



www.intellitecmv.com



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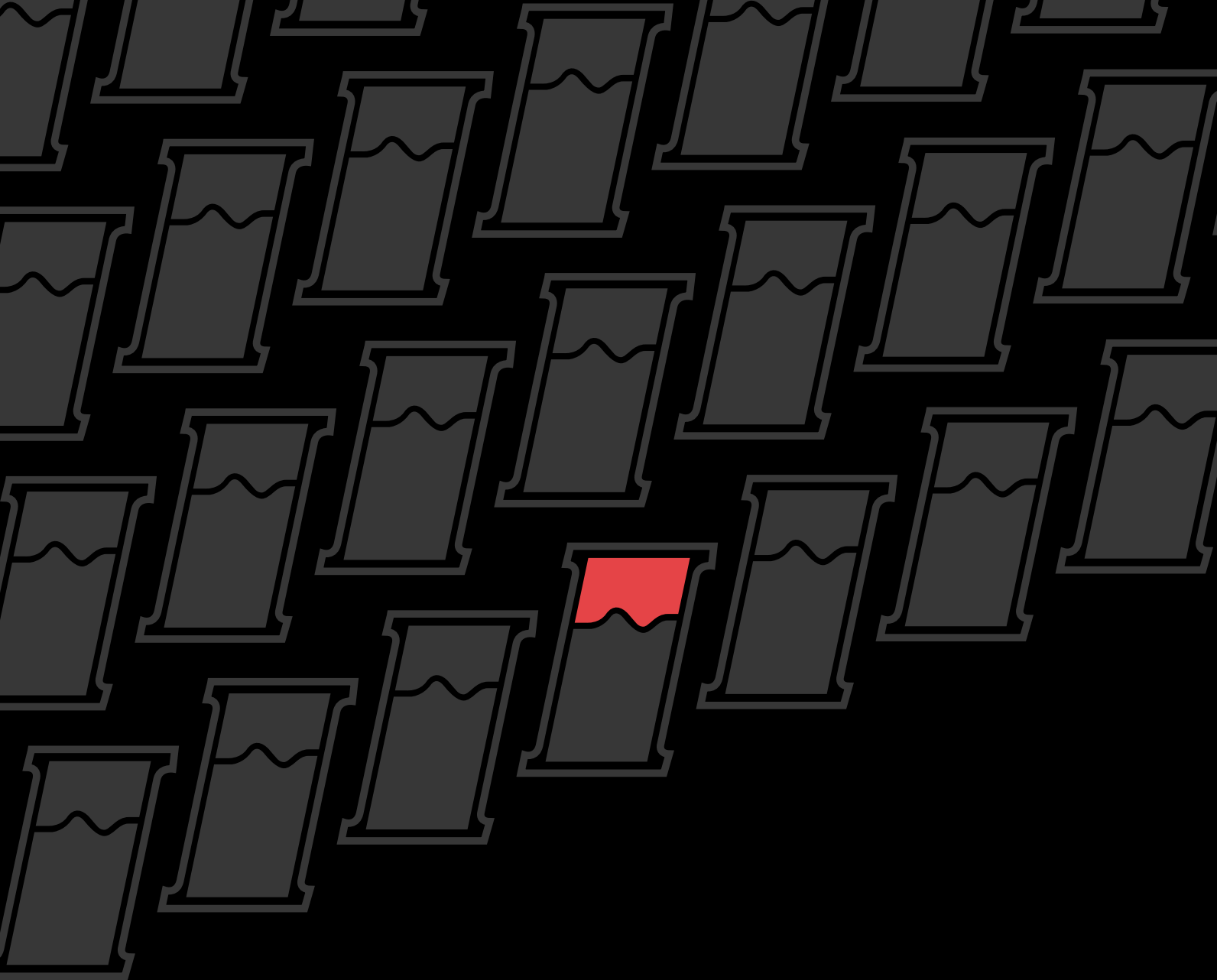
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ONE STOP SHOP

ONE STOP SHOP





Intellitec offer the specialist vehicle manufacturer a unique and cost effective solution for the supply of the complete electrical package for there vehicles.

Our one stop shop service is as the name suggests, we do the lot for you. From initial design engineering through final system design we work closely with you and your customer to ensure the system is right for both now and for in the future.

One part number, one solution delivered in one box, to include all schematic drawings, electronics, switches, harness & necessary software.

Not only does this approach assist in the purchasing of the electrical system, the reduction in electrical man hours per vehicle is also positively affected. Warranty problems are also dramatically reduced.

Intellitec will fully support the vehicle manufacturer during the re design process and will assign a dedicated engineer to provide full system design and support to the vehicle manufacturer.

Other companies who use the One Stop Shop solution include, TVAC, East Lancashire Coachbuilders, Alexander Dennis, & UV Modular.

For an initial discussion please speak with Brian Aston on **07747 167 222**

CPU

MODULES





Intellitec has over 10 years experience in the design, development & application engineering of multiplex technology specifically designed for Truck, Bus, Coach, Ambulance, Fire Appliance, Police Vehicles, Motorhome & Marine applications.

Our Multiplex product range includes a fixed " building block" modular system aimed at the body builder, Vehicle Programmable Logic Control (VPLC) designed for the utility vehicle & emergency service vehicles and Programmable Multiplex Control (PMC) which is currently used in Bus & Fire appliance construction and programmable switch panels.

PMC offers a new approach to design for the specialist vehicle body builder, unlike designing a vehicle harness or a printed circuit distribution board, where every "I" must be dotted and every "T" must be crossed before installation begins. As long as all the switches, sensor inputs and loads you wish to control are connected to a module somewhere in the system, the rest is a simple matter of using the Windows based program setup.

The function of each channel is defined by the designer to be either an input, output or a virtual channel. The definition of each channel is done by the selection of the modules. The relationship of these inputs and outputs are then defined by the designer through the Intellitec Windows based program using simple Boolean Logic Expressions.

A principle advantage of the PMC system is the high degree of flexibility it offers the vehicle designer at the point of design, pre delivery and later in the field when the vehicle needs functional updates.

Brief Functional Overview - Software

- Windows based, Boolean driven software
- On screen 320 channel status view
- 320 channels I/O accommodates up to 32 modules in one system
- 160 additional virtual channels to allow complex logic performance
- 160 timers, each with timer run and timer done channels
- Program files can be sent as email attachment

Please visit www.intellitecmv.com for full information download.

CPU

MODULES



PART NO.	DESCRIPTION	VEHICLE	FUNCTION
Central Processing Units			
CPU 00-00800-021	320 Channel Central Processing Unit	+12/24V	
506 00-00846-506	4 point DC Input / 6 point FET Out	+24V	20/10 Amp Fused, Solid State Outputs
516 00-00846-516	4 point DC Input / 6 point FET Out	+12V	20/10 Amp Fused, Solid State Outputs
606 00-00720-606	4 point DC Input / 6 point FET Out	+24V	10 Amp self protected, Solid State Outputs
616 00-00720-616	4 point DC Input / 6 point FET Out	+12V	10 Amp self protected, Solid State Outputs
600 00-00802-600	10 channel Solid State FET outputs	+24V	10 Amp self protected, Solid State Outputs
Low Wattage Output Modules			
320 00-00702-320	10 Channel Low Watt Output Module	+24V	
330 00-00702-330	10 Channel Low Watt Output Module	+12V	
Input Modules			
100 00-00622-100	10 point DC Input	+24V	10 DC Pos or Neg
110 00-00622-110	10 point DC Input	+12V	10 DC Pos or Neg
Load Manager Voltage input module			
809 00-00809-240	inputs 4 voltage thresholds	+24 Volt	
809 00-00809-120	inputs 4 voltage thresholds	+12 Volt	
916 00-00916-120	quad H bridge output	+12 Volt	(24 Volt available soon)

PART NO.	DESCRIPTION	VEHICLE	FUNCTION
Rocker Switch Direct Plug-in Adapters			
906 00-00643-906	6 Rocker Switch Adapter	+24V	Plugs to 6 by 1 Panel
916 00-00643-916	6 Rocker Switch Adapter <small>(Use standard ITT, Sprague or Britax switches)</small>	+12V	Plugs to 6 by 1 Panel
909 00-00656-909	9 Rocker Switch Adapter	+24V	Plugs to 3 by 3 Panel
919 00-00656-919	9 Rocker Switch Adapter <small>(Use standard ITT, Sprague or Britax switches)</small>	+12V	Plugs to 3 by 3 Panel
Warning Lamp Direct Plug-in Adapters			
806 00-00644-806	6 Warning Lamp Adapter	+24V	Plugs to 3 by 2 Panel
816 00-00644-816	6 Warning Lamp Adapter	+12V	Plugs to 3 by 2 Panel
Diagnostic Test Equipment			
00-00738-120	PMC System Status Monitor	+12V	
00-00738-240	PMC System Status Monitor	+24V	
00-00739-120	PMC Module Simulator	12V	
00-00739-240	PMC Module Simulator	24V	

This list of part Numbers does not represent the full range of PMC modules. For a full technical brochure, go to www.intellitecmv.com to download direct to your PC.



CPU

The PMC Central Processing Unit is the main component of Intellitec's Programmable Multiplex Control family.

The CPU has 320 channels that control as many as 32 remote Input / output modules through Intellitec's multiplex communications system (Pat. No. 4,907,222 and 6,011,997). This multiplex system allows the CPU, I/O Modules and switch panels to be wired together with just three standard automotive cables.

Multiple modules can be wired to a single connector. All input, or switch information is gathered through the remote modules and directly communicated to the CPU. The CPU then interprets the inputs, determines the states of all outputs and communicates that information to the remote modules via the PMC communications link.

The CPU also has 160 built-in timer channels which are setup by the Windows software. These timers can function as on-delay, off-delay, flasher and interval timers. PMC eliminates the need for flasher modules, mirror heat timers, wiper delays, load managers, etc. In addition, there are also 160 virtual channels which provide the capability to write very complex logic relationships between the channels.

The CPU RS-232C communications port and Windows software are used to setup or program the vehicle electrical specification. The port can also be used to perform system diagnostics. If a lap top isn't available, most diagnostics can be performed with a volt meter.

The PMC system communicates continually at a relatively slow rate of 4 kHz, with each input/output updated every .040 seconds. The multiplex signal communicates to the output modules with a large change in signal voltage. Because of the low communications frequency and large signal change, communication can take place without fear of interference over any economical wire and eliminates the need for special cables and connectors. In addition, four high speed channels are available to control elements requiring a higher speed.

The CPU includes a sleep mode which can reduce the overall system operating current, allowing the system to be constantly live with insignificant drain on the vehicle battery.

Through the use of Intellitec's WinPMCI Windows based software program and the connection of a PC to the RS-232C port, the user can easily set up the relationships between the switch inputs, timers and outputs.



For Full technical specification, please visit www.intellitecmv.com or ask for a CD.



916 Quad H Bridge Output Module

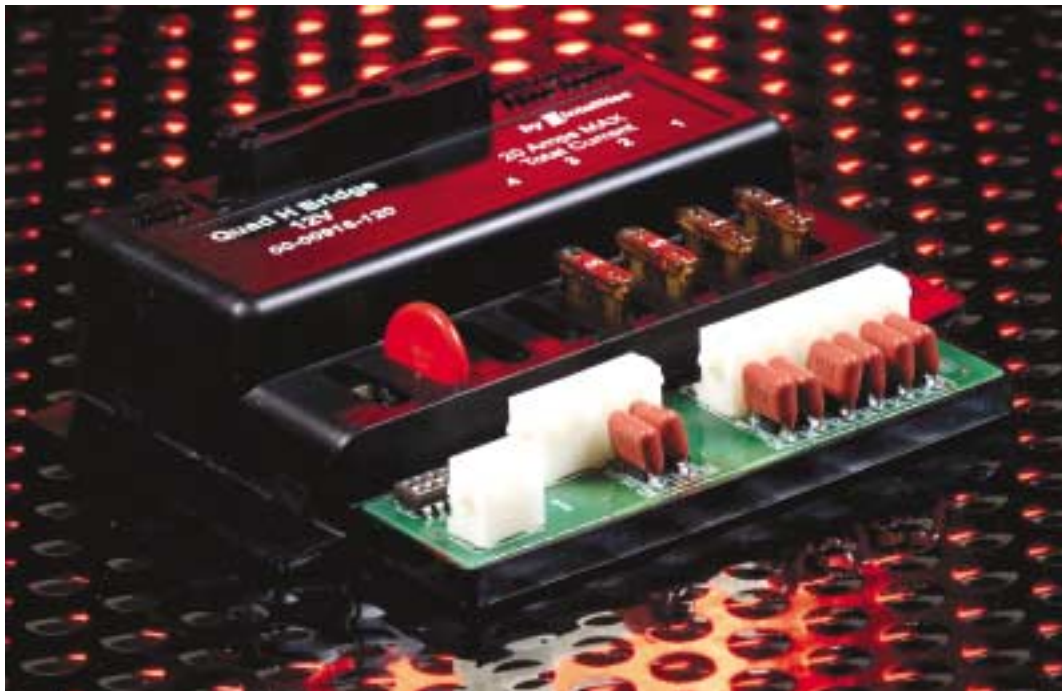
The 916-120 is a Quad H bridge module which provides power fusing, switching and distribution in one module. Typically the application for the H bridge is to operate reversible motor loads. This module has eight 10A SPDT relays connected in four "H" bridge configurations.

When a channel is activated, it connects one end of the load to the battery, while the other end is connected to earth, each of the four H bridges is fed from a fuse position that can be filled with a fuse or indeed circuit breaker. Total module current should not exceed 20A

The 916-120 module includes 9 diagnostic LED's. One indicates condition of comms signal, the others indicate activation of individual outputs.

Each of the first 8 channels will turn on one of the relays in the four H bridges. A channel 9 signal will turn on all the odd numbered channel relays and channel 10 signal will turn on the even channels. This allows simultaneous operation of the four motor loads with a single input.

Each of the outputs can also be used as individual outputs with the understanding that the load will be earthed when turned off. This allows the module power up to 8 individual loads. All connections are with AMP Mate N Lok to reduce installation time.





506 / 516 Module

The 506/516 provides power fusing, switching and distribution in one module. With its six, solid-state, high-side outputs it is capable of controlling a total of 50 Amps. The outputs are controlled by field effect transistors, with the outputs capable of controlling up to 20 amps. These are ideal for high use applications, such as flashing warning lights, indicators and brake lights.

The module includes a number of diagnostic leds to assist with fault diagnosis.

There are four input connections for rocker, limit or sensor switches. Each individual input can be configured as either a low-side switch to earth, or a high-side switch to battery. Input information is directly communicated to the CPU via the PMC communications link. All of the input/output harnesses are connected with AMP Mate-N-Lok connectors to reduce installation time and errors.

If the module's circuit board exceeds 100 degrees C, all outputs will turn off thus protecting the module. The COM LED will flash indicating that an over temperature condition exists. After cool down, and after power is removed and reapplied, the module will return to normal function. The module will record the number of times overheating has occurred and upon initial power up, the LED will flash this numeric figure.



MODULES



606 / 616 Module

The 606 / 616 provides power-fusing, switching and distribution in one module. With its six, solid-state, high-side outputs it is capable of controlling a total of 37 Amps, with each output capable of controlling 10 amps. The outputs are controlled by field effect transistors and are ideal for high use applications, such as indicators or brake lights.

The FET outputs in the 606/616 module are self protecting in the event of a short circuit. Either Fuses or circuit breakers may be utilized as redundant circuit protection. When circuit breakers are used, it is unlikely for them to trip during a short circuit, as the shut down circuitry associated with the FET is much faster and will shut current flow off before the circuit breaker has time to trip. Because of the added protection, circuitry maximum load current is limited to 10 Amps per channel and 37 Amps per module.

The module includes a number of diagnostic leds to assist with fault diagnosis.

There are four input connections for rocker, limit or sensor switches. Each individual input can be configured as either a low-side switch to earth, or a high-side switch to battery. Input information is directly communicated to the CPU and the solid state outputs are controlled by the CPU via the PMC communications link. All of the input/output harnesses are connected with AMP Mate-N-Lok connectors to reduce installation time and errors.

If the module's circuit board exceeds 100 degrees C, all outputs will turn off to protecting the module. The COM LED will flash indicating that an over temperature condition exists. After cool down, and after power is removed and reapplied, the module will return to normal function. The module will record the number of times overheating has occurred and upon initial power up, the LED will flash this numeric figure.





PMC Output Module 310/ 320

There are ten connections for low wattage loads, such as dash warnings lights or beepers. The PMC CPU utilizes input information from other modules on the system, and via the PMC communications link, controls the ten loads on this module. All of the output harnesses are connected with AMP Mate-N-Lok connectors to reduce installation time and errors.

All loads are negative (low-side) switched to a local load earth, which needs to be provided to the module. A fused load power connection is available at the module which can be used for loads requiring a power source.



PMC Input Module 100 / 110

There are ten input connections for rocker, limit or sensor switches. Each individual input can be configured as either a switch to earth, or a switch to battery. All input information is directly communicated to the CPU via the PMC communications link, and the CPU utilizes this information to control other PMC output modules. All of the output harnesses are connected with AMP Mate-N-Lok connectors to reduce installation time and errors. To reduce wiring, and if your panel switches are grouped together, you may consider using Intellitec standard switch adapters, custom adapters or custom switch panels. Several standard switch adapters are available.



MODULES

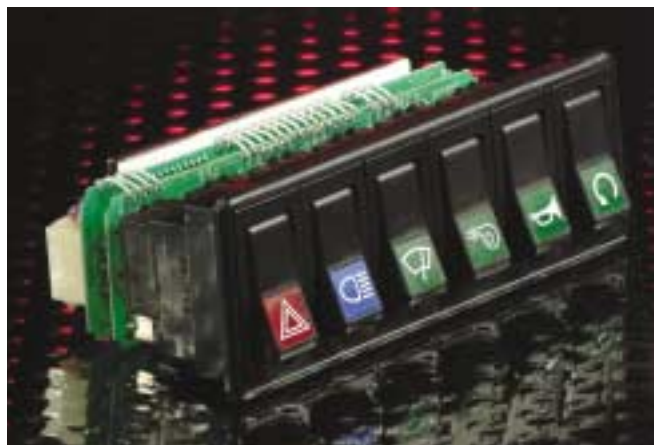


PMC Rocker Switch Adapters

906 /916 (6 switch) – 919 /909 (9 switch)

Rocker switches from SWF, Britax & Carling plug directly into the Adapter, eliminating the need for a harness or separate wiring to each switch. All switch information is directly communicated to the PMC CPU via the three wire PMC communications link, with the The third wire providing power to the lamps. The PMC connection is made with an AMP Mate-N-Lok connector to reduce installation time and errors. The switch indicator lamps are controlled directly on the adapter. When the switch is off, half of the battery voltage is supplied to the lamp for backlighting. When the switch is turned on, full battery voltage is applied.

The switches do not control the loads or functions directly; they simply communicate information to the PMC CPU. Due to this fact, the switches do not have to be complex, eliminating the need for multiple poles or multiple throws. The switches can be simpler and less expensive, reducing the different types of switches used. The Windows based setup replaces the need for SPDT, DPDT and other switch configurations.





Voltage Monitor

The Load Manager module provides 4 inputs to the PMC system corresponding to specific battery voltages.

Only 3 connections to the module are needed.

- A. Battery +
- B. PMC Communications bus
- C. PMC Earth

This module has been potted and provided with a Delphi Packard IP68 water tight connector to facilitate placement near the battery. The inputs from this module can be used in PMC Boolean logic to force selected loads off as the system voltage falls (load shedding). You may also wish to turn an output on to indicate to the engine controller that high speed idle is needed.



MODULES



PMC Signal Tester

The PMC Signal Tester aids in the process of diagnosing I/O and wiring problems in the vehicle. The tester may be connected at any point around the vehicle where there is access to the 3 wire communications bus. The connection may be made while the vehicle's multiplex system is operating, without detrimental effect. When connected, the tester is capable of displaying the status of every input and output in the system, or forcing any input or output in the system on.

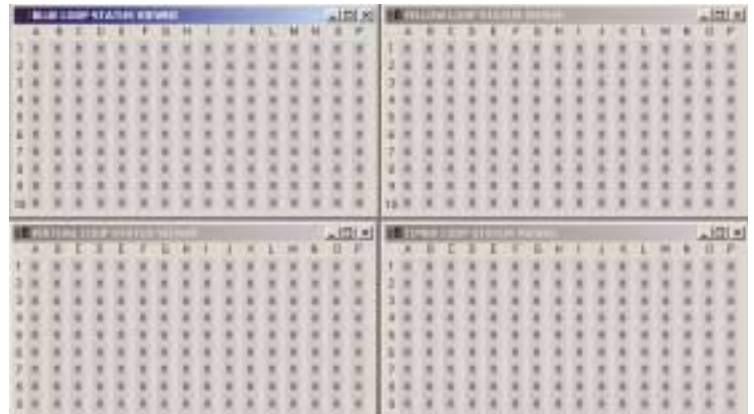
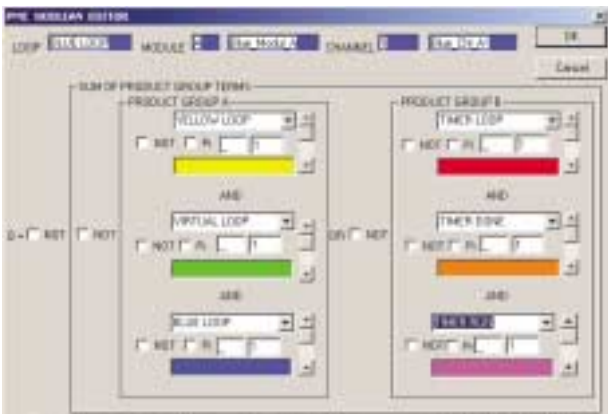
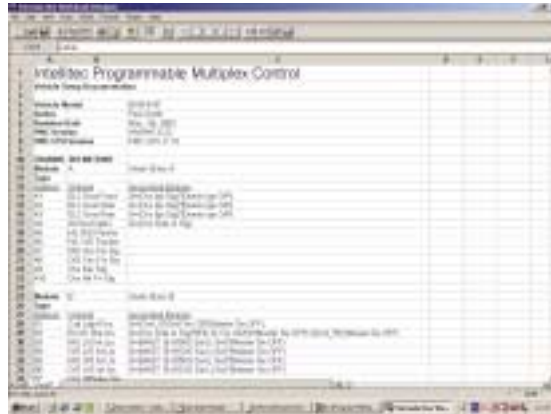
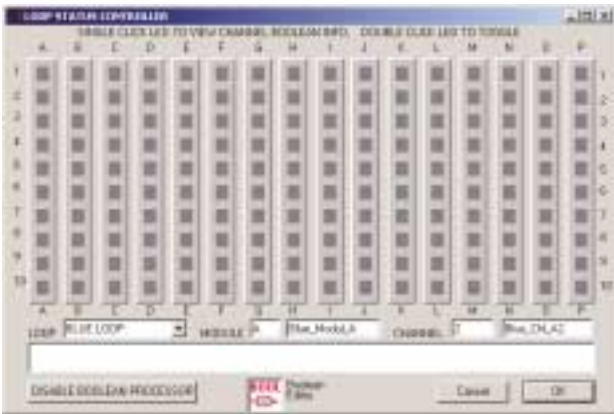
The tester has 10 push button switches and 10 LED's, each of which are related to a channel. Two, 16-position rotary switches are used to set the Switches and lights to any module address, either at individual or a shared address. If a push button on the tester is set to an output channel's address, pushing the button will cause the output to turn on. The LED's will light to reflect the status of both inputs and outputs.

Since it is acceptable to have more than one module in the PMC system with the same address, the tester can be set to duplicate any module from A through P.





- 320 I/O channels
- 160 Timers
- 160 Virtual channels
- On screen visual diagnostics
- 160-320 CPU Auto conversion capability
- Easy Windows Boolean logic programming
- Password protected version for service engineers if required
- Full 'free' technical support available





The Vehicle Programmable Logic Controller

is designed to provide a flexible switching unit, programmable by the installer, to perform a variety of functions including remote switching and signaling.

The controller provides ten solid state, high-side outputs, each capable of carrying 10 amps. Outputs can be programmed through a Windows-based program, using Boolean logic to perform various functions such as flashers, interlocks and timed outputs.

The controller has an Intellitec multiplexed communications line with sixteen channels, each capable of being either an input or an output. This allows remote switch panels with as many as 16 switches to communicate with the controller over two non-shielded wires.

In addition, the controller has three high-side direct inputs, a temperature input, voltage sensor and event counter that can also be used in the Boolean equations to control outputs. This allows logic statements such as Output = ignition and master switch and Volts>12. The controller also contains a built in audible alarm programmable with Boolean logic.

In a typical application, the controller and switch panels can be used to operate the lighting on a small emergency vehicle, airport vehicle, bus or any specialty vehicle. It can be programmed to operate flashing lights, interior lights, communications equipment, hydraulic valves, etc.



Part Nos.

- 00-00808-000-12V VPLC
- 00-00808-240-24V VPLC



Programmable Switch Panels

00-00 874-126-S	Part No 6 way 12v
00-00 870-130-S	Part No 10 way 12v
00-00 874-006-S	Part No 6 way 24v
00-00 870-010-S	Part No 10 way 24v

With vehicles becoming more complex and consequently having less room to run wiring from input to loads, many vehicle manufacturers are investigating other ways of reducing the bulk of wiring, specifically behind dash & corner pillars.

Switch panels are often difficult areas to work on; using traditional switches, crimps & hard wiring, it is not unusual to require 20+ cables to operate for example 10 switches. Couple these problems with long lead times from switch suppliers and this area of vehicle manufacture is often problematic and time consuming.

Available in 12V & 24V and in 6 & 10 way variations, the new slim line switch panels are all software configurable, therefore the vehicle designer can change, improve & add functionality as he / she sees fit without changing any switches or hardware function.

Legends for the switch panels can be produced on any PC, and each of the switches can be programmed to be either On / Off, Momentary, Latch or if required Multi Function.

Backlighting is provided by LED's, which is again programmable, and the Windows based point & click operation software can be supplied from Intellitec.





Tail Lift Battery Guard

K13 Tail Lift Battery Guard 12v
K14 Tail Lift Battery Guard 24v

The Tail Lift Battery Guard has been developed specifically to protect the engine starting batteries from being excessively drained by the tail lift to a point where there is insufficient voltage to start the vehicle.

Using the technology from our other Battery Guard products, the Tail Lift Battery Guard monitors the available battery power when the tail lift is in use, if the battery voltage drops below 24.1v (12.1v) a 4 minute voltage sensitive timer is triggered on the ECU.

If the voltage remains below 24.1 volts uniformly for 2 minutes, the sounder on the ECU will begin to bleep & the LED will begin to flash.

Should the Battery voltage remain below 24.1v for a full 4 minutes, the Tail Lift Battery Guard will isolate the tail lift, to protect starting voltage.

Once automatic isolation of the tail lift has taken place, the operator must start the vehicles engine to restore power to the tail lift, once the Tail Lift Battery Guard senses charging voltage go above 26.2v the ECU will automatically reset.

All connections are made locally inside the power pack, as a retrospective installation the Tail Lift Battery Guard should take no longer than 1 hour to install.



Key Features

- Prevents tail lift from flattening batteries.
- Visual & audible warning of low battery condition prior to isolation.
- Fully waterproof.
- Delphi Packard IP 67 Connections.
- Night silent operation.
- Approved by Ratcliff, Ray Smith Group & Ross & Bonnyman.
- Can be installed OEM by your lift supplier.
- Easy retrospective installation.
- Can be used on many types of plant / electro hydraulic equipment.

Installation

- 1 Isolate power pack before commencing.
- 2 Fit the guard inside the power pack enclosure ensure the surface is clean, utilise either fixing method.
- 3 Fit warning LED in a convenient location.
- 4 Connect wiring as indicated in diagram and secure using cable ties provided.
- 5 A night silent feature can be achieved by connecting into the rear lamps.
- 6 Attach labels to power pack.
- 7 Re-connect system and carry out manual test procedure as follows:
 - 1 Upon completed installation, start engine and wait until LED goes off.
 - 2 Stop Engine.
 - 3 Connect purple (test wire) to negative for 3 seconds until Battery Guard isolates, ensure LED is flashing.
 - 4 Tail Lift should be inhibited.
 - 5 Connect purple to negative.
 - 6 Tail lift should be operative & LED will go off.

Technical Information

Specifications	12 Volt	24 Volt
Nominal Operating Voltage	12.0 volts	24.0 volts
Maximum Current	10 amps	10 amps
Minimum Actuation Voltage	9.0 volts	9.0 volts
Reset Voltage	13.1 volts	26.2 volts
Maximum Continuous Carry Current	10 amps	10 amps
Ambient Temperature Range	-40of to + 185of	-40of to + 185of
Normal Input Voltage Range	10 - 16 Volts DC	20 - 32 Volts DC
Standby Current	< than 4 milliamps	< than 4 milliamps
Short Term Over Voltage Protection to:	+ 24 volts	+ 36 volts
Reverse Voltage Protection to:	- 300 volts	- 300 volts
Positive Voltage Spike Protection to:	+ 150 volts	+ 150 volts



Product Over View



Battery Guard 100A

K1 Battery Guard 12v 100A
K2 Battery Guard 24v 100A

Intellitec's Battery Guard provides the OEM and Fleet operator with a level of assurance never before possible, – A Guarantee that their vehicles will start first time Every Time.

Battery Guard constantly monitors the available battery voltage when the engine is not running, if the battery voltage falls below 24.1v (or 12.1v), a voltage sensitive timer in the Battery Guard ECU is triggered.

If the available battery voltage remains below 24.1v uniformly for a full 4 minutes, the ECU will pulse the Intellitec latching relay and the batteries will be isolated, to Guarantee Starting Power.

At this stage there will be no power for ignition, the vehicle operator must press the flashing reset switch and start his engine.

Battery Guard also offers vehicle operator the ability to manually isolate the batteries via the Battery Guard reset switch, simply press and hold the switch for 2 seconds, and the batteries will be isolated.

Our customers tell us the Battery Guard has proven to pay for itself with just one operation.
See cost saving calculator on www.intellitcvm.com



Key Features

- Guarantees Starting Power
- Manual Battery Isolator
- Fully Waterproof ECU
- Delphi Packard IP 67
- Waterproof Connectors
- Approved by Paccar, Iveco,
- Scania, Dennis, MAN
- Ignition Protection
- System test on start
- E Marked
- Supplied as complete kit

FAQ

Q, Can the Battery Guard isolate while the vehicle is moving?

A, No, the orange cable in the supplied loom is connected to an ignition or alternator source, voltage sensing is inhibited when the engine is running.

Q, Once isolated does the relay draw current?

A, No, the Battery Guard uses a patented latching contactor and draws power momentarily to switch, then zero current draw in open or closed position.

Q, How long to install?

A, This depends on vehicle to vehicle, with the dedicated kits we provide, an average of 2 hours is a good rule of thumb.

Technical Information

Specifications	12 Volt	24 Volt
Nominal Operating Current	12v	24v
Actuation Current	3.0 Amps	1.2 Amps
Min Actuation Voltage	9.0v	18v
Max Continuous Carry	100 Amps	100 Amps
Max (30 seconds) Carry Current	500 Amps	500 Amps
Ambient Temp Range	-40°C to + 85°C	-40°C to + 85°C
Normal Input Voltage Range	10 – 16v	20 – 32v
Contact Life at Full Load	Min. 10,000cycles	Min. 10,000cycles
Standby Current	< than 1 milliamp	< than 1 milliamp
Short Term Over Voltage Protection to	+ 24v	+ 36v
Reverse Voltage Protection to	- 300v	- 300v
Positive Voltage Spike Protection to	+ 150v	+ 150v

MODULES



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Product Over View



Battery Guard 200A

- K3 Battery Guard 12v 200A
- K4 Battery Guard 24v 200A

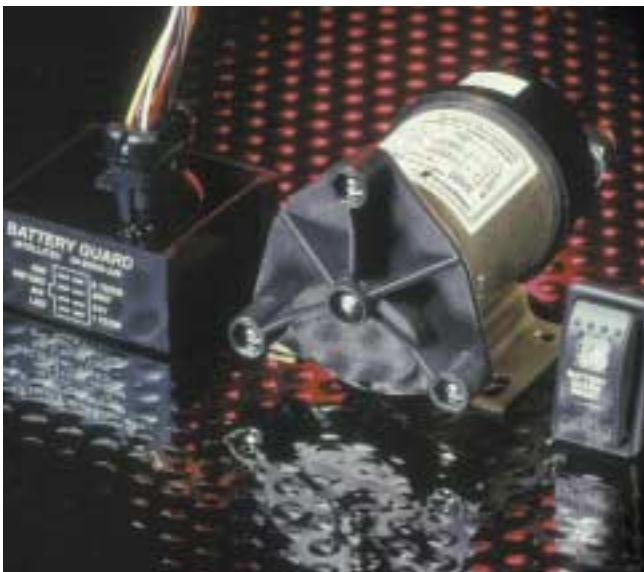
The 200 Amp Battery Guard has been designed specifically for vehicle applications where isolation of the full starting current is a requirement. The 200 Amp relay operates on the same principles as Intellitec's 100 Amp version that has been used by the industry for over 10 years.

These contactors are covered by Patent No 4,682,289. The 200 Amp version is designed to be used on larger vehicles where the continuous current draw can be larger than 100 Amps, the 200 Amp version can handle the heavier starter currents of larger diesel engines.

Battery Guard constantly monitors available battery power when the engine is not running, if the battery voltage falls below 24.1v (12.1v) a voltage sensitive timer in the ECU is triggered.

If the available battery voltage remains below 24.1v uniformly for a full 4 minutes, the ECU will pulse the Intellitec latching relay and the batteries will be isolated, to Guarantee Starting Power.

At this stage there will be no power at ignition, the vehicle operator must press the flashing reset switch and start his engine. Battery Guard also offers vehicle operator the ability to manually isolate the batteries via the Battery Guard reset switch: simply press and hold the switch for 3 seconds and the batteries will be isolated.



Key Features

- Prevents tail lift from flattening batteries.
- Visual & audible warning of low battery condition prior to isolation.
- Fully waterproof.
- Delphi Packard IP 67 Connections.
- Night silent operation.
- Approved by Ratcliff, Ray Smith Group & Ross & Bonnyman.
- Can be installed OEM by your lift supplier.
- Easy retrospective installation.
- Can be used on many types of plant / electro hydraulic equipment.

What is the "real" cost of a flat battery?

The answer to this question will certainly vary from fleet to fleet. Let's look at the potential costs involved in a flat battery "non start"

- 1 Damage to batteries – 1 deep cycle can reduce the battery's life by as much as 50%
- 2 Potential damage to voltage sensitive components from a "jump start", many vehicle manufacturers now state "do not jump start"!!!!
- 3 Stress and strain on alternator and starter motor; tail lift pumps with low voltage operation
- 4 Driver and vehicle downtime – how much per hour?
- 5 Late deliveries to customer – possible lost accounts?
- 6 Cost of jump start?
- 7 See cost saving calculator on www.intellitecmv.com

Technical Information

Specifications	12 Volt	24 Volt
Nominal Operating Current	12v	24v
Actuation Current	5.6 Amps	2.8 Amps
Min. Actuation Voltage	9.0v	18v
Max. Continuous Carry	200 Amps	200 Amps
Max. (30 seconds) Carry Current	1200 Amps	1200 Amps
Ambient Temp Range	-40°C to + 85°C	-40°C to + 85°C
Normal Input Voltage Range	10 – 16v	20 – 32v
Contact Life at Full Load	Min. 10,000cycles	Min. 10,000cycles
Standby Current	< than 1 milliamp	< than 1 milliamp
Short Term Over Voltage Protection to	+ 24v	+ 36v
Reverse Voltage Protection	- 300v	- 300v
Positive Voltage Spike Protection to	+ 150v	+ 150v

MODULES



Intellitec MV Ltd
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PSV Battery Guard

K9 PSV Battery Guard 24v

Component Part No's.

00-00727-120	12v PSV Battery Guard ECU
00-00727-240	24v PSV Battery Guard ECU
00-001-000	Carling Printed Reset Switch
00-000-727	Loom W / Packard

Intellitec's PSV Battery Guard has been specifically engineered for the bus and coach market. Most PSV chassis are fitted with a DC isolator as standard and we utilise the chassis isolator to effect low voltage automatic isolation using the PSV Battery Guard ECU in series with the existing isolator.

The PSV Battery Guard constantly monitors the available battery voltage when the engine is not running, and if the battery voltage drops below 24.1 (12.1v) a voltage sensitive timer in the ECU is triggered.

If the Battery Voltage remains below 24.1v (12.1v) uniformly for 2 minutes, the PSV Battery Guard ECU produces an output that drives the warning buzzer included in the kit, or our own digital speech module which says "Warning Low Battery, Please Start Your Engine".

Should the available battery voltage remain below 24.1v (12.1v) uniformly for 4 minutes' the PSV Battery Guard will switch the chassis isolator off to guarantee starting power.

At this stage there will be no power for ignition, so the driver must press the flashing reset switch and start his engine.

The PSV Battery Guard ECU has a built-in diagnostic feature, in the form of an LED indicator which is included on the module to help diagnose any system problems. This LED will illuminate with the engine running and will flash during countdown, prior to isolation.



Key Features

- Guarantees starting power
- Manual Battery Isolator
- Fully waterproof ECU
- Delphi Packard waterproof connectors
- Oil switch/engine run protection
- Switches positively or negatively biased isolators
- Audible warning/digital speech module 2 minutes prior to auto isolation (optional)
- Diagnostic indicator on ECU
- Easy installation both OEM and retrospectively
- Approved by Volvo and Dennis.

What is the "real" cost of a flat battery?

The answer to this question will certainly vary from operator to operator. Let's look at the potential costs involved in a flat battery "non start"

- 1 Damage to batteries - 1 deep cycle can reduce the battery's life by as much as 50%
- 2 Potential damage to voltage sensitive components from a "jump start". Many vehicle manufacturers now state "do not jump start"
- 3 Stress and strain on alternator/starter motor during low voltage operation
- 4 Driver and vehicle down time - how much per hour?
- 5 Late on routes - customer dissatisfaction

FAQ

- Q Can the PSV Battery Guard isolate whilst the vehicle is moving?
- A No, the orange cable in the loom is connected to an oil pressure switch or alternator light source which inhibits isolation regardless of the battery voltage.
- Q How long to install?
- A This can be different from vehicle to vehicle, 2 hours is a good rule of thumb.

Technical Information

Specifications	12 Volt	24 Volt
Nominal Operating Voltage	12.0 volts	24.0 volts
Maximum Current	10 amps	10 amps
Minimum Actuation Voltage	9.0 volts	9.0 volts
Maximum Continuous Carry Current	10 amps	10 amps
Ambient Temperature Range	-40of to + 185of	-40of to + 185of
Normal Input Voltage Range	10 - 16 volts DC	20 - 32 volts DC
Standby Current	< than 1 milliamp	< than 1 milliamp
Short Term Over Voltage Protection to:	+ 24 volts	+ 36 volts
Reverse Voltage Protection to:	- 300 volts	- 300 volts
Positive Voltage Spike Protection to:	+ 150 volts	+ 150 volts

MODULES



Product Over View

Battery Isolator Controller (BIC)



Battery Isolator Controller

K19 12v Battery Isolator Control

Intellitec's Battery Isolator Controller (BIC) has been designed specifically for vehicles that use dual battery systems and where starting power is crucial, such as utility vehicles, 4x4's, Ambulances, and boats etc.

The BIC performs two important functions, firstly the system provides a reliable and efficient method of both charging and isolating dual batteries, secondly if the chassis battery voltage falls below 9.0v for half a second and the auxiliary battery is above 9.0v, both batteries are connected to provide boost starting.

The BIC charging system operates by sensing the level of voltage on the chassis 12v system, when this voltage rises above 13.3v for 12 seconds, as happens when the engine is running normally, the BIC ECU will close the isolator relay, providing charging current to the auxiliary battery.

When the ignition is switched off, the relay will open immediately. If the voltage on the main chassis system should drop below 12v for more than 2 seconds while the ignition is on, the relay will drop out, this scenario could happen if the alternator could not keep up with all the loads.

When the chassis voltage rises above 13.3v again, the relay will again close in two seconds to try and charge the battery. The BIC system can also provide the driver with indicator lamps to indicate whether starting was as normal, from chassis battery or indeed was a boost start from both batteries paralleled.



Key Features

- Charging and isolation of dual battery systems
- Auto auxiliary starting
- Easy installation
- Reliable

What is the "real" cost of a flat battery?

The answer to this question will certainly vary from fleet to fleet. Let's look at the potential costs involved in a flat battery "non start"

- 1 Damage to batteries – 1 deep cycle can reduce the battery's life by as much as 50%
- 2 Potential damage to voltage sensitive components from a "jump start", many vehicle manufacturers now state "do not jump start"!!!!
- 3 Stress and strain on alternator and starter motor; tail lift pumps with low voltage operation
- 4 Driver and vehicle downtime – how much per hour?
- 5 Late deliveries to customer – possible lost accounts?
- 6 Cost of jump start?
- 7 See cost saving calculator on www.intellitecmv.com

Technical Information

Isolator function

<i>Pull-in voltage</i>	13.3 ± 0.3v
<i>Pull-in time</i>	15.0 ± 4 seconds
<i>Drop-out voltage</i>	12.0 ± 0.3v
<i>Drop-out time</i>	4 ± 1 second

General:

<i>Output current</i>	1.5 Amp maximum
<i>Ambient temperature</i>	-40°F to 185°F (-40°C to +85°C)

Auxiliary Start function:

<i>Chassis Battery</i>	<9.0 ± 0.3v
<i>Aux battery</i>	>9.0 ± 0.3v
<i>Pull-in time</i>	Approx. 0.5 seconds
<i>Indicator lamp current</i>	0.15 Amps maximum

Mating Plug:

<i>Housing:</i>	Molex 09-50-3071 or equal
<i>Contacts:</i>	Molex 08-50-0106 or equal qty 5 or 7 required)

MODULES



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Product Over View

Isolator Relay Delay (IRD)



Isolator Relay Delay

K20 12v Isolator Relay Delay
K21 24v Isolator Relay Delay

Intellitec's Isolator Relay Delay (IRD) offers a low cost, reliable approach to charging multiple batteries. Unlike diode isolators, the IRD provides the engine driven alternator with the opportunity to begin charging the main battery before connecting the auxiliary battery.

This allows the use of self exciting alternators and lets the engine briefly warm up prior to placing the load of a heavily discharged battery on the alternator.

The IRD ECU is fully potted in a plastic enclosure for mounting in the engine compartment. The ECU operates in conjunction with the Intellitec Silver Can relay, there are just three connections to be made, one from an ignition switched source, an earth, the last being the relay coil.

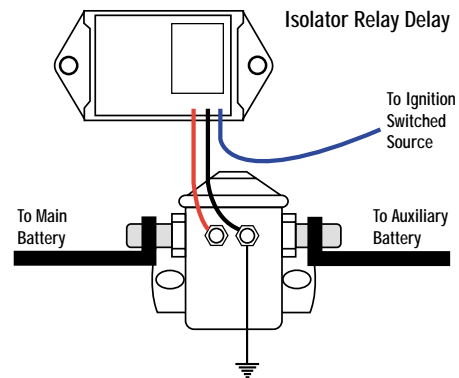
The IRD senses the voltage on the main battery of a 12v / 24v system, when this voltage goes above 13.3v / 26.6v for 12 seconds, the IRD ECU will close the isolator relay, providing charging current to the aux battery. When ignition is off, the relay opens immediately, should the voltage on the main battery drop below 12v / 24v for 2 seconds whilst the engine is running, the relay will drop out, prioritising charging current to the main battery.

Key Features

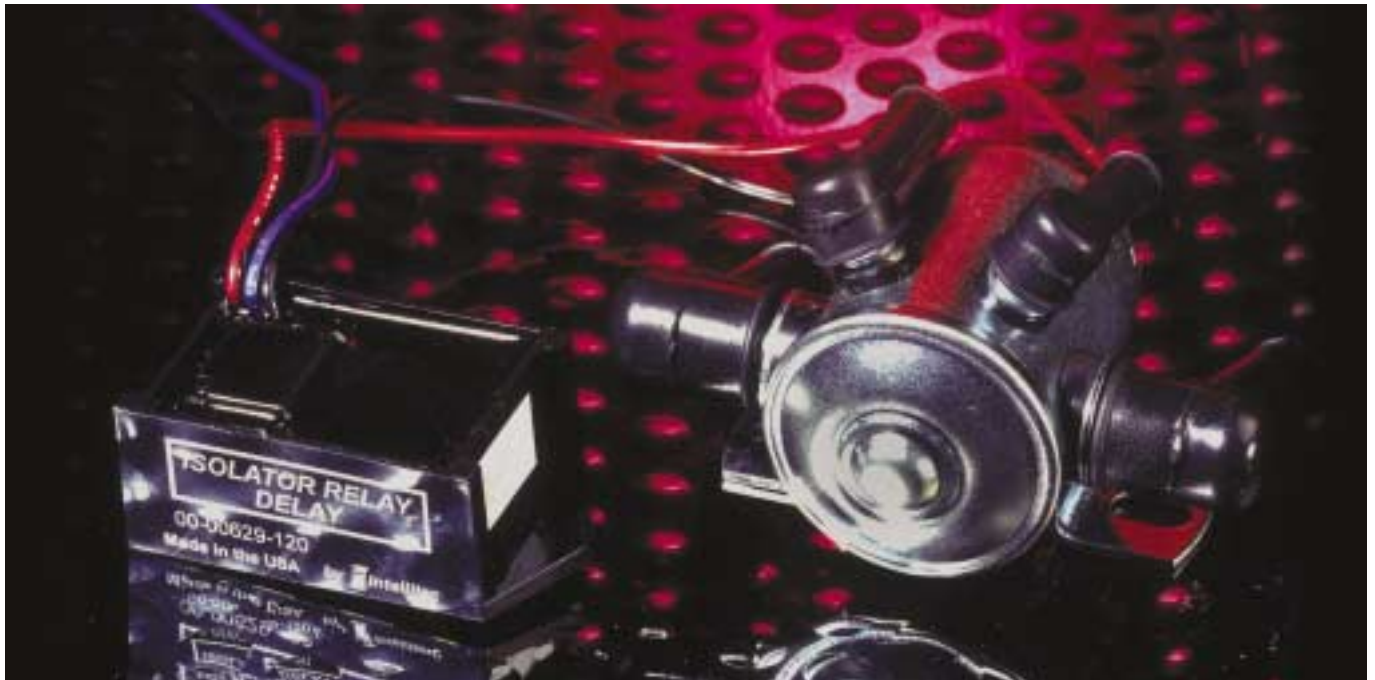
- Fully potted ECU
- Easy installation
- 12 and 24v
- ECU Can be used to control existing systems

Technical Information

Specifications	12 Volt	24 Volt
Part Number	00-00629-120	00-00629-240
Maximum Continuous Carry Current	10 Amps Max.	10 Amps Max.
Maximum Ambient Temperature	185°F	185°F
Minimum Ambient Temperature	-40°F	-40°F



MODULES



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Daytime Running Light Control

00-00926-240

The Intellitec Daytime Running Light Control (DRL) is a cost effective solution for the provision of reduced headlights during daylight hours.

Using pulse width modulation technology, the DRL ECU operates the headlight bulb filaments at a 50% duty cycle, to achieve this, three conditions need to be met, these are:

- 1 The engine must be running
- 2 The handbrake is released
- 3 The Headlights are switched off

If the driver turns on the headlights the DRL ECU is isolated and the head lamp bulb filaments return to full brightness.

The DRL has been designed to be suitable as either an OEM or indeed retrospective installation where the current monitoring of headlamp bulbs is a desired option.

Packaged in an IP68 fully waterproof enclosure, using Delphi Paccar plug, the DRL ECU can be mounted anywhere on the vehicle.

A diagnostic LED is provided on the ECU to provide indication and status of operation.



LED

Constant Red LED = The ECU has power but is not in PWM Mode.

Flashing Slow 2 Seconds = The ECU is active and is in PWM Mode.

Flashing Fast 0.5 Seconds = The ECU has power but there is an internal fault

Technical Information

<i>Ambient Temperature Range</i>	-40 to +85°C
<i>Vehicle system voltage range</i>	20 - 36 volts
<i>Short term over voltage</i>	52 volts
<i>Positive voltage spike protection</i>	+ 150 volts
<i>Negative voltage spike protection</i>	- 300 volts



Cargo Light Control

K22 12v Cargo Light Control
K23 24v Cargo Light Control

Intellitec's Cargo Light Control (CLC) has been designed to control the cargo/body lights on any type of commercial vehicle or trailer with health and safety of the operators in mind.

The CLC is easy to install and provides multi point switching and uses momentary switches in parallel to turn the lights on and off.

In addition to this function, the CLC offers low voltage battery protection from the lights being accidentally left on. When the lights are left on for more than twenty minutes, the CLC will blink the lights at a rate of eight times per minute, to alert the driver/operator of impending lights off. After the eighth blink, the lights will be switched off to prevent further current draw from the battery.

If the driver/operator wishes to keep the lights on, they simply hit the switch and another twenty minutes of light is allowed.

The CLC also provides low battery voltage indication for a period of two minutes while the lights are on (should the battery voltage drop below 24.0 volts). The lights will be blinked eight times per minute and then shut off to protect starting power.

The CLC is a fully waterproof module and is suitable for most environments, the electrical connections are made with Delphi Packard connectors.



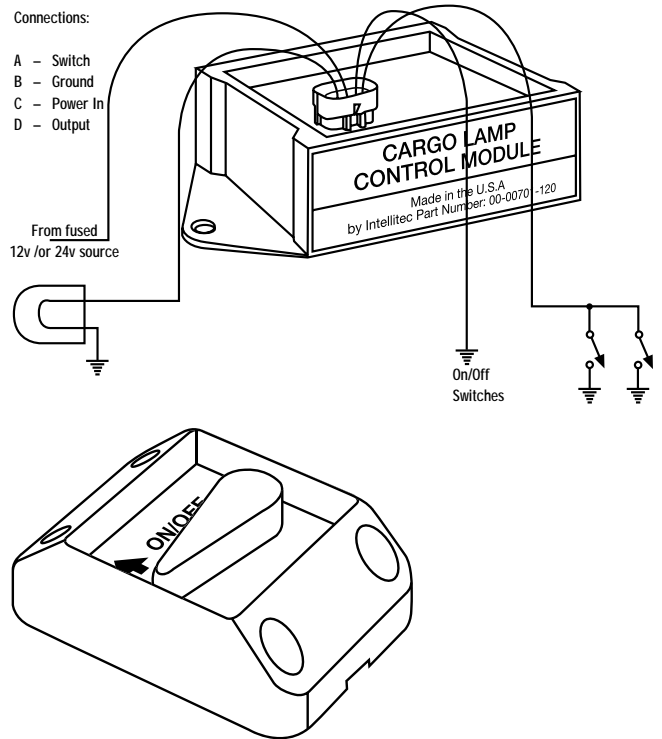
Key Features

- Prevents body lights from being accidentally left on
- Allows 20 minutes of body light use at good battery voltage
- Blinks lights 8 times to warn of impending "lights off"
- Voltage sensitive timer allows only 2 minutes of light at low battery voltage
- Easy to install OEM
- Multipoint switching
- Fully waterproof IP67
- Approved by the Royal Mail

Technical Information

Part Number	00-00701-120	00-00701-240
Nominal Supply Voltage	12v	24v
Maximum Continuous Carry Current	10 Amps	10 Amps
Maximum Ambient Temperature	185°F	185°F
Minimum Ambient Temperature	-40°F	-40°F
Normal Battery Delay Time	20 Minutes	20 Minutes
Low Battery Delay Time	2 Minutes	2 Minutes
Approximate Overall Size	108x92x15mm High	108x92x15mm High

Typical Wiring Diagram



MODULES



Product Over View

Flush Mounted Fuse Block

Flush Mounted Fuse Block

- 00-00585-000 Single Input
- 00-00628-000 Dual Input

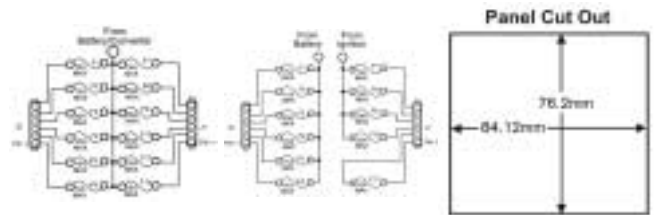
Intellitec's Surface mount fuse block is the ideal answer to the problem of installing a fused distribution panel in a vehicle where a 'finished' look is demanded. The Block provides spaces for up to twelve automotive standard blade type fuses. There are two versions, one with a single power input and the other with two separate power inputs. In the dual input version, the fuses are divided into two groups of six and four fuses, each fed from its own power input. There is also a single isolated fuse that can be fed from a third input supply. The unit comes complete with a snap on cover to hide the fuses, fuse extractor and the mating plugs and pins.

Intellitec's Flush mount fuse block is intended to provide 12v or 24v power to a group of electrical circuits in a vehicle. Power is fed into the fuse block from either a single or dual input connection (depending on model) and is distributed to each of the twelve fuses. Load connections are made through AMP mate n lok connectors.

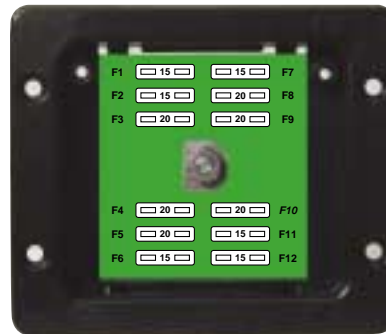
Technical Information

Model	Single Input	Dual Input
<i>Part Number</i>	00-00585-000	00-00628-000
<i>Maximum Continuous Carry Current</i>	100 Amps Total Max.	00 Amps Total Max.
<i>Maximum Ambient Temperature</i>	185°F	185°F
<i>Minimum Ambient Temperature</i>	-40°F	-40°F
<i>Mating Output Connector (6 pin)</i>	Amp 1-480704-0	Amp 1-480704-0

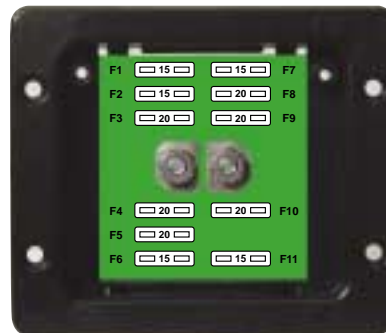
Schematics



Cover in position



Cover removed model 00-00585-000 Single Input



Cover removed model 00-00585-000 Dual Input

MODULES



Surface Mounted Fuse Block

- 00-00585-100 Single Input
- 00-00628-100 Dual Input

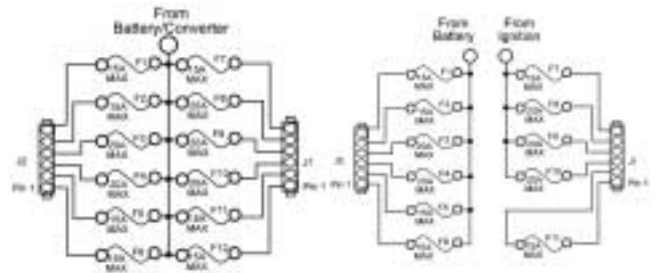
Intellitec's Surface mount fuse block is the ideal answer to the problem of installing a fused distribution panel in a vehicle where surface mounting is demanded. The Block provides spaces for up to twelve automotive standard blade type fuses. There are two versions, one with a single power input and the other with two separate power inputs. In the dual input version, the fuses are divided into two groups of six and four fuses, each fed from its own power input. There is also a single isolated fuse that can be fed from a third input supply. The unit comes complete with mating plugs and pins.

Intellitec's Surface mount fuse block is intended to provide 12v or 24v power to a group of electrical circuits in a vehicle. Power is fed into the fuse block from either a single or dual input connection (depending on model) and is distributed to each of the twelve fuses. Load connections are made through AMP mate n lok connectors.

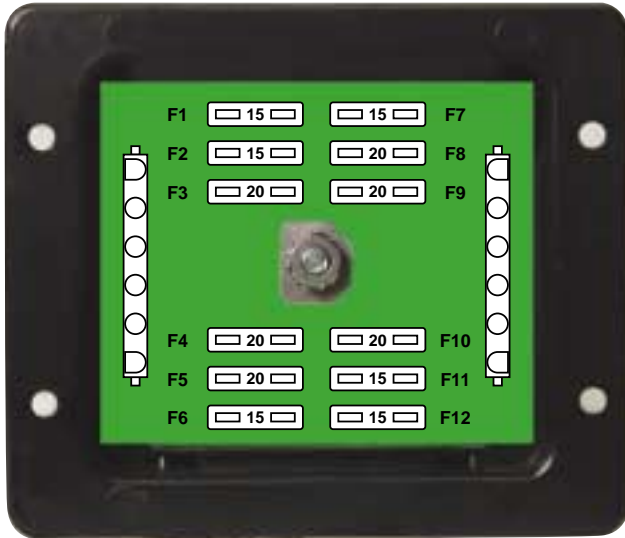
Technical Information

Model	Single Input	Dual Input
Part Number	00-00585-100	00-00628-100
Maximum Continuous Carry Current	100 Amps Total Max.	100 Amps Total Max.
Maximum Ambient Temperature	185°F	185°F
Minimum Ambient Temperature	-40°F	-40°F
Mating Output Connector (6 pin)	AMP 1-480704-0	AMP 1-480704-0

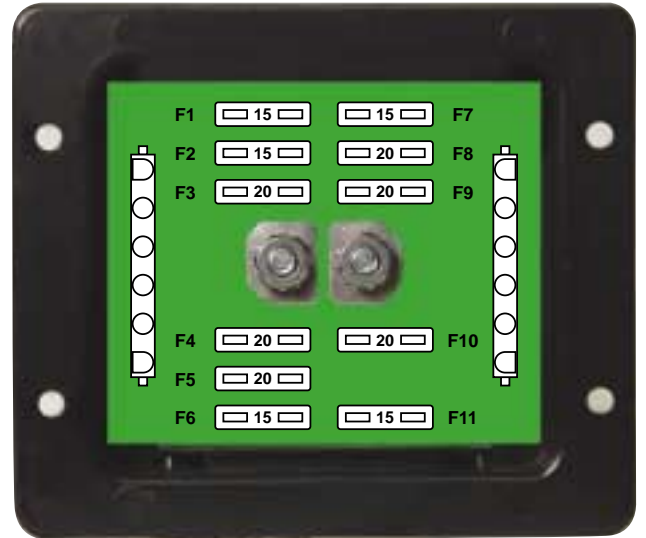
Schematics



MODULES



Model 00-00585-100 Single Input



Model 00-00628-100 Dual Input



SUNSHINE POWER
SUNSHINE POWER
SUNSHINE POWER