

reTerminal E1001

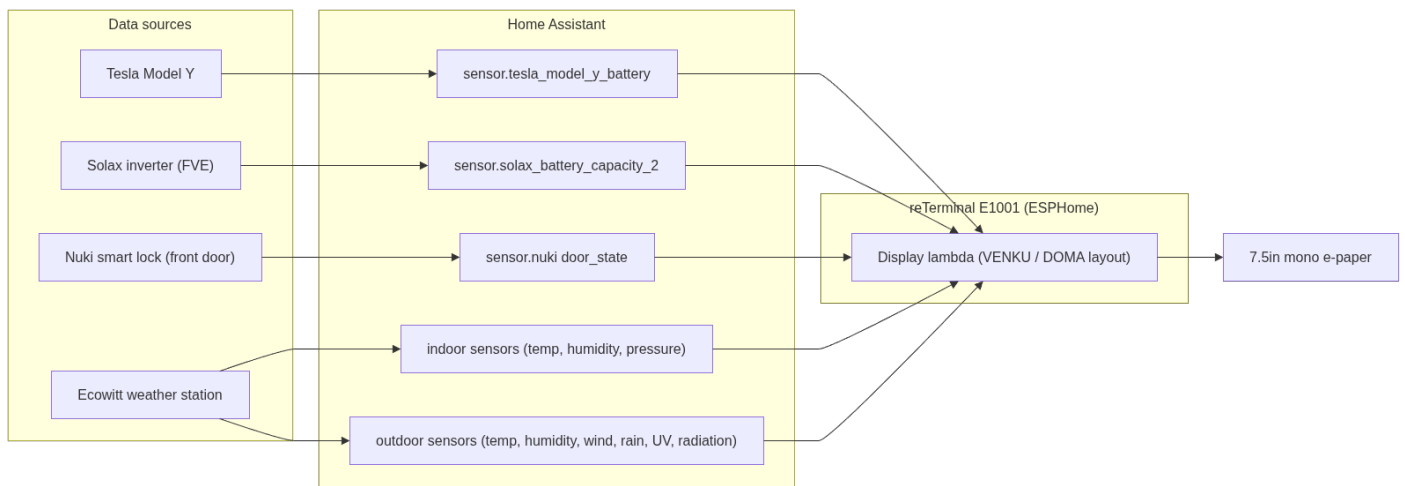
Overview

The reTerminal E1001 is a 7.5" monochrome e-paper display mounted in the **obývák (living room)**. It shows a weather-station dashboard driven by Home Assistant, combining outdoor conditions from an Ecowitt weather station, indoor climate, solar/battery status, and household state (front door, Tesla).

It is a companion to the **E1004** (color display in the kitchen) and shares the same visual language — matching icons, footer style, and refresh behavior.

Property	Value
Model	Seeed reTerminal E1001 (7.5" mono e-paper)
Resolution	800 × 480, landscape
Panel driver	<code>waveshare_epaper</code> , model <code>7.50inv2</code>
MCU	ESP32-S3
Power	Permanently powered (deep sleep disabled)
Location	Obývák (living room)
Firmware	ESPHome
Flashing	Wireless (OTA) — no USB cable needed

Data flow



What it displays

The layout is a two-column dashboard:

Left side – Outdoor (VENKU)

- Large current outdoor temperature (headline number)
- Feels-like (Pocitová), dew point (Rosa), UV index, solar radiation (Záření)
- Humidity (Vlhkost) as a large percentage
- Wind (VÍTR): speed, direction, gusts
- Rain (DĚŠŤ): current intensity and today's total

Right side – Indoor & Home (DOMA)

- Indoor temperature + humidity
- Air pressure (Tlak)
- Precipitation totals (week / month / year)
- **Door state (DVEŘE)** – main front door open/closed
- **Batteries** – FVE (home solar battery) and Tesla vehicle battery, with home and car icons

Footer

- **Meteostanice** – Ecowitt signal strength bars + station battery %
- **WiFi** – device WiFi signal strength bars
- **Aktualizace HH:MM** – time of last display refresh

Data sources (Home Assistant entities)

Display item	HA entity
Outdoor temp	<code>sensor.ecowitt_outdoor_temp_120fb</code>
Outdoor humidity	<code>sensor.ecowitt_outdoor_humidity_120fb</code>
Indoor temp	<code>sensor.ecowitt_temperature_indoor</code>
Indoor humidity	<code>sensor.ecowitt_humidity_humidityin</code>
Pressure	Ecowitt pressure sensor
Wind / rain / UV / radiation	Ecowitt <code>*_120fb</code> sensors
Door state	<code>sensor.nuki_sevcikovi_door_state</code>
FVE battery	<code>sensor.solax_battery_capacity_2</code>
Tesla battery	<code>sensor.tesla_model_y_battery</code>
Ecowitt signal	<code>sensor.ecowitt_signal_strength_120fb</code>

Refresh behaviour

To keep the e-paper calm (color/mono e-paper refresh is slow and visually noticeable), the display does **not** refresh constantly. It updates on:

- **Every 5 minutes** - scheduled interval
- **Outdoor temperature change** - debounced (8 s) so bursts collapse into one refresh
- **Door state change** - **instant** refresh (so an opened front door shows immediately)
- **Manual button** - `button.reterminal_e1001_e1001_refresh_display`, exposed in HA and on the Kiosk / Overview dashboards

A debounced redraw script prevents rapid-fire refreshes: any trigger schedules a single redraw a few seconds later rather than refreshing immediately (except the door, which is intentionally instant).

Manual refresh

A template button is exposed to Home Assistant:

- **Entity:** `button.reterminal_e1001_e1001_refresh_display`
- Available on the **Kiosk** dashboard ("Displej obyvak") and the **Overview** dashboard
- Pressing it forces an immediate full redraw

Hardware / pin notes

- **Deep sleep is disabled** - the device is permanently powered, so it stays awake and is always reachable for OTA flashing. (Originally, deep sleep made OTA unreliable because the device was only awake briefly; disabling it fixed wireless flashing.)
- **I²C sensor (SHT40):** `sda = GPIO19`, `scl = GPIO20`. ESPHome logs a harmless warning that these pins are shared with the USB-Serial-JTAG interface — this can be ignored (flashing works over WiFi and native USB, not those pins).
- The device's **own battery voltage** ("Zařízení") was removed from the footer — it is permanently powered, so that value was meaningless.

Icons (shared with E1004 for consistency)

Meaning	MDI icon
Temperature	<code>thermometer</code> (U+F050F)
Humidity	<code>water-percent</code> (U+F058E)
FVE / home	<code>home</code> (U+F02DC)
Tesla / car	<code>car-electric</code> (U+F0B6C)
Door	<code>door-open</code> / <code>door-closed</code>

Configuration reference

The full ESPHome YAML is stored in [\[link to your config location\]](#).



Note: the snippet below is sanitised. The real config also contains an API encryption key, an OTA password, and WiFi credentials — **these are secrets and are NOT included here**. See the corresponding entry in the password manager.

```
# — reTerminal E1001 (excerpt, secrets removed) —

esphome:
  name: reterminal-e1001

esp32:
  board: esp32-s3-devkitc-1
  framework:
    type: esp-idf

# Secrets removed – see password manager:
#   api: encryption key
#   ota: password
#   wifi: ssid / password

spi:
  clk_pin: GPIO7
  mosi_pin: GPIO9

i2c:
  sda: GPIO19      # shared with USB-JTAG (harmless warning)
  scl: GPIO20

# Debounced redraw – collapses bursts into a single refresh
script:
  - id: request_redraw
    mode: restart
    then:
      - delay: 8s
      - component.update: epaper_display

# Manual refresh button (exposed to Home Assistant)
button:
  - platform: template
    name: "E1001 Refresh Display"
```

```
on_press:
  then:
    - component.update: epaper_display

# 5-minute periodic refresh
interval:
  - interval: 5min
  then:
    - component.update: epaper_display

# Example trigger: instant refresh when the front door changes
text_sensor:
  - platform: homeassistant
    id: door_state
    entity_id: sensor.nuki_sevcikovi_door_state
    on_value:
      then:
        - component.update: epaper_display    # instant, not debounced
```

History / lessons learned

- **nan display bug:** early versions showed `nan` because the display drew before HA sensor data had loaded (a leftover from the deep-sleep wake timing). Fixed by disabling deep sleep + redrawing on sensor `on_value` + the periodic interval.
- **Excessive refreshing:** outdoor temperature changes frequently; without debouncing this caused constant, distracting refreshes. The debounce script fixed it.
- **Layout consistency:** the FVE/Tesla/door section and footer were reworked to match the E1004's icon set and footer style so the two displays feel like one system.

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