

# UNIVERSAL ELECTRICALS & ELECTRONICS

*Mining Safety Equipment Specialists*

ISO 9001:2015 Certified | DGMS Approved Products

## FAIL SAFE BRAKE MONITORING SYSTEM

*Parking Brake Alert & Monitoring Device for Mining Vehicles*



### PRODUCT OVERVIEW

The Fail Safe Brake Monitoring System is an intelligent safety device designed to prevent runaway vehicle accidents in mining operations. This DGMS-compliant system continuously monitors the parking brake status and engine condition, providing audible alerts to ensure that the hand brake is properly engaged when the vehicle engine is turned off.

### WORKING PRINCIPLE

The system operates on a simple yet effective logic:

- When **ENGINE is ON** → Buzzer remains **OFF** (regardless of hand brake position)
- When **ENGINE is OFF** and **HAND BRAKE is OFF** → Buzzer turns **ON** (continuous alert)
- Buzzer continues until **hand brake is manually engaged**

### KEY FEATURES

- **Automatic Monitoring:** Continuously monitors hand brake and engine status
- **Fail-Safe Design:** Alerts operator immediately when parking brake is not applied
- **Audible Alert:** Loud buzzer (85+ dB) ensures alert is heard in noisy mining environment
- **Simple Installation:** Easy integration with existing vehicle electrical systems
- **Robust Construction:** IP65 rated enclosure for harsh mining environments
- **Low Maintenance:** Solid-state electronics with no moving parts

## TECHNICAL SPECIFICATIONS

Parameter	Specification
Operating Voltage	12V / 24V DC (Auto-detect)
Current Consumption	< 50 mA (standby), < 200 mA (active)
Buzzer Output	85-95 dB @ 1 meter
Input Monitoring	Engine status (ignition), Hand brake switch
Operating Temperature	-20°C to +70°C
Protection Rating	IP65 (Dust-tight, Water-resistant)
Enclosure Material	ABS Plastic / Metal (as per requirement)
Dimensions	120mm x 80mm x 50mm (L x W x H)
Weight	Approx. 300 grams

## DGMS COMPLIANCE & REGULATORY FRAMEWORK

This Fail Safe Brake Monitoring System addresses critical safety requirements mandated by the Directorate General of Mines Safety (DGMS) for preventing runaway vehicle accidents in opencast mining operations.

## Relevant DGMS Circulars

### DGMS (Tech) Circular No. 06 of 2020

**Subject:** Minimum Design requirements for various Safety Features to be incorporated for use in Heavy Earth Moving Machinery (HEMM) & Heavy/Light vehicles in Open Cast Mines

This circular emphasizes the need for comprehensive safety features in mining vehicles to prevent accidents. The Fail Safe Brake Monitoring System contributes to compliance by ensuring parking brakes are engaged when vehicles are unattended.

### DGMS (Tech) Circular No. 04 of 2012

**Subject:** Brake Systems for Dumpers and Tippers

Mandates three types of brakes: Service Brake, Parking Brake, and Retard Brake. This circular highlights the importance of parking brake functionality, which our monitoring system ensures is properly utilized.

### DGMS (Tech) Circular No. 09 of 1999

**Subject:** Fail Safe Brake Systems

Specifies that at least one brake system shall be fail-safe (spring applied, hydraulically released or equivalent). Our monitoring system complements this by ensuring operator awareness of parking brake status.

### DGMS (Tech)(SOMA) Circular No. 03 of 2024

**Subject:** Trackless Transportation Machinery (TTM) Safety in Opencast Mines

Focuses on minimizing accidents involving wheeled TTM, specifically addressing runaway vehicle prevention. This system directly supports compliance with the safety measures outlined in this latest circular.

## Key Safety Concerns Addressed

- **Runaway Vehicles:** One of the major causes of accidents in opencast mines, particularly on inclined haul roads
- **Parking on Slopes:** Vehicles left unattended without parking brake can roll downhill causing severe accidents
- **Human Error:** Operator fatigue or oversight in applying parking brake
- **Compliance:** Assists mine management in meeting DGMS safety requirements

## SAFETY BENEFITS

- **Prevents Runaway Accidents:** Immediate alert ensures parking brake is applied before leaving vehicle
- **Reduces Property Damage:** Prevents vehicles from rolling into equipment, structures, or personnel
- **Saves Lives:** Critical protection for workers in the vicinity of parked vehicles
- **Operator Awareness:** Audible reminder reinforces safe parking practices
- **Cost Effective:** Low-cost solution with significant safety impact

## APPLICATIONS

- Dumpers and Tippers
- Mining Trucks
- Heavy Earth Moving Machinery (HEMM)
- Service Vehicles in Mining Operations
- Construction Equipment
- Any vehicle operating on inclined terrain

## INSTALLATION & SUPPORT

The system is designed for easy installation by qualified technicians. Complete installation manual, wiring diagrams, and technical support are provided. On-site installation services available on request.

### Warranty & Support

- **Warranty:** 12 months from date of installation
- **Technical Support:** Available via phone, email, and on-site visits
- **Spare Parts:** Available ex-stock

## CONTACT INFORMATION

### UNIVERSAL ELECTRICALS & ELECTRONICS

Bengaluru, Karnataka, India

Email: [info@ueetech.com](mailto:info@ueetech.com)

Website: [www.ueetech.com](http://www.ueetech.com)

***Making Mining Safer, One Innovation at a Time***

*Note: Specifications subject to change without notice. Please contact us for latest product information.*

