



AUTHORISED INSTALLERS ONLY

LockCAR CAN-IMMO

Professional installation and configuration guide covering CAN bus, LIN bus, and ADC bus button detection, PIN programming, and security settings.

INSTALLER MANUAL

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Role & Responsibilities

You are responsible for physical fitting, network selection, PIN programming and initial security configuration.

Installer-only

- CAN SCANNER access (login-protected)
- Network source selection
- Combo-PIN programming
- Output polarity, shock sensitivity, anti-hijack defaults
- OTA updates
- Factory reset

Owner-Level Access

Once handed over, the owner can switch enabled modes (PIN/TRUST/MANUAL), use LOCK/UNLOCK, rename/forget the device - but not reprogram PIN or change network source. See the User Manual.

Installer Authentication

Installer authentication unlocks access to the CAN, LIN, and ADC BUS scanner.

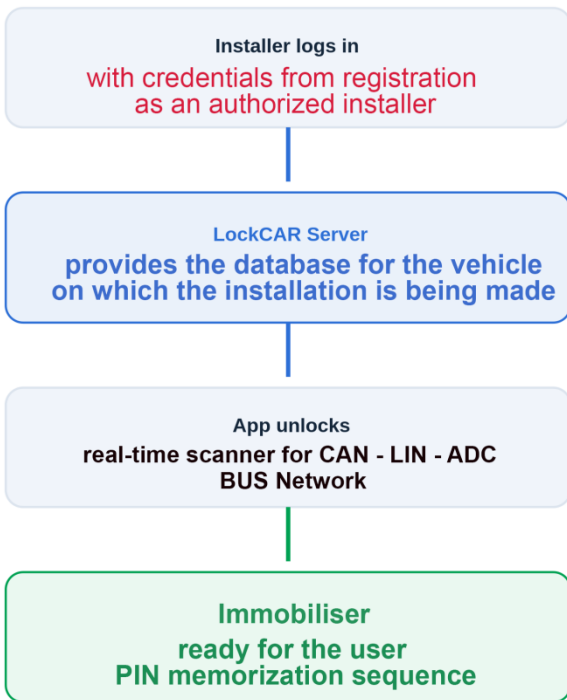


Fig. 1 the circuit from logging to mapping .

Logging In

- OPEN CAN BUS SCANNER - prompted to log in if not authorised
- Enter your lockcar.co.uk credentials (needs internet)
- Server issues a immobiliser update session
- Session expires automatically after a few hours

WHY LOGIN?

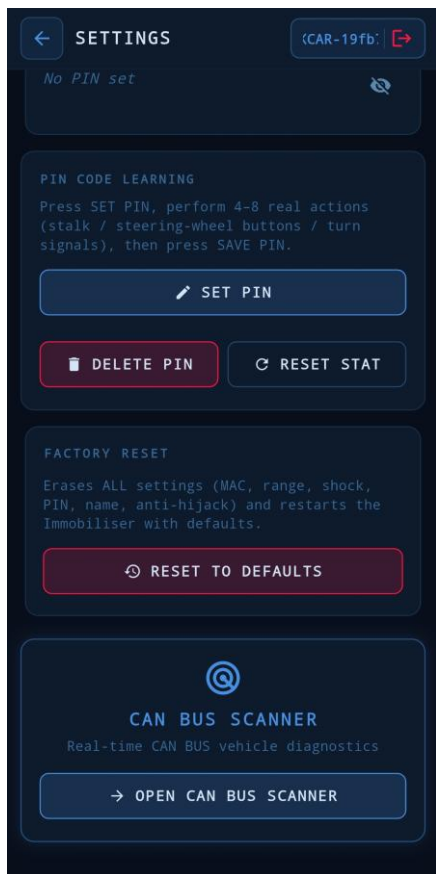
The installer has a CAN line scan tool that he connects the car to and requires login to prepare the updates.

Session Handling

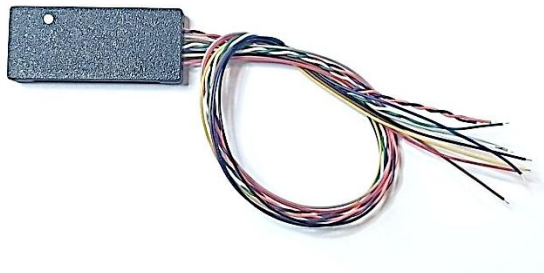
- Expiry is automatic - page re-locks
- One device at a time per token
- Manual sign-out available

REMINDER

Never share your credentials - each installer needs their own account for audit accuracy.



Physical Installation



LockCar CAN-IMMO

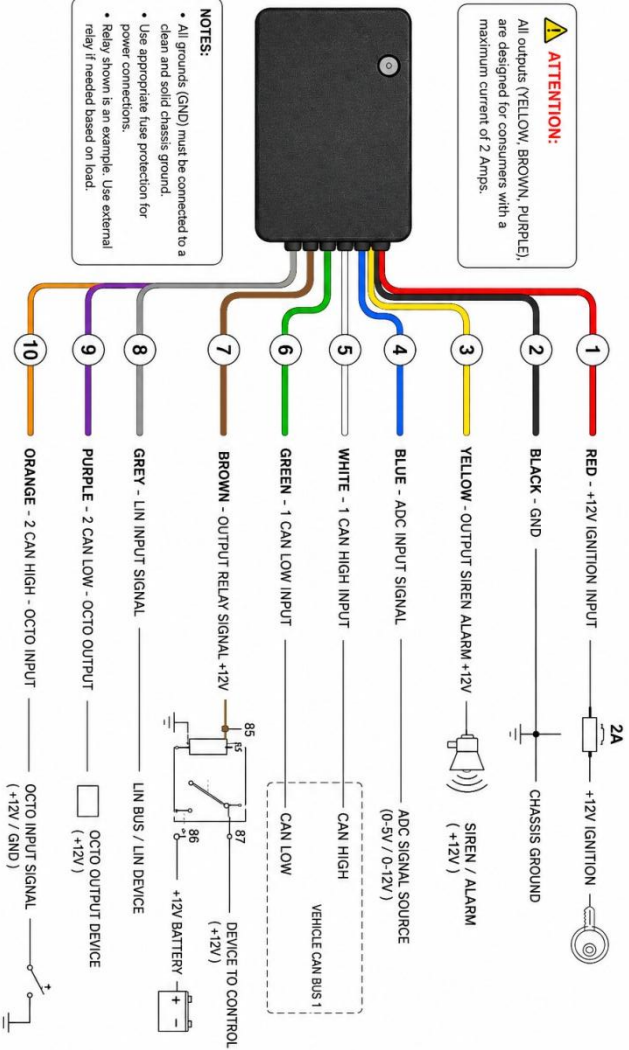
10-pin wiring harness pinout

	Pin 1 · RED	+12V ignition input (2A fuse)
	Pin 2 · BLACK	GND
	Pin 3 · YELLOW	Output siren alarm +12V (max 2A)
	Pin 4 · BLUE	ADC input signal
	Pin 5 · WHITE	CAN1 High input
	Pin 6 · GREEN	CAN1 Low input
	Pin 7 · BROWN	Output relay signal +12V (max 2A)
	Pin 8 · GREY	LIN input signal
	Pin 9 · PURPLE	CAN2 LOW - OCTO output (max 2A)
	Pin 10 · ORANGE	CAN2 HIGH - OCTO input (max 2A)

WIRING DIAGRAM

⚠ ATTENTION:

All outputs (YELLOW, BROWN, PURPLE), are designed for consumers with a maximum current of 2 Amps.



NOTES:

- All grounds (GND) must be connected to a clean and solid chassis ground.
- Use appropriate fuse protection for power connections.
- Relay shown is an example. Use external relay if needed based on load.

Before Powering On

- Confirm secure mounting, connectors seated
- Confirm network availability BUS - LIN or ADC BUS) before wiring
- Reconnect battery, check for unrelated warning lights

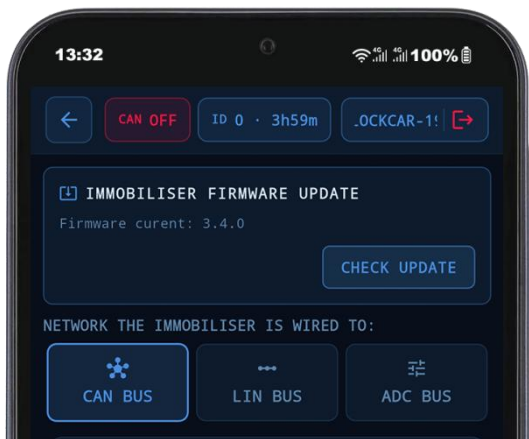
Best practice

- Disconnect battery before wiring
- Mount away from heat/vibration/moving parts
- Route away from pedals, steering, airbag looms
- Use approved splicing methods
- Test stationary before returning the vehicle

Choosing the Network

Network	Typical use
CAN BUS	Modern vehicles, multiplexed body control
LIN BUS	Simpler sub-systems (mirrors, seats)
ADC BUS	Older vehicles, resistive-ladder panels

Selected in-app before scanning; saved on the module.



CAN / LIN Bus Scanner

1. Lock the baseline

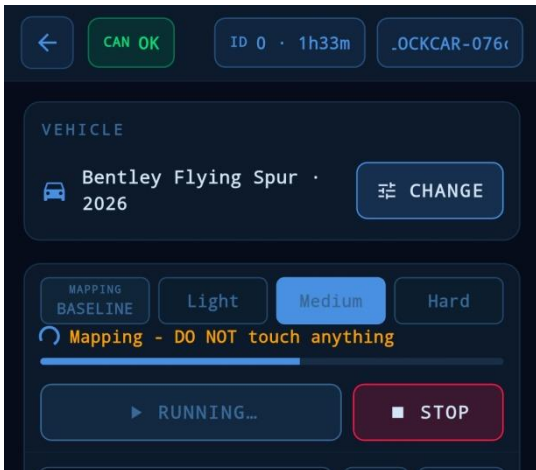
No buttons pressed - records normal idle traffic.

2. Identify noise

IDs changing faster than ~6x/sec auto-flagged as noise.

3. Press each button

Records diffs from baseline, scores each as a candidate.



Candidate Scoring

Scoring

- + single-bit flip, few transitions
- + clean 0-to-1 edge
- changes very often

Kind classification

BUTTON - clean, rare

TOGGLE - clean, held

MULTI-BIT - several bits

COUNTER/NOISE - constant

You choose

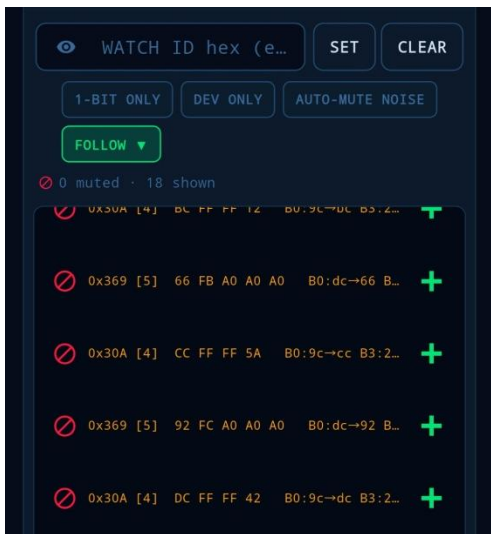
Pick top-ranked candidate
matching the pressed button
then assign a name

Fig. 2 - Score, classify, choose.

Optional: Speed Decoding

Decode vehicle speed live (km/h, mph) to confirm you're reading the correct ID. Optional, doesn't affect PIN programming.

Setting	Purpose
Offset/width	Where the value sits in the frame
Divisor/zero	Scales raw value to real units



ADC Bus Scanner

Resistive-ladder buttons produce distinct stable voltage plateaus.

1. Learn resting plateau

Auto-learned with nothing pressed.

2. Press & hold

Waits for stable readings before accepting a plateau.

3. Auto-merge

Nearby plateaus merge into one entry, avoiding duplicates.



Programming Combo-PIN

1. Start learning

Open combo screen, begin the learn sequence.

2. Press in order

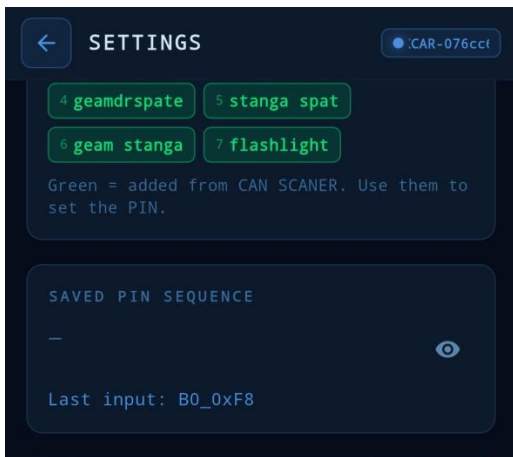
Each press echoed back by name for confirmation.

3. Confirm & save

Stored per network source (CAN/LIN/ADC).

GOOD SEQUENCE

Buttons unlikely to be pressed accidentally; short enough to remember.



Security Modes

Owner selects	Behaviour
PIN only	PIN each ignition cycle
TRUST only	Auto-unlock via tag
PIN+TRUST	Either method works
MANUAL	App-only, persists across reboot

MANUAL PERSISTENCE

Current firmware stores LOCK/UNLOCK in FLASH - survives a full power cycle. Explain this to the customer at handover.

LockCAR CAN-IMMO can be unlocked four ways, and the owner picks which one is active from the Dashboard's Security Options.

1. **PIN** - the vehicle needs the button-sequence combo entered fresh every ignition cycle.
2. **TRUST** - unlocks automatically whenever the paired Bluetooth tag is detected nearby; no button presses needed.
3. **PIN + TRUST together** - either method on its own is enough to unlock.

4. **MANUAL** - the owner controls LOCK/UNLOCK directly from the app; nothing automatic happens.
- In MANUAL, PIN/TRUST/Anti-Hijack/Shock are all suppressed - only the app command matters.
 - Every mode except MANUAL resets and re-checks at each new ignition cycle, for security.
 - MANUAL is the one exception - the last LOCK/UNLOCK command persists permanently, even across reboot, until the owner taps the opposite button.
 - Switching modes is instant and doesn't require re-pairing or a firmware update - it's a single command (SET_MODE) sent over Bluetooth from the Dashboard, applied by the module immediately.
 - Changing *into* MANUAL always starts from LOCKED, regardless of what PIN/TRUST had last decided - the owner then has to explicitly UNLOCK if they want it open, nothing carries over from the previous mode.
 - This mode selection is owner-level, day-to-day control - reprogramming the actual PIN sequence or the CAN/LIN/ADC network source still requires the installer's login-protected CAN Scanner tool, not the Dashboard.

Anti-Hijack

Anti-Hijack

Anti-Hijack is a staged, escalating response to the paired TRUST tag going out of range while the feature is armed - not an instant engine cut. It gives the driver two audible warnings before anything happens to the engine.

HOW DETECTION WORKS

The module continuously scans for the paired tag. A tag is considered "present" if it was last seen within the past **5 seconds**. As long as that's true, nothing happens - no counting, no warning.

Requirements to enable

- A TRUST tag must already be paired (its MAC address stored on the module) - Anti-Hijack reuses the same Bluetooth detection as TRUST mode, even if TRUST isn't the vehicle's active unlock method.
- Anti-Hijack has no effect while MANUAL mode is active - it is fully suppressed in that mode.

Escalation timeline once the tag goes missing

Stage	Trigger	Duration	What happens
Counting	Tag absent, re-checked every 30s	Up to 5 minutes	Silent - no warning yet, just counting
Phase 1 -early warning	5 minutes of continuous absence reached	~50 seconds	10 beeps, 1s on / 4s off
Phase 2 - final warning	Phase 1 completes, tag still absent	~5 seconds	5 faster beeps, 0.5s on / 0.5s off
Engine stop	Phase 2 completes, tag still absent	Immediate	Engine-stop output is latched (held)

If the tag comes back at any point before the engine actually stops - during the silent counting, Phase 1, or Phase 2 - the entire sequence cancels itself immediately and resets to idle, it's a clean cancel.

Important - the stop does not auto-release. Once the engine-stop output is latched, the tag reappearing does **not** undo it by itself. It stays stopped until the app explicitly sends an Engine Resume command. Make sure the customer understands this: getting the tag back nearby *after* the beeping has already finished won't restart things on its own.

Shock Sensor Alarm

Arming sequence

Once ignition is on, the sensor doesn't arm instantly - it waits **30 seconds**, then initialises and calibrates the accelerometer, and only then goes live. Arming happens only if *all* of these are still true at that moment:

- Shock detection is enabled by the installer
- PIN or TRUST is enabled (not a MANUAL-only setup)
- The vehicle has **not yet** been authenticated (no PIN entered, no tag present)
- No manual override is currently active from the app

VEHICLE-DEVICE BINDING

If you unlock before the 30 seconds are up, arming is simply cancelled - nothing ever activates.

Sensitivity

7 levels (0–6), set by the installer, map to different accelerometer thresholds - 0 is closest to "always trips", 6 is the most tolerant of vibration/bumps.

Response to a knock

Trigger	Response
A single knock/shock	2 short warning beeps (a "someone bumped it" notice)
3 separate knocks within 4 seconds	Full alarm siren - treated as a real attempt, not an accidental bump
Repeated full alarms within 30s of each other	Escalates - each repeat plays a longer siren cycle than the last

Disarming

The moment PIN is entered or the TRUST tag is detected present, the sensor is bypassed - the Dashboard shows *"ALARM BYPASSED - PIN ENTERED"* or *"ALARM BYPASSED - TAG PRESENT"*. If the owner manually silences it via UNLOCK, it shows *"DISARMED"* and stays that way only until the next ignition-off - it re-arms fresh on the next ignition cycle, following the same 30-second sequence again.

Device Settings

Setting	Notes
BLE name	Default LOCKCAR-xxxxxx, customisable
Range	RSSI threshold for TRUST detection
Passkey	Custom or auto-generated
Out. polarity	Match vehicle's active-high/low wiring

Firmware Updates

- Settings > Firmware Update
- App checks version
- Downloads, verifies encryption before sending
- Transfers in Immobiliser
- Module verifies & reboots

DO NOT INTERRUPT

Stay in range. If it fails, the module keeps its current working firmware.

Factory Reset

Restores defaults: PIN/TRUST re-enabled, MANUAL cleared (incl. stored GPIO state), anti-hijack off, shock default, polarity reset. Network source is kept.

PIN CLEARED

Re-teach the combo-PIN before returning the vehicle with PIN mode enabled.

Troubleshooting

Too many "noisy" candidates

Re-lock baseline with ignition freshly on, no accessories cycling.

Login fails

Check internet connectivity and account status.

Token keeps expiring

Expected - tokens are short-lived by design.

PIN stopped working after network change

Combo is per-network - re-teach it.