SYMPHONY MOSAIC FM Transmitter-Amplifier

2kW to 80 kW Analog and “Digital Ready for HD Radio and DRM compatibility” Based on Tessera ROCK High Efficiency LD-MOS Amplifiers of 1,1kW or 2,2kW

When developing Symphony Mosaic, the main target was: Always on Air, Less than 7 kg (15 lbs) of modules-weight, Easy maintenance, Low consumption and High Efficiency

The only way to reach this goal consists in the creation of a modular structure where each block of the system has been obsessively optimized for best results.

When each Tessera of the Mosaic is perfectly realized the overall structure benefits of this optimization obtaining the Symphony Mosaic Transmitter.

SYMPHONY MOSAIC FM Transmitter-Amplifier

Up to 75% Overall Efficiency - PLANAR LDMOS

65:1 VSWR Tollerant - Fully RF and Power Supply Redundant

20kW FM Transmitter build with the Tessera Rock 2kW Amplifier Module
10kW FM Transmitter build with the Tessera Rock 1kW Amplifier Module

Mosaic is the art of creating images made of small pieces of colored glass known as tesserae.

Mosaic Art Technology, is the Art of creating broadcast systems made of small highly optimized plug-in “Tesserae Amplifiers/Transmitters” following the pure idea of an extreme modularity.

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The only way to reach this goal consists in the creation of a modular structure where each block of the system has been obsessively optimized for best results.

When each Tessera of the Mosaic is perfectly realized the overall structure benefits of this optimization obtaining the Symphony Mosaic Transmitter.
HOT PLUG-IN POWER SUPPLY
Replace the power supply in ONE MINUTE 4 Steps
• Remove the front grid, operating only two screws
• Pull Off the sliding power supply
• Insert the new Power Supply
• Install the grid
That’s all!!
ROCK 1kW and ROCK 2kW, the Tessera Amplifier of the Symphony Mosaic.

- Ultra Compact Design.
- HOT PLUG-IN Power Supply
- Up to 75% overall efficiency
REVOLUTIONARY MODULAR COMBINER (MMMC)
BROKEN THE PORT NUMBER LIMITS.
- Ultra Compact Design.
- Low power to high power direct stepping.
- Low loss.
- Non Hierarchy Arbitrary odd and even port number.
- Ground referred balancing loads.
- Extremely high isolation value: more than 26dB.
- Up to 12 input way for 30 kW Output Power.
- Ultra-wideband, exceeds more stringent specifications.
- Phase stable.
- Best in class low loss performance: less than 0.1dB
- More than 12 dB of additive harmonic filtering.
- Low Cost vs Power ratio.

ISOLATED SPLITTER 2-10 way

UNBALANCED POWER LOAD 2-10 way
Optional Isolation transformer for lightning and overvoltage protection.

Example of system with 4 Isolation transformers on a 4 kW transmitter build with 4x1kW Amplifiers or 8kW Transmitter built by 4x2kW Amplifiers
TALENT Exciter/Transmitter is a Family of DDS Direct to Channel Digital FM stereo Exciters/Transmitters that guarantees a superior transmission quality and top performances. Output power from 30 W to 2000W using High Efficiency last LDMOS technology is housed into an ultra-compact cabinet of only 1U height for transmitters up to 500W (2U height for 2000W). TALENT is available also in JPN and OIRT frequencies. TALENT can be used as ultra-compact stand alone station, as well as driver in complex high power transmitters and N+1 systems. For any application TALENT is the ultimate solution that meets most demanding customer’ requirements and guarantees professional features at affordable price.

- High Efficiency last generation LDMOS technology up to 80%
- Very LOW SIGNAL TO NOISE MORE THAN 90 DB
- Very LOW DISTORTION and HIGH STEREO SEPARATION
- TOTAL SPECTRAL PURITY: > -100 DBC SPURIOUS, > - 75 DBC HARMONICS
- SEVEN SELECTABLE COMPLETE SET-UP: READY FOR USE IN 7+1 SYSTEM
- FULL- RANGE POWER SUPPLY: 90-260 VAC MAINS VOLTAGE
- COMPLIANT WITH ALL THE STANDARD: ETSI – CCIR - FCC.
- DIGITAL STEREO CODER: SUPERIOR STEREO QUALITY
- UP TO 75% LDMOS HIGH EFFICIENCY AMPLIFIERS
- EXTERNAL 10MHz and 1PPS SYNCHRONIZATION FOR USE ON SFN APPLICATIONS
- HIGHEST RF SIGNAL QUALITY
- PERFECT AUDIO FIDELITY
- REMOTE CONTROL BY TCP/IP: WEB + SNMP OF ALL SIGNAL PARAMETERS
- CLEAR CRISTAL AUDIO SOUND
- DYNAMIC RDS ENCODER
- SFN-Single Frequency Networks
- ASC-Automatic Audio Source Changover
SFN-Single Frequency Networks with TALENT DDS
TALENT is perfect to be used in a single frequency network. Whether you are looking to extend your coverage area, create a long unbroken coverage chain along a highway, or fill holes in your coverage area due to terrain shielding. TALENT Series is standard equipped with 10MHz and 1pps synchronization input.
SFN functionality is built into all TALENT Series transmitters and the built-in remote capability of the WEB interface, combined with GPS synchronization and time delay adjustment in microseconds increments, helps simplify the complex task of setting up a single frequency network.

ASC-Automatic Audio Source Changeover
Analogue Left and Right, MPX and AES/EBU digital audio changeover, 3 inputs. Priority handle of the main source input. Useful for those systems where satellite receivers are used combined with a terrestrial connection, so that guarantee the better quality of the signal deriving from the satellite and the greater reliability of the terrestrial connection. Priority Source, Intervention time, reset time and level threshold are programmable.

N+1 Automated Transmitter Backup
For facilities that broadcast multiple programs from a single site, N+1 capability provides even higher levels of redundancy that is both automated and cost effective. TALENT N+1 configurations support up to seven identical main transmitters plus a backup. The 7 fully settable memories allow to replace main transmitters in any frequency, power and audio configuration. The memories are direct selectable from TC/TS connector or through any communication port like RS232, RS485, TCP/IP.

RDS Coder Integrated
Dynamic RDS encoder integrated with full services:
AUTOMATIC CHANGE OVER
WITH INTERNAL COAX RELAY UP TO 150W OR DRIVE EXTERNAL COAX RELAY

Main Features

- HIGH PERFORMANCE AT LOW COST
- 1+1 STAND-BY CONFIGURATION
- AUTO-MANUAL MODE OPERATION
- NOMINAL RF POWER 150W
- INTERNAL OR EXTERNAL DUMMY LOAD 150W OR 300 W
- INTERNAL AUDIO CHANGE OVER
- REMOTE CONTROL
- WORKING FREQUENCY 80-120 MHz
- OUTPUT INTERFACE, DB9
- VERY COMPACT CABINET 1 UNIT RACK 19”
- AC MAINS 90-260 VAC EXTEND RANGE

To make more reliable a transmission system composed of many different main equipments, a spare equipment is required. The spare shall be able to switch the faulty device to guarantee the transmission continuity. The ACO150 NV System is designed with a modular approach in a 19”, 1U standard rack. The front panel is a two-column display, easy to understand, which allows the reading and setting parameters. All functions are selectable by a knob (encoder), and LED indicators provide an instant overview of the configuration. The ACO150NV is designed to work best with all the equipment Innovation, but can easily be used with equipment of other brands.
GENERAL
System: 1+1 standby with automatic and manual operation.
Switching Time: Adjustable 1 - 60 seconds.
Switching Power: Adjustable from 5 - 150 W
Control: Automatic/Manual mode
Internal load: 150W (250 W)
Input signal: TxA/TxB .
Output Signal: TxA/TxB On/ Off.
In/Out Interface: connector DB9.
Internal Audio Change Over.
Remote Control.
NON volatile Status Memory

RF SECTION
Max Power: 150 W (250W)
RF Output Impedance: 50 ohm.
RF Output Connector: "N" type.
RF Input Impedance: 50 ohm.

RF input Connector: "N" type.
Insertion loss: ≤ 0.25 dB
Input-Output VSWR: 1.07:1.
Frequency Range: 80.00 ÷ 120.00 MHz.
Isolation Input: ≥ 30 dB.
Input Connector: XLR female.

AUDIO SECTION
Audio Input: Left & Right, Multiplex.
Audio Input connectors: XLR Female (L&R) BNC (Mpx).
Audio Output: Left & Right, Multiplex.
Audio Output connectors: XLR Female (L&R) BNC (Mpx).

ELECTRICAL
AC Input Power: 90÷260 VAC 50/60 HZ single phase.
AC Apparent Power Consumption: 25 VA

Cooling: Forced air with internal long life brush-less ball bearing fan.
Acoustic noise: < -56 dBA @ 1 meter.

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

PHYSICAL DIMENSION
Mounting: Standard 19" chassis 1 U rack.
Size: 485 mm. W x 385 mm. D x 44 mm. H.
Weight: ~ 3.0 Kg (depending of the version)

Packing single Unit: 560 W x 510 D x 70 mm. H, Weight: ~ 3.5 Kg.
SYMPHONY 4kW to 20kW
The number of RF Amplifiers changes with the output power
40kW FM Transmitter
Output Filter/Combiner
OVERALL CHARACTERISTICS

**SYMPHONY UMC** Ultra Modular Concept structure allows relevant advantages:

- The entire system benefit of the optimum characteristics of the tesseræ.
- The tesseræ are each of them a complete a functioning module with its own power supply, ventilation, control logic and output filter, so, as the opposite of the standard plug-in transmitters tesseræ live by themselves witch the maintenance and the test: no need of special tools, each module can be connected and installed or tested as a single amplifier.
- Developing the tesseræ our engineers concentrate all the effort on: minimize weight, cost, power consumption and heat produced, and maximize: efficiency, reliability, electrical performance, connectivity and easy maintenance.
- A single tesseræ can put on air as back-up of a bigger transmitter.
- Shock and vibration during the transportation process can compromise the result of an installation, optimizing the tesseræ package allow our engineers to meet the most demanding transport conditions for hermetic, temperature control and vibration and Shock Isolation.
- During installation and maintenance, handled light packs help the health to operators.

The SYMPHONY UMC (Ultra Modular Concept) is a family based on a very compact aluminum extruded tesseræ Amplifier and its various combinations. Thanks to a careful choice of size 130 mm and 3 HE, power levels of the building blocks 2 kW FM and 400 W rms Wide Band Doherty TV the SYMPHONY UMC it can be considered as the New Reference for the modular plug-in transmitters. The modularity is completed with special combinaters, FM and TV exciters and control logics. FM exciter can be Analog or DDS both with integrated AES/EBU interface. TV exciter is top performance today available covering all standards DVB/T2, ATC, ISDB-Tb software selectable.

**KEY FACTS**

**Combining System**
- Compact and well isolated up to twelve way 20 kW PC Power Combiner, ultra-broadband, phase stable, low loss and showing more than 20 dB of additive harmonic filtering.
- Soft controlled sequential start-up reduce inrush current during OFF to ON transition.
- FM transmitters featuring only 800 mm rack depth and up to 40 kW FM in a single 19” rack.
- Digital TV Transmitters up to 8 KW Wide Band Doherty (WBD) output power in a single 19” rack.

**Hardware and Software Protections**
- Over and Under Voltage DC, Over and Under Voltage AC, RF and Power Supply Temperature, RF Coaxial Output Open or Short Circuit.
- Capability of a long working time on Short/Open loads at all phase angles without any damage.
- Last generation 1400 W LDMOS, VSWR > 65:1 @ all Phase Angles, designed for enhanced ruggedness ISM applications and plasma generators.
- Integrated AC Mains filtering.
- Integrated lightning protection.
- Delayed energized of the system after Mains Power Blackout prevents against peaks and high variation voltages typical of this events.
- Soft controlled sequential start-up-so to reduce the Inrush current during OFF to ON transition.

**WEB/SNMP Telemetry and Remote Control**
- Full Local or Remote control by by logon username and password.
- Remote control with Smartphones or Tablet.
- Host Logic and tele-measurement (TM, TC & TA).
- Remote control and monitoring via SNMP and/or WEB interface.
- With logbook or log file to record error or alarm message.
- Display of forward/reflection power value and reflection high alarm.

**Human Interface**
- Each module is equipped with a logic controller that allows full control by a local operator.
- All transmitter and amplifier parameters required for diagnostics can be retrieved locally or remotely via standard (IP) protocol and standard software (web browser, SNMP).
- Multilingual user guidance.
- High Definition, high contrast Color Oled display.
- Quick set of thresholds for protections level. This set is based on assignment of three “flavors” or PERSONALITIES: Conservative (primary target = protect itself), Standard (balanced), Aggressive (primary target = transmission without interruptions).

**N+1 and Backups systems**
- Conventional standby systems such as: exciter standby, (n+1) Transmitter standby, passive standby and active output stage standby can be implemented.
- No additional control units are needed for the exciter standby and the active amplifier standby.
TECHNICAL CHARACTERISTICS

Transmitter

Power Output: Adjustable from 2kW to 40kW build with 2kW Amplifier Module up to 10 Modules in one Rack:
2kW = 1 Module, 4kW = 2 Modules, 6kW 3 Modules, 8kW 4 Modules, 10 5 Modules, 12 kW = 6 Modules, 16 kW 8 Modules, 20kW 10 Modules

Power higher than 20kW are build combining more racks amplifiers:
24kW = 2 Racks 6 Modules each rack, 32kW = 2 Racks 8 Modules, 40kW = 2 Racks 10 Modules.

Output power on/off and adjustable from front panel and remotely.
Overall Efficiency (Typical): ≥71% for transmitter.
RF Output Impedance: 50 ohm.
RF Output Connector: 1-5+8 and 3+1/8 type. (other on request)
Monitor RF: ≥ -57 dBc, BNC connector.
VSWR: 1.5:1 Maximum with automatic fold-back at higher VSWR

Exciter

Frequency Range: 87.5 ± 108.00 MHz, Programmable in 10 kHz steps
On request 66 ± 74 MHz (OIRT), 76 ± 90 MHz (JPN) Bands.
Frequency Stability: ±2000Hz from -10 to +50°C.
Reference: TCXO 12.8 MHz. Can be synchronized by 1-2-2.5-5-10 MHz self select external clock (optional).
Frequency Control: Synthesizer upprocessor control.
Exciter Power Output: 30 W
Output Impedance: 50 ohm.
Display: forward/reflection power and modulation indicator
Type of Modulation: Direct frequency modulation of carrier frequency, F3E Stereo with Subcarrier and Mono

MONOURAL OPERATION

Audio Input Impedance: 600 ohm balanced, 15 Kohms unbalanced.
Audio Input Level: -12 to +12 dBm. (Other range on request)
Input Connector: XLR female.
Audio Frequency Response: ±0.15 dB, 30 Hz to 15 KHz.
Total Harmonic Distortion + Noise: 0.03% @ 400 Hz
Intermodulation Distortion: 0.03%, 1 KHz/1.3 KHz, 1:1 ratio
Transient Intermodulation Distortion: 0.03%, ≥56KHz square wave and 14 KHz sine wave.
FM S/N Ratio: -85 dB RMS detector, -85 dB below ±75 KHz deviation, 50 µs de-emphasis, weighted.

MULTIPLEX OPERATION

Composite Input Impedance: 5 Kohm unbalanced.
Composite Input Level: 3.5Vp-p for ±75KHz deviation.
Input Connector: BNC female.
Composite Amplitude Response: ± ±0.1dB, from 30Hz to 53KHz
Total Harmonic Distortion + Noise: 0.03% @ 400 Hz
Intermodulation Distortion: 0.03%, 1 KHz/1.3 KHz, 1:1 ratio
Transient Intermodulation Distortion: 0.03%, ≥2.96 KHz square wave and 14 KHz sine wave.
FM S/N Ratio: -85 dB RMS detector, -85 dB below ±75 KHz deviation, 50 µs de-emphasis, weighted.

STEREO OPERATION

Audio Input Impedance: 600 ohm balanced, 15 Kohm unbalanced.
Audio Input Level: -12 to +12 dBm.
Input Connector: XLR female.
Audio Frequency Response: ±0.15 dB, from 30 Hz to 15 KHz.
Total Harmonic Distortion + Noise: 0.03% @ 400 Hz
Intermodulation Distortion: 0.02%, 1 KHz/1.3 KHz, 1:1 ratio
Transient Intermodulation Distortion: 0.03%, ≥2.96 KHz square wave and 14 KHz sine wave.
FM S/N Ratio: -79 dB RMS detector, -75 dB below ±75 KHz deviation, 50 µs de-emphasis, weighted.

SINCH-MODULE FOR SFN APPLICATION

RF Harmonics: ≥ -55 dB @ 300KHz from ±75 KHz
Stereo Separation (crosstalk): ≥ -50 dB, 100Hz to 5kHz
FM S/N Ratio: ≥ -60 dB below reference carrier with 100% AM

EIAJCP340/1201.
D/A Converter: 24 bit.
Sampling Frequency: from 32 to 96 KHz with automatic selection
Stereo separation (crosstalk): ≥ -50 dB, 100Hz to 5kHz
FM S/N Ratio: ≥ -60 dB below ±75 KHz deviation, 50 µs de-emphasis, weighted.

AES/EBU OPERATION

Input Connector: XLR female, optical TOS-LINK.
Input Impedance: 110 ohm.
D/A Converter: 24 bit.
Sampling Frequency: from 32 to 96 KHz with automatic selection
Stereo separation (crosstalk): ≥ -60 dB, 100Hz to 5kHz
FM S/N Ratio: ≥ -60 dB below ±75 KHz deviation, 50 µs de-emphasis, weighted.

SCA, RDS, AUX OPERATION

Input Connector: BNC female.
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.

AUDITORY CONNECTIONS

USB: connector Type B female front panel.
Nº2 RS485: Serial Interface connector RJ45 back panel.
Telemetry Interface: connector DB25F back panel.
External Clock: connector SMA female (optional).

OPTIONS

External clock: for PLL synchronization purpose 1-2-2.5-5-10 MHz external reference oscillator with self selection of the incoming frequency.
• DOUBLE EXCITER WITH AUTOMATIC CHANGEOVER SYSTEM
• SNMP TELEMETRY INTERFACE
• GSM AND PSTN TELEMETRY
• TCP/IP TELEMETRY INTERFACE
• SINC-H MODULE FOR SFN APPLICATION
• OIRT & JPN VERSION
• DIGITAL AUDIO INPUTS
• LPFM CODE STATION/FCC IDENTIFICATION CODE
• RDS CODER: EASY PROGRAMMABLE BY PC

ELECTRICAL (for 10kW to 40kW Transmitter)

AC Input Power: 220/400 VAC ±15%, 50/60 Hz single phase or 3-phase
Power factor > 0.98
Cooling: Forced air

ENVIRONMENTAL

Operating temperature: -10°C to +50°C.
Max Operating Altitude: 4000 mt.
Relative Humidity Range: 0 to 95% non condensing.

PHYSICAL DIMENSIONS (For typical 10kW Transmitter):
Mounting: 40 unit cabinet (Other size Rack on request)
Size: 570mm. (W) x 1000mm. (D) x 1800 mm. (H) - Weight: ~ 220 Kg.

CTE Digital Broadcast - Registered Office: Viale Piave 15 - 20129 Milano - Italy - Phone: +39 051 660 0608
Operational and Technical Office: Via 11 di Settembre 2001 Nr. 2B- 40051 Altedo (BO) - Italy - www.ctedb.com - sales@ctedb.com
<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
</tr>
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<tbody>
<tr>
<td>SYMPHONY 2k/1-P</td>
<td>2.000 W high efficiency FM transmitter composed by: POP 30, ROCK 2k, 19&quot;x4U occupancy, Rack mounting system. No rack included</td>
</tr>
<tr>
<td>SYMPHONY 2k/1-J</td>
<td>2.000 W high efficiency FM transmitter composed by: POP 30, ROCK 2k, 19&quot;x4U occupancy, Rack mounting system. No rack included</td>
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<tr>
<td>SYMPHONY 2k/2</td>
<td>2.000 W modular high efficiency FM Transmitter composed by: JAZZ 30 Exciter, Nr. 2 ROCK 1K, 2-way splitter/combiner μP controlled, max. RF power out 2.200W, LCD display, 20U Cabinet.</td>
</tr>
<tr>
<td>SYMPHONY 3k/3</td>
<td>3.000 W modular high efficiency, Redundant Active Reserve, FM Transmitter composed by: JAZZ 30 Exciter, Nr. 3 ROCK 1K, 3-way splitter/combiner μP controlled, max. RF power out 3.300W, LCD display, in 20U Cabinet.</td>
</tr>
<tr>
<td>SYMPHONY 4k/2</td>
<td>4.000 W modular high efficiency, Redundant Active Reserve, FM Transmitter composed by: JAZZ 30 Exciter, Nr. 2 ROCK 2K, 2-way splitter/combiner μP controlled, max. RF power out 4.200W, LCD display, 20U Cabinet.</td>
</tr>
<tr>
<td>SYMPHONY 4k/4</td>
<td>4.000 W modular high efficiency, Redundant Active Reserve, FM Transmitter composed by: JAZZ 30 Exciter, Nr. 4 ROCK 2K, 4-way splitter/combiner μP controlled, max. RF power out 4.200W, LCD display, 20U Cabinet.</td>
</tr>
<tr>
<td>SYMPHONY 6k/3</td>
<td>6.000 W modular high efficiency, Redundant Active Reserve, FM Transmitter composed by: JAZZ 30 Exciter, Nr. 3 ROCK 2K, 3-way splitter/combiner μP controlled, max. RF power out 6.300W, LCD display, in 20U Cabinet.</td>
</tr>
<tr>
<td>SYMPHONY 8k/4</td>
<td>8.000 W modular high efficiency, Redundant Active Reserve, FM Transmitter composed by: JAZZ 30 Exciter, Nr. 4 ROCK 2K, 4-way splitter/combiner μP controlled, max. RF power out 8.400W, LCD display, in 30U Cabinet.</td>
</tr>
<tr>
<td>SYMPHONY 10k/3</td>
<td>10.000 W modular high efficiency, Redundant Active Reserve, FM Transmitter composed by: JAZZ 30 Exciter, Nr. 3 ROCK 3.5K, 3-way splitter/combiner μP controlled, max. RF power out 10.500W, LCD display, in 30U Cabinet.</td>
</tr>
<tr>
<td>SYMPHONY 10k/5</td>
<td>10.000 W modular high efficiency, Redundant Active Reserve, FM Transmitter composed by: JAZZ 30 Exciter, Nr. 5 ROCK 2K, 5-way splitter/combiner μP controlled, max. RF power out 10.500W, LCD display, in 30U Cabinet.</td>
</tr>
<tr>
<td>SYMPHONY 10k/10</td>
<td>10.000 W modular high efficiency, Redundant Active Reserve, FM Transmitter composed by: JAZZ 30 Exciter, Nr. 10 ROCK 1K, 10-way splitter/combiner/Unbalanced Loads, μP controlled, max. RF power out 10.500W, LCD display, in 42U Cabinet.</td>
</tr>
<tr>
<td>SYMPHONY 12k/6</td>
<td>12.000 W modular high efficiency, Redundant Active Reserve, FM Transmitter composed by: JAZZ 30 Exciter, Nr. 6 ROCK 2K, 6-way splitter/combiner μP controlled, max. RF power out 12.700W, LCD display, in 30U Cabinet.</td>
</tr>
<tr>
<td>SYMPHONY 14k/7</td>
<td>14.000 W modular high efficiency, Redundant Active Reserve, FM Transmitter composed by: JAZZ 30 Exciter, Nr. 7 ROCK 2K, 7-way splitter/combiner μP controlled, max. RF power out 14.800W, LCD display, in 40U Cabinet.</td>
</tr>
<tr>
<td>SYMPHONY 16k/8</td>
<td>16.000 W modular high efficiency, Redundant Active Reserve, FM Transmitter composed by: JAZZ 30 Exciter, Nr. 8 ROCK 2K, 8-way splitter/combiner μP controlled, max. RF power out 16.800W, LCD display, in 40U Cabinet.</td>
</tr>
<tr>
<td>SYMPHONY 20k/10</td>
<td>20.000 W modular high efficiency FM Transmitter composed by: JAZZ 50 Exciter, Nr. 10 ROCK 2K, 2x5-way splitter/combiner μP controlled, max. RF power out 22.000W, LCD display, in 2x40U Cabinet.</td>
</tr>
<tr>
<td>SYMPHONY 24k/12</td>
<td>24.000 W modular high efficiency, Redundant Active Reserve, FM Transmitter composed by: JAZZ 50 Exciter, Nr. 12 ROCK 2K, 2x5-way splitter/combiner μP controlled, max. RF power out 25.000W, LCD display, in 40U Cabinet.</td>
</tr>
<tr>
<td>SYMPHONY 32k/16</td>
<td>32.000 W modular high efficiency FM Transmitter composed by: JAZZ 50 Exciter, Nr. 16 ROCK 2K, 2x8-way splitter/combiner μP controlled, max. RF power out 34.000W, LCD display, in 2x40U Cabinet.</td>
</tr>
<tr>
<td>SYMPHONY 40k/20</td>
<td>40.000 W modular high efficiency, Redundant Active Reserve, FM Transmitter composed by: JAZZ 50 Exciter, Nr. 20 ROCK 2K, 2x10-way splitter/combiner μP controlled, max. RF power out 42.000W, LCD display, in 2x40U Cabinet.</td>
</tr>
<tr>
<td>SYMPHONY 48k/24</td>
<td>48.000 W modular high efficiency, Redundant Active Reserve, FM Transmitter composed by: JAZZ 50 Exciter, Nr. 24 ROCK 2K, 3x8-way splitter/combiner μP controlled, max. RF power out 48.000W, LCD display, in 2x40U Cabinet.</td>
</tr>
<tr>
<td>SYMPHONY 96k/48</td>
<td>96.000 W modular high efficiency, Redundant Active Reserve, FM Transmitter composed by: JAZZ 50 Exciter, Nr. 48 ROCK 2K, 4x8-way splitter/combiner μP controlled, max. RF power out 96.000W, LCD display, in 4x40U Cabinet.</td>
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<tr>
<td>SYMPHONY 1k/1-DDS</td>
<td>1.000 W high efficiency, Modular, Active Reserve, FM transmitter composed by: TALENT 10 Fully Digital DDS Exciter, ROCK 1k, 19&quot;x3U occupancy, Rack mounting system. No rack included</td>
</tr>
<tr>
<td>SYMPHONY 2k/1-DDS</td>
<td>2.000 W high efficiency, Modular, Active Reserve, FM transmitter composed by: TALENT 10 Fully Digital DDS Exciter, ROCK 2k, 19&quot;x4U occupancy, Rack mounting system. No rack included</td>
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<tr>
<td>SYMPHONY 2k/2-DDS</td>
<td>2.000 W modular high efficiency, Redundant Active Reserve, FM Transmitter composed by: TALENT 30 Fully Digital DDS Exciter, Nr. 2 ROCK 1K, 2-way splitter/combiner, µP controlled, max. RF power out 2.200W, LCD display</td>
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<tr>
<td>SYMPHONY 4k/2-DDS</td>
<td>4.000 W modular high efficiency, Redundant Active Reserve, FM Transmitter composed by: TALENT 10 Fully Digital DDS Exciter, Nr. 2 ROCK 2K, 2-way splitter/combiner, µP controlled, max. RF power out 4.200W, LCD display, in 30U Cabinet.</td>
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<tr>
<td>SYMPHONY 6k/3-DDS</td>
<td>6.000 W modular high efficiency, Redundant Active Reserve, FM Transmitter composed by: TALENT 10 Fully Digital DDS Exciter, Nr. 3 ROCK 2K, 3-way splitter/combiner, µP controlled, max. RF power out 6.300W, LCD display, in 30U Cabinet.</td>
</tr>
<tr>
<td>SYMPHONY 8k/4-DDS</td>
<td>8.000 W modular high efficiency, Redundant Active Reserve, LDMOS FM Transmitter composed by: TALENT 30 Fully Digital DDS Exciter, Nr. 4 ROCK 2K, 4-way splitter/combiner, µP controlled, max. RF power out 8.400W, LCD display, in 30U Cabinet.</td>
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<tr>
<td>SYMPHONY 10k/5-DDS</td>
<td>10.000 W modular high efficiency, Redundant Active Reserve, LDMOS FM Transmitter composed by: TALENT 30 Fully Digital DDS Exciter, Nr. 5 ROCK 2K, 5-way splitter/combiner, µP controlled, max. RF power out 10.500W, LCD display, in 30U Cabinet.</td>
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<tr>
<td>SYMPHONY 10k/3-DDS</td>
<td>10.000 W modular high efficiency, Redundant Active Reserve, LDMOS FM Transmitter composed by: TALENT 30 Fully Digital DDS Exciter, Nr. 3 ROCK 3K, 3-way splitter/combiner, µP controlled, max. RF power out 10.500W, LCD display, in 30U Cabinet.</td>
</tr>
<tr>
<td>SYMPHONY 12k/6-DDS</td>
<td>12.000 W modular high efficiency, Redundant Active Reserve, LDMOS FM Transmitter composed by: TALENT 50 Fully Digital DDS Exciter, Nr. 6 ROCK 2K, 6-way splitter/combiner, µP controlled, max. RF power out 12.700W, LCD display, in 30U Cabinet.</td>
</tr>
<tr>
<td>SYMPHONY 14k/7-DDS</td>
<td>14.000 W modular high efficiency, Redundant Active Reserve, FM Transmitter composed by: TALENT 50 Fully Digital DDS Exciter, Nr. 7 ROCK 2K, 7-way splitter/combiner, µP controlled, max. RF power out 14.800W, LCD display, in 40U Cabinet.</td>
</tr>
<tr>
<td>SYMPHONY 16k/8-DDS</td>
<td>16.000 W modular high efficiency, Redundant Active Reserve, FM Transmitter composed by: TALENT 50 Fully Digital DDS Exciter, Nr. 8 ROCK 2K, 8-way splitter/combiner, µP controlled, max. RF power out 16.800W, LCD display, in 40U Cabinet.</td>
</tr>
<tr>
<td>SYMPHONY 20k/10-DDS</td>
<td>20.000 W modular high efficiency, Redundant Active Reserve, FM Transmitter composed by: TALENT 50 Fully Digital DDS Exciter, Nr. 8 ROCK 2K, 8-way splitter/combiner, µP controlled, max. RF power out 22.000W, LCD display, in 40U Cabinet.</td>
</tr>
<tr>
<td>SYMPHONY 24k/12-DDS</td>
<td>24.000 W modular high efficiency, Redundant Active Reserve, FM Transmitter composed by: TALENT 50 Fully Digital DDS Exciter, Nr. 8 ROCK 2K, 8-way splitter/combiner, µP controlled, max. RF power out 25.000W, LCD display, in 40U Cabinet.</td>
</tr>
<tr>
<td>SYMPHONY 32k/16-DDS</td>
<td>32.000 W modular high efficiency, Redundant Active Reserve, FM Transmitter composed by: TALENT 50 Fully Digital DDS Exciter, Nr. 8 ROCK 2K, 8-way splitter/combiner, µP controlled, max. RF power out 34.000W, LCD display, in 2x40U Cabinet.</td>
</tr>
<tr>
<td>SYMPHONY 40k/20-DDS</td>
<td>40.000 W modular high efficiency, Redundant Active Reserve, FM Transmitter composed by: TALENT 50 Fully Digital DDS Exciter, Nr. 8 ROCK 2K, 8-way splitter/combiner, µP controlled, max. RF power out 42.000W LCD display, in 2x40U Cabinet.</td>
</tr>
<tr>
<td>SYMPHONY 48k/24-DDS</td>
<td>48.000 W modular high efficiency, Redundant Active Reserve, FM Transmitter composed by: TALENT 50 Fully Digital DDS Exciter, Nr. 8 ROCK 2K, 8-way splitter/combiner, µP controlled, max. RF power out 50.000W, LCD display, in 2x40U Cabinet.</td>
</tr>
<tr>
<td>SYMPHONY 96k/24-DDS</td>
<td>96.000 W modular high efficiency, Redundant Active Reserve, FM Transmitter composed by: TALENT 50 Fully Digital DDS Exciter, Nr. 8 ROCK 2K, 8-way splitter/combiner, µP controlled, max. RF power out 100.000W, LCD display, in 4x40U Cabinet.</td>
</tr>
</tbody>
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### OPTIONS

<table>
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<tr>
<th>Model</th>
<th>Description</th>
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<tr>
<td>SY-DDJ-30-OP</td>
<td>Double driver option composed by: 1 x JAZZ 30 and 1 x ACO150 Automatic Changeover Unit</td>
</tr>
<tr>
<td>SY-DDJ-50-OP</td>
<td>Double driver option JAZZ 50 with automatic changeover unit</td>
</tr>
<tr>
<td>SY-DDJ-100-OP</td>
<td>Double driver option JAZZ 100 with automatic changeover unit</td>
</tr>
<tr>
<td>SY-DD-TALENT-10-OP</td>
<td>Dual Driver option TALENT 10 with automatic changeover unit</td>
</tr>
<tr>
<td>SY-DD-TALENT-30-OP</td>
<td>Double driver option TALENT 30 with automatic changeover unit</td>
</tr>
<tr>
<td>SY-DD-TALENT-50-OP</td>
<td>Double driver option TALENT 50 with automatic changeover unit</td>
</tr>
<tr>
<td>SY-TCP/IP-OP</td>
<td>TCP/IP telemetry web gui and SNMP interface option for Symphony transmitters</td>
</tr>
<tr>
<td>SY-TCP/IP/SNMP</td>
<td>TCP/IP telemetry web gui / SNMP Interface Option</td>
</tr>
</tbody>
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### REDUNDANT AMPLIFIERS

<table>
<thead>
<tr>
<th>Model2</th>
<th>REDUNDANT AMPLIFIERS</th>
<th>POWER CONSUMPTION</th>
<th>OUTPUT CONNECTOR (inch EIA Standard)</th>
<th>DIMENSIONS (19&quot;)</th>
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<tr>
<td>SYMPHONY 1k</td>
<td></td>
<td>1350VA@1000W</td>
<td>7/16</td>
<td>2U Driver + 4U Amplifier</td>
</tr>
<tr>
<td>SYMPHONY 2k</td>
<td></td>
<td>2700VA@2000W</td>
<td>7/16</td>
<td>Rack 20U</td>
</tr>
<tr>
<td>SYMPHONY 4k</td>
<td></td>
<td>5400VA@4000W</td>
<td>7/8</td>
<td>Rack 20U</td>
</tr>
<tr>
<td>SYMPHONY 6k</td>
<td></td>
<td>8100VA@6000W</td>
<td>7/8</td>
<td>Rack 32U</td>
</tr>
<tr>
<td>SYMPHONY 8k</td>
<td></td>
<td>10800VA@8000W</td>
<td>1 5/8</td>
<td>Rack 32U</td>
</tr>
<tr>
<td>SYMPHONY 10k</td>
<td></td>
<td>13500VA@10000W</td>
<td>1 5/8</td>
<td>Rack 32U</td>
</tr>
<tr>
<td>SYMPHONY 12k</td>
<td></td>
<td>16200VA@12000W</td>
<td>1 5/8</td>
<td>Rack 32U</td>
</tr>
<tr>
<td>SYMPHONY 14k</td>
<td></td>
<td>18900VA@14000W</td>
<td>3 1/8</td>
<td>Rack 40U</td>
</tr>
<tr>
<td>SYMPHONY 16k</td>
<td></td>
<td>21600VA@16000W</td>
<td>3 1/8</td>
<td>Rack 40U</td>
</tr>
<tr>
<td>SYMPHONY 20k</td>
<td></td>
<td>27000VA@20000W</td>
<td>3 1/8</td>
<td>Rack 40U</td>
</tr>
<tr>
<td>SYMPHONY 24k</td>
<td></td>
<td>32400VA@24000W</td>
<td>3 1/8</td>
<td>Rack 40U</td>
</tr>
<tr>
<td>SYMPHONY 32k</td>
<td></td>
<td>43200VA@32000W</td>
<td>4'</td>
<td>2 x Rack 40U</td>
</tr>
<tr>
<td>SYMPHONY 40k</td>
<td></td>
<td>54100VA@40000W</td>
<td>4'</td>
<td>2 x Rack 40U</td>
</tr>
<tr>
<td>SYMPHONY 48k</td>
<td></td>
<td>64900VA@48000W</td>
<td>4’</td>
<td>2 x Rack 40U</td>
</tr>
<tr>
<td>SYMPHONY 96k</td>
<td></td>
<td>129700VA@96000W</td>
<td>6’</td>
<td>4 x Rack 20U</td>
</tr>
</tbody>
</table>