

# CASE STUDY

# ISUZU AUSTRALIA



**ISUZU**  
TRUCKS

**FYJ Kerb &  
Channel Kit**

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**DSSA**  
Digital Switching Systems Australia

Unit 8/27 Allgas St, Slacks Creek QLD, AUSTRALIA 4127  
PO Box 1301, Slacks Creek QLD, AUSTRALIA 4127  
P +61 (0)7 3290 4115 E sales@digitalswitching.com.au

## Concrete Agitator Solution - Kerb & Channel

**Client:** Isuzu Australia Limited  
**Industry:** Concrete Agitators  
**Vehicle:** ISUZU FYJ  
**Hardware:** DSS\_IAL\_KAC  
Full KYJ Kerb & Channel Kit

### **CHALLENGE:**

1. To manage truck speed with integrated safety features for an industry Kerb & Channel Mode, minimising brake wear and tear.
2. To minimise the possibility of the operator inadvertently trying to engage the diff locks when wheels are spinning, causing critical damage to the vehicle, rendering it inoperable.
3. To reduce the requirement for multiple third party devices i.e. Park Brake Alarm.

### **SOLUTION:**

To implement the DSSA PowerMate 8 load controller coupled with our PKU Series keypad (user interface) and Speed Control Module, allowing us to electronically manage operational procedures for the operator to control the vehicle under low speeds in a Kerb & Channel Mode. We can successfully do this by programming client specific rules and functions to monitor inputs and engine CANbus for various elements on the vehicle.

Utilising the applied hardware (PM8 & PKU2400) and adding unique software logic, this also allowed us to electronically manage safer use of the diff locks for the operator, therefore lowering risk to plant and equipment. As we came to understand the scope of the industry specific vehicle, again using the same hardware, we were able to add more control features to the digital switching system to further improve overall safety, both on site and for the operator. The same way we manage the diff lock solution, by adding intelligent programming we can control other elements of the vehicle such as beacons, alarms, and lighting. For the added benefits of this solution in this specific build application, we can explain as follows:-

### **KERB MODE:**

By pressing the KERB button on the keypad, the KERB Mode will activate ONLY when the following is TRUE:

- ⇒ Ignition ON and engine running
- ⇒ Engine revs are below 950 RPM
- ⇒ For Forward Motion: 1st gear is Requested, and 1st gear is Selected (1-1 indication on Selector)

### **OR**

- ⇒ For Reverse Motion: select REVERSE
- ⇒ Tail shaft not spinning (0 KPH)
- ⇒ Operator has foot brake APPLIED

When KERB Mode is ENABLED:

- ⇒ **The operator MUST KEEP the foot brake pedal DEPRESSED at the feather point (i.e., brake light ON) to maintain KERB mode ENABLE)**
- ⇒ The BEACONS and HAZARD LIGHTS will be automatically turned ON (and remain locked on)
- ⇒ When first Enabling Kerb Mode, the engine RPM will automatically go to the pre-selected value of 650 RPM  
When engine RPM is changed using Kerb Increment or Kerb Decrement the RPM value is remembered until the Key Ignition is cycled (OFF-ON)

When KERB Mode is DISABLED by pressing the KERB button on the keypad:

- ⇒ The BEACONS and HAZARD LIGHTS will be automatically turned OFF
- ⇒ The engine RPM will automatically return to IDLE

In the event of an emergency incident while in KERB Mode, the following actions will immediately abort (pause) KERB mode, yet BEACONS and HAZARD LIGHTS will remain always ON.

1. By APPLYING the PARK BRAKE
2. By RELEASING the FOOT BRAKE for more than (0 - 2) seconds (*Dealer Configurable Value*)

### **KERB INCREMENT:**

When KERB mode is enabled, the vehicle revs will automatically increase to and remain at the pre-selected RPM (default 650 RPM). By pressing the KERB ↑ button on the keypad, the revs will escalate in 50 RPM increments with each momentary press to a maximum value of 1100 RPM (*Dealer Configurable Value*).

### **KERB DECREMENT:**

When KERB mode is enabled, the vehicle revs will automatically increase to and remain at the pre-selected RPM. By pressing the KERB ↓ button on the keypad, the revs will de-escalate in 50 RPM increments with each momentary press to a minimum value of 550 RPM.

### **POWER DIVIDER:**

By pressing the POWER DIVIDER button on the keypad, the POWER DIVIDER solenoid will engage ONLY when the following is TRUE:

- ⇒ Ignition ON and engine running
- ⇒ Tail shaft not spinning (zero RPM)
- ⇒ Operator has foot brake applied

The Power Divider can be disengaged by the buttons on the keypad but will also automatically disengage by:

- ⇒ Engine being turned OFF
- ⇒ When vehicle speed is 20 KPH or greater

### **CROSS LOCK:**

By pressing the CROSS LOCK button on the keypad, the CROSS LOCK solenoid will engage ONLY when the following is TRUE:

- ⇒ Ignition ON and engine running
- ⇒ Tail shaft not spinning (zero RPM)
- ⇒ Operator has foot brake applied
- ⇒ Power Divider must always be engaged

The Cross Lock can be disengaged by the buttons on the keypad but will also automatically disengage by:

- ⇒ Engine being turned OFF
- ⇒ When vehicle speed is 20 KPH or greater

When the POWER DIVIDER is DISABLED, the CROSS LOCK is automatically DISABLED.

### **PARK BRAKE ALARM:**

The vehicle HORN will sound when the following is TRUE:

- ⇒ The DOOR is OPENED, and the PARK BRAKE is RELEASED
- ⇒ The alarm can ONLY be cancelled by APPLYING the PARK BRAKE

**SEAT BELT ALARM:**

The cabin BUZZER will sound when the following is TRUE:

- ⇒ The IGNITION is TURNED ON, the PARK BRAKE is RELEASED and the SEAT BELT is RELEASED
- ⇒ The alarm can be cancelled by ENGAGING the SEAT BELT
- ⇒ The alarm can be cancelled by APPLYING the PARK BRAKE
- ⇒ The alarm can be cancelled by TURNING OFF the IGNITION

**BEACONS:**

- ⇒ The BEACONS can be turned ON and OFF independently by pressing the BEACON button on the keypad

**BEACONS & HAZARD LIGHTS:**

- ⇒ The BEACONS and HAZARD LIGHTS will be automatically turned ON (and remain LOCKED ON) when Kerb mode is ENABLED
- ⇒ The BEACONS and HAZARD LIGHTS will remain ON when Kerb mode is ABORTED
- ⇒ The BEACONS and HAZARD LIGHTS will be automatically turned OFF when Kerb mode is DISABLED
- ⇒ The BEACONS and HAZARD LIGHTS will be automatically turned off when vehicle speed is (20 - 40) KPH  
*(Dealer Configurable Value)*

**ENGINE IDLE SHUT DOWN: *(Dealer Configurable Option)***

When ALL of the following rules are TRUE for a period of 5 minutes:

- ⇒ The ENGINE is RUNNING and revs remain below 650 RPM
- ⇒ ACCELERATOR pedal is fully OFF (and remains UNTOUCHED)
- ⇒ The PARK BRAKE is APPLIED
- ⇒ The vehicle speed is ZERO KPH

Then the ENGINE will be SHUT DOWN,

The ignition key must now be CYCLED off/on to RESTART the ENGINE.



**POWERMATE 8**



**POWERKEY PKU2400**



**SPEED CONTROL UNIT**