WRIST CONTROL FOR VALLOX · HOW THE AUTOMATION WORKS

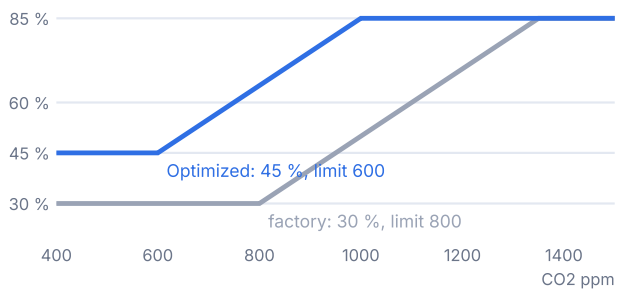
What the watch app does with the ventilation unit, and why

A Wear OS app for Vallox heat recovery units (MyVallox). This paper is for ventilation professionals: the logic, the numbers and the order in which the app changes the unit's settings. The numbers come from the app's code and from a year of history of a real apartment (2025-09-15 - 2026-09-14, 47,789 records every 10 min).

> **Core principle.** The app **does not drive the fans directly** and does not replace the unit's controller. It only chooses and writes the unit's parameters: the mode, the Away speed, the CO2 limit and the week schedule switch. The control itself always stays in the unit. If the watch switches off or loses the connection, the unit keeps running with the last settings.

1 How Vallox controls itself

Automatic mode starts from the **Away speed** and adds air when CO2 rises above the **CO2 limit**: measured at about **1 % of fan speed per 10 ppm** above the limit, up to the Boost speed. This is proportional control without integration, so CO2 settles **above** the limit.



Fan speed in Automatic versus CO2: grey - factory settings, blue - Optimized. Top line - Boost speed (85 %).

Two Vallox properties make the factory settings a compromise:

- **Away and Automatic share one speed** (20501). An empty home needs 30 %, Automatic about 45 %.
- **One CO2 limit for every mode** (20491). A low limit makes Home run the fan faster for no reason.

With the factory settings (Away 30 %, limit 800) mornings were measured at about 860-950 ppm CO2.

2 Modes and their recipes

The unit's panel switches only the mode. The app switches the mode and, in the same tap, writes the values that suit it.

MODE	WHEN	THE APP ALSO WRITES	LASTS
Optimized first in the list	Everyday mode	Automatic + the Away speed and CO2 limit chosen by Optimize (before optimizing - 45 %, 600 ppm) + automation (section 4)	Until you switch

At home	Steady fan	CO2 limit 800	Until you switch
Away	Nobody is home	Away 30 %, CO2 limit 800	Until you switch
Boost	Cooking, guests, sauna	Nothing	60 min, then back
Custom	Fireplace, special use	Nothing	The unit's timer, then back
Auto last in the list	Vallox factory behaviour	Factory values: Away 30 %, CO2 limit 800	Until you switch

In the unit, Optimized and Auto are the same Automatic mode; only the parameters differ. When the mode is switched on the panel, no recipe is applied - the app's mode window says so too.

3 Optimize - fitting the parameters to the home

1. **History.** The app reads the unit's history (at home directly from the unit, elsewhere from the Vallox cloud).
2. **Times of day.** How much CO2 builds up in the morning (6-9 h), day (10-17), evening (18-23) and night.
3. **Goal.** The user picks **Clean air** (CO2 median up to 620, 90 % of the time up to 720 ppm), **Balance** (700 / 800) or **Quiet** (850 / 1000).
4. **Choice.** Every pair is tried (Away in 5 % steps, limit in 100 ppm steps) and the **cheapest** one is taken - the lowest average fan speed that meets the goal at every time of day. If none does, the closest one. Safe range: Away 20-70 %, limit 500-1000 ppm.
5. **Forecast and apply.** The expected CO2 and average fan speed are shown; applying writes them to the unit and switches to Optimized.
6. **Check after 24 h** and **Undo** - restores the values from before Optimize.

4 Optimized automation

Active only while Optimized is on. After every reading (section 6) the app checks three rules. Two of them change the **base speed** (the Away speed), one only offers a Boost. CO2 control stays in the unit, so the air does not go stale between two readings: as soon as CO2 rises, the unit raises the fan by itself.

RULE	CONDITION	ACTION	ENDS WHEN	IN A YEAR OF HISTORY
Nobody home	CO2 ≤ 460 ppm for 90 min without a break, and no humidity jumps	Base 45 → **30 %**	CO2 rises 80 ppm above its lowest value, or humidity jumps	89 times (~1.7 a week), median 1.7 h
Dry air	Outdoors below +5 °C, indoor humidity < 38 % in two readings in a row, CO2 at least 100 ppm below the limit	Base → **35 %**	Humidity rises above 43 %	6 times in a winter, ~67 h in total
Boost offer	Humidity rises ≥ 8 % within ~30 min	Notification "Shower?" or "Cooking?", tap - Boost	At most once an hour	~220 a year (~4 a week)

> **Why the base, not the mode.** "Nobody home" does not switch to Away mode - it only lowers the speed Automatic starts from. When people come back, there is no need to wait for the app: the unit's own CO2 control adds air. When the condition ends, the app restores the Optimized base.

Shower or kitchen is told apart roughly: if the extract air temperature rises by at least 1 °C together with the humidity - "Cooking?", otherwise "Shower?". Hence the question mark.

Temporary modes. While Boost or Custom runs, the automation changes nothing and waits until the unit is back in Optimized.

5 Week schedule

If the unit's week schedule is on (register 4615), it would switch the mode at set times and Optimized would quietly end. So the first time Optimized is chosen, the app asks **once**: "Pause the schedule while Optimized is on?" With "Pause", the schedule is switched off (its events are kept), and switched back on when another permanent mode is chosen. The app restores only what it paused itself. Under Optimized a line shows "Schedule paused" or "Schedule on".

6 How often the app looks

"AUTO" SETTING (DEFAULT)	READING INTERVAL
Hours when this home is usually busy	every 20 min
Ordinary hours	every 30 min

Night 1-5 h	every 60 min
A change just seen (humidity +3 % or CO2 +100 ppm since the previous reading)	every 15 min for an hour

The "busy hours" are worked out for each unit from its own history; until there is enough data - 6-8 and 19-22 h. A fixed 20 min, 30 min or 1 h interval, or "Only in app" (then nothing runs in the background - no notifications and no automation), can also be chosen. At night the Android watch may batch the readings.

7 Notifications

WHAT	WHEN	TAP OPENS
CO2	Above 800 ppm - rising, above 1200 ppm - high	Mode window (Boost)
Humidity	Below 25 % or above 60 %	Mode window (Boost)
Indoor temperature	Below 18 °C or above 27 °C	The app
Filters	Once, when the change is due	The app
Unit clock	When the unit's time drifts	Settings
Boost offer	Section 4	Starts Boost

Each notification comes once, when the state changes, and does not repeat while it lasts.

8 Limits and safety

- On its own the app changes only four things: the mode, the Away speed (20501), the CO2 limit (20491) and the week schedule switch (4615). When the user asks, it also writes the filter change date and corrects the unit's clock. It never changes the Home and Boost speeds, humidity control, the heater, bypass or Custom settings.
- Optimize writes only within the safe range (Away 20-70 %, limit 500-1000 ppm); Undo restores the previous values.
- Without a connection the app changes nothing; the unit runs with the last parameters.
- At home the watch talks to the unit directly over Wi-Fi, elsewhere through the MyVallox cloud with the owner's account.

9 Planned

- **Per-unit thresholds.** The "empty home" CO2 level and the humidity jump limit worked out for each unit from its history (today - the numbers of one apartment). This needs data from more users.
- **Summer cooling.** More air when the night outside is cooler than inside; less on a hot day.
- **Weather forecast** - once there is summer experience.