

IoT-AE Monitoring System



Built-in sensor version

RAEM2 is an integrated wireless unmanned industrial condition monitoring system with internal battery, AE sensor, and wireless communication module. It is well-suited for the continuous acoustic emission signals monitoring such as leakage and wear signals.

- Single channel, time triggering
- Communications: 4G, LoRa, Bluetooth
- Data transmission to local devices (PC, phones) and cloud servers
- Suitable for timing monitoring for continuous signals, eg. leakage or wear signals.

Advantages:

1. Stand-alone monitoring system, no intrusive to your equipment.
2. Unattended monitoring.
3. Wireless data communication, various communication methods available, 4G, LoRa, Bluetooth.
4. Based on Linux Operating System, long-term stable running.
5. Suitable for most structural health / conditional monitoring.
6. Quantitative monitoring results, leakage rate, etc.
7. The cloud server for uploading data can be customized.
8. Bluetooth onsite inspection.

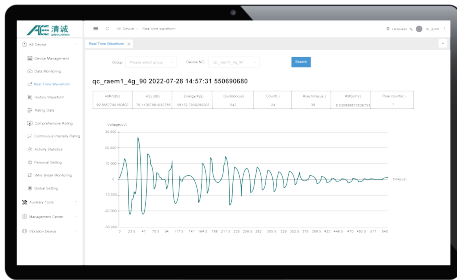


External sensor version

Technical specifications:

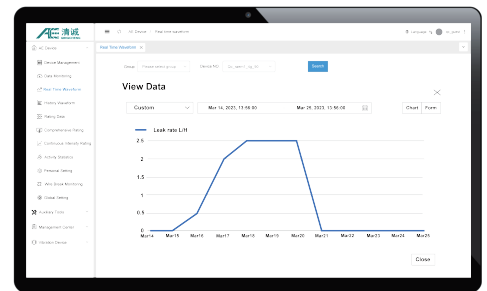
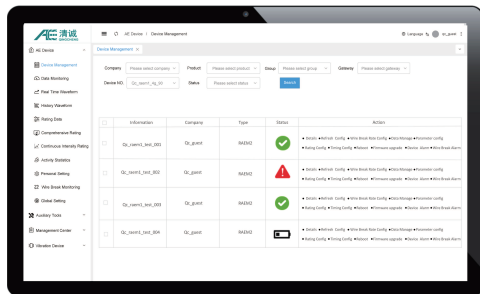
Channel	Single channel signal input	Input frequency	10kHz-400kHz
Sampling accuracy	16-Bit	Sampling Rate	Optional 200k/s, 500k/s, 1000k/s, 2000k/s
Communication method	4G/LoRa, Bluetooth	Mobile phone inspection	Bluetooth
Bandwidth of 4G	LTE-FDD: B1/B3/B5/B8 LTE-TDD: B34/B38/B39/B40/B41	Bluetooth maximum communication distance	13m in open area
Operating temperature	-20℃~+60℃	Charging voltage	8.4V
Protection level	IP65	Trigger mode	Time trigger
Dynamic Range	Built-in sensor version: 60dB External sensor version: 70dB	Maximum signal	100dB
Sampling length	2000Ksps: 500us~15000us 1000Ksps: 1000us~30000us 500Ksps: 2000~60000us 200Ksps: 5000~150000us	Sensor	GI150 (60kHz-400kHz) or GI40 (15kHz-70kHz)
Sampling method	Continuous sampling mode, Interval sampling mode, Timing sampling mode (Note: Only interval sampling mode in Lora version)		
System noise (Amplitude)	Built-in sensors version ≤ 40dB, external sensor version ≤ 30dB		
Voltage output to preamplifier	28V40dB/12V34dB/5V26dB		
Digital filter	128-order, the filtering range is related to the sampling rate, the maximum is 1/2 of the sampling rate		
Data output	Parameters (amplitude, RMS, power, ASL), waveform		
Power supply	Various methods are available: 1. External 8.4VDC power supply 2. Built-in rechargeable battery (3000mA@8.4V) 3. Built-in lithium battery with low self-discharge rate (7000mAh@8.4V, non-rechargeable)		
Timing acquisition sleep time accuracy	±1min (±2min with LoRa version)		
Battery life in internal sampling mode	Wake up every day 1 time, 1 second each time 3 years (with lithium battery), 1 year (with rechargeable battery)		
Battery life in continuous sampling mode	24h (with lithium battery), 15h (with rechargeable battery)		
Weight	< 500g (including battery, magnet, antenna)		
Dimensions	Built-in sensor version: diameter φ60mm, height 105mm (including 150k sensor but not antenna); height 117mm (including 40k sensor but not antenna) External sensor version: diameter φ60mm, height 105mm (Antenna not included)		
LoRa gateway theoretical maximum number of connected RAEM2 devices	200 units		
The longest communication distance of LoRa gateway	10km in open area		
LoRa gateway network access method	Wired Ethernet, Wi-Fi, 4G		
LoRa gateway working frequency	EU433、CN470-510、CN779-787、EU863-870、US902-928、AU915-928、AS923、KR920-923		

Brief introduction of IoT cloud platform:



Real-time display of waveform and AE parameter.

Quantitative testing results

ID	Information	Company	Type	Status	Action
01_00001_001_001	01_00001	01_00001	AEAD2	✓	View details
01_00001_001_002	01_00001	01_00001	AEAD2	⚠	View details
01_00001_001_003	01_00001	01_00001	AEAD2	✓	View details
01_00001_001_004	01_00001	01_00001	AEAD2	✖	View details

Remote configure hardware.

Onsite inspection through Bluetooth with smart phone

