marKoni
SERIES
by telsat

MKRT-D5000 Digital FM Transmitter

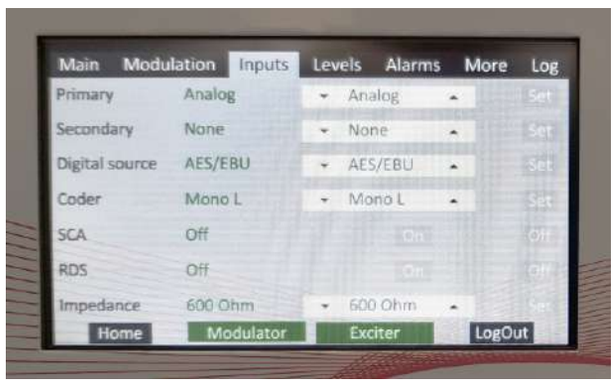
The philosophy of **mar*K*oni** transmitters provides a high reliability granted by very robust power supplies and amplification circuits, realized with MOSFET that are able to guarantee excellent performances, with very high efficiency and consequent low heating of all components.
Through the very User's friendly touch screen interface it is possible to check or change the complete system parameters. All these information can be also managed remotely by the network interface on the back panel, otherwise even locally by using the Ethernet connector on the front panel.

The extensive use of high-level Digital Signal Processing gives to **mar*K*oni** unique features in the audio broadcasting world. The native AES/EBU input module guarantees pure digital quality avoiding the conversion from an analogue source. The presence of the traditional L+R input assures as well top performances even with standard analogue audio.
The FM modulation is implemented by an innovative direct-RF synthesis algorithm with sub-Hz accuracy onto an FPGA-based digital processing core.
The result is a frequency-agile transmitter with immediate installation procedure, which allows operators to broadcast their audio content with excellent purity and maximum reliability.
mar*K*oni transmitters can be locked to the GPS time/ frequency reference signal for exact carrier allocation and Synchro FM operation, a promising band-efficient method of operating adjacent FM transmitters on the same RF frequency, after aligning all the RF and audio parameters of the transmission. The result is a clearly improved listener's reception in the overlapping signal area, extending the coverage to shadow areas, normally characterized by inter-channel interference.
A typical application of this iso-frequency approach is the coverage of branches of highways, allowing car radio receivers to keep tuning the same carrier while driving, without the annoying effect of black spots along the road.

The pure digital audio sensation that **mar*K*oni** creates is obtained thanks to a revolutionary Soft Limiter, which avoids audio intermodulation peaks, while safeguarding the integrity of the whole input dynamic range, with the use of accurate signal processing that allows high full-band stereo separation and extreme signal-to-noise ratio.
The units come with a full-option outfit: analogue and digital audio, analogue MPX and additional wideband SCA and IP inputs, embedded RDS Generator and Digital Stereo Coder and Web/SNMP remote control.

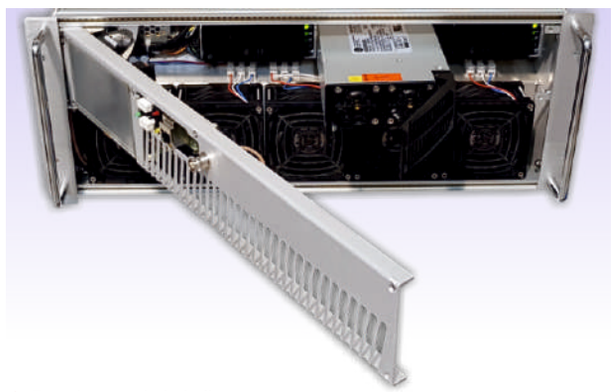
mar*K*oni is a synonymous of environmental sustainability (over 90% of the construction materials are recyclable).

mar*K*oni SERIES the future is here!



▲ Touch-screen display

▲ Internal detail



▲ Front panel details

MAIN FEATURES

- Crystal Digital Sound purity
- Fully Digital Signal Processing
- Embedded RDS generator
- Auto-calibration at power-on
- Internal 32-bit Digital Signal Processing
- Unbeatable price/performance ratio
- Lifetime upgradeable firmware
- Absolutely no analogue trimming points
- Single-chip Digital Processing guarantees maximum compactness
- Minimum BOM, maximum long-term reliability
- Fully remotely controllable by Web/SNMP interface
- 1pps and 10MHz inputs for Synchro FM Operation

Technical characteristics

SIGNAL PROCESSING SECTION

FM Carrier Generation	NCO-based synthesis
FM Modulation	Fully digital
Stereo Coder	Fully digital, integrated
Input Audio Limiter	Proprietary integrated Soft Limiter
Digital Processing Resolution	Real-time internal 32-bit digital processing
RDS Generator	Fully integrated
Monitoring Output Signal	Fully digitally generated

INPUT SECTION

- Analog L/R Input Section

L/R Analogue Inputs	30Hz - 15kHz (integrated digital stereo coder) 0dBu nominal (adjustable from -12dBu to +12dBu)
L/R Analogue Inputs Impedance	600 Ohm/10 kOhm balanced/unbalanced

- Analog MPX and SCA Input Section

Analogue MPX Input	30Hz - 100kHz 0dBu nominal
MPX Analogue Inputs Impedance	10 kOhm unbalanced
SCA1/SCA2 Inputs	40kHz - 100kHz 2Vpp nominal for ±7.5kHz deviation
SCA1/SCA2 Analogue Inputs Impedance	10 kOhm unbalanced

- Digital L/R Input Section

Digital Audio Input	AES/EBU (XLR Female), S/PDIF (BNC)
Balanced AES/EBU Input Impedance	110 Ohm
Unbalanced S/PDIF Input Impedance	75 Ohm

- RX-IP Audio Decoder (Optional)

RTP Receiver	Unicast RTP/UDP compatible receiver
Decoder	HE-AAC (v.1 and v.2), MPEG-1 Layer 3 or raw PCM
Connector	RJ45

- Audio Delay

Audio Input Delay (all audio inputs)	0 - 4us, step 1us

OUTPUT SECTION

RF Output Frequency (FM/OIRT bands)	87.5MHz - 108MHz step 1Hz, ±1ppm frequency stability / OIRT on request
Output Level	5000W
Output Interface/Impedance	7/8" Flange type / 50 Ohm
Pilot Carrier Frequency	19kHz ±0.001Hz
Pilot Carrier Level	0-12% modulation in 0.1% steps
Pilot Carrier Output	1Vpp digitally synthesized
MPX Analogue Output	0dBu from integrated digital stereo coder
19kHz and 38kHz Tone Suppression	< -63dB
THD (30Hz-15kHz)+N	< 0.1%
Synchronous AM	Better than -60dB
Asynchronous AM	Better than -70dB
Mono SNR RMS	Better than -85dB
Stereo SNR RMS	Better than -80dB
L/R and R/L Crosstalk	> 50dB (60dB typ.)
M/S and S/M Crosstalk	> 45dB full-band
Pilot Carrier Phase	User-adjustable (step <1°)
Frequency Deviation Range	User-adjustable 0 to ±200kHz
Pre-emphasis	Flat, 50us or 75us

GENERAL

Physical	Case 19"-4U
Remote Control Port	RS232/RS485
Remote Control Options	PSTN, GSM (optional), Ethernet, SNMP
Front Panel User Interface	LCD full color touch screen display
Power Supply Voltage	Medium power, 400V, ±15%
Typical Efficiency at 98MHz	74%
Operating Temperature	0 - 45°C

OPTIONS N+1 Redundancy configurations available from 1+1 to 4+1 (expandable)

Eco Friendly

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