TECHNICAL SPECIFICATION

Charge Preamplifier RE 2.0 Power Consumption

Portable hydrophone and piezo-sensor power behavior

This section summarizes the measured power behavior of the Natako Audio charge preamplifier for portable hydrophone and piezo-sensor applications.

SUPPLY RAILS	QUIESCENT CURRENT	POWER CONSUMPTION	CONTINUOUS OPERATION
±9 V	**8.05 mA**	**145 mW**	**58 h**
Two 9 V alkaline batteries	Per rail, 10 kΩ load	Typical, recorder / DAQ	Full performance, measured

Key Portable Power Features

- Battery powered from two standard 9 V alkaline batteries (±9 V rails).
- Low quiescent current: 8.05 mA per rail with 10 kΩ load.
- Approximately 145 mW typical power consumption in recorder / DAQ operation.
- 58 hours measured full-performance continuous operation with Toshiba alkaline 9 V batteries.

Recommended Published Specification

Parameter	Value
Supply configuration	Two 9 V alkaline batteries, generating ±9 V rails
Recommended load for rated battery life	10 kΩ or higher
Quiescent supply current	8.05 mA per rail typical, all gain settings, 10 kΩ load
Typical power consumption	145 mW total at ±9 V, 10 kΩ load
Specified continuous operating time	58 h typical at full specified performance
Recommended battery replacement point	After 58 h continuous use or when either battery falls to approximately 6.4 V under load

Typical Battery Endurance

The rated operating time is based on a measured continuous endurance test using two Toshiba alkaline 9 V batteries and a 10 kΩ output load. Output amplitude began to decrease after approximately 3500 minutes, so the published specification uses 58 hours as the full-performance operating time.

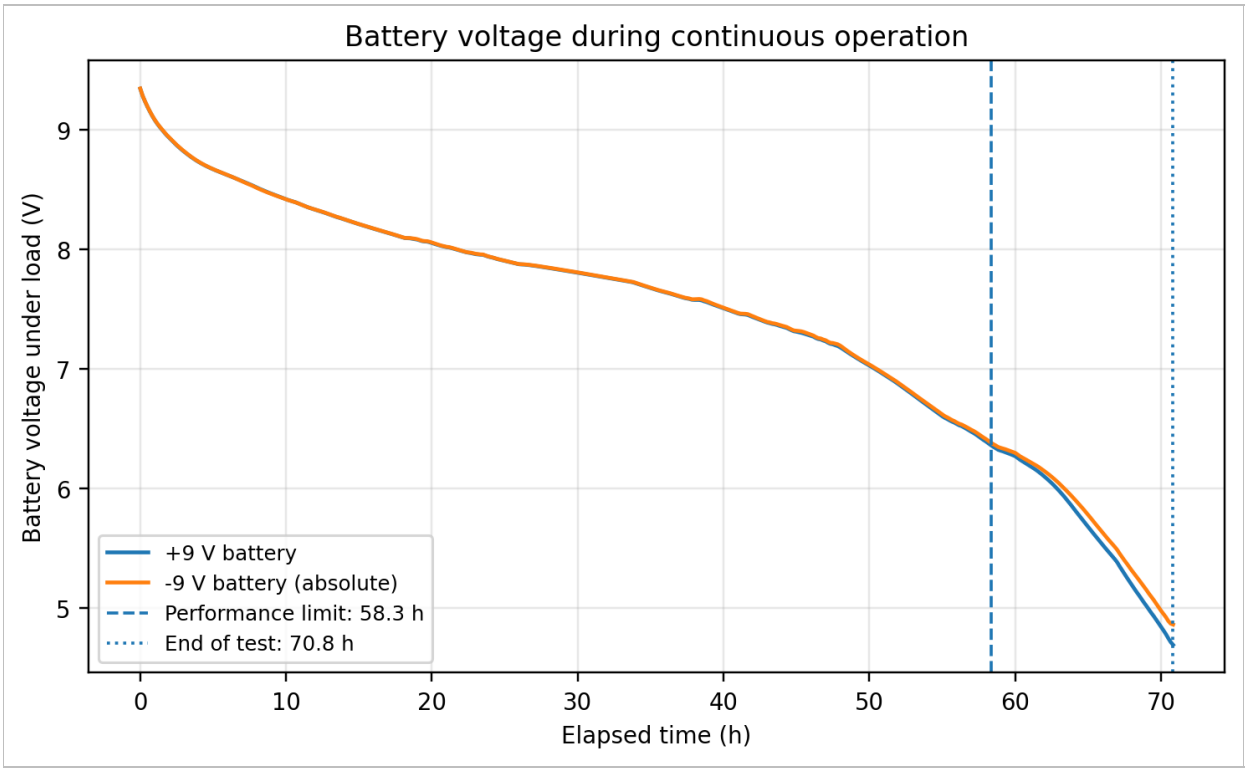

Figure 1. Battery voltage during the continuous operation test. Battery replacement is recommended near the specified performance endpoint.

Application Guidance

- For long field recordings, connect the preamplifier output to a high-impedance input such as a recorder, DAQ, or audio interface.
- Use the 58-hour figure for planning unattended operation and field deployments.
- For headphone monitoring, use moderate gain settings when possible. High gain with low-impedance headphones substantially reduces battery life.

> *The unit may continue operating beyond the rated full-performance time, but this region should not be used for calibrated or unattended measurements.*

Operating Time by Application Scenario

Battery life depends on load impedance, signal level, gain setting, temperature, and battery chemistry. The 10 kΩ case is the recommended portable recorder / DAQ condition. Direct headphone operation at high gain consumes significantly more current.

Load	Gain	Current per rail (mA)	Full-performance time (h)	Continued operation (h)
10 kΩ recorder / DAQ load	All gains	8.05	58.33	70.83
33 Ω headphones	5 dB	8.08	58.12	70.57
33 Ω headphones	15 dB	8.31	56.51	68.62
33 Ω headphones	25 dB	9.93	47.29	57.42
33 Ω headphones	35 dB	16.01	29.33	35.62
33 Ω headphones	45 dB	27.10	17.33	21.04

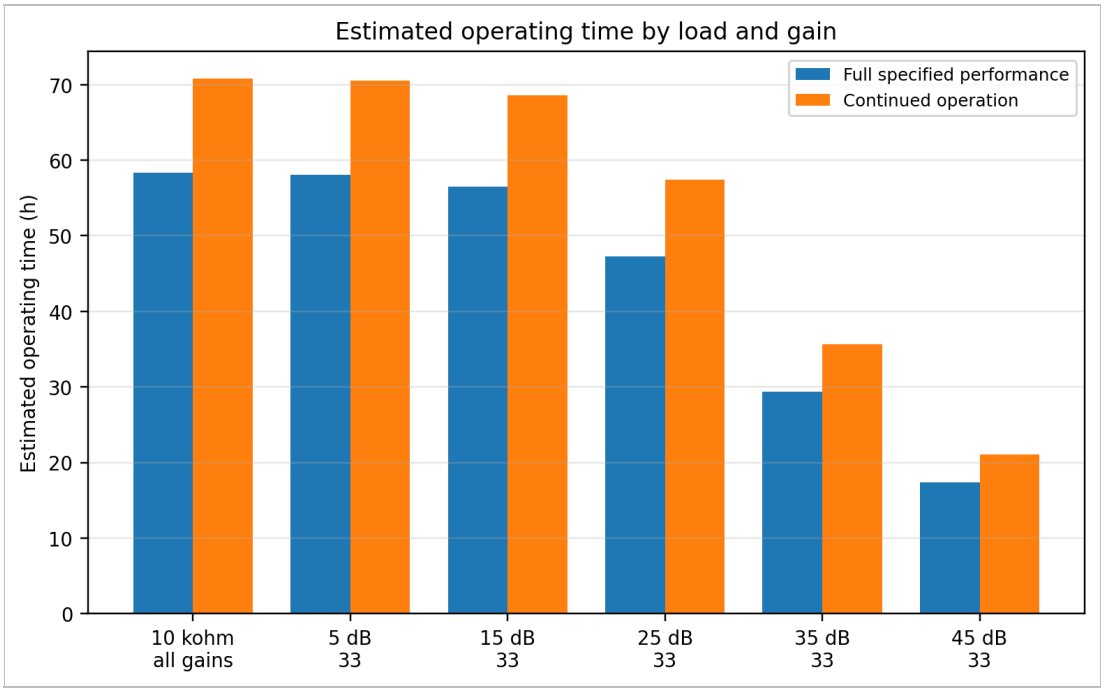

Figure 2. Estimated operating time for high-impedance and 33 Ω headphone-load scenarios.