

## SYNAPSE Series

High Performances Analogue  
FM Stereo Modulator Output  
Power Ranges 50W



- HIGH PERFORMANCE: TOP QUALITY AT REASONABLE PRICE
- NOMINAL RF OUTPUT POWER: 50W
- COMPACT SIZE: ONLY ONE 19" RACK UNIT CABINET
- VERY LOW SIGNAL/NOISE: TYP. 80 dB
- HIGH STEREO SEPARATION: TYP. 65 dB
- LOW DISTORTION: THD, IMD & TIM TYP. 0,05%.
- TOTAL SPECTRAL PURITY: > -100 dBc SPURIOUS, > - 75 dBc HARMONICS
- REMOTE CONTROL:TCP/IP: WEB + SNMP OF ALL SIGNAL PARAMETERS
- FULL – RANGE POWER SUPPLY: 90-260 VAC MAINS VOLTAGE
- COMPLIANT WITH ALL THE STANDARD: ETSI – CCIR - FCC.

### Options

- DIGITAL STEREO CODER: SUPERIOR STEREO QUALITY
- FULL FEATURES RDS/RBDS CODER: EASY PROGRAMMABLE BY PC
- OIRT and JPN: FREQUENCY BAND VERSION
- LPFM ODE STATION: FCC IDENTIFICATIONS CODE

**Synapse** is a compact and cost-effective FM Exciter featuring outstanding performance specifically designed for budget applications, both as low power stand-alone transmitter and as driver for low and medium power transmitters. The output power can be adjusted from 0 to 50W and it is housed into an ultra-compact cabinet of only one unit height.

**Synapse** is available in JPN and OIRT frequencies.

For best final price, the **Synapse** is available in two versions: MONO/MPX and STEREO. The Stereo Coder can be easily upgraded on site at any time, even after the first installation.

To meet all the customer needs, **Synapse** allows the possibility to be upgraded with useful options like RDS, AES/EBU Digital audio Input, TCP/IP WEB Remote Control and Encoder and FCC station coding.

The **Synapse** integrated CPU card allows the monitoring of a large number of parameters.

The user friendly menu is available on a clear LCD display; it allows the setting of all the working parameters and the monitoring of the operating figures.

- HIGH PERFORMANCE: TOP QUALITY AT REASONABLE PRICE
- NOMINAL RF OUTPUT POWER: 30W, 50W, 100W, 150W, 300W
- COMPACT SIZE: ONLY ONE 19" RACK UNIT CABINET
- VERY LOW SIGNAL/NOISE: TYP. 60 dB
- HIGH STEREO SEPARATION: TYP. 65 dB
- LOW DISTORTION: THD, IMD & TIM TYP. 0,05%.
- TOTAL SPECTRAL PURITY: > -100 dBc SPURIOUS, > - 75 dBc HARMONICS
- REMOTE CONTROL: TCP/IP WEB Remote Control and DB9 TELEMETRY PORT
- FULL – RANGE POWER SUPPLY: 90-260 VAC MAINS VOLTAGE
- COMPLIANT WITH ALL THE STANDARD: ETSI – CCIR - FCC.

### Options

- DIGITAL STEREO CODER: SUPERIOR STEREO QUALITY
- FULL FEATURES RDS/RBDS CODER: EASY PROGRAMMABLE BY PC
- OIRT and JPN: FREQUENCY BAND VERSION
- LPFM MODE STATION: FCC IDENTIFICATIONS CODE
- AES/EBU Digital Input
- Internal RDS Dynamic Encoder



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|--------------------------------|--|
| 1. RF OUT                      | RF Output. N (50 Ohm) type connector       |
| 2. RF Monitor                  | RF Output Monitor. BNC (50 Ohm) , female.  |
| 3. AUX Input                   | RDS/SCA Input. BNC female connector.       |
| 4. MPX Input                   | Unbalanced Input. BNC female               |
| 5. MONO Input                  | Analog Audio Input                         |
| 6. IMPEDANCE Audio Setting     | 600 / 10K                                  |
| 7. Interlock                   | NO. NC                                     |
| 8. Remote Connectors           | RJ45, 1 DB9 for remote control.            |
| 9. 19 kHz Output (Optional)    | 19 kHz Pilot Output. BNC female connector. |
| 10. Left (Optional)            | Stereo Analog Audio Input                  |
| 11. Right (Optional)           | Analog Audio Input                         |
| 12. IMPEDANCE Audio Setting    | 600/10K                                    |
| 13. Preenphasys setting        | Lin / 50uS / 75uS                          |
| 14. AC Mains                   | AC Main Source. VDE Mains socket.          |
| 15. Audio mode                 | Lin /25uS/ 50uS / 75uS                     |
| 16. RDS Programming (OPTIONAL) |  |

# TECHNICAL CHARACTERISTICS

## GENERAL

Power Output: 0-50 W adjustable from front panel,  
TCP/IP WEB Remote Control  
RF Output Impedance: 50 ohm.  
RF Output Connector: "N" type.  
Monitor RF: -53 dBc, 50Ω post harmonic filter VSWR:  
1.5:1 Maximum with automatic fold-back at higher VSWR  
Frequency Range: 87.5 ÷ 108.00 MHz, on request 66 ÷  
74 MHz ( OIRT), 76 ÷ 90 MHz (JPN) Programmable in 10  
KHz steps.  
Frequency Stability: better than ±150Hz  
(±1 ppm from -5 to 50°C).  
Frequency Control: Synthesizer μprocessor control. Type  
of Modulation: Direct frequency modulation of carrier  
frequency, F3E stereo and mono.  
Lock in Time: Typ. 4 second.  
Off Lock Attenuation: ≥ -60 dBc.  
Modulation Capability: ±150 KHz (up to 300kHz).  
Modulation Mode: Mono, Stereo, Multiplex, Aux.  
Preemphasis: Flat/25/50/75μs selectable internal  
Asynchronous AM S/N Ratio: -65 dB below reference  
carrier with 100% AM modulation @ 400 Hz,  
without FM modulation.  
Synchronous AM S/N Ratio: -65 dB below reference  
carrier with 100% AM modulation @ 400 Hz  
with FM modulation ±75 KHz @ 400 Hz.  
RF Harmonics: Exceeds EBU/CCIR/FCC requirements.  
RF Spurious: Exceeds ETSI/CCIR/FCC requirements.

## AUDIO INPUTS-TYPE OF MODULATIONS

Mono, Stereo  
Multiplex (MPX)  
RDS, SCA, , Auxialary

## MONAURAL OPERATION

Audio Input Impedance: 600 ohm balanced, 10 Kohms  
unbalanced.  
Audio Input Level: -9 to +18 dBu.  
Input Connector: XLR female.  
Audio Frequency Response: ±0.1 dB, 30 Hz to 15 KHz.  
Total Harmonic Distortion + Noise: 0.05% @ 400 Hz  
Intermodulation Distortion: 0.05%, 1 KHz/1.3 KHz, 1:1  
ratio  
Transient Interm. Dist.: 0,05%, 2.96 KHz square wave  
and 14 KHz sine wave.  
Distortion: 0.05%, 2.96KHz square wave and 14 KHz  
sine wave.  
FM S/N Ratio: -82 dB RMS, -80 dB at ±75 KHz dev., 50  
μs de-emphasis, weighted.

## MULTIPLEX OPERATION

Composite Input Impedance: 1.2 Kohm unbalanced.  
Composite Input Level: +6 to +12 dBm  
Input Connector: BNC female.  
Composite Amplitude Response: ±0.2 dB, 30 Hz  
to 100KHz.

Total Harmonic Distortion + Noise: 0.05% @ 400 Hz  
Intermodulation Distortion: 30 Hz to 15 kHz \* 0.05% @  
400 Hz  
Transient Interm. Dist.: 0,05%, 2.96 KHz square wave  
and 14 KHz sine wave.  
FM S/N Ratio: -83 dB RMS detector, -80 dB AT ±75 KHz  
dev., 50 μs de-emphasis, weighted.

## STEREO OPERATION

Audio Input Impedance: 600 ohm balanced, 10 Kohm  
unbalanced.  
Audio Input Level: -3 to +9 dBm.  
Input Connector: XLR female. Audio Frequency Respon-  
se: ±0.1 dB, 30 Hz to 15 KHz.  
Total Harmonic Distortion + Noise: 0.05% @ 400 Hz  
Intermodulation Distortion: 0.05%, 1 KHz/1.3 KHz, 1:1  
ratio  
Transient Interm. Dist.: 0,05%, 2.96 KHz square wave  
and 14 KHz sine wave.  
FM S/N Ratio: -71 dB at ±75 KHz dev,  
50 μs de-emphasis, weighted.  
Stereo Separation: 30÷80 Hz ≥ -50 dB, 80Hz÷15 KHz ≥  
-60 dB (Typ. 65 dB).  
Crosstalk attenuation:  
Main to Sub -50 dB 30 Hz to 15 KHz  
(typ. -55 dB 100 Hz to 8 KHz).  
38 KHz Suppression: ≥ -65 dB (typ. -80 dB).  
Pilot Frequency: 19 KHz ± 1 Hz  
Output Pilot: 1 Vpp., BNC female  
Audio Filter Attenuation: ≥ -44 dB @ 19 KHz, > -27 dB  
20 KHz to 100 KHz.  
Modes: Stereo, Mono

## AES/EBU OPERATION

Input Level: -10dBfs to 0dBfs  
Input Connector: XLR female, optical TOS-LINK.  
Input Impedance: 110 ohm.  
Data Format: S/PDF, AES/EBU, IEC958,  
EIAJCP340/1201.  
D/A Converter: 24 bit.  
Sampling Frequency: from 32 to 96 KHz with automatic  
selection  
Stereo separation (crosstalk): ≥50dB, 100Hz to 5kHz  
Amplitude response: ≤ ± 0.1dB, from 30Hz to 15kHz

## AUXILIARY INPUT

Input Impedance: 3 Kohm.  
Input Level: -3 to +6 dBm.  
Frequency Response: ±0.2 dB, 40 KHz to 100 KHz.  
Input Connector: BNC female. Most SCA, RDS, AUX,  
performance parameters  
are determined primarily by the generator used.

## TELEMERTY CONNECTOR

RJ45 , DB9 Female: back panel for remote connections.

## **OPTIONS**

DIGITAL STEREO CODERY  
RDS/RBDS CODER PROGRAMMABLE BY PC  
OIRT & JPN VERSION  
LPFM CODE STATION

## **ELECTRICAL**

AC Input Power: 90-260 VAC 50/60 HZ single phase.  
Cooling: Forced air with internal long life brushless ball bearing fan.  
Acoustic noise:< -56 dBa @ 1 m.

## **ENVIRONMENTAL**

Operating temperature: -10°C to +50°C.  
Max Operating Altitude: 3000 mt asl.  
Relative Humidity Range: 0 to 95% non condensing.

## **PHYSICAL DIMENSION**

Mounting: Standard 19" chassis 1 U rack.  
W: 485 mm. x D: 405 mm. x H: 44 mm.  
Weight: ~ 4,0 Kg