# PAS-Z, PAS-ZR and PAS-XP

## Benefits

- Suitable for above and below ground operation with seamless changeover between environments

- Compact (PAS-Z), ruggedized (PAS-ZR) and Explosion Proof (PAS-XP) versions available

- LED or radar type displays

- Accurate range and directionality for all vehicles, personnel, obstacles and assets

- 4 user-defined asset groups, which includes personnel, heavy vehicles, light vehicles and assets. Each asset group has 4 uniquely customizable zones

- Compatible with both electrical and diesel trackless mobile machines

- Easy and convenient local configuration or user friendly software for future download

- All interactions are logged, with the system providing extensive reporting capabilities

- Provides customisable audible and visual alarms

- Self-contained design with minimal footprint allows quick installation and easy maintainability

- Proven in mining, tunnelling, construction, forestry, ports and other industrial applications

## Proximity Detection and Collision Avoidance solution for above and below ground operations
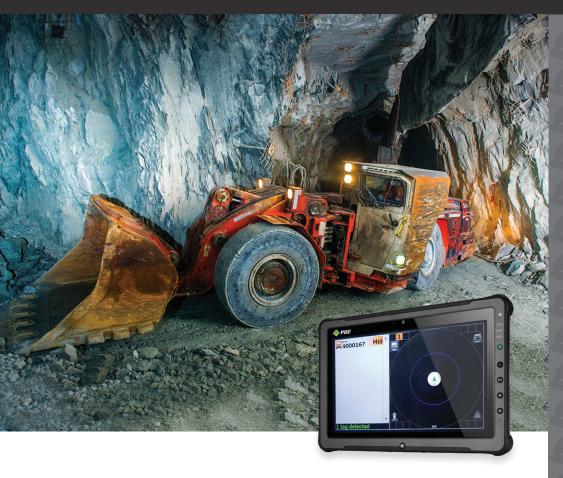
**PBE Group designed and manufactured the tag-based Proximity Alert Systems (PAS) to enhance workplace safety by reducing the risk of collision through asset and personnel detection and warning. The device alerts drivers to the presence of personnel, vehicles, obstacles and user defined geofences.**

PAS is a complete solution, suitable for all vehicle types for above and below ground operation. The system provides local driver and personnel indications as well as remote real time vehicle monitoring.

PAS records all interaction events and offers extensive data analysis and user-defined reporting capabilities. PAS has an integrated issuing centre that provides automated site entry/exit monitoring and control for approved personnel and vehicles.

Using a combination of radar, electromagnetics, RFID, and GPS, PAS provides the most accurate and flexible Proximity Detection and Collision Avoidance solution available for the mining, tunnelling and construction industries. ◆

## PBE

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| General Specification | PAS-Z | PAS-ZR | PAS-XP | PAS-O | PT-Tag | Charging Station (25) | Charging Station (10) |
|---|---|---|---|---|---|---|---|
| Dimensions (LxWxD) mm | 153 x 102 x 38 | 231 x 125 x 90 | TBD | 178 x 90 x 97 | 84 x 33 x 27 | 330 x 518 x 76 | 772 x 512 x 76 |
| Weight (kg) | TBD | TBD | TBD | TBD | 0.087 | 4.1 (With Tags) | 9.0 (With Tags) |
| Voltage *Optional 24-12VDC converter available | 11-15 VDC* | 11-15 VDC* | 11-15 VDC* | 3.7 VDC rechargeable Li-ion polymer | 3.7 VDC rechargeable Lithium-ion | 110 - 220 VAC | 110 - 220 VAC |
| System Operating Temperature | 0˚to 70˚C 32˚F to 158˚F | | | | | | |
| Enclosure Details | TBD | TBD | TBD | 4x, Sealed, Polycarbonate | IP66 / NEMA 4 | | |
| Warranty | 12 Months | | | | | | |

## Range/Accuracy

| | | | | | |
|---|---|---|---|---|---|
| RFID | ≈ 60m/Zonal awareness | | | ≈ 60m/Zonal awareness | ≈ 60m/Zonal awareness |
| Radar | ≈ 100m/≈ 0.3m | | | ≈ 45m/≈ 0.3m | ≈ 100m/≈ 0.3m |
| Electromagnetic (EM) | ≈ 10m/≈ 0.3m | | | ≈ 10m/≈ 0.3m | ≈ 10m/≈ 0.3m |
| GPS | Autonomous ≈2.5m CEP; SBAS = ≈2.0m CEP | | | | |

| Frequencies PAS-Z/ZR/XPS/O & Tags | ITU Region 1 | ITU Region 2 | ITU Region 3 |
|---|---|---|---|
| RFID | 868.3MHz | 915MHz | 920MHz |
| Radar | 4.5GHz | 4.5GHz | 6.5GHz |
| Electromagnetic (EM) | 122.1kHz | 122.1kHz | 122.1kHz |

## Technology and Features

- Multiple technologies for redundancy and accuracy (radar, electromagnetics, RFID and GPS)
- Accuracy ~30cm and ranges of ~150m
- PAS meets all relevant international standards and is Level 9 EMESRT certified
- Real time remote monitoring and control using a 3G/Wi-Fi network interface and proprietary software
- Automated issuing and testing station
- LED or radar type display (external tablet)
- The self-contained PAS-O allows additional protection of obstacles
- 'Safe Nodes', to define areas where detection not required (e.g. walkways)
- Dynamic Projected Detection Angle (DPDA) reduces nuisance stoppages during dovetailing and passing scenarios
- Powerful reporting capabilities with bar charts, heat maps and display of all recorded interactions
- 4 outputs and 4 inputs for alarms or allowing optional control and interaction with vehicle and machines
- Geo-fencing capability where each one can have unique settings such as zones and alarming
- Multiple outputs and CANBUS functionality for vehicle integration and control
- Compatible with PBE's tracking and entry/exit system for an integrated solution
- Powered via the ignition circuit of the vehicle/machine or via an auxiliary power source
- Data extraction either via the local USB port or remotely via the available network and proprietary software
- 10 and 25 Tag Charging Stations

## Inputs/Outputs

| | |
|---|---|
| PAS Outputs PAS-Z & PAS-XP | SPST contacts (2 NC & 2 NO); apply up to 30 VDC / 1 A |
| PAS Outputs PAS-ZR | SPST contacts (2 NC, 1 NO, & 1 NO configured for sounder strobe); For outputs 1, 2, & 4, apply up to 30 VDC / 1 A; Output 3 supplies voltage (Vin) for sounder strobe activation |
| PAS Inputs PAS-Z, PAS-ZR & PAS-XP | Input 1 & 2; apply up to 30 VDC (<10V = 0, 10-30V = 1). Input 3 & 4; switch closure/dry contact monitoring (open = 0, closed = 1) |



## About Us

PBE Group ("PBE") provide an adaptive and flexible integrated solution where a reliance on safety and productivity is essential. PBE is a true global systems provider for the mining, tunnelling, construction and associated markets. Our specialised engineering team integrates our industry specific manufactured products and best in class 3rd party products to ensure a sophisticated, robust and commercially viable solution. Our growth in international markets is based on the key verticals of Technology, Power and Service Delivery – fundamental in any industrial project. Our experience in confined space and underground construction has enabled PBE to complete over 850 projects in more than 60 countries with 320 staff and 18 regional offices. ◆

## Disclaimer

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