, H, I, K or N
Type of emission	vision C3F sound 1, 2 F3E
Sound FM carrier deviation	max. 50 kHz
Harmonic emission	≤ 60 dB
Spurious emission	≤ 70 dB
Variation of output power with black/white transition	± 0,2 dB
Vision carrier frequency stability	150 Hz / 3 months
External drive frequency	10 MHz

VIDEO CHARACTERISTICS	
Video input	base-band video
Nominal input voltage	1 V _{pp} ± 3 dB
Nominal input impedance	75 Ω
Return loss	> 34 dB
Vision modulation	A5C, negative (vestigial sideband)
Modulation depth	87,5 % (adjustable)
Group delay variation (0,2 to 4,8 MHz)	≤ ±35 ns
Differential gain	≤ 3 %
Differential phase	≤ ± 2°
Signal to noise ratio	typ. 55 dB rms, unweighted typ. 62 dB weighted according to CCIR Rec. 567 referred to B/W transition signal

AUDIO CHARACTERISTICS	
Input connector	XLR
Nominal input level (at dev. = ±50kHz)	+ 6 dBm (0 dBm)
Input impedance	600 Ω balanced (10 kΩ unbalanced)
Pre-emphasis	50 μs ± 0,5 μs
Amplitude vs. frequency response	30 Hz to 15 kHz ± 0,2 dB
Stereo crosstalk	> 36 dB
Dual sound crosstalk	> 70 dB
Total harmonic distortion	≤ 0,5 %
FM signal to noise (rms value) ratio (at dev.=±50kHz)	> 60 dB unweighted; > 65 dB weighted
Synchronous AM noise (at dev. = ±50kHz)	≤ - 40 dB

METERING	
Output power, Reflected power, Output amplifier transistors current and voltages, Driver amplifier transistors current and voltages, Temperature on the amplifiers, Power supply voltage, Video modulation, Audio deviation left and right, SYNC level, IF video level, Right sound carrier, Left sound carrier	

PROTECTION CIRCUITS	
High output power, High reflected power, Output amplifier overtemperature, Driver amplifier overtemperature, Over currents, Over voltages	

INDICATIONS	
MODE, SYNC, AGC, ALC, LOCK2, EXT REF, FILTER B.B., SC MODE, SC1 LOCK, SC2 LOCK, VC LOCK, KEY LOCK, OMT Start/Stop, Stand-by	

OTHER SPECIFICATIONS	
Ambient temperature working range	- 5 to + 45 °C (ETS 300 019)
Voltage power supply	AC 230 V -15 % to +10 %
Frequency	50 Hz
Relative humidity	90 % (max.)

CONTROL AND MONITORING INTERFACES	
Local control	RS 232, Ethernet
Remote control	Ethernet, RS 232 or 485 (Optional)
Supported protocols	TCP/IP, HTTP (Optional)

POWER CONSUMPTION, WEIGHT AND DIMENSIONS										
	2 W	5 W	10 W	20 W	50 W	100 W	200 W	500 W	1 kW	Up to 20 kW
stand by	75				100			240	253	Upon request
average	100	200	250	270	440	480	880	1.830	3.020	
white level					400	420	790	1.590	2.450	
black level					480	540	980	2.075	3.580	
External dimensions	19" x 2 U x 670 mm				19" x 5 U x 670 mm			19" x 23 U x 900 mm		
Weight	15				32			200	210	
RF output connectors	N female, 50 Ω							EIA 7/8", 50 Ω		

fpt

analogue translators

TYPES

FPT98A CH/CH 2 W
FPT98A CH/CH 5 W
FPT98A CH/CH 10 W
FPT98A CH/CH 20 W
FPT98A CH/CH 50 W
FPT98A CH/CH 100 W
FPT98A CH/CH 200 W
FPT98A CH/CH 500 W
FPT98A CH/CH 1 kW
FPT98A CH/CH 2 kW
FPT98A CH/CH 4 kW
FPT98A CH/CH 5 kW



Elti has developed ...

... the **FPT 98A series solid state translators versatile, reliable and user-friendly**

The Elti FPT 98A series are the product of many years experience. All models from the low-power compact design to medium power are modular and built in a 19" rackmount. The units service various television standards. Featuring LDMOS technology to offer high performance linearity across the entire operating band, the innovative and compact design makes these translators exceptionally user-friendly. Protection circuits and microprocessor operated controls guarantee maximum reliability. The whole series is fitted with remote software upload through internet or WEB server for management and control.



the Elti advantage

- DVB-T ready
- Mono/stereo/dual sound version
- Modular construction
- LDMOS technology
- 3/5 slope linearity precorrection
- AGC & ALC
- SAW IF filter specified with reference to the specific standard
- Compact models from 5 W-20 W feature built-in the same 20 W power amplifier (possible reduction of power)
- Full OFFSET in input and/or output channel
- Local/remote management and control

exciter

The exciter consists of down-converter modulator, up-converter, power supply, filter, CPU and power amplifier providing 0,5 W of output power. The built-in IntelStrong ARM based CPU and control system manages the entire exciter and can control amplifiers. All important parameters are available on LCD display and can be managed via the front panel keyboard. Integrated 5 slope linearity precorrection guarantees optimised translator performance.

compact versions

Compact versions of the translator are available in 2U up to 20 W and in 5U up to 200 W of output power. Compact translators perform to the same level as the exciter and include internal amplifier and output filter. Compact models from 5 W-20 W feature a built-in 20 W power amplifier, allowing for power reduction.

power amplifier

External 500 W power amplifiers are available, and can be doubled to service a 1, 2, 4 and 5 kW translators. All amplifiers are DVB-T ready, using LDMOS technology to offer high performance linearity across the entire operating band.

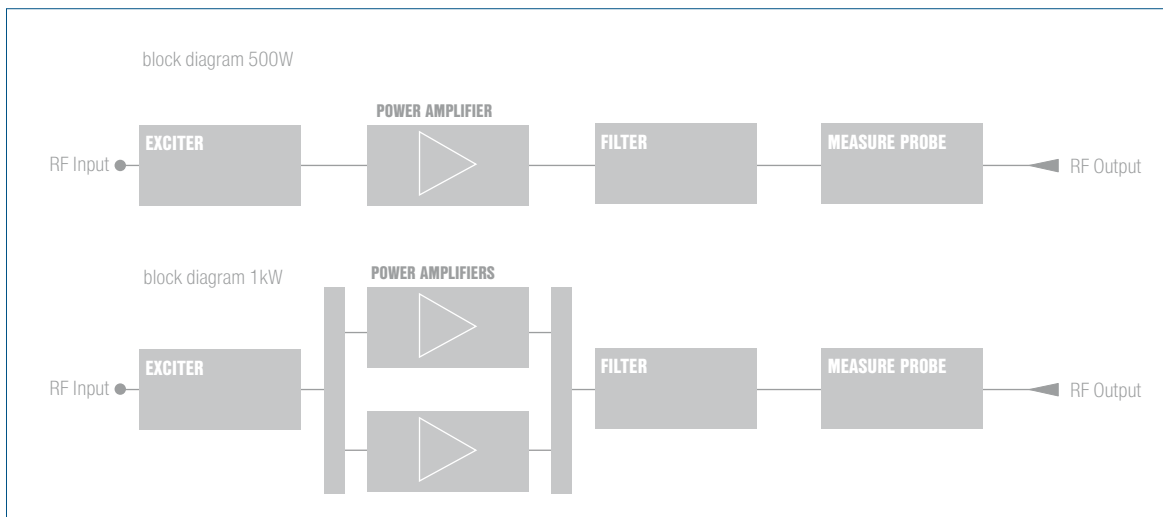
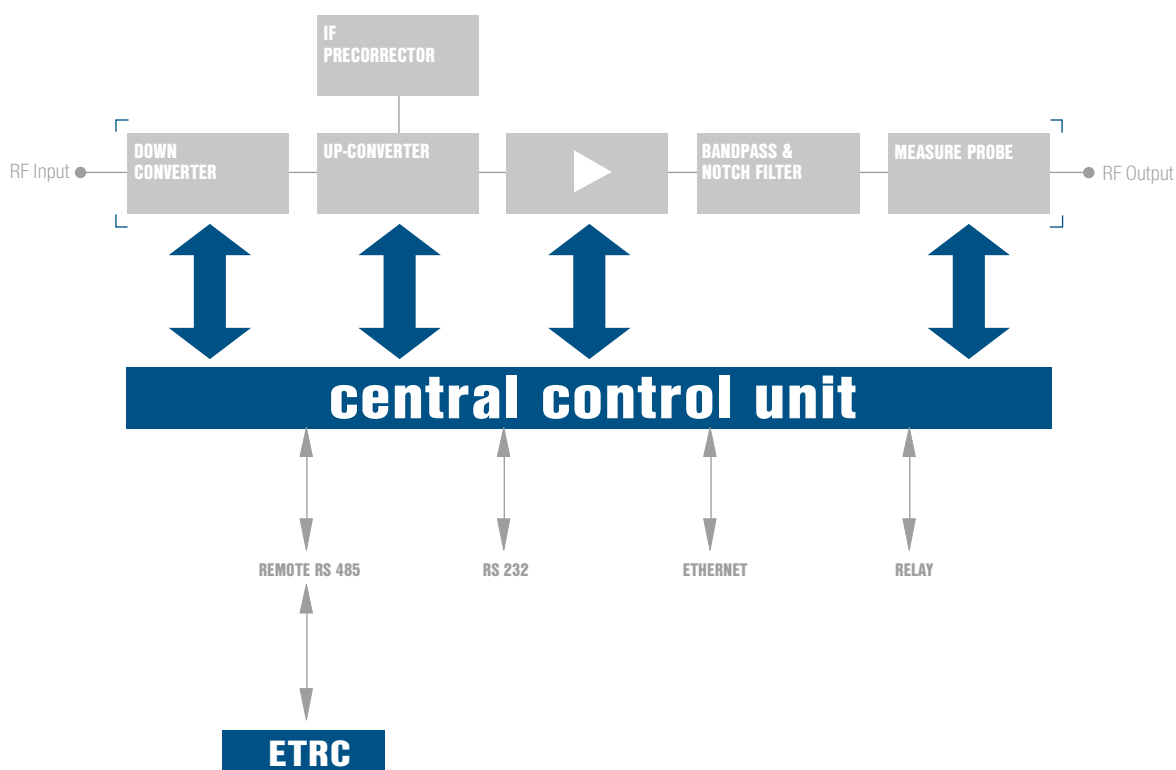
control and monitoring

The integrated control unit provides full control over the assembly and additional options. It features:

- Control of all parameters related to operation
- Password protection and access control
- Measurement and display of power, voltage, current, temperature
- Alarm history
- Save and restore function

External connections are provided by:

- Ethernet LAN/WAN for local/network access
- RS 232 or RS 485 for local access
- Other/custom specific serial connection



specifications

FPT analogue translators

INPUT PARAMETERS

Input frequency range	VHF (170 - 230 MHz), UHF (470 - 862 MHz), IF
Input RF impedance	50 Ω
Input coaxial connector	N
Input VSWR	< 1,2
Input voltage range	0,5 mV to 10 mV (-53dBm to -27dBm)
Noise figure Unip=2 mV	< 8 K _t (9 dB)

LOCAL OSCILLATORS

Transmitting channel frequency stability	max. + 0,5 ppm/year
External drive frequency	10 MHz

IF PARAMETERS

Vision IF frequency	38,0 - 38,9 MHz - depends on standard
IF filter	SAW acoustic device

OUTPUT PARAMETERS

Output frequency range	VHF (174-230 MHz), UHF (470-862 MHz)
Output power vision carrier peak synchro level (W)	2, 5, 10, 20, 50, 100, 200, 500, 1.000, 2.000, 4.000 and 5.000
Output VSWR	< 1,2
IMD products inside the channels fSLK (-0,75 to 5,75 MHz) (Ufv=-8dB, Ufb=-16dB, Ufs=-10dB)	< - 58 dB
Signals on adjacent channels and harmonics (two input unmodulated signals: Ufv=0dB, Ufs=-10dB)	< - 60 dB UHF
Other spurious products	< 70 dB, max 1 mW

RETRANSMISSION QUALITY

Picture S/N ratio (unweighted/weighted)	> 55/62 dB
Sound S/N ratio (unweighted/weighted)	> 54/60 dB (at df \pm 30kHz)
Sync pulse compression	< 4 %
Differential gain	< 3 %
Differential phase	< \pm 2 °
Group delay tolerance	< \pm 35 ns

METERING

Output power, Reflected power, Output amplifier transistors current and voltages, Driver amplifier transistors current and voltages, Temperature on the amplifier, Power supply voltage

PROTECTION CIRCUITS

High output power, High reflected power, Output amplifier overtemperature, Driver amplifier overtemperature, Over currents, Over voltages

INDICATIONS

MODE, SQU, AGC, ALC, LOCK OSC1, LOCK OSC2, EXT REF, KEY LOCK, OMT
Start/Stop, Stand-by

OTHER SPECIFICATIONS

Ambient temperature working range	- 5 to + 45 °C (ETS 300 019)
Voltage power supply	AC 230 V -15 % to +10 %
Frequency	50 Hz
Relative humidity	90 % (max.)

CONTROL AND MONITORING INTERFACES

Local control	RS 232, Ethernet
Remote control	Ethernet, RS 232 or 485 (Optional)
Supported protocols	TCP/IP, HTTP (Optional)
GSM control	SMS messaging and GPRS (Optional)

POWER CONSUMPTION, WEIGHT AND DIMENSIONS

	2 W	5 W	10 W	20 W	50 W	100 W	200 W	500 W	1 kW	Up to 5 kW
stand by (W)	73			100			240	253		Upon request
average (W)	95	165	190	250	500	520	950	1.830	3.020	
white level (W)					430	450	810	1.590	2.450	
black level (W)					550	570	1.120	2.075	3.580	
External dimensions	19" x 2 U x 670 mm				19" x 5 U x 670 mm			19" x 23 U x 900 mm		
Weight (kg)	15				32			200	210	
RF output connectors	N female, 50 Ω							EIA 7/8", 50 Ω		

DSA satellite and DTA terrestrial to Analogue transmitters

TYPES

Satellite DVB-S

DSA 2W
DSA 5W
DSA 10W
DSA 20W
DSA 50W
DSA 100W
DSA 200W
DSA 500W
DSA 1kW

Terrestrial DVB-T

DTA 2W
DTA 5W
DTA 10W
DTA 20W
DTA 50W
DTA 100W
DTA 200W
DTA 500W
DTA 1kW



Elti has developed ...

... a hybrid solution by joining the existing analogue transmission with quality reception of digital DVB-T or DVB-S networks.

Filling the void in the broadcasting systems Elti now provides a solution that enables transmission of digital content with analogue technology. Providing a unique ability to choose satellite content or even digital terrestrial content in order to fulfill customer needs.

With this solution Elti combines years of knowledge in analogue transmission and the quality of digital content.

Integration of high quality DVB-T and DVB-S receivers into analogue transmitters ensures a flawless transmission on a long term. The system is combined with a stand alone receiver DVB-T or DVB-S and a standard Elti analogue transmitter. Featuring LDMOS technology, microprocessor operated controls and totally redundant power supply they guarantee maximum on-air reliability. The range also includes configurations that can operate in dual drive, or via a 1+1 system. The transmitter is fitted with re-mote software upload through internet or WEB server for management and control.

specifications

Satellite DVB-S reception and analogue transmission – DSA repeater system

QPSK FRONT-END FUNCTIONALITY

Decoding and demodulation	Full compliant to ETS 300- 421 specification
Frequency range	Tunable upon 950-2150 MHz frequency band
Input level	-65 to - 25 dBm
Code rate	1/2, 2/3, 3/4, 5/6, 7/8

INPUTS / OUTPUTS

MPEG2-TS provided on 2 ASI outputs at 270 Mbits/s bit rate, according to EN 50083-9 standard
MPEG2-TS ASI input
Internal MPEG-2 demultiplexer-decoder - PAL, SECAM, RGB, and audio outputs
IC slot (Optional)

REMOTE MONITORING

Relays	4 user's defined synthesis alarms and "power supply on" are available
RS422 serial link	Allows access to all the functions of the equipment: configuration, alarms.

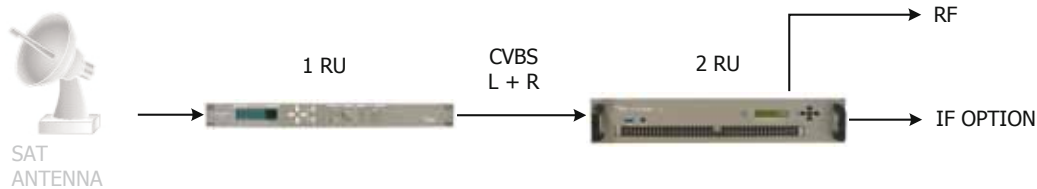
OTHER SPECIFICATIONS

Power Supply	100 - 240 V AC, 47 - 60 Hz
Consumption	< 25 VA
Cabinet	19" rack, 1U, 450 mm depth

DSA repeater system *

- 2W
- 5W
- 10W
- 20W
- 50W
- 100W
- 200W
- 500W
- 1kW

* for more specification about the transmission parameters please refer to pages 20-23 FOT transmitters



Terrestrial DVB-T reception and analogue transmission – DTA repeater system

COFDM FRONT-END FUNCTIONALITY

Decoding and demodulation	COFDM front-end full ETSI EN 300 744 compliant
IFFT mode	2K and 8K - hierarchical modes HP and LP
Frequency range	Frequency tunable upon TV frequency bands VHF III and UHF IV-V
Input level	-90 to - 25 dBm (depends of modulation)
Guard Interval	1/4, 1/8, 1/16, 1/32
Code rate	1/2, 2/3, 3/4, 5/6, 7/8
Modulation	QPSK, 16 QAM, 64 QAM

INPUTS / OUTPUTS

MPEG2-TS provided on 2 ASI outputs at 270 Mbits/s bit rate, according to EN 50083-9 standard
MPEG2-TS ASI input
Internal MPEG-2 demultiplexer-decoder - PAL, SECAM, RGB, and audio outputs

REMOTE MONITORING

Relays	4 user's defined synthesis alarms and "power supply on" are available
RS232 serial link	Allows access to all the functions of the equipment: configuration, alarms.

OTHER SPECIFICATIONS

Power Supply	100 - 240 V AC, 47 - 60 Hz
Consumption	< 25 VA
Cabinet	19" rack, 1U, 450 mm depth

DTA repeater system **

- 2W
- 5W
- 10W
- 20W
- 50W
- 100W
- 200W
- 500W
- 1kW

** for more specification about the transmission parameters please refer to pages 20-23 FOT transmitters

