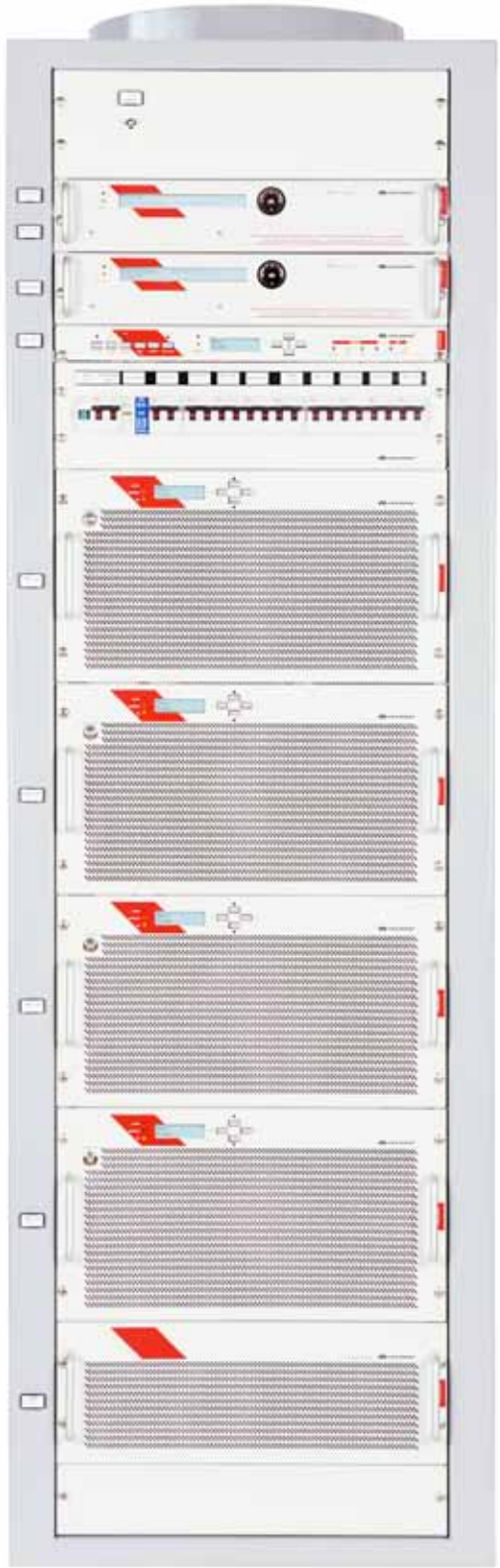
# MD / KD Series

UHF Solid State Analog or Dual Cast TV Transmitters / Amplifiers

# MD / KD Series Specifications



*The MD Series is the high quality Analog TV transmitters line of DB Elettronica. These transmitters are designed to assure extremely high performances in analog transmission and also in digital modulation (DVB-T/T2, DVB-H, ATSC, ISDB-T/Tb, DTMB, etc...). All MD Series transmitters can be easily upgraded for Digital transmission and/or for Dual-Cast transmission where both Analog & Digital modulations are available. This high-linearity design reduces cost of later upgrade to digital while providing the best analog modulation quality.*

## *HI-ADC™ technology*

The MD and KD Series are realized with the new HI-ADC™ technology. Using latest generation LDMOS RF devices with ultra-linear characteristics, higher performances have been obtained for analog and digital television:

- Higher modulation quality.
- Higher RMS output power in digital operations compared to previous technologies.
- Extremely low heating due to increased efficiency.
- High ruggedness devices resisting to very high load mismatches (65:1).

## *Digital ready*

The MD Series transmitters and KD Series amplifiers are perfectly suitable to be used for all standard digital modulations thanks to the high linearity and performances RF design.*Frequency-agile*

MD Series transmitters and KD Series amplifiers are fully broadband. All RF stages ahead of the output filters can operate on any UHF channel with instantaneous settings.

## *Modular assembly*

Easy removable interchangeable power amplifier modules and power supplies simplify the maintenance, reducing spare requirement and service costs.

## *Control logic unit*

A powerful control logic unit allows a complete control of the transmitter through front panel LCD display. Additionally a complete remote control system through WEB (including Web Server) and/or SNMP is available as option.

## *Measures and Alarms Control System*

User friendly interface with LCD display and pushbuttons for easy check and setup of all main parameters is present on the transmitter front. Some available measures and alarms are as follow:

- Forward and reflected power.
- Supply voltage and current of each RF amplifier module.
- Internal heat-sink temperature.
- Alarm indication for VSWR, over-temperature, overdrive.

## High redundancy configurations

High on-air reliability is assured by using multiple power amplifier modules, each one with multiple internal PA's, with independent power supplies and optional dual-driver configurations.

## Air cooling

The MD and KD Series oversized air cooling system widely extends transistor life. The amplifier modules are equipped with externally mounted redundant fans to allow easy and fast cleaning, or eventual replacement, without opening or removing any module and without interrupting the transmitter operation.

## Liquid Cooling

An oversize heat exchanger, single or double (optional), suitable for outdoor or indoor installation, and equipped with single or double (optional) pump system for maximum redundancy, is the main component of the powerful liquid cooling system. DB liquid cooling system assures high reliability, cooling efficiency and easy installation, thanks to the special design of liquid cooled heat-sinks inside the amplifier and low pressure liquid distribution. This system is designed to successfully face every hard climate condition.

## Advantages of MD and KD liquid cooling

Substantial advantages of our liquid cooling technology compared to air cooling are:

- Properly working even with hard climate conditions.
- Dramatically reduction of air conditioning needing.
- Correct functioning in dusty environment even with high humidity or salinity.
- Very low acoustic noise.
- Low heat radiation into the environment.
- Longer life for transistors and active elements due to colder continuous operation.

## Reduced maintenance

Easy accessibility of all parts, externally serviceable cooling air filters, very high MTBF for RF and power supply modules, are only some of the characteristics that explain the very high reduction of maintenance costs obtained.

## High Efficiency Power Supply

The High Efficiency Switch-Mode Power Supply with Power Factor Control meets all the international requirements for mains network disturbances.

## Surge and Lightning Protections (optional)

Surge and lightning protections for the transmitters are available as option to improve the durability of the equipment. Moreover, an isolation transformer can be optionally installed to increase the protection of the unit from overvoltage or spikes coming from the mains distribution.

## AAD Technology

Prevents corrosion from air moisture and increases reliability.

- Mechanical components are made in stainless steel or anticorodal aluminum.
- Air is properly ducted to avoid contact with electronic parts.
- All electronic boards and cablings are tropicalized with a special resin to strongly protect all circuits against salty and/or corrosive air.

## Meets or exceeds all international standards

For safety and electrical specifications.


### Digital TV

ATSC ADVANCED TELEVISION SYSTEMS COMMITTEE | DVB T/T2 | ISDB-T | DTMB

### Analog TV

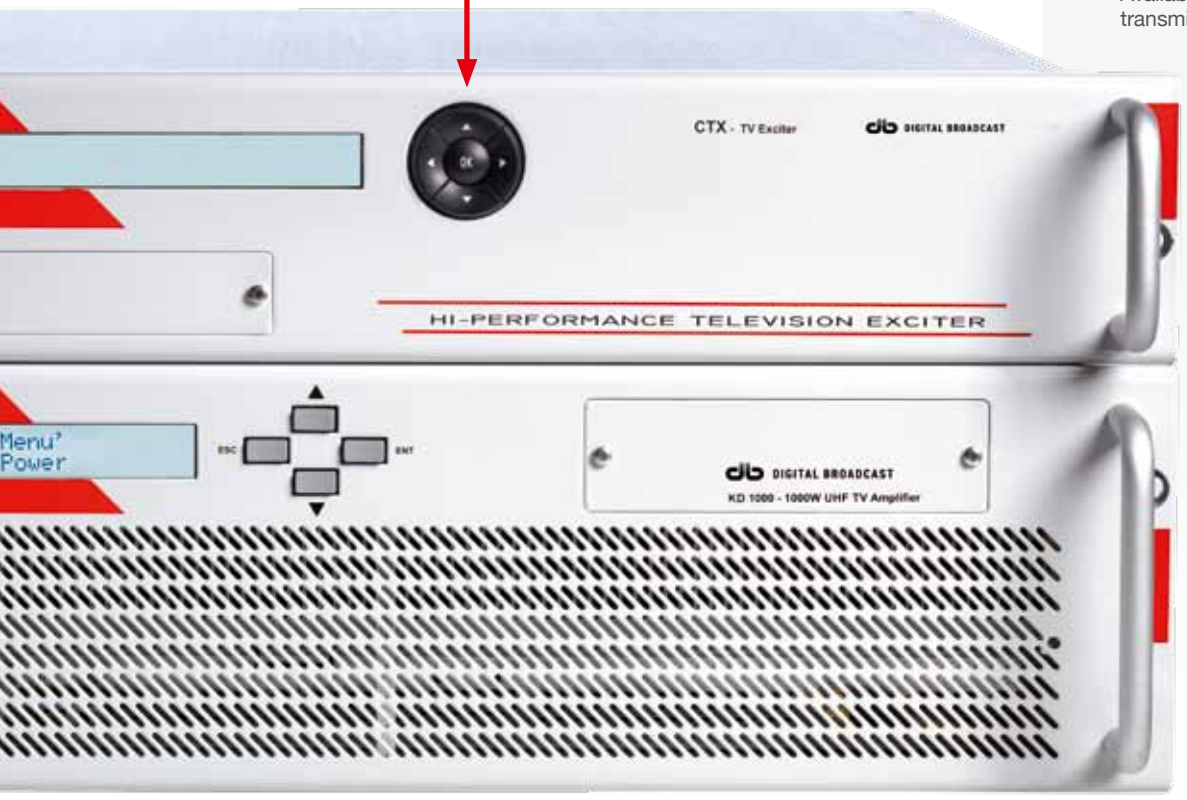
NTSC | PAL | Secam

# Dual Cast Ready and Digital Ready

All exciters in MD Series are CTX series, high performances Analog TV Multistandard Exciter. The MD Series is suitable to work in analog and dual cast mode thanks to the CTX internal ADC switching system with possibility to integrate external digital modulation units with direct front panel management.


User friendly interface with LCD display and pushbuttons for easy check and setup of all main parameters is present on the transmitter front.

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




- ***Dual driver redundancy (optional)***

  High on-air reliability is assured by using optional dual driver configuration.

- ***Small dimensions***

  Very small dimensions and low weight to reduce transport costs and to simplify logistics.

- ***Hot-plug fans***

  5 minutes maintenance time, no need to open or switch off the unit. No service interruptions.

- ***65:1***

  No more load mismatch failures thanks to VSWR 65:1 built-in protection.

- ***Protection against shocks***

  Mechanically designed to prevent damage to connectors, fans, and all the parts that typically may be damaged during transport or installation.

- ***Air filter***

  Available as an option on all transmitters.

# *TECHNICAL SPECIFICATIONS*

## GENERAL

| | |
|---|---|
| Operating frequency range | UHF – Band IV & V (470-860MHz) |
| TV Standards | G, H, I, K, L, M, N |
| In/out impedance | 50 Ω |
| Input connector (for KD series only) | N type (others on request) |
| Spurious and harmonic emissions (ref. to carrier) | ≤ - 60 dBc |
| Power stability | < 1% |
| Intermodulation (IMD-DIN 45004 -8, -16, -10 dB) | < -60 dBc (typ. - 62 dBc) |

## VIDEO PARAMETERS IN ANALOG MODE

| | |
|---|---|
| Input connector | BNC, 75 Ω |
| Video input level | 1Vpp ± 6dB adjustable |
| DC restoration circuit | at black porch |
| Differential gain at nominal power | < 4% |
| Differential phase at nominal power | < ± 2° |
| 2TK factor | < 1,5% |
| Group delay PV 0.75/5 MHz | < ± 30ns (within the video band) |
| In-band intermodulation (ref. to nominal power with 3 tones method Vc –5dB; Sc –10dB; Cc –17dB) | < -60dB |
| Off-band spurious radiation | < -60dB |
| S/N ratio (weighted) | > 60dB |
| External reference frequency input | 5 or 10MHz |

## AUDIO PARAMETERS IN ANALOG MODE

| | |
|---|---|
| Input connector | XLR |
| Input impedance | 600 Ω balanced |
| Input level | 6dBm ± 6dB (for ± 50kHz frequency deviation) |
| Pre-emphasis | 50 / 75 µs |
| S/N ratio | > 65 dB |

## AC POWER REQUIREMENTS

| | |
|---|---|
| AC input voltage | 115 / 230 VAC ± 15%, single phase or 230/380 VAC ± 15%, three-phases |
| AC supply frequency | 50 Hz or 60 Hz, ±5% |

## ENVIRONMENT

| | |
|---|---|
| Cooling | Forced air or Liquid Cooling (option) |
| Service | Continuous 24/24h |
| Operating temperature | -5°C to +45°C Derate 3°C per 500mt above 2000mt asl |
| Relative humidity | Up to 95% |

## *MD / KD Series*

| TRANSMITTER MODEL | AMPLIFIER MODEL | ANALOG OUTPUT POWER (WPS) | DIGITAL OUTPUT POWER DVB-T / DVB-T2 / ISDB / ISDB-Tb / T-DMB (Wrms)* | DIGITAL OUTPUT POWER ATSC (Wrms)* | OUTPUT CONNECTOR | COOLING SYSTEM |
|---|---|---|---|---|---|---|
| MD 50 | KD 50 | 50 | 16 | 20 | N | Air |
| MD 100 | KD 100 | 100 | 30 | 40 | N | Air |
| MD 200 | KD 200 | 200 | 60 | 80 | N | Air |
| MD 350 | KD 350 | 350 | 110 | 130 | N | Air |
| MD 500 | KD 500 | 500 | 200 | 250 | N | Air |
| MD 700 | KD 700 | 700 | 250 | 350 | DIN 7/16 | Air |
| MD 1000 | KD 1000 | 1000 | 350 | 500 | DIN 7/16 | Air |
| MD 1400 | KD 1400 | 1400 | 500 | 750 | EIA 7/8" | Air |
| MD 2000 | KD 2000 | 2000 | 700 | 1000 | EIA 7/8" | Air or Liquid |
| MD 3000 | KD 3000 | 3000 | 1000 | 1500 | EIA 1+5/8" | Air or Liquid |
| MD 5500 | KD 5500 | 5500 | 1400 | 2000 | EIA 1+5/8" | Air or Liquid |
| MD 10000 | KD 10000 | 10000 | 2500 | 3500 | EIA 3+1/8" | Air or Liquid |
| MD 20000 | KD 20000 | 20000 | 5000 | 7000 | EIA 3+1/8" | Air or Liquid |
| MD 30000 | KD 30000 | 30000 | 7500 | 10000 | EIA 4+1/2" | Air or Liquid |
| MD 40000 | KD 40000 | 40000 | 10000 | 14000 | EIA 4+1/2" | Air or Liquid |

** output power measure before filter*

*All specifications are subject to change without notice.*

## Contact Information

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