



brigade-electronics.com

We prevent collisions and save lives.

Brigade Electronics is a market leader of safety devices, with solutions to suit all commercial vehicles and mobile plant.

Since 1976, when we introduced the very first reversing alarm to Europe, we have championed the cause of vehicle and plant safety and continue to lead the way, pioneering many products and developing and patenting new technology.

We strongly believe in a complementary range of passive and active systems to warn and assist the driver whilst protecting workers, pedestrians and cyclists and constantly research technologies to see how they can further improve safety. Many products in our portfolio were initially introduced to the UK, Europe and even the world by Brigade.

Our product portfolio includes 360° camera systems, camera monitor systems, White Sound® reversing alarms, obstacle detection sensors, obstacle detection radar and digital recorders.

**Brigade Electronics Group Plc
is ISO 9001 Quality
Management certified.**



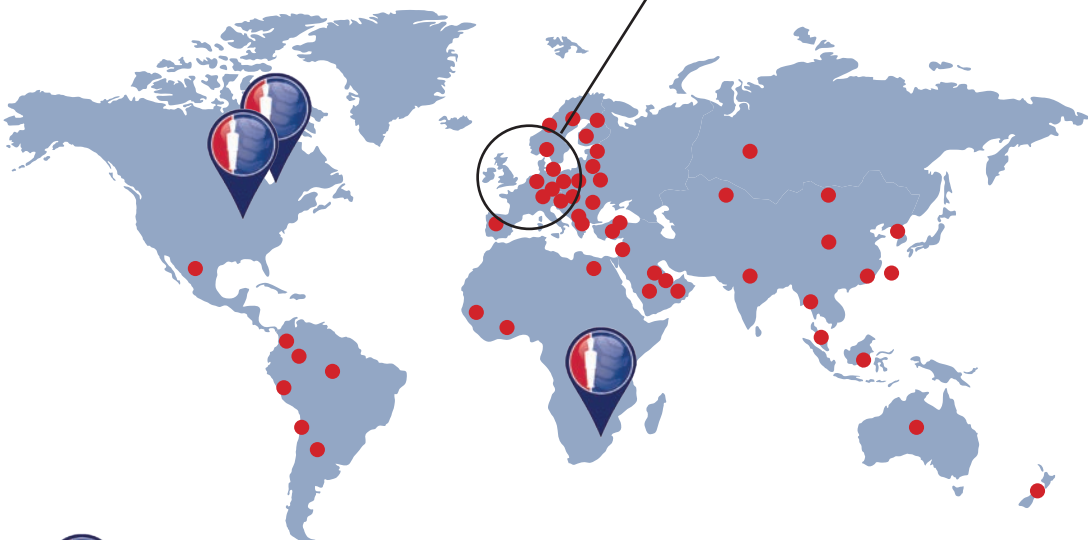
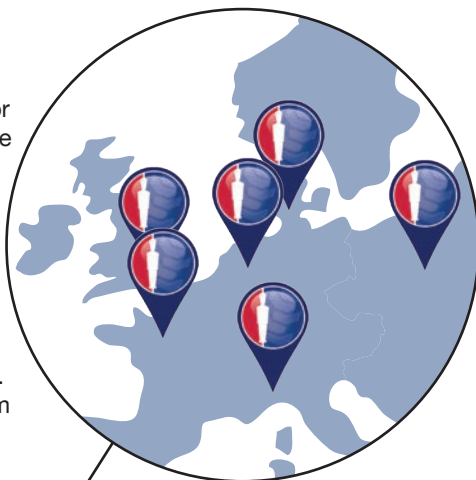
RS 622653
ISO 9001

Driving Global Safety



From our humble beginnings in the UK, we are now viewed as a market leader in vehicle safety systems. With a strong network of worldwide subsidiaries and approved distributor partners, all chosen for their high level of service and expertise, we have the experience and knowledge to understand your industry and the problems you face wherever you are.

Whether you operate an international, multi-vehicle fleet or a small business in a remote corner of the globe, on or off-road, vehicle or machine, Brigade has a local specialist to help with your safety requirements. We can provide a solution for a specific problem or offer friendly advice and support if you are new to vehicle safety systems.



Brigade Group: United Kingdom, Germany, Italy, Benelux, France, USA, South Africa, Canada, Poland

● **National Distributors**

Please visit our website for more information, individual specifications and to view our full range of safety solutions.

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Product Range



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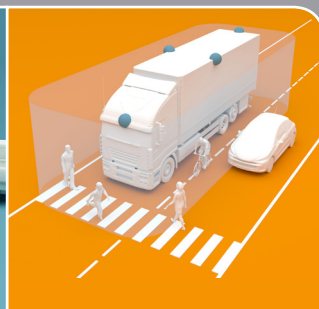
Brigade is committed to making roads and worksites safer for all. Wherever you are, vehicles and mobile plant continue to be a danger but whether you operate on- or off-road, vehicle or machine, large or small, we can help. We can provide a solution for a specific issue or offer friendly advice if you are new to vehicle safety systems.



Backeye®
Camera monitor systems



Backsense®
Radar obstacle detection



Backeye®360
360° camera system



bbs-tek®
White Sound® alarms



**Ultrasonic
sensors**
Obstacle detection



MDR
Mobile Digital recorders

How Brigade Can Help

Brigade Electronics is a market leader of safety devices, with solutions to suit all commercial vehicles and mobile plant.

Brigade's complementary range of safety devices help prevent collisions by assisting the driver whilst protecting workers, pedestrians and cyclists.

Product Range



Backeye® 360 360° camera system

Backeye®360 is an intelligent four-camera system designed to eliminate vehicle blind spots and assist low-speed manoeuvrability by providing the driver with a complete 360° view of their vehicle or machine in a single image.

Backeye® Camera monitor systems

Camera Monitor Systems can help eliminate vehicle blind spots to prevent collisions. Cameras are available to cover the rear, side and front blind spots as well as internal views and to monitor vehicle-specific functions. Multiple camera images can be viewed on a single in-cab monitor.

MDR Mobile Digital recorders

By simultaneously recording footage from up to eight vehicle-mounted cameras, a digital recorder can provide irrefutable evidence in the case of an incident. The lockable hard drive can store up to 1164 hours of data which can be easily accessed via a PC or uploaded via the 3G/4G network or dedicated WiFi.

bbs-tek® White Sound® alarms

Warning Alarms are vital audible devices to warn pedestrians and workers that a vehicle is manoeuvring. bbs-tek® alarms are the safest and yet quietest on the market due to their instantly locatable and directional sound. Options include smart alarms, which adjust to the ambient noise level and speaking alarms. bbs-tek® warning alarms are patented to Brigade.

Ultrasonic sensors Obstacle detection

2, 3 or 4 sensor systems which inform the driver of distance between the vehicle and any obstacles, whether moving or stationary. Increases safety when low-speed manoeuvring, reversing or in the near-side and front blind spots where pedestrians and cyclists can otherwise go undetected.

Backsense® Radar obstacle detection

Radar Obstacle Detection informs the driver of distance between the vehicle and obstacles, whether moving or stationary, by providing a graduated in-cab audible and visual warning. Backsense® radar works effectively in harsh conditions and poor visibility. Programmable system with bespoke detection range up to 30m in length and 10m in width.

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Backeye®360



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All vehicles have blind spots – areas around the vehicle that are obscured to the driver by bodywork or machinery. When manoeuvring, these blind spots present a significant danger to anything or anyone in the vehicle's path and inhibit the driver's ability to operate the vehicle safely.

Mirrors and single-view cameras can help but, even with this extra assistance, the driver may still not see everything in the vehicle's path.

Backeye®360 is an intelligent camera monitor system designed to assist low-speed manoeuvring by providing the driver with a complete surround view of the vehicle in real time.

- Eliminates blind spots, improves safety
- Comprehensive view of the surrounding area in a single image
- Reduces collisions with people and objects



About us:

Brigade Electronics is a market leader of safety devices, with solutions to suit all commercial vehicles and mobile plant.

Brigade's complementary range of safety devices help prevent collisions by assisting the driver whilst protecting workers, pedestrians and cyclists.

Research shows that in the time it takes to scan four mirrors, assess and then react to hazards, even at speeds as low as 5kph, a vehicle could travel as far as 10m

Backeye®360

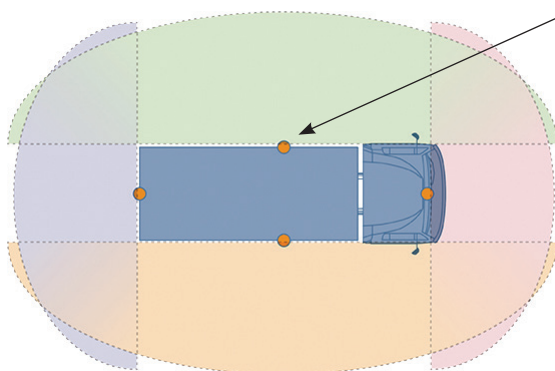


Backeye®360 is an intelligent camera monitor system designed to assist low-speed manoeuvring by providing the driver with a complete 'bird's-eye' surround view of the vehicle in real time.

How it works

Brigade offers a choice of 360° technologies, which work with four ultra wide-angle cameras with each one covering one full side of the vehicle with a viewing angle of over 180°.

High-mounted on the front, rear and sides, the calibrated cameras capture all of the surrounding area including the blind spots of the vehicle or machine.

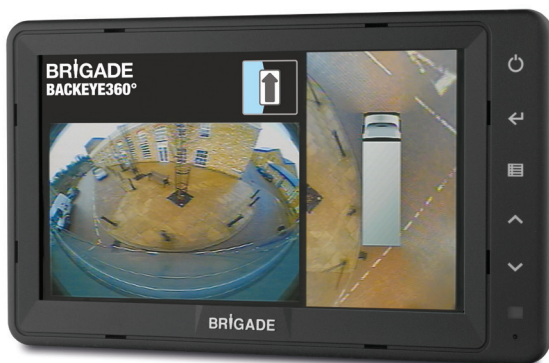


The four live images are simultaneously sent to an electronic control unit (ECU) where they are instantly processed, combined, blended and stitched. The distortion from the wide-angle camera lens is also corrected before delivering a clear, single, smooth, real-time image onto the driver's monitor.

Backeye®360 will work on virtually any rigid vehicle or machine, large or small and the distance of the viewing area can be set to suit the application.

Backeye®360 is compatible with Brigade's MDR recording systems.

The flexibility of Brigade systems means there are solutions suitable for both on- and off-road applications.



Actual Backeye®360 image

Please visit our website for more information, individual specifications and to view our full range of safety solutions.

brigade-electronics.com/360



Ultrasonic Obstacle Detection sensors



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Reducing blind spots and improving driver visibility are important issues for operators of road-going vehicles. Brigade's ultrasonic proximity sensors minimise both vehicle damage and collisions with pedestrians, cyclists or objects. Perfect for road-going commercial vehicles operating in confined spaces or manoeuvring at low speed. The detection system alerts the driver of obstacles close to the vehicle, whether moving or stationary.

Brigade's range of ultrasonic sensor systems includes;
Backscan®, Frontscan®, Sidescan®, Cornerscan™ and Stepscan™.

- Gives peace of mind to the driver
- Greater protection to pedestrians, cyclists and workers
- Minimises damage to vehicle, property and other objects



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Brigade's complementary range of safety devices help prevent collisions by assisting the driver whilst protecting workers, pedestrians and cyclists.

Many incidents involving vulnerable road users, especially cyclists, are due to the nearside blind spot.

Ultrasonic Obstacle Detection systems



The detection system alerts the driver of obstacles close to the vehicle, whether moving or stationary. An audible and/or visual in-cab warning informs of distance whilst an optional external speaking alarm can be added to alert cyclists and pedestrians that the vehicle is turning.

Backscan®

4 sensor system fitted to rear of vehicle as an invaluable aid to safe reversing.

- Underslung or flush mount installation
- System activated by reverse gear

Sidescan®

4 sensor system fitted to side of vehicle. Particularly relevant for the near side blind spot, where cyclists or pedestrians can otherwise go undetected.

- Underslung or flush mount sensors
- System can be activated below designated speed and/or turn indicator
- Optional external speaking alarm with side turn warning
- Intelligent mute function

Frontscan®

4 sensor system fitted to front of vehicle. Particularly relevant for front blind spot on high cabs where low objects or pedestrians can be hidden.

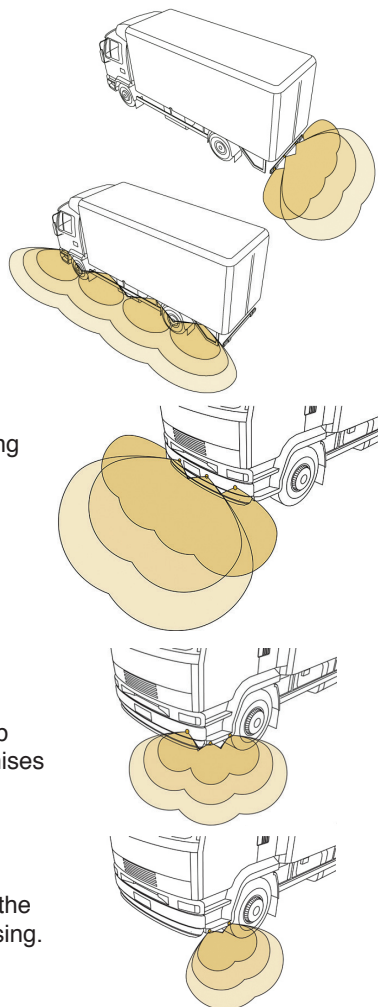
- System can be activated below designated speed

Cornerscan™

3 sensor system fitted to near side corner of vehicle cab to detect objects in the front near side blind spot. Minimises the risk of damage to the vehicle whilst manoeuvring and turning whilst reversing.

Stepscan™

2 sensor system fitted to nearside cab step. Minimises the risk of damage to the vehicle when turning whilst reversing.



Please visit our website for more information, individual specifications and to view our full range of safety solutions.

brigade-electronics.com/UDS



Reversing and Warning Alarms



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Reversing alarms are devices to warn anyone at risk from it moving backwards. Beeping alarms were introduced to Europe in the 1970s. They provided a vital step forward in safety yet, over time, they have been shown to have a number of inherent issues; specifically concerning their environmental impact, but also in terms of safety – the exact reason they were introduced in the first place. There is now a much better alternative.

bbs-tek® white sound® reversing alarms

- bbs-tek® multi-frequency reversing alarms use white noise (a wide range of frequencies). This enables the listener to instantly locate where and what direction the sound is coming from.
- bbs-tek® White Sound® reversing alarms create a “ssh-ssh” sound which is gentle on the ear and dissipates quickly, meaning the alarm can only be heard in the danger zone.
- The sound from bbs-tek® subsides quickly outside of the danger zone, meaning the alarms do not cause noise-nuisance thus eliminate noise complaints.



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Brigade's complementary range of safety devices help prevent collisions by assisting the driver whilst protecting workers, pedestrians and cyclists.

All bbs-tek® White Sound® warning and reversing alarms have a lifetime guarantee

reversing alarms

Why choose bbs-tek® over beeping alarms?

- **Instantly Locatable Sound**

bbs-tek® multi-frequency reversing alarms use white noise (a wide range of frequencies). This enables the listener to instantly locate where and what direction the sound is coming from. The broadband sound also gives workers wearing hearing protection devices (HPDs) and people with hearing difficulties a better chance of hearing the alarm.

- **Heard Only Where it Matters**

bbs-tek® White Sound® reversing alarms create a “ssh-ssh” sound which is gentle on the ear and dissipates quickly, meaning the alarm can only be heard in the danger zone.

- **Quieter, Yet Safer**

The sound from bbs-tek® subsides quickly outside of the danger zone, meaning the alarms do not cause noise-nuisance thus eliminating noise complaints.

Furthermore, with its multi-frequency range, White Sound® alarms can operate effectively at 5 decibels lower than a conventional beeping alarm.

bbs-tek® White Sound® reversing alarms are endorsed by the Noise Abatement Society and have been awarded the Quiet Mark for their environmental benefits.

SMART bbs-tek®

Our patented white sound reversing alarms are not only the safest alarms in the world due to their instant locatability and directional sound, but, with the inclusion of our self adjusting models, they're also the smartest. bbs-tek smart reversing alarms continually adjust to 5-10 decibels above the background noise level, making them ideal for environments with varying levels of noise.

- Continually adjust to 5-10 decibels above ambient noise level.
- Ideal for varying environments



Please visit our website for more information, individual specifications and to view our full range of safety solutions.

brigade-electronics.com/BBS



Camera Monitor systems

Cameras



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The size of commercial vehicles and machines mean vehicle blind spots are a major factor in collisions across all industries. Operator positions, bodywork, bulkheads and absent rear windows create further restrictions and can greatly limit driver visibility, making collisions even more likely. The significant financial cost of vehicle and property damage is magnified by associated costs such as downtime but, even greater, are the corporate and emotional costs when there is personal injury.

Brigade's camera monitor systems enable drivers and operators to manoeuvre and drive safely. Vehicle-mounted CCTV cameras can help the driver to see blind spots and provide a reversing aid by delivering a live feed on the monitor of everything in the camera view, including people or obstacles.

- Reduce blind spots
- Meets Health and Safety requirements
- Compatible with Brigade's MDR vehicle recorders
- Peace of mind for drivers, passengers and operators



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The size of commercial vehicles and machines mean blind spots are a major factor in collisions across all industries

Cameras



Rear view camera

The rear blind spot is a huge problem regardless of vehicle/machine.

- A massive 90% of reversing accidents occur OFF road
- Reversing commercial vehicles account for one claim in every six.

Reversing camera benefits;

- Prevents costly reversing collisions
- Assists safe and easier manoeuvring



Side view camera

The nearside blind spot is accountable for many collisions. Most cyclist fatalities happen at low speeds, typically at road junctions and when pulling off from a stationary position.

Sideswipe collisions on motorways are another common result of poor visibility. This problem is especially acute with the driver of left-hand-drive vehicles driving on the left side of the road and vice versa.

Side view camera benefits;

- Removes the nearside blind spot
- Meets Class VI & V blind-spot requirements
- Reduces risk of sideswipe collisions and when turning



Front view camera

ISO 5006 for earth moving machinery states that a driver must be able to detect a person 1.5m high, 1m out from the perimeter of the machine, whilst blind spot directive 2003/97/EC (Class VI) requires that the front view is mandatory at forward speeds below 30kph for HGVs.

Front view camera benefits;

- Meets front view blind spot requirements
- Reduced front vehicle damage



Brigade's range of cameras include models with the following features:

- | | | |
|-----------|---|----------------------|
| • IP69K | • Flush-mount | • Mirror/normal view |
| • Heater | • Adjustable lens position | • Audio |
| • Shutter | • LED's for ultra-low light performance | • Day/night sensor |

Please visit our website for more information, individual specifications and to view our full range of safety solutions.

brigade-electronics.com/CMS



Mobile Digital Recording



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False claims, “crash-for-cash” and shrinkage are now costing businesses millions each year. Add to this the issues of vandalism and attacks on drivers and the job of a transport manager becomes evermore difficult.

By capturing footage from vehicle-mounted cameras, Brigade’s Mobile Digital Recorder (MDR) offers the solution. It provides an accurate witness and gives irrefutable evidence in the case of an incident. Having recorded footage where there are conflicting reports of actual events or by being able to prove a staged accident, companies can make major cost savings whilst, importantly, supporting their drivers, who are often the subject of increased scrutiny after an incident.

- Proof against insurance claims such as ‘crash-for-cash’ scams
- Recording provides protection for drivers who may be wrongly accused
- Provides irrefutable evidence in the case of accidents and legal proceedings
- Encourages driver best practice, so less vehicle damage and accidents
- Peace of mind for passengers and drivers
- Vandalism deterrent



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Brigade’s range of 4 and 8 channel MDRs include models with WiFi and/or 3G/4G connectivity capabilities

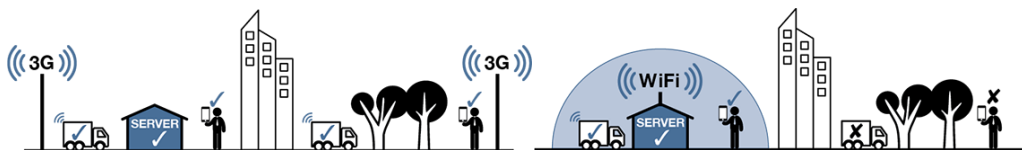
Mobile Digital Recording



Brigade's MDR range includes four-channel mobile recorders with a 500Gb hard drive and eight-channel, 1TB models. Both four and eight-channel vehicle recorders include models with WiFi and/or 3G/4G connectivity capabilities, allowing data to be accessed from the recorder without physically having to go to the vehicle.

Recording Features

- Records from up to eight cameras simultaneously
- Up to 1862 hours recording time
- Pre- and post-trigger recording of up to 30 minutes preceding or following an incident
- Simultaneous mirror-recording onto an in-built SD card, meaning the footage is always backed-up
- Built-in GPS for recording speed and location
- Eight configurable trigger inputs
- Audio functionality with high quality compression
- Motion detection for capturing footage when the vehicle is unattended
- G-sensor provides impact, acceleration and braking data
- Supports High Definition (AHD) cameras
- Interchangeable hard drive units



WiFi and/or 3G/4G recorder connectivity features:

- Download data without physically going to the vehicle(s).
- Set-up automatic downloading of data (triggered events) to a secure MDR server when in range of MDR WiFi.
- Stream data remotely via 3G/4G network.
- Real-time GPS tracking via 3G/4G network (providing vehicle has 3G/4G signal).
- Immediate notification of triggered events via 3G/4G network.
- Mobile App to access live views, vehicle locations, create snapshots and receive alerts.

Please visit our website for more information, individual specifications and to view our full range of safety solutions.

brigade-electronics.com/MDR



Backsense® Radar Obstacle Detection



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Industries such as mining, quarrying, agriculture and construction use machines and plant equipment which, by their very nature, pose a danger if they are not managed safely. Blind spots tend to be much larger on these vehicles and include not only the rear and nearside but also the front, especially with elevated driver positions.

Backsense® heavy-duty radar sensor systems are designed to detect people and objects in blind spots, significantly reducing accidents.

- Unique to Brigade
- Controlled beam pattern to minimise false warnings
- 5 stage audible and easy-to-read visual display
- Suitable for both on- and off-road applications
- Heavy duty – designed for severe weather conditions and all terrains



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40% of fatal accidents on quarry sites are caused by moving vehicles and 70% of collisions occur at low speed because of poor visibility

Backsense® Radar

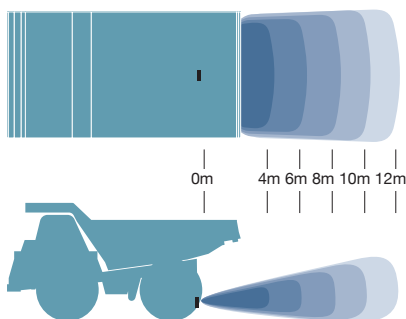


Backsense® heavy-duty radar sensor systems are designed to detect people and objects in blind spots, significantly reducing accidents. They detect stationary and moving objects, providing the driver with in-cab visual and audible warnings – alerting the operator whose attention cannot be focused on all danger areas.

Features & Benefits

Backsense® radar uses Frequency Modulated Continuous Wave (FMCW) technology, transmitting a continuously varying radar frequency signal with unique time stamps to each instance of the wave. The time of the returning wave is referenced to the stamp without the radar needing to pause transmitting. This gives more accurate detection than alternative radar products using Pulsed Radar technology that transmit a burst of radar and then listen for the returning wave.

Backsense® is available in 3 pre-set width and length models and a fully programmable radar, allowing complete control of the radar beam pattern and detection area. The spread and length of the beam can be set to the width of your vehicle or beyond (from 2m to 10m (6.5ft -33ft) and 3m to 30m (10ft-98ft) length and bespoke detection areas can be set to calibrate-out fixed objects or bodywork.



Example of programmable zones

- 5 stage audible and easy-to-read visual display
- Frequency Modulated Continuous Wave radar technology
- Controlled beam pattern to minimise false warnings
- Excellent close-in detection
- Suitable for both on- and off-road applications
- Heavy duty – designed for severe weather conditions and all terrains
- Unaffected by moisture, dust, vibration, heat, cold, UV, snow, ice, high wind, water and mud



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