

Personnel Protection Unit

The Personnel Protection Unit (PPU) alerts workers in close proximity to heavy mobile equipment that is fitted with a Personnel Protection System in order to minimize the risk of personal injury. The unit integrates with the Wabtec CAS-GPS proximity detection system and provides two-way alarming between the wearer and heavy mobile equipment at a pre-set range that is configurable.

Principle of Operation

Detects magnetic field emitted by a pre-fitted heavy vehicle and alerts the vehicle of personnel presence via V2V digital radio link. Configurable also to alert to vehicles based on proximity (GPS distance).

Features

- Uses low frequency magnetic (LFM) proximity detection that sees through metal and strata and is not dependent on line-of-sight for operation. Includes a vehicle operator safe zone to avoid operator being alarmed by their own unit.
- Two-way alarming with audible, vibration and visual alarms when in proximity of a heavy vehicle
- Programmable warning & alarm zones up to 12 m range maximum (from centre-axis of LFM antenna or 9m range from the side-axis)
- Belt mount tag unit with remote alarm unit suitable for helmet mounting
- Duress alert / Remote shutdown function
- Remote worker monitoring (man-down alarm) capability
- GPS tracking
- Logging of all activity and events for playback via CAS-WEB application
- Battery powered, portable unit with low & flat battery alerts
- Single unit desktop USB charger unit or optional multi-unit (gang) charger for charging up to 20 units at a time scalable to 300 units per test station
- Test station for verifying PPU functionality prior to use (functions as controller for multi-unit (gang) charger)

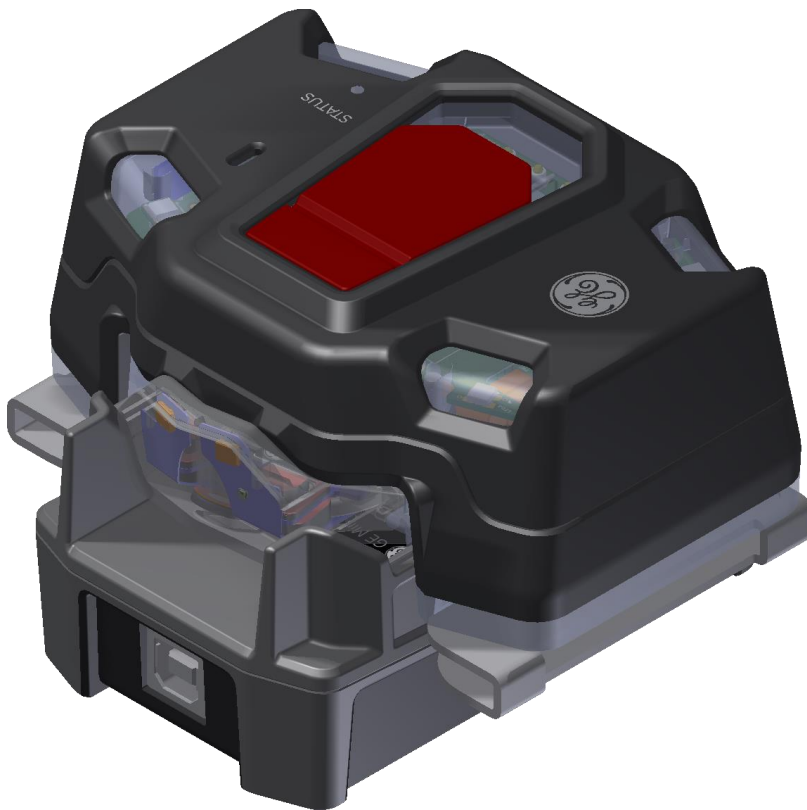


PPU showing tag with docked remote alarm

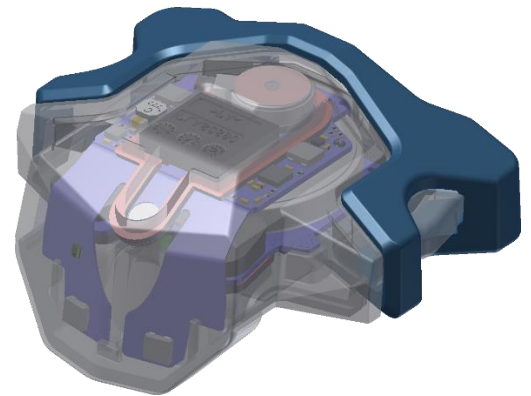
SPECIFICATIONS

Packaging	Belt mounted Tag Unit with Remote Alarm Unit suitable for mounting on hard hat, bump cap, clothing, or other locations
Range & Accuracy	LFM Receiver: 0 – 12m range +/- 1m accuracy (from LFM antenna centre-axis or 9m range from side-axis) V2V radio link: 0 – 100m range
Alarm Zones & Alerts	1) Warning zone example alert – two chirps at low duty cycle with flashing LED 2) Alarm zone example alert – constant alarm with RED flashing LED and vibration Warning & Alarm zone ranges and alert types are configurable
Programmable Parameters	Unit ID, alarm settings, duty cycle, duress alert/remote shutdown function, battery alerts, V2V settings
Response Time	≤ 0.5 second in Alarm zone to detect valid alarm and generate programmed alarm
Data Logging	Internal data logging in non-volatile memory for 24 hours minimum duration at 60 second log intervals. Data off-loadable via the multi-unit (gang) charger unit or via vehicles in V2V range Data logged is time and date stamped and includes the following parameters: <ul style="list-style-type: none"> All proximity alarm events (vehicle ID's, range, GPS location, gear status, speed) Operator key presses System health status
Self-Diagnostics	Internal self-checks on battery status and basic functions – faults generate audible & visual alarm. Test Station used to provide two-way functional testing of transmitter / receiver circuits and audible / vibrating alarms.
Man-Down Alarm	Unit may be configured to generate a 'man-down' alarm when there is no movement for a predetermined time period. Personnel Protection Unit transmits man-down (and duress-alert) alarms that can be detected by vehicles within V2V digital radio link range. Alarms detected by vehicles are transmitted to the CAS-WEB reporting system for generating SMS or radio emergency alerts (contingent on vehicle connectivity to CAS-WEB using mine site communications infrastructure). Programmable pre-warning period before the Man-down alarm is activated with the ability to cancel (shaking the unit).
Duress Alert / Remote Shutdown	Push button activated by hold for ≥0.5s Deactivated by hold for ≥3s Programmed to send a duress code over the V2V digital radio link to all vehicles in range for initiating a remote vehicle 'shut-down' procedure within a predefined range with in-cabin alert message. Alarms detected by vehicles within V2V range are transmitted to the CAS-WEB reporting system for generating SMS or radio emergency alerts (contingent on vehicle connectivity to CAS-WEB using mine site communications infrastructure). Programmable minimum ON time & time-before-activation.
GPS receiver	Low power GNSS receiver Enables personnel location tracking and journey replay using CAS-WEB reporting system.
Tag Unit – Remote Alarm Unit Pairing	License exempt transceiver, power level programmable to meet compliance requirements
Battery System	Tag Unit & Remote Alarm Unit: use rechargeable Li-ion batteries compliant with UL1642 Battery Life: 24 hours minimum (based on a 5 minute per hour alarm duty cycle) Charging: <ul style="list-style-type: none"> Single unit desktop USB charger or expandable multi-unit (gang) charger (20 unit) scalable to 300 units per test station Remote Alarm Unit: charged through the Tag Unit whilst on the charger Maximum charge time: 6 hours from flat condition 500 charge/discharge cycles to 80% depth of discharge (20% of remaining capacity) at 25°C yields 70% of original battery capacity
Operating Temperature	-20°C to 55°C
Storage Temperature	-40°C to 85°C
Operating Humidity	5% to 95% RH
Protection Rating	IP 67 (IEC 60592)
Size and Weight	Tag Unit (with belt adaptor) (H x W x D): 76 mm x 100 mm x 50 mm, 250g Remote Alarm Unit (H x W x D): 28 mm x 54 mm x 48 mm, 31g
Part Numbers	
PROD1006-n	CAS-GPS PERSONNEL PROTECTION UNIT REGION n INCLUDES:
PROD1060-n	CAS-GPS PPU TAG REGION n – 100 mW ERP Digital Radio Transceiver
PROD1061	CAS-GPS REMOTE ALARM – 10 mW ERP Digital Radio Transceiver

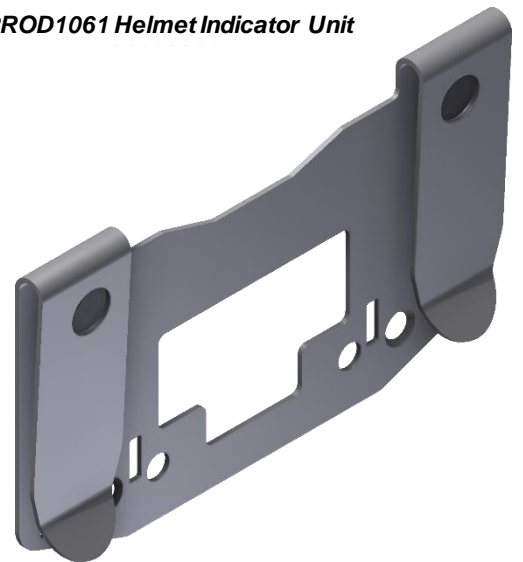
PROD1062	CAS-GPS PPU BELT ADAPTOR (<i>BELT LOOP</i>)
PROD1064	CAS-GPS PPU REMOTE ALARM HELMET ADAPTOR
Accessories	
PROD1063	CAS-GPS PPU CLIP ADAPTOR (<i>BELT CLIP</i>)
PROD1007-X1	CAS-GPS PPU DOCKING STATION (SINGLE UNIT) (<i>DESKTOP USB CHARGER</i>)
PROD1007-X16	CAS-GPS PPU MULTI CHARGER LOCKABLE (16 UNIT)
PROD1007-X20	CAS-GPS PPU MULTI CHARGER (20 UNIT)
PROD1082-n	CAS-GPS PPU TEST STATION REGION n
Region Variants (n)	
Region 1	869.525 MHz Digital Radio Transceiver
Region 2	920 MHz Digital Radio Transceiver
Region 4	866 MHz Digital Radio Transceiver
Region 5	864.5 MHz Digital Radio Transceiver (25 mW)
Region 7	921/922 MHz Digital Radio Transceiver
Country Availability	Please consult your Digital Mining Technology Representative
Compliance	RF Spectrum, EMC, Electrical Safety – for all countries of sale Shock & Vibration (IEC 60068)



PROD1006-n comprising PROD1060-n & PROD1061 mounted on Docking station PROD1007-X1



PROD1061 Helmet Indicator Unit



PROD1063 Belt Clip accessory

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