CORIOLIS · LED WALL DISPLAY

User's **Manual**

Wall clock, ambient art, guided fitness and games on a 128 × 128 pixel LED canvas.



Please read before first use
and keep for future reference.

Edition 1.0
October 2026

WELCOME

Hello, Coriolis.

Coriolis is a wall clock first: calm, legible from across the room, and on all day without demanding attention. Ask more of it and it turns into a yoga instructor, a workout timer, a focus timer, a fireplace or an arcade.

1	Safety and care	3
2	Getting started	4
3	The remote control	5
4	Everyday use	7
5	The scene menu	8
6	Clocks and information	9
7	Guided fitness	10
8	Games	14
9	Ambient art	15
10	Settings	16
11	Sound	18
12	Troubleshooting	19
13	Specifications	20

i Coriolis is a self-built device. Some features depend on optional parts: sound needs the audio module and its memory card, and the Weather scene needs the optional weather module (it waits patiently without one).

CHAPTER 1

Safety and care

! **Mains voltage inside.** The power supply inside the frame is connected to 230 V. Never open the back, touch the wiring or work on the electronics while the power cord is plugged in. Have any mains wiring checked by a qualified person.

- Use only the supplied mains lead and the fused, switched inlet on the back. Replace the fuse only with the same type (T3.15 A slow-blow).
- Keep the ventilation slots at the top and bottom of the frame clear. Do not cover the display or hang it directly above a radiator or fireplace.
- For indoor use in dry rooms only. Keep away from water, steam and direct sunlight.
- The display weighs about 6 kg. Hang it on a wall cleat rated for at least 15 kg, screwed into a stud or with suitable wall plugs.
- LED panels can be very bright. Avoid staring into the display at full brightness at close range; Night mode dims it automatically.
- Keep the remote's coin battery away from children. If swallowed, seek medical help immediately.

Cleaning

Switch off at the inlet. Wipe the front with a dry or barely damp microfibre cloth. Do not use solvents, glass cleaner or abrasive pads on the acrylic front.

Disposal

Electronic equipment and batteries must not go in household waste. Take them to an electronics collection point (in Spain, a *punto limpio*).

CHAPTER 2

Getting started

1. **Hang it up.** Mount the display on its wall cleat with the power inlet at the bottom. Leave a few centimetres free above and below for airflow.
2. **Plug in and switch on** with the switch next to the power inlet on the back.
3. **Watch it wake up.** A swirl of light spirals into the Coriolis logo, then the clock appears. Press any button to skip the intro.
4. **Check the time.** The internal clock keeps time with its own battery, even when unplugged. If the time is wrong, hold `MENU` on the remote to open Settings and adjust it under **Clock** (page 16).



The intro — about two seconds



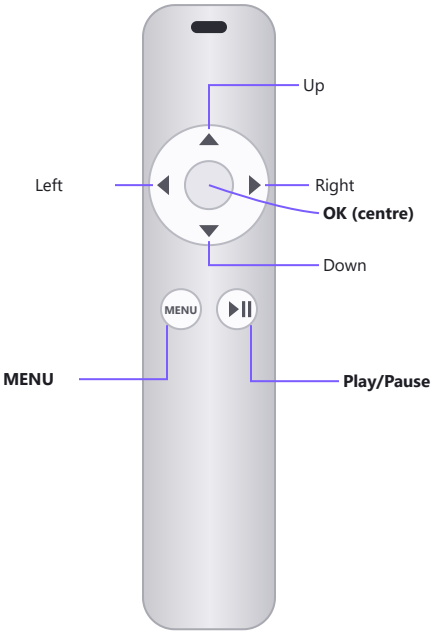
The clock — the home screen

✓ Coriolis switches between winter and summer time by itself on the last Sundays of March and October (European rule). You never have to change the clock for daylight saving.

CHAPTER 3

The remote control

Coriolis works with the slim aluminium Apple Remote. Point it at the display; the receiver sits behind the frame's edge.



Arrows

Left / Right — previous / next scene.
Up / Down — change the colour theme.
Inside menus, games and workouts the arrows move, steer and adjust instead.

OK

Start, confirm, pause.

MENU

Tap — open the scene menu (tap again to close).
Hold 1 s — open Settings.

Play/Pause

Tap — same as OK (pause a workout from the mat).
Hold 1 s — go home to the clock.

Other remotes and buttons

Coriolis also understands the common 17-button infrared remote (arrows, OK, number keys, `*` and `#`). It adds a few shortcuts:

BUTTON	ACTION
Arrows, OK	As on the Apple Remote
*	Scene menu (tap) · Settings (hold 1 s)
#	Back: close a menu, leave a game or workout, or go home to the clock
0	Clock overlay: off → digital → analog → words
1 – 9	Jump straight to a favourite:

1 Clock
2 Analog clock
3 Word clock
4 Weather
5 Calendar
6 Yoga
7 Exercise
8 Breathe
9 Fireplace

Holding a button

In menus, holding an arrow scrolls quickly. In games, holding an arrow keeps steering (for example, keeps the Pong paddle moving).

Back

The Apple Remote has no separate Back button. Use `MENU` to close menus, and **hold Play/Pause** to leave whatever you are doing and return to the clock.

> *i* Another remote not working? Its button codes can be added to the firmware. The display reports every code it receives over its USB port (see the Build Guide).

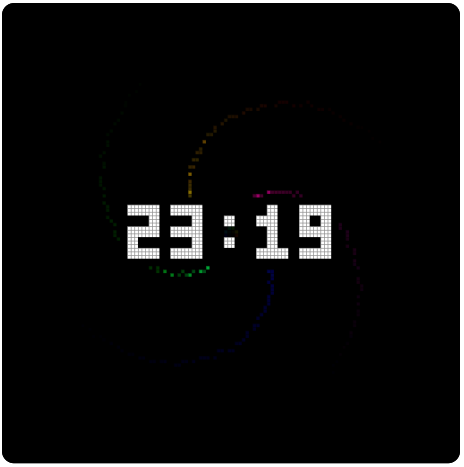
CHAPTER 4

Everyday use

Coriolis shows one **scene** at a time: a clock, an animation, a game or a guided session. The clock is home; you can always get back to it by holding Play/Pause.



Clock — time, date and a seconds bar



Clock overlay on top of an animation

Browse scenes

Press **Right** or **Left** to slide to the next or previous scene. Its name appears briefly at the bottom of the display.

Colour themes

Press **Up** or **Down** on a clock or animation to change its colour theme: Rainbow, Heat, Ocean, Forest, Ice, Gray and Matrix. Guides and games keep their own colours so they stay easy to read.

Clock overlay

Keep the time visible over any animation: choose digital, analog or word style, position and size in **Settings** → **Overlay**, or press `0` on a 17-button remote.

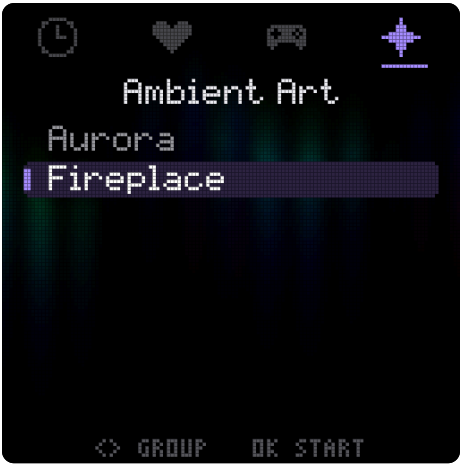
Autoplay

Turn on **Settings** → **General** → **Auto** to cycle through clocks and animations automatically (every 30 seconds by default). Games and workouts are never interrupted.

CHAPTER 5

The scene menu

Tap MENU to jump straight to any scene. The current scene pauses and dims in the background.



Scene menu — Ambient Art tab

Four tabs along the top:

- **Clocks & Info**
- **Fitness**
- **Games**
- **Ambient Art**

Left / Right	switch tab
Up / Down	choose a scene
OK	start it
MENU	close, no change

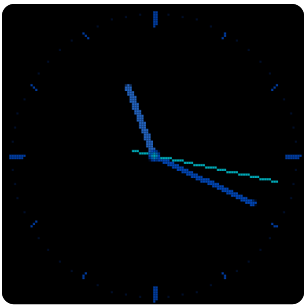
The menu opens on the tab and entry of the scene you are watching, so a quick MENU → **Down** → OK moves to its neighbour.

CHAPTER 6

Clocks and information



Digital
rounded numerals, date



Analog
hands and hour marks



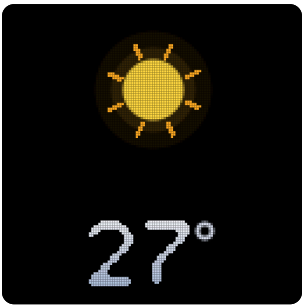
Word clock
“nine thirty-seven”



Bouncing
a drifting screensaver clock



Calendar
days to the next event



Weather
animated sky and temperature

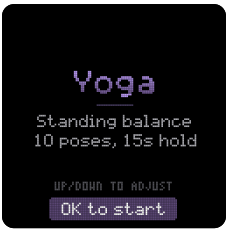
Calendar counts down to Barcelona-area public holidays (and fireworks on the day itself). **Weather** needs the optional weather module; without it, the scene shows that it is waiting for data.

CHAPTER 7

Guided fitness

Four coaches made to be read from the floor: a big clear figure, large timers, colour cues and spoken guidance.

Open them from the **Fitness** tab: **Yoga**, **Exercise**, **Breathe** and **Focus**. Every session runs the same way:



1 · Choose
Up/Down picks the routine



2 · Get ready
3-2-1 with ticks



3 · Follow
the figure leads



4 · Done
summary and time

During a session

OK or Play/Pause	Pause / resume (take a water break)
Right	Skip to the next pose or move
Left	Go back and repeat the previous one
Up / Down	Longer / shorter holds (yoga) · more / fewer reps (exercise)
Hold Play/Pause	End the session (# on a 17-button remote returns to the setup card)

Yoga

Poses are held for 15 seconds by default (5 – 60 s). One-sided poses are done on the **right** and then the **left**: a tag shows the side, the figure mirrors itself and the coach says “switch sides”. For the last seconds of each pose a **Next** badge shows what comes next, with soft ticks; a chime marks the halfway point of longer holds.

Morning wake-up · 8 poses
Child's pose → Cow → Cat → Down dog → Low lunge (R/L) → Forward fold → Mountain

Sun salutation · 9 poses
Mountain → Forward fold → Plank → Cobra → Down dog → Warrior 1 (R/L) → Forward fold → Mountain

Standing balance · 10 poses
Chair → Warrior 1 (R/L) → Warrior 2 (R/L) → Triangle (R/L) → Star → Tree (R/L)

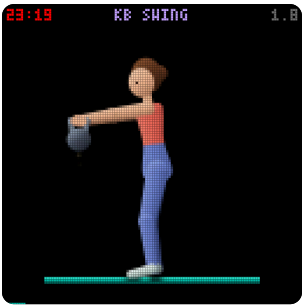
Hips & back · 10 poses
Child's pose → Cat → Cow → Down dog → Low lunge (R/L) → Pigeon (R/L) → Bridge → Savasana

Bedtime · 8 poses
Child's pose → Cat → Cow → Pigeon (R/L) → Bridge → Boat → Savasana

Choose the figure (female/male) and default hold time in Settings → Yoga. Listen to your body, and skip any pose that doesn't feel right.

Exercise

The figure demonstrates each rep while the coach counts out loud; a ring pulses with every rep. Between moves you get a short rest with a live preview of the next move.



Reps — kettlebell swing



Rest — next move preview



Tabata — green means go

PROGRAM	MOVES
Bodyweight	Squats, push-ups, lunges (R/L), sit-ups, jumping jacks, glute bridges
Kettlebell	Swings, goblet squats, rows (R/L), overhead press
Tabata HIIT	8 rounds of 20 s work / 10 s rest: high knees, mountain climbers, squats, jumping jacks. A **green** frame means work, **amber** means rest.
Core	Sit-ups, glute bridges, push-ups, 30 s plank hold, mountain climbers

Reps per set (default 8) and seconds per rep (default 3) are in Settings → Exercise. Rests are 10 s between moves and 5 s between sides.

Breathe and Focus





Breathe

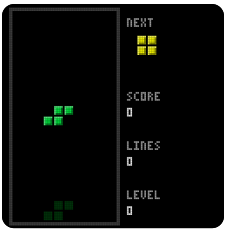
Breathe in as the circle grows, hold while it stays, breathe out as it shrinks. **Box breathing** uses four equal phases; **4-7-8** has a long hold and a longer exhale to help you wind down. Up/Down sets the pace (3 – 8 s per in-breath); a soft tone marks each phase.

Focus

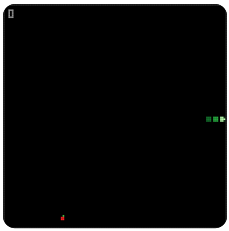
A Pomodoro timer for the wall. Work for 25 minutes (Up/Down: 5 – 60), then take a 5-minute break; every fourth break is 15 minutes long. The ring drains as time runs, and a dot appears for each finished session. OK pauses.

CHAPTER 8

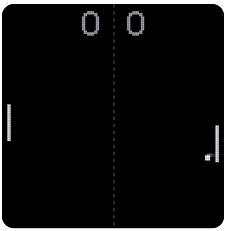
Games



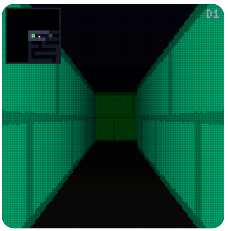
Tetris



Snake



Pong



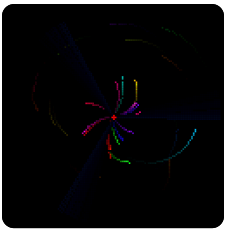
Labyrinth

GAME	CONTROLS
Tetris	Left/Right move · Up rotate · Down drop faster · OK drop. A shadow shows where the piece lands. Best score is kept.
Snake	Arrows steer. Walls and your own tail end the game; OK plays again. Best length is kept.
Pong	The computer plays both sides until you take over the left paddle with Up/Down. OK opens pause/restart/exit. Difficulty in Settings → Pong.
Labyrinth	A 3D maze. Up/Down on the title card chooses maze size; in the maze Up/Down walk, Left/Right turn, and OK opens pause/new-maze/exit. Find the glowing pillar to go deeper. Left alone, it explores by itself.

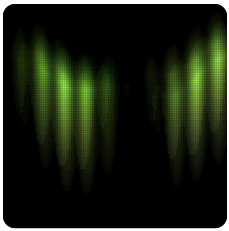
Each game starts from a title card: press `OK` to play. Use `OK` (Pause/Exit in Pong and Labyrinth), `#`, `MENU` or hold Play/Pause to leave a game; the arrow keys belong to the game while you play.

CHAPTER 9

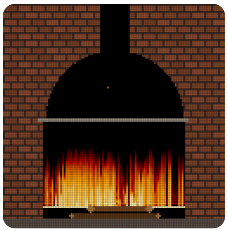
Ambient art



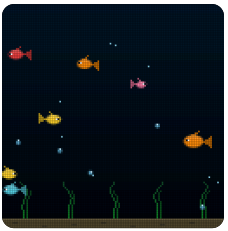
Coriolis



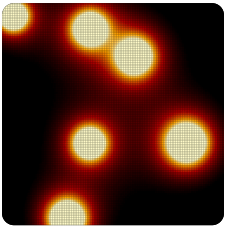
Aurora



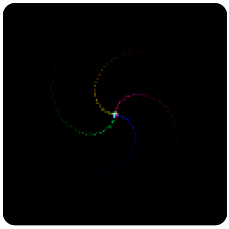
Fireplace



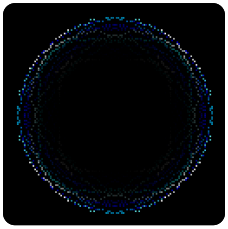
Aquarium



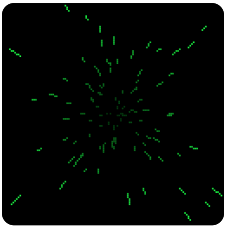
Lava lamp



Spirograph



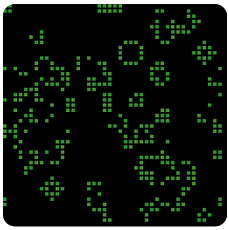
Mandala



Starfield



Digital rain

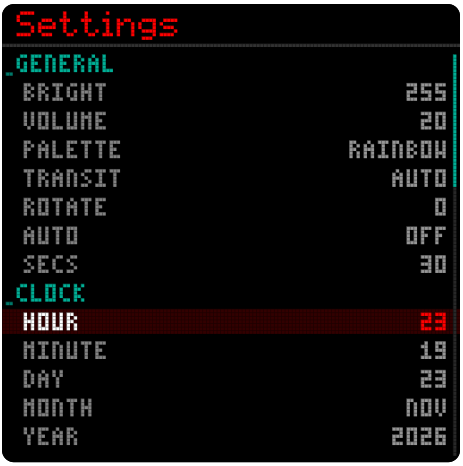


Game of life

Most animations follow the colour theme (Up/Down). The **Fireplace** crackles softly when sound is on; turn its sparks off in Settings → Fire. The **GIF player** is reserved for a future update with animations on a memory card.

CHAPTER 10

Settings



Settings, opened from the clock

Hold MENU to open Settings. It opens at the section for the scene you were watching.

Up / Down	choose a setting
Left / Right	change it
MENU	close and save

Changes take effect immediately and are remembered when you close the menu, even through power cuts.

GENERAL	WHAT IT DOES	DEFAULT
Bright	Display brightness	255 (max)
Volume	Sound volume, 0 = mute	20 of 30
Palette	Colour theme	Rainbow
Transit	Scene changes: Auto, Slide, Fade or Cut	Auto
Rotate	Turn the picture 90° at a time	0
Auto / Secs	Autoplay and its interval	Off / 30 s

CLOCK	WHAT IT DOES	DEFAULT
Hour, Minute	Set the time (seconds restart at zero)	—
Day, Month, Year	Set the date	—
Zone	Time zone as an offset from UTC	UTC+1 (Spain)
Summer	Automatic European summer time	EU auto
NIGHT		
Auto	Dim the display automatically at night	On
Start / End	Night hours	23:00 – 07:00
Bright	Night brightness (lower = darker)	16
OVERLAY		
Clock	Clock on top of animations: Off, Digi, Anlg, Word	Off
Pos / Size	Position on a 3 × 3 grid · small, medium, large	Middle / Med
SCENES		
Yoga	Flow · figure (fem/male) · hold seconds	Wake · Fem · 15
Exercise	Program · reps per set · seconds per rep	Body · 8 · 3
Breathe	Style (Box / 4-7-8) · in-breath seconds	Box · 4
Pong / Snake	Difficulty · speed	Normal
Fire	Sparks on/off	On

✓ Night mode only ever dims: if your daytime brightness is already lower than the night level, nothing changes.

CHAPTER 11

Sound

The built-in speaker plays chimes, countdown ticks, the spoken coach (pose names, “switch sides”, rep counts), the fireplace crackle and game sounds. Everything plays from a memory card inside the audio module; Coriolis never connects to the internet.

Volume

Settings → **General** → **Volume**, from 0 (mute) to 30.

The sound card

The audio module has its own microSD card (FAT32, up to 32 GB) with three folders at the top level:

`01`	Chimes, bells, ticks and game sounds
`02`	Spoken guidance: pose and move names, numbers, prompts
`ADVERT`	Copies of the chimes, played over the fireplace crackle

To create or replace it, run `python tools/generate_voice_pack.py` on a computer and copy the three folders to the card's root. You can choose another voice with `--voice`. Do not rename the numbered files.

CHAPTER 12

Troubleshooting

PROBLEM	TRY THIS
Nothing on the display	Check the mains lead and the switch on the back. Check the fuse in the inlet.
Very dim display	It may be night-time: see Settings → Night. Otherwise raise Settings → General → Bright.
Time is wrong	Settings → Clock: check Zone (UTC+1 for Spain) and Summer (EU auto), then the hour.
Time resets after unplugging	Replace the clock battery (CR2032) on the controller board.
Remote doesn't respond	Replace its coin battery and point it at the frame edge with the receiver. Bright sunlight on the receiver can blind it.
Arrows don't change scene	You are in a game or workout, which uses the arrows. Tap MENU, or hold Play/Pause to go home.
Stuck in a menu	Tap MENU to close it; hold Play/Pause to go home.
No sound	Check Volume in Settings; check the sound card is inserted and has the `01`, `02` and `ADVERT` folders.
Picture upside down or sideways	Settings → General → Rotate.
Weather says it's waiting	The optional weather module isn't fitted or has no connection yet.
A bright pixel or dark line	Switch off for 10 seconds and on again. If it stays, a panel or its cable needs attention (see the Build Guide).

CHAPTER 13

Specifications

Display	128 × 128 RGB LEDs (16,384 pixels), four 64 × 64 panels, 24-bit colour, ~120 Hz refresh
Size	Image 512 × 512 mm with 4 mm pixels (P4), or 384 × 384 mm with 3 mm pixels (P3). Frame about 550 × 550 × 80 mm (P4)
Weight	About 5–6 kg (P4)
Controller	Teensy 4.1 (600 MHz ARM Cortex-M7) with SmartLED Shield V5
Clock	Battery-backed real-time clock (CR2032); automatic EU summer time
Control	Infrared remote (Apple Remote or 17-button NEC remote); USB for servicing
Sound	DFPlayer Mini, 3 W speaker, offline clips from microSD
Power	230 V AC 50 Hz in; internal 5 V 40 A supply. Typical 10–30 W showing the clock; up to ~100 W on full white
Network	None. Coriolis works fully offline.
Content	25 scenes: 6 clocks/info · 4 fitness coaches (5 yoga flows, 4 exercise programs) · 4 games · 11 ambient animations

QUICK REFERENCE

At a glance

WANT TO…	DO THIS
Change scene	Left / Right
Pick any scene	Tap MENU · Left/Right tab · Up/Down · OK
Change colours	Up / Down on a clock or animation
Open Settings	Hold MENU for 1 second
Close a menu	Tap MENU
Go home to the clock	Hold Play/Pause for 1 second
Start a workout	Fitness tab · Up/Down choose routine · OK
Pause a workout	OK or Play/Pause
Skip / repeat a pose	Right / Left
Set the time	Hold MENU · Clock section
Dim at night	Settings · Night (on by default, 23:00–07:00)
Mute	Settings · General · Volume to 0

Coriolis — successor to Aurora and Borealis. Designed and built in Badalona.