

RESONIKS MPK801

Precision Broadband Measurement Microphone

The RESONIKS MPK801 is a ruggedized, ultra-wideband (20 Hz – 80 kHz) digital measurement microphone built for continuous data acquisition. Software-compensated to ± 0.5 dB* unit-to-unit consistency and streams audio directly over Ethernet.

Features

- ± 0.5 dB* compensated unit-to-unit consistency with sub-100 ns synchronization when connected to the ARK141 Sensor Hub
- Single M12 connector for data and power, no separate DAQ hardware required
- Powered either through PEK481 Network Adapter or through ARK141 Sensor Hub
- Ultra-wide frequency range (20 Hz – 80 kHz) with configurable sampling rate up to 192 kHz
- Linux audio driver (ALSA) installs in one command
- Continuous 24/7 streaming with packet-integrity monitoring; hot-swappable sensors with per-unit fault isolation
- Rugged industrial housing (-40°C to 70°C , IP54**)
- Calibration information is stored on every sensor and can be used for compensation



Typical Applications

- Acoustic ML for industrial condition monitoring - from calibrated training-data capture to deployed predictive maintenance and anomaly detection
- Industrial process, noise, and vibration monitoring
- Large-scale acoustic & vibro-acoustic research - beamforming and sound source localization at a fraction of traditional multi-channel DAQ cost

* Preliminary. Typical value from initial measurements; final specification subject to characterization and may change without notice.

** Pending confirmation by an accredited independent test laboratory.

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1 Acoustic & Electrical Performance

1.1 Acoustic Characteristics

Parameter	Value
Sound field	Free field
Digital frequency-response calibration	Unit-specific; software-selectable
Frequency range	20 Hz – 80 kHz
Frequency response	20 Hz – 80 kHz; $-3^*/+14^*$ dB; normalized at 1 kHz
Frequency response, compensated	20 Hz – 80 kHz; $\pm 0.5^*$ dB; normalized at 1 kHz
Sensitivity @ 1 kHz, 94 dB SPL	-35 dBFS* ± 0.5 dB*
SNR - 20 Hz–20 kHz bandwidth, A-weighted	71.5 dB(A)*
Equivalent noise level - 20 Hz–20 kHz	22.5 dB(A)*
THD @ 1 kHz, 94 dB SPL	0.1 %*
THD @ 1 kHz, 125 dB SPL	1.0 %*
THD @ 1 kHz, 128 dB SPL	10 %*
Acoustic Overload Point (AOP)	128 dB @ 10 % THD
Unit-to-unit response variation	± 3 dB*
Unit-to-unit response variation, compensated	± 0.5 dB*
Synchronization accuracy (requires ARK141)	< 100 ns*

1.2 Amplitude vs. Frequency

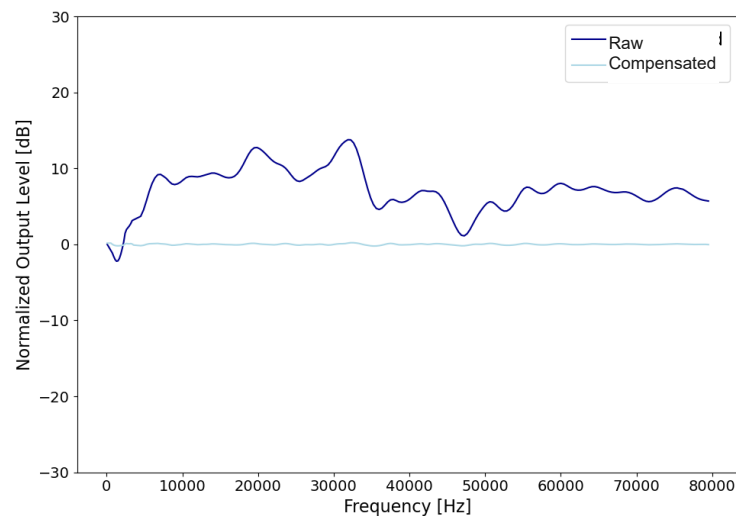


Figure 1: Typical amplitude vs. frequency response at 0° incidence

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1.3 Polar Patterns

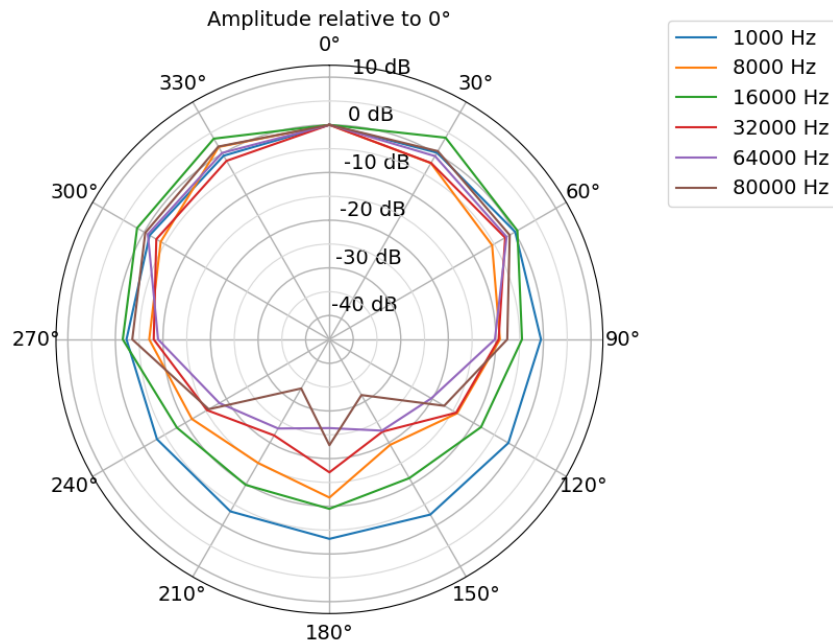


Figure 2: Directional sensitivity (polar pattern)

2 Synchronization

The MPK801 is designed for tightly synchronized multi-microphone measurements - a capability that sets it apart from conventional networked microphones. Sensors synchronize to within 100 ns, enabling coherent capture across a large multichannel system.

A single ARK141 connects up to 14 synchronized microphones.

3 Connectivity & Power

- Low-latency audio (>10 ms) streaming over Ethernet (UDP/IP) with packet-loss detection
- Single M12 (A-coded, 8-pin, IP67 mated) hybrid connection carrying data and power
- Shielded twisted-pair cabling (proprietary pin assignment), S/FTP, drag-chain capable, PUR mantle
- Digital signal path, shielded cabling, and metal housing keep the signal clean in high-EMI environments - validated on a spot-welding robot cell with no disruption
- Standalone operation: powered through the PEK481 Network Adapter (PoE or 12-48 V)
- Power consumption 1 W

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4 Mechanical, Mounting & Environmental

Parameters	Value
Dimensions	75 × 36 × 22 mm
Weight	140 g
Housing material	Aluminum
Mounting options	M4 front and rear; 3/8" rear, magnet
IP rating	IP54**
Operating temperature	−40 °C to 70 °C**
Humidity	Up to 99 % RH, non-condensing**

5 Software & Driver

5.1 Streaming & Software Access

- Designed for continuous 24/7 streaming and recording
- Audio stream integrity monitoring (per-packet sequencing for packet-loss detection)
- Fault isolation down to the individual microphone
- Linux driver is now available for Ubuntu (22.04, 24.04 and 26.04) and Debian (12 Bookworm and 13 Trixie); other specific distributions/hardware platforms supported on request, please enquire
- Configurable streaming endpoint (destination IP/port)

Multiple sampling rates are available; bit depth scales with the selected rate:

Sampling rate	Bit depth
48 kHz	31-bit
96 kHz	26-bit
192 kHz	21-bit

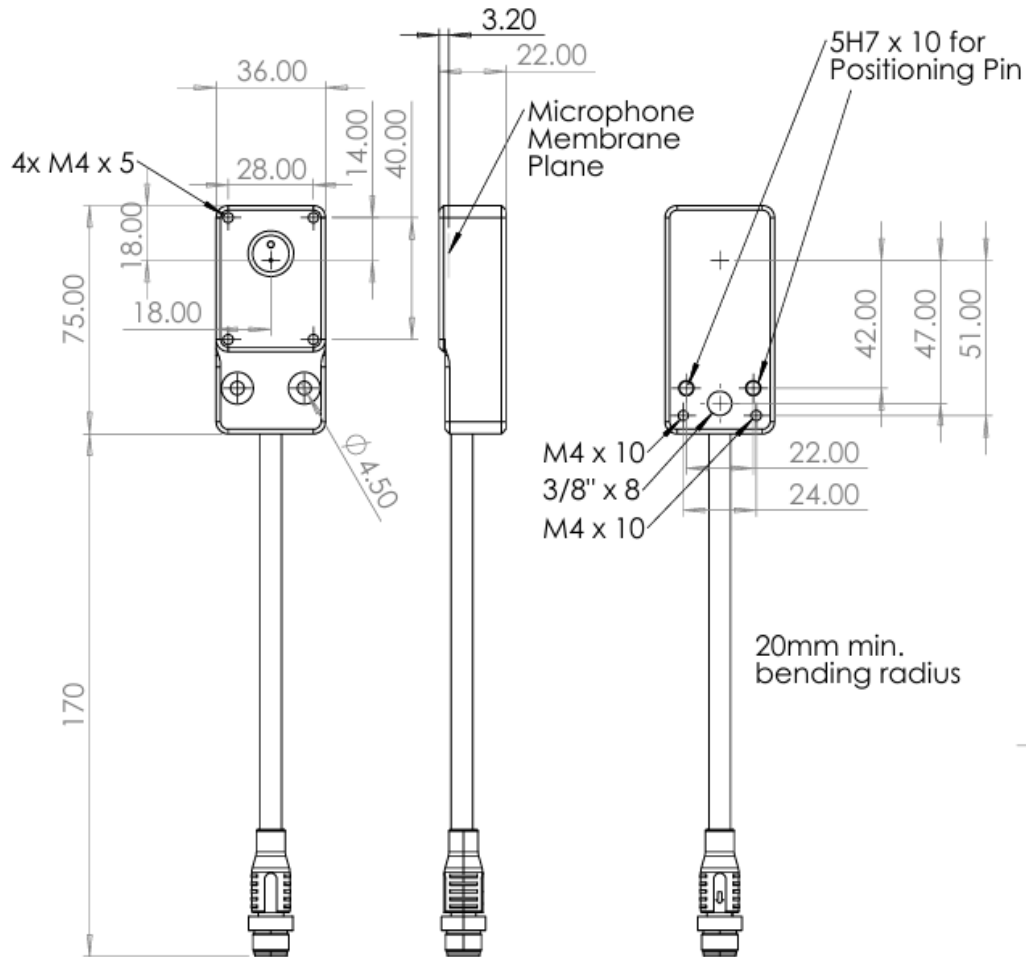
5.2 Monitoring & Control

- Monitoring: sensor status, packet transfer rate, audio latency, system metrics, error monitoring (e.g. Linux audio driver (ALSA) underruns, dropped packets)
- Control: restart / re-flash sensors; change settings (sample rate and bit depth); sensor identification by GUID; list of online sensors
- All monitoring and control data is accessible through the local monitoring panel.

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6 Drawing



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