EINSHTEIN HVAC SERVICE TOOL · TECHNICAL OVERVIEW

coolio 1000

A sensorless, AI-powered HVAC service tool that reads the system's own comms bus and predicts failures 7–14 days ahead. From Q1 2027, the same device monitors the site's water heater too.

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For HVAC service providers, manufacturers and wholesalers
Residential & small commercial

7–14 days
advance warning of developing faults

42%
fewer emergency calls in the 50-unit field trial

~40%
of flagged issues resolved remotely, no truck roll

30 min
install: no sensors, no new wiring, no refrigerant access

How it works

01 **HVAC & water heaters**
Units talk over their existing comms bus; water heaters added Q1 2027

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02 **coolio 1000**
Reads the bus by sniffing or IDU emulation; edge ML flags faults

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03 **Connectivity**
Wi-Fi, LTE, LoRaWAN or satellite; works offline too

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04 **einshtein cloud**
AI analysis, remote connect to any unit, diagnostic reports

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05 **Triage & action**
Dispatcher reviews, customer is notified, tech arrives with parts

Technical specifications

Connection	Taps the existing indoor–outdoor communication line; no added sensors or equipment changes
Modes	Passive protocol sniffing (read-only) · **IDU emulation** (active queries to the outdoor unit)
Protocols	`RS-485/TTL · Modbus · BACnet · CAN · LNS · OEM proprietary`
Brands	Daikin, Carrier, Trane, Lennox, Rheem, Mitsubishi Electric, Gree, Midea, LG, Hisense, TCL and others
Systems	Residential ductless and central split, light commercial packaged · thermostat agnostic
Water heaters `Q1 2027`	OTA update, new and installed units · storage, tankless, heat pump, solar, condensing, point-of-use, indirect · control-board tap or add-on sensor kit
Processing	On-device ML; offline-first fault detection
Fault detection	Equipment failures 7–14 days ahead; **drain and condensate faults** and **water heater leak risk** (Q1 2027) before they cause water damage
Connectivity	Wi-Fi · Cellular 3G/4G/LTE · LoRaWAN · Globalstar satellite
Enclosure · power	IP67 rated; outdoor-unit mount; line powered from the ODU or IDU
Installation	~30 min · one per system · auto-detects the bus
AI models	Trained on 50,000+ hours of HVAC data and 500+ hours of technician input
Dimensions	6.7 × 5.0 × 3.0 in (170 × 127 × 76 mm)

The einshtein ecosystem

coolio 1000 edge module
Protocol-level diagnostics at the outdoor unit

einshtein cloud platform
Remote diagnostics, alarms and fleet health view

Water heater monitoring (Q1 2027)
Same device; leak risk scores and automatic water shutoff

Customer engagement
Automated SMS, email and voice with options

Utility connection (Q1 2027)
OpenADR demand response, HVAC and hot water

Submetering (Q1 2027)
Water, electricity and gas submeter support

AI audio fault detection
Acoustic signatures as a second diagnostic signal

FieldAx integration
Collaboration, alarms, remote troubleshooting

Open edge AI platform
Models open to third-party devices and developers

ROI from a single avoided site visit or truck roll

Service provider impact · 35–50% fewer truck rolls · +25% first-time fix rate · ~60% faster resolution

Field trial: 50 residential units with two regional HVAC contractors. From Q1 2027: monitored maintenance plans covering HVAC and hot water.

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COOLIO 1000 HVAC SERVICE TOOL · SYSTEM ECOSYSTEM

From the comms bus to the service van

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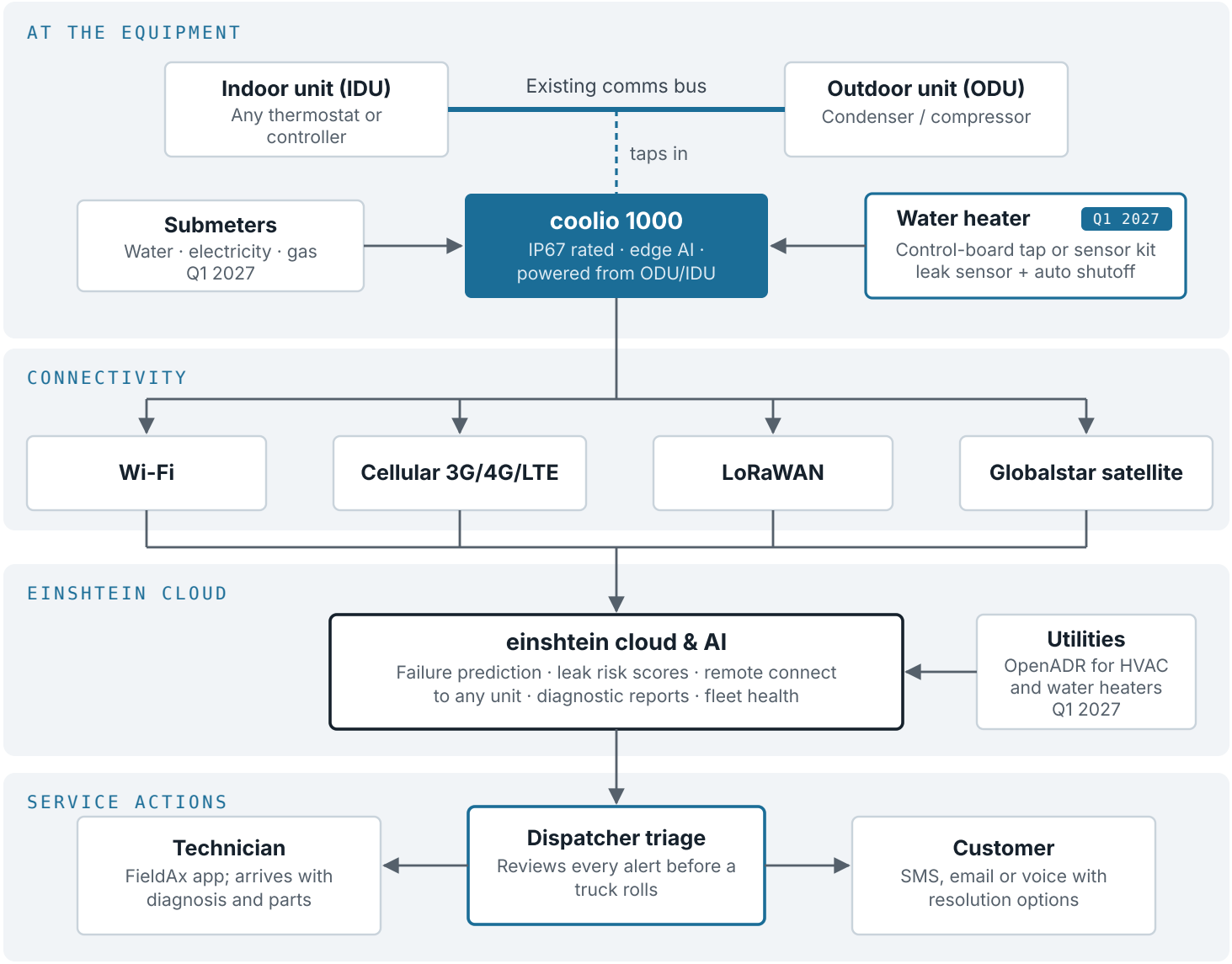

Two operating modes

MODE A · PASSIVE

Protocol sniffing

coolio 1000 listens to the traffic already flowing between indoor and outdoor units and never transmits, so system behaviour is unchanged. It captures operating states, fault codes and performance data as the units exchange them.

MODE B · ACTIVE

IDU emulation

coolio 1000 presents itself on the bus as an indoor unit, so it can query the outdoor unit directly rather than wait for traffic. The result is deeper, on-demand data for enhanced monitoring and remote diagnosis.

Water heater monitoring

Q1 2027 · OTA

ELECTRONIC CONTROLS

Control-board tap

Heat pump, tankless, condensing and most solar units are read directly, the same way as HVAC, with no change to how the heater runs: temperatures, flow, ignition and fault codes; Modbus or BACnet on commercial models.

MECHANICAL TANKS

Add-on sensor kit

Conventional tanks get compact sensors: current clamp or flue probe, pipe temperatures, leak sensor with automatic shutoff, relief valve and acoustic sediment sensing. Each tank gets a leak risk score for planned replacement.