Supplementary Information

A press-rotary triboelectric-electromagnetic hybrid energy harvesting device for indoor IoT node power supply and smart home control

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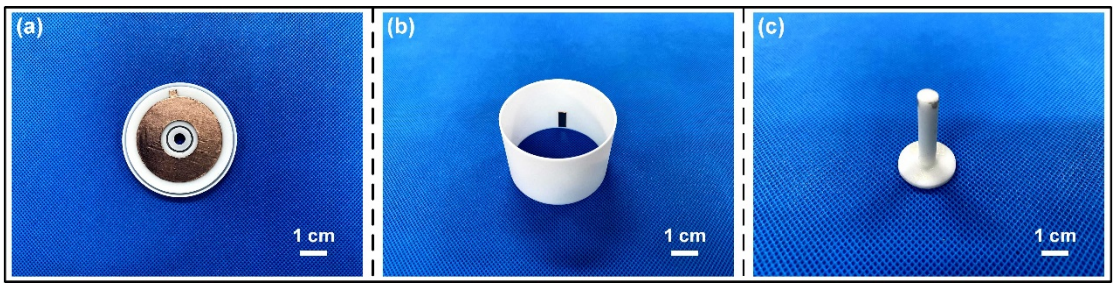

Fig. S1 Photos of components in PR-TEHD. (a) Top cover. (b) Shell. (b) Connecting shaft.

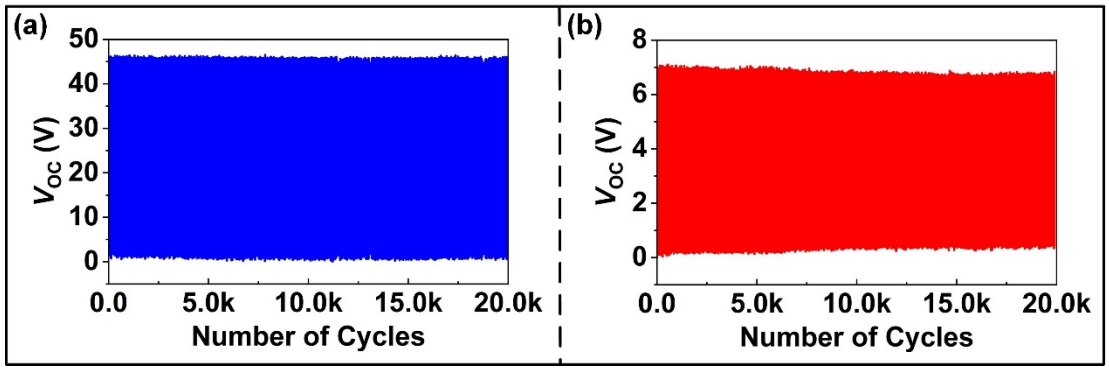

Fig. S2 Stability test of CS-TENG and FR-TENG. The open-circuit voltage (V_{OC}) for (a) 20,000 cycles of continuous operation for CS-TENG and (b) 20,000 cycles of continuous operation for FR-TENG.

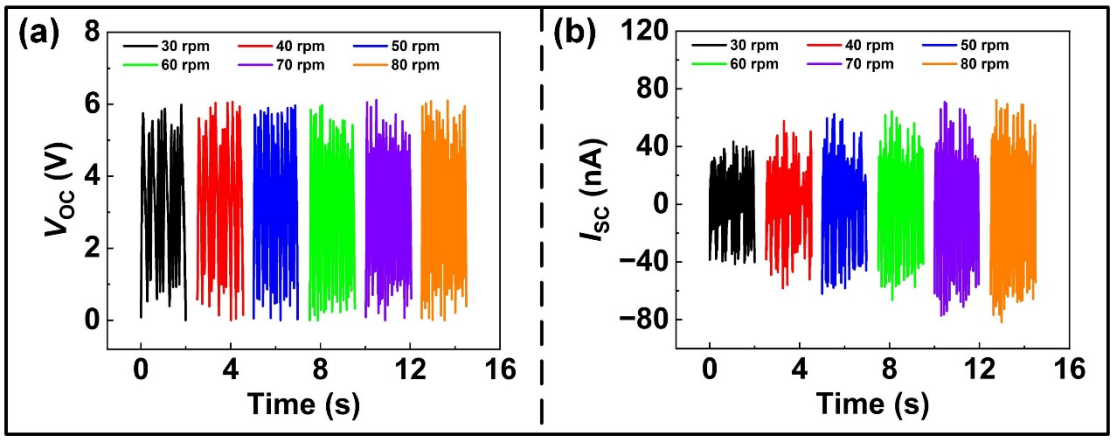

Fig. S3 Output performance of FR-TENG at different rotational speeds. Waveforms of (a) V_{OC} and (b) short-circuit current (I_{SC}).

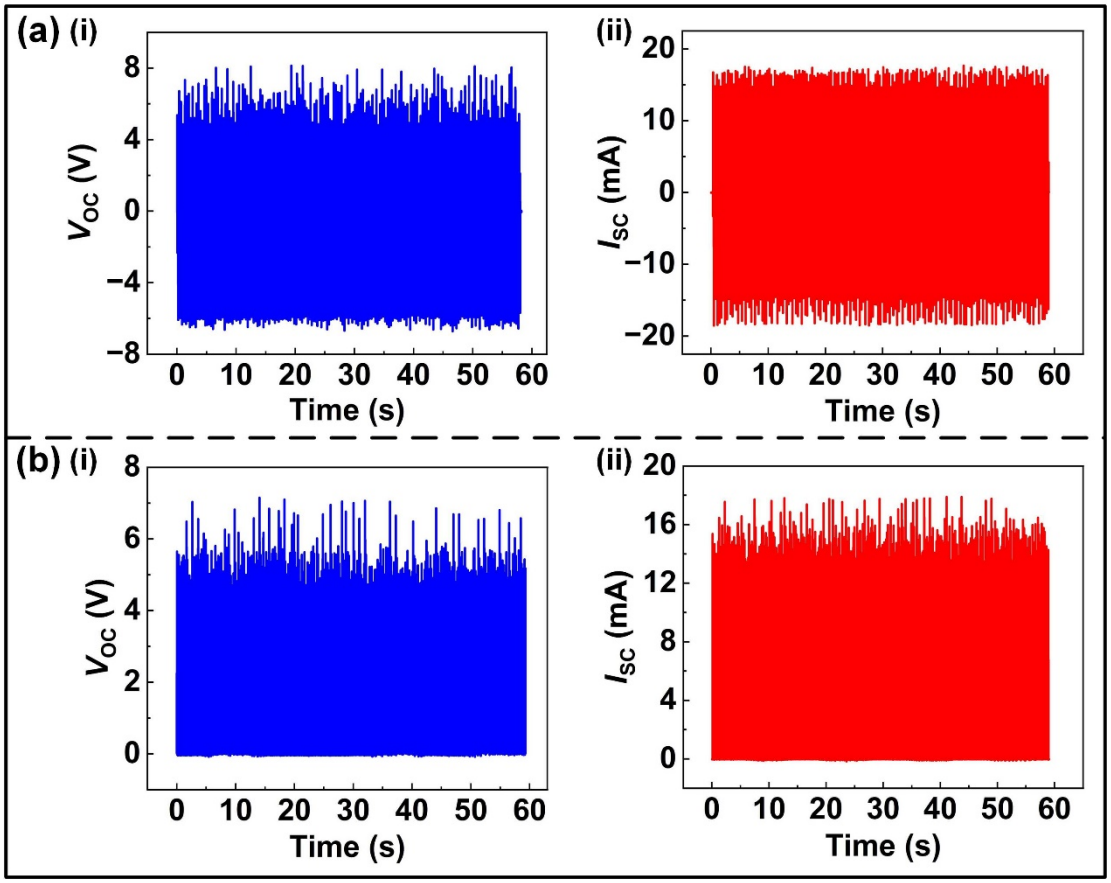

Fig. S4 Changes in the output waveforms of L-EMG before and after rectification. Waveforms of V_{OC} and I_{SC} (a) before rectification and (b) after rectification.

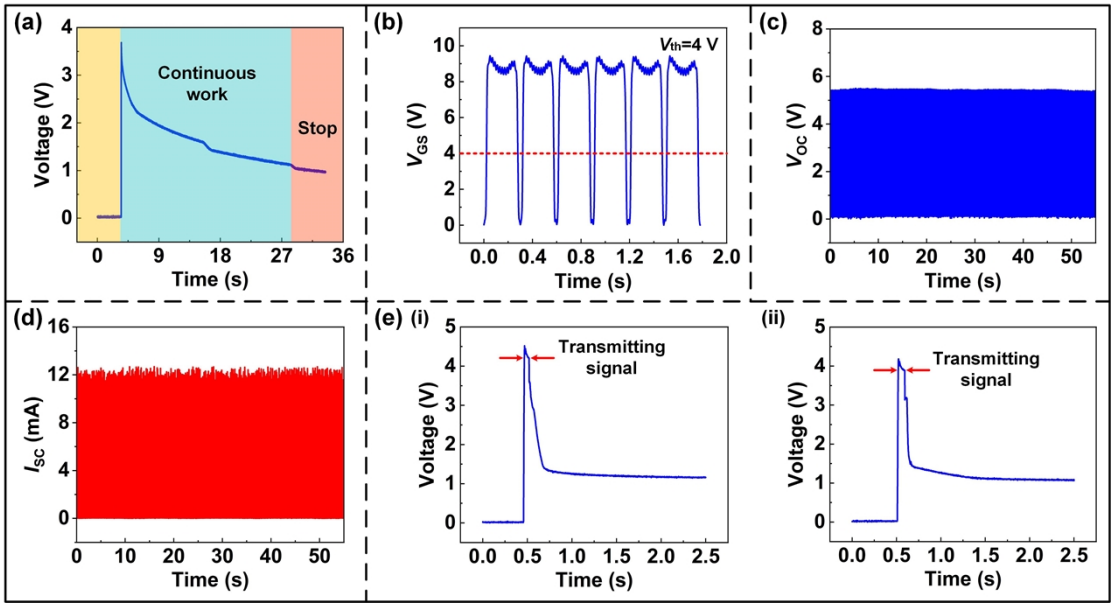

Fig. S5 Operating curves of electronic devices and waveforms of power management circuit (PMC). (a) The operating curve of the temperature and humidity sensor. (b) The waveform of the gate-source voltage (V_{GS}) of the MOSFET switch. Waveforms of (c) voltage and (d) current of the PMC output. (e) Operating curves of the wireless transmitter module (i) wireless switch and (ii) wireless doorbell.

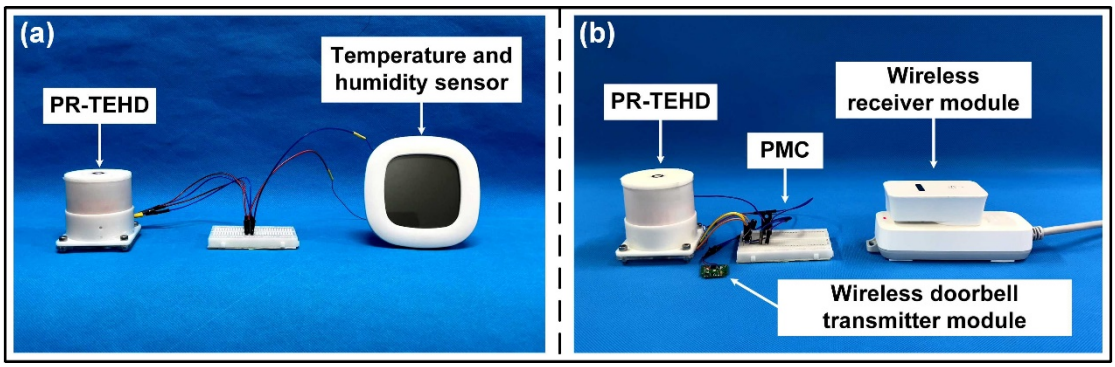

Fig. S6 Application demonstration of PR-TEHD as a power supply. (a) Temperature and humidity sensor and (b) wireless doorbell transmitter module are driven by PR-TEHD.

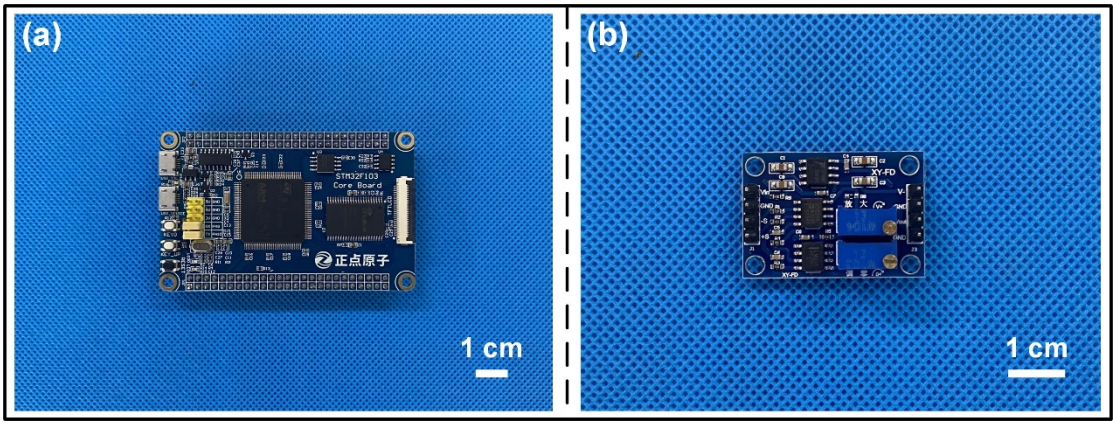

Fig. S7 Photographs of the electronic components in the smart home control system. (a) MCU. (b) Signal conditioning circuit module.

35 **Table S1**. The number of pulses corresponds to the MCU signal and the household appliance control
36 state.

Number of pulses	MCU signals		Application 1	Application 2	
	LED 0	LED 1	Light brightness	Light	Fan
1	0	0	0%	ON	OFF
2	1	0	30%	OFF	OFF
3	0	1	60%	OFF	ON
4	1	1	100%	OFF	OFF

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