

Weft Core

Monitoring and control gateway for professionally built campervans and expedition vehicles

Weft Core connects to the vehicle's electrical system, sensors and devices over Bluetooth, Zigbee, CAN and the Truma/Webasto heater bus, keeps a cellular link of its own for remote telemetry and diagnostics, and switches external loads such as the router, cameras and Starlink through standard automotive relays. Core is installed by the builder and comes with three years of Weft Connect included.

Key features

- Linux gateway on a Raspberry Pi Compute Module 5, fanless, with on-board storage and optional NVMe for camera recording
- Three dedicated 2.4 GHz radios: Bluetooth for device connections and the owner app, a second Bluetooth radio for continuous sensor telemetry, and a Zigbee coordinator
- Independent global LTE Cat 1 bis connection with embedded eSIM, used only for Weft telemetry, diagnostics and remote commands
- CAN-FD channel for house-bus integration (Victron VE.Can, CI-BUS, RV-C) and a heater-bus port for direct Truma (CP Plus TIN) and Webasto (W-Bus) control
- GNSS positioning, 6-axis motion sensing and barometric altitude
- Four protected high-side outputs for external 12/24 V relays, with fail-safe wiring for critical loads
- Independent supervisor that recovers the system automatically if the main computer hangs, and manages standby and deep-sleep states so Core never drains the house battery
- Gigabit Ethernet to the vehicle router
- 9-36 V input for 12 V and 24 V house systems, automotive transient protection and built-in energy metering
- Aluminum enclosure for cabinet mounting; all antennas external on SMA

Interfaces and connectivity

Interface	Specification	Connector
Ethernet	1x Gigabit Ethernet (10/100/1000BASE-T)	RJ45
Bluetooth A	Bluetooth 5 LE; device connections and owner-app access	SMA, external antenna
Bluetooth B	Bluetooth 5.3 LE; dedicated telemetry scanning (Victron Instant Readout, Safiery and others)	SMA, external antenna
Zigbee	IEEE 802.15.4 Zigbee 3.0 coordinator, +20 dBm; Thread-capable by firmware	SMA, external antenna
Cellular	LTE Cat 1 bis, global bands, embedded eUICC (eSIM). Weft service connection only, not an owner hotspot	SMA, external antenna
GNSS	Multi-constellation (GPS, Galileo, GLONASS, BeiDou); active antenna, 3.3 V bias	SMA, external antenna
CAN	CAN 2.0 / CAN-FD up to 5 Mbit/s, switchable 120 ohm termination; house bus	3-pole pluggable, 3.5 mm
Heater bus	Truma Combi via the CP Plus panel's spare TIN socket (standard Truma TIN cable; Core registers as an iNet Box), or Webasto heaters via W-Bus with a Weft adapter cable. Powered from the heater bus; 12 V systems	RJ12
Switched outputs	4x high-side relay-coil outputs, 500 mA each	5-pole pluggable, 3.5 mm
Power	9-36 V DC	2-pole pluggable, 5.0 mm
Service	Internal USB-C for service and recovery (enclosure open)	Internal
Indicators	Power, system, network/cellular, supervisor	Front-panel LEDs
Controls	Reset on the lid; recovery internal	Recessed button

Pluggable connectors are WAGO picoMAX with push-in terminals and locking latches; no crimp tools required. Wire range 0.5-1.5 mm² (power: 1.5-2.5 mm²).

Electrical specifications

Supply voltage, operating	9-36 V DC (12 V and 24 V house systems)
Transient protection	Input TVS, active surge limiting and 60 V-rated power stage; ISO 7637-2 / ISO 16750-2 class transients (to be validated)
Reverse-polarity protection	Yes
Power consumption, active	approx. 5 W typical (TBD after validation)
Power consumption, standby	target approx. 0.3-0.5 W: main computer off, low-power cellular management path kept available; wakes on motion, SMS, charging or schedule
Power consumption, deep sleep	target under 0.1 W: wakes on charging, motion or schedule
Battery protection	Builder-configurable house-voltage thresholds. Defaults (12 V / 24 V): standby below 12.0 / 24.0 V for 10 min, deep sleep below 11.8 / 23.6 V, resume above 13.0 / 26.0 V. Core never trips the battery's low-voltage cutoff
Power consumption, peak	approx. 35 W for seconds, during full compute load with NVMe and LTE transmit
Input current, maximum	approx. 6 A at 9 V, including relay coils
Recommended external fuse	TBD (installation guide)
Energy metering	Built-in input voltage, current, power and energy measurement
Real-time clock	Battery-free supercapacitor backup
Compute	Raspberry Pi Compute Module 5, 4 GB RAM (TBD), 32 GB eMMC (TBD)
Storage	eMMC (system); M.2 NVMe slot, 512 GB SSD fitted with the camera recording option
Supervisor	Independent microcontroller: watchdog, automatic recovery, output control, power monitoring

Switched outputs

Core switches external loads through standard 12 V or 24 V automotive relays supplied by the builder. Core drives the relay coils only; the loads stay on the vehicle's own fused distribution.

Outputs	4, high-side (output supplies system voltage when on)
Coil current	500 mA continuous per output
Protection	Current limit, short-circuit, over-temperature, open-load detection, fast coil demagnetization
Diagnostics	Per-output coil current and fault reporting
Fail-safe	Outputs off when Core is unpowered. Loads wired through normally closed relays stay on if Core fails or is unplugged
OUT4	Hardware-limited switching time for a critical load: the output cannot stay energized longer than 20 s, regardless of software or a failed output driver
Supply	Internal, from Core's protected input; no separate coil feed needed

Intended loads: vehicle router (normally closed), external PoE switch and cameras, Starlink Mini, one critical third-party controller (normally closed, OUT4).

Positioning and sensors

GNSS	u-blox M9 multi-constellation receiver, concurrent GPS/Galileo/GLONASS/BeiDou, approx. 1.5 m CEP, time pulse for system clock
Motion	6-axis IMU (3-axis accelerometer, 3-axis gyroscope) for motion, tilt and tow detection
Pressure	Barometric sensor for altitude and weather trend; enclosure vented
Power	Input voltage, current and energy
Temperature	Board temperature via on-board sensors

Mechanical and environmental

Enclosure	Extruded aluminum with mounting flanges; fanless, passively cooled
Dimensions	TBD (set by the EVT2 enclosure)
Weight	TBD
Mounting	Flange-mounted inside a cabinet or technical compartment; not for exterior or wet locations
Ingress protection	Indoor use; membrane vent for pressure equalization
Operating temperature	Target -20 to +60 °C ambient at the enclosure (to be validated)
Storage temperature	-40 to +85 °C
Vibration	Automotive cabinet installation; compute module and storage mechanically retained
Antennas	5x SMA female; external antennas supplied or specified by Weft

Compliance

EU	CE marking under the Radio Equipment Directive (radio, EMC, safety, RF exposure, cybersecurity per EN 18031): planned for the EU launch, Q1 2027
US	FCC Part 15 and PTCRB/carrier certification: planned for the US launch, Q2 2027
Cellular module	Telit Cinterion LE310Q1-WW, GCF/PTCRB-certified module
Security	Secure boot, hardware device identity, signed updates, unique per-device credentials

Evaluation units supplied before certification are marked "evaluation sample, not for resale" and are intended for builder testing only.

Ordering information

Weft Core (WC1)	One per vehicle. Includes Weft Core, antenna set, connectors, embedded eSIM, owner app with the builder's branding, Weft Workshop, and three years of Weft Connect (remote access and the AI assistant)
Option: camera recording	512 GB SSD, recording and playback for IP cameras, while driving and while parked. Factory-fitted at order or added later by the installer. Cameras not included; 1 TB and 2 TB on request
Warranty	3 years on Weft Core hardware; a replacement unit restores its configuration from the cloud

In the box: Weft Core, connectors for power, CAN and outputs, antenna set and the install guide. The Truma TIN cable is a standard Truma part, not included; the Webasto adapter cable is a Weft accessory.

Service: Weft Connect (the built-in eSIM service, remote access and the AI assistant) is included for three years from activation; owners can renew it in the app afterwards. Local control, modes and automations run on Core regardless. Weft Workshop is included with no per-seat fees. Weft is sold to vehicle builders and workshops; ordering requires a verified account.

Installation notes

- **Power.** Connect to the house battery system through a dedicated fuse (value in the installation guide). Core operates on 12 V and 24 V systems without configuration. In 48 V systems, feed Core from the 12 V DC-DC rail, never from the 48 V bus.
- **Relays.** Use standard automotive relays rated for the system voltage. Wire any load that must stay on if Core fails (router, critical controller) through the relay's normally closed contact. Relays with a built-in coil diode are polarity-sensitive: output to pin 86, ground to pin 85.
- **Antennas.** GNSS and LTE antennas belong on the roof or another location with sky view. The three 2.4 GHz antennas can stay inside the vehicle but should be separated from each other by at least the distance given in the installation guide, and not enclosed in a metal cabinet.
- **CAN.** Connect to the house bus (Victron VE.Can, CI-BUS or RV-C). Enable the 120 ohm termination only when Core is at the end of the bus.
- **Ethernet.** Connect Core to the vehicle router. Core does not provide Wi-Fi.
- **Environment.** Mount in a ventilated technical compartment, away from heaters and direct sun. Do not block the membrane vent.
- **Connectors.** Disconnect pluggable connectors only with the vehicle's house supply off.