Backsense® Radar

Backsense® radar systems use a patented Frequency Modulated Continuous Wave (FMCW) radar technology. Backsense® radar transmits a continuously varying frequency signal which gives a unique time stamp to each instance of the wave. The returning wave is then referenced against this without having to stop transmitting unlike pulsed radar. The advantages of FMCW over competitor pulsed radar are FMCW has better detection at long distance and greater resistance to electromagnetic noise.

Backsense® radar also controls the radar beam pattern, so the spread of the beam can be restricted to the width of the plant for the length of the detection area, to minimise false alerts on a busy site.

Ultrasonic

Ultrasonic sensors generate pulsed high frequency sound waves. If there is an object in the path of these pulses, they will be reflected back to the sensor as an echo. By measuring the time difference between the pulse being transmitted and the echo being received, it is possible to determine how far away the object is from the sensor.
Obstacle Detection

Backsense Radar

Ultrasonic
Obstacle Detection

Backsense Radar

- Detects multiple moving and stationary objects.
- High frequency continuous wave provides increased reliability & low false alarm rates.
- Effective through non-metallic surfaces e.g. plastic & fiberglass.
- BS-8000 model has adjustable detection range – 30m to 3m.
- Self-diagnostics function.
- Rugged cable system withstands harsh environmental conditions.
- In-cab 5 stage audible & visual alert.
- Auxiliary output to activate additional items, e.g. cameras, alarms etc.
- Transient, short circuit, overcharge & reverse polarity protection.
- Epoxy filled for maximum vibration resistance.
- Environmentally sealed sensor – IP69K.
- Sensor can be steam & pressure cleaned.
- Multi-voltage.
- 2 year warranty.

Voltage : 12–24V
Current Draw : 0.4A
Radar Frequency : 24.068GHz to 24.218GHz
Auxiliary Output : 0.5A
Weight : Sensor 0.7kg
Display 0.3kg
Vibration : 20G
Shock : 100G
EMC : CE & ‘e’ marked
Approvals : ISO 16750/13766, EN13309 & FCC
Operating Temperature : -40°C to 85°C
Ingress Protection : Sensor IP69K

In-Cab Audible & Visual Display
When an object is detected, the in-cab display LEDs illuminate and an audible alert will sound. Each LED represents approximately 1/5 of the detection distance.

Configurable
The fully configurable BS8000C is supplied with easy to use PC software for setting the following parameters:

- Detection zone length & width
- Blind area mapping
- Buzzer starting zone
- Trigger output length
# Backsense Radar Kits

<table>
<thead>
<tr>
<th>Part No.</th>
<th>Type</th>
<th>Detection Distance (m)</th>
<th>Detection Width (m)</th>
<th>Detection Zones</th>
<th>Kits contain:</th>
</tr>
</thead>
<tbody>
<tr>
<td>BS-7030</td>
<td>Fixed Range</td>
<td>3</td>
<td>2.5</td>
<td>5 x 0.6m</td>
<td>Sensor unit</td>
</tr>
<tr>
<td>BS-7045</td>
<td>Fixed Range</td>
<td>4.5</td>
<td>3.5</td>
<td>5 x 0.9m</td>
<td>Audio/visual display</td>
</tr>
<tr>
<td>BS-7060</td>
<td>Fixed Range</td>
<td>6</td>
<td>4.5</td>
<td>5 x 1.2m</td>
<td>Sensor &amp; display mounting hardware</td>
</tr>
<tr>
<td>BS-8000</td>
<td>Configurable</td>
<td>3 – 30</td>
<td>2 – 10</td>
<td>Configurable</td>
<td>Installation &amp; operation manual</td>
</tr>
</tbody>
</table>

Kits contain:
- Sensor unit
- Audio/visual display
- 9m Cable (sensor to display)
- Sensor & display mounting hardware
- Installation & operation manual
- BS-8000 kit contains Software CD and USB Cable

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## Accessories & Spare Parts

<table>
<thead>
<tr>
<th>Part No.</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>BS-05B</td>
<td>Adjustable sensor bracket</td>
</tr>
<tr>
<td></td>
<td>Supplied with bolts, washers and nylock nuts.</td>
</tr>
<tr>
<td>BS-05DCX</td>
<td>Extension Cable – 5m</td>
</tr>
<tr>
<td>BS-09DCX</td>
<td>Extension Cable – 9m</td>
</tr>
<tr>
<td>BS-7030D</td>
<td>Display – 3m range</td>
</tr>
<tr>
<td>BS-7045D</td>
<td>Display – 4.5m range</td>
</tr>
<tr>
<td>BS-7060D</td>
<td>Display – 6m range</td>
</tr>
<tr>
<td>BS-8000D</td>
<td>Display – Configurable range</td>
</tr>
<tr>
<td>BS-70XXS</td>
<td>Sensor – Fixed range</td>
</tr>
<tr>
<td>BS-8000S</td>
<td>Sensor – Configurable Range</td>
</tr>
</tbody>
</table>
Obstacle Detection

- Obstacle detection rate under 200 milliseconds.
- Adjustable max detection distance via dip switch.
- Backscan includes in-cab visual display.
- 3 stage warning zones.
- Environmental Learning Mode prevents false alarms.
- Multiple sensor mount types included.
- Backscan incorporates 50cm compensation range for inboard mounted sensors (selectable via dip switch).
- One trigger output.
- Self diagnostic function.
- Sensors & ECU environmentally sealed.
- Multi-voltage.
- 2 year warranty.

Voltage : 12-24V
Current Draw : 0.2A
Approvals : RoHS, CE & ‘e’ marked
Operating Temp : -40°C to 80°C
Ingress Protection : Sensors & ECU environmentally sealed.

Environment Learning Mode prevents false alarms from tow-hooks and other ancillary fixed equipment that intrudes into the first 100cm of the detection zone.

50cm Compensation
50 centimetre compensation for installation to vehicles with in-board bumpers / tray over hang.

Warning Zone
The frequency of the signal changes according to the distance from sensors to the object.

- 4 beeps per sec
- 1 beep per sec

Environment Learning

50cm Compensation

Warning Zone
Obstacle Detection

Sidescan

Part No.  | Max. Detection Distance (m)
--- | ---
SS-4000W | 1.0/1.5

Kit contains:
- 4 x Sensor
- 1 x Buzzer
- 1 x ECU
- 4 x 0° Sensor Bracket
- 4 x 11° Sensor Bracket
- 4 x Pandant Mount Housing
- 4 x Sensor Harness – 4.5m
- 1 x Buzzer Harness – 10m
- 2 x Extension Cable – 2.5m

Backscan®

Part No.  | Max. Detection Distance (m)  | Outer | Inner
--- | --- | --- | ---
BS-4000W | 2.5/0.6 | 2.5

Kit contains:
- 4 x Sensor
- 1 x Display
- 1 x ECU
- 4 x 0° Sensor Bracket
- 4 x 11° Sensor Bracket
- 4 x Pandant Mount Housing
- 4 x Sensor Harness – 2.5m
- 1 x Display Harness – 15m

4 sensor system fitted to rear of vehicle as an invaluable aid to safe reversing. Gives greater protection to pedestrians and workers, whilst minimising damage to vehicle and other objects.

4 sensor system fitted to side of vehicle increasing safety when turning or low speed manoeuvring. Particularly relevant for near-side blind spot where cyclists or pedestrians can otherwise go undetected.
Obstacle Detection

Cornerscan

Part No. | Max. Detection Distance (m) | CS-3000 | 0.6/1.0

Kit contains:
- 3 x Sensor
- 1 x Buzzer
- 1 x ECU
- 3 x 11° Sensor Bracket
- 3 x 18° Sensor Bracket
- 3 x 26° Sensor Bracket
- 3 x Sensor Harness – 2.5m
- 1 x Buzzer Harness – 2.5m

3 sensor system fitted to near side corner of vehicle cab detects objects in front near side blind spot. Minimises the risk of damage to the vehicle cab whilst manoeuvring at low speed.

Frontscan

Part No. | Max. Detection Distance (m) | Outer | Inner | FS-4000W | 2.5/0.6 | 2.1/1.0

Kit contains:
- 4 x Sensor
- 1 x Buzzer
- 1 x ECU
- 4 x 11° Sensor Bracket
- 4 x 18° Sensor Bracket
- 4 x 26° Sensor Bracket
- 4 x Sensor Harness – 2.5m
- 1 x Buzzer Harness – 2.5m

4 sensor system fitted to front of vehicle improving safety when manoeuvring at low speed. Particularly relevant for front blind spot on high cabs where low objects or pedestrians can be hidden.
Stepscan Kit contains:
- 2 x Sensor
- 1 x Buzzer
- 1 x ECU
- 2 x 11° Sensor Bracket
- 2 x 18° Sensor Bracket
- 2 x 26° Sensor Bracket
- 2 x Sensor Harness – 2.5m
- 1 x Buzzer Harness – 2.5m

2 sensor system fitted to near side cab step giving awareness to the driver of objects to the side when turning and reversing. Minimises the risk of damage to the vehicle cab from otherwise unseen objects.

Stepscan
Part No. Max. Detection Distance (m)
ST-2000 0.6/1.0

Obstacle Detection