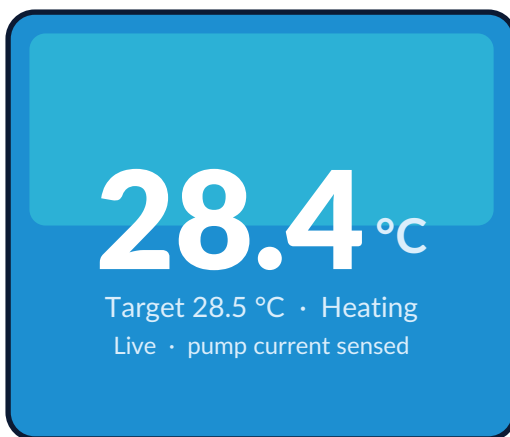


PRECISION POOL CONTROL

SI-Pool Smart Pool Controller

A locally-controlled pool automation unit with pump-current sensing, scheduling, dry-run protection and a self-hosted web app – plus automatic Home Assistant discovery for sites that already run one. Three switched outputs (pump, light, heat-pump enable), a stainless-steel temperature probe in a thermowell, and an on-board AC current sensor that turns the pump itself into a filter-health and dry-run sensor.



LIVE TEMP	Pool °C with target setpoint
OUTPUTS	Pump · Light · Heat-pump enable
PUMP MONITOR	AC current sense → derived W & kWh
PROTECTION	Dry-run trip + filter-health monitor

Key Capabilities

Switched outputs	Three heavy-duty 20 A relays – pump, pool light and heat-pump enable. Heat-pump output is read-only on the dashboard, driven by the on-device thermostat / interlock.
Pump current sensing	On-board AC current transformer on the pump circuit; live wattage and lifetime energy are derived at mains voltage. The same readings drive filter health and dry-run protection.
Filter health from pump draw	Centrifugal-pump physics: a clogged filter pulls less wattage. Installer sets <i>Clean</i> (post-backwash) and <i>Dirty</i> (alert floor) thresholds in the web UI.
Dry-run protection	Trips when pump is ON but draw stays below threshold for the grace period – protecting the mechanical seal. Bypass-able for priming.
Scheduling & thermostat	Two daily run-windows plus <i>Auto</i> · <i>Run-now</i> · <i>Off</i> override. Setpoint with hysteresis and pump-running interlock for the heat pump.
Local web app + remote	Self-hosted dashboard at http://si-pool.local on the LAN. Managed encrypted remote-access tunnel included for the first year – no port-forwarding, no third-party tunnel.
Home Assistant native	Automatic MQTT discovery – every entity appears in HA without YAML the moment a broker is configured.
Graceful failure	All control logic runs on the device. Loss of Wi-Fi, MQTT or remote tunnel does not stop the pool.

Exposed Entities (Home Assistant)

Entity	Type	Unit	Purpose
Pool Temperature	Sensor	°C	Live water temperature from the thermowell probe
Target Temperature	Number	°C	Setpoint, adjustable in 0.5 °C steps
Pump	Switch + sensor	—	Commanded state and observed state (from current sensor)
Pool Light	Switch	—	Pool light relay
Heat-pump Enable	Switch (read-only)	—	Driven by on-device thermostat / interlock
Pump Mode	Select	—	Auto schedule · Run now · Off
Schedule Window 1 / 2	Time range	h:m	Two daily run-windows
Pump Current	Sensor	A	Live AC current on the pump circuit
Pump Power (derived)	Sensor	W	Wattage derived from current at mains voltage
Lifetime Energy	Sensor	kWh	Cumulative pump consumption (derived)
Filter Status	Sensor (text)	—	Clean · Dirty · Paused (pump idle)
Dry-run Trip	Binary sensor	—	Latched on under-current trip; resettable from UI

Entities are auto-discovered over MQTT and follow Home Assistant conventions. All control logic runs on-device — entities reflect state but the device does not depend on Home Assistant.

Standalone Web App

Every SI-Pool ships with a self-hosted dashboard reachable at <http://si-pool.local> on the LAN. The same UI is also exposed over a managed encrypted tunnel — **included for the first year** — so the owner can see and control the pool from anywhere without setting up port-forwarding, dynamic DNS or a third-party tunnel themselves. Home Assistant remains optional.

The UI gives full operational control: live temperature and target setpoint; pump **Auto / Run-now / Off** with two scheduled run-windows; pool light toggle; heat-pump enable; live power telemetry; filter-health readout with installer-tunable thresholds; and dry-run protection with trip threshold, grace period and manual reset.

Technical Specifications

Controller	Wi-Fi MCU running on-device firmware (details withheld for IP)
Connectivity	Wi-Fi 2.4 GHz (b/g/n) · MQTT auto-discovery for Home Assistant
Local interface	Self-hosted web app on http://si-pool.local – runs on the device, no cloud account required
Remote access	Managed encrypted tunnel – first 12 months included; no port-forwarding required
Switched outputs	3 × SPST relays, 20 A @ 250 V AC resistive (pump · light · heat-pump enable)
Pump monitor	On-board AC current sensor; wattage and lifetime kWh derived at mains voltage
Temperature sensor	Waterproof digital probe in a 316 stainless-steel thermowell, ≈ 3 m lead, ±0.5 °C, 0–80 °C water
Setpoint & protection	15–35 °C setpoint with hysteresis. Configurable dry-run trip (W, grace period, manual reset) and filter Clean / Dirty thresholds (W).
Power supply	220–240 V AC mains, internal regulated DC; ≈ 2–3 W idle
Enclosure	IP65 wall-mount ABS with sealed cable glands; ≈ 220 × 170 × 90 mm
Operating temperature	0 °C to +55 °C electronics; 0 °C to +80 °C probe
Compliance	CE / RoHS components; assembled in South Africa
Warranty	12-month limited warranty against manufacturing defects

In the Box

- IP65 SI-Pool controller enclosure (pre-wired and tested)
- 316 stainless-steel thermowell with waterproof digital temperature probe
- On-board AC current transformer for pump-circuit monitoring
- Sealed cable glands for pump, light and heat-pump output cables
- Quick-start installation guide – local web app, MQTT and remote-access setup

Typical Applications

Residential	Single-pump fibreglass / concrete pools with optional heat pump and pool light.
Estate / cluster	Common-area pools where the manager wants remote visibility without running HA.
Holiday lets	Owner-managed pools needing scheduled filtration and remote heater control.
Solar-heated	Pools paired with a heat pump or solar-thermal loop, scheduled around solar hours.

Ordering & lead times: standard units ship within 3–5 working days from Johannesburg. OEM branding, alternative thermowell threads and bundled installation are available on request – contact info@si-sa.co.za.