# Switching Systems

# Switching Systems

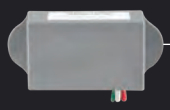
ICS Switch Panel 8

ESM Mini 10

Radio Remote Control 12

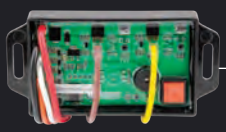
Rollover 14

Tipper 15



Voltage Sensor 16

Headlights On Units 17



Hand Brake Alarm Module 18

Low Coolant Alarm 19

IONNIC Idle Timer 20

IONNIC Idle Timer SE 21

Speed/Frequency Switch 22

Low Battery Cutout 23

Smart Battery Isolator 24

Battery Separators 25

# Switching Systems

## ICS Switch Panel

Actual size

12V 24V

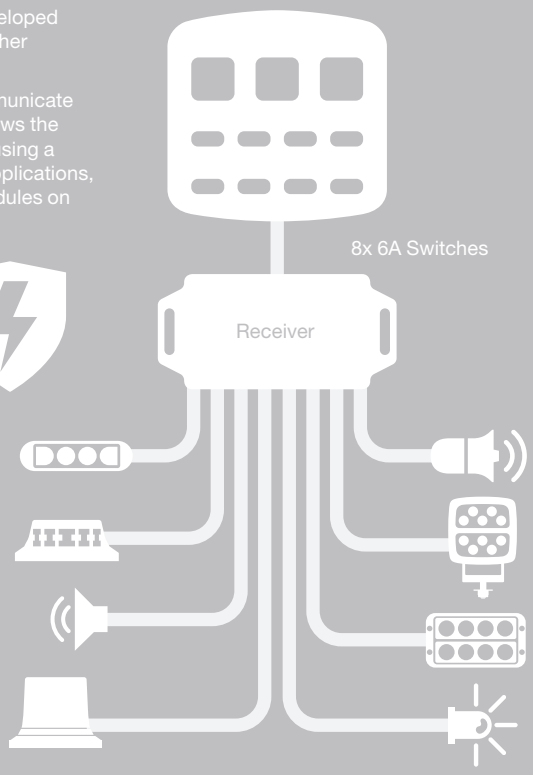
- Developed to control lighting and other electronic automotive accessories.
- Incorporates the latest in onboard circuit protection and monitoring technology.
- Each output surge protected to 6A.
- 3 user-configurable master switches.
- All switches can be set to latching or momentary.
- Mounting point on back of switch panel – use with common 1/4" thread adjustable mounts.
- Epoxy-encapsulated receiver module for enhanced moisture and vibration protection.
- Includes 4 decals.
- 8 outputs (6A each).
- Multiple outputs can be combined to allow switching of high current loads.
- Eliminates excess wiring.
- Multi-voltage.
- Compact design.

| | |
|---|---|
| **Voltage :** | 12–24V |
| **Outputs :** | 8 |
| **Max. Output Current Rating** (per output) **:** | 6A |
| **Max. Output Current Rating** (total) **:** | 40A |
| **Cable Length :** | 4.5m |
| **Housing :** | ABS |
| **Operating Temperature :** | -40°C to 85°C |

The ICS Switch Panel has been developed to control all types of lighting and other electronic automotive accessories.

The switch panel and receiver communicate using a proprietary signal which allows the switching system to be configured using a single receiver module for typical applications, or with additional slave receiver modules on larger systems or vehicles.

The ICS Switch Panel incorporates the latest in onboard circuit protection technology.
In the event of a short circuit the system immediately turns off the affected output preventing damage to the switch panel and devices controlled by it. The panel provides real-time feedback to the operator via LED's on both the panel and receiver module as to the state of each output.




In the event of an intermittent short circuit the output of the affected circuit will turn off and remain off for 4 seconds.
After this period of time the ICS will check the circuit, if no short is present, it will automatically turn the output back on.

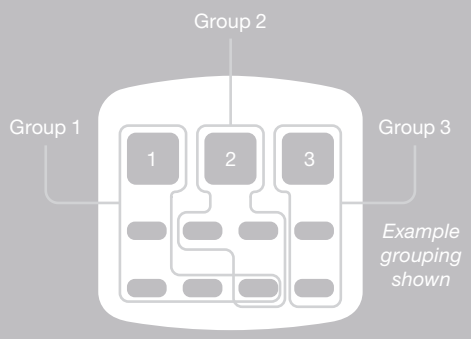
All circuits are monitored and controlled independently. In the case of a short circuit, only the affected output is isolated while all others remain operational.

## Master Switches

The ICS switch panel features 3 user-configurable master switches.

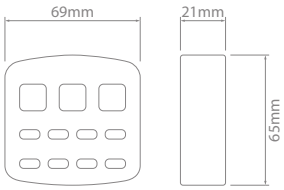
These switches can be used to link any combination of the 8 individual switches together to allow activation of multiple circuits via the switching of a single button.

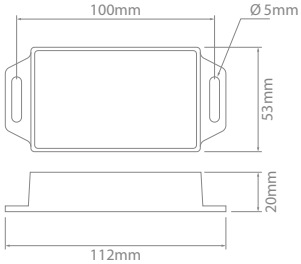
Note that individual switches can be associated with more than one master switch.

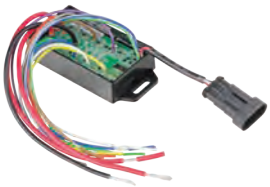



Custom assign any number of buttons to one of the three master switches

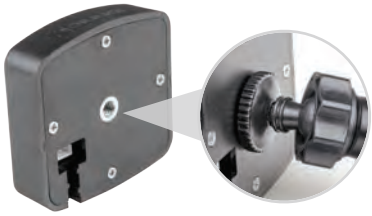
Watch video





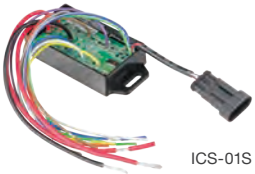
Receiver Module



Mounting point on back of switch panel – use with common 1/4" thread adjustable mounts. Mount not supplied

## ICS Switch Panel Kit

| Part No. | Voltage | Kit Contents |
|---|---|---|
| **ICS-01** | 12–24 | 1 x Switch Panel<br>1 x Receiver Module<br>1 x 4.5m Cable (Switch Panel to Receiver)<br>4 x Overlay Function Decals<br>1 x Mounting Screws & Washers<br>1 x Double-sided Mounting Tape |



ICS-01S

50127

50128

HT-4301

## ICS Switch Panel – Accessories & Related Products

| Part No. | Description |
|---|---|
| **ICS-01S** | Receiver module |
| **50127** | Superseal kit – 3 circuits – Receptacle. Includes contacts and seals |
| **50128** | Superseal kit – 3 circuits – Plug. Includes contacts and seals |
| **HT-4301** | Parallel crimping tool. Crimp range – 0.35–0.5, 0.75, 1.0, 1.5mm$^2$ |

# Switching Systems

## ESM Mini

- Electronically controlled switch module with inbuilt circuit monitoring and protection.
- Each output surge protected to 8A.
- 6 inputs, 6 outputs – 12V.
- 5 inputs, 5 outputs – 24V.
- Compact design.
- Save space and installation time.
- Eliminates excess wiring.
- Multi-voltage.
- Epoxy filled for enhanced moisture and vibration protection.

12V 24V

| | |
|---|---|
| **Voltage :** | 12–24V |
| **Inputs :** | 6 x 12V, 5 x 24V |
| **Outputs :** | 6 x 12V, 5 x 24V |
| **Max. Output Current Rating** *(per output)* **:** | 7A |
| **Max. Output Current Rating** *(total)* **:** | 20A |
| **Body :** | ABS |
| **Cable Length :** | 120mm |
| **Operating Temperature :** | -40°C to 85°C |

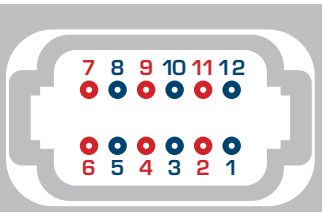
The ESM Mini is a compact, electronically controlled switch module with inbuilt circuit monitoring and protection.

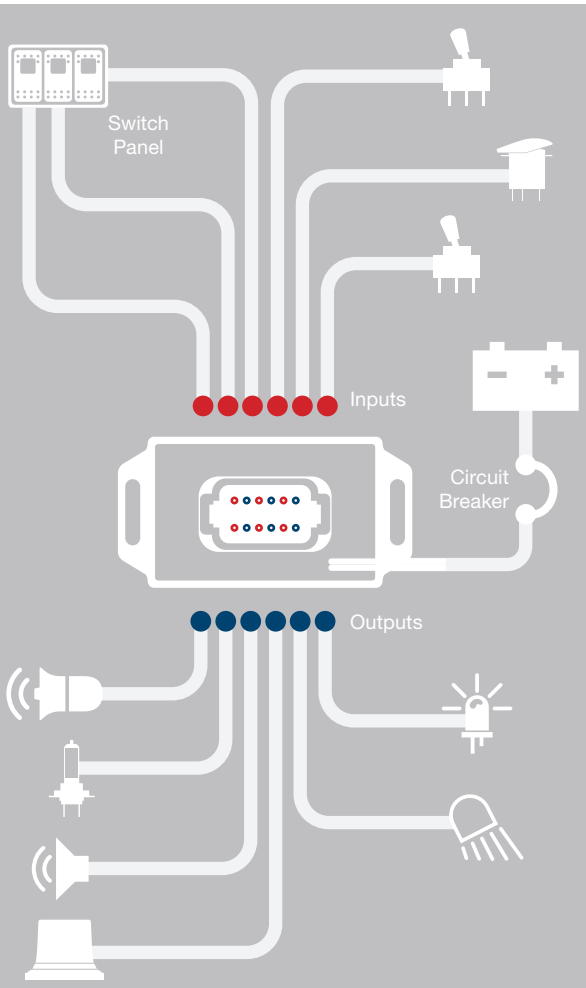
The unit can be used in any application where conventional circuit protection may have been used in the past.

The ESM Mini can be used for any application, from connecting auxiliary lighting off original vehicle tails lights, e.g. Minebar hook up, to monitoring and protecting a range of auxiliary equipment switched off the original vehicle inputs or from after market toggle, rocker switches etc.

If a short circuit or over current condition presents on any of the outputs then the affected output will shut down. This circuit will then cycle 3 times (on/off) and if the over current situation is still present the output will then be locked in the off state until the fault is rectified and the input is reset.

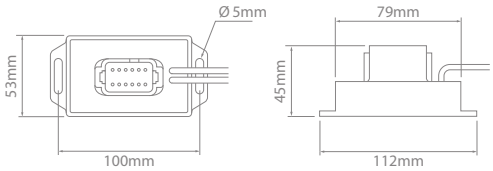
| | | |
|---|---|---|
| Circuit 1<br>Input – 4<br>Output – 3 | Circuit 2<br>Input – 2<br>Output – 1 | Circuit 3<br>Input – 6<br>Output – 5 |
| Circuit 4<br>Input – 11<br>Output – 12 | Circuit 5<br>Input – 9<br>Output – 10 | Circuit 6<br>Input – 7<br>Output – 8 |

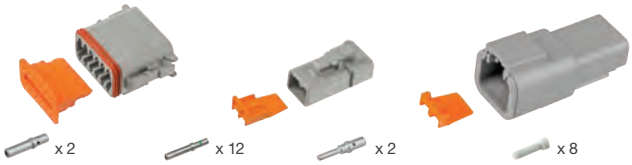



Inductive loads must not be used on the input or output circuits without additional external protection. Failure to do so may result in damage to the unit and will void warranty.

Components made redundant when using an ESM Mini Kit




## ESM Mini Kit

| Part No. | Voltage | Switching |
|---|---|---|
| **ESM006** | 12–24 | Positive |

Kit Contents:

- 1 x ESM006 Control Module
- 1 x Connector – DT Series (DT06-12SA)
- 1 x Connector – DTP Series (DTP04-2P)
- 1 x Connector – DTP Series (DTP06-2S)
- 8 x Cavity Plug (114017)
- 1 x Wedgelock – DT Series (W12S)
- 1 x Wedgelock – DTP Series (WP2P)
- 1 x Wedgelock – DTP Series (WP2S)
- 2 x Pin – Solid (0460-204-12141)
- 2 x Socket – Solid (0462-203-12141)
- 12 x Socket – Solid Green Band (0462-209-16141)

DET12, DET16

HDT48-00

DET-RT

CB255-*XX*

P-WSBFH/5

BF*XX*/10

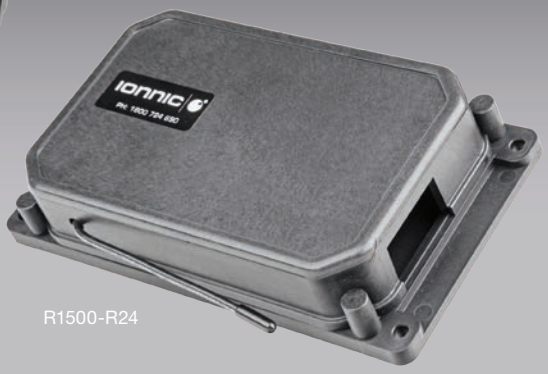
## ESM Mini – Accessories & Related Products

| Part No. | Description |
|---|---|
| **DET12** | Crimping tool. Size 12 |
| **DET16** | Crimping tool. Size 16 |
| **HDT48-00** | Crimping tool. Size 12, 16, 20 & 22 |
| **DET-RT** | Multi-use hook tool |
| **CB255-*XX*** | Circuit breaker – Panel Mount Series<br>Replace '*XX*' with desired amperage: 10, 15, 20, 25, 30, 35, 40, 50 |
| **P-WSBFH/5** | ATC fuse holder kit – 30A<br>Kit contents: 5 x Housing, 5 x Plugs, 10 x Terminals |
| **BF*XX*/10** | ATC/ATO blade fuses, pack of 10<br>Replace '*XX*' with desired amperage: 1, 2, 3, 4, 5, 7.5, 10, 15, 20, 25, 30, 40 |

# Switching Systems

## Radio Remote Control

R1000-TF4




R1500-R24

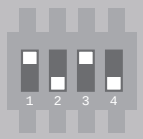
- 4 output, user programmable remote switching system.
- Up to 90 metre range.
- Rolling codes, secure encryption.
- Multiple transmitters able to be paired with single receiver.
- All 4 outputs can be momentary or latching.
- Hard-wired interlock feature on 2 outputs.

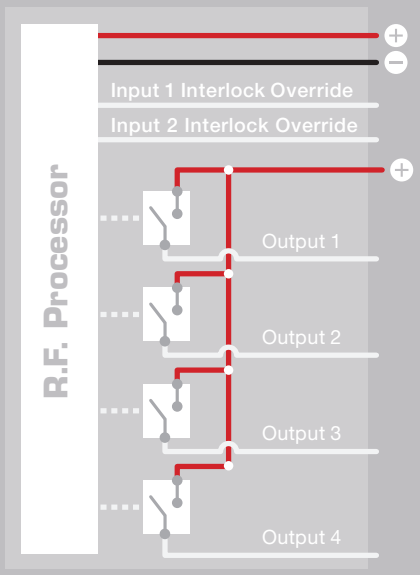
| | |
|---|---|
| **Typical Range :** | 90m |
| **Frequency :** | 433 MHz |
| **Current Rating :** | 5A max. per output |
| **Fob Battery :** | 1 x CR2032 |
| **Transmitter Battery Life :** | 100,000 activations |
| **Receiver Cable Length :** | 300mm |
| **Encryption :** | Rolling Codes |

R15-R12-F, R15-R24-F

## DIP Switches

DIP switches found inside receiver enclosure can be set to achieve either latching or momentary for each output respectively.

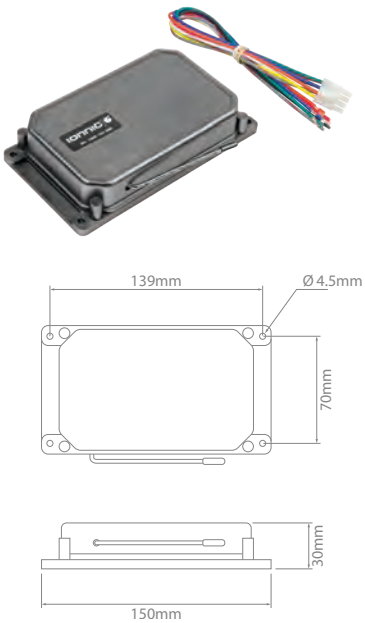


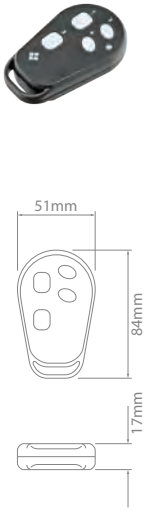

Interlock Override inputs can be used to manually override outputs 1 and 2 only.

## Radio Remote Control – Kits

| Part No. | Voltage | Kit contents |
|---|---|---|
| **R15-R12-F** | 12 | 1 x Receiver (R1500-R12), 1 x Transmitter (R1000-TF4) |
| **R15-R24-F** | 24 | 1 x Receiver (R1500-R24), 1 x Transmitter (R1000-TF4) |




R1500-R12, R1500-R24




R1000-TF4

R1500-ADP-HNS

## Radio Remote Control – Components

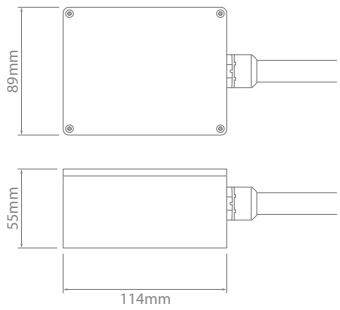
| Part No. | Voltage | Description |
|---|---|---|
| **R1500-R12** | 12 | Receiver |
| **R1500-R24** | 24 | Receiver |
| **R1000-TF4** | — | Transmitter – Fob style. Suits 12V or 24V |
| **R1500-ADP-HNS** | — | 10 Pin to 8 Pin harness. May be required if replacing older R1500-R12 models |

Rollover

- AS2809 compliant rollover switch.
- Solid state electronics.
- Microprocessor controlled.
- Multi-voltage.
- Senses vertical & horizontal axis through an accelerometer (angle and G-force sensing device).
- Conducts system self-tests without shutdown.
- EMF spike suppression.

10V 30V

| | |
|---|---|
| **Voltage :** | 10–30V |
| **Housing :** | Die-cast |
| **Compliance :** | AS2809 |

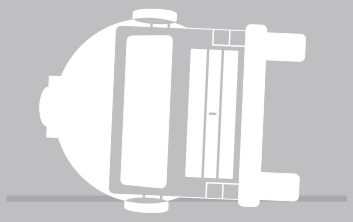



## Intelligent Rollover Switch

The iROS uses a 2 axis accelerometer to determine angle and G-force. The output will only be switched if all of the criteria for angle and motion are met and held for a set period.

Compliant to AS2809, the iROS will activate any of the remotely switched battery isolation switches commonly used on the Australian market.

The iROS has an input for a 'System Test' button that when pushed and held will activate the sensor to the rollover point, making testing a simple task.



## Rollover

| Part No. | Description |
|---|---|
| **IROS** | AS2809 compliant rollover switch |

Tipper

- Determines when there's an unsafe lean on a raised tipper body.
- Solid state electronics.
- Microprocessor controlled.
- Multi-voltage.
- Data logs the last 15 activations.
- Conducts system self-tests.

| | |
|---|---|
| **Voltage :** | 10–30V |
| **Housing :** | Die-cast |
| **Connector Ingress Protection :** | IP65 |

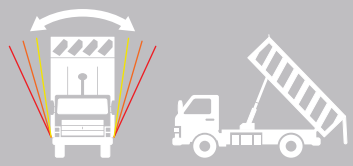
10V 30V IP65

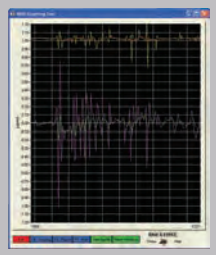
## Tipper Safety

The iROS-T (intelligent roll over switch – tipper) warns the driver of a potentially unsafe lean on a tipper body as it is being raised.

The supplied dash mounted display indicates system status and angle warnings with the 3rd (and highest) level activating an output for an external alarm or control.

Each iROS-T requires the three warning angles to be programmed into the unit once installed. This requires the iROS-T cable and PC compatible software (supplied).

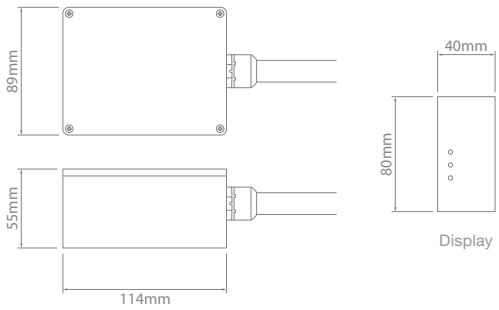




This software also allows access to the data logs of the last 15 activations.

IROS-T

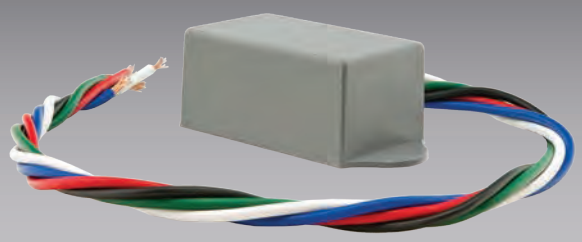
IROS-T-USB




## Tipper

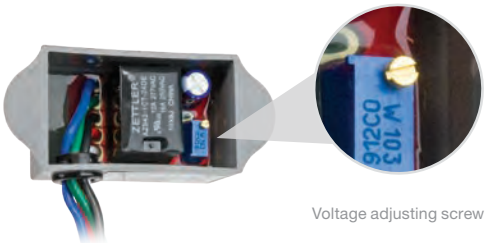
| Part No. | Description |
|---|---|
| **IROS-T** | Kit includes sensor unit & connector, display and 1.8m harness |
| **IROS-T-USB** | Proprietary cable required to program iROS-T |

# Voltage Sensor

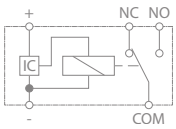


- Internal change-over relay activates when the voltage falls below or rises above the preset level.
- Adjustable sensing range.
- Example uses:
  – Helps prevent the over-discharging of a battery.
  – Triggering an alert when a battery discharges to a preset level.
  – Automatic activation of a battery charger.
- Made in Australia.
- 2-year warranty.

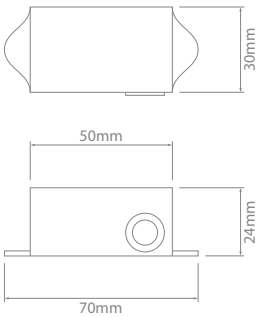
| | |
|---|---|
| **Body :** | ABS |
| **Wire Length :** | 300mm |
| **Operating Temperature :** | 0°C to 50°C |

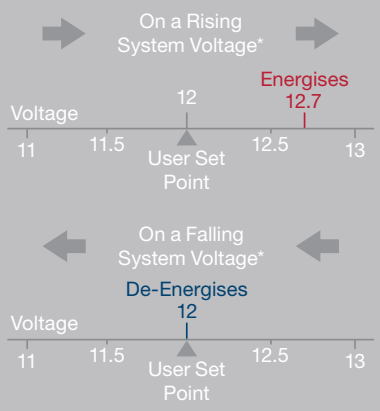


Voltage adjusting screw




5 Terminal – Change Over (C/O)




*VS12 operation illustrated with default User Set Point.

Used to switch a circuit relative to system voltage.

The user only sets the minimum voltage level (User Set Point).

The VS12 maximum voltage level is approximately +0.7 volts higher than the User Set Point.

The VS24 maximum voltage level is approximately +1.5 volts higher than the User Set Point.

When the system voltage reaches the maximum voltage level the internal change-over relay energises switching the COM from NC to NO.

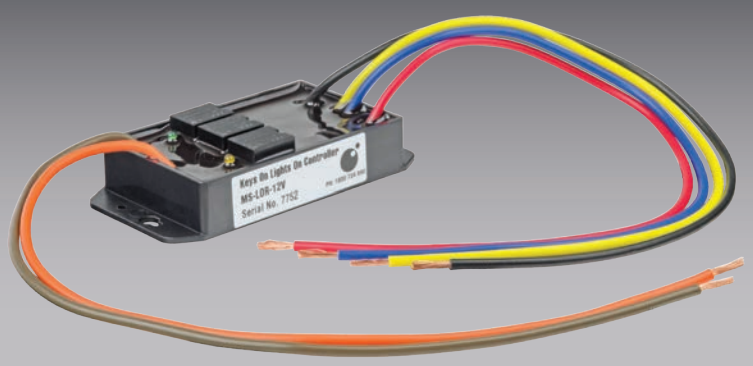
When the system voltage falls below the minimum voltage level the internal relay de-energises switching the COM back to NC.

## Voltage Sensor

| Part No. | Voltage | Current Rating (A) | Adjustable Sensing Range (V) | Factory Trigger Setting Minimum Voltage | Factory Trigger Setting Maximum Voltage |
|---|---|---|---|---|---|
| **VS12** | 12 | 10 | 9.0 – 16.0 | 12.0 ± 0.2 | 12.7 |
| **VS24** | 24 | 10 | 18.0 – 35.0 | 24.0 ± 0.2 | 25.2 |

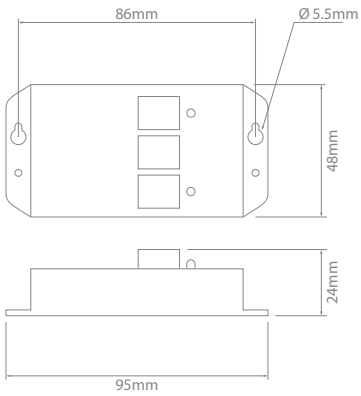
# Headlights On Units

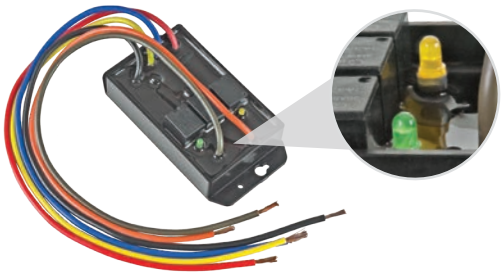
- Designed to operate park & low beam lights any time vehicle ignition is on.
- 10 seconds start up delay.
- Compact easy installation.
- Diagnostic LEDs.
- Available in positively and negatively switching models.
- Epoxy filled for enhanced moisture and vibration protection.
- 2-year warranty.




| | |
|---|---|
| **Body :** | ABS |
| **Wire Length :** | 200mm |
| **Operating Temperature :** | -40°C to 70°C |

2Yrs



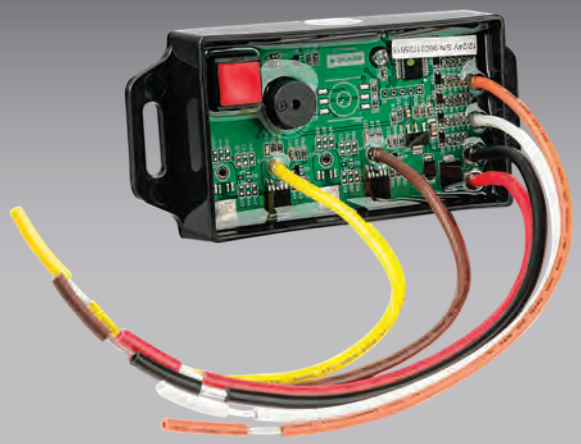



## Headlights On Units

| Part No. | Description |
|---|---|
| **MS-LOR-12V** | Suits any negatively switched headlight |
| **MS-LOP-12V** | Suits any positively switched headlight |

Installation on late model multiplexed vehicles must be performed by a qualified technician.

# Hand Brake Alarm Module



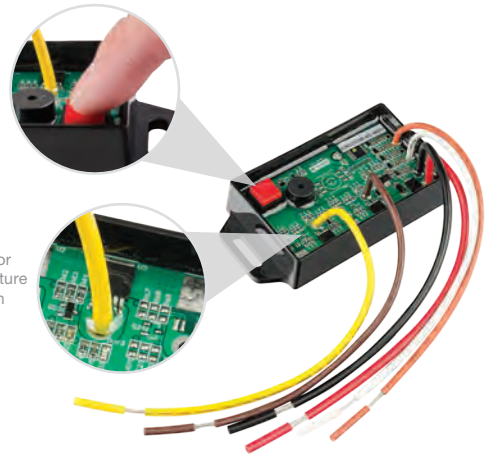
12V 24V  2Yrs

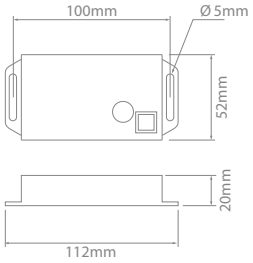
- Can be adapted to any vehicle.
- Self learning function automatically detects vehicle triggers for quick and easy installation.
- Designed to signal when hand brake is not engaged and vehicle door opens.
- Satisfies mine site requirements.
- 2 stage outputs.
- Compact easy installation.
- Suitable for positive and negatively switched vehicles/applications.
- Epoxy filled for enhanced moisture and vibration protection.
- Can be used as a general 2 stage alarm module.
- 2-year warranty.

| | |
|---|---|
| **Voltage :** | 12–24V |
| **Current Rating :** | 2 x 4A @ 12V |
| **Body :** | ABS |
| **Wire Length :** | 150mm |
| **Operating Temperature :** | -40°C to 70°C |

Self learning function automatically detects vehicle triggers for quick and easy installation

Epoxy filled for enhanced moisture and vibration protection






## Hand Brake Alarm Operation

The MS-HB01 Hand Brake Alarm Module is designed to satisfy the mine site requirement where all stationary vehicles must have the hand brake engaged.

The MS-HB01 does this by triggering alarms when a vehicle operator attempts to leave the vehicle by opening one or more of the doors without applying the hand brake.

The MS-HB01 unit is a 2 stage device.

*Stationary vehicle* | *Hand brake not engaged* | *Door opens*

Stage 1 output ON.

↓

*5 seconds delay*

↓

Stage 1 & Stage 2 output ON.

*Device deactivation will only occur when the hand brake is applied. Closing the door alone will not deactivate the unit.*

## Hand Brake Alarm Module

| Part No. | Description |
|---|---|
| **MS-HB01** | Suits any positive or negatively switched vehicle |

# Low Coolant Alarm

- Visual & audible warning device for water/ coolant level monitoring.
- LED indicator on modules.
- 7 second “slosh” delay preventing false triggering.
- Epoxy encapsulated modules.
- Brass sleeve or rubber multi-fit style probes available.

B657

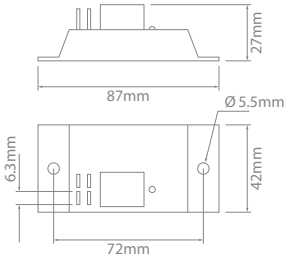
BA16DS-RED

8015002

WL601PS1

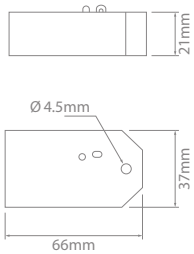
| | | |
|---|---|---|
| **Voltage :** | | 12–24V |
| **Sensing Depth :** | WL601P | 35mm |
| | WL601PS1 | 25mm |
| **Current Rating :** | 8015002 | 3A @ 12V |
| | WL601LP | 10A |

12V 24V



WL601LP

Modules



8015002

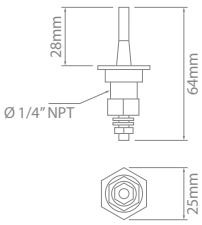
WL601PS1

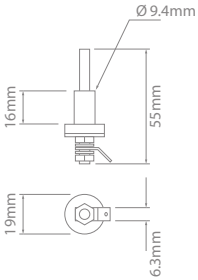
Probes

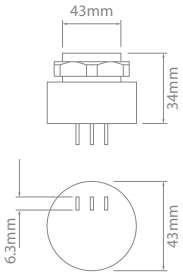
WL601P

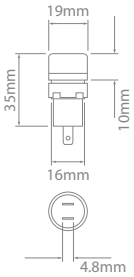
Buzzer
B657

Pilot Lamp
BA16DS-RED




## Low Coolant Alarm – Kits

| Part No. | Description | Module WL601LP | Module 8015002 | Probe WL601PS1 | Probe WL601P | Buzzer B657 | Pilot Lamp BA16DS-RED |
|---|---|---|---|---|---|---|---|
| **WL-1** | 10A Module with Threaded Probe | • | — | • | — | • | • |
| **WL-2** | 10A Module with Multi-fit Probe | • | — | — | • | • | • |
| **WL-3** | 3A Module with Threaded Probe | — | • | • | — | • | • |
| **WL-4** | 3A Module with Multi-fit Probe | — | • | — | • | • | • |

All components available separately.

# Switching Systems

## IONNIC Idle Timer

- Selectable idle time cycle.
- LED indicators for visual warning.
- Multi-voltage.
- Environmentally sealed – IP65.
- Push & toggle switch kits available.
- Suitable for Energised To Run (ETR) systems. Energised To Stop (ETS) model available on request.

12V 24V

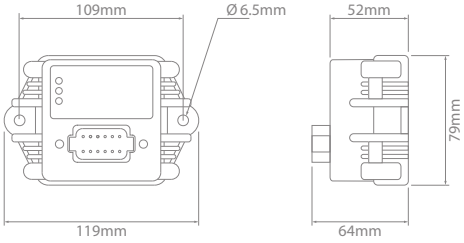
| | |
|---|---|
| **Voltage :** | 12–24V |
| **Enclosure :** | ABS |
| **Ignition Output :** | 10A |
| **Auxiliary Output :** | 0.7A |
| **Ingress Protection :** | IP65 |
| **Approvals :** | CE, C-Tick |
| **Operating Temperature :** | -40°C to 85°C |

IP65

IT11450

ITBKT

B657




Illuminated push button switch (Red)

IT10451

Engraved label

IT11451

Illuminated pilot light (Amber)

## IONNIC Idle Timer

| Part No. | Description | |
|---|---|---|
| **IT11450** | Idle timer controller unit | |
| **ITBKT** | Optional mounting bracket. Powder-coated aluminium | |
| **B657** | Optional warning buzzer | |
| **IT10451** | Harness with stainless steel push button switch & engraved label – 1.8m | |
| **IT11451** | Harness with toggle switch, boot & pilot light – 1.8m | |
| **IT10452** | Idle timer kit – push button switch | Kit contents:1 x Controller Unit (IT11450), 1 x Harness (IT10451) |
| **IT11452** | Idle timer kit – toggle switch | Kit contents:1 x Controller Unit (IT11450), 1 x Harness (IT11451) |

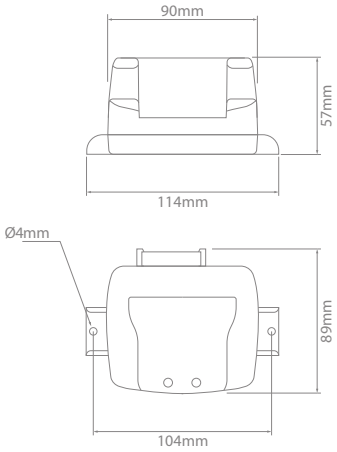
# IONNIC Idle Timer SE

- Three-minute engine idle timer.
- Positive and negative shut-down output.
- Integrated hand brake alarm function.
- Hand brake input self-learn function.
- Multi-voltage.
- LED indicators for visual warning.
- Supplied with TE DEUTSCH connector kit.

NEW

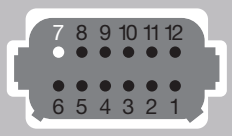
| | |
|---|---|
| **Voltage :** | 12–24V |
| **Enclosure :** | Polycarbonate |
| **Ignition Output :** | 8A |
| **Auxiliary Output :** | 1A |
| **Approvals :** | C-Tick |
| **Operating Temperature :** | -40°C to 85°C |

12V 24V



## Integrated Hand Brake Alarm Function

The IONNIC Idle Timer SE has an integrated handbrake alarm function. If the ignition is turned off and the handbrake is not engaged, power will be output to pin 7, allowing the user to activate an alarm, buzzer, or light.




## IONNIC Idle Timer SE NEW

| Part No. | Description |
|---|---|
| **IT2001** | Idle timer controller unit with connector kit |

Kit contents:
1 x Idle Timer Controller Unit
1 x DEUTSCH DT Series 12 Pin Connector
1 x Wedgelock
6 x Cavity Plug
10 x Size 16 Green Band Contact

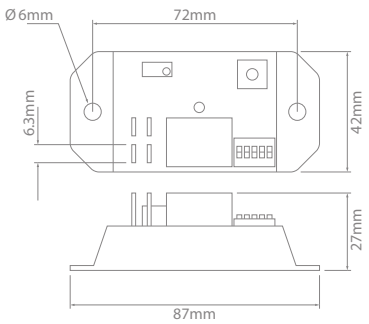
# Switching Systems

## Speed/Frequency Switch

- Selectable frequency via DIP switches.
- Designed to work with all standard signal inputs e.g. magnetic pick up, computer signal, ignition coil, sensor.
- Ground signal sent once predetermined frequency has been reached.
- Adjustable hysteresis to help prevent chattering at the switch point.
- LED indicates activation.
- Epoxy filled for enhanced moisture & vibration protection.
- 12 or 24 volt operation, selectable via DIP switch.

| | |
|---|---|
| **Voltage :** | 12V or 24V (selectable) |
| **Current Rating :** | 3A @ 12V |
| **Hysteresis :** | Adjustable |
| **Input Frequency :** | 10–12,000 Hz |
| **Input Signal :** | Sine, square wave |
| **Input Voltage :** | 1.5–50VAC |

5 Way DIP Switch
– Voltage
– Frequency




### Speed/Frequency Switch

| Part No. | Description |
|---|---|
| **SS301** | Multi-adjustable frequency switch |

# Low Battery Cutout

- Protects batteries being completely discharged from non-essential loads potentially denying engine cranking power.
- Protects from overvoltage – shuts down over 16V (12V mode), 32V (24V mode).
- Microprocessor controlled with 10 different selectable under-voltage thresholds on 12 and 24 Volt.
- LED for output status (on/off) and programming.
- Programmable delayed alarm output.
- Programmable delayed load disconnect.
- 5-year warranty.
- Made in Europe.

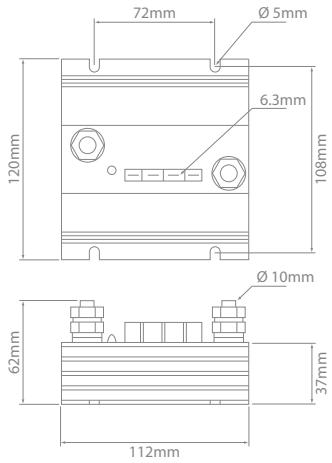
| | |
|---|---|
| **Voltage :** | 12V/24V |
| **Cable Diameter :** | 50mm² (min.) |
| **Weight :** | 730g |
| **Ingress Protection :** | IP66 |
| **Approvals :** | CE, C-Tick |

IP66 5Yrs Made in Europe

## Don't Let Your Battery Run Flat

Utilising the Low Battery Cutout you can be assured your battery won't be drained while in action.

Program the Low Battery Cutout to trigger an alarm when your charge is getting low.




## Low Battery Cutout

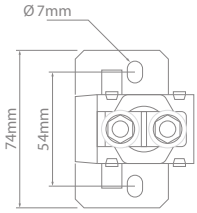
| Part No. | Max. Load (A) | Peak Current (A) | Under Voltage Disconnect Voltage 12V Mode | Under Voltage Disconnect Voltage 24V Mode | Over Voltage Disconnect Voltage 12V Mode | Over Voltage Disconnect Voltage 24V Mode |
|---|---|---|---|---|---|---|
| **ED-LBC1224-200** | 200–210 | 480 | 10–12V* | 20–24V* | 16V | 32V |

*10 different selectable under-voltage thresholds for 12 and 24 Volt.

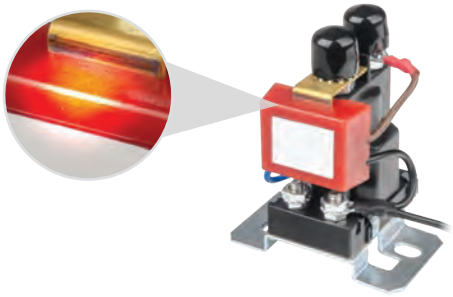
# Smart Battery Isolator

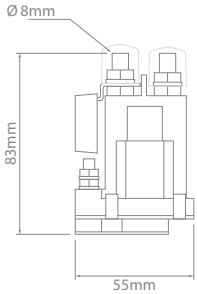
- Microprocessor-controlled battery isolator designed for use in multi-battery applications.
- Cost-effective protection against a flat battery.
- Cooler operating temperature compared to standard solenoid.
- Silver alloy contacts for longer life.
- Power saving technology.
- Fault indication LED.
- Surge protected.
- Designed and manufactured in Australia.
- 2-year warranty.

| | |
|---|---|
| **Body :** | Polymer |
| **Contacts :** | Silver Alloy |
| **Operating Temperature :** | 0°C to 50°C |
| **Approvals :** | CE, C-Tick, AS/NZS CISPR11:2004 |




Fault indication LED






## Smart Battery Isolator

| Part No. | Voltage | Current Rating (A) Inrush | Current Rating (A) Continuous | Off Volts | On Volts | Current Draw (A) |
|---|---|---|---|---|---|---|
| **SBI-12** | 12 | 400 | 100 | 12.7 | 13.2 | 0.15 |
| **SBI-24** | 24 | 400 | 100 | 25.4 | 26.4 | 0.15 |

# Battery Separators

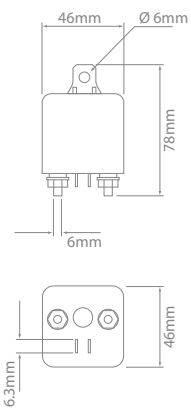
- Microprocessor-controlled battery isolators designed for use in multi-battery applications.
- Cost-effective protection against flat battery.
- Intelligent battery monitoring to prevent unwanted switching.
- Starter battery priority.
- No voltage loss.
- Surge-protected.
- 5-year warranty.
- Ideal for service vehicles, solar power systems, caravans, RVs, trailer homes, industrial systems and maritime applications.

ED-VSR1224-160

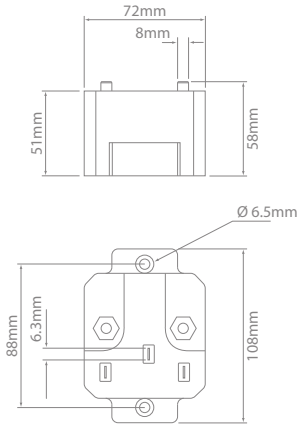
ED-VSR1224-140

| | |
|---|---|
| **Voltage :** | 12/24V |
| **Approvals :** | C-Tick |
| **Operating Temperature :** | -10°C to 40°C |

5Yrs




ED-VSR1224-140




ED-VSR1224-160

## Battery Separators

| Part No. | Current Rating (A) Inrush | Current Rating (A) Continuous | Off Voltage @12V | Off Voltage @24V | On Voltage @12V | On Voltage @24V | Weight (kg) |
|---|---|---|---|---|---|---|---|
| **ED-VSR1224-140** | — | 140 | 12.8 | 25.6 | 13.2 | 26.4 | 0.1 |
| **ED-VSR1224-160** | 480 | 160 | 12.8 | 25.6 | 13.2 | 26.4 | 0.5 |