



MEWP Shield - Product Overview

June 2023

Proximity Detection and Control MEWP Shield



There's no such thing as being 'half-crushed'! Using the latest sensor technology combined with innovative software for proximity detection and control, our mobile Elevated Work Platform (MEWP) Shield system engages the worker protection function to identify potential hazards before an elevated work platform incident occurs. MEWP Shield provides excellent secondary guarding protection in industrial proximity control.



Overhead Object
Detection



Graduated alert as
hazards approach



Control Interlock
System



Retrofittable
to most EWP's
without modification



Meets Global
Safety Standards



Product Benefits

- Detects hazards before incidents occur
- Simple installation, easily retrofit
- Engineered interlock control to stop movement
- Improved reliability in machine safety
- Reduced incident related costs
- Reduce Risk Profile
- Configurable detection distances

The crushing issue

What value could we put to preventing hundreds of entrapment & crushing incidents around the world, every year?

Entrapment / Crush incident Statistics

- Entrapment is defined as an incident whereby a person's body or head is trapped or crushed between the work platform and an external structure following movement of the MEWP*
- From 2012-2021 91% of all reported entrapment incidents resulted in a fatality*
- The estimated cost of a crush / entrapment incident (avg) is US\$67k direct and US\$73k indirect cost - total of US\$140k**
- ~20% of all fatalities associated with MEWP incidents were due to entrapment / crush incidents*

Current Mitigation

- "Crush Bars" have been utilised to stop motion; however, these devices typically require 25kg of pressure to activate
- Training courses educate operators on safe operating methods, however incident reports show operators lose focus, cut corners or miss critical hazards resulting in serious incidents
- Other solutions use LIDAR detection causing issues with false alerts for certain materials often found in work environments
- Physical barriers are used in some cases, however external barriers make it difficult for operators to work in tight spaces
- Systems focused on the operator's position (two hands, proximity to controls) are inefficient and lead to nuisance alerts

The Solution

MEWP Shield protects operators on an expansive model range of elevated work platforms (EWP's) from being crushed or injured on building, warehouse and construction sites

Utilising filtering technology MEWP Shield uses ultrasonic sensors to detect both overhead and shearing obstacles, alerting the operator to potential hazards

MEWP Shield is unique in offering secondary guarding that prevents crushing incidents BEFORE they happen protecting all basket occupants

A companion application (iOS & Android) allows system owners to configure detection distances, view detection data, and review data logs of system alerts

MEWP Shield keeps operators safe from serious injury whilst minimising property damage and lost productivity due to incidents



Competitors

Current MEWP Shield competitors:

- **EQSS Overwatch** (Australian Based) – LIDAR system focused on operator positioning. Estimated cost - US\$1,300
- **JLG SkyGuard** (US Based) – Pressure activated system (23kg) exclusive to JLG. Estimated cost - US\$6,500
- **Genie LiftGuard** (US Based) – Cable pressure activated system exclusive to Genie. Cost unavailable



MEWP Shield competitor comparison

Comparison of other solutions on the market

	MEWP Shield	EQSS Overwatch	JLG SkyGuard	Genie LiftGuard
Able to protect all occupants of basket	Y	N	N	N
Identifies hazards external to the basket	Y	N	Y	N
Multiple configurations based on machine type (i.e.. Scissor lift, boom lift, mast lift)	Y	N	N	N
Requires physical pressure to activate stop function	N	N	N (enhanced) Y (Standard)	Y
Available for multiple OEM MEWPs factory fitment	Y	Y	N	N
Retrofittable to multiple OEM's	Y	Y	N	N
Detection Distance configurable	Y	N/A	N	N/A
Event data (Time & Location) available for download	Y	Y	N	N
Override function	Y	Y	Y	N
Companion App (iOS & Android)	Y	Y	N	N
Base retail system Cost <\$1,500 (\$AUD)	Y	N	N	N
Overhead AND shearing hazard detection	Y	N	Y	N
Sensing Technology	Ultrasonic	LIDAR	Ultrasonic (enhanced)/ Pressure Bar	Pressure Wire

MEWP Shield features

Sensor	
Sensors per module	1 per module to allow versatility of placement and any orientation System can have from 1 to 8 sensor
Sensor Size	Small, easy to mount virtually anywhere
Sensor enclosure	Diecast Aluminium
Sensor Mounting	Any position
Number of sensor modules per system	8
Sensor communications	Hard wired
Sensor module power	Hard wired
Sensor type	Low profile button, ultrasonic
Integrated microcontroller	ESP32 ARM 32 bit LX6
Communications with main controller	Wired, LIN Bus, custom protocol

Control Unit	
Ownership of hardware	Protective designed in-house
Ownership of firmware (wireless protocol)	Protective developed in-house
Enclosure	Polycarbonate
Connectors	M12 standard instrumentation type
Harness	M12 and wire tail, single cable daisy chain configuration

User Interface	
Indicators	Centralised on separate user panel, plus local sensor indication. One multicolour LED on sensor for status indication
Override function	Easily accessible Push Button Switch
Bluetooth App	Android and Apple versions for system monitoring, adding sensors, adjusting detection distances and retrieval of logs and data

MEWP Shield features

System Features	
System Self-tests	Extensive - tests continuously for presence of user panel and sensors and detects loss of communications within a few seconds sounding an alarm and logging events
Data Logging	All system events logged, with timestamp, such as warning and alarm conditions, sensor and system faults
Adding of sensors	Sensors can be added and removed at will using the App
System configuration	Each sensor detection zone can be adjusted using the App at installation time or in the field if required
System expansion	LIN Bus connectivity allows for future connection of any other type of sensor, relay, switch, indicator or alarm Up to 14 devices can be connected to the LIN Bus
Communications	LIN Bus, All devices are hard wired into the system in a daisy chain/star configuration simplifying cable routing and connections
CAN Bus capability	YES J1939
Outputs for machine control	2 x Relay, 1 x Solid State
Integrated microcontroller	ESP32 ARM 32 bit LX6
Bluetooth Connectivity	ESP32 PICO

MEWP Shield specifications

Sensor	
Supply Voltage	3.3V
Average Current Draw	65mA (@3.3V) (Note 1)
Communications	LIN-BUS
Max. Nodes per Bus	8
Sensing Range	280mm Min.
	4500mm Max.
Size	77L x 55W x 32H (L, R, D-Models), 77L x 67W x 32H (B-Model) (Note 2)
Net Weight	110 grams
Mounting	Four mounting points, M3.5 Screws or M4 Bolts
	Brackets provided or supplied by customer (Note 3)
Operating Temperature	-30 to +85 °C
Storage Temperature	-40 to +105 °C
Ingress	IP67 in accordance with ISO16750 Section 5.4.3
Enclosure	Diecast aluminum alloy, black powder coated

Operator Panel	
Supply Voltage	12-24V
Average Current Draw	11mA (@12V), 6mA (@24V)
Communications	LIN-BUS
Max. Nodes per Bus	1
Size	121L x 54W x 33H
Net Weight	135 grams
Mounting	Four mounting points, M3.5 Screws or M4 Bolts
	Brackets provided or supplied by customer (Note 3)
Operating Temperature	-30 to +85 °C
Storage Temperature	-40 to +105 °C
Ingress	IP67 in accordance with ISO16750 Section 5.4.3
Enclosure	Diecast aluminum alloy, black powder coated

MEWP Shield specifications

Base Controller	
Power	12 or 24 volt automotive (4.8 – 40 VDC) Max 100mA
Internal Power Hold-up	5 seconds for orderly user alert and shutdown (Note 4)
Operator Interface	GUI via Bluetooth® to Android® or iOS® device
Communications	LIN-BUS, CAN-BUS
LIN-BUS Limitations	Max 16 Nodes, Max 40m length (Note 5)
Internal Lockout Contact	240VAC / 220VDC contact Rating, 3A contact current Max.
Open Drain Outputs	Sink, 2.5A 60VDC max (interface to ext. lamps, sounders etc.)
Size	122L x 83W x 40H not including space for cable exits
Net Weight	300 grams
Mounting	Four mounting points, M6 hard-mounted
Operating Temperature	-30 to +85 °C
Storage Temperature	-40 to +105 °C
Ingress	IP65 in accordance with ISO16750 Section 5.4.3
Enclosure	Polycarbonate with clear lid
Electrical Susceptibility	Meets ISO7637 parts 1&2



Protective Pty Ltd

181 Beringarra Avenue
Malaga, Perth Western Australia 6090
Australia

www.protective.net.au

+61 08 6244 4353

sales@protectiveinnovations.com.au

Disclaimer and Limitation of Liability

The material and information contained in this document is for general information purposes only. You should not rely upon the material or information in this document as a basis for making of any business, legal or any other decisions. Whilst we endeavour to keep the information up to date and correct, we make no representations or warranties of any kind, express or implied about the completeness, accuracy, reliability, suitability or availability with respect to the document or the information, products, services contained in the document for any purpose. Any reliance you place on such material is therefore strictly at your own risk.

