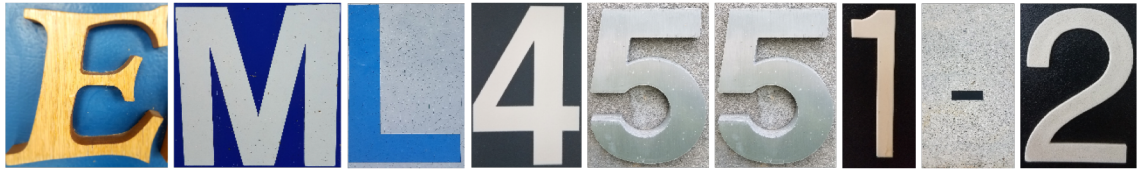


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Team 35: Aftermarket Child Detection for Car Seats

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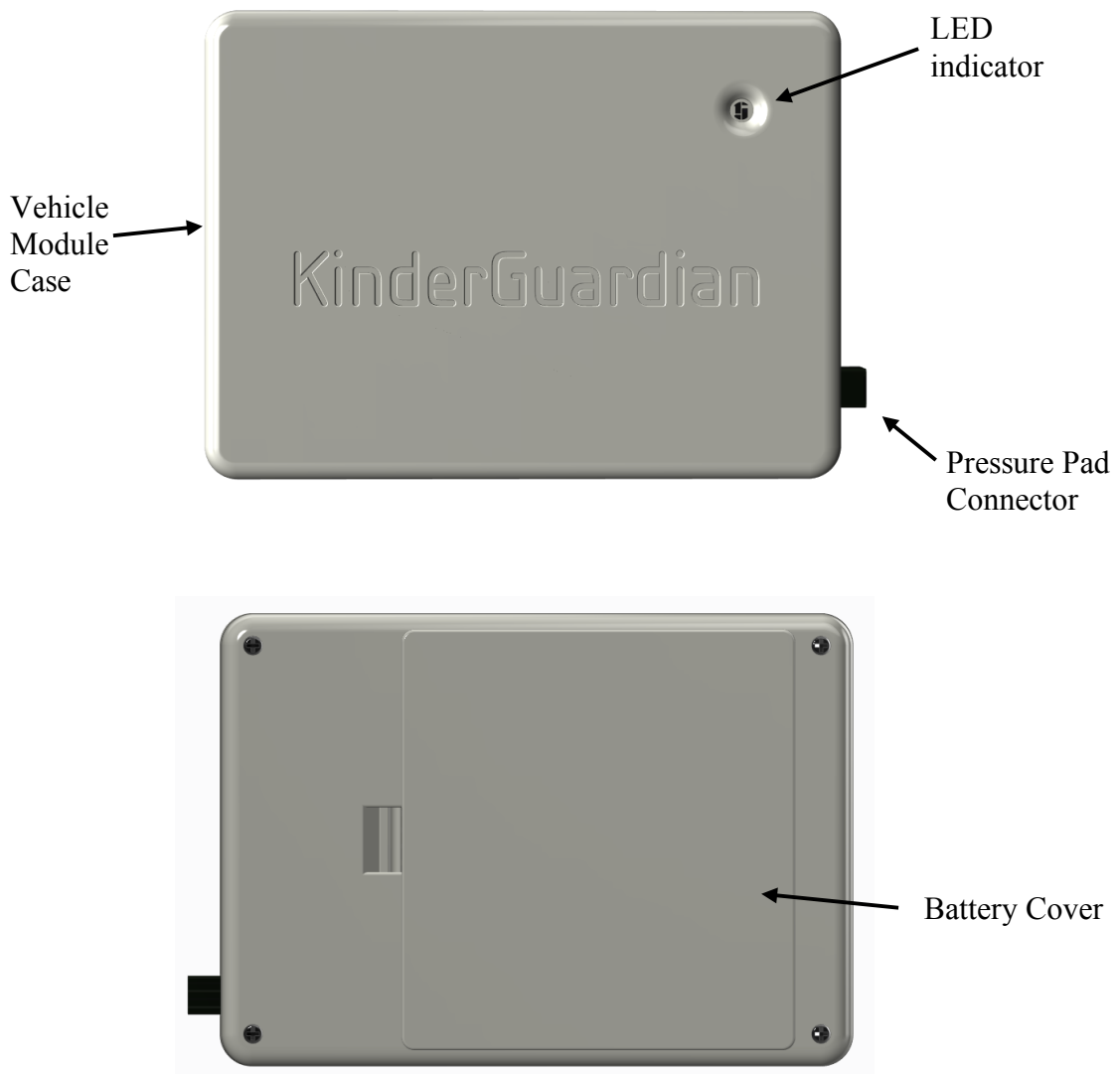
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This operation manual describes how to setup, operate, and care for the KinderGuardian car seat child detection system. Please note, this device is activated by a pressure switch. After the device is installed, do not place anything other than your child in the car seat as this could cause false alarms.

Components and Parts Lists

Vehicle Module

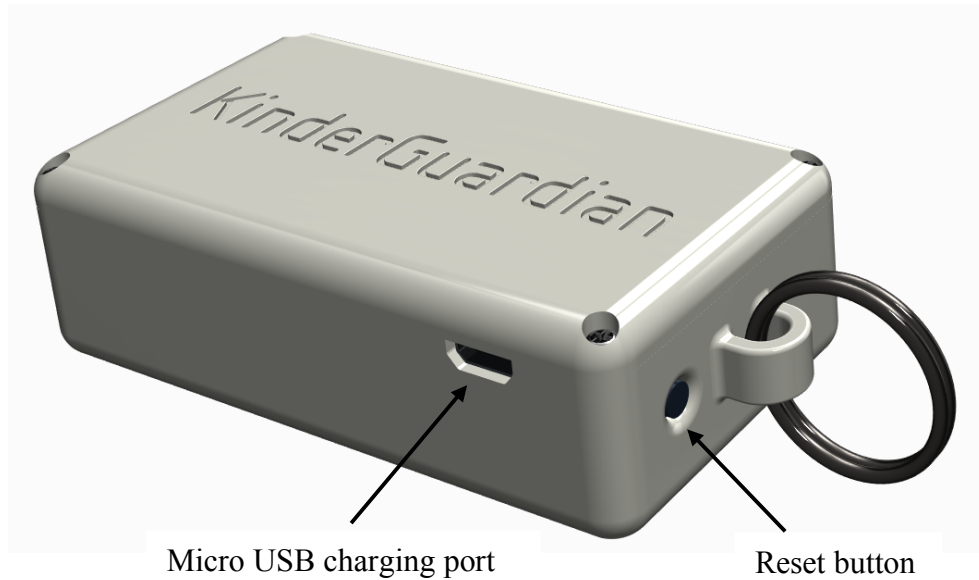


The following table lists all the components that make up the vehicle module.

Part	Description
ESP8266 Microcontroller	Accepts inputs from the pressure mat and temperature sensor, performs calculations, and wirelessly communicates with the key fob
Pressure Pad	Pressure activated switch used for child detection
Pressure Pad Connector	Connects pressure pad to vehicle module
TMP36 Temperature Sensor	Low voltage, precision temperature sensor
AA Battery Holder	Accepts 4 AA batteries to supply 6 volts to the module
WS2812 RGB LED	Intelligent control LED light used as an indicator with multiple color outputs
Vehicle Module Case	Houses components. PETG plastic
Vehicle Module Rear Cover	PETG plastic
Battery Cover	Allows easy access to battery compartment. PETG plastic
4 x Screws	Used to fasten the rear cover to the vehicle module case

Key Fob





The following table lists all the components that make up the key fob.

Part	Description
ESP8266 Microcontroller	Wirelessly communicates with vehicle module. Controls alarm and Status LED
Piezo Alarm	Audible alarm
3.7V 800mAh LiPo Battery	Supplies power to the key fob components
TP4056 Charging Board	Regulates charging and discharging of battery
WS2812 RGB LED	Intelligent control LED light used as an indicator with multiple color outputs
Key Fob Case	PETG plastic
Key Fob Cover	PETG Plastic
4 x Screws	Used to fasten the key fob cover to the key fob case
Keyring	Allows the key fob to be attached to a set of keys or a lanyard

Setup

First remove device from packaging. The package should contain:

- Key fob (1)
- Vehicle Module (1)
- Pressure pad (1)
- Hook and loop fastener (1)

Vehicle Module

Remove the battery cover from the back of the vehicle module by compressing the tab and pulling it towards you to access the battery compartment. Insert 4 AA batteries, ensuring that the negative (flat) end of each battery is on the spring side. Reinstall the battery cover. The indicator LED will flash blue periodically to indicate that the device is in STANDBY mode.

Next, attach the included hook and loop fastener to the desired location on the car seat. This is where the vehicle module will mount. Remove the protective backing from the hook and loop fastener and apply to a clean, flat, plastic surface with firm pressure. Press the back of the vehicle module against the hook and loop fastener on the car seat to join them together.





After attaching the vehicle module to the car seat, lift the car seat cushion liner and slide the pressure pad in between the cushion and the plastic of the car seat. Ensure that the pressure pad is centered on the seat and does not crease while performing this procedure. Route the pressure pad wire around to the vehicle module and connect the wire. Push firmly until the connectors are locked together. Make sure to secure any loose wires.

Key fob

After removing the key fob from the packaging, insert a micro USB cable into the port on the side and allow the unit to fully charge before the first use. The key fob will glow red while charging and will glow blue when charging is complete. It should take around an hour to fully charge the battery. Once charging is complete, remove the micro USB cable and attach the key fob to your key ring if desired. The system is now ready for operation.

Operation and Use

To activate the device, place child into car seat. Properly secure the child to the car seat. Once the child is placed in the car seat, the indicator LED will turn green. This indicates that the device is active and temperature sensing has been initiated. Once the child is removed from the seat, the system will return to STANDBY mode and the indicator LED will periodically flash blue.

If a dangerous temperature condition is determined by the system while the car seat is occupied, the vehicle module LED indicator will turn red. The vehicle module will then send a signal to the key fob and activate the audible and visual alarm within the key fob. The key fob will remain in alarm mode until the child is removed from the car seat. Once the child has been removed from the car seat, the key fob will discontinue the alarm and the vehicle module indicator LED will return to periodically flashing blue, indicating STANDBY state.

If the key fob malfunctions and initiates a false alarm, press the RESET button on the side of the key fob to reboot the system. After a few seconds, the system will reconnect and continue normal operation.

Battery life is dependent on how frequently the system is used. If the key fob and/or vehicle module begins flashing a red indicator light, the batteries need to be recharged (key fob) or changed out (vehicle module). Refer to the setup instructions for changing or recharging batteries.

Cleaning

All components of the KinderGuardian system can be cleaned with a sanitizing spray or wipe. Avoid using abrasive cleaners or cleaners that contain bleach as they may damage the plastic. Do not submerge any components.

Storing

If you intend to not use the KinderGuardian system for an extended amount of time, remove the AA batteries from the vehicle module and store in a dry location. It is also recommended that the key fob be fully recharged every 6 months to preserve the lifespan of the rechargeable battery.