

IS400

Digital Hybrid Wireless™ Instrument System



An Industry First

Lectrosonics Digital Hybrid Wireless™ uses a proprietary algorithm to encode the digital audio information into an analog format which can be transmitted in a robust manner over a UHF FM wireless link. At the receiver, the encoded signal is captured and a DSP recovers the original digital audio. This combination offers the superb audio quality of a pure digital system and the outstanding operating range of the finest FM wireless systems. The digital audio chain eliminates a compandor and its artifacts, and provides audio frequency response flat to 20 kHz.

This digital/analog hybrid technique provides very beneficial properties. Because the information being transmitted is digitally encoded, immunity to noise is much higher than a compandor can offer. Because the encoded audio is sent in analog format, spectral and power efficiency and operating range are not compromised. Under weak RF conditions, the received signal degrades gracefully, like an analog system, delivering as much usable audio as possible at maximum range.

Rugged and Ultra Portable

Both the transmitter and receiver are all metal and provide 256 selectable frequencies in each of nine standard Lectrosonics frequency blocks. The input amplifier of the IM transmitter uses an ultra low noise op-amp for quiet operation. The A-D converter digitizes the audio, and then filters supersonic audio above 21 kHz. The resulting signal is encoded with a proprietary algorithm to produce an analog

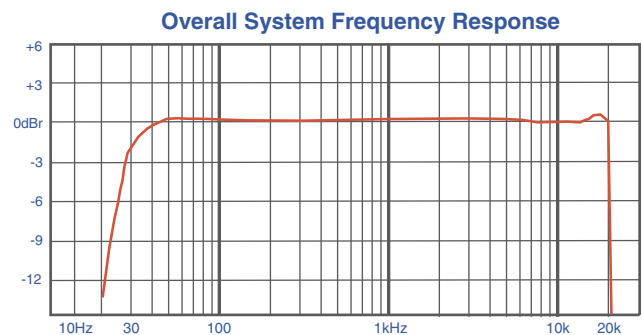
System Highlights

- Digital Hybrid™ transmission for compandor-free audio and unmatched tone
- 256 selectable UHF frequencies
- Rugged all-metal construction
- R400 Diversity Receiver
 - Low noise, robust RF front end
 - Independent XLR and ¼" audio outputs
 - SmartTuning™ with graphic display for easy selection of clear transmission frequencies
- IM Transmitter
 - Spring steel clip for secure mounting
 - Level indicators for precise gain adjustment
 - Greater than 50 mW RF output power for long range and dropout-free performance

data signal for RF transmission. The RF transmission is an optimized FM system with +/-75 kHz deviation for a high signal to noise ratio and a faithful representation of the original signal. The IM transmitter is powered by a single 9VDC battery and provides greater than 50 mW RF output over the life of the battery for extended operating range and resistance to dropouts.

Outstanding Audio Performance

The IS400 sets a new standard for wireless instrument systems. Flat frequency response, low distortion and compandor-free operation provides the closest thing to using a high-quality, short instrument cable. This graph shows that the IS400 reproduces the lowest fundamental from a 5-string bass (low B) at 32Hz up to the very highest overtones and harmonics found in the finest acoustic guitars.



*US Patent Pending

Receiver Rear Panel Features

A standard XLR balanced and an unbalanced 1/4" jack are provided, with independent volume control within the front panel menu for connection to a balanced input and a guitar amplifier simultaneously. Also on the rear panel are a locking power input jack that can accept 8-18 VDC (center pin positive), and two antenna inputs for diversity reception. The power jack input is diode protected to prevent damage if the power is applied with reversed polarity. The receiver is supplied with two UHF antennas with right angle BNC connectors.



Specifications

R400 Receiver

Operating Frequencies (MHz):	Block 22: 563.200 - 588.700 Block 27: 691.200 - 716.700
Frequency Adjustment Range:	25.5 MHz in 100 kHz steps
Receiver Type:	Triple conversion; superheterodyne
IF frequencies:	244 MHz, 10.7 MHz and 300 kHz
Frequency Stability:	±0.001 %
Front end bandwidth:	±30 MHz, @ -3dB
Sensitivity:	
20 dB Sinad:	1 uV (-107 dBm), A weighted
60 dB Quieting:	1.5 uV (-104 dBm), A weighted
Squelch Quieting:	> 100 dB
AM rejection:	>60 dB, 2 uV to 1 Volt (Undetectable after processing)
Diversity method:	Phased antenna combining (SmartDiversity™)
FM Detector:	Digital pulse counting detector operating at 300 kHz
Antenna inputs:	Dual BNC female jacks; 50 Ohm impedance
Audio output:	1/4-inch unbalanced and XLR balanced connectors; independently adjustable from -20 to +5 dBu in 1 dB steps (into nominal 10k load). Can drive 600 ohm load
Audio Performance:	
Frequency Response:	20 Hz to 20 kHz (+/-1dB)
THD:	0.2% (typical)
SNR at receiver output:	107.0 dB
Audio Test Tone:	1 kHz, -20 to +5 dBu, <1%THD
Rear Panel Features:	Unbalanced 1/4-inch and balanced XLR audio output jacks External DC input BNC antenna connectors
External Power:	8 VDC min. to 18 VDC max., 1.6 W; 200 mA max.
Weight:	13.0 oz.
Dimensions:	5.50"w x 1.75"h x 4.75"d (6.25" deep including knob and connectors)

IM Transmitter

Frequency selection:	256 frequencies in 100 kHz steps
RF Power output:	Greater than 50 mW
Pilot tone:	25 to 32 kHz; 5 kHz deviation (in the 400 Series operating mode)
Frequency stability:	± 0.002%
Deviation:	± 75 kHz (max)
Spurious radiation:	60 dB below carrier
Equivalent input noise:	-118 dBV (A-weighted)
Input level:	Nominal 2 mV to 300 mV, before limiting. Greater than 1V maximum, with limiting.
Input impedance:	1k Ohm
Gain control range:	43 dB; semi-log rotary control
Modulation indicators:	Dual bi-color LEDs indicate modulation of -20, -10, 0, +10dB referenced to full modulation
Frequency Response:	35 Hz to 20 kHz (+/-1dB); low frequency roll-off is 12 dB/octave
THD:	0.2%
Controls:	<ul style="list-style-type: none">• Power "ON-OFF" switch• Audio input gain knob• Two 16-position rotary switches adjust transmitter frequency
Audio Input Jack:	TA5M (Male)
Instrument Cable:	JFET high-impedance input Mogami® 2552 cable material (24 inches) TA5F transmitter connector
Antenna:	Permanently attached jacketed stainless steel
Battery:	Precision compartment auto-adjusts to accept any known alkaline 9 Volt battery. (We've tried 243 different ones.)
Battery Life:	5 hours (alkaline); 12 hours (lithium)
Weight:	6.6 ozs. - 187 grams (including lithium 9V battery)
Dimensions:	4.18 x 1.65 x 1.58 inches

Specifications subject to change without notice