Child Safety

Kids safety is one of the most important responsibilities for any school or bus driver. Ensuring that all kids have been transported safely to their homes is paramount importance for any school, bus driver, or bus attendant officer. However, kids may go to sleep in a bus missing their stop location. Ensuring that the bus driver will check every row or seat in a bus before he stations and locks the bus is what our new-innovative solution "Child Safety" does. With the Child Safety device, we ensure that no kids are left behind. Unfortunate incidents have happened in the past causing kids to suffocate! no place for such irresponsible behavior nowadays anywhere at any time. It is the driver's responsibility to check that each-and-every seat is empty before he locks the bus and leaves. It is of paramount importance for all involved parties.

The Child Safety is designed to work on all types of school buses, for any school and for any age. The Child Safety is an electronic device that uses RFID technology to ensure kids safety. An RFID card will be installed on each row on the bus. While the main device consists of two integrated tightly coupled devices: 1) station device and, 2) handheld reader. The handheld reader enables the driver to scan all RFID cards and then download all these cards to the main station device. If the driver misses to scan any row, the main station device will alert the driver, giving a chance to scan the missing row before he locks the bus. However, in case the driver misses to scan any row again, the main station device will sound the horn indicating that the driver did not scan all the rows. By doing so, we ensure that the driver has scanned all rows and that no kids are left in the bus.

HANDHELD DEVICE
FEATURES:

- Scanning seat IDs based on station request when the handheld unmounted from the station (on scanning mode).
- Compare the seat IDs with stored IDs then send an alarm request to the station if there is a missing ID (on station mode).
- Mute the alarm on using admin card (on station mode).
- Storing configured seat IDs.

Handheld device has three different operations mode:

- **Station Mode:** when in mounted on the base station device, in this case it read "Admin" cards only in order to mute a fired alarm, (Seat LEDs will be OFF).
- **Reading Mode:** the device will scan the seat IDs if a scanning request received from station (Only programmed seat LEDs will be ON), and enter idle mode if no request received (Seat LEDs will be OFF).
- **Programming Mode:** The handheld enter this mode from reading mode by using "Installer" card, then the seat LED will be flashing one by one until finishing all seats programming then the handheld will exit this mode into idle mode by "Installer" card again. In programming mode, "Admin" card used to overstep seat programming into next seat.

PRODUCT CODE: FMS-40003040-001

BASE STATION DEVICE
FEATURES:

- Charging the handheld battery.
- Set alarm off notification if the handheld disconnected for a long time.
- Request scanned seat IDs status when the bus ignition is turned off after a trip.
- Set the alarm on after the trip ends for a specific time but the driver did not scan all seat rows.
- Storing and process the following events:

  - **Scanner Away Timeout:** for the soft alarm notification.
  - **Max. Scanning period:** max. period given to the driver for scanning the seat IDs before an alarm.
  - **Min. trip period for start scanning:** min. trip duration that enable a request scanned seat IDs.
  - **Notification Period before run output:** For the first stage of alarm. The alarm has two stages. First stage is to run continuously warning beep for a specified period, and the second stage is to run the station output.

PRODUCT CODE: FMS-40003040-002

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EXAMPLE OF WORKING SCENARIO

- The Installer will remove the handheld from base station and use "Installed" card to enter programming mode.

- The Installer will go through all the seats in the bus to scan them one by one.

- The Installer will exit the programming mode by "Installer" card and mount the handheld on the station.

- The driver start a trip for a minimum specified period then stop the bus and turn off the ignition.

- The base station will detect a trip and send a request to the handheld to get the seat status.

- The driver shall disconnect the handheld from base station and go through all the seats in the bus for scanning them one by one within the specific period. Each seat has a special **RED** LED on the handheld, the LED will be **GREEN** once the driver scan the seat ID.

- The driver should connect the handheld on the base station, and then the handheld will check the scanned seat IDs and send a seat status to the base station to set alarm off if there is a missed seat.

- If driver has scanned all the seats, there will be no alarm,and the process ends here.

- If driver has missed to scan a seat, the alarm will be triggered and the driver should rescan the seats.

TECHNICAL SPECIFICATION

HANDHELD DEVICE

RFID:	13.56 MHz ISO14443A
RFID Card:	Mifare S50 with 1K EEPROM
Indicators:	24 RGB LEDs
Battery:	3.7 V Li-Po 400 mAh
Operating Voltage:	5 VDC
Charge current:	200mA
Operating Temperature:	-20 to +70 (without battery)
Storage Temperature:	-35 to +90 C
Interface:	UART with TTL logic

BASE STATION DEVICE

Operating Voltage:	7 to 36 V
Current consumption:	Active: 120mA @ 12 V Passive: 20mA @ 12 V
Operating Temperature:	-20 to +70 C
Storage Temperature:	-35 to +90 C
Interface:	UART with TTL logic, ignition Input, open drain output

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