Vehicle Conversion Catalogue

2019

RING
®

CARNATION

On Board With You

ON BOARD WITH YOU

Intelligent Power Management and Switch Control

Contents

Transforming a vehicle into a mobile work unit requires many products and multiple disciplines. Ring Carnation, through its knowledge of vehicle electronics and lighting has a unique proposition that combines power management with the provision of remote power. This enables vehicles to operate safely as mobile work units in various extreme conditions.

Ring Carnation services the emergency and specialist vehicle sectors with intelligent switching and power management systems to maintain correct battery power.

Power Management

Our genisys™ technology is an integral part of many converted vehicles on the roads, configured to each vehicle's power demands and able to manage those power demands for efficient operation.

Powering and Charging

When working remotely having a source of mains power is vital to ensure tools and other equipment on the vehicle can be operated efficiently.

Being able to charge both the chassis battery and an auxiliary battery is also a must to ensure maximum power is always available. Working either separately or in conjunction with our genisys™ technology packages, or range of inverters and charging equipment ensures maximum work efficiency.

Rear Working Area

The essence of converting a vehicle is to make it suitable as a mobile work station. It is often the rear of the vehicle that is converted to make the mobile operating platform possible. Ring Carnation have a large range of lighting to make working on-site easier and more importantly, safer. All our lighting packages ensure industry guidelines of correct light level are adhered to.

Safe Working

Good scene lighting is important for illuminating the area of work both internally and externally. Warning lights are as important so other road users can see you more clearly while working.

It is essential that correct external illumination and hazard warning systems meet the relevant legislations.

Ring Carnations's genisys™ system manages the numerous applications within the vehicle to ensure power is maintained and provides safer working vehicles for the fleet manager and work force.

Technical and Customer Support

Technical

Ring Carnation understand that vehicle converters can work on a wide range of different conversion projects, each with their own specific requirements. As well as top quality products we offer after sales support and knowledge.

We can support fleet managers with correct product selection, and work with the converter to ensure everything is correctly installed. We'll supply installation schematics, CAD drawing files, and support with installation training and final sign off. If required, we can assist with sub assembly of the power systems to provide 'plug & play' installations.

Customer Support

Our Customer Service Team is on hand to offer technical support. When a vehicle is a mobile workspace it needs to operate with minimal downtime. Our support package is designed to keep you moving.

Post-product support is available via our Customer Service team, and our onsite technical engineering teams are on hand to assist.

Commitment To Quality

With over 40 years experience in the manufacture and distribution of automotive products, Ring Carnation's commitment to quality is second to none. Through major investments in test equipment and fully qualified engineers, Ring Carnation recognises quality is of the utmost importance in helping to ensure customer satisfaction and with this in mind Ring Carnation's Engineering and Quality Assurance teams carries out stringent design and quality control procedures on a continuous basis.

Load Testing

Power products undergo a series of electrical soak tests using programmable AC and DC loads and equipment, such as inverters, are subjected to appliance testing, ensuring compatibility in the end application.

Data Logging

To validate performance of multi-stage chargers, data loggers allow charging curves to be analysed and checked against the requirements of different automotive battery types.

Output waveforms from inverters are measured and approved using oscilloscopes or spectrum analysers to ensure they conform to the required standard.

Environmental Testing

To ensure products perform in all relevant environments, temperature testing is carried out in both hot and cold thermal chambers. Products are subject to impact, vibration, chemical and water resistance tests.

Life Testing

Products are not only tested to conform to specification, but also to conform to appropriate standards of life time use.

Lighting Laboratory

Designed and developed by Ring Carnation, it's lighting laboratory is a unique installation that allows it to carry out product testing and performance verification beyond that laid down by international standards.

The state-of-the-art laboratory is equipped with the latest ProMetric CCD light imaging photometer. Not only does this equipment allow the overall measurement of light output but it also helps define true operating times of useable light levels for inspection lamps. In-house software designers and engineers are continuously improving technology to make sure we stay ahead of the game.

Power Management & Control Systems

Ring Carnation designs and manufactures industry-leading control systems for special purpose vehicles. Having served the emergency services since its formation, Ring Carnation's electronics have been proven in the toughest of operating environments.

Modern vehicle conversions have increasing levels of auxiliary electrical equipment on-board, which place greater demands upon batteries. Our genisys™ programmable logic control systems are designed to monitor voltage levels and distribute power to where it is needed most, maintaining safe vehicle operation.

Bespoke-configured to every application – be it a welfare van, a police response car, a mini coach, an outside broadcast truck or an emergency ambulance – genisys™ offers operators greater ease of use than conventional 'hard-wired' setups by providing automated safety and courtesy features. genisys™ also offers peace of mind to Fleet Managers, preserving power and offering ease of installation and fault diagnosis.

The genisys™ family of modules includes ECUs, output modules, a wide range of standard and bespoke keypads, CAN interface modules and Protocol converters for third party system integration.

In 2019 we redefine the benchmark for special purpose vehicle control: **genisys™ II**.

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Contents

Intelligent Power Management

Introducing intelligent power management

Modern special purpose vehicles carry ever increasing levels of electrical devices, mobile computers and communications systems. From warning lights to defibrillator chargers, medical data terminals to highway pursuit cameras, this increasing electrical payload places greater burden on vehicle power.

These vehicles – ambulances, outside broadcast units, welfare vans, police cars – are vital working assets, and their operators cannot afford to have them inoperative, especially when in mission-critical situations. They may be on-scene for minutes, hours or days, and their electrical systems must be designed for steadfast operation. 'V.O.R' is the last phrase a Fleet Manager needs to hear: it is inconvenient, costly and potentially even life-threatening.

20th century 'hard-wiring' methods – switches & relays and their associated heavy, cumbersome wiring looms – simply cannot keep-up with the needs of these advanced mobile workstations.

Ring Carnation's power management & control products add intelligence to auxiliary electrical systems, making vehicles easier to use, more capable and significantly more reliable. We can't make batteries last forever, but our systems work to effectively manage available power and to direct it where it is needed most.

Our programmable logic control (PLC) systems consist of modular building blocks of hardware – ECUs, output modules, keypads and integration modules – which may be configured to suit an infinite number of vehicle applications using our bespoke software utility. Vehicle functionality can be repeatedly and substantially changed in minutes without need for any tools or rewiring.

If you need your electrical systems to work reliably in the toughest of environments, you need **genisys™**.

genisys™ benefits installers, operators and end users

- Versatile and configurable: modular, scalable hardware may be programmed for a diverse range of applications, enabling standardisation of product for fitters and lowered inventory for workshops.
- Software-driven PLC facilitates a broad range of automated courtesy, safety and power management features. Most notably, 'Load shedding' enables Fleet Managers to set which functions should be prioritised in the event of battery depletion, preserving power to enable engine starting.
- Ring Carnation's in-house team provides systems fully configured for rapid 'plug & play' installation.
- genisys™ 'Voice Alert' provides so much more information than a warning buzzer, advising operators of enabled functions, issuing instructions and providing hazard warnings.
- Solid state technology used in place of industrial relays along with the ability to multiplex modules around the vehicle to reduce wiring runs, contributing to reduced weight.
- Module I/O status indicator lamps give workshop technicians at-a-glance information for system fault-finding.
- Intelligent chassis inputs available via genisys™ CAN interface modules.
- Integration with third-party devices and fleet management systems are achievable using the genisys™ Protocol Converter module.
- Future proof: genisys™ systems are intrinsically reconfigurable for update throughout their life and may be transferred from aged vehicles to new.
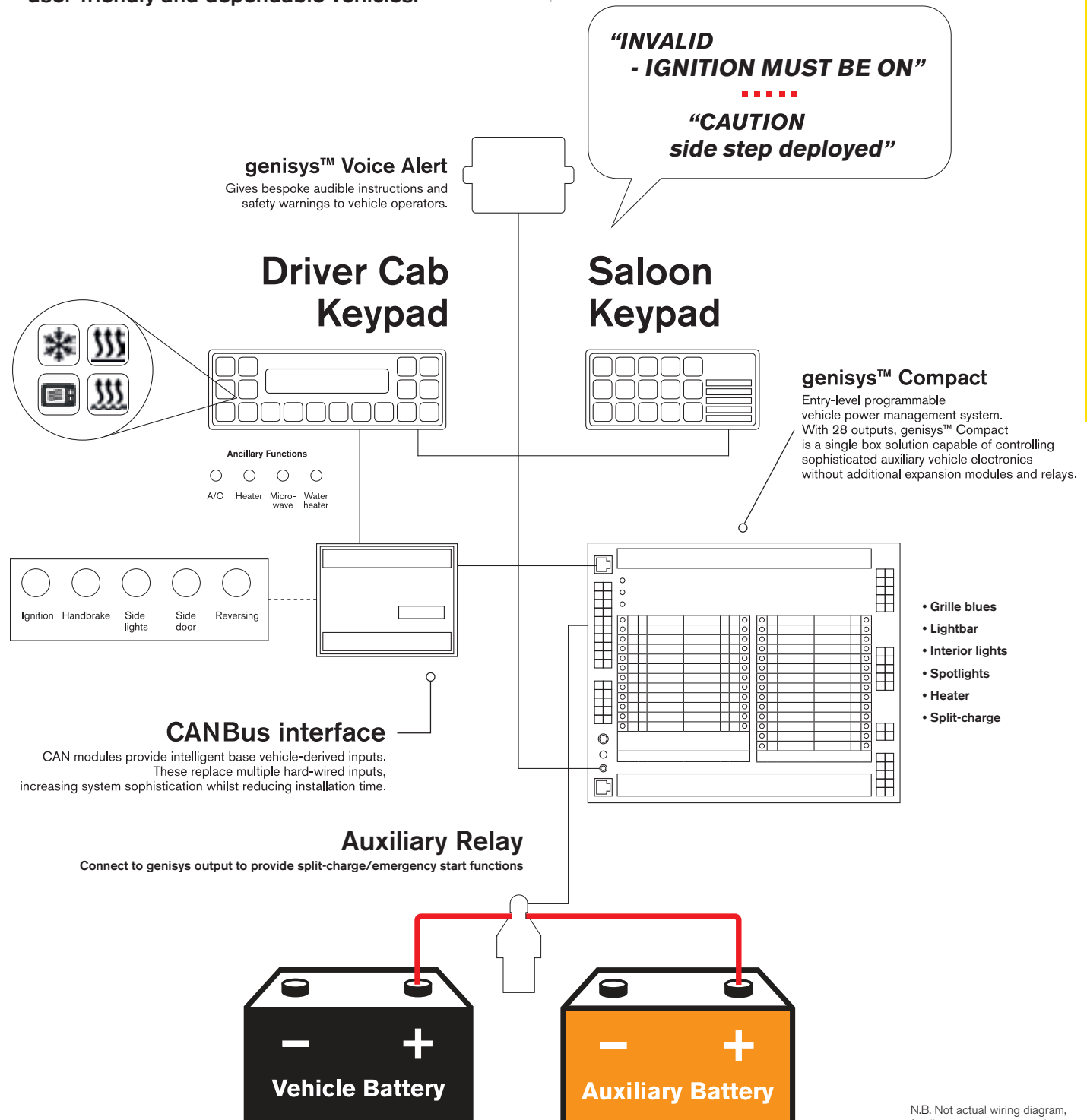
genisys™: the heart of your electrical system

Our team of technical experts will help you integrate genisys™ into your electrical systems to provide you with the most intelligently configured, user-friendly and dependable vehicles.

Combine genisys™ control with Ring Carnation's on-board power, safety and warning equipment to provide you with the complete electrical package for your conversion.

"INVALID - IGNITION MUST BE ON"

"CAUTION side step deployed"

genisys™ Voice Alert
Gives bespoke audible instructions and safety warnings to vehicle operators.

Driver Cab Keypad

Saloon Keypad

Ancillary Functions

A/C   Heater   Micro-wave   Water heater

Ignition   Handbrake   Side lights   Side door   Reversing

genisys™ Compact
Entry-level programmable vehicle power management system. With 28 outputs, genisys™ Compact is a single box solution capable of controlling sophisticated auxiliary vehicle electronics without additional expansion modules and relays.

• Grille blues
• Lightbar
• Interior lights
• Spotlights
• Heater
• Split-charge

CANBus interface
CAN modules provide intelligent base vehicle-derived inputs. These replace multiple hard-wired inputs, increasing system sophistication whilst reducing installation time.

Auxiliary Relay
Connect to genisys output to provide split-charge/emergency start functions

Vehicle Battery

Auxiliary Battery

N.B. Not actual wiring diagram, for illustrative purposes only.

Intelligent Power Management

genisys™ Compact

Ring Carnation has long been at the forefront of ambulance control with the majority of UK A&E fleets choosing genisys™ to reliably manage their vehicle electronics.

Compact is Ring Carnation's entry level power management solution, suitable for a wide range of low to medium-complexity vehicles such as ambulance RRV & PTS, Police response cars and Welfare vans.

This cost-eff ective system offers proven genisys™ control technology in a slimline enclosure. With 28 outputs and 150A (max) operating current, Compact is a single box solution capable of controlling sophisticated vehicle conversions without need for expansion modules and relays. Compact: High capability. Low price.

- 28 medium and high current outputs (2 x negative), 150A max
- 24 digital inputs
- 4 analogue inputs
- Fully configurable for bespoke installations using genisys™ programming software
- Proven genisys™ power management & control capability
- Load shedding and splitcharge functionality
- Voice alert channel
- Integration with MDT and telemetry available via the genisys™ Protocol Converter module
- EMC compatibility: E-marked

Specification

Recommended Operating Supply Voltage:	10-16V
Total Output Current:	150A
No. of Outputs:	14 Positive (High Current) 12 Positive (Medium Current) 2 Negative (Medium Current)
Current Rating (per Output):	2 x 30A, 12 x 15A, 12 x 3A 2 x 5A (negative)
Digital Inputs:	24 (16 Positive and 8 Negative)
Analogue Inputs:	4 Configurable
CAN Data Input:	Available as separate module
Audio Warnings:	Single Audio Channel 3.5mm socket
Dimensions:	W234 x H50 x D175mm
Module Compatibility:	genisys™ keyboards, CAN & Protocol Converter
Configuration:	Maintains genisys™128 software usage
Power Consumption Unit Only: In Operation Sleep Mode	<200mA <30mA
Branding / Customer configuration:	Pre-printed I/O Configuration

Electromagnetic Compatibility Specification

General Automotive CE:	72/245/EEC (2009/19/EC)
FCC:	Complies with FCC regulations
Emarked:	VCA approvals

Environmental Specification

Operating/Storage Temperature:	-20 to 50ºC ambient
Ingress Protection:	IP20

genisys™ ECU

At the heart of every genisys™ power management system is the electronic control unit (ECU), governing communication between all modules.

genisys™ is a programmable logic controller (PLC), with the ECU acting as the commanding module. This intelligent node monitors digital and analogue inputs and instructs other system modules, which can be multiplexed around the vehicle.

Every genisys™ system operates uniquely according to program logic that has been bespoke-tailored to each vehicle application. 'genisys™ 128' operating software is configured to customer preferences by Ring Carnation's engineers and then uploaded to the ECU. Subsequently the ECU holds information on the complete system setup including module types and addresses. Status lamps to the front of the module indicate if I/O is not responding correctly, aiding rapid vehicle fault finding. If any of the system components fail to respond correctly then an error report can be sent to Keypad LCDs and/or audible voice alerts. This feature facilitates rapid fault finding, reducing time to diagnose installation issues and to action in-field repairs.

When used in conjunction with a genisys™ CAN module, the ECU can monitor intelligent base vehicle inputs and use these conditions to drive system logic.

Typical genisys™ 128 logic features actioned by the ECU module include 'auto-functions' engaged without need for keypad input, 'load-shedding' sequences to preserve battery life and Ring Carnation's audible 'Voice Alerts', which provide audible information relating to hazard warnings and operator instructions.

- 24 Digital Inputs
  - 16 High-side switching digital inputs
  - 8 Low-side switching digital inputs
- 4 Analogue inputs
  - Monitor upto 4 separate battery banks
  - Battery voltages displayed on keypad LCD
  - NEW temperature monitoring feature available
- Supports 15 additional genisys™ input, output or user interface modules
- 2 programmable audio channels with independent volume setting
- Vehicle Radio mute output available
- PC interface port
- I/O status indicator

genisys™ OPM

The Output Module (OPM) connects to the genisys™ modular system providing a safe, internally fused, high power output switching system. Safety is assured by means of intelligent current monitoring, automatically disabling outputs when a fault condition occurs.

Outputs are controlled by solid state switches (MOSFET) rather than mechanical relays. These provide longer operating life, faster switching, and require very little drive current.

- Up to 16 intelligent outputs per module
  - 150A Total output current per module
  - 2x30A Maximum Rated outputs
  - 14x15A Rated outputs
  - Product variant provides 2 x Lowside outputs
- Short Circuit and Overload protection
- 100ms Update rate
- Dedicated resettable fuses enable safe OPM disconnections
- Output current limit configured in genisys™ software application

genisys™ user interfaces

12-way keypad

genisys™ Keypads

At the 'front-end' of genisys™ control systems are user-friendly keypad interfaces, with a variety of models available to suit wide ranging customer applications. Forming part of the genisys™ modular concept, systems can contain up to three keypads, quickly connected using data cables. Core variants include 6, 12, 16 and 18-way, and key positions can be configured for key press or to act as additional warning lamps.

genisys™ keypads are designed to be mounted within a standard vehicle DIN aperture for ease of fitment and to minimise installation impact upon base vehicles. Additional models are available including larger switch variants, mobile PC backup 'Hotkey suites', and fully bespoke panels manufactured to customer specifications are available.

- Illuminated fully configurable keys
- Built in buzzer for immediate key press confi rmation
- LED warning indicators built in to the 6 & 12 way keypads
- The 18 way comes with a two line LCD display
- Separate night time brightness settings
- DIN compatible using adapter fascia

18-way keypad

genisys™ TouchScreen

genisys™ TouchScreen brings greatly enhanced functionality to Ring Carnation's high quality range of keypads.

Our flagship keypad features up to 8 bespoke digital layers along with six physical backup keys, fully configured to customer preferences. TouchScreen may be set up to provide various features including battery voltage and temperature display (with optional sensor cables), and clock/timer functions. Bespoke graphics can be created to visualise monitoring of onboard vehicle features, and logos can be integrated to enhance customer branding. An integrated speaker provides audible notification of warnings and key press feedback.

Utilising the Windows CE platform, the possibilities for features which can be incorporated into the new genisys™ TouchScreens are as wide as our customers' vehicle control requirements.

Just like our membrane keypads, TouchScreens connect to the genisys™ system via CAT5 Cross-over cables*. In the unlikely event of a digital display/key issue, the six hard keys will remain operational, ensuring that critical functions can always be operated.

- 7" touchscreen display interface
- 6 x back-up hard keys
- Up to 8 menu screens with customisable visuals/layouts
- Audio output
- EMC approved

*The only additional wiring required for genisys™ TouchScreen installation is twin power cables/2-way mini fit connector.

Specification

Recommended Operating Supply Voltage:	From 10-16V
Communication with genisys™:	Cross-over CAT5 cable
Touchscreen Sizes:	7" touchscreen with 800x480 display
Number of Keys/Screens:	32 keys + 8 navigation keys + 4 setting keys. 8 Screens. Custom graphics symbols & logos design
Analogue Inputs:	4 x voltage inputs 4 x Temperature sensors inputs
Audio Channels:	1 x audio channel with internal speaker
Software:	Windows CE platform running genisys™ "Virtual Keypad" program
Hard Keys:	6 illuminated hard keys
Configuration/Upload:	via USB
Power Consumption In Operation Sleep Mode:	<500mA <30mA

genisys™ CANbus Interface

With the introduction of CANbus technology on modern vehicles, finding the necessary connections required to interact with a vehicle chassis can be extremely complicated and time consuming. Many outputs are no longer available as they are only present on the vehicles CANbus. The solution is to use a Ring Carnation CANbus interface module that will either overcome any issues you may encounter on vehicles with multiplexed wiring or at the very least simplify installations - saving time and reducing interference with OEM wiring harnesses. The Carnation CANbus interface interprets the CANbus protocols, converts them and transmits direct to the genisys™ system using the databus.

- Vehicle specific with an ever-expanding library of applications
- Integrated Runlock variants available for specialist vehicles
- Databus communication means significantly less wiring and fewer connections
- The Ring Carnation module can provide a range of different input signals making the interface the ideal choice for a wide range of specialist vehicle applications

The following signals are available:

- Handbrake
- Front Doors
- Side/Rear Door
- Van Rear Door/Tailgate
- Ignition
- D+ (engine running)
- Main Beam
- Dipped Beam
- Sidelights
- Reverse
- Brake Lights
- Fog Lights
- Left/Right Indicators
- 2 x Speed Triggers (programmable)
- 2 x RPM Triggers (programmable)

Protocol Converter

The Protocol Converter allows PC-based hardware to control the genisys™ system through a software keypad interface. To the genisys™ system, the converter appears as a standard keypad module allowing bi-directional communication between genisystm and the PC.

The PC, running the supplied software, can then be used to operate up to 32 configurable, on screen keys or indicator icons. Like all other genisys™ modules this unit has been designed with ease of fitment and remote diagnostics via LED indicators.

- PC connection through the RS232 serial port on the module
- Operate up to 32 totally configurable key switches via PC

genisys™ II

The Next Generation of Power Management

Since 2007, genisys™ has been trusted to manage power onboard the most critical of vehicle applications: lifesaving ambulances. The system has continually evolved, finding new applications and with new modules added to the range to support integration with chassis and third-party equipment.

We have also introduced new low-cost variants of genisys™ – XVi and Compact – to make our control technology accessible to more markets including response cars, welfare vans and minibuses.

Our customers have learnt to maximize the value of genisys™, pushing our modules to their maximum to create the most functional, safe and dependable vehicles. Whilst working closely with chassis suppliers, converters and operators on thousands of genisystm installations to-date, we have been privileged to gain an even greater understanding of our customers' needs.

Modern special-purpose vehicles are increasingly 'connected' assets, designed to work 24/7 with minimum downtime and communicating maximum information on system health back to base.

When conceiving our next generation products, we imagined devices that would reach further into on-board electrical sub-systems, monitoring and controlling more things, and with versatility to support advancing technologies.

A decade -on from genisys™' arrival we have put everything we have learnt about control into the new market leader:

genisys™ II

The genisys™ II Series

Our next generation of modules is available in three formats, offering back compatibility, major performance enhancements and a connected platform.

The three options are:
- genisys™ II Classic ECU
- genisys™ II CAN
- genisys™ II NINA

genisys™ II Classic ECU

genisys™ II Classic ECU uses RJ45 connectivity and is fully compatible with genisys™ mk1 modules. This new control unit can be installed in place of a first generation ECU, offering a quick performance upgrade and transition into many of gII Series' new features.

- **Advanced system hardware:** 32-bit 300Mhz Atmel Cortex-M7 processor with 2MB of on-board memory. Has approx. 4 times as much memory buffer 1 and 8 times as much memory buffer than generation 1. This supports up to 16 modules including six keypads.

- **Enhanced I/O:** 16 x analogue + 16 x digital inputs, 1 x external CAN input gives greater monitoring and control capability.

- **Increased operating efficiency:** features modern circuitry with 2-channel Class D high efficiency audio amplifier. Significantly reduced current draw when in 'sleep' mode.

- **Rugged polymer enclosure:** durable PC-ABS housing with anti-microbial additive. The lighter-weight construction has improved environmental protection and internal moisture and shock indicators. Easy to update I/O assignment inserts.

- **Front-mounted LCD & controls**
  Two-line dot matrix display provides immediate access to program version number and system health. Front-mounted menu keys for Voice Alert volume, LCD contrast and diagnostics.

- **USB programming port**
  Auto configuration file upload via USB drive or USB to PC offers the ultimate ease of updates.

genisys™ II CAN

The all-new genisys™ lineup including ECU, OPMs and keypads with CAN connectivity and the full suite of gII control features enabled. gII ECU and OPMs benefit from gII Classic's new performance upgrades plus:

- **CAN 2.0B protocol** for a more resilient communications network with AES128 encryption for greater security.

- **Pulse width modulated (PWM) outputs with feedback** enable analogue control of outputs for features such as variable lighting and HVAC.
  Intelligent output monitoring provides status indication for controlled devices

- **Regulated Output Voltage** to ensure smooth supply even on Smart Alternator -equipped vehicles.

genisys™ II Configuration Utility

New gII Series applications software is substantially more powerful and easier to use. They are able to create more complex logic and facilitating much faster programming.
**NFC RFID on board data logger** for rapid module fault diagnosis via compatible Smart device.

genisys™ II NINA advance information:

- **Combined Microcontroller + Android™ ECU:** intelligently-linked dual-platform device provides the robustness of a microcontroller with the enormous capability of an Android™ mobile operating system to offer a control system like no other

- **A new level of control:** bespoke 'Apps' may be created to offer dynamic new control features. Even greater genisys™ capability to integrate with third-party services including HVAC, telematics, medical and communications devices. Potential for vehicle infotainment system links. NINA provides a powerful central control & distribution hub for your vehicles

- **7" Touchscreen GUI:** totally configurable, so the display may be tailored for vehicle operator input or for service functions. High resolution touchscreen provides 'virtual keypad' and system diagnostic information. Physical controls provide backup or primary input when the Touchscreen interface is disabled

- **Connected:** on-board Wi-Fi, Bluetooth, GPS, motion tracking & 4G modem*. Online management of genisys™ II NINA control systems via genisysnina.com. Remote diagnostics, software and configuration updates. Hardware supports telematics and driver behaviour features.

*dependent upon chosen model specification
Android is a trademark of Google LLC.
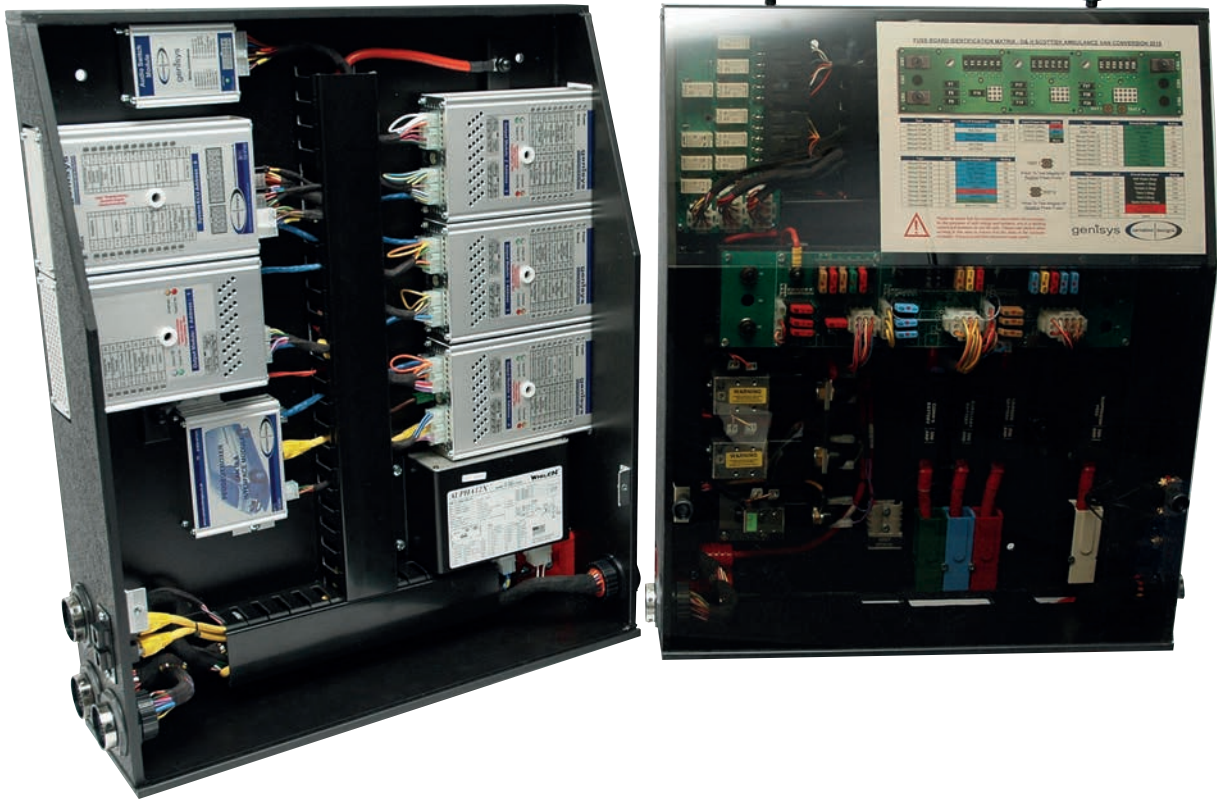
Sub-assembly

Alongside genisys™ control system, production Ring Carnation also offers a bespoke sub-assembly engineering and manufacturing service.

Taking our genisys™ control offering a stage further, we provide our customers with their complete auxiliary electrical sub-system wired, connected to genisys™, tested and mounted to custom designed panels and enclosures, ready for rapid hook-up to vehicle looms. This enables our customers to de-skill elements of their vehicle production and significantly reduce their build times. For end users, it also gives peace of mind that every vehicle will be electrically identical and therefore easier to service.

- Assemblies are tailored precisely to customer requirements including those for electrical configuration and mechanical elements, and for use with any control modules from the genisys™ range.

- Absolute consistency of production: same wire colours, pin-outs, connectors, wire routings each and every time.

- Our capacity enables us to support converters with high-volume weekly production output.

- All assemblies are functionally tested in-house to ensure correct operation prior to installation.
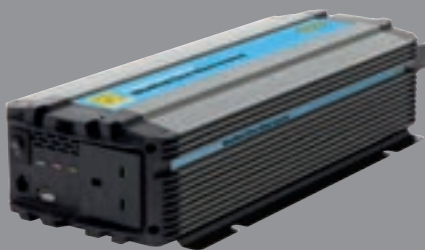
Sub-assembly services

Powering and Charging Systems

Providing mains power from your vehicle is essential for your teams to operate the tools and equipment they need. It is imperative to select the correct power source for the work required.

CARNATION

Powering and Charging Systems

Contents

Selecting the right Inverter
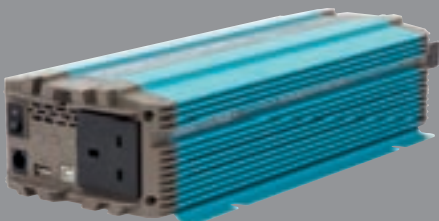
Power on the Move 12V DC to 230V AC

④ ① ②

③

Key features

① Integrated multi-function LCD display
② Compact heavy duty casing
③ Optional display mounting
④ 2.1A USB
⑤ Pure Sinewave
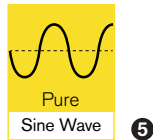
Pure
Sine Wave ⑤

Ring's new range of inverters are compact, efficient and give better power management information for operators. For installers, they allow easier, quicker installation and have a smaller footprint. The new inverters, available in both Pure Sine Wave and Modified Sine Wave, now include a power saving mode to ensure battery power lasts for as long as possible. The new models are reduced in weight and have up to 40% smaller footprints than previous models, helping save valuable space in commercial vehicles.

Selected new models now include a multi-function LCD display, which is also an optional fit across the rest of the range. This can also be remotely mounted, making it easy for users to check power output. The inverters will display a warning once the battery is running low - essential to help monitor power usage via additional battery current sensor and ensure batteries do not become fully depleted. The inverters also have a series of simple error codes - displayed on the LCD - that make it quicker and simpler to diagnose power issues, such as low battery voltage shutdown and high voltage shutdown. The inverters also feature overload and over-temperature control, protecting both the vehicle and users.

Pure
Sine Wave

Modified
Sine Wave

Selecting the right inverter

START

Do you know the appliances to be connected?

Yes   No

A   Are appliances to be used mostly from column A, B, or C below?   C

B

Are appliances used regularly for long periods?

No   Yes

Do any appliances have variable power control?

Yes

No

Modified Sine Wave Inverter Recommended

Pure Sine Wave Inverter Recommended
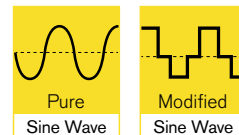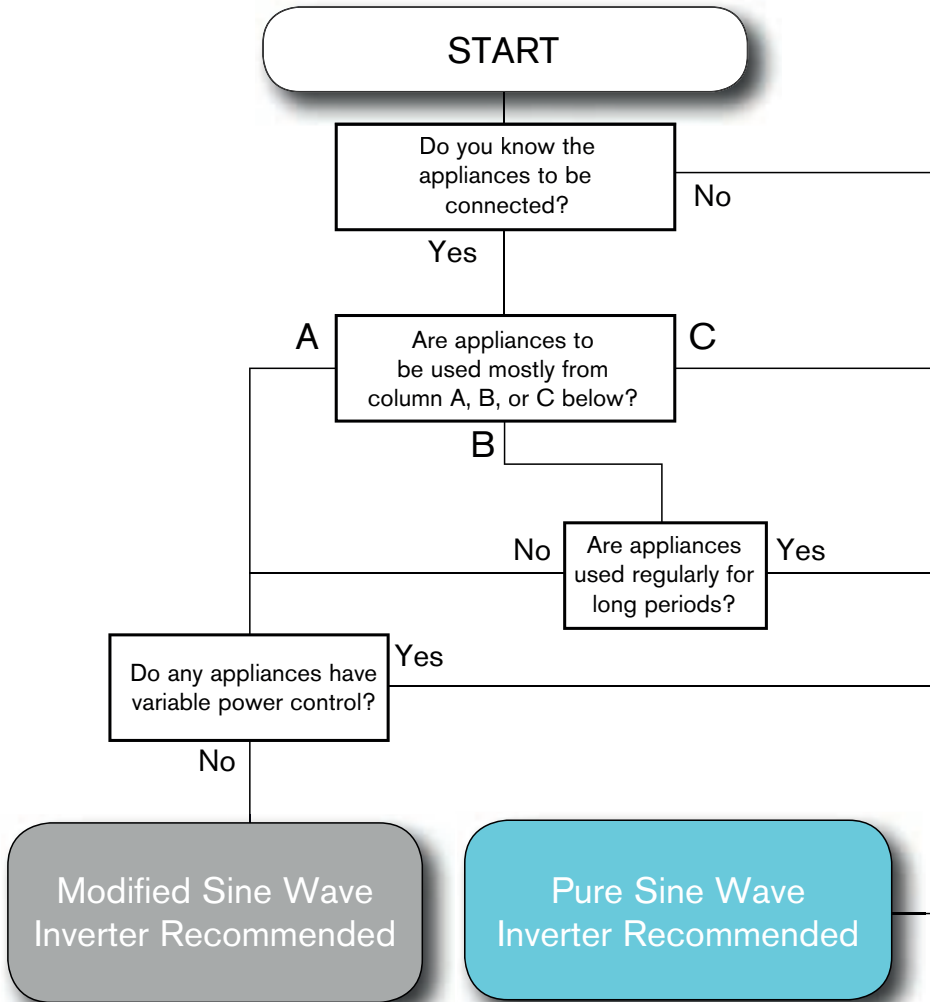
Selecting Inverter Size

Rated Power

Find the power rating for all appliances that could be used at the same time. If only the operating current is shown then use the following formula to calculate the power:

Power (Watts) = Current x 240

Examples
Laptop   150W
Angle grinder   500W
Work light   300W
TOTAL   950W

In this instance, a Ring inverter with at least 1000W Output would be recommended.

Surge Power

Check the inverter can handle the startup or surge power required by the equipment. For example, a microwave with a cooking power of 800W can require up to 2400W surge power during startup, therefore an inverter with this surge capability will be needed.

User must ensure the rated power of the inverter is not exceeded. Note: devices such as microwaves, compressors etc. can have instantaneous power surges at start-up, that can be two or three times their rated output.

Compatibility Chart

The following chart shows which appliances are recommended for each type of inverter, including those which are only suitable for pure sine wave inverters.

| Continuous Rating	A Products which are generally compatible with all inverter types	B Products which may be incompatible or not run effectively with modified sine (MSW) inverters	C Products which may cause damage to modified sine (MSW) inverters
10W - 50W	Phone charger / Desk fan	Digital clock / Rechargeable shaver(C)	HID worklights(C) / Night lights(C)
50W - 100W	Portable stereo / DVD player	Fluorescent lamps(C)	Transformerless power tool chargers (C)
100W - 150W	Small LCD TV	Laptop computer	Instant start fluorescent lights
150W - 200W	Inkjet printer		
200W - 300W	Desktop PC	Large Stereo	
300W - 500W	Small electric drill(I) / Small fridge	Variable speed drill(I) / Oxygen concentrator	Laser printers
500W - 750W	Small angle grinder(I)	Microwave oven(I) / Bread maker	
750W - 1000W	Industrial water pump(I)	Coffee machine	
1000W - 1500W	Large angle grinder(I)		
1500W - 2000W	Circular saw(I) / Hot air gun / Vacuum cleaner(I)		
2000W +	Electric chainsaw(I) / Fan heater		

(I) - Inductive loads which may require startup power 2-5 times the continuous power   (C) - Capacitive loads which may create high current spikes on MSW inverters

600W Pure Sine Wave Inverter

- 600 watt pure sine wave output
- Operating mode & fault indicators
- Power saving mode
- Up to 12 hours continuous use
- Compact heavy duty extruded casing
- Optional multi-function LCD display (RINVLCD)
- Optional battery sensor module (RINVCM)
- Optional bluetooth module (RINVBM)

600W Pure Sine Wave	12.4 LCD Display	2.1A USB	E Approved	x1 UK/EU Socket
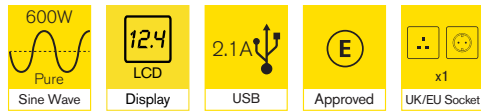
1000W Pure Sine Wave Inverter

- 1000 watt pure sine wave output
- Integrated multi-function LCD display
- Operating mode & fault indicators
- Power saving mode
- Up to 12 hours continuous use
- Compact heavy duty extruded casing
- Optional battery current sensor
- Optional bluetooth module

1000W Pure Sine Wave	12.4 LCD Display	2.1A USB	E Approved	x2 UK/EU Socket
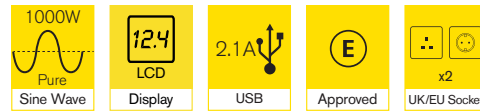
Specification	UK/Euro 12V	1000W UK/Euro 12V/24V	
Product Code:	UK: RINVPA6 Euro: REINVPA6	UK: RINVPA10 Euro: REINVPA10	UK: RINVPB10 Euro: REINVPB10
Cont Power Rating (up to 12 hrs):	600 watts	1000 watts	1000 watts
Peak Power Rating (up to 200ms):	1200 watts	2000 watts	2000 watts
Output Voltage:	200/220/230/240V AC ±3%	200/220/230/240V AC ±3%	200/220/230/240V AC ±3%
Output Frequency:	50/60Hz ±0.05%	50/60Hz ±0.05%	50/60Hz ±0.05%
Output Waveform:	Pure Sine Wave	Pure Sine Wave	Pure Sine Wave
Input Voltage Range:	9.5V-16.5V (12V nom)	9.5V-16.5V (12V nom)	19V-33V (24V nom)
Input Current:	59amps (max)	98amps (max)	49amps (max)
Efficiency @ 75% Load:	90%	90%	90%
No Load Current:	< 1.50amp	< 1.6amp	< 1.1amp
Power Saving Mode:	Yes	Yes	Yes
Power Saving Mode Current:	< 0.2amp	< 0.2amp	< 0.2amp
Low Battery Alarm:	10.0V-11.5V ±0.5 volt	10.0V-11.5V ±0.5 volt	20.0V-23.0V ±0.5 volt
Low Battery Shutdown:	9.5V-11.0V ±0.5 volt	9.5V-11.0V ±0.5 volt	19.0V-22.0V ±0.5 volt
Thermal Protection:	60 ± 10°C	60 ± 10°C	60 ± 10°C
AC Mains Outlets:	UK: 1 x 13A 3-pin UK Euro: 1 x 10A 2-pin Shuko	UK: 2 x 13A 3-pin UK Euro: 2 x 10A 2-pin Shuko	UK: 2 x 13A 3-pin UK Euro: 2 x 10A 2-pin Shuko
USB Port:	2.1amp	2.1amp	2.1amp
LCD Display Panel:	No	Yes	Yes
Display Panel Port:	Yes	Yes	Yes
Current Sensor Port:	Yes	Yes	Yes
Comms Port:	Yes	Yes	Yes
Input Cable Gauge / Length:	14mm² / 95cm	22mm² / 95cm	14mm² / 95cm
Dimensions:	L340 x W170 x H81.5mm	L320 x W247 x H118.5mm	L320 x W247 x H118.5mm
Weight:	2.8kg	4.3kg	4.3kg
Approvals:	CE-LVD / RoHS / WEEE / E-Mark	CE-LVD / RoHS / WEEE / E-Mark	CE-LVD / RoHS / WEEE / E-Mark
Case Quantity:	4 x 1	2 x 1	2 x 1

RING®
CARNATION

2000W Pure Sine Wave Inverter

- 2000 watt pure sine wave output
- Integrated multi-function LCD display
- Operating mode & fault indicators
- Power saving mode
- Up to 12 hours continuous use
- Compact heavy duty extruded casing
- Optional battery current sensor
- Optional bluetooth module

2000W Pure Sine Wave	12.4 LCD Display	2.1A USB	E Approved	x2 UK/EU Socket
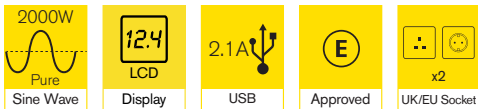
3000W Pure Sine Wave Inverter

- 3000 watt pure sine wave output
- Operating mode & fault indicators
- Up to 12 hours continuous use
- Compact heavy duty extruded casing
- Optional wired remote contrl (RINVWRC)

3000W Pure Sine Wave	E Approved	x2 UK/EU Socket

| Specification	2000W UK/Euro 12V/24V		UK/Euro 12V
Product Code:	UK: RINVPA20 Euro: REINVPA20	UK: RINVPB20 Euro: REINVPB20	UK: RINVP3000 Euro: REINVP3000
Cont Power Rating (up to 12 hrs):	2000 watts	2000 watts	3000 watts
Peak Power Rating (up to 200ms):	4000 watts	4000 watts	6000 watts
Output Voltage:	200/220/230/240V AC ±3%	200/220/230/240V AC ±3%	230V AC±10%
Output Frequency:	50/60Hz ±0.05%	50/60Hz ±0.05%	50Hz
Output Waveform:	Pure Sine Wave	Pure Sine Wave	Pure Sine Wave
Input Voltage Range:	9.5V-16.5V (12V nom)	19V-33V (24V nom)	10V-16V (12V nom)
Input Current:	196amps (max)	98amps (max)	294 amps (max)
Efficiency @ 75% Load:	90%	90%	> 85%
No Load Current:	< 2.0amp	< 1.5amp	< 1.5amp
Power Saving Mode:	Yes	Yes	No
Power Saving Mode Current:	< 0.2amp	< 0.2amp	-
Low Battery Alarm:	10.0V-11.5V ±0.5 volt	20.0V-23.0V ±0.5 volt	10.5V ±1 volt
Low Battery Shutdown:	9.5V-11.0V ±0.5 volt	19.0V-22.0V ±0.5 volt	10.0V ±1 volt
Thermal Protection:	60 ± 10°C	60 ± 10°C	60 ± 10°C
AC Mains Outlets:	UK: 2 x 13A 3-pin UK Euro: 2 x 10A 2-pin Shuko	UK: 2 x 13A 3-pin UK Euro: 2 x 10A 2-pin Shuko	UK: 2 x 13A 3-pin UK Euro: 2 x 10A 2-pin Shuko
USB Port:	2.1amp	2.1amp	No
LCD Display Panel:	Yes	Yes	Yes
Display Panel Port:	Yes	Yes	Yes
Current Sensor Port:	Yes	Yes	No
Comms Port:	Yes	Yes	No
Input Cable Gauge / Length:	38mm² / 95cm	22mm² / 95cm	60mm² / 95cm
Dimensions:	L420 x W247 x H118.5mm	L420 x W247 x H118.5mm	L520 x W286 x H96mm
Weight:	5.9kg	5.9kg	10.8kg
Approvals:	CE-LVD / RoHS / WEEE / E-Mark	CE-LVD / RoHS / WEEE / E-Mark	CE-LVD / RoHS / WEEE
Case Quantity:	2 x 1	2 x 1	2 x 1

# Powering and Charging Systems

Pure Sine Wave Inverters

RCD Inverter 1000W Pure Sine Wave

- Integrated Earth leakage protection (RCD)
- Fully protected against overload, over temperature & low/high voltages
- Heavy duty extruded casing suitable for professional use
- Optional wired remote control (RINVWRC)
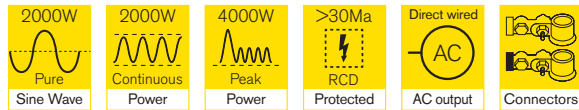
RCD Inverter 2000W Pure Sine Wave

- Integrated Earth leakage protection (RCD)
- Direct wired AC Outputs provides a more integrated solution
- Pure sine wave Output ensures best possible appliance compatibility
- Provides power for up to 12 hours of continuous use
- LED display showing operating mode & fault conditions
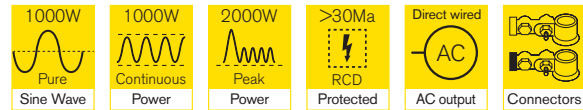
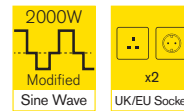| Specification	1000W UK/Euro 12V/24V		2000W UK/Euro 12V/24V	
Product Code:	UK: RINVPR1000	UK: RINVPR1024	UK: RINVPR2000	UK: RINVPR2024
Cont Power Rating (up to 12 hrs):	1000 watts	1000 watts	2000 watts	2000 watts
Surge Power Rating (up to 1sec):	2000 watts	2000 watts	4000 watts	4000 watts
Output Voltage:	230V AC±10%	230V AC±10%	230V AC±10%	230V AC±10%
Output Frequency:	50Hz	50Hz	50Hz	50Hz
Output Waveform:	Pure Sine Wave	Pure Sine Wave	Pure Sine Wave	Pure Sine Wave
Input Voltage Range:	10V-16V	20V-30V	10V-16V	20V-30V
Efficiency:	>85%	>85%	>85%	>85%
No Load Current Draw:	<1.3amp	<1.0amp	<1.5amp	<1.0amp
RCD Trip Current:	30mA	30mA	30mA	30mA
Low Battery Alarm:	10.5 ± 1 volt	21 ± 1 volt	10.5 ± 1 volt	21 ± 1 volt
Low Battery Shutdown:	10.0 ± 1 volt	20 ± 1 volt	10.0 ± 1 volt	20 ± 1 volt
Thermal Protection:	60 ± 10ºC	60 ± 10ºC	60 ± 10ºC	60 ± 10ºC
USB Port:	2A (max)	2A (max)	No	No
Remote Control Port:	Yes	Yes	Yes	Yes
Dimensions:	394 x 224 x 96	394 x 224 x 96	385 x 290 x 96	385 x 290 x 96
Weight:	6.3kg	6.3kg	7.7kg	7.7kg
Case Quantity:	2 x 1	2 x 1	2 x 1	2 x 1

1000W Modified Sine Wave Inverter

- 1000 watt modified sine wave output
- Operating mode & fault indicators
- Up to 12 hours continuous use
- Compact heavy duty extruded casing
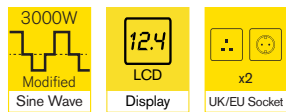- Optional multi-function LCD display
- Optional current sensor module

| 1000W Modified Sine Wave | 2.1A USB | x1 UK/EU Socket |
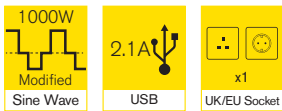
2000W Modified Sine Wave Inverter

- 2000 watt modified sine wave output
- Operating mode & fault indicators
- Up to 12 hours continuous use
- Compact heavy duty extruded casing
- Optional multi-function LCD display
- Optional current sensor module

| 2000W Modified Sine Wave | x2 UK/EU Socket |

Specification

	1000W UK/Euro 12V/24V		2000W UK/Euro 12V/24V	
Product Code:	UK: RINVMA10 Euro: REINVMA10	UK: RINVMB10 Euro: REINVMB10	UK: RINVMA20 Euro: REINVMA20	UK: RINVMB20 Euro: REINVMB20
Cont Power Rating (up to 12 hrs):	1000 watts	1000 watts	2000 watts	2000 watts
Peak Power Rating (up to 200ms):	2000 watts	2000 watts	4000 watts	4000 watts
Output Voltage:	230 AC ±3%	230 AC ±3%	230 AC ±10%	230 AC ±3%
Output Frequency:	50Hz ±0.05%	50Hz ±0.05%	50Hz ±0.05%	50Hz ±0.05%
Output Waveform:	Modified Sine Wave	Modified Sine Wave	Modified Sine Wave	Modified Sine Wave
Input Voltage Range:	10.0V-16V (12V nom)	20V-32V (24V nom)	10.0V-16V (12V nom)	20V-32V (24V nom)
Input Current:	98amps (max)	49amps (max)	196amps (max)	98amps (max)
Efficiency @ 75% Load:	89%	89%	89%	89%
No Load Current:	< 0.70amp	< 0.45amp	< 0.80amp	< 0.55amp
Power Saving Mode:	No	No	No	No
Power Saving Mode Current:	-	-	-	-
Low Battery Alarm:	10.5V ±0.5 volt	21.0V ±0.5 volt	10.5V ±0.5 volt	21.0V ±0.5 volt
Low Battery Shutdown:	10.0V ±0.5 volt	20.0V ±0.5 volt	10.0V ±0.5 volt	20.0V ±0.5 volt
Thermal Protection:	60 ± 10°C	60 ± 10°C	60 ± 10°C	60 ± 10°C
AC Mains Outlets:	UK: 1 x 13A 3-pin UK Euro: 1 x 10A 2-pin Shuko	UK: 1 x 13A 3-pin UK Euro: 1 x 10A 2-pin Shuko	UK: 2 x 13A 3-pin UK Euro: 2 x 10A 2-pin Shuko	UK: 2 x 13A 3-pin UK Euro: 2 x 10A 2-pin Shuko
USB Port:	2.1amp	2.1amp	No	No
LCD Display Panel:	No	No	No	No
Display Panel Port:	Yes	Yes	Yes	Yes
Current Sensor Port:	Yes	Yes	Yes	Yes
Comms Port:	No	No	No	No
Input Cable Gauge / Length:	14mm² / 95cm	14mm² / 95cm	38mm² / 95cm	22mm² / 95cm
Dimensions:	L340 x W170 x H81.5mm	L340 x W170 x H81.5mm	L340 x W170 x H162mm	L340 x W170 x H162mm
Weight:	2.7kg	2.7kg	4.6kg	4.6kg
Approvals:	CE-LVD/CE-EMC/RoHS/WEEE	CE-LVD/CE-EMC/RoHS/WEEE	CE-LVD/CE-EMC/RoHS/WEEE	CE-LVD/CE-EMC/RoHS/WEEE
Case Quantity:	4 x 1	4 x 1	2 x 1	2 x 1

# Powering and Charging Systems

3000W Modified Sine Wave Inverter

• 3000 watt modified sine wave output
• Integrated multi-function LCD display
• Operating mode & fault indicators
• Up to 12 hours continuous use
• Compact heavy duty extruded casing
• Optional battery current sensor

3000W Modified Sine Wave	12.4 LCD Display	x2 UK/EU Socket

4000W Modified Sine Wave Inverter

• 4000 watt modified sine wave output
• Integrated multi-function LCD display
• Operating mode & fault indicators
• Up to 12 hours continuous use
• Compact heavy duty extruded casing
• Optional battery current sensor

4000W Modified Sine Wave	12.4 LCD Display	x2 UK Socket
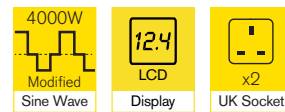
Specification	UK/Euro 12V	UK 12V
Product Code:	UK: RINVMA30 Euro: REINVMA30	UK: RINVMA40
Cont Power Rating (up to 12 hrs):	3000 watts	4000 watts
Peak Power Rating (up to 200ms):	6000 watts	8000 watts
Output Voltage:	230 AC ±3%	230 AC ±3%
Output Frequency:	50Hz ±0.05%	50Hz ±0.05%
Output Waveform:	Modified Sine Wave	Modified Sine Wave
Input Voltage Range:	10.0V-16V (12V nom)	10.0V-16V (12V nom)
Input Current:	294amps (max)	392amps (max)
Efficiency @ 75% Load:	89%	89%
No Load Current:	< 0.90amp	< 1.0amp
Power Saving Mode:	No	No
Power Saving Mode Current:	-	-
Low Battery Alarm:	10.5V ±0.5 volt	10.5V ±0.5 volt
Low Battery Shutdown:	10.0V ±0.5 volt	10.0V ±0.5 volt
Thermal Protection:	60 ± 10°C	60 ± 10°C
AC Mains Outlets:	UK: 2 x 13A 3-pin UK Euro: 2 x 10A 2-pin Shuko	UK: 2 x 13A 3-pin UK Euro: 2 x 10A 2-pin Shuko
USB Port:	No	No
LCD Display Panel:	Yes	Yes
Display Panel Port:	Yes	Yes
Current Sensor Port:	Yes	Yes
Comms Port:	No	No
Input Cable Gauge / Length:	60mm² / 95cm	38mm² x 2 / 95cm
Dimensions:	L400 x W170 x H162mm	L460 x W170 x H162mm
Weight:	5.7kg	7.0kg
Approvals:	CE-LVD / CE-EMC / RoHS / WEEE	CE-LVD / CE-EMC / RoHS / WEEE
Case Quantity:	2 x 1	2 x 1

Inverter Accessories

Multi-function LCD Display

- Multi-function LCD display for inverters with no screen
- Mount inverter display in a more convenient location
- Complete with fixing screws and encaps
- Compatible with RINVPA, RINVBP and RINVMA models of inverters as applicable

12.4 LCD Display | 6m Cable length | x4 Fixings
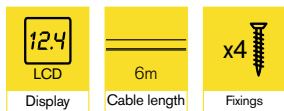
Specification	UK/Euro
Product Code:	RINVLCD
Data Cable Length:	6m
Dimensions:	99.5 x 70 x 27.8mm
Weight:	0.23kg
Approvals:	CE-EMC / RoHS / WEEE / E-Mark
Case Quantity:	50 x 1

Mount Inverter Display Frame

- Mount inverter display in a more convenient location
- Complete with fixing screws and encaps
- Compatible with RINVPA, RINVBP and RINVMA models of inverters as applicable

6m Cable length | x4 Fixings
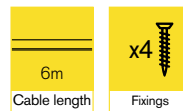
Specification	UK/Euro
Product Code:	RINVFRM
Data Cable Length:	6m
Dimensions:	99.5 x 70 x 27.8mm
Weight:	0.19kg
Approvals:	RoHS / WEEE
Case Quantity:	50 x 1

Battery Current Sensor

Provides the operator with indication of remaining operating time before the power will be depleted or vehicle needs starting.

- Allows indication of time remaining before battery is flat
- Provides monitoring of inverter battery current
- Improves power management
- Temperature compensation sensor
- Compatible with RINVPA, RINVBP and RINVMA models of inverters

Specification	UK/Euro
Product Code:	RINVCM
Input Voltage:	12V DC (nominal)
Input/Output Current:	500A (max)
Battery Cables Gauge / Length:	2 x 38mm² / 30cm, 1 x 22mm² / 30cm
Data Cable Length:	1m / 3m / 1.75m
Temp Sensor Cable Length:	3m
+12V Power Cable Length:	1.75m
Dimensions:	120 x 91.2 x 40mm
Weight:	1.0kg
Approvals:	CE-EMC / RoHS / WEEE / E-Mark
Case Quantity:	20 x 1

Current Sensor Installation

1. Load (−) cable
2. Comms cable
3. +12V Power cable
4. Temperature sensor cable
Fuse
Cables provided with inverter

LED indicator | 6m Cable length | x4 Fixings
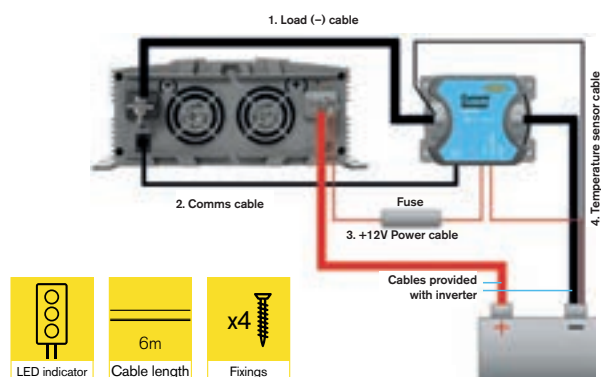
# Powering and Charging Systems

DC-DC Smart Battery Charger

Compatible with Smart alternators

A DC-DC Smart Charger is able to take energy from DC sources such as a vehicle alternator or solar panel then convert it to a multi-stage output for charging an auxiliary battery. The unit is particularly suited to utility vehicles, caravans, motorhomes and boats where power may be required away from a mains electrical supply. As an alternative to split charge relay systems, the unit can provide a faster, more intelligent charging solution to ensure batteries are kept in good condition with power always available. It also has a programmable input voltage range to allow compatibility with smart alternators.

- Converts power from a vehicle's main battery into multistage output for charging an aux battery
- Maximises charge into the auxiliary battery
- Programmable for most battery types
- Low battery shut off to protect main battery
- Sleep mode to reduce battery strain
- LCD screen for clear readings
- Temperature compensation for more accurate results

Fully automatic	Display	Solar (MPPT)	10-45V Input voltage	12V Output voltage	Sleep mode	Temperature Compensation

Example Connection
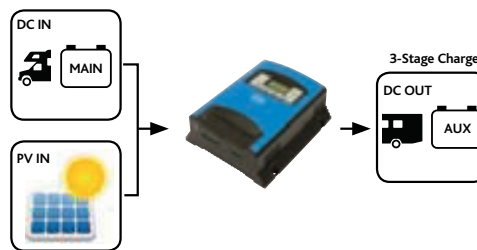
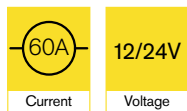| Specification	UK
Product Code:	RSCDC30
Input Voltage:	PV: 10-50V DC: 12.6-50V
Max Output Voltage:	14.8v
Max Output Current:	30A
Sleep Mode Current:	20mA
MPPT:	Yes
Temperature Compensation:	25˚C ±20mV˚C
Operating Temperature:	-10˚C to 45˚C
Dimension:	L236 x W203 x H87mm
Weight:	1.8kg
Pack Quantity:	1 x 1
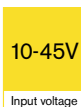
Power Protection

Whether the vehicle is fitted solely with the chassis battery, or is fitted with a secondary auxiliary battery, the battery shield is a crucial piece of protective equipment that prevents flat batteries and engine start failure by interrupting power supply to ancillary equipment.

Battery Shield

The Ring Battery Shield is the ideal solution to prevent flat batteries and battery failure by over discharging. Suitable for extra power for accessories up to 60A.

- 10 x Programmable settings
- Ease of programme change
- Auto mode selection (12V/24V)
- Connection for remote alarm
- Switch connection remote on/off

- IP65
- Built in heat sink
- Supplied with installation kit and instructions

60A Current | **12/24V** Voltage

Battery Shield

The Ring Battery Shield is the ideal solution to prevent flat batteries and battery failure by over discharging. Suitable for extra power for accessories up to 100A.

- 10 x Programmable settings
- Ease of programme change
- Auto mode selection (12V/24V)
- Connection for remote alarm
- Switch connection remote on/off

- IP65
- Built in heat sink
- Supplied with installation kit and instructions

100A Current | **12/24V** Voltage

Specification	UK
Product Code:	RTBS60
Case Quantity:	5 x 1
Pack Dimensions:	H37 x W100 x D80mm
Packaging:	Carton
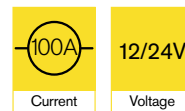
Specification	UK
Product Code:	RTBS100
Case Quantity:	5 x 1
Pack Dimensions:	H52 x W127 x D105mm
Packaging:	Carton

Typical installation

Single Battery System
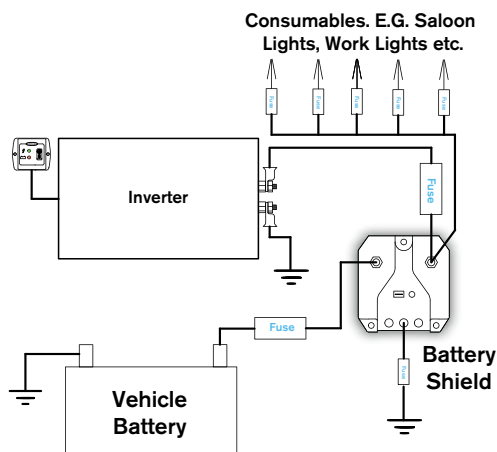
**Auxiliary Battery System**
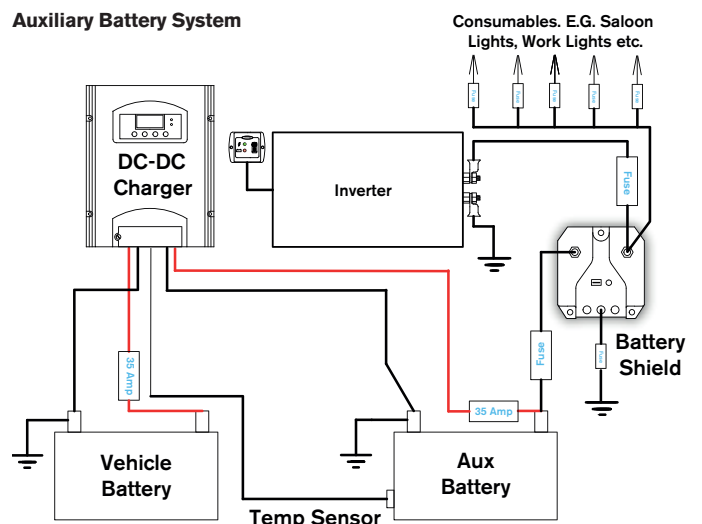
Ancillary Lighting

Safety at work is paramount to us all, even more so when your workspace is mobile. At the kerbside or on work sites, dangerous operating positions may be unavoidable, especially as third parties might also be involved. Work lighting will help you and your team be seen and be safe.

Be Seen - Be Safe.

Ancillary Lighting

Contents
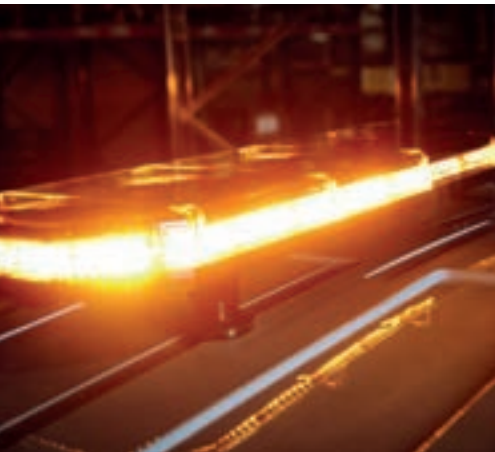
Technical understanding of LEDs

What is an LED?

LED stands for light emitting diode. They are semiconductors that emit light when an electric current is passed through them. Light is produced when the current combines with the semiconductor material.

LEDs are increasingly being used as alternatives to other traditional forms of lighting such as halogen, fluorescent and incandescent lights.

Benefits of LEDs

The benefits of upgrading to LED are universal and relevant to all LED products. These range from safety improvements, improved light output and light up times, to long-term financial benefits as a result of longer life, low power consumption and reduced vehicle down time.

Long Life – LED products are designed to offer optimum life with low maintenance. With LEDs having up to 50,000 hours life they are designed into the units as a non-replaceable light source making bulb changes a thing of the past.

Low Power – Reduced power consumption enables the user to benefit from a longer light up time without running a vehicle engine to preserve battery life. Alternatively, more lamps can be installed for an increased light output without exceeding previous power requirements from halogen lamps.

What is a Lumen?

A lumen is the International System of Units for measuring the total amount of visible light.

The intensity of light or illuminance is measured in Lux. Lux = 1 lumen per square metre. All lumen values quoted are actual measurements taken in our laboratory and adhere to recommended industry best practice.
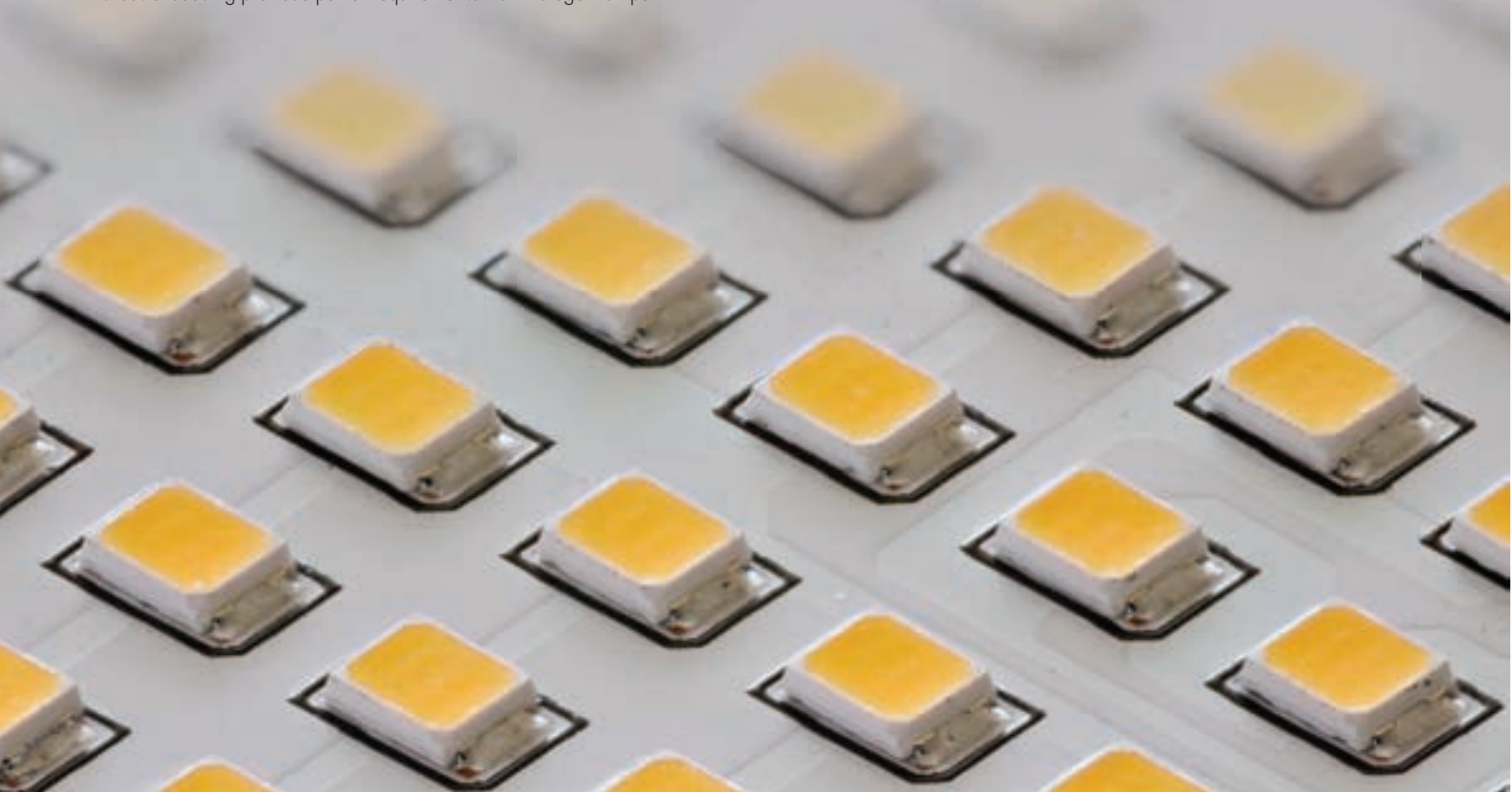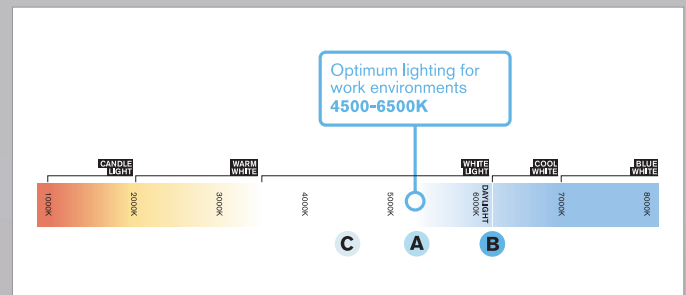
Colour Temperature of LEDs

The colour temperature of a light source relates to the colour of light emitted. It is measured in degrees Kelvin.
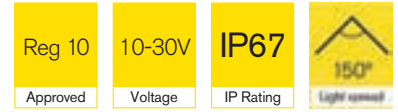White daylight has a range between 5000K and 6000K.
Traditional incandescent lights has a range between 2,500K and 3000K, producing an orange/red light.
LEDs can have a source of light ranging from 2,000K to 10,000K.

Optimum lighting for work environments
4500-6500K

CANDLE LIGHT · WARM WHITE · WHITE LIGHT · COOL WHITE · BLUE WHITE

1000K · 2000K · 3000K · 4000K · 5000K · DAYLIGHT 6000K · 7000K · 8000K

C · A · B

Fluorescent LEDs

Unlike other LED lights, no dots or point source appears in the light.

Reg 10	10-30V	IP67	150°
Approved	Voltage	IP Rating	Light spread

RC5021   RC5022

RC5024   RC5025   RC5029

Key Features

174mm   124mm
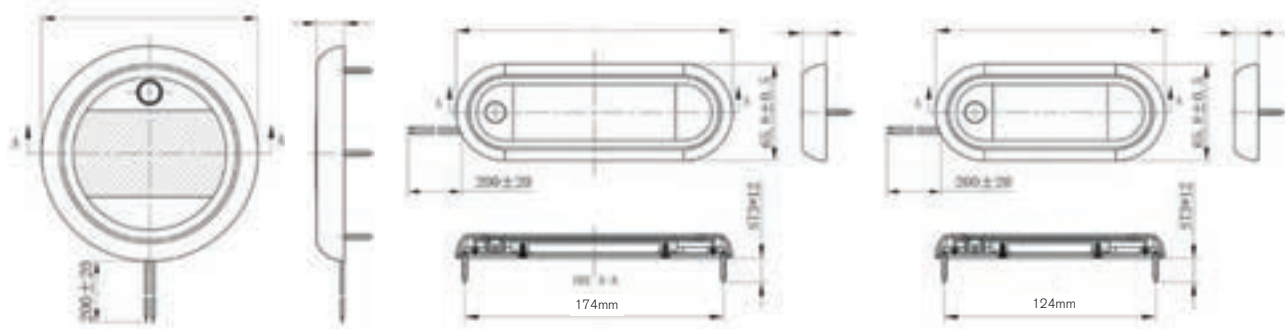
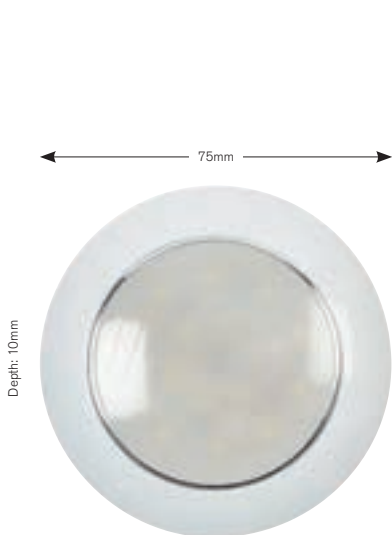| Specification	Circular		Oval		PIR
Function:	No switch	Touch switch	No switch	Touch switch	Touch switch
Product Code:	RC5021	RC5022	RC5024	RC5025	RC5029
Watts:	10w	10w	7.2w	7.2w	5w
Current Draw:	0.8A	0.8A	0.6A	0.6A	0.42A
Light Source:	24 x LED	24 x LED	18 x LED	18 x LED	12 x LED
Lumens:	600	600	425	425	300
Colour Temperature:	4500K	4500K	4500K	4500K	4500K
Cable Length:	200mm	200mm	200mm	200mm	200mm

Ancillary Lighting

LED Slimline Lights

As the name suggests this range of light units are perfect for where space is at a premium.
Their compact design allows them to be fitted a in low level roof linings or discreetly within the cab of
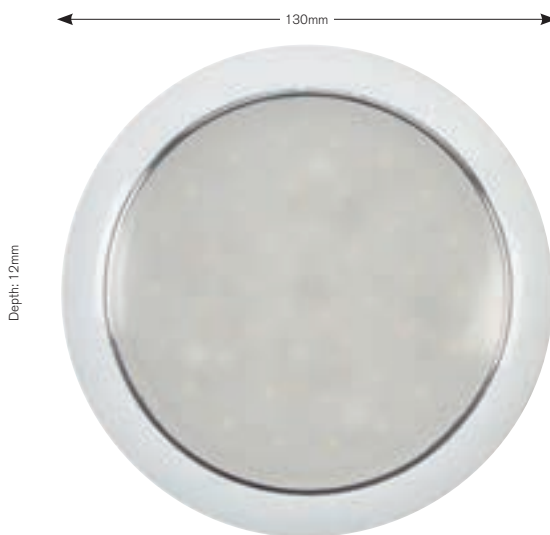a vehicle for additional light.

12V Voltage

Reg 10 Approved

| 75mm |
| Depth: 10mm |

RC5008B

| 130mm |
| Depth: 12mm |

RC5009B

| 185mm | 100mm |
| Depth: 12mm |

RC5010B

| 220mm | 150mm |
| Depth: 12mm |

RC5011B

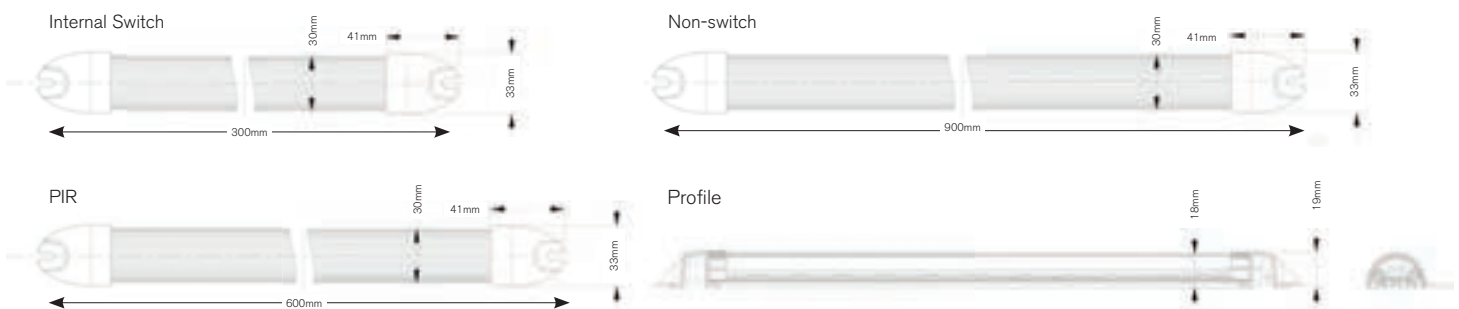| Specification	Round		Rectangular	
Function:	No switch	No switch	No switch	No switch
Product Code:	RC5008B	RC5009B	RC5010B	RC5011B
Watts:	1w	3w	3.6w	3.2w
Current Draw:	0.1A	0.3A	0.3A	0.3A
Light Source:	16 x LED	42 x LED	63 x LED	60 x LED
Lumens:	70	180	200	200
Colour Temperature:	-	-	-	-
Cable Length:	125mm	125mm	125mm	125mm

LED Baton Lights

LED baton lights are ideal for illuminating a large interior area. Equivalent to fluorescent tubes in an office, but with LED which will draw a much lower wattage. Positioned centrally, these will provide a wide spread of light. Ideal for van rear load areas, welfare vehicles, cabins, trailers, fridges, etc.

- Aluminium housing and polycarbonate lens
- Cable length 200mm

Reg 10	10-30V	180°
Approved	Voltage	Light spread

Internal Switch

PIR

Non-switch

Key Features

Internal Switch

30mm 41mm 33mm 300mm

Non-switch

30mm 41mm 33mm 900mm

PIR

30mm 41mm 33mm 600mm

Profile

18mm 19mm

Specification	Non-switched			PIR			Internal Switch		
Function:	300mm	600mm	900mm	300mm	600mm	900mm	300mm	600mm	900mm
Product Code:	RCV5012	RCV5013	RCV5014	RCV5015	RCV5016	RCV5017	RCV5018	RCV5019	RCV5020
Watts:	6w	12w	18w	6w	12w	18w	6w	12w	18w
Current Draw:	0.5A	1A	1.5A	0.5A	1A	1.5A	0.5A	1A	1.5A
Light Source:	12 x LED	24 x LED	36 x LED	12 x LED	24 x LED	36 x LED	12 x LED	24 x LED	36 x LED
Lumens:	400	800	1250	400	800	1250	400	800	1250

Ancillary Lighting

LED Strip Light

- Link up to 6 units together
- Aluminium housing and Polycarbonate lens
- Cable length 200mm

12V	Reg 10		
Voltage	Approved		170° Light spread

Specification

Function:	500mm Interior lighting
Product Code:	RC3010
Watts:	4.8w
Current Draw:	0.4A
Light Source:	21 x LED
Lumens:	470
Light Spread:	170°
Colour Temperature:	6200K

LED Strip Light

- Aluminium housing and Polycarbonate lens
- Cable length 200mm

Key Features

IP53	
IP Rating	120° Light spread

12.6mm 345.3mm

Specification

Function:	Interior lighting
Product Code:	RC3002
Watts:	6w
Current Draw:	0.5A
Light Source:	16 x LED
Lumens:	280
Colour Temperature:	-
Cable Length:	-

Slim Line LED Lamp

Emits 100 lumens of bright light. The high colour temperature of 6000K gives a very white light. Long life and low power. Reg 10 approved. Ideal for lockers, racking systems and steps.

- Slim line LED step lamp
- Emits 100 lumens
- 6000K colour temperature
- Long life and low power
- Reg 10 approved

Specification

Product Code:	RCV5101
Product Dimensions:	H17 x W52 x D32mm
Weight:	0.0210kg
Voltage:	10-30V DC
Wattage:	1w

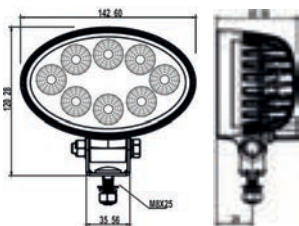| Reg 10	10-30V
Approved	Voltage

LED Work Lamps

A range of durable LED work lights to provide bright, clear and crisp illumination over large areas – essential for safety at work.

8 LED Oval Work Lamp

Reg 10	10-30V	IP67	
Approved	Voltage	IP Rating	Medium flood

Key Features

Specification

Function:	Medium Flood
Product Code:	RCV9603
Lens:	Clear
Watts:	24w
Current Draw:	2A
Light Source:	8 x 3w LED
Light Output:	2000 Lumens
Housing Material:	Diecast Aluminium
Lens Material:	Polycarbonate
Cable Length:	500mm

6 LED Cube Work Lamp

Reg 10	10-30V	IP67	
Approved	Voltage	IP Rating	Medium flood

Key Features
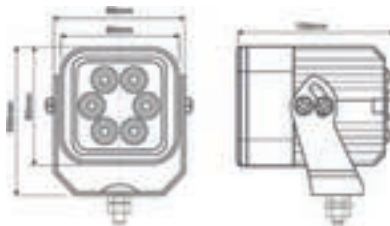
Specification

Function:	Medium Flood
Product Code:	RCV9600
Lens:	Clear
Watts:	18w
Current Draw:	1.5A
Light Source:	6 x 3w LED
Light Output:	1500 Lumens
Housing Material:	Diecast Aluminium
Lens Material:	Polycarbonate
Cable Length:	480mm

4 LED Work Lamp

Reg 10	12/24V	IP67	
Approved	Voltage	IP Rating	Medium flood

Key Features
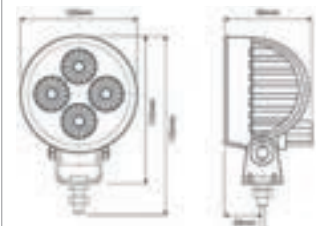
Specification

Function:	Medium Flood
Product Code:	RCV9594
Lens:	Clear
Watts:	12w
Current Draw:	1A
Light Source:	4 x 3w LED
Light Output:	700 Lumens
Housing Material:	Diecast Aluminium
Lens Material:	Polycarbonate
Cable Length:	500mm

Scene Lighting

LED Work Lamps

4 LED Work Lamp

ECE Approved	12/48V Voltage	IP66 IP Rating	Medium flood
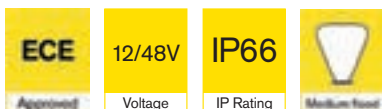
Key Features
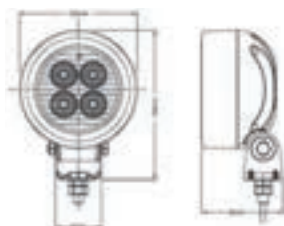
Specification

Function:	Flood
Product Code:	RCV9590
Lens:	Clear
Watts:	12w
Current Draw:	1A
Light Source:	4 x 3w LED
Light Output:	800 Lumens
Housing Material:	Diecast Aluminium
Lens Material:	Polycarbonate
Cable Length:	2000mm

4 LED Work Lamp

ECE Approved	12/48V Voltage	IP66 IP Rating	Medium flood
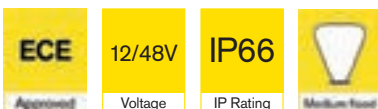
Key Features
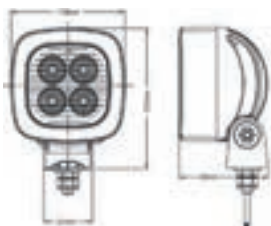
Specification

Function:	Flood
Product Code:	RCV9591
Lens:	Clear
Watts:	12w
Current Draw:	1A
Light Source:	4 x 3w LED
Light Output:	800 Lumens
Housing Material:	Diecast Aluminium
Lens Material:	Polycarbonate
Cable Length:	2000mm

6 LED Work Lamp

9-32V Voltage	IP67 IP Rating	Wide flood
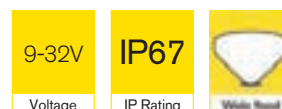
Key Features
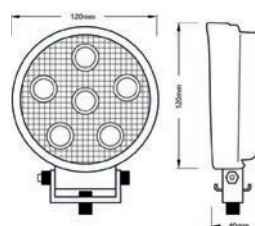
Specification

Function:	Flood
Product Code:	RCV9595
Lens:	Clear
Watts:	18w
Current Draw:	1.5A
Light Source:	6 x 3w LED
Light Output:	900 Lumens
Housing Material:	Diecast Aluminium
Lens Material:	Polycarbonate
Cable Length:	500mm

![RING CARNATION logo]

5 LED Work Lamp

9-32V	IP67	
Voltage	IP Rating	Wide flood

Key Features
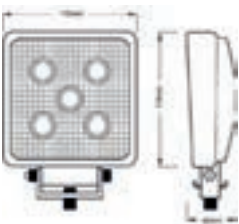
Specification

Function:	Flood
Product Code:	RCV9596
Lens:	Clear
Watts:	15w
Current Draw:	1.3A
Light Source:	5 x 3w LED
Light Output:	700 Lumens
Housing Material:	Diecast Aluminium
Lens Material:	Polycarbonate
Cable Length:	500mm

5 LED Mag-mount Work Lamp

CE	Magnet	9-33V	IP67
Approved	Magnet	Multi voltage	IP Rating

Medium flood			

Key Features
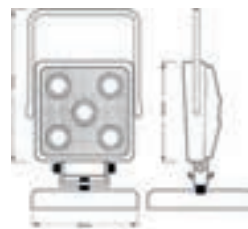
Specification

Function:	LED Mag-mount work lamp
Product Code:	RCV9597
Lens:	Clear
Watts:	10w
Current Draw:	0.8A
Light Source:	5 x 2w LED
Light Output:	700 Lumens
Housing Material:	Diecast Aluminium
Lens Material:	Polycarbonate
Cable Length:	3000mm

Rechargeable Magnetic Mount LED Work Lamp

600 Lumens	12V DC plug	Magnet	Mains adaptor
Rechargeable	USB compatible	8h Operating time	Wide flood
5h Charging time	LED indicator		

Key Features
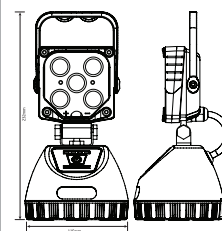
Specification

Function:	Rechargeable Magnetic Mount LED Work Lamp
Product Code:	RCV9605 (UK) RCV9606 (Euro)
Light Output:	600 lumens (high) 300 lumens (low)
Battery:	7.4V 4400mA Li-ion battery
Output Current:	USB1: 2.0A
Mains Adaptor:	Input: 230V AC 50/60Hz Output: 5V DC 2000mA
Dimensions:	H232 x W115 x D97mm
Weight:	0.74kg
Pack Quantity:	10 x 1

Ancillary Lighting
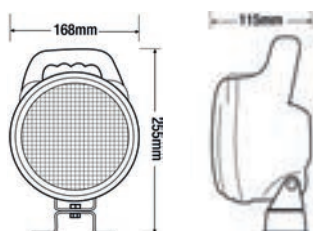
Scene Lighting

Halogen Work Lamps

A range of robust and weatherproof work lights that will stand up to knocks and heavy use indoors or outside. Ideal for contractors, tradesmen, and DIY enthusiasts.

Halogen Work Lamp

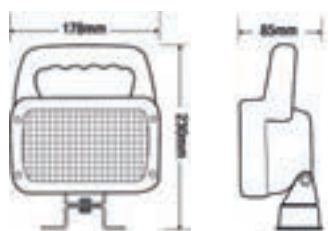12/24V Voltage | H3 Bulb required! | Wide flood

Key Features

Specification

Function:	Wide Flood
Product Code:	RCV9540
Lens:	Clear
Watts:	55w @ 12V 70w @ 24V
Current Draw:	4.6A @ 12V 2.9A @ 24V
Light Source:	R453 R460
Light Output:	680 Lumens
Housing Material:	Polypropylene
Lens Material:	Polycarbonate
Cable Length:	290mm

Halogen Work Lamp

12/24V Voltage | H3 Bulb required! | Wide flood

Key Features

Specification

Function:	Wide Flood
Product Code:	RCV9550
Lens:	Clear
Watts:	55w @ 12V 70w @ 24V
Current Draw:	4.6A @ 12V 2.9A @ 24V
Light Source:	R453 R460
Light Output:	620 Lumens
Housing Material:	Polypropylene
Lens Material:	Polycarbonate
Cable Length:	-

Halogen Work Lamp

12/24V Voltage | H3 Bulb required! | Wide flood

Key Features
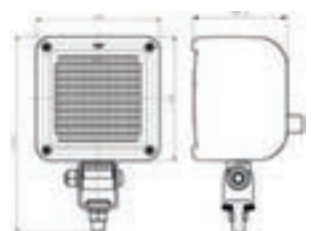
Specification

Function:	Wide Flood
Product Code:	RCV9586
Lens:	Clear
Watts:	55w @ 12V 70w @ 24V
Current Draw:	4.6A @ 12V 2.9A @ 24V
Light Source:	R453 R460
Light Output:	860 Lumens
Housing Material:	Polypropylene
Lens Material:	Polycarbonate
Cable Length:	-

Halogen Work Lamp

12/24V Voltage | H3 Bulb required! | IP66 IP Rating | Wide flood

Key Features
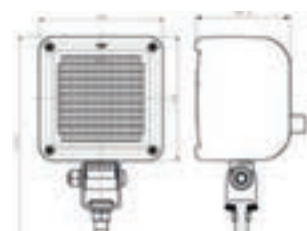
Specification

Function:	Wide Flood
Product Code:	RCV9598
Lens:	Clear
Watts:	55w @ 12V 70w @ 24V
Current Draw:	4.6A @ 12V 2.9A @ 24V
Light Source:	R453 R460
Light Output:	780 Lumens
Housing Material:	Polypropylene
Lens Material:	Polycarbonate
Cable Length:	-

LED Strobes

Be seen and stay safe with a warning strobe featuring high light output and low current draw. All models are synchronisable and have multiple flash patterns.
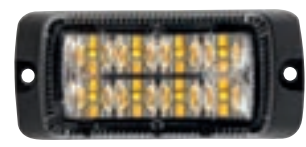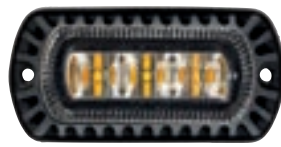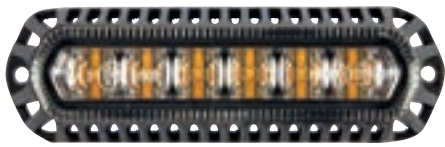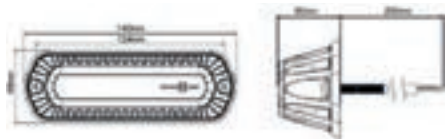
LED Strobe

Reg 10	Reg 65	10-30V	IP67
Approved	Approved	Voltage	IP Rating

Synchronisable | Flash patterns x10 | Surface mounted

Key Features

Specification

Function:	6 LED amber strobe
Product Code:	RCV2210
Watts:	18w
Current Draw:	1.5A
Light Source:	6 x 3w LED
Housing Material:	Diecast Aluminium
Lens Material:	Polycarbonate
Cable Length:	200mm

LED Strobe

Reg 10	Reg 65	10-30V	IP67
Approved	Approved	Voltage	IP Rating

Synchronisable | Flash patterns x10 | Surface mounted

Key Features
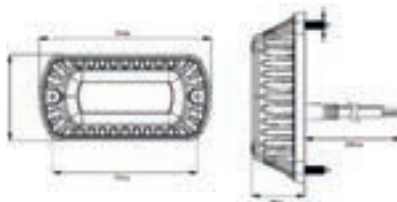
Specification

Function:	3 LED amber strobe
Product Code:	RCV2212
Watts:	9w
Current Draw:	0.75A
Light Source:	3 x 3w LED
Housing Material:	Diecast Aluminium
Lens Material:	Polycarbonate
Cable Length:	200mm

LED Strobe

Reg 10	Reg 65	10-30V	IP67
Approved	Approved	Voltage	IP Rating

Synchronisable | Flash patterns x10 | Surface mounted

Key Features
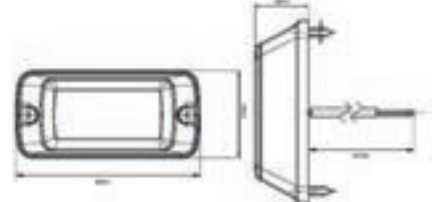
Specification

Function:	8 LED amber strobe
Product Code:	RCV2213
Watts:	24w
Current Draw:	2.0A
Light Source:	8 x 3w LED
Housing Material:	Diecast Aluminium
Lens Material:	Polycarbonate
Cable Length:	200mm

Ancillary Lighting

Hazard Lighting

Slimline Strobes

Ideal to fit inside rear door shuts for additional safety.

Lighting bracket to allow adjustability

LED Strobe

Reg 10	10-30V	IP67	
Approved	Voltage	IP Rating	Synchronisable

Flash patterns x19	Surface mounted

Key Features

LED Strobe

Reg 10	10-30V	IP67	
Approved	Voltage	IP Rating	Flash patterns x19

Surface mounted

Key Features

LED Strobe

Reg 10	Reg 65	10-30V	IP67
Approved	Approved	Voltage	IP Rating

Synchronisable	Flash patterns x10	Surface mounted

Key Features

Specification

Function:	4 LED slimline amber strobe
Product Code:	RCV2214
Watts:	2w
Current Draw:	0.17A
Light Source:	4 x 0.5w LED
Housing Material:	Diecast Aluminium
Lens Material:	Polycarbonate
Flash Patterns:	19
Cable Length:	200mm
Optional Bracket:	RCV2214BR

Specification

Function:	6 LED slimline amber strobe
Product Code:	RCV2215
Watts:	3w
Current Draw:	0.25A
Light Source:	6 x 0.5w LED
Housing Material:	Diecast Aluminium
Lens Material:	Polycarbonate
Flash Patterns:	19
Cable Length:	200mm
Optional Bracket:	RCV2215BR

Specification

Function:	6 LED slimline amber strobe R65
Product Code:	RCV2216
Watts:	18w
Current Draw:	1.5A
Light Source:	6 x 3w LED
Housing Material:	Diecast Aluminium
Lens Material:	Polycarbonate
Flash Patterns:	10
Cable Length:	200mm
Optional Bracket:	RCV2216BR

LED Lightbars

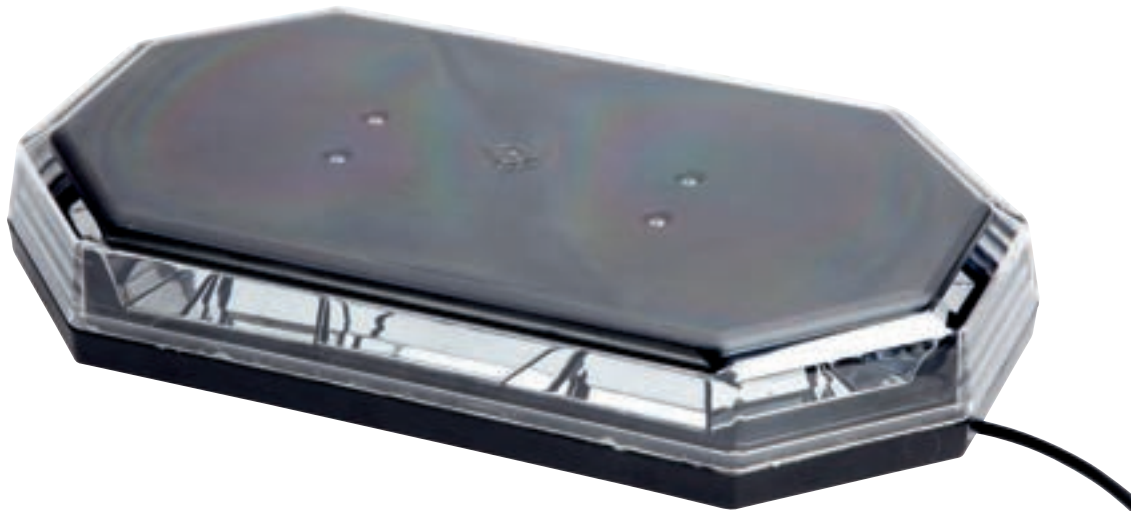Super bright, high quality light bars to meet road traffic regulations.

Ancillary Lighting

LED Modular Light Bars

LED amber light bar. Efficient, long life warning light. Choose from 10 different flash patterns, including rotation, pulse or flash, to best suit your vehicle and application. Rated IP67 - dust and waterproof. Made from resilient ABS and polycarbonate. Features 56x 0.2W LEDs for bright amber light. 2300mm cable. Reg 65 and Reg 10 approved. Ideal for commercial use.

• Amber LED light bar

• Magnetic mount for easy installation

Reg 10	Reg 65	10-30V	IP67	Rotate	Pulse	Flash
Approved	Approved	Voltage	IP Rating			

x10 Flash patterns

Key Features

Mag mount

Single bolt

Single hole installation

Lifter bracket when additional height is required to clear bodywork
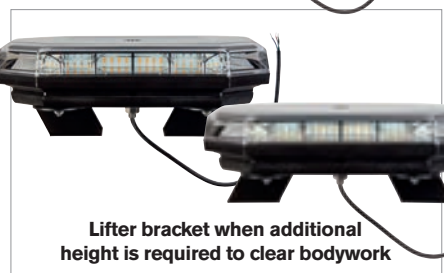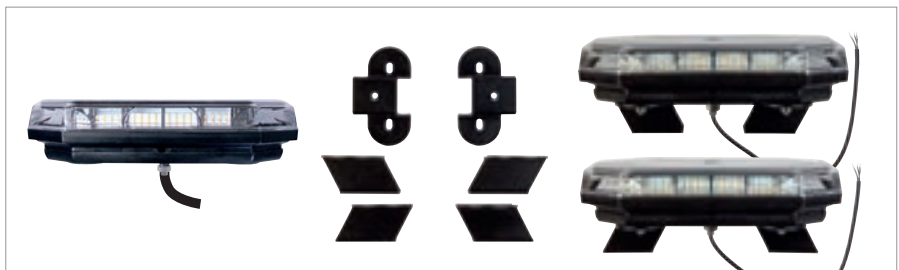
Specification

Function:	Magnetic mount	Single & 4 bolt mount
Product Code:	RCV9812	RCV9813
Watts:	39w	39w
Current Draw:	3.3A	3.3A
Light Source:	56 x 0.5w LED	56 x 0.5w LED
Housing Material:	ABS	ABS
Lens Material:	Polycarbonate	Polycarbonate
Cable Length:	2300mm	250mm
Optional Bracket 50mm:	-	RCV9813RBR

®

CARNATION

LED E Approved Light Bars

LED amber light bar with bolt mount, mounting kit included. Suitable for 12V and 24V vehicles.

- Adjustable legs to alter width
- Mounting kit included

Reg 10	Reg 65	10-30V	IP67		
Approved	Approved	Voltage	IP Rating	Flash patterns	Adjustable legs

Bolt mount	Mounting kit bolt				
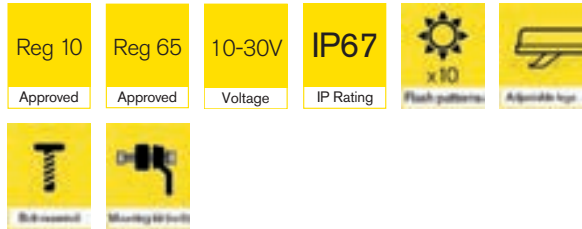
Key Features
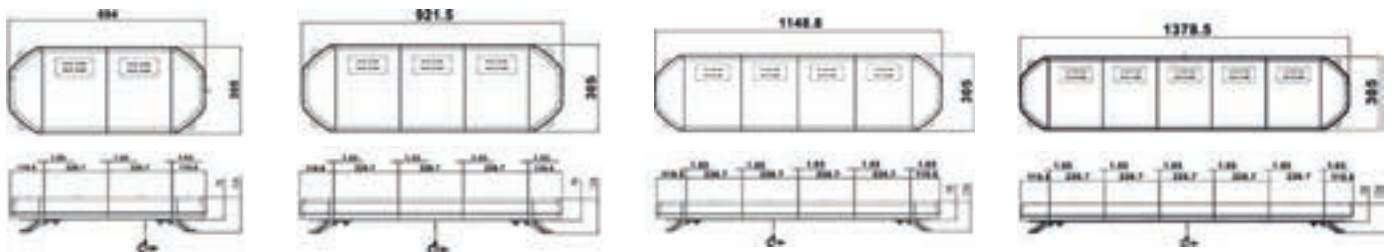
Specification

Function:	Amber light bar	Amber light bar	Amber light bar	Amber light bar
Product Code:	RCV9819	RCV9820	RCV9821	RCV9824
Watts:	79w	109w	127w	140w
Current Draw:	6.6A	9.1A	10.6A	11.7A
Light Source:	100 x 0.5w LED	132 x 0.5w LED	164 x 0.5w LED	196 x 0.5w LED
Housing Material:	ABS	ABS	ABS	ABS
Lens Material:	Polycarbonate	Polycarbonate	Polycarbonate	Polycarbonate
Cable Length:	500mm	500mm	500mm	500mm

Ancillary Lighting

Integrated Stop Tail Indicator LED Amber Light Bar

- Built in stop/tail indicator lights
- Approved to R6, R7, R10 and R65
- Fully integrated solution
- Brackets and mounting kit included

12/24V	IP67	Reg 65	Reg 10	Reg 7	Reg 6	3 Year
Voltage	Weatherproof	Approved	Approved	Approved	Approved	Warranty

Key Features

921.5

305

RCV9825

Front

Back

305mm

116mm

1148mm
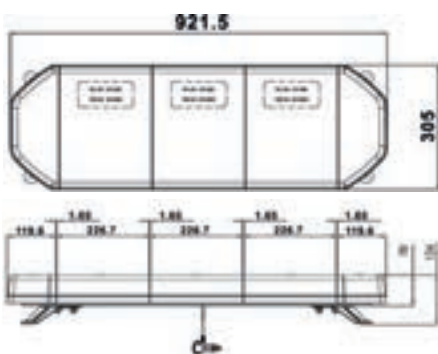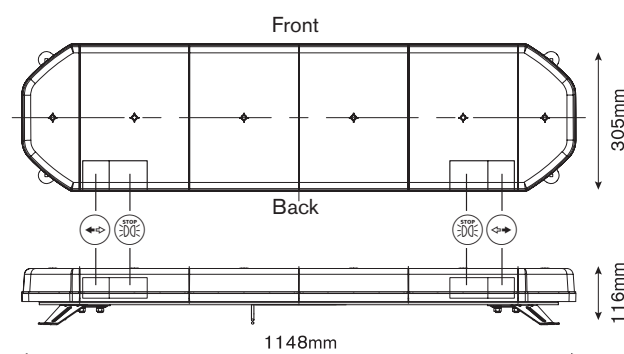
RCV9826

Specification

Function:	Stop/Tail Ind light bar	Stop/Tail Ind light bar
Product Code:	RCV9825	RCV9826
Watts:	109w	103W
Current Draw:	9.1A	-
Light Source:	132 x 0.5w LED	148 x 0.5W LED
Housing Material:	ABS	ABS
Lens Material:	Polycarbonate	Clear Polycarbonate
Cable Length:	500mm	500mm

LED Mini Light Bars

Mini LED amber light bar, ideal for smaller vans and cars. Suitable for 12V and 24V vehicles. Efficient, long life warning light.

• Selection of 20 different flash patterns

Reg 10	Reg 65	10-30V	IP67	x20
Approved	Approved	Voltage	IP Rating	Flash patterns

Key Features

93mm | 41mm | 8mm | 251mm | 170 mm | 51mm
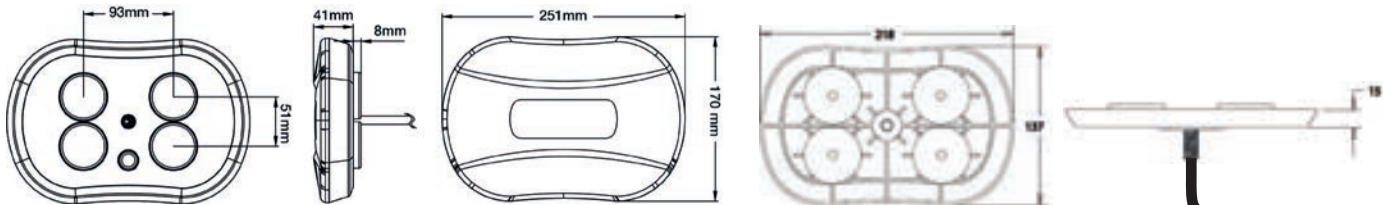
Magnetic fit

Single bolt fit

Specification

Function:	Magnetic mount	Single bolt mount
Product Code:	RCV9822	RCV9823
Watts:	20w	20w
Current Draw:	1.7A	1.7A
Light Source:	40 x 0.5w LED	40 x 0.5w LED
Housing Material:	ABS	ABS
Lens Material:	Polycarbonate	Polycarbonate
Cable Length:	2500mm	250mm

Ancillary Lighting

LED Beacons

Roof mounted beacons should be illuminated when entering, leaving or moving within the site, when travelling in traffic at less than the general traffic speed and when stationary on the hard shoulder. Vehicles engaged in snow clearing, gritting operations or similar work should also display a flashing amber warning at all times when operating.

Key Features

Reg 10	Reg 65	10-30V	IP67
Approved	Approved	Voltage	IP Rating
Rotate	Pulse	Flash	

Specification

Function:	Amber beacon magnetic mounting	Amber beacon 4 bolt fixing
Product Code:	RCV9815	RCV9816
Lens:	Clear	Clear
Watts:	18w	18w
Current Draw:	1.5A	1.5A
Light Source:	36 x 0.5w LED	36 x 0.5w LED
Housing Material:	ABS	ABS
Lens Material:	Polycarbonate	Polycarbonate
Cable Length:	2400mm	400mm

Key Features

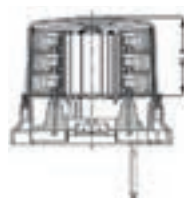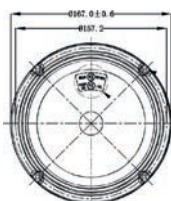| Reg 10	10-30V	IP67
Approved	Voltage	IP Rating
Rotate	Pulse	Flash

Specification

Function:	Single bolt mount	Din pole fixing	Magnetic mount	Three bolt fixing
Product Code:	RCV9807	RCV9808	RCV9809	RCV9810
Lens:	Amber	Amber	Amber	Amber
Watts:	4.8w	4.8w	4.8w	4.8w
Current Draw:	0.4A	0.4A	0.4A	0.4A
Light Source:	24 x 0.2w LED	24 x 0.2w LED	24 x 0.2w LED	24 x 0.2w LED
Housing Material:	ABS	ABS	ABS	ABS
Lens Material:	Polycarbonate	Polycarbonate	Polycarbonate	Polycarbonate
Cable Length:	200mm	-	2300mm	200mm

CARNATION

Key Features

CE Approved	Reg 10 Approved	10-30V Voltage	IP67 IP Rating	Rotate
			Pulse	Flash
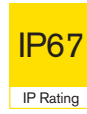
Specification

Function:	Slimline amber beacon
Product Code:	RCV9811
Lens:	Amber
Watts:	4w
Current Draw:	0.33A
Light Source:	20 x 0.2w LED
Housing Material:	ABS
Lens Material:	Polycarbonate
Cable Length:	200mm

Halogen Beacons

Halogen range with a range of fitting options.

CE Approved	Reg 65 Approved
12/24V Voltage	IP55 IP Rating
H1 Bulb required	Rotate
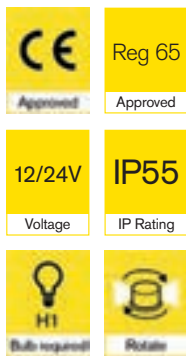
Specification

Function:

	Three bolt fixing	Magnetic mount	Din pole fixing	Flexi din fixing	Single bolt mount
Product Code:	RCV9910	RCV9920	RCV9930	RCV9940	RCV9950
Lens:	Amber	Amber	Amber	Amber	Amber
Watts:	55w @ 12V, 70w @ 24V	55w @ 12V, 70w @ 24V	55w @ 12V, 70w @ 24V	55w @ 12V, 70w @ 24V	55w @ 12V, 70w @ 24V
Current Draw:	4.6A @ 12V, 2.9A @ 24V	4.6A @ 12V, 2.9A @ 24V	4.6A @ 12V, 2.9A @ 24V	4.6A @ 12V, 2.9A @ 24V	4.6A @ 12V, 2.9A @ 24V
Light Source:	R448, R466	R448, R466	R448, R466	R448, R466	R448, R466
Housing Material:	Polypropylene	Polypropylene	Polypropylene	Polypropylene	Polypropylene
Lens Material:	Polycarbonate	Polycarbonate	Polycarbonate	Polycarbonate	Polycarbonate
Cable Length:	200mm	3000m (extended)	-	-	200mm

Safety Systems

To ensure safe on-road operation and to meet on-site rules and regulations, camera safety systems are becoming increasingly necessary. They give the driver more control – particularly with larger vehicles – reduce the chance of damage, lower downtime and help cut costs. All Ring's safety systems are designed to withstand commercial conditions.

Safety Systems

Contents

7" Wireless Quad Channel Reversing Camera System

- Quad channel wireless digital reversing camera system
- 7" TFT quad channel monitor
- Wireless camera system for faster installation
- 4 x high definition cameras, with 120° viewing angle to give complete view
- IP69 rated - dust, dirt and sand proof, plus resistant to high pressure water jets and steam
- Infra red night vision up to 10m
- Built-in speakers for audio
- Adjustable parking guidelines
- Power and video harness for installation
- E approved

Specification

Product Code:	RBGR4070
Product Dimensions:	H134 x W184 x D57mm
Voltage:	12-24V DC
Weight:	1.264kg
E Regulation:	10 - EMC

Wireless Rear Camera (RBGWC1) Key Features

7" 4CH Wireless Monitor (RBGMW7) Key Features

7" Dual Channel Reversing Camera System

- Dual channel digital reversing camera system
- 1x high definition camera
- Additional camera can be added for dual channel. See page 59 for extra cameras
- 7" TFT dual channel monitor
- 120° viewing angle to give wide view of the road
- IP69 rated - dust, dirt and sand proof, plus resistant to high pressure water jets and steam
- Infra red night vision up to 10m
- Built-in speakers for audio
- Adjustable parking guidelines
- Includes 20m extension cable and power and video harness for installation
- E approved

Specification

Product Code:	RBG2070
Product Dimensions:	H133 x W189 x D57mm
Voltage:	12-24V DC
Weight:	1.82kg
E Regulation:	10 - EMC

Wireless Rear Camera (RBGCB3) Key Features

7" 2CH Monitor (RBGMB7) Key Features

7" Reversing Camera System

- Reversing camera with colour CMOS camera
- 120° degree lens for wide view of rear of the vehicle
- 7" monitor with integral control box
- Infra red night vision up to 10m
- Built-in microphone and speakers
- Reversing trigger for automatic power on
- Anti-glare sunshade on camera
- Fully adjustable mounting bracket
- Shockproof to 10G
- IP68 rated - dust, dirt and sand proof, plus waterproof up to 1.5m for up to half an hour
- Additional cameras available

Specification

Product Code:	RBGB1070
Product Dimensions:	H133 x W186 x D111mm
Voltage:	12/24V DC
Weight:	1.598kg
E Regulation:	10 - EMC

Rear Camera (RBGCB1) Key Features

Night vision	Microphone	Colour screen	Waterproof	Camera sensor	Fitting instructions
Vibration Resistance	Aluminium	Approved			

7" Monitor (RBGMB7) Key Features

TFT Screen	Audio output	Colour screen	Camera inputs	Mirror image	Voltage
Fitting instructions	Auto operation	Approved			
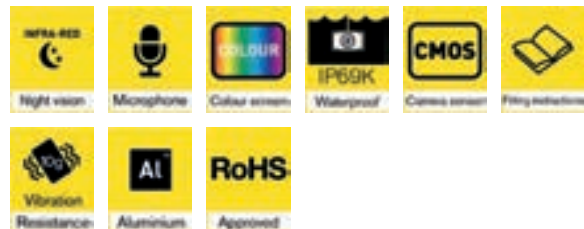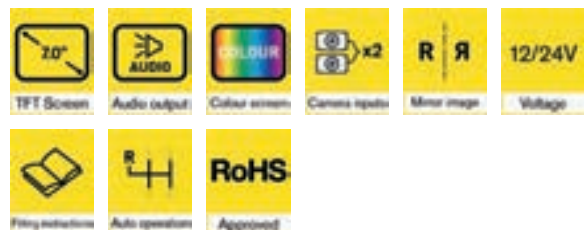
Safety Systems

High Level Brake Lights

Ring's high level brake lights are direct replacements for OE-fitted lights on vans, allowing a reversing camera to be fitted whilst maintaining the original fitted look of the vehicle. All the lights are available as both single units and part of a complete kit, that provide all the components needed for installation.

High Level Brake Lights
All models feature:

- 120° lens for wide, high angle view of the road
- Adjustable eyeball 1/3" CMOS colour camera
- Infra red night vision up to 7m
- Rated IP69 – dust and waterproof
- E approved
- OEM look

High Level Brake Lights
All models are also available as complete kits, with all components needed for installation. There are two versions of kits available:

- One with a conventional monitor and fitting components
- One with rear view mirror monitor and fitting components

KIT 1		
RBGMB7		7" Dashboard Monitor with Dual Channel function.
RBGBWH		Dual Channel Power Harness for 7" Monitor.
RBGB010		10m Extension Cable.
High Level Brake Light		

KIT 2		
RBGMM43		4.3" Rear View Mirror Monitor with Dual Channel function.
RBGB010		10m Extension Cable.
High Level Brake Light		

RBGCBRT

Renault Trafic, Fiat Tolento and Vauxhall Vivaro High Level Brake Light

SUITABLE VEHICLE
Renault Trafic

Camera only: RBGCBRT
Kit with standard monitor: VIVKIT1
Kit with standard monitor: VIVKIT2

Specification

Product Code:	RBGCBRT
Product Dimensions:	H115 x W212 x D66mm
Voltage:	12V DC
Weight:	0.354kg
E Regulation:	7+10 - POSITION, STOP AND END OUTLINE LAMPS + EMC

RBGCBFD

Fiat Ducato High Level Brake Light

SUITABLE VEHICLE
Fiat Ducato

Camera only: RBGCBFD
Kit with standard monitor: DUCKIT1
Kit with mirror monitor: DUCKIT2

Specification

Product Code:	RBGCBFD
Product Dimensions:	H98 x W263 x D80mm
Voltage:	12V DC
Weight:	0.220kg
E Regulation:	7+10 - POSITION, STOP AND END OUTLINE LAMPS + EMC

RBGCBFT

Ford Transit High Level Brake Light

SUITABLE VEHICLE
Ford Transit

Camera only: RBGCBFT
Kit with standard monitor: TRAKIT1
Kit with mirror monitor: TRAKIT2

Specification

Product Code:	RBGCBFT
Product Dimensions:	H125 x W387 x D66mm
Voltage:	12V DC
Weight:	0.304kg
E Regulation:	7+10 - POSITION, STOP AND END OUTLINE LAMPS + EMC

RBGCBMS

Mercedes Sprinter High Level Brake Light

SUITABLE VEHICLE
Mercedes Sprinter

Camera Only: RBGCBMS
Kit with standard monitor: SPRKIT1
Kit with mirror monitor: SPRKIT2

Specification

Product Code:	RBGCBMS
Product Dimensions:	H102 x W340 x D67mm
Voltage:	12V DC
Weight:	0.244kg
E Regulation:	7+10 - POSITION, STOP AND END OUTLINE LAMPS + EMC

RBGCBGV

Universal High Level Brake Light

SUITABLE VEHICLE
Universal

Camera only: RBGCBGV
Kit with standard monitor: UNIKIT1
Kit with mirror monitor: UNIKIT2

Specification

Product Code:	RBGCBGV
Product Dimensions:	H115 x W212 x D66mm
Voltage:	12V DC
Weight:	0.354kg
E Regulation:	7+10 - POSITION, STOP AND END OUTLINE LAMPS + EMC

Safety Systems

Cameras Accessories

Camera Extension Cable

Extension cable for reversing camera systems. Available in 5m, 10m or 20m length.

Specification

Product Code:	RBGB005	RBGB010	RBGB020
Length:	5m	10m	20m
Weight:	0.178kg	0.356kg	0.694kg

2CH Power Harness for 7" Monitor

Harness compatible with all Ring High Level Brake Lights and Brake Light Kits.

RBGBWH - Works with the following brake light cameras:

- RBGCBMS
- RBGCBFD
- RBGCBFT
- RBGCBRT
- RBGCBGV

Comes as part of the following kits:

- SPRKIT1
- DUCKIT1
- TRAKIT1
- VIVKIT1
- UNIKIT1

Vehicle and Trailer Coiled Connection System ("Suzi" cable)

Truck and trailer coiled connection system. Includes weatherproofing tape.

- Trailer socket with 4 pin female lead
- Trailer socket with 4 pin male lead
- RBGM46 adaptor cable
- RBGM64 adaptor cable
- Flexible coiled cable - coiled length 0.98m
- Working length - 3m
- Maximum length - 4.5m
- Includes waterproofing tape

Specification

Product Code:	RBGSC8
Product Dimensions:	H47 x W830 x D47mm
Weight:	1.094kg

Metal Monitor Mounting Brackets

Metal mounting bracket for reversing system monitors. Small base. Adjustable to fix and position at the best angle for the driver. Resilient metal is hard wearing.

- Reversing camera monitor mounting bracket
- Adjustable
- Hard wearing

Specification

Product Code:	RBGMBS
Product Dimensions:	H92 x W68 x D65mm
Weight:	0.142kg

High Level Brake Light Camera Rear View Mirror Monitor

- Rear view mirror monitor with 4.3" embedded screen
- Easy to view for drivers
- Provides OEM-style finish
- Two channels
- Rated IP68, making it dust, sand and waterproof
- Vibration resistant
- Includes mounting bracket and cables for installation
- E approved
- Ideal for use with Ring High Level Brake Light Cameras

Specification

Product Code:	RBGMM43
Product Dimensions:	H82 x W268 x D127mm
Voltage:	12-24V DC
Weight:	0.526kg
E Regulation:	10 - EMC

Rear/Side/Front Camera (HD CMOS)

Specification

Product Code:	RBGCB3	RBGCB5	RBGCB7
Image Sensor:	1/3" CMOS	1/3" CMOS	1/3" CMOS
Horizontal Resolution:	700 TV lines	700 TV lines	700 TV lines
Aperture:	f2.8mm	f2.8mm	f2.8mm
Viewing Angle:	120º	120º	120º
Video Output:	1.0Vp-p, 75Ω	1.0Vp-p, 75Ω	1.0Vp-p, 75Ω
Night Vision:	16 x IR LEDs	9 x IR LEDs	9 x IR LEDs
Infra Red Distance:	10m	7m	7m
Ingress Rating:	IP69K	IP69K	IP69K
Audio	Microphone	-	-
Voltage:	-	12V DC	-
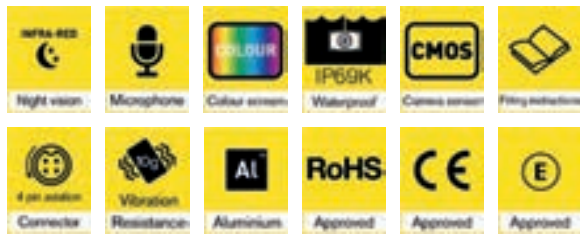
RBGCB5

RBGCB7

RBGCB1
Rear View Camera (CMOS)

RBGCB2
Side View Camera (CMOS)

Rear View Camera (CMOS)

Specification

Product Code:	RBGCB1
Image Type:	¼" Colour CMOS
Pixels:	H500 x V582 PAL
Horizontal Resolution:	420 TV lines
Lens:	f2.8mm
Lens View Angle:	120º
Video Output:	1.0Vp-p, 75Ω
Infra Red Distance:	10m
LED:	10 x infra-red LEDs
Voltage:	12V DC (via monitor)
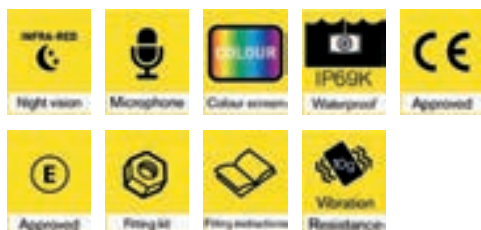
Wireless Rear Camera (HD CMOS)

Specification

Product Code:	RBGWC1
Image Type:	1/3" CMOS
Horizontal Resolution:	700 TV lines
Aperture:	f2.8mm
Viewing Angle:	120º
Night Vision:	16 x IR LEDs
Infra Red Distance:	10m
Ingress Rating:	IP69K
Frequency:	2.4GHz
TX Distance:	Up to 100m (open space)
Audio	Microphone
Voltage:	12V-24V DC

Safety Systems
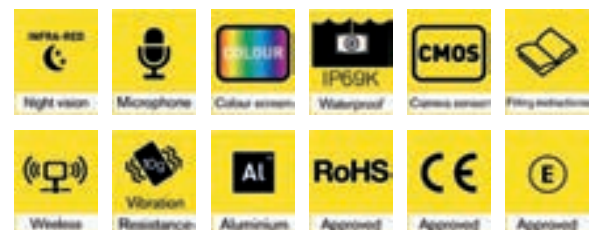
Cameras and Monitors

SUITABLE
VEHICLE
Universal

Sharks Fin Reversing Camera

- Infra red night vision up to 7m
- Rated IP69K - weather, water and dust proof
- 120° degree lens for wide view of rear of the road

Specification

Product Code:	RBGCB6
Product Dimensions:	H213 x W132 x L64mm
Weight:	0.268kg
Voltage:	12V DC

Side View Colour Camera

- Side view colour camera
- Infra red up to 7m
- Adjustable mount to position in best place on vehicle
- 800mm cable included
- IP68 rated - dust, dirt and sand proof, plus waterproof up to 1.5m for up to half an hour
- Extra models are RBGCB1, RBGCB2, RBGCB3, RBGCB5, RBGCB7, RBGWC1 – wireless

Specification

Product Code:	RBGC7
Product Dimensions:	H65 x W65 x D98mm
Weight:	0.248kg
Voltage:	12V DC

Audio Colour Camera

Colour camera with audio and infra red night vision. An additional camera to upgrade Ring camera safety systems. 500 x 582 pixel camera, with 110° viewing angle. Infra red distance of up to 12m. Rated IP68, making it water and weather resistant. 800mm cable to install with existing camera systems.

- Additional camera for Ring camera safety systems
- Colour and audio camera
- Infra red up to 12m
- 800mm cable
- IP68 rated - dust, dirt and sand proof, plus waterproof up to 1.5m for up to half an hour
- 110° viewing angle

Specification

Product Code:	RBGC8
Product Dimensions:	H77 x W93 x D65mm
Weight:	0.484kg
Voltage:	12V DC

2CH 7" Dashboard Monitor

RBGMB7 - Works with the following brake light cameras:

- RBGCBMS
- RBGCBFD
- RBGCBFT
- RBGCBRT
- RBGCBGV

- 7" LCD monitor
- 2 channel – suitable for up to 2 camera inputs
- Day/night sensor for automatic adjustment
- 12/24V
- Includes mounting bracket

Comes as part of the following kits:

- SPRKIT1
- DUCKIT1
- TRAKIT1
- VIVKIT1
- UNIKIT1

Specification

Product Code:	RBGMB7
Product Dimensions:	H120 x W183 x D58mm
Weight:	0.360kg
Voltage:	12/24 V
E Regulation:	Approved

Reversing Alarms

This range of heavy duty reversing alarms are designed to be universally fitted on 12V and 24V vehicles. The extra loud buzzers give ample warning when a large vehicle is reversing, helping reduce the risk to those nearby. All are designed for commercial use, and are fully sealed and waterproof. All feature over voltage and polarity protection.

Heavy Duty Reversing Alarm

- Heavy duty reversing alarm
- Ideal for commercial use
- Suitable for 12V and 24V vehicles
- Night silent function
- Extra loud volume of 96db at 1m
- Single bolt fixing
- Fully sealed and waterproof
- Over voltage protection
- Polarity protection

Specification

Product Code:	RRA100
Product Dimensions:	H109 x W72 x D72mm
Weight:	0.25kg
Voltage:	12/24V DC

Compact Heavy Duty Reversing Alarm

- Multi voltage reversing alarm
- Heavy duty - ideal for commercial use
- Suitable for vehicles with voltage between 12V and 80V
- Extra loud alarm - 112dB at 1m distance
- Fully sealed and waterproof
- 2 bolt fixing
- Over voltage protection
- Polarity protection

Specification

Product Code:	RRA20
Product Dimensions:	H72 x W99 x D40mm
Weight:	0.0266kg
Voltage:	12-80V DC

Self Adjusting Volume, Compact Multi Voltage Reversing Alarm

- Multi voltage reversing alarm
- Heavy duty - ideal for commercial use
- Suitable for vehicles with voltage between 12V and 80V
- Extra loud alarm - 112dB at 1m distance
- Fully sealed and waterproof
- 2 bolt fixing
- Over voltage protection
- Polarity protection

The RRA30 features self adjusting volume and will increase or decrease the alarm volume depending on the ambient back ground noise.

Specification

Product Code:	RRA30
Product Dimensions:	H72 x W99 x D40mm
Weight:	0.0266kg
Voltage:	12-80V DC

Around the Workshop

All professionals need durable equipment that can withstand inevitable knocks and drops whilst carrying out tough installation and engineering tasks. Our range offers robust garage and workshop equipment that has been extensively tested to ensure that it lasts.

Contents

Inspection Lamps

Inspection Lamps

The right tool for every job...

Whether you're working on the van or installing equipment in it, Ring has the right inspection lamp for the job.

Bright, portable, rechargeable, resistant to oil and dirt and tough enough to withstand knocks in a workshop.

Features Explained

240 Lumens ▶ 7h Max. power

High Power

High power lamps utilise the latest technology to provide a brighter, uniform, wide angle light output compared with conventional LEDs. This allows a larger area of the engine bay to be illuminated.

Standard | High Power

Multi-angle
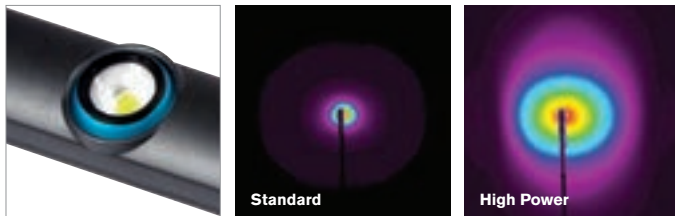
Multi-Positioning

Multi-positioning is an essential feature for directional lighting allowing "hands free" operation. The magnets, ratcheting mechanisms and hooks allow you to position the light output exactly where you need it.

310 Lumens

Light Output

Lumens are measurements of total light output, making this measurement applicable for torches.

CE Approved

CE Approved

All Ring inspection lamps are tested and certified to the relevant EMC & LVD Directives.

RIL3900HP REIL3900HP	RIL3600HP REIL3600HP	RUBL1000 REUBL1000
UP TO 400 Lumens	250 Lumens	1000 Lumens
Torch function	Torch function	
▶ 3h Operating time	▶ 3h Operating time	▶ 15h Operating time
⚡ 4h Charging time	⚡ 4.5h Charging time	⚡ 6.5h Charging time
6000K Colour temp	6000K Colour temp	6000K Colour temp
Multi-angle	Multi-angle	Multi-angle
Li-ion Rechargeable	Li-ion Rechargeable	Li-ion Rechargeable
Magnet	Magnet	1.75m 1.2m Extendable arms

MAGflex Pivot
Slim Inspection Lamp

Created to illuminate the most inaccessable of spaces. The MAGflex Pivot combines a slim design with multi axis rotation and tilt, meaning light can be directed exactly where required and the flexible mounting options allow hands free working.

- Rechargeable and cordless
- New technology COB LED provides 400 lumens light output
- Dimmable switch for adjustable light output
- Fully foldable and pocket sized
- Slim design to illuminate the smallest of spaces
- Multi axis rotation and tilt for full angle illumination
- White light output simulates daylight
- High power LED torch function for a focused light
- Wide angle of light output that has uniform intensity
- Multiple magnets (one at the base, two at the rear) for hands free use
- Integral hanging hook
- Battery usage LED indicator
- Anti-slip comfortable grip
- Li-ion battery for faster consistent recharging
- Includes AC mains charger

UP TO **400** Lumens	▶ **3h** Operating time	Multi-angle	Li-ion Rechargeable	Dimmable
6000K Colour temp	Torch function	⚡ **4h** Charging time	Magnet	Battery status
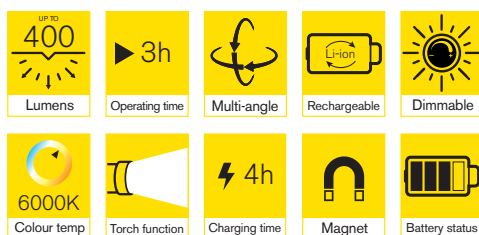
Specification

Product Code:	RIL3900HP (UK)
	REIL3900HP (Euro)
Light Output:	Up to 400 Lumens
Battery:	3.7V Li-ion, 2600mAh
Mains Adaptor:	Input: 230V AC 50/60Hz
	Output: 5V DC 1000mA
Operating Time:	3h
Charging Time:	4h
Product Dimensions:	H230 x W30 x D42mm
Weight:	0.134kg
Case Quantity:	12 x 1

Key features

1. LED Torch
2. 5W COB LED
3. ON/OFF Dimmer Switch
4. Torch ON/OFF
5. Magnet
6. Charging Indicator
7. Charging Socket
8. Integral Hanging Hook

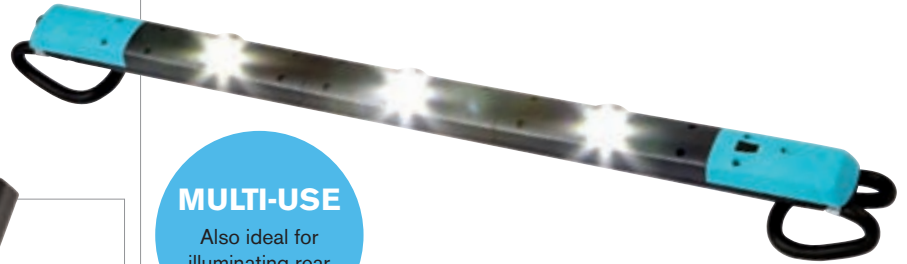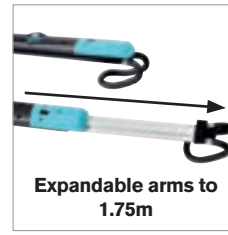**Expandable arms to 1.75m**

MULTI-USE
Also ideal for illuminating rear work area

MAGflex Twist LED Inspection Lamp

- Rechargeable and cordless
- COB LED provides 250 lumens light output
- Lamp can rotate 360º with a 180º ratcheting design to allow ultimate directional lighting
- White light output simulates daylight
- Wide angle of light output that has uniform intensity

- 2 x magnets for hands free use
- Integral hanging hook
- High power LED torch function
- Anti-slip comfortable grip
- Li-ion battery for faster consistent recharging
- Includes AC mains charger

250 Lumens	Li-ion Rechargeable	▶ 3h Operating time	⚡4.5h Charging time
Torch function	6000K Colour temp	Multi-angle	Magnet

Under Bonnet LED Inspection Lamp

- 3 x 5W LEDs provide 1000 lumens light output
- Long operating time allows full working day usage
- 3 levels of light output:
  - High (3 lamps) - 1000 Lumens
  - Med (2 lamps) - 675 Lumens
  - Low (1 lamp) - 350 Lumens
- 6000K colour temperature for bright white light
- 40º adjustable head to shine light on the engine bay exactly where it is required

- Sturdy polycarbonate, ABS and Aluminium construction
- Rechargeable 3.7V 10400mAh Li-ion battery
- Padded hooks design allows usage with different vehicle types including cars, vans and 4x4s
- Illuminated battery status indicator
- Includes AC mains adaptor

1000 Lumens	6000K Colour temp	1000 Lumens ▶ 6h Max. power	350 Lumens ▶ 15h Max. life	⚡6.5h Charging time
Multi-angle	Li-ion Rechargeable	60º Beam angle	1.75m 1.2m Extendable arms	

Specification

Product Code:	RIL3600HP (UK) REIL3600HP (Euro)
Light Output:	250 Lumens
Battery:	3.7V Li-ion, 2200mA, 8.14Wh
Mains Adaptor:	Input: 230V AC 50/60Hz Output: 5V DC 500mA
Operating Time:	3h
Charging Time:	4.5h
Product Dimensions:	H242 x W51 x D42mm
Weight:	0.488g
Case Quantity:	10 x 1

Specification

Product Code:	RUBL1000 (UK), REUBL1000 (Euro)
Light Output:	1000 Lumens (3 lamps) 675 Lumens (2 lamps) 350 Lumens (1 lamp)
Battery:	3.7V Li-ion, 10400mA, 38.48Wh
Mains Adaptor:	Input: 230V AC 50/60Hz Output: 5V DC 2000mA
Operating Time:	6h (3 lamps), 10h (2 lamps), 15h (1 lamp)
Charging Time:	4.5h
Product Dimensions:	H110 x W1195 x D120mm
Weight:	2.196kg
Case Quantity:	4 x 1
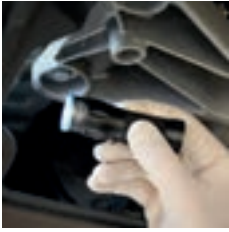
Zoom110 Micro
LED Inspection Torch

- Up to 110 lumen torch provides bright white light
- Standard setting has a wide-angle light output for total illumination of the work area
- Optical 6x zoom for a focused beam of light to see into the distance

- Built in IC protection to protect battery from over charge or discharge
- Complete with USB to Micro USB cable for convenient 2.5hr charge time
- Magnetic base for hands free usage

Zoom150 Duo
LED Inspection Torch

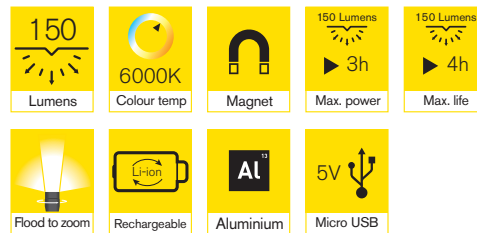- Up to 150 lumen torch provides bright white light
- Standard setting has a wide-angle light output for total illumination of the work area
- Optical 6x zoom for a focused beam of light to see into the distance
- Torch mode up to 150 lumens – 3hr illumination time
- Lamp mode up to150 lumens – 4hr illumination time

- Magnetic base for hands free usage
- Li-ion rechargeable battery, 2.96Wh
- Built in IC protection to protect battery from over charge or discharge
- Complete with USB to Micro USB cable for convenient recharging
- 6hr recharge time

110 Lumens	6500K Colour temp	Magnet	110 Lumens ▶ 2h Max. power	60 Lumens ▶2.5h Max. life
Flood to zoom	Li-ion Rechargeable	Al 13 Aluminium	5V Micro USB	

150 Lumens	6000K Colour temp	Magnet	150 Lumens ▶ 3h Max. power	150 Lumens ▶ 4h Max. life
Flood to zoom	Li-ion Rechargeable	Al 13 Aluminium	5V Micro USB	

Specification

Product Code:	RIT1010
Light Output:	110 Lumens (high) 60 Lumens (low)
Battery:	3.7V Li-ion, 600mAh, 2.22Wh
Functions:	High, low
Operating Time:	Up to 2h (high) 2.5h (low)
Product Dimensions:	H89 x W28 x D28mm
Weight:	0.07kg
Case Quantity:	50 x 1

Specification

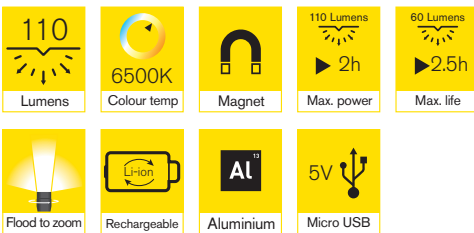| Product Code:	RIT1040
Light Output:	150 Lumens (high) 150 Lumens (low)
Battery:	3.7V Li-ion, 600mAh, 2.22Wh
Functions:	High, low
Operating Time:	Up to 2h (high) 2.5h (low)
Product Dimensions:	H89 x W28 x D28mm
Weight:	0.07kg
Case Quantity:	50 x 1

Zoom300
LED Inspection Torch

- Up to 300 lumen torch provides bright white light
- Standard setting has a wide-angle light output for total illumination of the work area
- Optical 6x zoom for a focused beam of light to see into the distance
- Max power mode up to 300 lumens – 4.5hr illumination time
- Max life mode up to 150 lumens – 10hr illumination time
- Magnetic base for hands free usage
- Li-ion rechargeable battery, 8.14Wh
- Built in IC protection to protect battery from over charge or discharge
- Complete with USB to Micro USB cable for convenient recharging
- Power bank functionality, ideal for an emergency charge of a mobile phone
- 6hr recharge time

| 300 Lumens | 6500K Colour temp | Magnet | 300 Lumens ▶4.5h Max. power | 150 Lumens ▶10h Max. life |
| Power bank | Flood to zoom | Li-ion Rechargeable | Al Aluminium | 5V Micro USB |

Zoom750
LED Inspection Torch

- Up to 750 lumen torch provides bright white light
- Standard setting has a wide-angle light output for total illumination of the work area
- Optical 6x zoom for a focused beam of light to see into the distance
- Max power mode up to 750 lumens – 5.5hr illumination time
- Max life mode up to 350 lumens – 11hr illumination time
- Li-ion rechargeable battery, 16.28Wh
- Built in IC protection to protect battery from over charge or discharge
- Complete with USB to Micro USB cable for convenient recharging
- Power bank functionality, ideal for an emergency charge of a mobile phone
- 12hr recharge time

| 750 Lumens | 6000K Colour temp | Power bank | Li-ion Rechargeable | Al Aluminium |
| 750 Lumens ▶5.5h Max. power | 350 Lumens ▶11h Max. life | Flood to zoom | 5V Micro USB | |

Specification

Product Code:	RIT1050
Light Output:	300 Lumens (high) 150 Lumens (low)
Battery:	3.7V Li-ion, 2200mAh, 8.14Wh
Functions:	High, low
Operating Time:	Up to 4.5h (high) 10h (low)
Product Dimensions:	H145 x W38 x D38mm
Weight:	0.23kg
Case Quantity:	25 x 1

Specification

Product Code:	RIT1060
Light Output:	750 Lumens (high) 350 Lumens (low)
Battery:	3.7V Li-ion, 4400mAh, 16.28Wh
Functions:	High, low
Operating Time:	Up to 5.5h (high) 11h (low)
Product Dimensions:	H210 x W44 x D44mm
Weight:	0.372kg
Case Quantity:	10 x 1

Battery Maintenance

Battery Maintenance

Maintaining and recording both the vehicle battery and ancillary battery condition is vital. Ring's range of professional battery tools help diagnose, repair and recharge batteries, to ensure better performance and longer life. All Ring's battery maintenance range is designed for intensive, long-term use in workshops, fleets and other professional environments.

START STOP
Start/stop

Suitable for EFB & AGM 'Stop/Start' Batteries

BATTERY ANALYSERS

Record battery status on build sheets at arrival, during build and shipment.

12V Graphical Battery Analyser with Printer

- Multi-function testing of battery, alternator, starter and vehicle earth
- Intuitive Graphical User Interface
- Integrated thermal printer for instant recording of results
- Memory storage up to 80 results allows multi-vehicle testing
- Battery range setting for smaller motorcycle batteries
- Selectable battery types for Wet, AGM & EFB
- Temperature compensation for more accurate results
- Alternator diode ripple test function
- Date and time stamp on print out
- Includes icon driven software to allow report printing via PC
- Robust storage case

12V	Multi-function	Data storage	Battery type
Voltage	Multi-function	x80 Data storage	SLI AGM EFB

Graphical	Battery ranges	Diode ripple test	USB compatible	Integral printer	PC report
Display	CCA 40-600 100-2000				

Specification

Product Code:	RBAG700
Test Method:	Microprocessor controlled
Voltage:	12V
Battery Types:	Wet, AGM & EFB
Display Type:	Graphic LCD with backlight
Battery CCA Ranges:	40-600 (low range), 100-2000 (high range)
Battery Standards:	CCA/SAE, DIN, EN1, EN2, IEC, JIS, CA/MCA
Battery Test:	Yes
Alternator Test:	Yes
Diode Ripple Test:	Yes
Starter Test:	Yes
Earth Test:	Yes
Data Download & Printing:	Yes
Integral Printer:	Yes
Pack Dimensions:	H260 x W360 x D98mm
Case Quantity:	8 x 1

Battery Maintenance

12V Graphical Battery Analyser

- Multi-function testing of battery, alternator and starter
- Intuitive Graphical User Interface
- Battery range setting for smaller motorcycle batteries
- Selectable battery types for Wet, AGM & EFB
- Temperature compensation for more accurate results
- Alternator diode ripple test function
- Includes icon driven software to allow report printing via PC
- Robust storage case

12V Voltage	Multi-function	Graphical Display	SLI AGM EFB Battery type
PC report	CCA 40-600 100-2000 Battery ranges	Diode ripple test	USB compatible

Specification

Product Code:	RBAG500
Test Method:	Microprocessor controlled
Voltage:	12V
Battery Types:	Wet, AGM & EFB
Display Type:	Graphic LCD with backlight
Battery CCA Ranges:	40-600 (low range), 100-2000 (high range)
Battery Standards:	CCA/SAE, DIN, EN1, EN2, IEC, JIS, CA/MCA
Battery Test:	Yes
Alternator Test:	Yes
Diode Ripple Test:	Yes
Starter Test:	Yes
Data Download & Printing:	Yes
Pack Dimensions:	H220 x W260 x D70mm
Case Quantity:	20 x 1

12V Digital Battery Analyser

- Microprocessor controlled battery testing
- Scrolling alpha-numeric LED display
- Programmable battery capacity and battery standards
- Test batteries in and out of vehicle
- Reverse polarity protection

12V Voltage	CCA 100-1700 Battery ranges	1234 LED Display

Specification

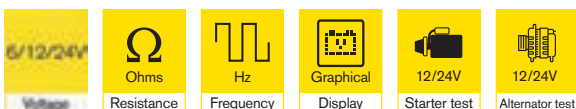| Product Code:	RBA50
Battery Types:	12V
Cable Length:	70cm
Battery CCA Range:	100 - 1700
Weight:	0.28Kg
Pack Dimensions:	H220 x W260 x D70mm
Case Quantity:	20 x 1

RING ®

CARNATION

Multi-Function Automotive Tester

The Multi-function Automotive tester will diagnose electrical faults in 6V, 12V and 24V vehicles, with specific electrical tests for the starter motor and alternator.

- Auto ranging, 6/12/24V battery testing with traffic light LED result
- Will test up to a maximum of 50V
- Rapid current testing, up to 80A without removing fuses
- Current adapter for in-line current testing
- 12/24V Starter Test, checks battery during engine cranking
- Normal and Smart 12/24V alternator test, for checking vehicle charging system
- Frequency and duty cycle settings, aid testing of sensors
- Continuity and resistance modes, for locating wiring faults
- Robust storage case

Specification

Product Code:	RMM500
Voltage Test:	6/12/24 Volt
Starter Test:	12/24 Volt
Alternator Test:	12/24 Volt
Voltage Range:	0 - 50V DC ±2%
Current (Parallel):	0 - 80A ±3%, 3A - 30A (Mini fuse), 3A - 40A (Standard fuse), 20A - 80A (Maxi fuse)
Current (In-line):	1 - 999mA ±1% (Low range), 1 - 30A ±2% (High range)
Resistance:	0 - 1MΩ ±2%
Frequency:	1Hz - 20KHz ±1Hz
Continuity:	0 - 500Ω
Working Temp:	0 - 50°C
Batteries:	3 x AA (not included)
Pack Dimensions:	H260 x W360 x D98mm
Case Quantity:	8 x 1

6/12/24V Voltage	Ohms Resistance	Hz Frequency	Graphical Display	12/24V Starter test	12/24V Alternator test

Battery Maintenance

Professional SmartChargers

50A, 12V Professional SmartCharger

- 8 stage intelligent battery smart charger
- Up to 50 amp charging current
- Battery support unit maintains the battery voltage when diagnostics are connected drawing power
- Programmable multi-chemistry specific charging profile for different battery types
- Multifunction LED
- Manual battery reconditioning
- Temperature compensation

25A, 12V Professional SmartCharger

- 8 stage intelligent battery smart charger
- Up to 25 amp charging current
- Battery support unit maintains the battery voltage when diagnostics are connected drawing power
- Programmable multi-chemistry specific charging profile for different battery types
- Multifunction LED
- Manual battery reconditioning
- Temperature compensation

Specification

Product Code:	RSCPR50
AC Input Voltage:	230V
DC Output Voltage:	12V
Charge Rates:	2/6/12/25/50A
LCD Display:	Yes
Battery Capacity:	14-1000Ah
Battery Compatibility:	Flooded/Calcium/Gel/AGM
Temp Compensation:	Yes
Weight:	4.1kg
Pack Dimensions:	H97 x W304 x D425mm
Case Quantity:	4 x 1
Accessories:	RSCPRC Remote control panel

Specification

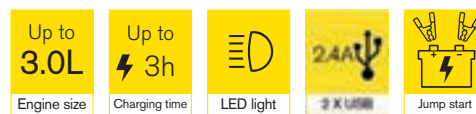| Product Code:	RSCPR25
AC Input Voltage:	230V
DC Output Voltage:	12V
Charge Rates:	2/6/12/25A
LCD Display:	Yes
Battery Capacity:	14-500Ah
Battery Compatibility:	Flooded/Calcium/Gel/AGM
Temp Compensation:	Yes
Weight:	3.2kg
Pack Dimensions:	H97 x W304 x D425mm
Case Quantity:	4 x 1
Accessories:	RSCPRC Remote control panel

72 Ring Automotive Limited

Compact Lithium Jump Starter 12V, 6,000mAh

- Lithium Cobalt LiCoO2 jump starter
- A safe, high powered compact jump starter that also provides power to recharge electronic gadgets
- Provides an emergency power solution that fits easily into your glove box
- 3-in-1 jump starter for petrol vehicles up to 2.0L
- Powerbank function – Has 1 x high powered USB socket for charging electronic appliances including smart phones and tablets
- Fast 2hr recharge time

- Suitable for small to medium cars & vans
- Intelligent clamp for safe battery jump starting
- 'Safe Connect' system makes jump starting quick and safe
- LED torch
- Supplied with Micro USB charging cable
- Reverse polarity, short circuit and anti-spike protection

Up to 2.0L	Up to ⚡2h	≡D	2.4A	Jump start
Engine size	Charging time	LED light	USB	Jump start

Specification

Product Code:	RPPL200
Internal Battery Voltage (Nominal):	11.1V
USB Output:	5V 2.4A or 9V 2.0A
Starting Current:	150A
Peak Current:	300A
Max Cranking Time:	3 secs
Battery Type:	Lithium Cobalt LiCoO2
Battery Capacity:	6000mAh
Operating Temperature:	-20° to 40°C
Cable Clamp Opening:	30mm
Weight:	300g
Pack Dimensions:	H170 x W87 x D20mm
Pack Dimensions:	H120 x W222 x D85mm
Case Quantity:	10

High Powered Compact Lithium Jump Starter 12V, 13,000mAh

- Lithium Cobalt LiCoO2 jump starter
- A safe, high powered compact jump starter that also provides power to recharge electronic gadgets
- Provides an emergency power solution that fits easily into your glove box
- 3-in-1 jump starter for petrol vehicles up to 3.0L/diesel vehicles up to 2.0L
- Powerbank function – 2 x high powered USB socket for charging electronic appliances including smart phones and tablets
- Recharges in only 3hrs time

- Suitable for small to medium cars & vans
- Intelligent clamp for safe battery jump starting
- 'Safe Connect' system makes jump starting quick and safe
- LED torch
- Supplied with Micro USB charging cable
- Reverse polarity, short circuit and anti-spike protection

Up to 3.0L	Up to ⚡3h	≡D	2.4A 2 X USB	Jump start
Engine size	Charging time	LED light		Jump start

Specification

Product Code:	RPPL300
Internal Battery Voltage (Nominal):	14.8V
USB Output:	5V 2.4A or 9V 2.0A or 12V 1.5A
Starting Current:	300A
Peak Current:	600A
Max Cranking Time:	3 secs
Battery Type:	Lithium Cobalt LiCoO2
Battery Capacity:	13,000mAh
Operating Temperature:	-20° to 40°C
Cable Clamp Opening:	30mm
Weight:	490g
Pack Dimensions:	H164 x W88 x D33mm
Pack Dimensions:	H120 x W222 x D85mm
Case Quantity:	10

Supplementary Equipment

A comprehensive range of products that complete the installation of extra equipment and complement the daily activities of the vehicle operator. All selected products meet relevant industry regulations where required and are tough enough for everyday operator use.

Supplementary Equipment

www.ringautomotive.com

Supplementary Equipment

Towing

The towing equipment you use needs to be resilient enough for commercial use. Ring's coupling and towing electrics meet regulations and are stress tested to ensure they can withstand long term, heavy duty applications.

RCT743

RCT742

RCT744

RCT765

RCT764

RCT763

RCT600

Specification

Product Code:	RCT765	RCT764	RCT763	RCT600	RCT742	RCT743	RCT744
Description:	M16 Mounting Bolts (x2)	M16 Mounting Bolts (x2)	M16 Mounting Bolts (x2)	Single Mounting Plate	2" Drop Plate	3" Drop Plate	4" Drop Plate
Length:	55mm	75mm	90mm	-	-	-	-
Material:	Steel	Steel	Steel	Black Coated Steel	Zinc Plated Steel	Zinc Plated Steel	Zinc Plated Steel
Pack Dimensions:	H150 x W125 x D30mm	H150 x W125 x D30mm	H150 x W125 x D30mm	H250 x W125 x D5mm	Bulk	Bulk	Bulk
Pack Quantity:	10 x 1	10 x 1	10 x 1	10 x 1	10 x 1	10 x 1	10 x 1

BCT715

BCT718

Suitable for most hitchhead stabilisers including Al-ko, Winterhoff etc.

RCT725

Specification

| Product Code:	BCT715	BCT718	RCT725
Description:	50mm Towball (92/20 approved)	Extended Neck Towball	Ball and Pin Coupling
Material:	Forged Steel	Forged Steel	Forged Steel
Pack Dimensions:	Bulk	Bulk	Bulk
Pack Quantity:	10 x 1	10 x 1	1 x 1
Approval:	E approved	E approved	E approved

Towing Electrics

12N Smart Logic Relay

• 12N smart logic bypass relay
• Allows 12N electrics to be wired to vehicles with multiplex and CANbus systems
• Includes warning buzzer
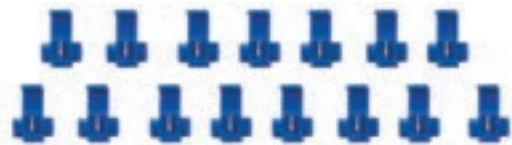• Compatible with multiples and CANbus wiring systems

Specification

Product Code:	RCT485
Description:	12N Smart Logic Relay
Pack Dimensions:	H150 x W125 x D30mm
Pack Quantity:	10 x 1
Barcode:	5055175224657
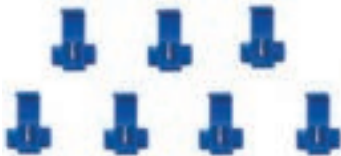
12N Socket Assembly

Specification

Product Code:	RSA175
Description:	12N Socket Assembly
Pack Dimensions:	H250 x W125 x D90mm
Pack Quantity:	5 x 1

13 Pin Socket Assembly with fog cut out

Specification

Product Code:	RSA500
Description:	13 Pin Socket Assembly with fog cut out
Pack Dimensions:	H250 x W125 x D90mm
Pack Quantity:	5 x 1

Sockets and Adaptors

Specification

Product Code:	A0008	A0012	A0032	A0035	A0036
Description:	7 Pin Socket	7 Pin Socket with fog cut out	13 Pin Socket inc. seal	13 Pin Socket/ Plug 7 Pin Adapter	7 Pin Socket/ 13 Pin Plug Adapter
Material:	Plastic	Plastic	Plastic	Plastic	Plastic
Pack Dimensions:	H150 x W125 x D60mm	H150 x W125 x D60mm	H150 x W125 x D60mm	H150 x W125 x D60mm	H150 x W125 x D60mm
Pack Quantity:	10 x 1	10 x 1	10 x 1	10 x 1	10 x 1

Supplementary Equipment

MAGcode Connectors

MAGcode connectors provide power connections for low voltage products, to provide easy connection and disconnection. Ideal for battery chargers, additional lighting and additional power connectors.

Only live when port and clip are connected.

Suitable for internal and external applications.

PowerClip

PowerPort

12v/24v

12v/24v

12v/24v

PowerPort Pro   PowerClip Pro   PowerPort   PowerClip

Auto Magnetic and Mechanical Twist Lock Mechanism for Professional Applications

- Available in 12V
- 25amp max current
- Duty cycles under load - 5000 cycles
- Magnetic twist lock connection
- Only live when the clip and port are connected
- Suitable for interior and exterior applications
- IP42 rated when connected
- Minimum installation depth
- Magnetic coding prevents 12 or 24V incorrect connection and polarity protection

Specification

Product Code:	RMGCPRO12B	RMGPRO12B
Description:	Powerclip Pro	Powerport Pro
Voltage:	12V	12V
Pack Dimensions:	Ø38 x D22mm	Ø38 x D18mm
Pack Quantity:	1 x 1	1 x 1
Approval:	CE	CE

IP42 Weatherproof | 12V Voltage | 25A Max. load | Polarity check | CE Approved

Auto Magnetic Connection Mechanism

- 12 and 24V variants available
- 15amp max current
- Duty cycles under load - 4000 cycles
- Magnetic quick connection

Specification

Product Code:	RMGC12B	RMGP12B	RMGC24B	RMGP24B
Description:	Powerclip	Powerport	Powerclip	Powerport
Voltage:	12V	12V	24V	24V
Pack Dimensions:	Ø38 x D22mm	Ø38 x D18mm	Ø38 x D22mm	Ø38 x D18mm
Pack Quantity:	1 x 1	1 x 1	1 x 1	1 x 1
Approval:	CE	CE	CE	CE

IP42 Weatherproof | 12/24V Voltage | 15A Max. load | Polarity check | CE Approved

Guide to Legislation

Warning Light Legislation

Which vehicles are affected?

L - Motor vehicles with less than four wheels.

M - Motor vehicles with at least four wheels and used for the carriage of passengers.

N - Power driven vehicles having at least four wheels and used for the carriage of goods.

O - Trailers.

T - Agricultural, forestry and mobile machinery.

(For full category definition visit www.unece.org)

Legislation applicable to beacons, roof bars and strobes used on the highway

Traffic signs manual - Chapter 8 Traffic Safety Measures and Signs for Road Works & Temporary Situations

What is it? - Within the regulations, Chapter 8 specifies the requirement of beacons used 'on high speed roads'. The vehicles included are any that stop on the highway for works purposes or inspections. These shall be equipped with either a roof-mounted flashing amber warning light bar (comprising at least 2 independent light sources) or 2 independent roof mounted flashing amber warning beacons visible through 360°

To comply with the requirements, warning lamps must:

• Be UN ECE Reg 65 approved for Special Warning Lamps

• Be fitted in the correct position i.e, if a roof mounted beacon is likely to be obscured at the rear by other roof mounted equipment, additional beacons should be fitted.

What it affects - Roof mounted beacons shall be in use when entering, leaving or moving within the site and when travelling in traffic at less than the general traffic speed and when stationary on the hard shoulder. Vehicles engaged on snow clearing, gritting operations or similar work shall display a flashing amber warning at all times when operating.

See: Department for Transport / Highways agency, Department for Regional Development (Northern Ireland), Transport Scotland and Welsh Assembly Government.

ECE Regulation 65 - Uniform provisions concerning the approval of special warning lamps for power-driven vehicles and their trailers.

What is it? - Reg 65 details the specification of Special Warning Lamps (Beacons, Roof Bars & Strobes) which are used on the highway. The regulation ensures the light output, colour, flash frequency and construction of the lamps meet the required standards. The markings on the lamps confirm the lamps approval to Reg 65.

What it affects - Vehicles in categories L, M, N, O & T

Vehicle Upgrade Legislation

Although this regulation has not been adopted in the UK any beacon carrying the ECE Reg 65 approval mark must meet the standard.

Look for this symbol on Ring products to be assured of ECE Reg 65 compliance.

TA1-02 $\left(E_1\right)$ **xxxx**

See: UN ECE United Nations Economic Commission for Europe

ECE Regulation 10 - Uniform provisions concerning the approval of vehicles with regard to electromagnetic compatibility (EMC)

What is it? - Electromagnetic compatibility is the ability of a product to function in an electromagnetic environment without affecting other components or the vehicle. This applies to original equipment and aftermarket fitted products including warning lighting such as beacons.

What it affects - Vehicles in categories L, M, N & O.

Look for this symbol on Ring products to be assured of Reg10 compliance.

10R-04 $\left(E_1\right)$ **xxxx**

See: UN ECE United Nations Economic Commission for Europe

Type Approval - Legislation relevant to vehicle builders and converters

EC Directive 2007/46/EC – European Community Whole Vehicle Type Approval

What is it? – Certification granted to a product that meets a minimum set of regulatory, technical and safety requirements. A type approved product requires approval certifications, drawings & photographs. These are available from Ring upon request.

Do I need it? – As part of European Community Whole Vehicle Type Approval (ECWVTA) set out in 2007/46/EC, all categories of vehicles need to meet the requirements of Directive 72/245/EEC.

Products requiring E approval – Only those components that are defined as being 'immunity-related' require Automotive Type Approval.

'Immunity-related' is defined within the Directive, but the term applies to the following:

- Related to the direct control of the vehicle
- Related to driver, passenger and other road-user protection
- Related to causing confusion to the driver and other road users by optical and audible disturbances
- Related to vehicle data bus functionality
- Related to vehicle statutory data

If your product falls within any of these areas, you will need full Type Approval for components (e-marking) Source; www.dft.gov.uk/vca Those products defined as being 'non-immunity related' require compliance with the generic EMC Directive 2004/108/EC or the RTTE Directive 1999/5/EC and CE-marking, along with a 2004/104/EC 'Annex IIIC attestation' from a Technical Service.

Who it affects – Anyone who builds on, converts, modifies, or adds to a type approved vehicle.
See: VCA (Vehicle Certification Agency) the designated UK Approval Authority and Technical Service for type approval to all automotive European Community (EC) Directives and the equivalent United Nations Economic Community for Europe (ECE) Regulations.

Guide to Legislation

Notes

Ring Automotive Limited

Notes

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/ringautomotive

CAT1289

BS EN ISO 9001:2008
FM 504682