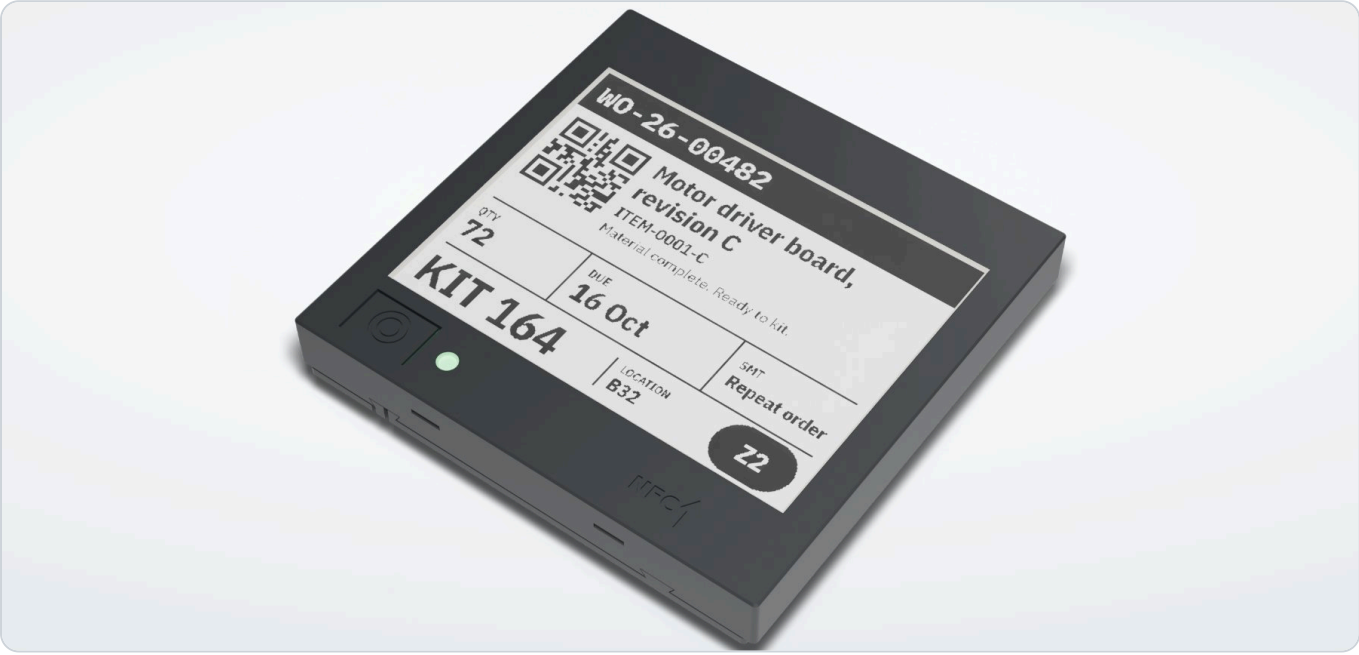
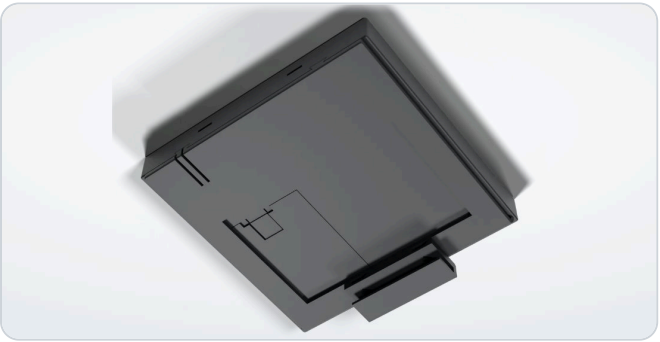
Tile 4.2″

E-paper label with an RGB LED and a button

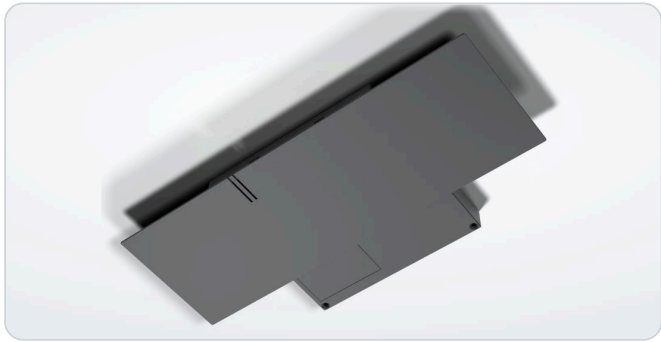
For kitting boxes, carts and stations. It replaces the A5 paper label, and your ERP keeps it up to date: order, item, quantity, due date and priority, in black, white, red and yellow.



Render from the design model, with invented example data on the panel. Nothing has been fabricated yet.



From behind, with the hook that clips over the box rim.



On the adapter for the card pocket of a small-load container.

The label follows the order
When planning moves an order up, the box label redraws with a red band. Nobody reprints anything.

The right box lights up
A Locate request is designed to make the LED blink within about 2 s; the button confirms the pick.

Three ways to mount
A hook over the box rim, an adapter for the 210 × 74 mm card pocket, or a plate with foam pads.

Cells change on the box
A screwdriver releases the label from its plate; the plate stays where it is.

In development. The design is captured in KiCad and build123d (revision A). No board has been fabricated and nothing has been tested on hardware; every value here is a design target or an estimate until it is measured on prototypes.

Specifications

Design in the design files · Target to be verified on prototypes · Estimate calculated, not measured · Planned not built yet

Display

Panel	4.2″ e-paper, 400 × 300 pixels	Design
Colours	Black, white, red and yellow	Design
Active area	84.8 × 63.6 mm	Design
Redraw	About 20 s for a full redraw	Estimate
New image shown	Within 40 s of a request	Target
Without power	Keeps showing the last image	Design

Light and button

LED	RGB behind a light pipe, 4 mm window; white and yellow mixed	Design
Reaction	Blinks within 2 s of a request	Target
Visibility	Colours told apart at 5 m in factory light; ±60°	Target
LED limits	Enforced in firmware: 20 % duty per pattern, 300 s per command; not yet verified on hardware	Design
Button	One, flexible key; short, long (≥ 1 s) and double press	Design

Radio and pairing

Radio	Bluetooth 5.4 Electronic Shelf Label profile (PAwR), sync every 1–2 s	Design
Module	nRF54L15 radio module with integrated antenna and its own radio approvals	Design
Security	ESL profile encryption with bonded keys; unencrypted commands are rejected	Design
Pairing	NFC tap with a phone, or QR code on the back	Design
Range	30 m line of sight in free air	Target

Power

Battery	Two CR2450 in parallel, 1,240 mAh nominal	Design
Battery life	5 years or more at 4 updates and 10 locate requests a day	Target
Power model	6.5–7.2 years with the LED at ≤ 10 % duty	Estimate
Battery door	Snap door on the back; a coin or flat screwdriver releases it. Coin-cell compliance of the latch still open	Design

Mechanical

Size	100 × 98 × 12 mm	Design
Weight	About 75 g with cells	Estimate
Mounting	Slides onto a mounting plate and latches; a screwdriver releases it	Design
Mounts	Rim hook, card-pocket adapter (210 × 74 mm insert) or plate with VHB pads	Design
Housing	Static-dissipative plastic. Prototypes printed in PETG-ESD; production in antistatic PC/ABS	Target

Environment

Temperature	0 to 40 °C, indoor	Target
Ingress	IP40, dry rooms	Target
ESD	IEC 61000-4-2 ±8 kV air; surface ≤ 100 V for use in an EPA	Target
Drop	1 m onto concrete, six faces	Target
Flammability	UL 94 V-0 or V-2 enclosure material	Target

Compliance

- **Not certified, not CE marked yet.** Before sale the label gets its own assessment under the Radio Equipment Directive: EN 300 328, EN 301 489-1/-17, EN 62368-1 and EN 62311.
- The radio module's approvals do not cover the finished label on their own.
- RoHS and REACH are design requirements. WEEE and battery take-back are arranged before the first sale.

Availability

- **Not for sale yet.** Pilot sets go to a few manufacturers first. Ask at service@newmatik.com.
- One version, with a four-colour panel.
- Works with the Merkora access point, bridge and control center.