HMa

TECHNICAL DATA

Wideband Plug-on Transmitter

With Digital Hybrid Wireless® Technology

HMa, HMa-941, HMa/E01, HMa/E02, HMa/E06, HMa/E07-941, HMa/X

- **Accepts audio from any microphone or audio source with an XLR connector**
- **Selectable 5, 15, 48 volt phantom power**
- **Up to 76 MHz tuning range in 100 kHz or 25 kHz steps for up to 3072 frequencies**
- **Adjustable low frequency roll-off**
- **Powered by two AA batteries**
- **USB port for firmware updates**
- **IR (infrared) port for fast setup**
- **Remote controlled "dweedle" tones (audio tone set-up control)**
- **Solid machined aluminum housing**

This unique plug-on transmitter design will ideally match any microphone or line level source via a standard XLR connector. Phantom power is selectable at 5, 15 and 48 volts, or can be turned off for use with dynamic microphones and line level signal sources.

DSP compatibility modes are also included to work with legacy Lectrosonics analog wireless microphone receivers and IFB receivers, as well as some receivers from other manufacturers.

The transmitter is powered by two AA batteries, with status indicated by a multi-color LED. A USB port is provided for firmware updates. An IR (infrared) port is also included to simplify setup with IR enabled receivers.

Digital Hybrid Wireless® is a revolutionary design that combines digital audio with an analog FM radio link to provide outstanding audio quality and the exemplary RF performance of the finest analog wireless systems.

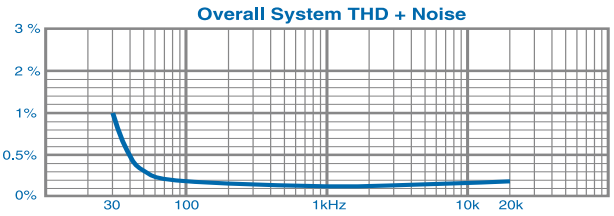
The design overcomes channel noise in a dramatically new way, digitally encoding the audio in the transmitter and decoding it in the receiver, yet still sending the encoded information via an analog FM wireless link. This proprietary algorithm is not a digital implementation of an analog compandor. Instead, it is a technique which can be accomplished only in the digital domain.

The process eliminates compandor artifacts, expanding the applications to include test and measurement of acoustic spaces.

*US Patent 7,225,135

The input amplifier uses an ultra low noise op-amp for quiet operation. It is gain controlled with a wide range dual envelope limiter, providing over 30 dB of headroom above full modulation. A 24-bit A-D converter digitizes the audio, then filters supersonic noise above 21 kHz. The resulting signal is encoded with a proprietary algorithm to produce an analog data signal for RF transmission.

The audio performance of the overall hybrid system is depicted in the graph below. Distortion in the overall system is extremely low over the entire audio bandwidth.



The antenna is formed between the machined aluminum housing of the transmitter and the attached microphone or cable. It functions as a dipole radiator when attached to a hand-held microphone and somewhat like a ground plane antenna when connected with a cable or plugged directly into a mixer. The conical shaped collar on the input coupler is made of DuPont™ Delrin® to improve the ERP of the antenna in the uppermost frequency bands.

WARNING: Moisture, including talent's sweat, will damage the transmitter. Wrap the HMa in a plastic baggie or other protection to avoid damage or see HMCVR.

LECTROSONICS®
Rio Rancho, NM, USA
www.lectrosonics.com

Specifications

Operating Frequency Range:

HMa:	Band A1:	470.100 - 537.575
	Band B1:	537.600 - 607.950
HMa/X:	Band A1:	470.100 - 537.575
	Band B1:	537.600 - 614.375
	Band C1:	614.400 - 691.175
HMa/E01:	Band A1:	470.100 - 537.575
	Band B1:	537.600 - 614.375
	Band B2:	563.200 - 639.900
	Band C1:	614.400 - 691.175
HMa/E02:	Band A1:	470.100 - 537.575
	Band B1:	537.600 - 614.375
	Band C1:	614.400 - 691.175
	Band C2:	640.000 - 716.700
HMa/E06:	Band B1:	537.600 - 614.375
	Band C1:	614.400 - 691.175
HMa-941:		941.525 - 951.975
		952.875 - 956.225
		956.475 - 959.825
HMa/E07-941:		941.525 - 951.975
		953.025 - 956.225
		956.475 - 959.825

NOTE: It's the user's responsibility to select the approved frequencies for the region where the transmitter is operating

Frequency Selection Steps:	Selectable; 100 kHz or 25 kHz
RF Power output:	HMa: Selectable 100 or 50 mW
	HMa/E01: Selectable 25 or 50 mW
	HMa/E02: 10 mW
	HMa/E06: Selectable 50 or 100 mW EIRP
	HMa/E07-941: Selectable 50 or 100 mW
	HMa-941: Selectable 50 or 100 mW
Compatibility Modes:	HMa: Nu Hybrid, Mode 3, IFB
	HMa/E01: Digital Hybrid, Mode 3, IFB
	HMa/E02: Digital Hybrid, Mode 3, IFB
	HMa/E06: Digital Hybrid,Mode 3, IFB
	HMa/E07-941, HMa-941: Digital Hybrid, 200 Series, 100 Series, Mode 3, Mode 6, Mode 7, IFB
Pilot tone:	25 to 32 kHz; 5 kHz deviation (in the Digital Hybrid mode)
Frequency stability:	± 0.002%
Spurious radiation:	HMa/E01/E02/941/X: 60 dB below carrier HMa: Compliant with ETSI EN 300 422-1 v1.4.2
Equivalent input noise:	–125 dBV (A-weighted)
Input level:	Nominal 2 mV to 300 mV, before limiting. Greater than 1V maximum, with limiting.
Input impedance:	1K Ohm
Input limiter:	Dual envelope "soft" limiter; greater than 30 dB range
Gain control range:	55 dB; panel mounted membrane switches
Operating temp. range:	Celsius: -20° - 40° Farenheit: -5° - 104°
Modulation indicators:	Dual bi-color LEDs indicate modulation of -20, -10, 0, +10 dB referenced to full modulation

Audio Performance (overall system):

Frequency Response:	35 Hz to 20 kHz (+/-1dB);
Low frequency Roll-off:	Adjustable for -3dB @30, 50, 70, 100, (120 or 150 Hz)
THD:	0.2% (typ. 100 Hz to 20 kHz - see table)

Signal to Noise Ratio (dB) at receiver output:

SmartNR	no limiting	w/limiting
OFF	103.5	108.0
NORMAL	107.0	111.5
FULL	108.5	113.0

Note: The dual envelope "soft" limiter provides exceptionally good handling of transients using variable attack and release time constants. Once activated, the limiter compresses 30+ dB of transmitter input range into 4.5 dB of receiver output range, thus reducing the measured figure for SNR without limiting by 4.5 dB.

Input Dynamic Range:	125 dB (with full Tx limiting)
Controls & Indicators:	• Power/Phantom "ON-OFF" • Phantom voltage selector • Audio input gain • LCD w/membrane switches • LED audio level indicators
Audio Input Jack:	Standard 3-pin XLR (female)
Phantom Power:	5V @ 18 mA max., 15V @ 15 mA max. and 48 V @ 4 mA max., plus "OFF"
USB port:	Used for firmware updates
IR (infrared) port:	For quick setup by transferring settings from an IR enabled receiver
Antenna:	Housing and attached microphone form the antenna
Battery:	Two 1.5 Volt AA alkaline

Battery Life (Duracell Ultra):

AA alkaline; No Phantom Power:	5h 0m*
AA alkaline; 48V Phantom Power:	3h 30m**

* Tested with a dynamic microphone
** Tested with a Sanken CS1 for a phantom-powered microphone

Weight:	6.7 oz (190 grams) without batteries
Dimensions:	4.25x1.62x1.38 inches 107.95x41.15x35.05 mm
Emission Designator:	A1: 44K3F3E B2: 57K9F3E HMa/E06: 180KF3E HMa/E07-941: 110KF3E

Specifications subject to change without notice.

CE UK CA

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