

ENDOTHERMAL SYSTEMS



CINDERCLOCK

A programmable alarm clock that works with no app, no account, and no internet connection.

Executive brief

Version 1.0 · 10 August 2026

endothermalsystems.com

CinderClock is a programmable alarm clock. It keeps time, runs alarms on any calendar pattern, plays your own audio files, and does all of it on the device, with no app, no account, and no server behind it. It is the first product of Endothermal Systems, and it launches on Crowd Supply.

The device is finished. The unit photographed here runs firmware v2.1.3 in a printed enclosure, with every feature working. This brief is six pages. The full design study and a 27 page dossier are linked at the end.

STATUS

Finished prototype, 4 August 2026.
Firmware v2.1.3, enclosed, all features working.

PRICE

\$229 assembled, \$149 kit. Planned, pending Crowd Supply review.

TARGET

100 backers at a 70/30 split, raising \$20,500.

OPEN SOURCE

Firmware and documentation under Apache 2.0, published. Board and enclosure files at launch.

WHAT NOTHING ELSE DOES

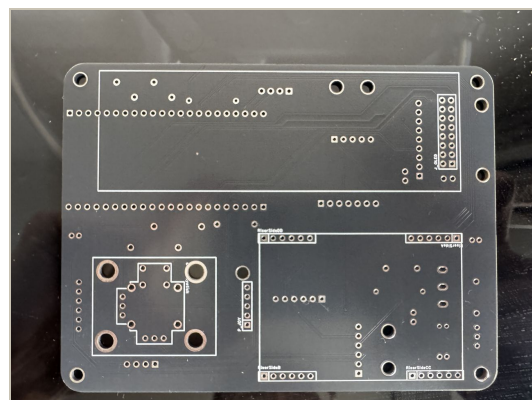
Three capabilities have no competitor at any price: recurrence beyond weekday and weekend, sunrise and sunset tracking computed offline from your coordinates, and an alarm you must win a game to dismiss. Two more, published design files and modules that lift out on pin headers, have no competitor in any consumer category.

WHAT IT DOES NOT DO

It does not light a room, track sleep, take voice commands, or sell a content library. Battery runtime has not been measured, so no runtime figure appears in this brief.



The finished unit. 140 by 160 by 170 mm, printed in two parts



The main board. Through-hole, every active part on pin headers

Why it exists

The phone is the default alarm clock and it has a documented failure mode. In April 2024 Apple confirmed to the Wall Street Journal that it was aware of a problem causing some iPhone alarms not to play the expected sound. Reports continued into 2025. The most capable computer most people own has an unresolved fault on the one job a bedside clock has.

The replacement market does not answer this. The low end sells clocks that cannot express a weekday alarm. The premium end sells clocks that need an app, an account, or a subscription. Philips lists the SmartSleep at \$199.99 and Loftie at \$169.99, while Hatch charges \$49.99 a year for its content library and Loftie \$59.99 for its own. Prices were read in July 2026.

Underneath that sits the argument that decides the purchase. Since 2016 this category has repeatedly shut off hardware that people had paid for.

DATE	WHAT HAPPENED
May 2016	Nest bricked the \$299 Revolv hub with about a month's notice
June 2017	Hello shut down. Its Sense bedside device had raised \$2.4M on Kickstarter
April 2022	Insteon shut its servers with no warning. Only what ran locally kept working
August 2023	Amazon Halo stopped functioning and the health data was deleted
December 2024	Spotify remotely bricked every Car Thing ever sold, and told owners to recycle them
2025	Tidbyt was acquired, manufacturing ceased, and owners wrote their own servers

Two of those, Hello's Sense and Kello, were bedside devices in this exact category, both crowdfunded and both gone. CinderClock keeps working when we stop existing, and the files are public before the first unit ships.

What it does

Alarms repeat on any calendar pattern. One setting called Cycle takes the value Weeks or Days: in Weeks an alarm fires on the days ticked, every Nth week, and in Days it fires every N days from a start date, which expresses "every 3 days" and "3 days on, 2 days off". The alarm list writes each pattern back in plain language, and every editor shows a next-ring line computed by the scheduler itself, so the preview and the behaviour cannot disagree.



Cycle: Weeks. The bottom line is the scheduler's own answer to when it next rings.

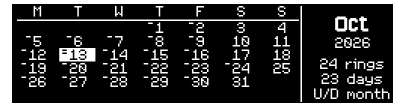


Cycle: Days. No consumer clock on sale expresses this.

Sunrise and sunset are computed on the device from coordinates entered by hand, with a world map to set a position by eye, and the times recompute daily. Nothing in it touches a network. Dismissal is a 100 mm arcade button sized to be hit without aiming. Snooze is deliberately harder, and any alarm can be gated behind a game, where a third loss dismisses it. The device is also a month calendar of every scheduled alarm, a saved-timer system with a Pomodoro preset, a stopwatch, an ambient sound and animation player, an hourly chime, an environment monitor, and eight games.



Sun Follow. Offline, from coordinates set on the device.



Calendar. Ticks come from the scheduler, so it checks the recurrence setting.

Where it stands against the market

Rows are the things CinderClock does. Columns are whether anything else does them. Three rows have no competitor at any price, and two more have none in any consumer category.

CAPABILITY	PHILIPS	HATCH	LOFTIE	ECHO SPOT	LAMETRIC	CINDERCLOCK
Works with no app, account, or network	partial	no	no	no	no	yes
Recurrence beyond weekday and weekend	no	no	no	no	no	yes
Sunrise and sunset tracked for your location	simulated	no	no	no	no	yes, offline
Wakes you with your own audio files	no	no	no	partial	no	yes
Requires you to win a game to dismiss	no	no	no	no	no	yes
Month calendar of every scheduled alarm	no	no	no	no	no	yes
Every active part replaceable on pin headers	no	no	no	no	no	yes
Firmware, board files, and case models published	no	no	no	no	no	yes
Subscription available to buy	no	yes	yes	Prime	no	no

Where competitors genuinely win, stated plainly. Philips and Hatch project real light into a dark room and CinderClock does not, so for a buyer whose want is waking to light they remain the right product. Hatch sells sleep tracking and a content library, which is a different business. Colour screens

photograph better than a monochrome OLED. There is no voice control. Several open ESP32 clock projects exist on GitHub, none approaching this feature set, and none arriving in a box.

The numbers

The target is 100 backers at a 70/30 split of assembled units to kits. The figures below count only what backers pay. The Crowd Supply house order is a separate transaction and is counted separately.

	UNITS	PRICE	RAISED
Assembled	70	\$229	\$16,030
Kit	30	\$149	\$4,470
Total	100		\$20,500

The bill of materials is the same \$80 a unit on either build, because a kit is the same set of parts without the assembly step. That figure excludes the enclosure, which has no firm quote, and it is rounded from \$82.

Raised from 100 backers	\$20,500
Parts, 100 units at about \$80	\$8,000
Left for everything else	about \$12,000

That remainder funds certification, enclosures, logistics, and labour. Certification is the fixed item and it is not optional, because the board carries an ESP32 with an on-board antenna, which puts FCC Part 15B in the path before a unit ships to a US backer. The published funding threshold is \$12,000, which the campaign has to clear to fund at all, and the 100 backer target raises more than that.

The house order, separately. Crowd Supply also buys stock at wholesale for its own store and for Mouser, roughly the same volume again, at about 57% of retail. That order is what sets the price. At \$229 the wholesale price is \$130.53, which clears a modular cost of goods of \$110.60 by \$19.93 and the integrated respin at \$86.00 by \$44.53, so the distributor side is profitable on either build. At \$199 it clears the modular build by \$2.83.

Making it

Main boards are assembled at a factory, modules are bought wholesale, enclosures are printed in-house, and final assembly is done in-house. The enclosure is designed for PLA, with PETG as the fallback and resin as a third

route.

ROUTE	COST PER ENCLOSURE
In-house FDM, realistic	about \$30
Resin, cheapest material	about \$50
Printed by a service	about \$100

Three printers cost about \$2,400 and repay themselves after 34 units. Above roughly 400 backers, injection tooling replaces the fleet, and the crossover is 750 enclosures.

Crowd Supply distributes through Mouser, so the bill of materials was reconciled against the Mouser catalogue. Of the nine active modules in the modular prototype only one is a catalogue item, but the bare ICs reverse that: eight of the nine map to a verified in-catalogue Mouser part. Five categories stay off catalogue and are carved out as a specialty list: the arcade button, the key switches and keycaps, protected cells and the card, the IP5306 power IC, and the cheap display module.

What is open, and what we do not claim

Firmware and documentation are published under Apache 2.0 today, at github.com/Endothermal-Systems/CinderClock, so the openness claim is verifiable in one click before a backer pays. PCB design files and enclosure models publish at launch, after one more board revision. The bill of materials is public. Two bundled fonts remain under CC BY-SA with attribution, credited on a screen the owner can reach.

What we do not claim: battery runtime, which has not been measured and so is never quoted; room illumination, which Philips and Hatch do and this does not; sunrise accuracy above roughly 65 degrees of latitude; MP3 playback, since the device plays WAV only; and anything at all about sleep quality. No ship date is quoted until it is locked with Crowd Supply.

Full design study: endothermalsystems.com/work/cinder-clock.html · **27 page dossier:** endothermalsystems.com/docs/CinderClock-Dossier.pdf · **Firmware:** github.com/Endothermal-Systems/CinderClock