



DIGITAL BROADCAST

FM

Mozart Series



Mozart Series

The latest Audio excellence in FM Broadcasting

# Mozart Series Specifications



*The new Mozart FM Exciter/Transmitter Series is the latest audio excellence in the FM Broadcasting industry with revolutionary Audio & RF technologies.*

## MAIN CHARACTERISTICS

- ▶ The **GREEN RF™** technology, combined with new 65:1 devices, is the latest evolution of the world-famous patented **COLD-FET™** technology applied on DB's transmitters.
- ▶ **Low maintenance** costs thanks to the easy access to all components, external cooling air filters, very high MTBF for RF and power supply modules.
- ▶ **Compact design** and low weight to reduce transportation costs and simplify logistics.
- ▶ **High frequency stability** in short and long terms assured by Digital Phase Locked Loop circuit with low drift VCTCXO.
- ▶ Complete **WEB SERVER SNMP, GSM or SMS** remote control, available as option.
- ▶ Complete remote management via WiFi with **WiFi Touch**, available as option.
- ▶ External reference oscillator, available as option: 10 MHz.
- ▶ **Frequency Agile Broadband**, settable directly from the LCD front panel with 10 KHz steps without need for tuning tools.
- ▶ Meets or exceeds all international standards for safety and electrical specifications.

## HIGHLIGHTS

- ▶ **MSE™: Magnetic Sound Enhancer** is a magnetic barrier that protects the VCO, the heart of FM modulator, and increases sound quality.
- ▶ **Stereo Generator:** high performance built-in digital stereo coder provides separation typical >65dB.
- ▶ Signal/noise ratio >80dB assures the highest audio quality.
- ▶ Input sensitivity and output deviation adjustable with high precision of 0,05dB from the front panel display or remotely by web interface.
- ▶ Level and phase of the Pilot tone adjustable from the front panel and Web interface.
- ▶ **AES/EBU** digital stereo audio interface available as option.
- ▶ **Powerful modulation limiter** keeps the maximum frequency deviation within international requirements to avoid over-modulation and adjacent channels interference. Limiter levels can be set from the front panel.
- ▶ Switch-mode power supply with power factor control. Highly efficient and widely over-rated power supply modules insure low heating, low AC power consumption and superior reliability. The power factor control circuitry meets the international requirements for mains network disturbances.
- ▶ **High efficiency cooling system.** Thanks to the air cooling system, the heat-sink temperature can rise only about 10°C above ambient temperature. This guarantees the proper functioning even in sites with extreme climate conditions and high temperature.

# Human Interface, Connectivity and Web Remote Control

*Main parameters are fully controllable and adjustable by Web and SNMP interfaces:*

- ▶ Operation Frequency.
- ▶ Output power.
- ▶ Input connector impedance for Left and Right connectors.
- ▶ Insertion and adjustment of the limiter.
- ▶ Choice of the active input connectors.
- ▶ Enabling of the input audio connectors.
- ▶ Audio sensitivity of all the inputs.
- ▶ Pre-emphasis value.
- ▶ Audio mode selection.
- ▶ Foldback VSWR threshold setting (in % value).
- ▶ Deviation for:
  - ▶ total input signal
  - ▶ 19 kHz pilot
  - ▶ RDS signal
  - ▶ SCA signal
  - ▶ AUX signal
  - ▶ AES/EBU signal
- ▶ Phase of 19kHz pilot.
- ▶ Warning levels for:
  - ▶ audio lower than a specific threshold set by the customer
  - ▶ audio over a specific threshold set by the customer
- ▶ low power (the output power is lower than a specific threshold set by the customer)
- ▶ VSWR (the reflected power is higher than a specific threshold set by the customer)
- ▶ Audio low times (how much time the audio remains lower than the specific threshold)
- ▶ Audio over times (how much time the audio remains higher than the specific threshold)
- ▶ Weekly scheduler page
- ▶ Network parameters settings:
  - ▶ MAC address
  - ▶ IP address
  - ▶ Subnet mask
  - ▶ Gateway
- ▶ SNMP parameters settings:
  - ▶ TRAP IP addresses
  - ▶ read community
  - ▶ write community
  - ▶ trap type
- ▶ informs timeout
- ▶ informs retries
- ▶ WEB accesses settings:
  - ▶ user name
  - ▶ password
- ▶ NTP parameters settings:
  - ▶ preferred and backup servers
  - ▶ update interval
  - ▶ time zone
  - ▶ status
- ▶ E-mails configuration (e-mail sent in case of alarm reporting the complete status of the unit and, as attachment, the log file in .txt format):
  - ▶ station ID (label to identify the station)
  - ▶ account Username
  - ▶ account Password
  - ▶ server SMTP URL
  - ▶ server SMTP port
  - ▶ security and Authentication mode
  - ▶ destination Addresses (up to 5 different addresses can receive the notification)

*Parallel Remote Control Connector Interface (optional) with dry contact relay outputs and opto-isolated inputs with the following signals available: on/off, local/remote, alarm status, RF higher than a preset threshold, reset of alarms, change between 6 available memories (for 6 different configurations of the unit).*

## REMOTE CONTROL

|                                              |                                                                                                                                                                            |
|----------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Parallel Remote Control Connector Interface: | Available with dry contact relays outputs and opto-isolated inputs                                                                                                         |
| Parallel Remote Signals (TLS):               | On<br>Local/remote<br>Audio presence in the input<br>Alarm status<br>RF higher than a preset threshold<br>Status of each of the 6 available memories (active / not active) |
| Parallel Remote Controls (TLC):              | On<br>Off<br>Reset alarms<br>Choice of the active memory among 6 possible configurations                                                                                   |
| Web log file                                 | <ul style="list-style-type: none"> <li>Up to 64000 events stored in the web board</li> <li>The log file is saved in the PC in common text format (.txt)</li> </ul>         |
| SNMP                                         | SNMP v2c with Traps and Informs                                                                                                                                            |
| Weekly scheduler page                        | Available for the modification of the basic parameters of the unit up to 4 times for each day                                                                              |

## SOFTWARE

|                        |                                                                                                                                                                                                                                                                                                                                                          |
|------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Update:                | Available without proprietary tools<br>Firmware remotely upgradable by TCP/IP for modulator board and web board<br>Received software automatically controlled before being installed<br>Possibility to return to the previous firmware release after new release has been installed<br>Possibility to select by WEB / SNMP which release will run on air |
| Configuration download | The configuration of the active memory can be downloaded and stored in the PC. This file can be uploaded in another unit to set it with the same configuration without any other adjustment                                                                                                                                                              |



# Efficiency Enhancement

Mozart design was optimized to get minimum losses of the passive elements and excellent performances of the active elements in order to increase the AC efficiency up to more than 70%.



Latest generation LD-MOS devices increase DC to RF efficiency up to 85%, with a drastic reduction of energy consumption.



Hot-plug fans: 5 minutes maintenance time, no need to open or switch the unit.



All the main working parameters are displayed by leds to indicate the transmitter status at the first glance.

## ● GREEN RF™

Latest generation LD-MOS devices increase DC to RF efficiency up to 85%, with a drastic reduction of energy consumption. Overall AC to RF efficiency is over 70%.

## ● COLD-FET™

Lower heating + High RF efficiency = Longer device's life.

## ● MSE™ Magnetic Sound Enhancer

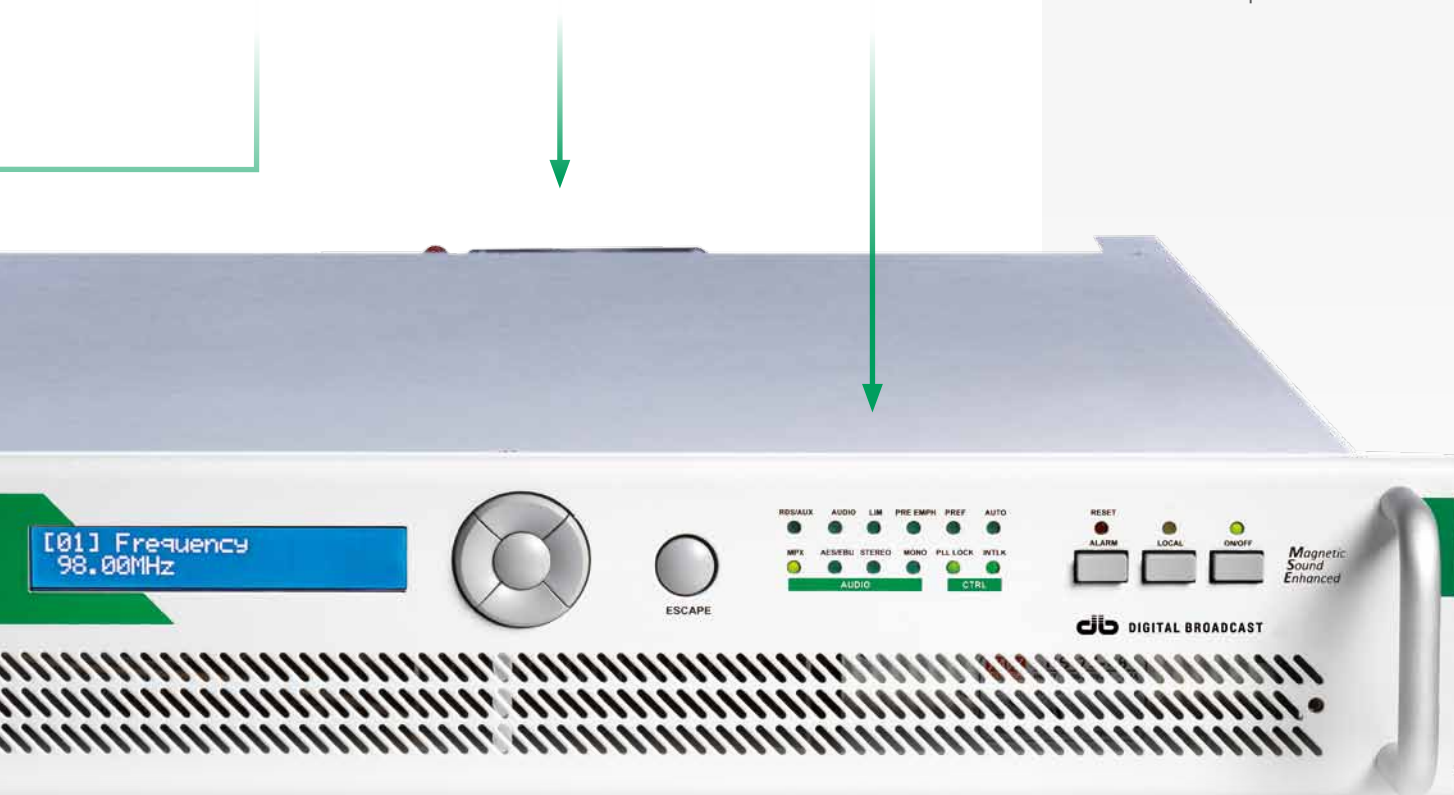
A magnetic barrier protects the VCO, the heart of FM modulator, dramatically increasing the sound quality.

## ● 65:1

No more load mismatch failures: all devices are with VSWR 65:1 built-in protection.

## ● Web Controlled

Web Server, SNMP version 2C, GSM or SMS remote control available as option.



## GENERAL

|                       |                                                                                                   |
|-----------------------|---------------------------------------------------------------------------------------------------|
| Frequency range       | 87.5 to 108 MHz adjustable with 10kHz step                                                        |
| Output impedance      | 50 $\Omega$                                                                                       |
| Output connectors     | N from 30W up to 500W<br>DIN 7/16 for 1kW<br>EIA 7/8" for 2kW and 3kW                             |
| Deviation capability  | $\pm 75$ kHz, up to $\pm 200$ kHz with distortion < 0.5%                                          |
| Short term stability  | $\pm 1$ ppm from -5 to +45 °C                                                                     |
| RF harmonics          | Exceeds CCIR/FCC requirements                                                                     |
| RF spurious           | Exceeds CCIR/FCC requirements                                                                     |
| Pre-emphasis          | 0, 25, 50, 75 $\mu$ s (selectable)                                                                |
| Modulation monitoring | BNC connector                                                                                     |
| Pilot tone            | Phase and Amplitude adjustable from display and WEB interface                                     |
| Log file              | Up to 200 dated events saved in the transmitter memory, accessible from display and WEB interface |

## AUDIO INPUTS

|                              |                                                                                                             |
|------------------------------|-------------------------------------------------------------------------------------------------------------|
| Modulating input signal      | Mono, Stereo (Left, Right, Left + Right), Encoded stereo (MPX), SCA, RDS, AUX, Digital AES/EBU              |
| Input sensitivity adjustment | With 0,05dB steps by front panel display interface or by WEB interface                                      |
| Limiter                      | It can be enabled/disabled and adjusted from 30 kHz to 180 kHz by front panel display and WEB interface     |
| Internal RDS coder           | Synchronized with the 19kHz pilot of the internal stereo coder or the 19kHz pilot of an external MPX signal |

### MONO

|                                             |                                          |
|---------------------------------------------|------------------------------------------|
| Audio input levels for +/- 75 kHz deviation | Adjustable from -9 to +18 dBu            |
| Audio response                              | $\pm 0.3$ dB (30 Hz to 15 kHz)           |
| THD+N on encoded channels                   | < 0.06% ( typ. 0.03% ) (30 Hz to 15 kHz) |
| Audio Impedance                             | 600 $\Omega$ Balanced                    |
| Audio connector                             | XLR                                      |

### STEREO

|                                             |                                                   |
|---------------------------------------------|---------------------------------------------------|
| Audio input levels for +/- 75 kHz deviation | Adjustable from -9 to +18 dBu                     |
| Audio response                              | $\pm 0.3$ dB (30 Hz to 15 kHz)                    |
| THD+N on encoded channels                   | < 0.03% (30 Hz to 15 kHz)                         |
| Audio Impedance                             | 10 k $\Omega$ Unbalanced or 600 $\Omega$ Balanced |
| Audio connector                             | XLR (Left & Right)                                |

### MPX (External coder)

|                                             |                                                                          |
|---------------------------------------------|--------------------------------------------------------------------------|
| Audio input levels for +/- 75 kHz deviation | Adjustable from -6 to +6 dBu or from +6 to +18 dBu (selectable at order) |
| THD+N on encoded channels                   | < 0.03% (30 Hz to 100 kHz)                                               |
| Audio Impedance                             | > 5 k $\Omega$ Unbalanced                                                |
| Audio connector                             | BNC                                                                      |

### RDS/SCA/AUX (with separated connectors)

|                                             |                                             |
|---------------------------------------------|---------------------------------------------|
| Audio input levels for +/- 75 kHz deviation | Adjustable from -19.5 to +7.5 dBu           |
| Audio Impedance                             | 2 k $\Omega$ (others on request) Unbalanced |
| Audio connector                             | BNC                                         |

### AES/EBU

|                                             |                               |
|---------------------------------------------|-------------------------------|
| Audio input levels for +/- 75 kHz deviation | Adjustable from -15 to 0 dBFS |
| Audio Impedance                             | 110 $\Omega$                  |
| Audio connector                             | XLR                           |

## FRONT PANEL

|                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Front panel menu             | Accessible from LCD display                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Direct function push buttons | Available on the front panel for the following functions: <ol style="list-style-type: none"> <li>1. ON/OFF (Stand-by)</li> <li>2. Local/Remote</li> <li>3. Reset Alarms</li> </ol>                                                                                                                                                                                                                                                                                                              |
| Status leds                  | Presence of leds to indicate the status of the unit at the first glance                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Working parameters leds:     | <p>Audio Status:</p> <ul style="list-style-type: none"> <li>• RDS/AUX input signal present</li> <li>• Audio presence on the input (Left or Right)</li> <li>• Limiter inserted</li> <li>• Pre-emphasis inserted</li> <li>• MPX input signal active</li> <li>• AES/EBU input signal active</li> <li>• STEREO operation with internal stereo coder</li> <li>• MONO operations</li> </ul> <p>Control Status</p> <ul style="list-style-type: none"> <li>• Interlock</li> <li>• PLL locked</li> </ul> |

## AC POWER REQUIREMENTS

|                     |                                       |
|---------------------|---------------------------------------|
| AC supply voltage   | 115 / 230 VAC $\pm$ 15%, single-phase |
| AC supply frequency | 50 Hz or 60 Hz, $\pm$ 5%              |
| Power factor        | > 0.9                                 |

## ENVIRONMENT

|                       |                                                         |
|-----------------------|---------------------------------------------------------|
| Cooling               | Forced air                                              |
| Service               | Continuous 24/24h                                       |
| Operating temperature | -5°C to +45°C<br>Derate 3°C per 500 m above 2000 mt asl |
| Relative humidity     | Up to 95%                                               |

## AVAILABLE OPTIONS

|             |                                                                                                            |
|-------------|------------------------------------------------------------------------------------------------------------|
| /L+R        | L+R audio input option for mono and stereo operation (XLR connectors)                                      |
| /S          | Built-in Stereo Coder board. To mount this option is necessary to include also the /L+R Audio Input option |
| /AEBU       | Digital audio input, AES-EBU                                                                               |
| /IO         | I/O board for complete telesignal and telecontrol interface. Opto-isolated inputs and dry output contacts  |
| /WB-SNMP-2C | WEB/SNMP version 2C. Includes complete monitoring of all parameters and remote software upgrade via WEB    |
| /SMS-2C     | Complete monitoring and control of all parameters via SMS (Short messages on portable phone)               |
| /RDS        | Fully PC programmable built-in Radio Data System                                                           |

## Contact Information

**DB Elettronica Telecomunicazioni S.p.A.**

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35127 Padova - Italy

| MODEL       | OUTPUT POWER (W) | DIMENSION |
|-------------|------------------|-----------|
| MOZART 30   | 30               | 19" x 1U  |
| MOZART 50   | 50               | 19" x 1U  |
| MOZART 100  | 100              | 19" x 2U  |
| MOZART 300  | 300              | 19" x 2U  |
| MOZART 500  | 500              | 19" x 2U  |
| MOZART 1000 | 1000             | 19" x 2U  |
| MOZART 2000 | 2000             | 19" x 3U  |
| MOZART 3000 | 3000             | 19" x 3U  |

All specifications are subject to change without notice.