



You're safer with us

# Our Products

**North America  
Edition 20**





# Zero lives lost in collisions with commercial vehicles and mobile machinery

**It's a big challenge but we are on a mission to deliver this vision.**

Brigade is at the pinnacle of commercial vehicle and mobile machinery blind-spot safety. A founder and innovator of sensing and monitoring systems that have helped save lives for over forty years.

While our portfolio may be emulated, our commitment to vehicle safety, our reliable, trusted products and our dedicated team of experts, cannot. We invest in people as well as technology. Everyone in the Brigade family understands the life-changing significance of the products and service we provide and the importance of outstanding systems that work in the most demanding of situations.

For the future: We will continue to inform and work with policy makers and industries to ensure blind-spot mitigation is effective. We will recruit the highest calibre people who are passionate about what we do. We will impart expert knowledge and advice to help customers with their challenges. We will always seek to innovate and bring new products to market that help prevent collisions and save lives. We will strive to achieve our vision of zero lives lost by constantly improving the safe operation of commercial vehicles and mobile machinery around the world.

- Brigade Electronics Group Plc management systems are certified to ISO9001:2015
- Our principal manufacturing facilities are certified to IATS16949:2016
- All applicable products have CE-marking in Europe and FCC/IC approval in North America
- The majority of our products comply with UN ECE Regulation 10 (EMC)
- Combinations of our camera monitor systems are certified to Regulation 46
- Cables are UNECE R118 compliant
- Our products comply with REACH and RoHS









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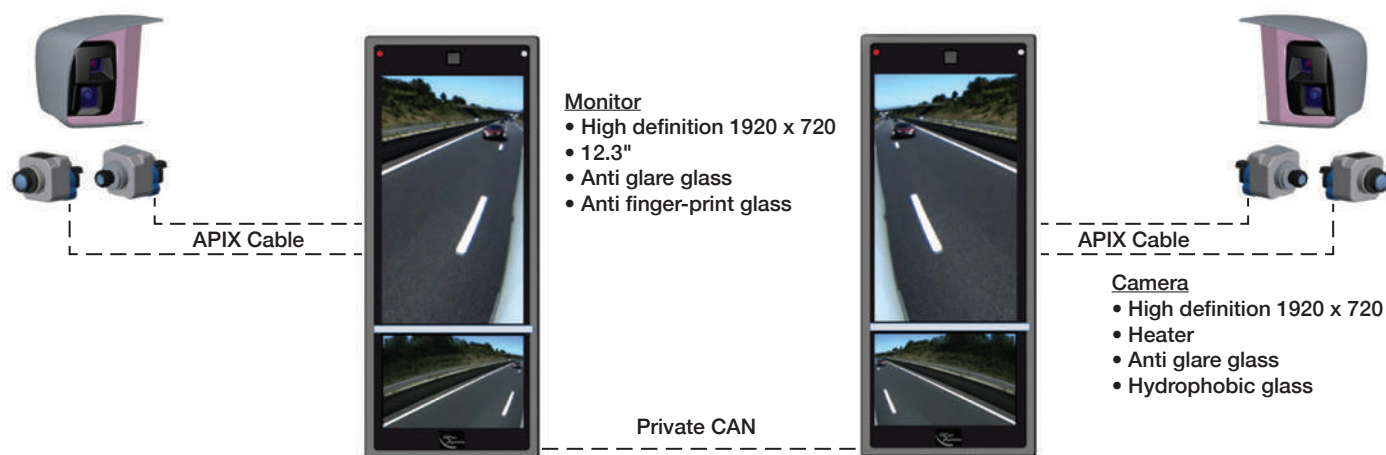
# Backeye®eMirrors

## Mirror replacement system



**For a driver, being able to see blind spots around the vehicle is a necessity. Using a camera monitor system for visibility instead of mirrors can offer many benefits.**

Replace conventional Class II and Class IV mirrors with high-definition externally mounted side-view cameras and a pair of high definition (HD) monitors typically mounted on the A-frame inside the cab. Installation is best carried out at or by a vehicle manufacturer or bodybuilder.

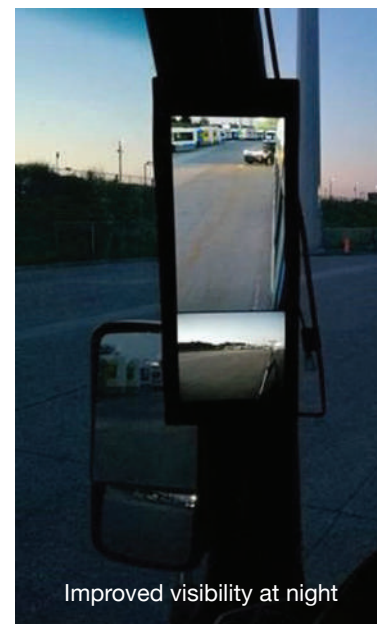
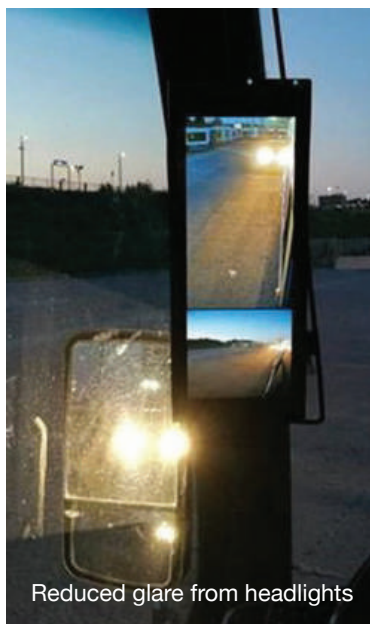


### Monitor features:

- High Definition (HD)
- Screen layout can be configured to replicate the replaced mirror positions
- Built-in light sensor for automatic screen brightness
- Monitors are linked via a private CAN network for auto-screen balance/brightness and system operating data
- Anti glare and fingerprint glass ensures the image is always clear
- Distance markers

### Camera features:

- High Definition (HD)
- Two cameras per side/housing (Class II and Class IV or Class V)
- Cameras mounted in housing, behind heated, anti-glare, hydrophobic treated glass
- Optional integrated lens cleaning with pressurized air or water.



### Certification:

- UN ECE Regulation No 46 (R46), regarding devices for indirect vision and their installation. Only camera monitor systems with R46 approval may be installed in place of a compulsory mirror.
- ISO 16505
- ISO 26262





## Why install a camera monitor system in place of mirrors?

- **Wider viewing angle**

A camera has a wide viewing angle which allows the driver to see more than the minimum required field of view. A driver does not need to physically move to view a broader area as would be necessary with a conventional mirror.

- **No damage to mirrors and improved aerodynamics**

Because of their size and the distance they protrude, mirrors are prone to being hit and broken. A smaller, flush-mounted camera reduces the risk of damage, lowering maintenance costs and vehicle downtime. Replacing mirrors with cameras also improves aerodynamics which contributes to lower fuel consumption.

- **No glare and reduced light reflection**

Low sun and headlights can be dazzling for drivers, creating glare and making it difficult or impossible to define objects in mirrors. A camera system automatically adjusts to the lighting, significantly reducing glare and therefore improving driver visibility by displaying a clear image on the monitor.

- **Better visibility at night**

Night time visibility is one of the key advantages a camera system has over a conventional mirror. Low-light (low lux) capability and auto-image enhancement mean greatly improved visibility in low light conditions and a clear image on the monitor, even in almost total darkness.

- **Better visibility in the rain**

Mirrors are challenging to use in the rain. Not only does the driver need to see the vehicle and surroundings in the mirror, but through an equally wet and sometimes misted window. Water and dirt obscure the view, hugely reducing driver visibility. The camera aperture will focus through water on the lens, maintaining visibility in any type of environment or weather condition. A heated camera also helps to keep the lens free from moisture.





# Backeye®360

## 360° Camera Monitor System

### How it works

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

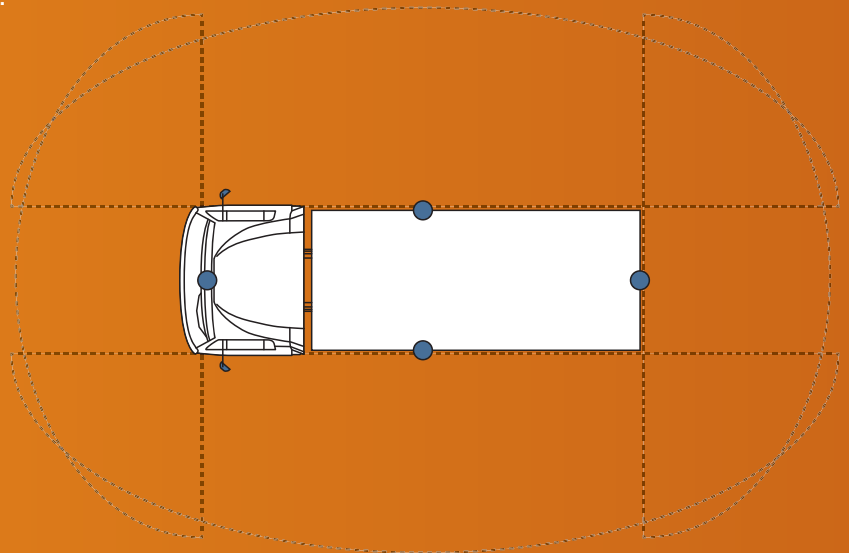
360° technology works with four ultra wide-angle cameras, each covering one full side of the vehicle with a viewing angle of over 180°.

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 so that a clear, real-time view of all around the vehicle is provided to the driver in a single image on the monitor.

Backeye®360 will work on most vehicles and machines, large or small. Our expert team of Applications Engineers can advise on installation to everything from a van to a 200 ton dump truck, including rigid and articulated trucks and buses, wheel loader, excavators, lift trucks, straddle carriers and many others.



Model

Part No:

NEW

## AHD 360° CAMERA SYSTEM

HD

BN360-300 - High Definition Backeye®360 system

5800



- IP69K cameras
- 12-24Vdc
- Size (WxHxD) ECU  
178 x 113 x 26mm  
7 x 4.4 x 1 inches
- Size (WxHxD) Camera  
61 x 50 x 42mm  
2.4 x 2 x 1.7 inches
- 5 year warranty

AHD

### Contents

- 1 x ECU
- 4 x BN360-1000C cameras
- 1 x Video output cable to connect to SELECT range monitor
- 1 x set-up/view-select button
- 1 x ECU power harness
- 1 x ECU interface/video input harness

### Features

- 720p HD 360° image
- 15 different view modes (10 x landscape & 5 x portrait configurations)
  - Front & rear crossing-traffic
  - Customisable vehicle position
- 2 pre-defined configuration groups
- Configure & customise set up via PC calibration software
- Left, right, reverse & speed signal triggers
- Configurable on-screen parking markers
- Customisable overlay guidelines per camera view
- 2 x video outputs
- Ultra-wide viewing angle cameras (HxV) 182° x 118°
- 1/4" CMOS sensor
- Video output: AHD 1.0 and NTSC

### Power

- Power consumption: 15 Watts
- Current: 1.22 Amps

### Durability & Standards

- Mechanical vibration: 8.5G
- Mechanical shock: 51G
- Operating temperature: -30 to +75°C / -22 to +167°F
- IP30 ECU
- CE marked
- E-Marked: UNECE R10 compliant
- FCC Approved
- IC Approved
- ISO 20653:2006
- ISO 13766-1:2018

### NOTES:

- Calibration kit is required for installation.
- Monitor and camera extension cables not included
- Individual cameras not recordable on MDR - monitor output only.

NEW

## BN360-300 CABLES

HD

|             |                         |      |
|-------------|-------------------------|------|
| BN360-H320  | HD 20m/66' camera cable | 5809 |
| BN360-H315  | HD 15m/49' camera cable | 5810 |
| BN360-H310  | HD 10m/33' camera cable | 5811 |
| BN360-H305  | HD 5m/16' camera cable  | 5812 |
| BN360-H3025 | HD 2.5m/8' camera cable | 5813 |

NEW

## BN360-300 360° CAMERA MONITOR SYSTEMS

HD

Complete 360 AHD camera monitor system for large rigid vehicles



SE-770H-300 - 360 AHD camera system with VBV-770HM - 7" AHD monitor

6114

- 1 x VBV-770HM AHD Monitor
- 1 x BN360-300 AHD 360 system
- 1 x BN360-H310 - 10m/33' camera cable
- 2 x BN360-H315 - 15m/49' camera cables
- 1 x BN360-H320 - 20m/66' camera cable

See individual products for detailed specifications and warranties

## BN360-200/BN360-300 MOUNTING BRACKETS



|                  |   |      |
|------------------|---|------|
| BN360-100C-BKT01 | Adaptable mounting bracket<br>Can be shaped to allow installation on non-vertical surfaces    | 4649 |
| BN360-100C-BKT02 | Mounting bracket to adjust camera angle   | 4714 |
| BE360-CD         | Deflector to shield camera from knocks<br>(To be used with BN360-100C-BKT02 Mounting bracket) | 4701 |
| BN360-100C-BKT03 | Deflector to shield camera from knocks  | 4743 |



**Model**
**Part No:**

## 360° CAMERA SYSTEM

**BN360-200 - Backeye®360 system**
**5200**


- IP69K cameras
- 12-24Vdc
- Size (WxHxD) ECU  
174 x 101 x 30mm  
6.9 x 4 x 1.2 inches
- Size (WxHxD) Camera  
61 x 46 x 36mm  
2 x 1.8 x 1.4 inches
- 5 year warranty

**MDR**  
COMPATIBLE

**R46**  
APPROVED\*

### Contents

- 1 x ECU
- 4 x BN360-100C cameras
- 1 x Video output cable to connect to SELECT range monitor.
- 1 x set-up/view-select button
- IR receiver & remote control
- 1 x ECU power harness
- 1 x ECU interface harness

### Features

- 360° image
- 19 different view modes (max 10 views per chosen configuration group) including:
  - Landscape or portrait configurations
  - Front & rear crossing-traffic
  - Left & right lane changing assist
  - Customisable vehicle position
- 4 pre-defined configuration groups
- Configure & customise set up via monitor and IR remote control
- Left, right, reverse & speed signal triggers
- Configurable on-screen parking markers
- 3 x video outputs
- Ultra-wide viewing angle cameras (HxV) 185° x142°
- 1/3.7" CMOS sensor
- TV system: NTSC or PAL via switch on ECU (cameras NTSC only)

### Power

- Power consumption: 8 Watts
- Current: 0.65 Amps

### Durability & Standards

- Mechanical vibration: 8.5G
- Mechanical shock: 51G
- Operating temperature: -30 to +75°C / -22 to +167°F
- IP30 ECU
- CE marked
- E-Marked: UNECE R10 compliant
- FCC Approved
- IC Approved
- ISO 20653:2006
- ISO 13766:2006
- EN 13309:2010
- \*Camera monitor system R46 approved

### NOTES:

- **calibration kit is required for installation.**
- **Monitor and camera extension cables not included**

## BN360-200 CABLES AND ADAPTERS



|             |  |      |
|-------------|--|------|
| BN360-L120  | 20m/66' camera cable                           | 4493 |
| BN360-L115  | 15m/49' camera cable                           | 4495 |
| BN360-L110  | 10m/33' camera cable                           | 4496 |
| BN360-L105  | 5m/16' camera cable                            | 4498 |
| BN360-L1025 | 2.5m/8' camera cable                           | 4499 |
| AC-305      | Splitter cable for MDR (1 required per camera) | 4903 |

## BN360-200 REQUIREMENTS FOR ARTICULATED VEHICLES

|                 |  |      |
|-----------------|--|------|
| BN360-Enclosure | IP66 Enclosure kit to enable ECU to be installed on outside of vehicle | 4723 |
| SK-15-05        | Articulated vehicle cable kit for BN360-200 (3-camera)                 | 5066 |

## BN360-200 360° CAMERA MONITOR SYSTEMS

**Complete 360 camera monitor system for large rigid vehicles**


|              |   |      |
|--------------|---|------|
| SE-7104F-100 | 360 camera system with VBV-7104FM - 10.4" monitor | 5378 |
| SE-770-100   | 360 camera system with VBV-770M - 7" monitor      | 5379 |



- 1 x Monitor
- 1 x BN360-200 360 system
- 1 x BN360-L110 - 10m /33' camera cable
- 2 x BN360-L115 - 15m/49' camera cables
- 1 x BN360-L120 - 20m/66' camera cable

See individual products for detailed specifications and warranties







# Backeye® Camera Monitor Systems

## A Winning Range

Camera monitor systems are used in a wide range of on and off-road applications to meet a host of health and safety and legislative requirements.

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

Whether you need an entry-level reversing camera or full-vehicle camera system, we can help. With single-to-multiple camera inputs and auto-triggers, Brigade cameras and monitors will work on any application in any industry.

Brigade's camera monitor systems are compatible with its range of Mobile Digital Recorders (MDR).

## ELITE

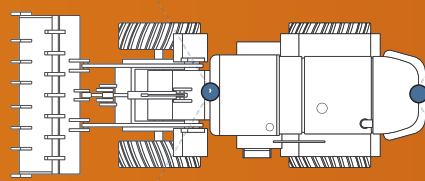
Top of the range systems that are the first choice for Original Equipment Manufacturers (OEMs) and Bodybuilders. Exceptional quality and consistent performance in the harshest conditions. Rigorously tested to higher standards, the superior components and build quality are reflected in the Elite series' 5 year warranty. Ideal for heavy duty applications including semi-trucks, on/off-highway vehicles, agricultural machinery, and mobile mobile machinery used on Construction, Civil Engineering, Quarry and Mine sites.

## SELECT

High quality, reliable, best-selling mid-range systems. First choice in the Aftermarket and popular also with OEMs and Bodybuilders. 3 year warranty. Ideal for medium to large on-highway vehicles and smaller off-highway mobile machinery.

## ESSENTIAL

Entry level reversing solution for cost-conscious Aftermarket customers. Ideally suited for on-highway applications.



# Camera/monitor compatibility

| <div> <div>✓ = Compatible</div> <div>✓ AC-035 = Compatible with adapter(s) shown</div> <div>✗ = Not compatible</div> </div> |        |                          | MONITORS   |                   |   |                          |
|---|--------|--------------------------|--|-------------------|---|--------------------------|
|   |        |                          | ELITE  |                   | SELECT  |                          |
|   |        |                          | BE-970WFM<br>BE-970WM<br>BE-865DDM<br>BE-870LM<br>BE-870FM | BE-856GM          | VBV-7104FM<br>VBV-770FM<br>VBV-770M<br>VBV-750M | VBV-770M-S<br>VBV-750M-S |
| CAMERAS   | ELITE  | BE-810C Shutter          | ✓  | ✓ SC-1000-ECU     | ✓ AC-007 & SC-1000-ECU                          | ✗                        |
|   |        | All other Elite cameras  | ✓  | ✓                 | ✓ AC-007  | ✓ AC-007                 |
|   | SELECT | VBV-711C Shutter         | ✓ AC-035 & AC-006  | ✓ AC-035 & AC-006 | ✓ AC-035  | ✓                        |
|   |        | All other Select cameras | ✓ AC-006   | ✓ AC-006          | ✓   | ✓                        |

## Camera icons



Infrared LEDs for ultra-low-light performance



Day/night sensor



Audio



Heater



Normal/mirror view

**WDR**

Wide Dynamic Range

**DWDR**

Digital Wide Dynamic Range

## Monitor icons



Number of camera inputs



Number of auto-triggers



Audio



'Button-lock' anti-tamper feature



On-screen distance and vertical line markers



Normal/mirror view - switching from menu

## Cable icons

(Black = solid/pins)



Male connector Select



Female connector Select



Male screw fit connector Elite



Female screw fit connector Elite



Male push fit connector Elite



Female push fit connector Elite



Male shutter connector Select



Female shutter connector Select



Male Backeye®360 connector



Female Backeye®360 connector



**Model**

**Part No:**

## 7" IP69K MONITOR

**ELITE**

**BE-970WM - Waterproof 7" Digital LCD monitor**

**3351**



- 12-24Vdc
- IP69K
- Size (WxHxD)  
194 x 124 x 48mm  
7.6 x 4.9 x 1.9 inches
- 5 year warranty



### Features

- 2 Camera inputs
- Shutter camera compatible - both inputs
- Backlit touch screen button panel
- 'Button-lock' anti-tamper feature
- 2 Auto-triggers
- Mirror / Normal switching from menu
- On screen distance and vertical line markers
- Audio
- Sun shield
- Multi-lingual menus
- Auto-switching PAL / NTSC

### Picture Quality

- LED backlighting (gives 20,000 hours life)
- Anti-glare screen
- Resolution: 800 x 480
- Contrast ratio: 500:1
- Brightness: 500cd/m²
- Viewing angles:  
Side 65° x Top 50° x Bottom 60°

### Power

- Power consumption: 11 Watts
- Current: 0.9 Amps

### Durability & Standards

- Aluminium die-cast casing
- Mechanical vibration: 20G
- Mechanical shock: 100G
- Operating temperature:  
-40 to +70°C / -40 to +158°F
- CE marked
- E-Marked: UNECE R10 compliant
- ISO 16750
- ISO 13766: 2006
- HALT tested

## 7" IP69K QUAD MONITOR

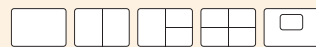
**ELITE**

**BE-970WFM - Waterproof 7" Quad digital LCD monitor**

**3560**



- 12-24Vdc
- IP69K
- Size (WxHxD)  
194 x 124 x 48mm  
7.6 x 4.9 x 1.9 inches
- 5 year warranty



Plus additional in-built image options

### Features

- 4 camera inputs
- Shutter camera compatible (inputs 1&2)
- Backlit touch screen button panel
- 'Button-lock' anti-tamper feature
- 5 Auto-triggers
- Mirror / Normal switching from menu
- On screen distance and vertical line markers
- Audio
- Speed switch trigger to turn monitor on/off or trigger a split screen
- Sun shield
- Multi-lingual menus
- Auto-switching PAL / NTSC

### Picture Quality

- LED backlighting (gives 20,000 hours life)
- Anti-glare screen
- Resolution: 800 x 480
- Contrast ratio: 500:1
- Brightness: 500cd/m²
- Viewing angles:  
Side 65° x Top 50° x Bottom 60°

### Power

- Power consumption: min 28 Watts
- Current: max 2.15 Amps

### Durability & Standards

- Aluminium die-cast casing
- Mechanical vibration: 10G
- Mechanical shock: 100G
- Operating temperature:  
-40 to +75°C / -40 to +167°F
- CE marked
- E-Marked: UNECE R10 compliant
- ISO 16750
- ISO 20653: 2006
- HALT tested

Model

Part No:

## 7" QUAD MONITOR

ELITE

BE-870FM - 7" Digital LCD monitor

2146



- 12-24Vdc
- Size (WxHxD)  
197 x 135 x 30mm  
7.8 x 5.3 x 1.2 inches
- 5 year warranty



Plus additional in-built image options

### Features

- 4 camera inputs
- 5 Auto-triggers
- Shutter camera compatible
- 'Button-lock' anti-tamper feature
- Mirror / Normal switching from menu
- On-screen distance & vertical line markers
- Audio
- Sun shield
- Auto-dimmer
- Multi-lingual menus
- Auto-switching PAL / NTSC

### Power

- Power consumption: 21 Watts
- Current: 1.9 Amps

### Durability & Standards

- Mechanical vibration: 6G
- Mechanical shock: 100G
- Operating temperature:  
-40 to +70°C / -40 to +158°F
- CE marked
- E-Marked: UNECE R10 compliant
- HALT tested

### Picture Quality

- LED backlighting  
(gives 20,000 hours life)
- Anti-glare screen
- Resolution: 800 x 480
- Contrast ratio: 500:1
- Brightness: 4000cd/m²
- Viewing angles:  
Side 70° x Top 50° x Bottom 70°

## 7" MONITOR

ELITE

BE-870LM - 7" Digital LCD monitor

2705



- 12-24Vdc
- Size (WxHxD)  
197 x 128 x 34mm  
7.8 x 5 x 1.3 inches
- 5 year warranty



### Features

- 2 Camera inputs
- Shutter camera compatible - both inputs
- 'Button-lock' anti tamper feature
- 2 Auto-triggers with configurable trigger-off delays
- Mirror / Normal switching from menu
- On-screen distance and vertical line markers
- Audio
- Sun shield
- Auto-dimmer and keypad illumination
- Multi-lingual menus
- Auto-switching PAL / NTSC

- Resolution: 800 x 480
- Contrast ratio: 500:1
- Brightness: 400cd/m²
- Viewing angles:  
Side 70° x Top 50° x Bottom 70°

### Power

- Power consumption: 12 Watts
- Current: 1 Amp

### Durability & Standards

- Mechanical vibration: 2.5G
- Mechanical shock: 51G
- Operating temperature:  
-30 to +70°C / -22 to +158°F
- CE marked
- E-Marked: UNECE R10 compliant
- \*Camera monitor system R46 approved

### Picture Quality

- LED backlighting  
(gives 20,000 hours life)
- Anti-glare screen

## 5.6" MONITOR

ELITE

BE-856GM - 5.6" Digital LCD monitor

3756



- 12-24Vdc
- Size (WxHxD)  
172 x 115 x 32mm  
6.8 x 4.5 x 1.2 inches
- 5 year warranty



### Features

- 2 camera inputs
- 2 Auto-triggers
- Mirror / Normal switching from menu
- On-screen distance & vertical line markers
- Audio
- Sun shield
- Auto-dimmer
- Multi-lingual menus
- Auto-switching PAL / NTSC

- Brightness: 350cd/m²
- Viewing angles:  
Side 70° x Top 50° x Bottom 70°

### Power

- Power consumption: 11 Watts
- Current: 0.9 Amps

### Durability & Standards

- Mechanical vibration: 10G
- Mechanical shock: 50G
- Operating temperature:  
-40 to +70°C / -40 to +158°F
- CE marked
- E-Marked: UNECE R10 compliant
- ISO 13766: 2006
- ISO 16750
- HALT tested

### Picture Quality

- LED backlighting  
(gives 20,000 hours life)
- Anti-glare screen
- Resolution: 640 x 480
- Contrast ratio: 500:1



## What is WDR?

Wide Dynamic Range (WDR) automatically balances lighting in a camera image for improved detail in highlights and shadows.

This is particularly useful when working in environments where lighting quickly changes, for example; reversing into a dark loading bay on a sunny day. The transition from bright light to shadow will cause cameras that do not feature WDR to fail to pick up fine details. Areas of the picture will be bright and other areas extremely dark.

WDR Cameras balance lighting so no areas are under or over exposed, improving clarity and detail in the image.



Standard camera



WDR camera



### Model

### Part No:

#### CAMERA WITH DWDR

#### ELITE

**BE-901C - Integrated fisheye correction**

**5278**

**BE-991C - Integrated fisheye correction - No audio**

**5280**



- Viewing angle (HxVxD)  
100 X 65 X 106°
- IP69K/IP68
- Size (WxHxD)  
86 x 72 x 80mm  
3.4 x 2.8 x 3.2 inches
- 5 year warranty



**DWDR**

#### Features

- Integrated image correction for wide viewing angle (fisheye) lens distortion
- Digital Wide Dynamic Range for improved detail in shadows and highlights
- 5 Infrared LEDs for ultra-low light performance
- Day / Night sensor
- Heater
- Microphone (BE-900C & BE-901C)
- Mirror / Normal view
- Automatic white balance
- Sony CMOS sensor
- TV lines: 350

#### Power

- Power consumption: 4.5 Watts
- Current: 0.36 Amps

#### Durability & Standards

- Mechanical vibration: 8.5G
- Mechanical shock: 51G
- Operating temperature:  
-40 to +70°C / -40 to +158°F
- CE marked
- E-Marked: UNECE R10 compliant
- FCC Approved
- ISO 20653:2006
- ISO 16750-4

# Elite Cameras / Cables

Model

Part No:

## CAMERA WITH WDR

ELITE



|             |                                       |       |
|-------------|---------------------------------------|-------|
| BE-801C     | - NTSC                                | 1905  |
| BE-801C(40) | - Narrow viewing angle: 32 x 24 x 41° | 2085C |
| BE-801C(78) | - Narrow viewing angle: 69 x 51 x 92° | 2084C |
| BE-891C     | - Waterproof to IP69K, No microphone  | 5426  |

• Viewing angle (HxVxD)  
108 x 80 x 136° NTSC

• IP68

• Size (WxHxD)  
86 x 72 x 80mm  
3.3 x 2.8 x 3.1 inches

• 5 year warranty



R46  
APPROVED\*

WDR

### Features

- Wide Dynamic Range for improved detail in shadows and highlights
- 5 Infrared LEDs for ultra-low light performance
- Day / Night sensor
- Heater
- Microphone
- Mirror / Normal view
- Automatic white balance
- Sony CMOS sensor
- TV lines: 600

### Power

- Power consumption: 4.5 Watts
- Current: 0.33 Amps (0.37 - 2.63 Amps BE-850C)

### Durability & Standards

- Mechanical vibration: 8.5G
- Mechanical shock: 51G
- Operating temperature: -40 to +85°C / -40 to +185°F
- CE marked
- E-Marked: UNECE R10 compliant
- FCC Approved
- IC Approved
- ISO 13766:2006
- ISO 20653:2006
- EN13309:2010
- \*Camera monitor system R46 approved BE-800C, BE-890C & BE-850C only

## MINI CAMERA

ELITE



|   |      |
|---|------|
| BE-821C - Mini camera (mirror image) NTSC | 2002 |
| BE-823C - Mini camera (normal image) NTSC | 5100 |

• Viewing angle (HxVxD)  
113 x 90 x 136°

• IP68

• Size (WxHxD)  
47 x 40 x 50mm  
1.8 x 1.6 x 1.7 inches

• 5 year warranty

### Features

- Backlight compensation
- Automatic white balance
- 1/4" Sony CCD
- TV System: NTSC
- TV Lines: 600

### Power

- Power consumption: 0.9 Watts
- Current: 0.1 Amps

### Durability & Standards

- Mechanical vibration: 10G
- Mechanical shock: 100G
- Operating temperature: -40 to +80°C / -40 to +176°F
- CE marked
- E-Marked: UNECE R10 compliant
- FCC approved (NTSC models only)
- IC approved (NTSC models only)
- HALT tested
- ISO 20653:2006



**Model**

**Part No:**

**CAMERA TO MONITOR CABLES**

**ELITE**



|          |                   |      |
|----------|-------------------|------|
| BE-L130  | - 30m / 98' cable | 0800 |
| BE-L120  | - 20m / 66' cable | 0801 |
| BE-L115  | - 15m / 49' cable | 0802 |
| BE-L112  | - 12m / 39' cable | 3008 |
| BE-L110  | - 10m / 33' cable | 0803 |
| BE-L108  | - 8m / 26' cable  | 3007 |
| BE-L105  | - 5m / 16' cable  | 0804 |
| BE-L101  | - 1m / 3.3' cable | 5042 |
| BE-L1003 | - 0.3m / 1' cable | 2797 |

**ELITE CAMERA EXTENSION CABLES**

**ELITE**



|         |                             |      |
|---------|-----------------------------|------|
| BE-X025 | - 25m / 82' extension cable | 1907 |
| BE-X020 | - 20m / 66' extension cable | 1143 |
| BE-X015 | - 15m / 49' extension cable | 2101 |
| BE-X010 | - 10m / 33' extension cable | 2100 |
| BE-X005 | - 5m / 16' extension cable  | 2099 |
| BE-X003 | - 3m / 10' extension cable  | 0805 |

Model

Part No:

TRUCK/TRAILER CABLE KIT

ELITE

SK-31E - Truck and trailer cable kit - unique pin layout

1830

Inclusive of SK-31E-T - Trailer kit



- |  |      |  |      |
|--|------|--|------|
| • BE-L110 - 10m/32.8' cable for cab  | 0803 | SK-31E-T - Trailer only kit  | 1886 |
| • SP-7A - 7-pin bulkhead socket for cab & cab-end camera connector (unique pin layout) | 1827 | • BE-X020 - 20m/65.6' extension cable for trailer  | 1143 |
| • SC-7 - Coiled cable with 7-pin plugs (unique pin layout)                             | 1829 | • SP-7B - 7-pin bulkhead socket for trailer & trailer-end camera connector (unique pin layout) | 1828 |

TRUCK/TRAILER CABLE KIT

ELITE

SK-30E - Truck and trailer cable kit

1144

Inclusive of SK-30E-T - Trailer kit



- |   |      |   |      |
|---|------|---|------|
| • BE-L110 - 10m/32.8' cable for cab                                 | 0803 | SK-30E-T - Trailer only kit   | 1885 |
| • SP-07C - 7-pin bulkhead socket for cab & cab-end camera connector | 1140 | • BE-X020 - 20m/65.6' extension cable for trailer                           | 1143 |
| • SC-07 - Coiled cable with 7-pin plugs                             | 1046 | • SP-07T - 7-pin bulkhead socket for trailer & trailer-end camera connector | 1142 |



Model

Part No:

TRUCK/TRAILER CABLE KIT

ELITE



SK-15-01 - Truck and trailer cable kit for three cameras

3427

• SP-15A-01 - 15-pin bulkhead socket for cab & 3 cab-end camera connectors

3423

• SP-15B-01 - 15-pin bulkhead socket for trailer & 3 trailer-end camera connectors

3422

• SC-15-01 - Coiled shielded cable with 15-pin plugs

3268

TRUCK/TRAILER CABLE KIT

ELITE



SK-15-04 - Truck and trailer cable kit for single camera & single buzzer ultrasonic detection system

3997

• SP-15A-04 - 15-pin bulkhead socket for cab & cab-end camera connector plus stripped wires and display/buzzer connection for Ultrasonics

3955

• SP-15B-04 - 15-pin bulkhead socket for trailer & trailer-end camera connector plus stripped wires and display/buzzer connection for Ultrasonics

3956

• SC-15-01 - Coiled shielded cable with 15-pin plugs

3268

Model

Part No:

## TRUCK/DRAWBAR TRAILER CABLE KIT

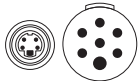
ELITE

### SK-50E - Truck and drawbar trailer cable kit for two cameras

#### - unique pin layout

Inclusive of SK-50E-A Truck kit and SK-31E-T trailer kit

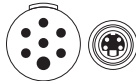
1570



SP-7A



SC-7



SP-7B

#### SK-50E-A - Truck only kit

1879

- BE-L115 - 15m/49.2' cable for truck 0802
- BE-X005 - 5m/16.4' extension cable for truck camera 2099
- CS-020 - Two way camera selector 1571
- SP-7A - 7-pin bulkhead socket for trailer & trailer-end camera connector (unique pin layout) 1827
- SC-7 - Coiled cable with 7-pin plugs (unique pin layout) 1829

#### SK-31E-T - Trailer only kit

1886

- BE-X020 - 20m/65.6' extension cable for trailer camera 1143
- SP-7B - 7-pin bulkhead socket for cab & cab-end camera connector (unique pin layout) 1828

# What is AHD?

An Analogue High Definition (AHD) camera monitor system is an analogue system that supports High Definition video resolutions. The resolution of HD & AHD systems is measured in pixels per square inch (p). AHD 1.0 supports 720p HD resolution and AHD 2.0 supports 1080p HD resolution.

## What about PAL and NTSC formats?

HD cameras operating at 25Hz (25frames per second) are compatible with PAL format (so we call them PAL). HD cameras operating at 30Hz (30 frames per second) are compatible with NTSC format (so we call them NTSC).

## What should I consider when choosing between AHD and traditional CVBS systems?

There are many factors to consider when choosing between AHD and traditional CVBS, including compatibility with other systems and bandwidth/memory capacity if connecting to a mobile digital recorder. (AHD systems will use more bandwidth for transmission and will take up more memory for the same time period). For the best HD quality results, all parts of the system should be AHD.



AHD camera image



Traditional CVBS camera image

## Compatibility with existing traditional CVBS systems:

- Brigade HD cables can be used instead of traditional CVBS cables for all Brigade SELECT camera monitor systems.
- Brigade HD cameras can be used with our MDR-500 series Mobile Digital Recorders (MDR).
- Brigade's traditional CVBS cameras can be used with our new HD monitors (camera image will not be HD).
- Brigade's traditional CVBS monitors are not compatible with HD cameras.

## Model

## Part No:

NEW

AHD 7" MONITOR

SELECT

VBV-770HM - 7" High Definition LCD monitor

5611



- 12-24Vdc
- Size (WxHxD)  
196 x 118 x 26mm  
7.7 x 4.6 x 1 inches
- 3 year warranty



### Features

- AHD and CVBS compatible
- High-definition, high contrast, wide view angle
- 3 camera inputs
- 3 Auto-triggers
- Mirror / Normal switching from menu
- 'Button lock' anti-tamper feature
- On-screen distance markers
- Audio
- Sun shield
- Auto-dimmer
- Multi-lingual menus
- Auto-switching AHD 1.0 / AHD 2.0 / NTSC

### Picture Quality

- LED backlighting (gives 20,000 hours life)
- Anti-glare screen

- Resolution: 1024 x 600
- Contrast ratio: 700:1
- Brightness: 500cd/m<sup>2</sup>
- Viewing angles:  
Side 85° x Top 85° x Bottom 85°

### Power

- Power consumption: 10 Watts
- Current: 0.8 Amps

### Durability & Standards

- Mechanical vibration: 4G
- Mechanical shock: 51G
- Operating temperature:  
-30 to +70°C / -22 to +158°F
- CE marked
- E-Marked: UNECE R10 compliant
- HALT tested
- FCC approved
- IC approved



## Model

## Part No:

**NEW**

### AHD CAMERA 1080p

**SELECT**



**VBV-7101C - High definition (1080p-NTSC)**  
**VBV-7191C - No audio. High definition (1080p-NTSC)**

**5467**  
**5471**

• Viewing angle (HxVxD)  
 110° x 60° x 127°

• IP69K

• Size (WxHxD)  
 81 x 77 x 70mm  
 3.2 x 3 x 2.75 inches

• 3 year warranty



#### Features

- 4 high-power Infrared LEDs for ultra-low light performance
- Day / Night sensor
- Microphone
- Mirror view
- \* Backlight compensation
- Automatic white balance
- Sony CMOS 1/3" & Nextchip ISP
- TV System: AHD 1.0 (1080p)
- TV Lines: 800

#### Power

- Power consumption: 3 Watts
- Current: 0.2 Amps

#### Durability & Standards

- Mechanical vibration: 8.5G
- Mechanical shock: 51G
- Operating temperature: -30 to +80°C / -4 to +176°F
- CE marked
- E-Marked: UNECE R10 compliant
- FCC approved
- IC approved

**NEW**

### AHD CAMERA 720p

**SELECT**



**VBV-7001C - High definition (720p-NTSC)**  
**VBV-7091C - No audio. IP69K High definition (720p-NTSC)**

**5465**  
**5469**

• Viewing angle (HxVxD)  
 107° x 64° x 126°

• IP67

• Size (WxHxD)  
 81 x 77 x 70mm  
 3.2 x 3 x 2.75 inches

• 3 year warranty



#### Features

- 4 high-power Infrared LEDs for ultra-low light performance
- Day / Night sensor
- Microphone
- Mirror view
- \* Backlight compensation
- Automatic white balance
- Sony CMOS 1/3" & Nextchip ISP
- TV System: AHD 1.0 (720p)
- TV Lines: 600

#### Power

- Power consumption: 3 Watts
- Current: 0.2 Amps

#### Durability & Standards

- Mechanical vibration: 8.5G
- Mechanical shock: 51G
- Operating temperature: -30 to +80°C / -4 to +176°F
- CE marked
- E-Marked: UNECE R10 compliant
- FCC approved
- IC approved

**Model**
**Part No:**
**NEW**
**AHD EYEBALL CAMERA**
**SELECT**


- VBV-3001C** - High Definition Flush-mount eyeball camera  
Mirror view - (720p-NTSC)
- VBV-3021C** - High Definition Flush-mount eyeball camera  
Normal view - (720p-NTSC)

**5455**
**5457**

- Viewing angle (HxVxD)  
**VBV-3001C / VBV-3021C:**  
127° x 71° x 142°

- IP69K

- Size (WxHxD)  
57 x 42 x 70mm  
2.2 x 1.7 x 2.8 inches

- 3 year warranty


**Features**

- 5 high power infrared LEDs for ultra-low light performance
- Day / Night sensor
- Lens swivel adjustment: 26° (Top) x 4° (Bottom) x 4° (Left) x 4° (Right)
- Lens rotation adjustment: ±180°
- Microphone
- Backlight compensation
- Automatic white balance
- 1/3" Sony CMOS
- TV System: AHD 1.0 (720p)
- TV lines: 600

**Power**

- Power consumption: 1.5 Watts
- Current consumption: 0.16 Amps

**Durability & Standards**

- Mechanical vibration: 8.5G
- Mechanical shock: 51G
- Operating temperature: -30 to +70°C / -22 to +158°F
- CE marked
- E-Marked: UNECE R10 compliant
- FCC approved

**OPTIONAL EXTRAS**

- SM-3XX-25** Surface mounting adapter (25mm deep)

**4596**
**AHD MINI CAMERA**
**SELECT**


- DMC-1031** - High definition mini camera (internal use) (720p-30fps)
- DMC-1035** - High definition mini camera (internal use) (720p-25fps)

**5303**
**5304**

- Viewing angle (HxVxD)  
68 x 38 x 80°

- IP30

- Size (WxHxD)  
43 x 45 x 37.5mm  
1.7 x 1.8 x 1.5 inches

- 3 year warranty


**Features**

- Mirror / Normal view
- Backlight compensation
- Automatic white balance
- CMOS - 1/3" ON-Semi ISP - Nextchip
- TV System: AHD 1.0 (720p)
- TV Lines: 900

**Power**

- Power consumption: 1.0 Watt
- Current: 0.55 Amps

**Durability & Standards**

- Mechanical vibration: 10G
- Mechanical shock: 51G
- Operating temperature: -30 to +85°C / -22 to +185°F
- CE marked
- E-Marked: UNECE R10 compliant
- FCC approved
- IC approved

Model

Part No:

## AHD DOME CAMERA

SELECT



|           |  |      |
|-----------|--|------|
| MD-61     | - High definition dome camera (720p-NTSC)                        | 5738 |
| MD-61(SW) | - High definition dome camera - Superwide view angle (720p-NTSC) | 5690 |
| MD-61(W)  | - High definition dome camera - Wide view angle (720p-NTSC)      | 5698 |

- Viewing angle (HxVxD)  
68° x 38° x 80°  
(SW) 150° x 85° x 180°  
(W) 93° x 51° x 110°

• IP68

- Size (Diameter x H)  
76 x 59.5 mm  
3 x 2.3 inches

• 3 year warranty



### Features

- Dome camera with 150° movement range in all directions
- Can be used internally or externally
- Mirror / Normal view
- Backlight compensation
- Automatic white balance
- CMOS - 1/3" ON-Semi ISP - Nextchip
- TV System: AHD 1.0 (720p)
- TV Lines: 900
- TV Lines: 600 (SW & W)

### Power

- Power consumption: 1 Watt
- Current: 0.57 Amps

### Durability & Standards

- Mechanical vibration: 10G
- Mechanical shock 51G
- Operating temperature:  
-30 to +85°C / -22 to +185°F
- CE marked
- E-Marked: UNECE R10 compliant
- FCC Approved
- IC Approved



## OPTIONAL EXTRAS

|            |  |      |
|------------|--|------|
| MD-50SM-30 | - Surface mounting adapter (30mm/1.2" deep)  | 5003 |
| MD-50AM-15 | - Angled surface mounting adapter (adds 15°) | 5004 |
| MD-50AM-25 | - Angled surface mounting adapter (adds 25°) | 5005 |

NEW

## AHD CAMERA CABLES

SELECT



|           |                   |      |
|-----------|-------------------|------|
| VBV-H420  | - 20m / 66' cable | 5513 |
| VBV-H415  | - 15m / 49' cable | 5514 |
| VBV-H410  | - 10m / 33' cable | 5516 |
| VBV-H405  | - 5m / 16' cable  | 5519 |
| VBV-H4025 | - 2.5m / 8' cable | 5522 |

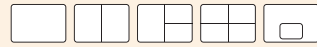


**Model**
**Part No:**

## 10.4" QUAD MONITOR

**SELECT**
**VBV-7104FM - 10.4" Digital LCD Monitor**
**4474**


- 12-24Vdc
- Size (WxHxD)  
267 x 193 x 30mm  
10.5 x 7.6 x 1.2 inches
- 3 year warranty



Plus additional in-built image options

### Features

- 4 camera inputs
- 'Button-lock' anti-tamper feature
- 5 Auto-triggers
- Configurable trigger delay
- Mirror / Normal switching from menu
- On-screen distance markers
- Built-in speaker
- Sun shield
- Multi-lingual menus
- Auto-switching PAL / NTSC

### Power

- Power consumption: 31 Watts
- Current: 2.8 Amps

### Durability & Standards

- Mechanical vibration: 4G
- Mechanical shock: 50G
- Operating temperature:  
-20 to +70°C / -4 to +158°F
- CE marked
- E-Marked: UNECE R10 compliant
- HALT tested

### Picture Quality

- LED backlighting  
(gives 30,000 hours life)
- Anti-glare screen
- Resolution: 1024 x 768
- Contrast ratio: 500:1
- Brightness: 400cd/m<sup>2</sup>
- Viewing angles:  
Side 70° x Top 60° x Bottom 60°

## 7" MONITOR

**SELECT**
**VBV-770M - 7" Digital LCD monitor**
**4288**
**VBV-770M-S - 7" Digital LCD monitor**
**4697**

Includes 1 x 5-pin input for connection to VBV-710C shutter camera

*Also available in High Definition model*


- 12-24Vdc
- Size (WxHxD)  
196 x 118 x 26mm  
7.7 x 4.6 x 1 inches
- 3 year warranty



### Features

- 3 camera inputs
- 3 Auto-triggers
- Mirror / Normal switching from menu
- 'Button lock' anti-tamper feature
- On-screen distance markers
- Audio
- Sun shield
- Auto-dimmer
- Multi-lingual menus
- Auto-switching PAL / NTSC

### Power

- Power consumption: 18 Watts
- Current: 1.5 Amps

### Durability & Standards

- Mechanical vibration: 4G
- Mechanical shock: 100G
- Operating temperature:  
-30 to +70°C / -4 to +158°F
- CE marked
- E-Marked: UNECE R10 compliant
- HALT tested

### Picture Quality

- LED backlighting  
(gives 20,000 hours life)
- Anti-glare screen
- Resolution: 800 x 480
- Contrast ratio: 500:1
- Brightness: 400cd/m<sup>2</sup>
- Viewing angles:  
Side 70° x Top 50° x Bottom 70°

# Select Monitors

Model

Part No:

## 5" MONITOR

SELECT



**VBV-750M - 5" Digital LCD monitor**

**4287**

**VBV-750M-S - 5" Digital LCD monitor**

**4710**

Includes 1 x 5-pin input for connection to VBV-710C shutter camera



- 12-24Vdc
- Size (WxHxD)  
149.5 x 99 x 22mm  
5.9 x 3.9 x 0.8 inches
- 3 year warranty



### Features

- 3 camera inputs
- 3 Auto-triggers
- Mirror / Normal switching from menu
- On-screen distance markers
- 'Button lock' anti-tamper feature
- Audio
- Sun shield
- Auto-dimmer
- Multi-lingual menus
- Auto-switching PAL / NTSC

### Picture Quality

- LED backlighting (gives 20,000 hours life)
- Anti-glare screen
- Resolution: 800 x 480
- Contrast ratio: 500:1
- Brightness: 350cd/m<sup>2</sup>
- Viewing angles:  
Side 70° x Top 50° x Bottom 70°

### Power

- Power consumption: 11.5 Watts
- Current: 0.95 Amps

### Durability & Standards

- Mechanical vibration: 4G
- Mechanical shock: 100G
- Operating temperature:  
-30 to +70°C / -4 to +158°F
- CE marked
- E-Marked: UNECE R10 compliant
- HALT tested

## 7" QUAD MONITOR

SELECT

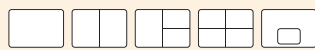


**VBV-770FM - 7" Digital LCD monitor**

**4982**



- 12-24Vdc
- Size (WxHxD)  
182 x 122 x 27mm  
7.2 x 4.8 x 1 inch
- 3 year warranty



Plus additional in-built image options

### Features

- 4 camera inputs
- 'Button-lock' anti-tamper feature
- 5 Auto-triggers
- Mirror / Normal switching from menu
- On-screen distance markers
- Audio
- Sun shield
- Multi-lingual menus
- Auto-switching PAL / NTSC

### Picture Quality

- LED backlighting (gives 20,000 hours life)
- Anti-glare screen
- Resolution: 800 x 480
- Contrast ratio: 500:1
- Brightness: 400cd/m<sup>2</sup>
- Viewing angles:  
Side 70° x Top 50° x Bottom 70°

### Power

- Power consumption: 27 watts
- Current: 2.2 Amps

### Durability & Standards

- Mechanical vibration: 4G
- Mechanical shock: 50G
- Operating temperature:  
-30 to +70°C / -4 to +158°F
- CE marked
- E-Marked: UNECE R10 compliant

## CAMERA MONITOR SYSTEM ANCILLARIES

SELECT



**BMM-019-ARM - 68mm/2.7" replacement arm (Select range)**

**3348**

- 68mm/2.7" mounting bracket arm
- Allows monitor to be dash-mounted in portrait position

A further range of camera/monitor brackets and mounting adapters is available. Please contact us for details

Model

Part No:

## CAMERA

SELECT



**VBV-701C - NTSC**

**2575**

**VBV-791C - Waterproof to IP69K, no audio NTSC**

**2842**

*Also available in High Definition (720p & 1080p) models*

• Viewing angle (HxVxD)  
86 x 72 x 122°

• IP67

• Size (WxHxD)  
81 x 77 x 70mm  
3.2 x 3 x 2.8 inches

• 3 year warranty



### Features

- 4 high-power Infrared LEDs for ultra-low light performance
- Day / Night sensor
- Microphone
- Mirror view
- \* Backlight compensation
- Automatic white balance
- 1/3" Sharp CCD
- TV Lines: 750

### Power

- Power consumption: 3 Watts
- Current: 0.2 Amps

### Durability & Standards

- Mechanical vibration: 10G
- Mechanical shock: 51G
- Operating temperature: -30 to +70°C / -22 to +158°F
- CE marked
- E-Marked: UNECE R10 compliant
- FCC approved
- HALT tested

## SHUTTER CAMERA

SELECT



**VBV-711C - Shutter camera**

**2808**

Direct connection to VBV-770M-S and VBV-750M-S monitors via 5-pin 10m (VBV-L510) or 20m (VBV-L520) camera cable.

• Viewing angle (HxVxD)  
98 x 73 x 108°

• IP68 / IP69K

• Size (WxHxD)  
122 x 85 x 82mm  
4.8 x 3.3 x 3.2 inches

• 3 year warranty



### Features

- 4 high power infrared LEDs for ultra-low light performance
- Day / Night sensor
- Automatic Shutter
- Heater
- Microphone
- Mirror / Normal view
- Backlight compensation
- Automatic white balance
- 1/3" Sharp CCD
- TV System: PAL
- TV Lines: 580

### Power

- Max Power consumption: 6 Watts
- Max Current: 0.5 Amps

### Durability & Standards

- Mechanical vibration: 10G
- Mechanical shock: 50G
- Operating temperature: -30 to +70°C / -22 to +158°F
- CE Marked
- E-Marked: UNECE R10 compliant



# Select Cameras

## Model

## Part No:

### EYEBALL CAMERA

### SELECT



- VBV-301C** - Flush-mount eyeball camera - Mirror view - NTSC  
**VBV-321C** - Flush-mount eyeball camera - Normal view - NTSC

**5213**  
**5217**

*Also available in High Definition (720p) models*

- **Viewing angle (HxVxD)**  
111 x 80 x 153°
- **IP69K**
- **Size (WxHxD)**  
57 x 42 x 70mm  
2.2 x 1.7 x 2.8 inches
- **3 year warranty**



#### Features

- 5 high power infrared LEDs for ultra-low light performance
- Day / Night sensor
- Lens swivel adjustment: 26° (Top) x 4° (Bottom) x 4° (Left) x 4° (Right)
- Lens rotation adjustment: ±180°
- Microphone
- Backlight compensation
- Automatic white balance
- 1/3" Sharp CCD
- TV System: NTSC
- TV lines: 600

#### Power

- Power consumption: 2.3 Watts
- Current consumption: 0.16 Amps

#### Durability & Standards

- Mechanical vibration: 8.5G
- Mechanical shock: 51G
- Operating temperature: -30 to +70°C / -22 to +158°F
- CE marked
- E-Marked: UNECE R10 compliant
- FCC approved

### OPTIONAL EXTRAS

- SM-3XX-25** Surface mounting adapter (25mm/82" deep)

**4596**

### CYLINDER CAMERA

### SELECT



- VBV-481C** - Cylinder camera NTSC

**2843**

- **Viewing angle (HxVxD)**  
96 x 71 x 126°
- **IP69K/IP68**
- **Size (Diameter x Length)**  
35 x 50mm  
1.4 x 2 inches
- **3 year warranty**



#### Features

- 9 LEDs for ultra-low light performance
- Day/night sensor
- Mirror view
- Backlight compensation
- Auto white balance
- 1/3" Sharp CCD
- TV Lines: 800

#### Power

- Power consumption: 1.9 Watts
- Current: 0.2 Amps

#### Durability & Standards

- Mechanical vibration: 10G
- Mechanical shock: 50G
- Operating Temperature: -30 to +70°C / -22 to +158°F
- E-Marked: UNECE R10 compliant
- CE marked
- FCC approved VBV-481C only
- IC approved VBV-481C only

## Model

## Part No:

### DOME CAMERA

### SELECT



|           |   |      |
|-----------|---|------|
| MD-51     | - Dome Camera NTSC                        | 5736 |
| MD-51(SW) | - Dome Camera - Superwide view angle NTSC | 5686 |
| MD-51(W)  | - Dome Camera - Wide view angle - NTSC    | 5694 |

*Also available in High Definition (720p) models*

- Viewing angle (HxVxD)  
(SW) 150° x 85° x 180°  
(W) 93° x 51° x 110°

- IP68

- Size (Diameter x H)  
76 x 59.5 mm  
3 x 2.3 inches

- 3 year warranty



#### Features

- Dome camera with 150° movement range in all directions
- Can be used internally or externally
- Mirror / Normal view
- Backlight compensation
- Automatic white balance
- CMOS - 1/3" ON-Semi ISP - Nextchip
- TV System: NTSC
- TV Lines: 600

#### Power

- Power consumption: 1 Watt
- Current: 0.57 Amps

#### Durability & Standards

- Mechanical vibration: 10G
- Mechanical shock 51G
- Operating temperature: -30 to +85°C / -22 to +185°F
- CE marked
- E-Marked: UNECE R10 compliant
- FCC Approved
- IC Approved

### OPTIONAL EXTRAS

|            |  |      |
|------------|--|------|
| MD-50SM-30 | - Surface mounting adapter (30mm/1.2" deep)  | 5003 |
| MD-50AM-15 | - Angled surface mounting adapter (adds 15°) | 5004 |
| MD-50AM-25 | - Angled surface mounting adapter (adds 25°) | 5005 |

### MINI CAMERA

### SELECT



|          |                                   |      |
|----------|-----------------------------------|------|
| DMC-1021 | - Mini camera (internal use) NTSC | 5715 |
|----------|-----------------------------------|------|

*Also available in High Definition (720p) models*

- Viewing angle (HxVxD)  
68 x 38 x 80°

- IP30

- Size (WxHxD)  
43 x 45 x 37.5mm  
1.7 x 1.8 x 1.5 inches

- 3 year warranty



#### Features

- Mirror / Normal view
- Backlight compensation
- Automatic white balance
- CMOS - 1/3" ON-Semi ISP - Nextchip
- TV System: NTSC
- TV Lines: 600



#### Power

- Power consumption: 1.0 Watt
- Current: 0.55 Amps

#### Durability & Standards

- Mechanical vibration: 10G
- Mechanical shock: 51G
- Operating temperature: -30 to +60°C / -22 to +140°F
- CE marked
- E-Marked: UNECE R10 compliant
- FCC approved
- IC approved

# Select Cameras

| Model   |   | Part No: |
|---|---|----------|
| SELECT CAMERA CABLES  |   | SELECT   |
|  | VBV-L430 - 30m / 98' cable                      | 2108     |
|   | VBV-L420 - 20m / 66' cable                      | 1380     |
|   | VBV-L415 - 15m / 49' cable                      | 3150     |
|   | VBV-L412 - 12m / 39' cable                      | 3106     |
|   | VBV-L410 - 10m / 33' cable                      | 1386     |
|   | VBV-L407 - 7m / 23' cable                       | 3151     |
|   | VBV-L406 - 6m / 20' cable                       | 3152     |
|   | VBV-L405 - 5m /16' cable                        | 1499     |
|   | VBV-L403 - 3m / 10' cable                       | 4977     |
|   | VBV-L4025 - 2.5m / 8' cable                     | 1554     |
|  | VBV-L520 - 20m / 66' 5-pin shutter camera cable | 3664     |
|   | VBV-L510 - 10m / 33' 5-pin shutter camera cable | 3663     |
|   | VBV-L505 - 5m / 16' 5-pin shutter camera cable  | 4001     |



**Model**
**Part No:**
**TRUCK/TRAILER CABLE KIT**
**SELECT**
**SK-15-05 - Truck and trailer cable kit for 3-camera Backeye®360**
**5066**


- SP-15A-05 - 15-pin bulkhead socket for cab & cab-end connector plus 3x connections for Backeye®360 Select 5064
- SP-15B-05 - 15-pin bulkhead socket for trailer & trailer-end connector plus 3x connections for Backeye®360 Select 5065

- SC-15-01 - Coiled shielded cable with 15-pin plugs 3268

**TRUCK/ DRAWBAR TRAILER CABLE KIT**
**SELECT**
**VSK-50E - Truck and drawbar trailer cable kit for two cameras**
**2540**

Inclusive of VSK-50E-A Truck kit and VSK-30E-T Trailer kit


**VSK-50E-A - Truck only kit 2541**

- VBV-L420 - 20m/66' cable for truck 1380
- VBV-L405 - 5m/16' camera cable for truck camera 1499
- VCS-020 - Two-way camera selector 1844
- 1 x VSP-47A - 7-pin camera bulkhead socket for truck rear 1847
- SC-07-24S - Coiled cable with 7-pin sockets 1227

**VSK-30E-T - Trailer only kit 2542**

- VBV-L420 - 20m/66' cable for trailer 1380
- VSP-47B - 7-pin camera bulkhead socket for trailer 1846

**TRUCK/DRAWBAR TRAILER CABLE KIT**
**SELECT**
**VSK-505E - Truck and drawbar trailer cable kit for two Select shutter cameras**
**4005**


- VBV-L420 - 20m/66' cable for truck 1380
- VBV-L520 - 20m/66' camera cable for truck camera 3664
- VBV-L505 - 5m/16' camera cable for cab 4001
- VCS-020 - Two-way camera selector 1844
- 2 x AC-035 - 5-pin to 4-pin shutter camera adapter 3702

- VSP-57A - 7-Pin bulkhead socket for cab & cab-end camera connector 3869
- VSP-57B - 7-pin bulkhead socket for trailer & trailer-end camera connector 3870
- SC-07-24S - Coiled cable with 7-pin plugs 1227

# Select Cables

Model

Part No:

## TRUCK/TRAILER CABLE KIT

SELECT

### VSK-31E - Truck and trailer cable kit - unique pin layout

2539

Inclusive of VSK-31E-T - Trailer kit



SP-7A SC-7 SP-7B  
(Select connector via supplied adapter cables)

- VBV-L410 - 10m/33' cable for cab 1386
- SP-7A - 7-pin bulkhead socket for cab & cab-end camera connector (unique pin layout) 1827
- AC-014 - Adapter cable 2094
- SC-7 - Coiled cable with 7-pin plugs (unique pin layout) 1829

### VSK-31E-T - Trailer only kit

2543

- VBV-L420 - 20m/66' cable for trailer 1380
- AC-006 - Adapter cable 1983
- SP-7B - 7-pin bulkhead socket for trailer & trailer-end camera connector (unique pin layout) 1828

## TRUCK/TRAILER CABLE KIT

SELECT

### VSK-30E - Truck and trailer cable kit

2538

Inclusive of SK-30E-T - Trailer only kit



VSP-47A SC-07-24S VSP-47B

- VBV-L410 - 10m/33' cable for cab 1386
- VSP-47A - 7-pin bulkhead socket for cab & cab-end camera connector 1847
- SC-07-24S - Coiled cable with type 24S 7-pin plugs 1227

### VSK-30E-T - Trailer only kit

2542

- VBV-L420 - 20m/66' extension cable for trailer 1380
- VSP-47B - 7-pin bulkhead socket for trailer & trailer-end camera connector 1846

## TRUCK/TRAILER CABLE KIT

SELECT

### VSK-305E - Truck and trailer cable kit for Select shutter camera

3871



VSP-57A SC-07-24S VSP-57B

- VBV-L510 - 10m/33' cable for cab 3663
- VBV-L520 - 20m/66' cable for trailer 3664
- VSP-57A - 7-pin bulkhead socket for cab & cab-end camera connector 3869
- VSP-57B - 7-pin bulkhead socket for trailer & trailer-end camera connector 3870
- SC-07-24S - Coiled cable with type 24S 7-pin plugs 1227

Model

Part No:

## CAMERA MONITOR SYSTEMS

SELECT

**VBV-770-301 - Single flush-mount camera monitor system for rigid vehicles**

**4779**



|                                 |      |
|---------------------------------|------|
| • VBV-770M - 7" monitor         | 4288 |
| • VBV-301C - flush-mount camera | 5213 |
| • VBV-L420 - 20m/66' cable      | 1380 |

See individual products for detailed specifications and warranties

**VBV-770-000N - Single camera monitor system for rigid vehicles**

**4693**



|                            |      |
|----------------------------|------|
| • VBV-770M - 7" monitor    | 4288 |
| • VBV-701C - camera        | 2575 |
| • VBV-L420 - 20m/66' cable | 1380 |

See individual products for detailed specifications and warranties

**VBV-750-000N - Single camera monitor system for rigid vehicles**

**4706**



|                            |      |
|----------------------------|------|
| • VBV-750M - 5" monitor    | 4287 |
| • VBV-701C - camera        | 2575 |
| • VBV-L420 - 20m/66' cable | 1380 |

See individual products for detailed specifications and warranties

## OPTIONAL EXTRA

Add VBV-301C (low mount) or VBV-321C (high mount) side view camera + VBV-L405 (5m/16' cable) to spot cyclists.



# Select/Essential Kits

Model

Part No:

## CAMERA MONITOR SYSTEMS

SELECT

**VBV-770-311 - Single flush-mount camera monitor system for small rigid and vans 4783**



- |   |      |
|---|------|
| • VBV-770M - 7" monitor                 | 4288 |
| • VBV-301C - Flush-mount eyeball camera | 5211 |
| • VBV-L410 - 10m/33' cable              | 1386 |

See individual products for detailed specifications and warranties

**VBV-750-311 - Single flush-mount camera monitor system for rigid vehicles 4782**



- |   |      |
|---|------|
| • VBV-750M - 5" monitor                 | 4287 |
| • VBV-301C - Flush-mount eyeball camera | 5211 |
| • VBV-L410 - 10m/33' cable              | 1386 |

See individual products for detailed specifications and warranties

**VBV-750-910 - Single camera monitor system for vans 4220**

4220



- |                               |
|-------------------------------|
| • VBV-750M - 5" color monitor |
| • VBV-791C - color camera     |
| • VBV-L410 - 10m / 33' cable  |

See individual products for detailed specifications and warranties

**VBV-770-910 - Single camera monitor system for vans 4221**

4221



- |                                 |
|---------------------------------|
| • VBV-770M - 7" color monitor   |
| • VBV-791C - IP69K color camera |
| • VBV-L410 - 10m / 33' cable    |

See individual products for detailed specifications and warranties

## ESSENTIAL MONITOR

ESSENTIAL

**VBV-243M - 4.3" Digital Mirror monitor 5323**

5323



- 12-24Vdc
- Size (WxDxH)  
280 x 92 x 30.5mm  
11 x 3.6 x 1.2 inches
- 1 year warranty



### Features

- On screen multi-lingual display menu
- Digital LCD panel
- 2 Auto-trigger
- Auto dimmer
- Illuminated keypad
- On-screen distance markers
- TV system: PAL / NTSC

### Picture Quality

- Resolution: 480 x 272
- Contrast ratio: 600:1
- Brightness: 1000cd/m<sup>2</sup>
- Viewing angles:  
Side 65° x Top 60° x Bottom 50°

### Power

- Power consumption: 6.6 Watts
- Current: 0.53 Amps

### Durability & Standards

- Vibration rating: 6G
- Operating temperature:  
-20 to +70°C / -4 to +158°F
- CE marked
- FCC approved



Model

Part No:

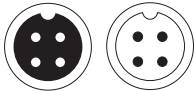
NEW

## CAMERA MONITOR SYSTEM

ESSENTIAL

VBV-671-000 - NTSC Camera monitor system

5816



- **Camera Viewing angle (HxVxD)**  
89 x 65 x 114°

- IP67

- **Camera Size (WxHxD)**  
76 x 59 x 52mm  
3 x 2.3 x 2 inches

- **Monitor Size (WxHxD)**  
205 x 126 x 26mm  
8 x 5 x 1 inches

- 1 year warranty



### Contents

- 1 x VBV-670M monitor
- 1 x monitor sunshield
- 1 x monitor bracket
- 1 x VBV-63XC camera
- 1 x 20m VBV-L4020 extension cable
- Fitting kit

### Camera Features

- Normal view
- 1/3" PixelPlus CMOS
- TV Lines: 425

### Monitor Features

- 2 camera inputs
- 1 auto trigger
- Sun shield
- Multi-lingual menus
- Normal/Mirror via OSD menu

### Picture Quality

- Monitor resolution: 800x400
- Contrast ratio: 500:1
- Brightness: 250 cd/m²
- Monitor viewing angles:  
Side 70° x Top 45° Bottom 65°

### Power

- Power consumption: 4.2 Watts
- Current: 0.4 Amps

### Durability & Standards

- Mechanical vibration:  
Camera: 8.5G Monitor: 4G
- Operating temperature:  
-30 to +70°C / -4 to +158°F
- CE marked
- FCC approved



## TO CONNECT AN ADDITIONAL CAMERA

VBV-631C - Essential Camera - NTSC

5817

VBV-L4020 - 20m/66" Essential extension cable

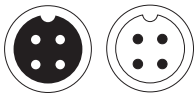
5773

## CAMERA MONITOR SYSTEM

ESSENTIAL

VBV-650-000N - NTSC Single-camera monitor system

4766



- **Camera Viewing angle (HxVxD)**  
81 x 59 x 108°

- IP67

- **Camera Size (WxHxD)**  
65 x 59 x 55mm  
2.5 x 2.3 x 2 inches

- **Monitor Size (WxHxD)**  
150 x 99 x 31mm  
6 x 4 x 1.2 inches

- 1 year warranty



### Contents

- 1 x VBV-670M monitor
- 1 x monitor bracket
- 1 x VBV-621C camera
- 1 x 20m VBV-L4020 extension cable
- Fitting kit

### Camera Features

- Mirror view
- CMOS
- TV Lines: 420

### Monitor Features

- 1 camera input

### Picture Quality

- Monitor resolution: 640x480
- Monitor viewing angles:  
Side 70° x Top 50° Bottom 70°

### Power

- Power consumption: 2 Watts

### Durability & Standards

- Operating temperature:  
-30 to +70°C / -4 to +158°F



# Adapter Cables

## Model

## Part No:

### BRIGADE CAMERA MONITOR ADAPTERS



|  |  |      |
|--|--|------|
|  | AC-006 - Connects Select camera (not shutter) to Elite cable                 | 1983 |
|  | AC-007 - Connects Select monitor to Elite cable                              | 1984 |
|  | AC-014 - Connects Elite camera to Select cable                               | 2094 |
|  | AC-014(5M) - Connects Elite camera to Select cable, 5m/16.4' long            | 5049 |
|  | AC-020 - Connects Elite monitor to Select cable                              | 2590 |
|  | AC-035 - 5-pin to 4-pin Select shutter camera adapter                        | 3702 |
|  | AC-055(5M) - 5-pin to 4-pin Select cable, 5m long                            | 4267 |
|  | AC-305 - Splitter cable connects 1 x BN360-200 camera to MDR & ECU           | 4903 |
|  | AC-306 - Splitter cable connects 1 x (Non HD) Select camera to MDR & monitor | 4904 |
|  | AC-307 - Splitter cable connects 1 x Elite camera to MDR & Monitor           | 4905 |

### MISCELLANEOUS CAMERA MONITOR ADAPTERS



|  |   |      |
|--|---|------|
|  | AC-056 - Connects Select camera to Orlaco monitor                                     | 4401 |
|  | AC-062 - Connects Elite camera to Orlaco monitor                                      | 4691 |
|  | AC-063 - Connects Elite camera to Orlaco monitor, screw fit                           | 4925 |
|  | AC-066 - Connects Orlaco camera to Elite monitor                                      | 5027 |
|  | AC-067 - Connects Orlaco camera to Select monitor                                     | 5028 |
|  | AC-24-12(009) - In-line 24/12Vdc converter -<br>Select camera to Mekra 507405 monitor | 4926 |
|  | AC-308 - Splitter cable to connect MDR to Mekra 507405 CMS                            | 4949 |

## Model
















## Part No:

### OEM CAMERA MONITOR ADAPTERS

|   |   |   |  |      |
|---|---|---|--|------|
|  |    |    | AC-041 - Connects Elite camera to John Deere 7-pin amp output                      | 4245 |
|   |    |    | AC-042 - Connects Select camera to John Deere 7-pin amp output                     | 4246 |
|   |    |    | AC-044 - Connects Select camera to Molex M12 (Fendt)                               | 4279 |
|   |    |    | AC-045 - Connects Elite camera to Molex M12 (Fendt)                                | 4280 |
|   |    |    | AC-068 - Connects Select camera to MAN Harman unit with camera prep                | 5234 |
|   |    |    | AC-069 - Connects Select camera to MAN/Scania Harman unit without camera prep      | 5318 |
|   |    |    | AC-24-12(002) - In-line 24/12Vdc converter - Elite camera to Mercedes monitor      | 4266 |
|   |    |    | AC-24-12(004) - In-line 24/12Vdc converter - Select camera to MAN MMT HSD          | 4281 |
|  |  |  | AC-24-12(006) - In-line 24/12Vdc converter - Select camera to Volvo FH(4) & FM(4)  | 4719 |
|   |  |  | AC-24-12(007) - In-line 24/12Vdc converter - Select camera to Iveco connect system | 4762 |
|   |  |  | AC-24-12(008) - In-line 24/12Vdc converter - Select camera to Mercedes Sprinter    | 4763 |
|   |  |  |  |      |

A further range of OEM-specific adapters to connect Brigade cameras to factory-fit monitors is available

### GENERAL CAMERA MONITOR ADAPTERS

|   |   |   |   |      |
|---|---|---|---|------|
|  |  |  | AC-016 - Connects AV to Camera input of Elite monitor                         | 2150 |
|   |  |  | AC-019 - Connects Elite camera to male phono (video only)                     | 2589 |
|  |  |  | AC-021 - Connects BNC/FLIR PathFindIR camera to Elite cable                   | 2704 |
|   |  |  | AC-024 - Connects AV to Select monitor<br>(video & audio input, 12Vdc output) | 3183 |
|   |  |  | AC-028 - Connects AV to Select cable  | 3335 |
|   |  |  | AC-064 - Connects Elite camera to BNC adapter cable                           | 4948 |

## Model

## Part No:

### DIGITAL WIRELESS CONNECTION SYSTEM



**DW-1001-TX - Digital Wireless Transmitter**  
**DW-1001-RX - Digital Wireless Receiver**

**4282**  
**4283**

- Digital technology
- 12-24Vdc
- 1 camera input
- IP69K (Transmitter)
- Size (WxHxD)  
113 x 114 x 31mm  
4.4 x 4.5 x 1.2 inches
- 3 year warranty

#### Features

- Image Latency: 200 milliseconds
- No need for retractable coiled cables
- Reduces installation time
- Re-pair facility allows for interchangeable trailers
- Triggered by reverse gear
- TV System: NTSC
- Secure connection

#### Power

- Maximum Current Amps:  
TX: 0.85 RX: 0.17
- Power consumption:  
TX: 9.8 Watts RX: 2.2 Watts

#### Durability & Standards

- Operating temperature:  
-40 to +70°C / -40 to +158°F
- Mechanical vibration: 6G
- Mechanical shock: 20G
- CE marked
- E-Marked: UNECE R10 compliant

Includes connectors/adapters for both Elite and Select range cameras and monitors. Not AHD compatible

### CAMERA MONITOR SYSTEM ANCILLARIES



Elite



Select



**CS-020 - Two-way camera selector (Elite range connectors)**  
**VCS-020 - Two-way camera selector (Select range connectors)**

**1571**  
**1844**

- Allows a 2nd camera to be connected to a monitor
- 2nd camera view selected by trigger wire
- Full screen view only
- 2 year warranty

Not AHD compatible

### CAMERA MONITOR SYSTEM ANCILLARIES



**LS-60-A - Speed switch**

**4851**

- 12-24Vdc
- Auto-triggers safety equipment at the designated speed
- Size (WxHxD)  
44 x 16 x 64mm  
1.7 x 0.6 x 2.5 inches
- 2 year warranty

#### Features

- Normally closed - safety device on by default, turning off at designated speed
- 10 speed threshold settings
- Compact size
- Easy to install and set up
- Short circuit protection on camera inputs
- Reverse polarity protected

#### Power

- Power consumption: 21.6 Watts
- Max current: 1.8 Amps
- Switch Output max. current: 1.2 Amps

#### Durability & Standards

- Mechanical vibration: 10G
- Mechanical shock: 50G
- Operating temperature:  
-40 to +85°C / -40 to +185°F
- CE marked
- E-Marked: UNECE R10 compliant

#### Notes:

- A relay is required if connected to a device that is higher than 1.2 Amps
- Not compatible with HD systems



Model

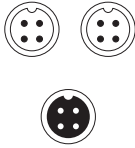
Part No:

## CAMERA MONITOR SYSTEM ANCILLARIES

SELECT

SS-002 - Twin camera screen splitter (Select range connectors)

3044



- 12-24Vdc
- 2 camera inputs
- Size (WxHxD)  
147 x 37 x 78mm  
5.7 x 1.5 x 3 inches
- 2 year warranty



Single



Split

In-built image options

### Features

- Offers split-screen option for monitors without in-built functionality
- 3 trigger inputs per camera
- Shutter camera compatible with adapters (Elite - AC-035) (Select - TS-1000-ECU)
- TV System: NTSC
- Manual Mirror/Normal switching - choose from horizontal normal/mirror or vertical normal/flip
- Short circuit protection on camera inputs
- Reverse polarity protected

Adapter required for Elite range monitors  
Not AHD compatible

### Power

- Power Consumption: 8.4 Watts
- Current: 0.7 Amps

### Durability & Standards

- Mechanical vibration: 10G
- Mechanical shock: 50G
- Operating temperature: -30 to +70°C / -22 to +158°F
- CE marked
- E-Marked: UNECE R10 compliant
- FCC approved
- IC approved

## CAMERA MONITOR SYSTEM ANCILLARIES

ELITE

EDM-50 - Multi-camera module and screen splitter (Elite range connectors)

2152



- 12-24Vdc
- 4 camera inputs
- Size (WxHxD)  
154 x 28 x 105mm  
6 x 1.1 x 4.1 inches
- 2 year warranty



Single



Split



Triple



Quad



Picture in picture

Plus additional in-built image options

### Features

- Shutter camera compatible (inputs 1,2&3)
- AV input to accept DVD, sat nav or other add-ons
- 5 manual or auto-triggers for each camera
- On screen distance markers
- Mirror / Normal image switch for each camera
- Selectable camera audio
- Auto-scanning function
- Adapter required for Select range monitors

### Power

- Power consumption: 20 Watts
- Current: 2 Amps

### Durability & Standards

- Mechanical vibration: 5G
- Operating temperature: -25 to +70°C / -13 to +158°F
- CE marked
- E-Marked: UNECE R10 compliant

Not AHD compatible



# MDR

## Mobile Digital Recording

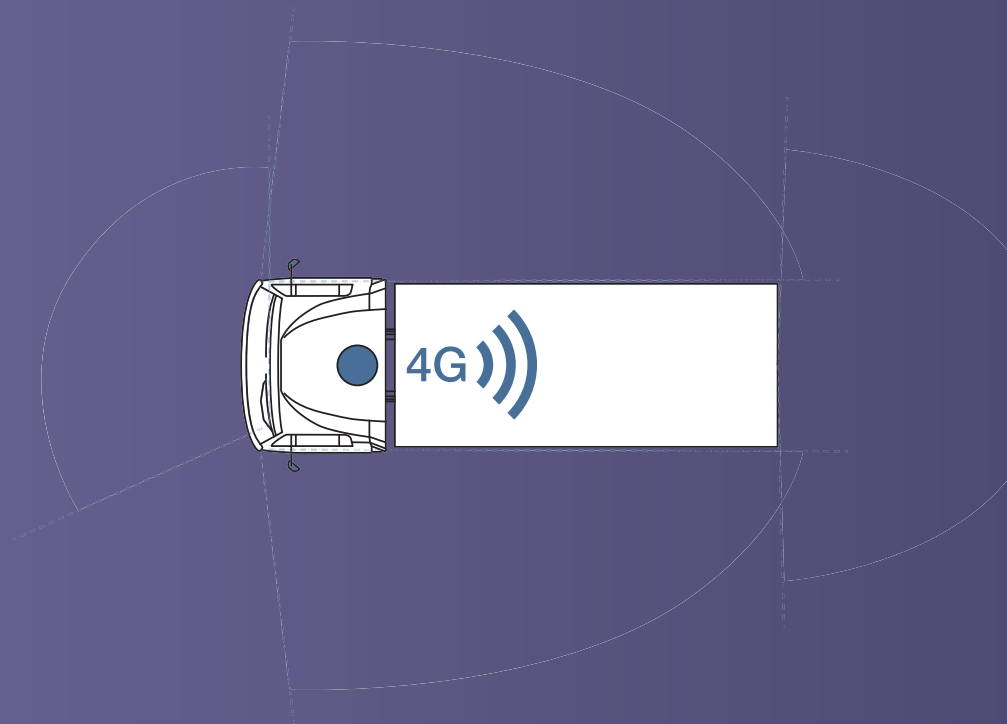
### Providing your witness

Brigade's Mobile Digital Recording (MDR) systems are now capable of capturing vehicle data and footage from up to 16 vehicle-mounted cameras. The MDR range includes models with 4G and WiFi connectivity capabilities, allowing data to be accessed from the recorder without having to physically go to the vehicle.

To take full advantage of the benefits of 4G connectivity, Brigade has launched Bridge, a fully managed service for 4G enabled systems so that operators do not have to set up and maintain their own servers and manage SIMs and mobile data.

New IP Cameras and Network Expansion Modules mean that up to 6 cameras can be connected to our 4-channel MDR and up to 16 cameras can be connected to our 8-channel MDR.

MDRs are compatible with all Brigade Backeye® camera monitor systems, including Backeye®360 – BN360-200 and IP Cameras. .



# BRIDGE

## MDR 4G Hosted Service

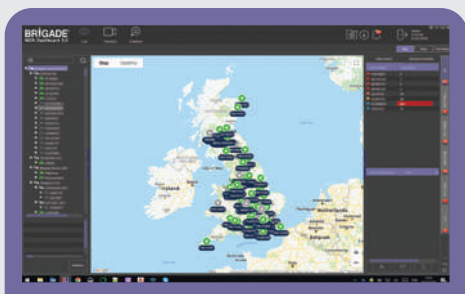
The MDR range includes models with 4G connectivity capabilities, allowing data to be accessed from the recorder without having to physically go to the vehicle.

To take full advantage of the benefits of 4G connectivity, Brigade has launched Bridge, a fully managed service for 4G enabled systems so that operators do not have to set up and maintain their own servers and manage SIMs and mobile data.

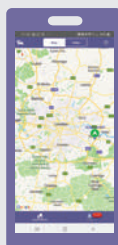


### Benefits of having remote access to the MDR can include:

- **Playback of historical footage and metadata from MDR or server** - Metadata includes: GPS location, speed, G-force, events and alarms.
- **Vehicle tracking** - Includes: GPS location, speed and alarms. Dual-screen support with dedicated location map.
- **Live view of vehicle cameras and metadata** - Metadata includes: GPS location, speed and alarms. Up to 64 cameras can be viewed from multiple MDRs on one screen.
- **Download footage**
  - **Scheduled:** one-off download to the server that will commence once vehicle is online.
  - **Automatic:** Pre-alarm and post-alarm footage (e.g. 30 seconds) will automatically save to the server.
  - **Manual:** Download historical footage from the MDR to local storage.
- **Geo-fencing** - Easily set up geographical boundaries to know when your vehicle enters and/or leaves areas.



Vehicle Tracking on MDR Dashboard  
PC software and MDR App



Example of 4-channel playback  
MDR Dashboard PC software

### All Bridge packages include

- 4G connection
- Competitively-priced 12 month contract, rolling thereafter
- SIM card
- Remote access to MDR via secure cloud server
- Technical helpline and online tutorials
- Access to data via MDR Apps for iOS and Android systems
- Access to data via MDR Dashboard PC software: Windows OS required (minimum Windows 7)

For further information, visit [brigade-electronics.com/bridge](http://brigade-electronics.com/bridge)





At the time of print, 4G Hosted Services only available in selected countries.



**Model**

**Part No:**

## MOBILE DIGITAL RECORDER

|   |  |      |
|---|--|------|
| MDR-508-2000  | - 8 channel 2TB hard disk recorder                                 | 5577 |
| MDR-508-1000  | - 8 channel 1TB hard disk recorder                                 | 5126 |
|   | MDR-508GW-2000 - 8 channel 2TB hard disk recorder with WiFi and 4G | 5556 |
|   | MDR-508GW-1000 - 8 channel 1TB hard disk recorder with WiFi and 4G | 5127 |
|    | MDR-508G-2000 - 8 channel 2TB hard disk recorder with 4G           | 5550 |
|   | MDR-508G-1000 - 8 channel 1TB hard disk recorder with 4G           | 5539 |
|    | MDR-508W-2000 - 8 channel 2TB hard disk recorder with WiFi         | 5579 |
|   | MDR-508W-1000 - 8 channel 1TB hard disk recorder with WiFi         | 5129 |



- 9-32Vdc
- 8 camera inputs - Supports AHD High definition cameras
- 8 trigger/alarm inputs
- Lockable and interchangeable Hard Drive Unit
- Fast, easily downloadable recordings and data
- Size (WxHxD)  
224 x 85 x 221mm  
8.8 x 3.3 x 8.7 inches
- 3 year warranty

### Main Contents

- Mobile Digital Recorder with 2.5" SATA HDD caddy unit
- Wired Mouse
- 64Gb industrial grade Class 10 SD card
- Input / Output Cable
- Power Cable
- GPS Antenna
- 4G Antenna (G and GW models)
- Wi-Fi Antenna (W and GW models)
- USB A to B Cable (3.0)
- Security Key
- Bracket and Fixings

### Features

- Remotely access MDR units using wireless (WiFi models only) and/or Mobile network (4G models only)
- Mobile apps for remote view (WiFi/4G models only)
- Geo-fencing (WiFi/4G models only)
- Mobile Standards: 2G/3G/4G
- Audio (cameras must have microphones)
- Robust aluminum housing
- Anti-vibration mounting allows for installation at any angle
- Built-in GPS
- Internal G-sensor and built-in buzzer
- Recordings saved to hard disk (protected by non-visible digital watermark) and in-built Mirror recording onto 64Gb SD card
- Recording modes: normal, alarm and timer (all watermarked)
- Configurable alarm trigger settings (speed, G-force, motion detection, video loss, voltage)
- Record images prior to alarm activation and after vehicle switched off

- MDR-Dashboard (full player) and MDR-Player (portable) with Google and MS Bing maps (English only)
- Search by date, time or triggered events
- Multi-level password protected access
- Hard drive unit directly pluggable to PC via USB port
- 8 x trigger Inputs, 2x trigger outputs and 1x12V power output
- Built-in HDD heater
- MDR Control using USB Mouse or optional IR remote control
- USB 3.0 connection
- TV System: PAL/NTSC/AHD
- Compatible with Brigade's vehicle CCTV camera monitor systems, IP cameras and Backeye@360 systems

### Image and Audio Quality

- High quality H.264 image compression
- ADPCM - audio compression
- Choice of 8 low to high resolution settings
- Record at between 1 and 25 frames per second, per channel

### Power

- Max power consumption: 80 Watts
- Current: 6.6 Amps

### Durability & Standards

- Mechanical vibration: 1G
- Mechanical shock: 51G
- Operating temperature: -40 to +70°C / -40 to +158°F
- E-Marked: UNECE R10 compliant
- CE marked
- FCC approved
- IC approved
- RoHS2 Compliant

## OPTIONAL EXTRA

**Expand the channel capability of the MDR with the addition of an Expansion Module and IP cameras:**

See pages 52-53

**IP-EM4 - Expansion Module adds 4 channels to MDR-508 = 12 channels**

**IP-EM8 - Expansion Module adds 8 channels to MDR-508 = 16 channels**



# Mobile Digital Recorders

**Model**

**Part No:**

## MOBILE DIGITAL RECORDER

|   |  |      |
|---|--|------|
| MDR-504-2000  | - 4 channel 2TB hard disk recorder                                 | 5563 |
| MDR-504-1000  | - 4 channel 1TB hard disk recorder                                 | 5561 |
|   | MDR-504GW-2000 - 4 channel 2TB hard disk recorder with WiFi and 4G | 5554 |
|   | MDR-504GW-1000 - 4 channel 1TB hard disk recorder with WiFi and 4G | 5552 |
|    | MDR-504G-2000 - 4 channel 2TB hard disk recorder with 4G           | 5546 |
|   | MDR-504G-1000 - 4 channel 1TB hard disk recorder with 4G           | 5548 |
|    | MDR-504W-2000 - 4 channel 2TB hard disk recorder with WiFi         | 5567 |
|   | MDR-504W-1000 - 4 channel 1TB hard disk recorder with WiFi         | 5565 |



- 9-32Vdc
- 4 camera inputs - Supports AHD High definition cameras
- 8 trigger/alarm inputs
- Lockable and interchangeable Hard Drive Unit
- Fast, easily downloadable recordings and data
- Size (WxHxD)  
190 x 75 x 222mm  
7.5 x 3 x 8.7 inches
- 3 year warranty

### Main Contents

- Mobile Digital Recorder with 2.5" SATA HDD caddy unit
- Wired Mouse
- 32Gb industrial grade Class 10 SD card
- Input / Output Cable
- Power Cable
- GPS Antenna
- 4G Antenna (G and GW models)
- Wi-Fi Antenna (W and GW models)
- USB A to B Cable (3.0)
- Security Key
- Bracket and Fixings

### Features

- Remotely access MDR units using wireless (WiFi models only) and/or Mobile network (4G models only)
- Mobile apps for remote view (WiFi/4G models only)
- Geo-fencing (WiFi/4G models only)
- Mobile Standards: 2G/3G/4G
- Audio (cameras must have microphones)
- Robust aluminum housing
- Anti-vibration mounting allows for installation at any angle
- Built-in GPS
- Internal G-sensor and built-in buzzer
- Recordings saved to hard disk (protected by non-visible digital watermark) and in-built Mirror recording onto SD card
- Recording modes: normal, alarm and timer (all watermarked)
- Configurable alarm trigger settings (speed, G-force, motion detection, video loss, voltage)
- Record images prior to alarm activation and after vehicle switched off

- MDR-Dashboard (full player) and MDR-Player (portable) with Google and MS Bing maps (English only)
- Search by date, time or triggered events
- Multi-level password protected access
- Hard drive unit directly pluggable to PC via USB port
- 8 x trigger Inputs, 2x trigger outputs and 1x12V power output
- Built-in HDD heater
- MDR Control using USB Mouse or optional IR remote control
- USB 3.0 connection
- TV System: PAL/NTSC/AHD
- Compatible with Brigade's vehicle CCTV camera monitor systems, IP cameras and Backeye@360 systems

### Image and Audio Quality

- High quality H.264 image compression
- ADPCM - audio compression
- Choice of 8 low to high resolution settings
- Record at between 1 and 25 frames per second, per channel

### Power

- Max power consumption: 60 Watts
- Current: 5 Amps

### Durability & Standards

- Mechanical vibration: 1G
- Mechanical shock: 51G
- Operating temperature: -40 to +70°C / -40 to +158°F
- E-Marked: UNECE R10 compliant
- CE marked
- FCC approved
- IC approved
- RoHS2 Compliant

## OPTIONAL EXTRA

**Expand the channel capability of the MDR with the addition of an Expansion Module and IP cameras:**

See pages 52-53



**IP-EM4 - Expansion Module adds 2 channels to MDR-504 = 6 channels**

**Model**
**Part No:**
**500 SERIES MOBILE DIGITAL RECORDER ACCESSORIES**


**AC-305** - Splitter cable connects 1 x Backeye®360 BN360-200 camera to MDR & ECU **4903**

**AC-306** - Connects 1 x Select camera to MDR and monitor **4904**

**AC-307** - Connects 1 x Elite camera to MDR and monitor **4905**



**MDR-RP01** - Remote status & interface panel with panic button **4872**



**MDR-06RPC** - 6m/19.7" cable for Remote status & interface panel **4873**

**MDR-GS-02** - External G-sensor **4988**

**MDR-03GSC** - 3m/9.8" G-sensor cable **4874**



**MDR-508GW-EXP-0** - Wi-Fi & 4G upgrade Expansion Module **S5542**  
For MDR-508 models only. SD card not included

**MDR-508G-EXP-0** - 4G upgrade Expansion Module **S5543**  
For MDR-508 models only. SD card not included

**MDR-508W-EXP-0** - Wi-Fi upgrade Expansion Module **5311**  
For MDR-508 models only. SD card not included



**MDR-500-500-MCU** - Caddy unit with 500GB HDD **5132**

**MDR-500-1000-MCU** - Caddy unit with 1TB HDD **5157**

**MDR-500-2000-MCU** - Caddy unit with 2TB HDD **5330**

**SD-32GB-IND** - 32GB industrial grade Class 10 SD card **4875**

**SD-64GB-IND** - 64GB industrial grade Class 10 SD card **4876**



**MDR-FPB32-01** - External SD Mirror-recorder in fireproof housing **4896**  
with 32GB industrial grade Class 10 SD card

# IP Cameras & Expansion Modules

## What are IP cameras & Expansion Modules?

An Internet Protocol (IP) camera is a high-definition digital camera with its own IP address. Instead of transmitting video over a video cable to a monitor or MDR, the IP camera transmits digital video to the MDR over a data connection (ethernet cable) where the images are saved to the HDD memory.

Brigade Expansion Modules use Power Over Network (PON) Switch technology to expand the channel capability of the MDR by transmitting digital video images from IP cameras over the top of existing analogue video cables/signals. The MDR on-screen display allows easy camera set up without need for specific IP camera knowledge

**Benefit:** Connecting IP cameras increases the number of channels available on the MDR:

|                        |  |               |
|------------------------|--|---------------|
| MDR-504                | - 4 x Analogue channels plus 1 x IP channel        | = 5 channels  |
| MDR-504 and PON switch | - 4 x Analogue channels plus 2 x IP channels       | = 6 channels  |
| MDR-508                | - 8 x Analogue channels plus 1 x IP channel        | = 9 channels  |
| MDR-508 and PON switch | - 8 x Analogue channels plus up to 8 x IP channels | = 16 channels |

### Model

### Part No:

**NEW**

## IP CAMERA



### IP-1000C - Internal forward-facing camera

**5935**

- **Viewing angle (HxVxD)**  
87 x 48 x 95°
- **IP20**
- **Size (WxHxD)**  
75 x 122 x 40mm  
3 x 5 x 1.6 inches
- **3 year warranty**



#### Features

- High-definition picture quality
- Windscreen flush-mounted to avoid reflections
- Microphone
- Normal view - mirror view via OSD settings or IP web interface
- Backlight compensation
- Automatic white balance
- Supports web browser access
- Fast setup feature in MDR 500 series to auto-assign camera IP address
- Picture Elements: 1920(H) x 1080(V)
- Imaging device: CMOS
- TV Lines: 800

#### Power

- Power consumption: 2.5 Watts
- Current: 0.2 Amps

#### Durability & Standards

- Mechanical vibration: 4.7G
- Mechanical shock: 51G
- Operating temperature:  
-40 to +70°C / -40 to +158°F
- Video output signal: H264 or H.265
- Network protocol: MDR5, ONVIF, TCP/IP, HTTP, DHCP, NTP, FTP
- CE marked
- E-Marked: UNECE R10 compliant
- FCC approved
- IC approved

**Note:** For use with MDR only

**NEW**

## IP CAMERA



### IP-1200C - Surface-mount dome camera

**5937**

- **Viewing angle (HxVxD)**  
94 x 53 x 95°
- **IP65**
- **Size (WxHxD)**  
102 x 55 x 96 mm  
4 x 2 x 3.8 inches
- **3 year warranty**



#### Features

- High-definition picture quality
- Surface mount
- Heater
- Normal view
- Backlight compensation
- Automatic white balance
- Supports web browser access
- Fast setup feature in MDR 500 series to auto-assign camera IP address
- Picture Elements: 1920(H) x 1080(V)
- Imaging device: CMOS
- TV Lines: 700

#### Power

- Power consumption: 3.5 Watts
- Current: 0.3 Amps

#### Durability & Standards

- Mechanical vibration: 4.7G
- Mechanical shock: 51G
- Operating temperature:  
-40 to +70°C / -40 to +158°F
- Video output signal: H264 or H.265
- Network protocol: MDR5, ONVIF, TCP/IP, HTTP, DHCP, NTP, FTP
- CE marked
- E-Marked: UNECE R10 compliant
- FCC approved
- IC approved

**Note:** For use with MDR only



## Model

## Part No:

**NEW**

## IP CAMERA

### IP-1100C - Surface-mount camera

**5936**



- **Viewing angle (HxVxD)**  
84 x 46 x 103°
- **IP67**
- **Size (WxHxD)**  
96 x 52 x 58mm  
3.8 x 2 x 2.3 inches
- **3 year warranty**



#### Features

- High-definition picture quality
- Surface mount
- Built-in G-sensor for automatic image orientation
- High power infrared LED for low-light performance
- Day/night sensor
- Normal view
- Backlight compensation
- Automatic white balance
- Supports web browser access
- Fast setup feature in MDR 500 series to auto-assign camera IP address
- Imaging device: CMOS
- Picture elements: 1920 x 1080
- TV Lines: 800

#### Power

- Power consumption: 5 Watts
- Current: 0.2 Amps

#### Durability & Standards

- Mechanical vibration: 8.5G
- Mechanical shock: 51G
- Operating temperature: -40 to +70°C / -40 to +158°F
- Video output signal: H264 or H.265
- Network protocol: MDR5, ONVIF, TCP/IP, HTTP, DHCP, NTP, FTP
- CE marked
- E-Marked: UNECE R10 compliant
- FCC approved
- IC approved

**Note:** For use with MDR only

**NEW**

## IP EXPANSION MODULES

### IP-EM4 - PON 4-channel switch

**5860**

### IP-EM8 - PON 8-channel switch

**5861**



- **12-24Vdc**
- **4 or 8 IP camera inputs**
- **Size (WxHxD)**  
IP-EM4: 149 x 44 x 127mm  
6 x 1.7 x 5 inches  
IP-EM8: 174 x 54 x 129.5mm  
7 x 2 x 5 inches
- **3 year warranty**

#### Features

- Expands the channel capability of the MDR by enabling the addition of IP cameras:
- IP-EM4 - adds 2 channels to MDR-504
- IP-EM4 - adds 4 channels to MDR-508
- IP-EM8 - adds 8 channels to MDR-508
- IP-EM8 not compatible with MDR-504

#### Power

- Power consumption: 3 Watts

#### Durability & Standards

- Mechanical vibration: 2.3G
- Mechanical shock: 150G
- Operating temperature: -40 to +70°C / -40 to +158°F
- CE marked
- E-Marked: UNECE R10 compliant
- FCC approved
- IC approved

**NEW**

## IP CAMERA ACCESSORIES



### IP-EC-1 - CAT5E Ethernet cable 1m / 3.3'

**5865**

### IP-EC-5 - CAT5E Ethernet cable 5m / 16'

**5866**

### IP-EM-PC - MDR-PON Power cable

**5864**

### IP-L601 - IP Camera extension cable 1m / 3.3'

**5867**

### IP-L603 - IP Camera extension cable 3m / 10'

**5902**

### IP-L605 - IP Camera extension cable 5m / 16'

**5903**

### IP-L610 - IP Camera extension cable 10m / 33'

**5982**

### IP-L615 - IP Camera extension cable 15m / 49'

**5904**

### IP-L620 - IP Camera extension cable 20m / 66'

**5983**

### IP-L630 - IP Camera extension cable 30m / 98'

**5984**

### IP-1XXX-PC - IP Power and Ethernet cable -

**5985**

To connect a single camera to an MDR without the PON Switch

**WARNING:** There is a latency (time lag) in all digital video transmission, including IP Cameras. Although this time lag is small (~800ms), it is unacceptable for a camera that a driver is using as a safety and manoeuvring aid. Brigade IP cameras are an excellent choice for general monitoring (eg bus interior, doors, luggage compartment) and recording purposes, but should not be used as a driver aid for manoeuvring or blind-spot monitoring. Analogue cameras are still the best choice for safety critical manoeuvring and blind spot monitoring applications.



# Ultrasonic Object Detection Systems

## Sensor Systems

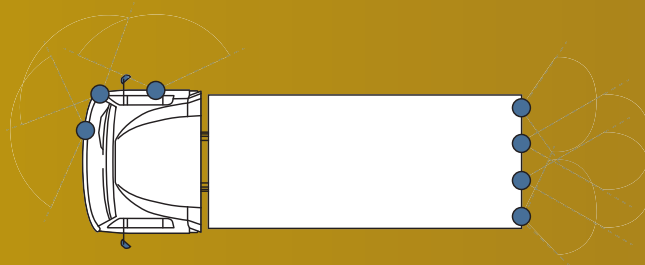
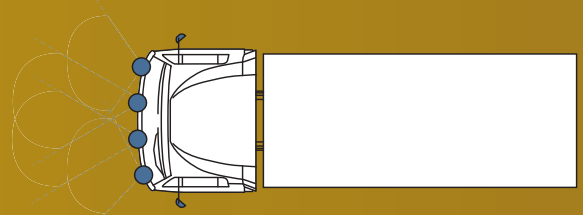
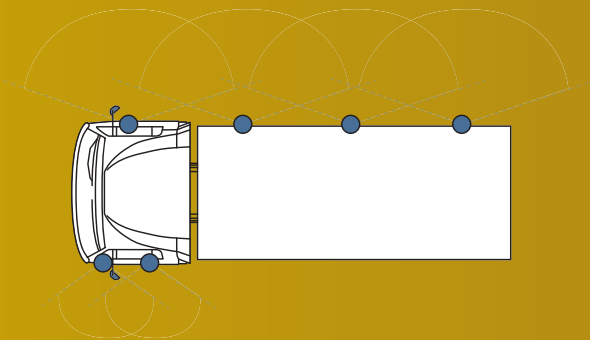
Reducing blind spots and improving driver visibility are important issues for operators of road-going vehicles. Brigade's ultrasonic detection sensors minimize both vehicle damage and collisions with pedestrians, cyclists or objects. Perfect for road-going commercial vehicles operating in confined spaces or maneuvering at low speed.

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

## On-Screen Display

Working in conjunction with a camera monitor system and up to two ultrasonic detection systems, the on-screen display module warns the driver of obstacles close to the vehicle by overlaying 3-stage audible and visual ultrasonic data onto the camera image on the vehicle's monitor.

- **Integration of Brigade's ultrasonic obstacle detection systems and camera monitor systems**
- **Ultrasonic detection warnings overlaid onto camera image on in-cab monitor**
- **Reduced driver stress and distractions as all information is in one view**





# Ultrasonic Object Detection

## Ultrasonic Detection On-Screen Display Module

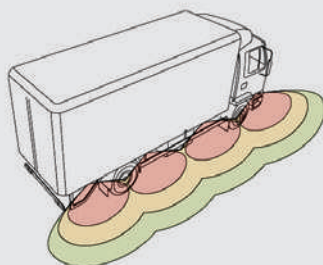


- Integration of Brigade's ultrasonic obstacle detection systems and Backeye® camera monitor systems
- Ultrasonic detection warnings overlaid onto camera image on in-cab monitor
- Reduced driver stress and distractions as all information is in one view

### Sensor data and camera image combined

Brigade's ultrasonic proximity sensors minimize both vehicle damage and collisions with pedestrians, cyclists or objects. Perfect for road-going commercial vehicles operating in confined spaces or maneuvering at low speed.

Working in conjunction with a Backeye® camera monitor system and up to two ultrasonic detection systems, the on-screen display module warns the driver of obstacles close to the vehicle by overlaying 3-stage audible and visual ultrasonic data onto the camera image on the monitor.



**Model**

**Part No:**

### ULTRASONIC ON-SCREEN DISPLAY MODULE

**UDS-OSD21-ECU - On-screen display module NTSC**

**5347**



- Allows 3-stage audible and visual Ultrasonic data to be overlaid onto camera image on vehicle monitor
- 12-24Vdc
- 2 camera inputs
- 2 trigger inputs
- 2 UDS inputs
- 2 UDS outputs
- 2 year warranty

#### Contents

- OSD ECU
- Power cable
- Splitter cable
- Trigger cable

#### Features

- Overlay on monitor of vehicle icon and detection data from up to 2 x ultrasonic detection systems
- Compatible with 1x Sidescan® Frontscan® and Backscan®
- UDS overlay will appear on a black background if no cameras installed
- Graphics can be overlaid left or right on the monitor
- Audible warning via monitor
- Ultrasonic system fault displayed on monitor
- Compatible with MDR

#### Power

- Power consumption: 1.7 Watts
- Current: 140mA

#### Durability & Standards

- Mechanical vibration: 5G
- Mechanical shock: 10G
- Operating temperature: -30 to +70°C +22 to +158°F
- IP30
- Dimensions (WxDxH): 74 x 118 x 28 mm 2.9 x 4.6 x 1.1 inches
- CE marked
- E-Marked: UNECE R10 compliant
- FCC Approved
- IC Approved

**Note: Not compatible with HD camera monitor systems**



Model

Part No:

## BACKSCAN® ULTRASONIC DETECTION SYSTEM

BS-4000W - Backscan® Rear reversing sensor system

3744



- 4 sensor system
- 12-24Vdc
- 2.5m detection range - outer sensors 2.5m/0.6m (8.2/2') (selectable via dip switch)
- Graduated visual and audible distance warning display
- Underslung and flush-mount fixings included
- 50cm/1.2' compensation range for sensors fitted inboard of vehicle rear (selectable via dip switch)
- 3 year warranty

### Contents

- 4 x sensors
- Visual and audible display
- 4 x 0° flush mount fixings
- 4 x 11° flush mount fixings
- 4 x underslung fixings
- Waterproof control box
- 15m/49' display cable
- 4 x 2.5m/8' sensor cables

### Features

- Obstacles detected in under 200 milliseconds
- Environment Learning Mode prevents false alarms from tow-hooks and other ancillary equipment that intrudes in the first 100cm (3.3') of the detection zone
- Self-diagnostic function
- 1 x Trigger output

### Power

- Power consumption: 2.4 Watts
- Current: 200mA

### Durability & Standards

- Mechanical vibration: 5G
- Mechanical shock: 10G
- Operating temperature: -30 to +80°C / -22 to +176°C
- Waterproof sensors to IP68
- Waterproof control box to IP69K
- CE marked
- E-Marked: UNECE R10 compliant
- FCC approved



## ADDITIONS FOR ARTICULATED VEHICLES

|           |                                       |      |
|-----------|---------------------------------------|------|
| SK-15-04  | Truck/trailer camera/sensor cable kit | 3997 |
| SK-UDS-05 | Truck/trailer sensor only cable kit   | 4219 |
| UDS-10BC  | 10m/33' Buzzer/display cable          | 3716 |

## OPTIONAL EXTRA

|              |   |      |
|--------------|---|------|
| UDS-RELAY-24 | Trigger-out diode protected relay 24Vdc   | 4215 |
| UDS-RELAY-12 | Trigger-out diode protected relay 12Vdc<br>To power a device switched by the output trigger | 4216 |

# Ultrasonic Object Detection

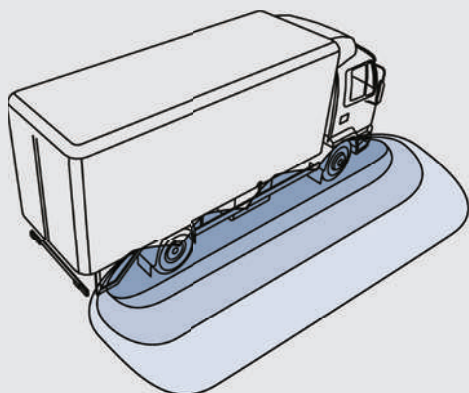
## Sidescan®Flex

### Flexible side detection

Sidescan®Flex is a four-sensor system fitted to the side of a vehicle to detect objects in the nearside blind spot, where cyclists or pedestrians can otherwise go undetected.

An advancement to the standard Sidescan® system, Sidescan®Flex allows the operator to choose from four detection configurations, each with different detection distances and audible and visual alerts (see table).

Sidescan® Flex has an increased maximum detection range of 2.5 metres / 8.2 feet.



| Detection distance       |                    | Config 1 | Config 2 | Config 3 | Config 4 |
|--------------------------|--------------------|----------|----------|----------|----------|
| 0 - 0.6m<br>0 - 2'       | Beeps per second   | Constant | Constant | Constant | Constant |
|                          | Flashes per second | 8        | 8        | 8        | 8        |
| 0.6 - 0.9m<br>2 - 3'     | Beeps per second   | Constant | 4        | 4        | 4        |
|                          | Flashes per second | 8        | 8        | 8        | 8        |
| 0.9 - 1.5m<br>3 - 4.9'   | Beeps per second   | 4        | -        | -        | 1        |
|                          | Flashes per second | 4        | 4        | 4        | 4        |
| 1.5 - 2.5m<br>4.9 - 8.2' | Beeps per second   | 1        | -        | -        | -        |
|                          | Flashes per second | 1        | 1        | -        | -        |

### Model

### Part No:

**NEW**

## SIDESCAN®FLEX ULTRASONIC DETECTION SYSTEM

**SS-4200W - Sidescan®Flex sensor system with mute function**

**5916**

**SS-4200W-000 - Sidescan®Flex sensor system with mute function, low speed trigger module and turn indicator sensor kit**

**6075**

Includes LS-60-A low speed trigger module and TS-001ECU turn indicator sensor



- 4 sensor system
- 12-24Vdc
- Detection zones - 0 - 2.5m (0 - 8.2') (4 audible/visual configurations, selectable via dip switches)
- Underslung and flush-mount fixings included
- 1 Output trigger
- 3 year warranty

#### Contents

- 4 x sensors
- Buzzer
- 4 x 0° flush mount fixings
- 4 x 11° flush mount fixings
- 4 x underslung fixings
- Waterproof control box
- 10m/33' buzzer cable
- 4 x 4.5m/15' sensor cables
- 2 x 2.5m/8' extension cables

#### Features

- Obstacles detected in under 200 milliseconds
- Buzzer with audible distance warning, LED & adjustable volume control
- Buzzer will silence after 4 seconds if there is no movement from detected object or vehicle
- Self-diagnostic function

- Environment Learning Mode prevents false alarms from ancillary equipment that intrudes in the first 100cm (3.3') of the detection zone

#### Durability & Standards

- Mechanical vibration: 5G
- Mechanical shock: 10G
- Operating temperature: -30 to +80°C / -22 to +176°F
- Waterproof sensors to IP68
- Waterproof control box to IP69K
- CE marked
- E-Marked: UNECE R10 compliant
- FCC approved

#### Power

- Power consumption: 2.4 Watts
- Current: 200mA

### OPTIONAL EXTRA



**UDS-RELAY-24 Trigger-out diode protected relay 24Vdc**

**4215**

**UDS-RELAY-12 Trigger-out diode protected relay 12Vdc**

**4216**

To power a device switched by the output trigger

Model

Part No:

## SIDECAN® ULTRASONIC DETECTION SYSTEM

|                |  |      |
|----------------|--|------|
| SS-4100W -     | Sidescan® Side sensor system with mute function  | 5257 |
| SS-4100W-000 - | Sidescan® Side sensor system with mute function,<br>low speed trigger module and turn indicator sensor kit | 5344 |

Includes LS-60-A low speed trigger module and TS-001ECU turn indicator sensor



- 4 sensor system
- 12-24Vdc
- 1.0/1.5m (3.2/4.9') detection range - (selectable via dip switch)
- Audible distance warning
- Underslung and flush-mount fixings included
- 2 levels of sensitivity - (selectable via dip switch)
- 3 year warranty

### Contents

- 4 x sensors
- Buzzer
- 4 x 0° flush mount fixings
- 4 x 11° flush mount fixings
- 4 x underslung fixings
- Waterproof control box
- 10m/33' buzzer cable
- 4 x 4.5m/14.7' sensor cables
- 2 x 2.5m/8.2' extension cables

### Features

- Obstacles detected in under 200 milliseconds
- Buzzer with audible distance warning, LED & adjustable volume control
- Buzzer will silence after 4 seconds if there is no movement from detected object or vehicle
- Environment Learning Mode prevents false alarms from ancillary equipment that intrudes in the first 100cm of the detection zone
- Self-diagnostic function

### Durability & Standards

- Mechanical vibration: 5G
- Mechanical shock: 10G
- Operating temperature: -30 to +80°C/ -22 to +176°F
- Waterproof sensors to IP68
- Waterproof control box to IP69K
- CE marked
- E-Marked: UNECE R10 compliant
- FCC approved

### Power

- Power consumption: 2.4 Watts
- Current: 200mA



## SIDECAN®/SIDECAN®FLEX ADDITIONS FOR ARTICULATED VEHICLES

|           |  |      |
|-----------|--|------|
| SK-15-04  | Truck/trailer camera/sensor cable kit                | 3997 |
| SK-UDS-05 | Truck/trailer sensor only cable kit (required)       | 4219 |
| UDS-10BC  | 10m/33' display cable (required)                     | 3716 |
| SS-4100W  | Additional Sidescan sensor system for cab (optional) | 5257 |

## SIDECAN®/SIDECAN®FLEX RECOMMENDED EXTRAS

|           |  |      |
|-----------|--|------|
| LS-60-A   | Low speed trigger module<br>Enables sensors below designated speed | 4851 |
| TS-001ECU | Turn indicator trigger for system activation                       | 1362 |

## SIDECAN®/SIDECAN®FLEX OPTIONAL EXTRA

|           |   |      |
|-----------|---|------|
| SS-BC-08  | Backchat speaking alarm with side turn warning for cyclists/pedestrians<br>Note: TS-001ECU Turn indicator trigger is required | 1334 |
| TCO-47-01 | Latched auto-reset Backalarm cut-out (dash mount)   | 4752 |



# Ultrasonic Object Detection

Model

Part No:

## FRONTSCAN® ULTRASONIC DETECTION SYSTEM

FS-4000W - Frontscan® Front sensor system

3747



- 4 sensor system
- 12-24Vdc
- 2.0m/1.0m (6.8'/3.2') detection range - outer sensors can be reduced to 0.6m (2') (selectable via dip switches)
- Audible distance warning
- Flush-mount
- 3 year warranty

### Contents

- 4 x sensors
- Buzzer
- 4 x 11° flush mount fixings
- 4 x 18° flush mount fixings
- 4 x 26° flush mount fixings
- Waterproof control box
- 2.5m/8' buzzer cable
- 4 x 2.5m/8' sensor cables

### Features

- Obstacles detected in under 200 milliseconds
- Environment Learning Mode prevents false alarms from tow-hooks and other ancillary equipment that intrudes in the first 100cm

- (3.3') of the detection zone
- Self-diagnostic function
- 1 x Trigger output

### Durability & Standards

- Operating temperature: -30 to +80°C / -22 to +176°F
- Waterproof sensors to IP68
- Waterproof control box to IP69K
- CE marked
- E-Marked: UNECE R10 compliant

### Power

- Power consumption: 2.4 Watts
- Current: 200mA

## RECOMMENDED EXTRA



LS-60-A

Low speed trigger module

Enables sensors below designated speed

4851

## OPTIONAL EXTRA



UDS-RELAY-24

Trigger-out diode protected relay 24Vdc

4215

UDS-RELAY-12

Trigger-out diode protected relay 12Vdc

4216

To power a device switched by the output trigger

## CORNERSCAN® ULTRASONIC DETECTION SYSTEM

CS-3100 - Cornerscan® Corner sensor system with mute function

5261



- 3 sensor system
- 12-24Vdc
- 0.6/1.0m (2/4') detection range - (selectable via dip switch)
- Audible distance warning
- Flush-mount
- 2 levels of sensitivity - (selectable via dip switch)
- 3 year warranty

### Contents

- 3 x sensors
- Buzzer
- 3 x 11° flush mount fixings
- 3 x 18° flush mount fixings
- 3 x 26° flush mount fixings
- Waterproof control box
- 2.5m/8' buzzer cable
- 3 x 2.5m/8' sensor cables

### Features

- Obstacles detected in under 200 milliseconds
- Buzzer with audible distance warning, LED & adjustable volume control
- Buzzer will silence after 4 seconds if there is no movement from detected object or vehicle
- Environment Learning Mode prevents false alarms from

- ancillary equipment within the first 100cm (3.3') of the detection zone
- Self-diagnostic function

### Power

- Power consumption: 2.4 Watts
- Current: 2 Amps

### Durability & Standards

- Mechanical vibration: 5G
- Mechanical shock: 10G
- Operating temperature: -30 to +80°C / -22 to +176°F
- Waterproof sensors to IP68
- Waterproof control box to IP69K
- CE marked
- E-Marked: UNECE R10 compliant
- FCC approved

## RECOMMENDED EXTRA



LS-60-A

Low speed trigger module

Enables sensors below designated speed

4851



**Model**

**Part No:**

## STEPSCAN™ ULTRASONIC DETECTION SYSTEM

|   |  |      |
|---|--|------|
| ST-2100 -                                     | Stepscan™ Step sensor system with mute function                              | 5262 |
| ST-2100-60-A -                                | Stepscan™ Step sensor system with mute function and low speed trigger module | 5345 |
| Includes UDS-4.5SC 4.5m/14.7' extension cable |  |      |



- 2 sensor system
- 12-24Vdc
- 0.6/1.0m (2/3.2') detection range - (selectable via dip switch)
- Audible distance warning
- Flush-mount
- 2 levels of sensitivity - (selectable via dip switch)
- 3 year warranty

### Contents

- 2 x sensors
- Buzzer
- 2 x 11° flush mount fixings
- 2 x 18° flush mount fixings
- 2 x 26° flush mount fixings
- Waterproof control box
- 2.5m/8.2' buzzer cable
- 2 x 2.5m/8.2' sensor cables

### Features

- Obstacles detected in under 200 milliseconds
- Buzzer with audible distance warning, LED & adjustable volume control
- Buzzer will silence after 4 seconds if there is no movement from detected object or vehicle
- Environment Learning Mode prevents false alarms from

ancillary equipment that intrudes in the first 100cm (3.3') of the detection zone

- Self-diagnostic function

### Durability & Standards

- Mechanical vibration: 5G
- Mechanical shock: 10G
- Operating temperature: -30 to +80°C / -22 to +176°C
- Waterproof sensors to IP68
- Waterproof control box to IP69K
- CE marked
- E-Marked: UNECE R10 compliant
- FCC approved

### Power

- Power consumption: 2.4 Watts
- Current: 200mA



## RECOMMENDED EXTRA

|  |                          |      |
|--|--------------------------|------|
| LS-60-A                                | Low speed trigger module | 4851 |
| Enables sensors below designated speed |                          |      |

## EXTENSION CABLES



|  |      |
|--|------|
| UDS-2.5BC - Buzzer/display extension cable 2.5m/8.2' | 3717 |
| UDS-10BC - Buzzer/display extension cable 10m/33'    | 3716 |
| UDS-15BC - Buzzer/display extension cable 15m/49'    | 3746 |
| UDS-2.5SC - Sensor extension cable 2.5m/8.2'         | 3719 |
| UDS-4.5SC - Sensor extension cable 4.5m/14.7'        | 3720 |
| UDS-7.0SC - Sensor extension cable 7.0m/23'          | 5623 |



# Backsense®

## Radar Object Detection Systems

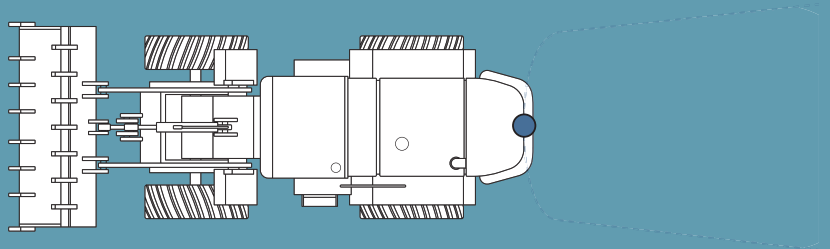
### FMCW technology

Backsense® heavy-duty radar sensor systems are designed for heavy-duty machines to detect people and objects in blind spots. 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.

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 listen for the returning wave.

### Radar Models

- **Backsense®** systems are available with fixed and programmable detection ranges and a programmable model with an IP69K in-cab display. Custom detection areas can be programmed to calibrate-out fixed objects or bodywork.
- **Backsense® Network radar** allows you to link up to eight radar sensors. The system provides object detection in CAN message format which may be processed to display data on control panels/displays on the vehicle or used to control aspects of the machine.
- **Backsense® on-screen display** works in conjunction with Backeye® camera monitor systems and up to two radar sensors. It warns the driver of objects in the danger zone by overlaying 5-stage audible and visual radar data onto the camera image on the monitor.





# Backsense® Radar Object Detection

Model

Part No:

NEW

## IP69K PROGRAMMABLE BACKSENSE® OBJECT DETECTION SYSTEM

BS-9000-WD - Waterproof display - Programmable detection range

5713



- 9-32Vdc
- Detection length: up to 30m/98' (minimum programmable distance 0 - 3m / 0 - 9.8')
- Detection width: 2 to 10m / 6.6 to 33'
- Rugged design for harsh environmental conditions
- Sensor size (WxHxD) 217 x 129 x 50mm 8.5 x 5 x 1.9 inches
- Display size without bracket (WxHxD) 118 x 97 x 55 mm 4.6 x 3.8 x 2.2 inches
- IP69K sensor
- IP69K display
- 3 year warranty

### Contents

- 1 x BS-9000 Radar sensor
- 1 x IP69K audible and visual display with mounting bracket
- 1 x Extension cable 9m/29.5'
- 1 x Network Y Cable
- 1 x Network terminator
- 1 x Mini USB cable

### Features

- Frequency modulated continuous wave (FMCW) radar technology
- Effectively detects stationary, moving and multiple objects
- 1 activation input
- 1 trigger output
- 2nd trigger output for optional external alarm
- Programmable:
  - Detection area
  - Blind zones - system ignores fixed objects
  - Trigger activation
  - Buzzer
- 5 stage audible and visual distance warning display
- 3 set volume levels (maximum 95dB) with volume lock

- AMPS hole pattern for alternative mounting with industry-standard bracket
- Resistant to water, moisture, dust, vibration, heat, cold, mud and glare

### Power

- Current: 0.9 Amps
- Power consumption: 8 Watts

### Durability & Standards

- Mechanical shock- sensor: 100G
- Mechanical shock- display: 50G
- Mechanical vibration: 8.3G
- Operating temperature: -40 to +85°C / -40 to +185°F
- CE marked
- E-Marked: UNECE R10 compliant
- BS EN 13309: 2010
- ISO13766: 2006

### Configuration Software

- \*Available via Brigade website or USB (purchased separately)

## OPTIONAL EXTRAS

CT-470 - Constant tone external alarm - 102dB

1346

\*BS-WD-USB - USB -programming software, port driver and operating guide

5637

## PROGRAMMABLE BACKSENSE® OBJECT DETECTION SYSTEM

BS-8000 - Standard display - Programmable detection range

4530



- 9-32Vdc
- Detection length: up to 30m/98' (minimum programmable distance 0 - 3m / 0 - 9.8')
- Detection width: 2 to 10m/ 6.5 to 33'
- Rugged design for harsh environmental conditions
- Sensor size (WxHxD) 217 x 129 x 50mm 8.5 x 5 x 1.9 inches
- Display size with bracket (WxHxD) 101 x 71 x 70mm / 4 x 2.8 x 2.7"
- IP69K sensor
- 3 year warranty

### Contents

- 1 x Configurable radar sensor
- 1 x Audible and visual display with USB socket and mounting bracket
- 1 x 9m/29.5' extension cable
- 1 x Mini USB cable
- 1 x Software CD

### Features

- Frequency modulated continuous wave (FMCW) radar technology
- Effectively detects stationary, moving and multiple objects
- 1 activation input
- 1 trigger output
- Programmable:
  - Detection area
  - Blind zones - system ignores fixed objects
  - Trigger activation
  - Buzzer
- 5 stage adjustable audible and visual distance warning display
- Sensor resistant to water, moisture, dust, vibration, heat, cold, mud and glare

### Power

- Current: 0.8 Amps
- Power consumption: 8 Watts

### Durability & Standards

- Mechanical shock: 100G
- Mechanical vibration: 8.3G
- Operating temperature: -40 to +85°C / -40 to +185°F
- CE marked
- E-Marked: UNECE R10 compliant
- BS EN 13309: 2010
- ISO13766: 2006



**Model**

**Part No:**

## FIXED BACKSENSE® OBJECT DETECTION SYSTEMS



|   |      |
|---|------|
| BS-7030 - Standard display - 3m/10' length x 2.5m/8' width detection range      | 4527 |
| BS-7045 - Standard display - 4.5m/14.8' length x 3.5m/11' width detection range | 4528 |
| BS-7060 - Standard display - 6m/20' length x 4.5m/14.8' width detection range   | 4529 |

- 9-32Vdc
- Maximum detection range of either 3m, 4.5m or 6m (9.8', 14.8' or 20')
- Rugged design for harsh environmental conditions
- Sensor size (WxHxD)  
217 x 129 x 50mm  
8.5 x 5 x 1.9 inches
- Display size with bracket  
(WxHxD) 101 x 71 x 70mm /  
4 x 2.8 x 2.7"
- IP69K sensor
- 3 year warranty

### Contents

- 1 x Non-configurable radar sensor
- 1 x Standard audible and visual display with mounting bracket
- 1 x 9m/29.5' extension cable

### Features

- Frequency modulated continuous wave (FMCW) radar technology
- Effectively detects stationary, moving and multiple objects
- 1 activation input
- 1 trigger output
- 5 stage adjustable audible and visual distance warning display
- Sensor resistant to water, moisture, dust, vibration, heat, cold, mud and glare

### Power

- Current: 0.8 Amps
- Power consumption: 8 Watts

### Durability & Standards

- Mechanical shock: 100G
- Mechanical vibration: 8.3G
- Operating temperature:  
-40 to +85°C / -40 to +185°F
- CE marked
- E-Marked: UNECE R10 compliant
- BS EN 13309: 2010
- ISO13766: 2006

## BACKSENSE® RADAR OBJECT DETECTION ACCESSORIES



|   |      |
|---|------|
| BS-02DCX - 2m/6.6' extension cable  | 5272 |
| BS-05DCX - 5m/16' extension cable   | 4550 |
| BS-09DCX - 9m/30' extension cable   | 4551 |
| BS-25DCSX - 25m/82' extension cable (Female end connector supplied loose)         | 4975 |
| BS-00NYC - Network Y Cable for 9000 series radar                                  | 5270 |
| BS-02PIC - Network power input cable for 9000 series radar                        | 5271 |
| BS-00NT - 120 Ohms Network Terminator for 9000 series radar                       | 5291 |
| BKT-017 - Adjustable radar bracket<br>with 105mm/4.1" depth bracket mounting arms | 4676 |
| BKT-018 - Low-profile adjustable radar bracket                                    | 4758 |

# Backsense® Radar Object Detection

## Backsense® Radar On-Screen Display

- Integration of Brigade's Backsense® radar detection and Backeye® camera monitor systems
- Up to 2 Radar detection warnings overlaid onto camera image on in-cab monitor
- Reduced driver stress and distractions as all information is in one place



### Radar sensor data and camera image combined

Working in conjunction with a Backeye® camera monitor system and up to two Backsense® Network radar detection systems, the on-screen display module warns the driver of obstacles in the danger zone by overlaying 5-stage audible and visual radar data onto the camera image on the monitor.

### Model

### Part No:

## BACKSENSE® RADAR ON-SCREEN DISPLAY KIT

### BS-9001-OSD - Radar sensor & On-screen display module

5658



- Allows 5-stage audible and visual radar data to be overlaid onto camera images on in-cab monitor
- 12-24Vdc
- Detection length: up to 30m/ 98' (minimum programmable distance 3m/9.8')
- Detection width: 2 to 10m/ 6.5 to 33'
- Sensor size (WxHxD)  
217 x 129 x 50mm  
8.5 x 5 x 1.9 inches
- OSD ECU size (WxHxD)  
195 x 120 x 35mm  
7.7 x 4.7 x 1.4 inches
- 2 camera inputs
- 2 BS-9000 Backsense® inputs
- 3 trigger inputs
- 3 trigger outputs
- 3 year warranty

#### Contents

- 1 x OSD Radar ECU
- 1 x BS-9000 Radar sensor
- 1 x Network power cable
- 1 x Extension cable 9m/29.5'
- 3 x Network Y-cable
- 2 x Network terminator

#### Features

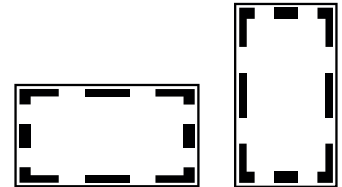
- Frequency modulated continuous wave (FMCW) radar technology
- Overlay on monitor of detection data from up to 2 BS-9000 radar sensors
- Each radar can be shown in one of 8 positions around the monitor/vehicle
- Compatible with Backsense® BS-9000 Network radar sensors only
- Programmable:
  - Detection area
  - Blind zones - system ignores fixed objects
  - Overlay transparency level
- Radar system fault displayed on monitor
- USB connection for configuration via PC
- Compatible with MDR, non-HD Backeye®360 & Elite range camera monitor systems (Select range via adapters)
- Audible warning via monitor or optional internal buzzer
- Supports external warning alarm

#### Durability & Standards

- Operating temperature:  
-40 to +85°C / -40 to +185°F
- OSD: IP30
- CE marked
- E-Marked: UNECE R10 compliant
- FCC Approved
- IC Approved

#### Configuration Software

- \*Available via Brigade website or USB (purchased separately)



To not obstruct camera views, each radar can be shown in one of eight positions around the edge of the monitor

Camera monitor system not included

### TO ADD AN ADDITIONAL RADAR SENSOR:

- 1 x BS-9000 - Network Radar sensor
- 1 x BS-00NYC - Network Y Cable
- 1 x Extension cable

5266

5270

### OPTIONAL EXTRAS

- \*BS-9001-USB - USB - programming software, port driver and operating guide 5656
- AC-007 - Adapter cable to connect a Select range monitor 1984
- AC-020 - Adapter cable to connect a Select range camera 2590

## Backsense® CAN Radar

For OEM and specialist application markets, Brigade's Network Radar allows you to connect and link up to 8 sensors to cover large, sometimes complex blind spot zones around a vehicle or machine.

The system provides object detection in CAN (Controller Area Network) message format which may be processed to display data on control panels/displays on the vehicle or used to interact with aspects of the machine.

Each connected radar sensor is allocated a unique ID and will transmit data for up to 8 closest objects. With a detection range of up to 30m/98' length and 10m/33' width, it provides a flexible system to meet customer specific requirements.

- Provides object detection in CAN message format
- Independent CAN Bus may communicate with existing CAN network via CAN Gateway
- Separate CAN message & ID for each object detected (up to 8 per sensor)

### Model

### Part No:

## NETWORK BACKSENSE® OBJECT DETECTION

### BS-9000 - Backsense® CAN object detection radar

5266



- 12-24 Vdc
- Detection length: up to 30m/98'
- Detection width: up to 10m/33'
- Sensor size (WxHxD)  
217 x 129 x 50mm  
8.5 x 5 x 1.9 inches
- IP69K sensor
- 3 year warranty

#### Contents

- 1 x BS-9000 Radar sensor

#### Features

- Frequency modulated continuous wave (FMCW) radar technology
- Network up to 8 sensors
- Extremely rugged design for severe weather conditions and all terrains
- Communication via CAN Gateway
- Configurable CAN ID
- Complies with CAN2.0A Base Frame Format
- Separate CAN message & ID for each object detected (up to 8 closest objects per sensor)

#### Power

- Current: 0.4 Amps
- Power consumption; 4 Watts

#### Durability & Standards

- Mechanical shock: 100G
- Operating temperature: -40 to +85°C / -40 to +185°F
- CE marked
- E-Marked: UNECE R10 compliant
- BS EN 13309: 2010
- ISO13766: 2006

**Note: For CAN message format, refer to user manual at [brigade-electronics.com](http://brigade-electronics.com)**







# Warning Alarms & Quiet Vehicle Sounder

## Warning and Back Up Alarms

Vital safety devices needed to warn workers and pedestrians that a vehicle is maneuvering.

**bbs-tek® white sound®** are the safest alarms in the world due to their instant locatability and directional sound. The multi-frequency alarms are only heard in the danger zone, thus eliminating noise nuisance for local residents. bbs-tek® alarms are endorsed by PIEK and the Noise Abatement Society and have been awarded the Quiet Mark.



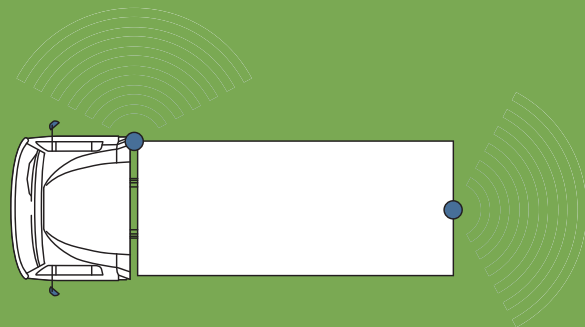
**bbs-tek® White Sound® Smart alarms** auto-adjust to 5-10dB above ambient.

### Heavy duty

For quarry and construction machines or environments with high ambient noise.

### Medium duty

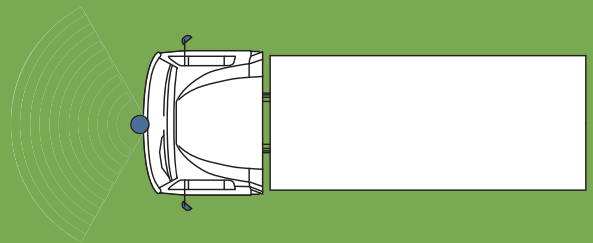
Ideal for commercial road going vehicles and environments with mid-level ambient noise.



## Quiet Vehicle Sounder

Designed for electric and hybrid-electric vehicles of all types, the QVS Electric Vehicle Sounder warns pedestrians and other vulnerable road users that a quiet vehicle is approaching.

Front speaker system incorporating bbs-tek® patented technology for instantly locatable and directional sound. Pitch and volume increase with vehicle speed in a similar way as an internal combustion engine. Sound cuts out above a pre-set speed threshold.



# bbs-tek® White Sound® Alarms

**Model**

**Part No:**

## WHITE SOUND® SMART BACK UP ALARM

**SA-BBS-107 - Self-adjusting heavy-duty - 87-107 Decibels**

**1400**



- 12-24Vdc
- IP68
- Size (WxHxD)  
172 x 79 x 95mm  
6.7 x 3.1 x 3.7 inches
- Lifetime warranty

### Features

- Alarm continually adjusts to 5-10dB above ambient
- Multi-frequency broadband sound
- Instantly locatable
- Sound confined to danger area
- Eliminates noise nuisance
- Sounder unit: Driver
- Hole centers: 153mm / 6"

### Power

- Current: Max 1 Amp

### Durability & standards

- Mechanical vibration: 10G
- Operating temperature:  
-40 to +85°C / -40 to +185°F
- CE marked
- E-Marked: UNECE R10 compliant
- SAE J994

## WHITE SOUND® SMART BACK UP ALARM

**SA-BBS-97 - Self adjusting - medium duty - 77-97 Decibels**

**1399**

**SA-BBS-97HV - Self adjusting - electric forklift - 77-97 Decibels**

**1398**



- 12-24Vdc
- 36-80Vdc (HV)
- IP68
- Size (WxHxD)  
127 x 76 x 65mm  
5 x 3 x 2.5 inches
- Lifetime warranty

### Features

- Alarm continually adjusts to 5-10dB above ambient
- Multi-frequency white sound alarm
- Instantly locatable
- Sound confined to danger area
- Eliminates noise nuisance
- Sounder unit: Driver
- Hole centers: 98-108mm / 3.8-4.2"

### Power

- Current: Max 1 Amp

### Durability & standards

- Mechanical vibration: 10G
- Operating temperature:  
-40 to +85°C / -40 to +185°F
- CE marked
- E-Marked: UNECE R10 compliant
- SAE J994
- NAS/PIEK approved for night-time delivery

## WHITE SOUND® BACK UP ALARM

**BBS-107 - Heavy duty - 107 Decibels**

**0899**

**BBS-102 - Heavy duty - 102 Decibels**

**0898**



- 12-24Vdc
- IP68
- Size (WxHxD)  
172 x 79 x 95mm  
6.8 x 3.1 x 3.7 inches
- Lifetime warranty

### Features

- Multi-frequency broadband sound
- Instantly locatable
- Sound confined to danger area
- Eliminates noise nuisance
- Sounder unit: Driver
- Hole centers: 153mm / 6"

### Power

- Current: Max 1 Amps

### Durability & standards

- Mechanical vibration: 10G
- Operating temperature:  
-40 to +85°C / -40 to +185°F
- CE marked
- E-Marked: UNECE R10 compliant
- SAE J994

## WHITE SOUND® BACK UP ALARM

**BBS-82HV - Electric forklift - 82 Decibels**

**1322**

**BBS-92ADR - Petrol tanker - 92 Decibels**

**2165**



ADR version



- 12-24Vdc
- 36-80Vdc (HV)
- IP68
- Size (WxHxD)  
127 x 76 x 65mm  
5 x 3 x 2.5 inches
- Lifetime warranty

### Features

- Multi-frequency broadband sound
- Instantly locatable
- Sound confined to danger area
- Eliminates noise nuisance
- Sounder unit: Speaker
- Hole centers: 98-108mm / 3.8-4.2"

### Power

- Current: Max 0.3 Amps

### Durability & standards

- Mechanical vibration: 10G
- Operating temperature:  
-40 to +85°C / -40 to +185°F
- CE marked
- E-Marked: UNECE R10 compliant
- SAE J994

## Model

## Part No:

### WHITE SOUND® BACK UP ALARM



|        |                             |      |
|--------|-----------------------------|------|
| BBS-97 | - Medium duty - 97 Decibels | 0935 |
| BBS-92 | - Medium duty - 92 Decibels | 0934 |
| BBS-87 | - Medium duty - 87 Decibels | 0897 |
| BBS-82 | - Medium duty - 82 Decibels | 0896 |

- 12-24Vdc
- IP68

- Size (WxHxD)  
105 x 65 x 37mm /  
4.1 x 2.5 x 1.5 inches  
(BBS-97/92)  
105 x 65 x 32mm /  
4.1 x 2.5 x 1.3 inches  
(BBS-87/82/77)

- Lifetime warranty

#### Features

- Multi-frequency broadband sound
- Instantly locatable
- Sound confined to danger area
- Eliminates noise nuisance
- Sounder unit: Speaker
- Hole centers: 76mm / 3"

#### Power

- Current: Max 0.5 Amps

#### Durability & standards

- Mechanical vibration: 10G
- Operating temperature:  
-40 to +85°C / -40 to +185°F
- CE marked
- E-Marked: UNECE R10 compliant
- SAE J994
- NAS/PIEK approved for night-time delivery (BBS-82 only)

### QVS QUIET VEHICLE SOUNDER (AVAS)

#### QVS-001-75 - Quiet Vehicle Sounder

5385



- 12-24Vdc
- IP68 Speaker
- IP30 ECU
- Size Speaker (WxHxD)  
120 x 135 x 120mm  
4.7 x 5.3 x 4.7 inches
- Size ECU (WxHxD)  
93 x 26 x 185mm  
3.7 x 0.2 x 7.3 inches
- 2 year warranty



#### Contents

- 1 x Speaker
- 1 x ECU

#### Features

- Warns pedestrians and other VRU's that a quiet vehicle is approaching
- Combined multi-frequency bbs-tek® technology and tonal sounds
  - Multi-frequency sound
  - Directional and locatable - The sound is only heard in the hazard zone.
- Front speaker system
- Pitch and volume increase with vehicle speed to mimic an internal combustion engine
- Operational below speeds of 20MPH
- Front sounder operational when ignition activated (silenced when parking brake applied)
- Uses Tachograph speed signal\*\*
- Sounder unit: Speaker

#### Power

- Current: Max 0.1 Amps

#### Durability & standards

- Mechanical vibration: 10G
- Operating temperature:  
-30 to +70°C / -22 to +158°F
- CE marked
- E-Marked: UNECE R10 compliant
- FCC approved
- IC Marked
- UNECE R138 compliant\*
- 49 CFR Part 571 and 585 Federal Motor Vehicle Safety Standards compliant\*

\* QVS helps achieve compliance for the vehicle.

\*\* If your vehicle is not equipped with a Tachograph, please contact us for alternative installation methods

## QVS Quiet Vehicle Sounder (AVAS)

- Warns pedestrians and other vulnerable road users that a quiet vehicle is approaching.
- Incorporating bbs-tek® technology
  - Multi-frequency, directional and instantly locatable sound which is only heard in the hazard zone.
- Front speaker system.
- Pitch and volume increase with vehicle speed in a similar way as an internal combustion engine.

- Sound fades out above a pre-set speed threshold.
- Designed for electric and hybrid-electric vehicles of all types.



# Speaking Alarms

**Model**

**Part No:**

## NIGHTSHIFT® SPEAKING ALARM



|  |      |
|--|------|
| BC-01(NS) - Single reversing message - Nightshift - 90 or 0 Decibels | 0378 |
| BC-01(NS-B) - Bespoke single message - Nightshift - 90 or 0 Decibels | 1198 |

• 12-24Vdc

• IP68

• Size (WxHxD)  
122 x 84 x 50mm  
4.8 x 3.3 x 2 inches

• 2 year warranty

### Features

- Real speech alarm
- \* BC-01(NS) message "Ssh! Stand well clear, vehicle reversing..."
- Bespoke message up to 8 seconds, under 4 seconds for best speech quality
- Double engage reverse to cut-out or reduce sound
- Sounder unit: Speaker
- Hole centers: 102mm / 4"

### Power

- Current: 0.5 Amps

### Durability & standards

- CE marked
- E-Marked: UNECE R10 compliant

## SPEAKING ALARM



|   |      |
|---|------|
| BC-01 - Single reversing message - 90 Decibels  | 0077 |
| BC-01(B) - Bespoke single message - 90 Decibels | 0079 |
| BC-02(B) - Bespoke dual message - 90 Decibels   | 0083 |

• 12-24Vdc

• IP68

• Size (WxHxD)  
122 x 84 x 50mm  
4.8 x 3.3 x 2 inches

• 2 year warranty

### Features

- Real speech alarm
- \* BC-01 message "Ssh! Stand well clear, vehicle reversing..."
- Bespoke message up to 8 seconds, under 4 seconds for best speech quality
- Sounder unit: Speaker
- Hole centers: 102mm / 4"

### Power

- Current: 0.5 Amps

### Durability & standards

- CE marked
- E-Marked: UNECE R10 compliant



**Model**

**Part No:**

## SPEAKING HANDBRAKE WARNING ALARM



2 wire version

**BC-01(H/Brake) - Single message - 2 wire - 90 Decibels**  
**BC-01(4W)(H/Brake) - Single message 4 wire - 90 Decibels**

**0849**  
**1715**

- 12-24Vdc
- IP68
- Size (WxHxD)  
122 x 84 x 50mm  
4.8 x 3.3 x 2 inches
- 2 year warranty

### Features

- Real speech alarm
- \* Message "Bleep! Handbrake not applied..."
- Sounder unit: Speaker
- Hole centers: 102mm / 4"

### Power

- Current: 0.5 Amps

### Durability & standards

- CE marked
- E-Marked: UNECE R10 compliant

## SPEAKING SIDE TURN WARNING ALARM



**SS-BC-08 - Single side-turn message - 90 Decibels**

**1334**

- 12-24Vdc
- IP68
- Size (WxHxD)  
122 x 84 x 50mm  
4.8 x 3.3 x 2 inches
- 2 year warranty

### Features

- Real speech alarm
- \* Message "Ssh! Caution. Truck turning left..."
- Sounder unit: Speaker
- Hole centers: 102mm / 4"

### Power

- Current: 0.5 Amps

### Durability & standards

- CE marked
- E-Marked: UNECE R10 compliant

Note: TS-001ECU Turn indicator trigger is required 1362

**Model**

**Part No:**

## VEHICLE INTERCOM



**BC-VI - Normally open channel rear to cab; button press cab to rear**  
**BC-VI-2 - Normally closed channel; button press communication**

**0815**  
**0875**

- 12-24Vdc
- IP68
- Size (WxHxD)  
122 x 84 x 50mm  
4.8 x 3.3 x 2 inches
- 2 year warranty

### Features

- Two-way communication system
- Master unit volume control: 80-95dB
- Includes master unit, slave unit and 25m cable
- Sounder unit: Speaker
- Hole centers: 102mm / 4"

### Power

- Current: 0.5 Amps

### Durability & standards

- CE marked
- E-Marked: UNECE R10 compliant
- FCC Approved
- IC Approved

## ALARM ANCILLARIES



**TCO-47 - Timed auto-reset reversing alarm cut-out (dash mount)**

**0663**

- 12-24Vdc
- 2 year warranty

### Features

- Single touch timed relay
- Allows driver to cut-out alarm if reversing between the hours of 11.30pm-7.00am
- Auto-resets after 3-4 mins delay

### Durability and Standards

- CE marked
- EMC approved

## ALARM ANCILLARIES



**TCO-47-01 - Latched side-turn alarm cut-out (dash mount)**

**4752**

- 12-24Vdc
- 2 year warranty

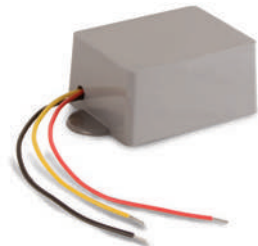
### Features

- Single touch timed relay
- Allows driver to cut-out alarm between the hours of 11.30pm-7.00am
- Resets by switch or ignition

### Durability and Standards

- CE marked
- EMC approved

## ALARM ANCILLARIES



**NS-2 - Nightshift reversing alarm cut-out switch**

**0334**

**NS-3 - Nightshift reversing alarm cut-out switch (auto gearbox)**

**0974**

- 12-24Vdc
- IP68
- 2 year warranty

### Features

- Double engage reverse to cut-out alarm
- Resets when reverse gear disengaged
- No wiring necessary to cab

### Durability and Standards

- CE marked
- EMC approved

# Warranties

**LIFETIME**

## **Lifetime New-For-Old Warranty (covers product for the life of vehicle)**

bbs-tek® White sound® back up alarms  
Self-adjusting back up alarms

**5  
YEARS**

## **5 Year New-For-Old Warranty**

Backeye®360 camera system  
ELITE range camera monitor systems

**3  
YEARS**

## **3 Year New-For-Old Warranty**

SELECT range camera monitor systems  
MDR mobile digital recorders, IP cameras and accessories  
Ultrasonic object detection systems  
Backsense® radar object detection systems  
Digital wireless camera monitor connection

**2  
YEARS**

## **2 Year New-For-Old Warranty**

Camera monitor system ancillaries  
Ultrasonic object detection on-screen display  
Ultrasonic object detection ancillaries and extras  
Alarm ancillaries  
Backchat® Speaking alarms  
Vehicle intercom  
QVS Quiet vehicle sounder

**1  
YEAR**

## **1 Year New-For-Old Warranty**

ESSENTIAL camera monitor systems  
All products aside those specifically listed

## **Warranty Terms and Conditions**

Brigade warrants all goods to be free from defect in material and workmanship in normal use provided that they have been installed and operated in accordance with the instructions supplied. Normal wear-and-tear excluded. The commencement date of all warranties is the date of delivery to the purchaser unless otherwise agreed in writing by Brigade. The period during which the warranty applies is stated above. Brigade make no other warranty, express or implied, with respect to the goods, their marketability, quality or fitness for any particular use or purpose. In particular, but without prejudice to the general provisions of the conditions of sale, no responsibility is assumed for incidental or consequential loss by reason of any warranty express or implied. Full details of Brigade's Terms and Conditions can be found at [www.brigade-inc.com](http://www.brigade-inc.com).

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| 1398  | SA-BBS-97HV        | 66   | 3268  | SC-15-01    | 33   | 4691 | AC-062            | 38   |
| 1399  | SA-BBS-97          | 66   | 3335  | AC-028      | 39   | 4693 | VBV-770-000N      | 35   |
| 1400  | SA-BBS-107         | 66   | 3348  | BMM-019-ARM | 28   | 4697 | VBV-770M-S        | 27   |
| 1499  | VBV-L405           | 32   | 3351  | BE-970WM    | 15   | 4701 | BE360-CD          | 10   |
| 1554  | VBV-L4025          | 32   | 3422  | SP-15B-01   | 21   | 4706 | VBV-750-000N      | 35   |
| 1570  | SK-50E             | 22   | 3423  | SP-15A-01   | 21   | 4710 | VBV-750M-S        | 28   |
| 1571  | CS-020             | 40   | 3427  | SK-15-01    | 21   | 4714 | BN360-100C-BKT02  | 10   |
| 1715  | BC-01(4W)(H/BRAKE) | 69   | 3560  | BE-970WFM   | 15   | 4719 | AC-24-12(006)     | 39   |
| 1827  | SP-7A              | 20   | 3663  | VBV-L510    | 32   | 4723 | BN360-Enclosure   | 11   |
| 1828  | SP-7B              | 02   | 3664  | VBV-L520    | 32   | 4743 | BN360-100C-BKT03  | 10   |
| 1829  | SC-7               | 02   | 3702  | AC-035      | 38   | 4752 | TCO-41-01         | 70   |
| 1830  | SK-31E             | 20   | 3716  | UDS-10BC    | 55   | 4752 | TCO-47-01         | 55   |
| 1844  | VCS-020            | 40   | 3716  | UDS-10BC    | 57   | 4758 | BKT-018           | 61   |
| 1846  | VSP-47B            | 33   | 3717  | UDS-2.5BC   | 57   | 4762 | AC-24-12(007)     | 39   |
| 1847  | VSP-47A            | 33   | 3719  | UDS-2.5SC   | 57   | 4763 | AC-24-12(008)     | 39   |
| 1879  | SK-50E-A           | 22   | 3720  | UDS-4.5SC   | 57   | 4766 | VBV-650-000N      | 37   |
| 1885  | SK-30E-T           | 20   | 3744  | BS-4000W    | 53   | 4779 | VBV-770-301       | 35   |
| 1886  | SK-31E-T           | 22   | 3746  | UDS-15BC    | 57   | 4782 | VBV-750-311       | 36   |
| 1886  | SK-31E-T           | 20   | 3747  | FS-4000W    | 56   | 4483 | VBV-770-311       | 36   |
| 1905  | BE-801C            | 18   | 3756  | BE-856GM    | 16   | 4851 | LS-60-A           | 40   |
| 1907  | BE-X025            | 19   | 3869  | VSP-57A     | 33   | 4851 | LS-60-A           | 55   |
| 1983  | AC-006             | 38   | 3870  | VSP-57B     | 33   | 4872 | MDR-RP01          | 47   |
| 1984  | AC-007             | 38   | 3871  | VSK-305E    | 34   | 4873 | MDR-06RPC         | 47   |
| 1984  | AC-007             | 62   | 3955  | SP-15A-04   | 21   | 4874 | MDR-03GSC         | 47   |
| 2002  | BE-821C            | 18   | 3956  | SP-15B-04   | 21   | 4875 | SD-32GB-IND       | 47   |
| 2084C | BE-801C(78)        | 18   | 3997  | SK-15-04    | 21   | 4876 | SD-64GB-IND       | 47   |

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| 4903 | AC-305           | 11   | 5426 | BE-891C        | 18   | 5985  | IP-1XXX-PC      | 49   |
| 4903 | AC-305           | 38   | 5455 | VBV-3001C      | 25   | 6075  | SS-4200W-000    | 54   |
| 4903 | AC-305           | 47   | 5457 | VBV-3021C      | 25   | 6114  | SE-770H-300     | 10   |
| 4904 | AC-306           | 38   | 5465 | VBV-7001C      | 24   | S5542 | MDR-508GW-EXP-0 | 47   |
| 4904 | AC-306           | 47   | 5467 | VBV-7101C      | 24   | S5543 | MDR-508G-EXP-0  | 47   |
| 4905 | AC-307           | 38   | 5469 | VBV-7091C      | 24   |       |                 |      |
| 4905 | AC-307           | 47   | 5471 | VBV-7191C      | 24   |       |                 |      |
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| 4948 | AC-064           | 39   | 5516 | VBV-H410       | 26   |       |                 |      |
| 4949 | AC-308           | 38   | 5519 | VBV-H405       | 26   |       |                 |      |
| 4975 | BS-25DCSX        | 61   | 5522 | VBV-H4025      | 26   |       |                 |      |
| 4977 | VBV-L403         | 32   | 5561 | MDR-504-1000   | 46   |       |                 |      |
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| 5005 | MD-50AM-25       | 26   | 5575 | MDR-504GW-2000 | 46   |       |                 |      |
| 5005 | MD-50AM-25       | 31   | 5577 | MDR-508-2000   | 45   |       |                 |      |
| 5027 | AC-066           | 38   | 5579 | MDR-508W-2000  | 45   |       |                 |      |
| 5028 | AC-067           | 38   | 5583 | MDR-508G-2000  | 45   |       |                 |      |
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| 5065 | SP-15B-05        | 33   | 5637 | BS-WD-USB      | 60   |       |                 |      |
| 5066 | SK-15-05         | 11   | 5656 | BS-9001-USB    | 62   |       |                 |      |
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| 5100 | BE-823C          | 18   | 5686 | MD-51(SW)      | 31   |       |                 |      |
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| 5127 | MDR-508GW-1000   | 45   | 5694 | MD-51(W)       | 31   |       |                 |      |
| 5128 | MDR-508G-1000    | 45   | 5698 | MD-61(W)       | 26   |       |                 |      |
| 5129 | MDR-508W-1000    | 45   | 5713 | BS-9000-WD     | 60   |       |                 |      |
| 5132 | MDR-500-500-MCU  | 47   | 5715 | DMC-1021       | 31   |       |                 |      |
| 5157 | MDR-500-1000-MCU | 47   | 5726 | MD-51          | 31   |       |                 |      |
| 5200 | BN360-200        | 11   | 5738 | MD-61          | 26   |       |                 |      |
| 5213 | VBV-301C         | 30   | 5773 | VBV-L4020      | 37   |       |                 |      |
| 5217 | VBV-321C         | 30   | 5800 | BN360-300      | 10   |       |                 |      |
| 5234 | AC-068           | 39   | 5809 | BN360-H320     | 10   |       |                 |      |
| 5257 | SS-4100W         | 55   | 5810 | BN360-H315     | 10   |       |                 |      |
| 5261 | CS-3100          | 56   | 5811 | BN360-H310     | 10   |       |                 |      |
| 5262 | ST-2100          | 57   | 5812 | BN360-H305     | 10   |       |                 |      |
| 5266 | BS-9000          | 63   | 5813 | BN360-H3025    | 10   |       |                 |      |
| 5270 | BS-00NYC         | 61   | 5816 | VBV-671-000    | 37   |       |                 |      |
| 5271 | BS-02PIC         | 61   | 5817 | VBV-631C       | 37   |       |                 |      |
| 5272 | BS-02DCX         | 61   | 5860 | IP-EM4         | 49   |       |                 |      |
| 5278 | BE-901C          | 17   | 5861 | IP-EM8         | 49   |       |                 |      |
| 5280 | BE-991C          | 17   | 5864 | IP-EM-PC       | 49   |       |                 |      |
| 5291 | BS-00NT          | 61   | 5865 | IP-EC-1        | 49   |       |                 |      |
| 5303 | DMC-1031         | 25   | 5866 | IP-EC-5        | 49   |       |                 |      |
| 5304 | DMC-1035         | 25   | 5867 | IP-L601        | 49   |       |                 |      |
| 5311 | MDR-508W-EXP-0   | 47   | 5902 | IP-L603        | 49   |       |                 |      |
| 5318 | AC-069           | 39   | 5903 | IP-L605        | 49   |       |                 |      |
| 5323 | VBV-243M         | 36   | 5904 | IP-L615        | 49   |       |                 |      |
| 5330 | MDR-500-2000-MCU | 47   | 5916 | SS-4200W       | 54   |       |                 |      |
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| 5347 | UDS-OSD21-ECU    | 52   | 5937 | IP-1200C       | 48   |       |                 |      |
| 5378 | SE-7104F-100     | 11   | 5982 | IP-L610        | 49   |       |                 |      |
| 5379 | SE-770-100       | 11   | 5983 | IP-L620        | 49   |       |                 |      |

# Glossary

**ADPCM**

An audio file format, optimized for storing digitised data at a low sampling rate.

**AHD**

Analogue high definition video standard that uses standard cable to transmit HD video from cameras to Monitor/DVR

**Amp**

Unit of electric current.

**Auto-trigger**

Enables automatic triggering of an action e.g. display of rear camera view when reverse gear engaged.

**AVAS**

Acoustic Vehicle Alert System (AVAS) automatically emits an external synthesized sound to enable pedestrians to be audibly aware of the vehicle's presence.

**A/V input/output**

Communication connection between electronic devices.

**- Input**

Receives audio/visual signals such as from DVD or satellite navigation

**- Output**

Sends audio/visual signals to other devices such as to mobile digital recorder.

**Brightness**

Brightness of the picture displayed on a monitor, measured in candelas per square metre (cd/m<sup>2</sup>). Higher the measure the brighter the picture.

**CAN bus**

Controller Area Network is a robust vehicle standard designed to allow microcontrollers and devices to communicate with each other without a host computer.

A Controller Area Network (CAN bus) is a robust vehicle bus standard designed to allow microcontrollers and devices to communicate with each others' applications without a host computer.

**CCD (Charged-Coupled Device)**

A tiny photocell used in cameras to convert light into a digital signal.

**Contrast**

Light intensity ratio of a display device between darkest and lightest colour produced.

**CE mark**

Confirmation that a product is in conformity with the essential requirements of any applicable directives e.g. 2004/108/EC (relating to Electromagnetic Compatibility).

**CVBS**

Composite Video Blanking and Sync. An analogue video signal format that carries standard-definition video as a single channel.

**Decibel (dB)**

Unit of measure of the pressure (intensity) of sound. The higher the rating the more intense the sound.

**DWDR (Digital Wide Dynamic Range)**

Digitally Produces a greater dynamic range of luminosity for improved detail in highlights and shadows.

**EMC (Electro-magnetic compatibility)**

Regulation concerning the type-approval tests for European automotive electronics.

**- E**

United Nations mark for approved vehicle components sold into the EU. And in some other countries under UN-ECE Regulation 10

**EN 13309:2010**

Construction machinery. Electromagnetic compatibility of machines with internal power supply

**FCC mark**

Certification for electromagnetic interference on products manufactured or sold in the United States which comply with the Federal Communications Commission.

**FMCW**

Frequency-Modulated Continuous Wave radar. A known stable frequency continuous wave is transmitted and then received from any reflecting objects.

**Frequency**

Number of times a sound source vibrates per unit of time, measured in hertz (Hz). The higher the rating the higher the pitch.

**GPS (Global Positioning System)**

Global satellite system providing positioning and timing services to worldwide users on a continuous basis.

**HALT (Highly Accelerated Life Test)**

A comprehensive stress test applied to electronic equipment to identify design weakness.

**IC (Industry Canada)**

Certification for electromagnetic interference on products manufactured or sold in Canada which comply with the Bureau of Innovation, Science & Economic Development

**Illumination distance (camera)**

Distance a camera with infrared LEDs can see in ultra-low light conditions, measured in metres.



#### **IP## (Ingress Protection)**

An international classification for the sealing of electrical equipment against the intrusion of solid objects (digit 1) and liquids (digit 2). Higher the rating the better protection in each case.

#### **ISO 13766**

Specific standard for earthmoving equipment, includes requirements for some additional tests that are not covered in the tests for 'E' or 'e' under EMC.

#### **ISO 16750**

Standard providing guidance regarding environmental conditions commonly encountered by electrical and electronic systems installed in vehicles.

#### **ISO 20653: 2006**

Road vehicles — Degrees of protection (IP-Code) of electrical equipment against foreign objects, water and access

#### **LCD (Liquid Crystal Display)**

Thin, flat display device made up of any number of colour or monochrome pixels i.e. monitor screen.

#### **LED (Light Emitting Diode (camera))**

Emits infrared light for high efficiency and performance in ultra-low light.

#### **LED (Light Emitting Diode (monitor))**

Used to back light the monitor display for crisp images and superior image quality.

#### **Mechanical shock**

Level of sudden acceleration or deceleration, such as impact or being dropped, to which product will still perform. Measured in gravitational force (G).

#### **Mechanical vibration**

Level of continuous or repetitive

motion, such as engine vibration, to which product will still perform. Measured in gravitational force (G).

#### **NAS-PIEK**

The standard for quiet delivery vehicles in the UK, certified by the Noise Abatement Society.

#### **NTSC (National Television Systems Committee)**

TV colour encoding standard.

#### **PAL (Phase Alternating Line)**

TV colour encoding standard.

#### **Quiet Mark**

An international approval associated with the UK Noise Abatement Society. It encourages companies worldwide to prioritise noise reduction.

#### **R46**

UN ECE Regulation No 46 covers devices for indirect vision and their installation.

#### **R118**

UN ECE Regulation No 118 determines the burning behaviour (ignitibility, burning rate and melting behaviour) of materials.

#### **R138**

UN ECE Regulation concerning the approval of Quiet Road Transport Vehicles with regard to their reduced audibility.

#### **Resolution (RGB)**

Number of pixels used to display an image. Measured in Width x 3 channels (Red, Green, Blue) x Height.

#### **RoHS 2**

The restriction of the use of certain hazardous substances in electrical and electronic equipment

#### **SAE J994**

Performance testing for electrically operated reversing alarms primarily intended for use on off-road, self-propelled construction and industrial machines.

#### **Sounder unit**

Unit which produces the sound of an alarm.

#### **TV Lines**

Number of horizontal lines used to create an image.

#### **Viewing angles (camera)**

The maximum angle of vision.

#### **Viewing angles (monitor)**

The maximum angle at which an image can be successfully viewed. Measured from the centre point on the monitor.

#### **Vulnerable road user**

Road users most at risk in traffic – such as pedestrians, cyclists and public transport passengers. Children, older people and disabled people may also be included in this category.

#### **Watt**

A measure of the electrical power needed to drive a product.

#### **WDR (Wide Dynamic Range)**

Produces a greater dynamic range of luminosity for improved detail in highlights and shadows.

#### **WiFi**

A facility allowing devices to communicate wirelessly. A wireless network creates a small, localised area within which your devices can receive signal.

#### **4G**

A cellular data service available from mobile network providers.

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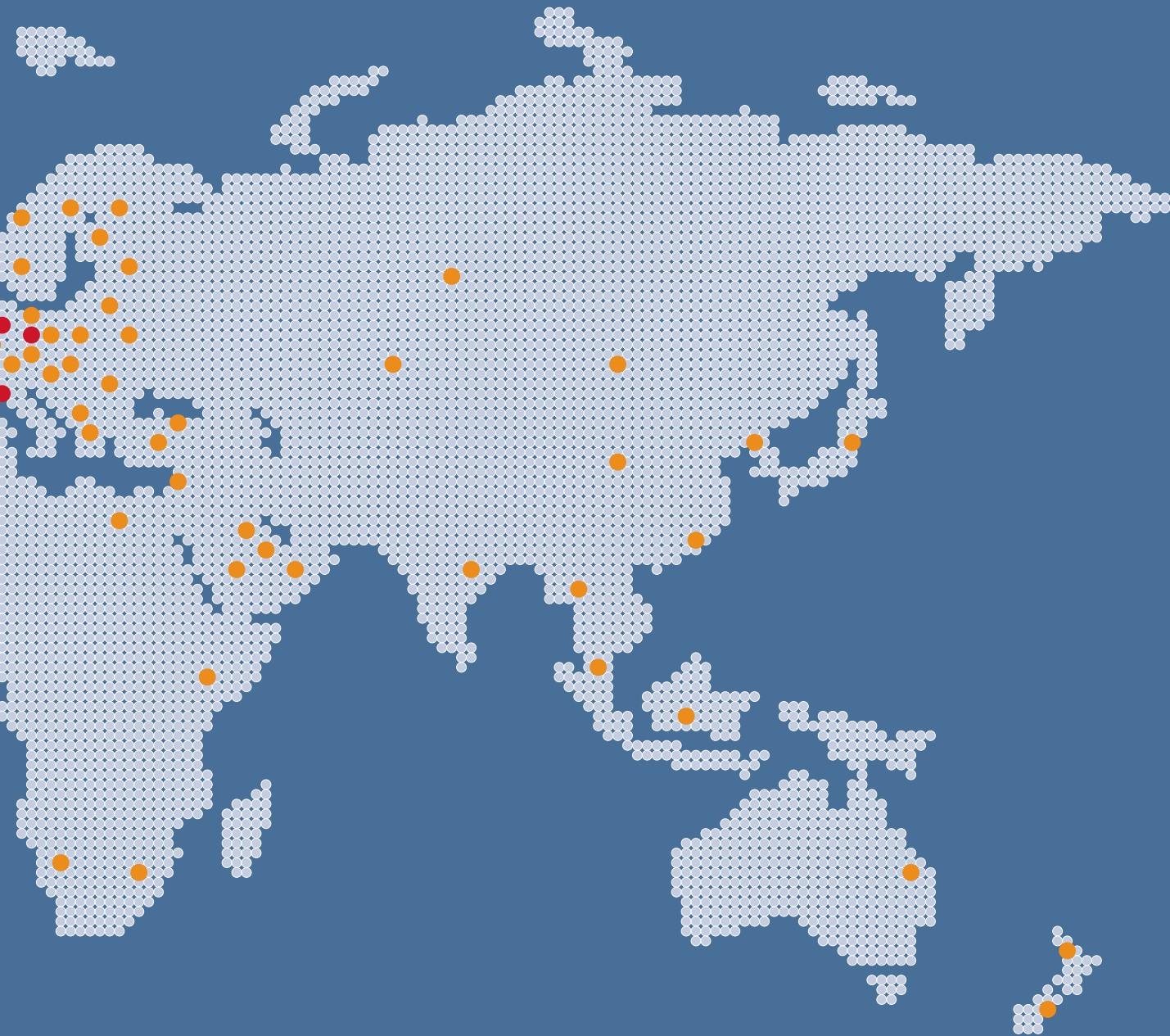
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