



POWER DISTRIBUTION MODULES

PDM-05 & PDM-4C

USER MANUAL

REV 1.0

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THIS PRODUCT IS DESIGNED FOR MOTOSPORT USE ONLY AND SHOULD NOT
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NO WARRANTY IS MADE OR IMPLIED REGARDING ANY CARTEK PRODUCTS TO
PROTECT USERS FROM INJURY OR DEATH.
USER ASSUMES ALL RISKS.

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INTRODUCTION

The **CARTEK PDM-4C** and **PDM-05** are small, 4 and 5 channel, electrical Power Distribution Modules (PDMs) that are specifically designed to replace relays, fuses and circuit-breakers thereby simplifying a vehicle's wiring system. All outputs are fully protected against accidental short-circuits and over-current with user selectable current settings. Outputs can be activated by the configurable input pins, or by receiving CAN messages (PDM-4C only). Each channel has an Input and Output status LED with additional diagnostic data available through the CAN data stream. All configuration is done through the integrated push button so no external software is required.

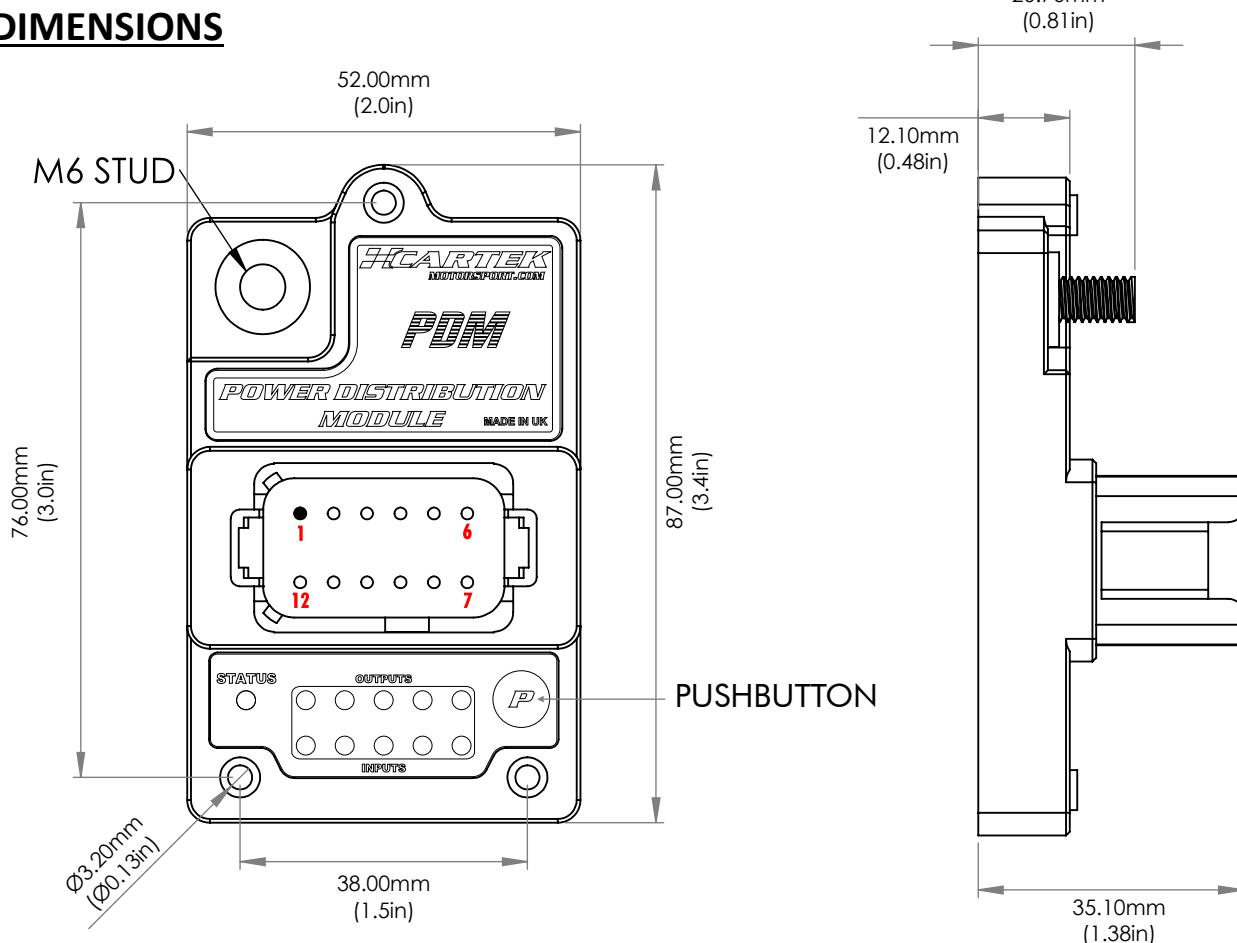
GENERAL SPECIFICATION

| | |
|----------------------------|--|
| Size: | L = 87mm (3.4in), W = 52mm (2.0in) |
| Weight: | 128g (0.28lbs) |
| Battery Positive terminal: | M6 stud |
| 12 pin Connector: | TE/Amphenol DT06-12SB |
| Operational Voltage: | 8v - 18v |
| Current consumption: | 60-200mA typ. |
| Output current limits: | Selectable 5/10/15/20A current limits. Soft-Start available on each output. |
| Total current output | 60A(PDM-4C) / 70A(PDM-5) |
| Input Types | 4 x Input types: (Active low/Active High/Edge Triggered/PWM control) |
| CAN Bus | 125/250/500/1000 kbps selectable baudrates. Selectable Input and Output stream addresses. |
| Operating temperature: | -25°C - +100°C |
| Storage temperature: | -40°C - +125°C |

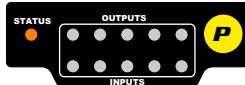
PDM COMPARISON TABLE



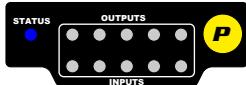
| | CK-PDM-4C | CK-PDM-05 |
|--------------------------------|------------------|------------------|
| No. of Outputs: | 4 x 20A outputs | 5 x 20A outputs |
| Maximum total current: | 60A | 70A |
| No. Of Inputs: | 4 | 5 |
| CAN-Bus enabled: | Yes | No |
| Additional Lighting Functions: | No | Yes |

USER MANUAL
DIMENSIONS

PIN OUT

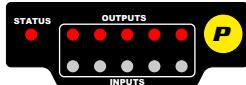

| Pin Number | CK-PDM-4C | CK-PDM-05 |
|------------|------------|------------|
| 1 | Ground | Ground |
| 2 | CH1 Output | CH1 Output |
| 3 | CH2 Output | CH2 Output |
| 4 | CH3 Output | CH3 Output |
| 5 | CH4 Output | CH4 Output |
| 6 | CAN-Lo | CH5 Output |
| 7 | CAN-Hi | CH5 Input |
| 8 | CH4 Input | CH4 Input |
| 9 | CH3 Input | CH3 Input |
| 10 | CH2 Input | CH2 Input |
| 11 | CH1 Input | CH1 Input |
| 12 | Aux Input | Aux Input |

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OVERALL STATUS LED


Status LED is Orange:
 Power is applied but Ignition Input is OFF.
 All outputs will remain OFF.

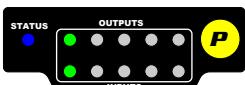


Status LED is Blue:
 Power is applied and Ignition Input is ON.
 All outputs can be activated.

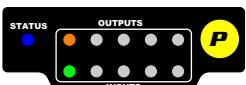


Status LED is flashing Red:
 All Outputs have shutdown due to major error.
 See 'Fault Diagnostic' page for more information.

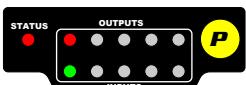
| Status | LED Colour |
|-----------------------------------|-----------------|
| PDM powered / Ignition input OFF. | Orange |
| PDM powered / Ignition input ON. | Blue |
| Low-Voltage detected (<8V) | Red (2-Flashes) |
| High Voltage detected (>18V) | Red (3-Flashes) |
| Over Temperature limit (>85°C) | Red (4-Flashes) |
| Maximum total current exceeded. | Red (5-Flashes) |

INPUT/OUTPUT STATUS LED


Channel 1 Input is active.
 Channel 1 Output is ON.

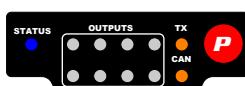


Channel 1 Input is active.
 Channel 1 output current is too high.

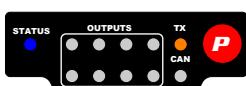


Channel 1 Input is active.
 Channel 1 Output has shutdown due to Over-Current.

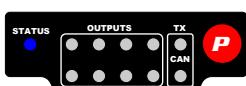
| Status | LED Colour |
|---------------------------------|----------------|
| Input/Output is Active | Green |
| Output is in Over-current phase | Amber |
| Output Shutdown | Red (flashing) |

CAN-BUS STATUS LED (PDM-4C only)


CAN Bus data is being transmitted and received.



CAN Bus data is being transmitted.
 No CAN Bus data is being received.



No CAN Bus data is being transmitted or received.
 Possible connection error or baudrate mismatch.

| Status | LED Colour |
|-----------------------------|------------|
| CAN Receive (RX) is Active | Amber |
| CAN Transmit (TX) is Active | Amber |
| No CAN Activity | Off |

ERROR RESET

If an over-current error occurs on a channel then this error can be reset by simply turning that channel OFF then ON again via the Input pin or CAN Message. This error can also be reset by pressing Pushbutton 'P' or by turning Ignition Input OFF.

If a major error occurs then this can only be reset by turning all channels OFF, by pressing Pushbutton 'P', by turning Ignition Input OFF or sending CAN Bus reset message.

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OVER-CURRENT PROTECTION

Each output on the Power Distribution Module has 8 available settings for over-current protection:

| Setting | Current Limit | Setting | Current Limit |
|---------|-------------------------|---------|-------------------------|
| 1 | 5 Amps | 5 | 15 Amps |
| 2 | 5 Amps with Soft Start | 6 | 15 Amps with Soft Start |
| 3 | 10 Amps | 7 | 20 Amps |
| 4 | 10 Amps with Soft Start | 8 | 20 Amps with Soft Start |

The Power Distribution Module will constantly monitor the current of each output while it is ON.

- If the output current is greater than 15% of the selected setting then the output will shut down. The Output Status LED (and CAN diagnostic data) will indicate that the output has shut down.
- If the output current is greater than the selected setting but under the 15% threshold then the output will remain on for a limited period of time (the higher the exceeded amperage, the quicker the shutdown). Therefore each output can accept moderate current spikes and inrush current. The Output Status LED (and CAN diagnostic data) will indicate when it is in the over-current phase. This provides users with an early warning if the current flowing through an output is close to the exceeded current (as set in the configuration).
- If the total current from all active channels exceeds 60 Amps then all outputs will shut down.

SOFT-START

If the connected load draws too much current at start up and causes the output to shut down then it is recommended to use the Soft Start settings. This feature will slowly turn on the load therefore reducing any inrush current it may have. Soft Start should be used for any inductive loads such as radiator fan, electric motor, electric pump, or xenon lights.

Note: Soft Start does not operate when Input Type is set to PWM.

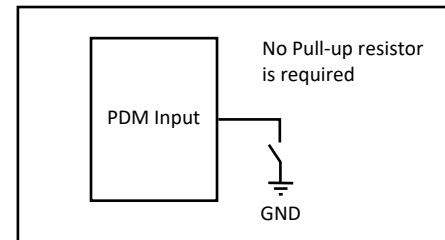
USER MANUAL
INPUT TYPES

Each Input on the Power Distribution Module has 6 available options:

| Setting | Input Type | Setting | Input Type |
|---------|-------------------------------|---------|-------------|
| 1 | Active Low (default) | 4 | Active High |
| 2 | Edge Trigger (Without Memory) | 5 | Always On |
| 3 | Edge Trigger (With Memory) | 6 | PWM Input |

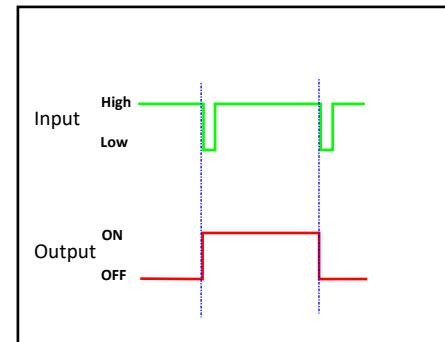
1) Active LOW (default) GROUND SWITCHED SIGNAL

The channel output will be **ON** whenever the Input Signal is at a **low** level (less than 1.2V). When the input is left open-circuit the output will be **OFF**.
Note: A pull-up resistor is internally connected to each input pin.


2) Edge Trigger (Without Memory). GROUND SWITCHED SIGNAL

The channel output will switch **ON** only when the Input Signal voltage falls from a high level to a low level and will switch **OFF** only on the next occurrence of a falling signal. This is for use with momentary pushbutton switch inputs where the output will 'latch' ON and OFF.

Note: A pull-up resistor is internally connected to each input pin.

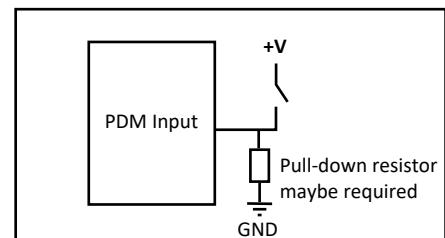

3) Edge Trigger (WITH Memory). GROUND SWITCHED SIGNAL

Same as above (4) but the status of the output is saved to memory such that on power-up the Output will always return to the previous ON or OFF state.
Note: A pull-up resistor is internally connected to each input pin.

4) Active HIGH. POSITIVE SWITCHED SIGNAL

The channel output will be **ON** whenever the Input Signal is at a **high** level (higher than 1.2V). When the input is left open-circuit the output will be **ON**.

Note: If the output is required to be **OFF** when the input is left open-circuit then a pull-down resistor needs to be installed between the channel input pin and chassis/ground. This resistor value will need to be between 1Kohms and 3.3Kohms.


5) Always ON.

The channel output will be permanently **ON** except when the Ignition Input is OFF or when there is an over-current error. No input connection is required. An over-current error can be reset by pressing Pushbutton 'P', by turning Ignition Input OFF or sending CAN Bus reset message.

6) PWM Input/Output.

The Output will directly follow the Input without any filtering or switch debounce. This can be used for PWM input signals at maximum frequency of 200hz. **Note:** To manage heat build up it is recommended to drive the input at 100hz maximum and output current of 15A maximum if using for a long period of time.

CAN Inputs (PDM-4C only)

Channels can also be activated by receiving a CAN message. The Input type must be set to Active Low or Edge trigger. For more information go to the CAN-Bus chapter.

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OUTPUT FUNCTIONS

Each output on the Power Distribution Module has 6 available functions:

| Setting | Function | Setting | Function |
|---------|----------------------------|---------|--------------------|
| 1 | Input Controlled (default) | 4 | Timer ON (10 Mins) |
| 2 | Flashing (1Hz) | 5 | Overrun (5 Mins) |
| 3 | Timer ON (5 Mins) | 6 | Overrun (10 Mins) |

1) Input Controlled (default) The channel output will switch ON and OFF according to the status of the Input.

2) Flashing (1Hz). When the channel output is switched ON it will flash at a rate of 1Hz.

Example use: Direction /indicators.

3) Timer On (5 Minutes). The channel output will switch ON and OFF according to the status of the Input but will only remain on for a maximum time of 5 minutes. Example use: Heated Screen

4) Timer On (10 Minutes). The channel output will switch ON and OFF according to the status of the Input but will only remain on for a maximum time of 10 minutes. Example use: Heated Screen

5) Overrun (5 Minutes). The channel output will switch ON and OFF according to the status of the Input but will remain on, after being switched off, for an additional 5 minutes. Example use: Radiator Fan.

6) Overrun (10 Minutes). The channel output will switch ON and OFF according to the status of the Input but will remain on, after being switched off, for an additional 10 minutes. Example use: Radiator Fan.

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AUXILIARY INPUT MODES

The Power Distribution Modules have a dedicated Auxiliary Input pin (AUX) that offers the following functions:

| Setting | Mode | Setting | Mode |
|---------|-----------------------|---------|---|
| 1 | No Function | 4 | Hazard Indicator Flashing |
| 2 | Ignition Input (High) | 5 | Car Lights Controller (CK-PDM-05 only) |
| 3 | Ignition Input (Low) | 6 | Spot Lamps Controller (CK-PDM-05 only) |

1 = No Function. The AUX Input is disabled.

2 = Ignition Input - High. Outputs will be active only when the voltage on AUX Input pin is at a high level (greater than 3.0V). All outputs are shutdown while the AUX Input is at a low level (lower than 2.0V) or unconnected. A pull-down resistor is internally connected to the AUX Input pin with this function.

Note: With this configuration the AUX Input could be connected to +12V Ignition Switch.

3 = Ignition Input - Low (Default) All outputs are shutdown while the AUX Input is at a low level (lower than 2.0V). Outputs will only become active when the AUX Input is at a high level (greater than 3.0V) or unconnected. A pull-up resistor is internally connected to the AUX Input pin with this function.

Note: With this configuration the AUX Input can be connected to ground-switched Ignition OFF signal, e.g. Battery Isolator.

Note: The Engine Stop output signals from CARTEK Battery Isolators will work with either Ignition Input setting.

4 = Hazard Indicator Flashing. Any channels that are set to Flashing(1Hz) (see Menu 3) will automatically flash when the AUX Input is connected to 0V (chassis/ground). A pull-up resistor is internally connected to the AUX Input pin with this function.

Note: With this configuration the AUX Input can be used as a Hazard Indicator switch input by operating any channels that are set to Turn Signal Indicators (Flashing 1Hz).

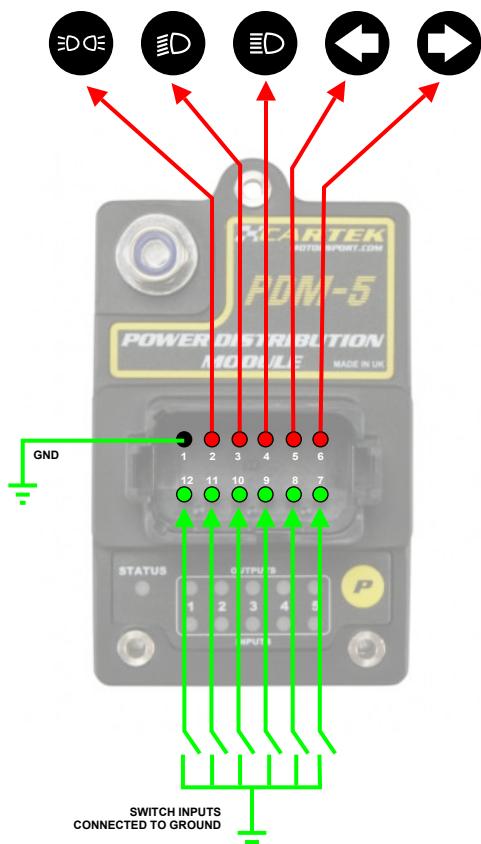
SPECIFIC CONTROLLER APPLICATIONS (PDM-05 ONLY)

When the Auxiliary Input pin is configured for Setting 5 or 6 (see Menu 4) then the Power Distribution Module becomes a specific controller where the Inputs and Outputs are specifically assigned with specific functionality. Output Current Protection and Input Types can still be configured.

Note: This only applies to the **PDM-05** and not the **PDM-4C**

CAR LIGHTS CONTROLLER (PDM-05 only)

When the AUX Input is set to Car Lights Controller (Menu 4, option 5) the Inputs and Outputs are automatically allocated for the purpose of controlling 5 lighting circuits:



| Pin Number | Description |
|------------|-----------------------------|
| 1 | Ground |
| 2 | Side/Tail/Rain Light Output |
| 3 | Low Beam Output |
| 4 | High Beam Output |
| 5 | Left Indicator Output |
| 6 | Right Indicator Output |
| 7 | Right Indicator Input |
| 8 | Left Indicator Input |
| 9 | High Beam Input |
| 10 | Low Beam Input |
| 11 | Side/Tail/Rain Light Input |
| 12 | Hazard Indicator Input |

NOTES FOR OPERATION:

Inputs must **only** be connected to ground and set to either:

1. Active Low - if using a 'latching' switch.
2. Edge Trigger (Without Memory) - if using a 'momentary' switch.
3. Edge Trigger (WITH Memory) - if using a 'momentary' switch.

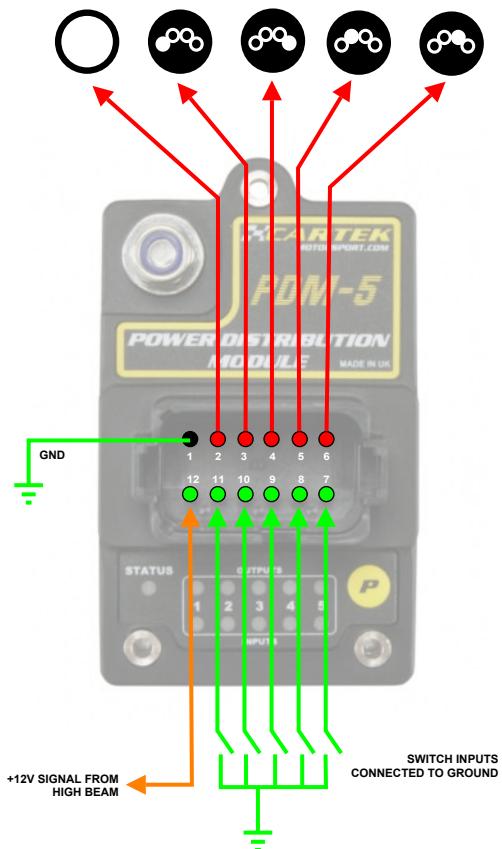
Pin 2 output (Side/Tail/Rain Lights) will turn ON when pin 11 input is active but will also automatically turn ON when either Low Beam or High Beam outputs are ON.

Low Beam will automatically turn OFF when High Beam is turned ON.

When Pin 12 is active (Hazard Indicator Input) both Indicator outputs will be active .

USER MANUAL
SPOT LIGHTS CONTROLLER (PDM-05 only)

When the AUX Input is set to Spot Lights Controller (Menu 4, option 6) the Inputs and Outputs are automatically allocated for the purpose of controlling Spot Lamps:



| Pin Number | Description |
|------------|--------------------------------|
| 1 | Ground |
| 2 | 'Spare' Output |
| 3 | Spot Light 1 Output |
| 4 | Spot Light 2 Output |
| 5 | Spot Light 3 Output |
| 6 | Spot Light 4 Output |
| 7 | Spot Light 'Flash' Input |
| 8 | Spot Light 'ALL' Input |
| 9 | Spot Light 3 & 4 Input |
| 10 | Spot Light 1 & 2 Input |
| 11 | 'Spare' Input |
| 12 | Spot Light Enable Input (+12V) |

NOTES FOR OPERATION:

Spot Light outputs only active when a +12V signal is applied to the Spot Light Enable input, pin 12. By connecting this to a headlamp high-beam circuit the spot lamp outputs will automatically extinguish when headlamps are dipped to low-beam.

Spot Light Flash Input must **only** be connected to a momentary action, ground connected pushbutton switch.

Input pins 8-11 must **only** be connected to ground connected switches and set to either:

1. Active Low - if using a 'latching' switch.
2. Edge Trigger (Without Memory) - if using a 'momentary' switch.
3. Edge Trigger (WITH Memory) - if using a 'momentary' switch.

The 'Spare' Output will work independently of the Spot Lights and so will not turn off if the Spot Light Enable Input is switched off. Therefore, this can be used for any purpose such as Navigator Light or Rain Light.

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INSTALLATION

The PDM should be mounted in a cool area of the vehicle and secured in place using all three mounting holes. The PDM is designed to withstand a high degree of shock and vibration so it can be mounted direct to chassis without the need to use vibration absorbing rubber mounts.

BATTERY POSITIVE CONNECTION

Power to the PDM is via the M6 electrical stud base. This should be connected directly to the positive terminal of the car battery using cable that is capable of handling the maximum total output current when all channels are activated.

MAIN CONNECTOR

All other connections are via the 12pin Amphenol AT04-12PX connector. To connect to this, use the AT06-12SB housing and AT62-201 crimps supplied. The crimps are suited for 20-16 AWG wire only and can handle 20 Amps continuously at 60 degrees or less. The higher the temperature the less current the crimps can handle (manufacture specifies 13 Amps at 125 degrees). Wire size must be compatible with the crimps and capable of handling the maximum output current.

NOTE: When attaching the crimps onto the wires, always use the crimp manufacturer specific tool.

GROUND CONNECTION

Pin(1) must be connected to chassis/GND at all times. 16 AWG wire is recommended.

NOTE: If you are driving an output through PWM then you should make sure the connected load also shares the same ground connection as the PDM.

INPUT CONNECTIONS

The inputs are only low current signals therefore 20 AWG wire can be used.

OUTPUT CONNECTIONS

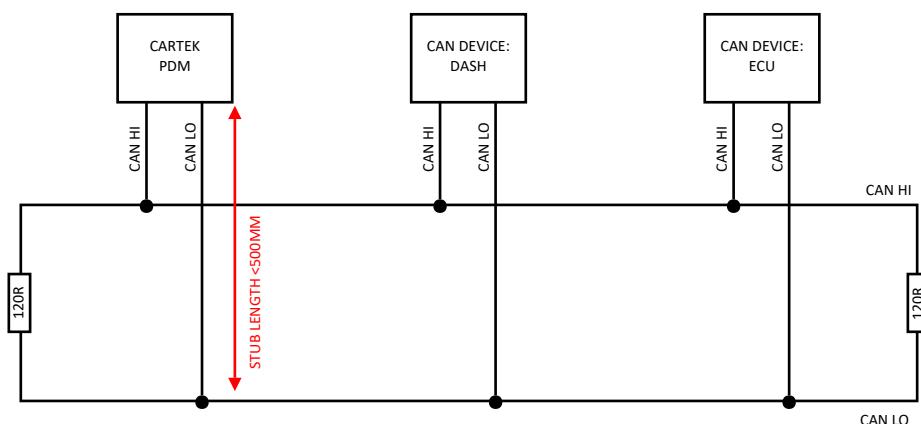
The output current will dictate the wire gauge used. Typically with high quality wire (TYCO spec 55):

5-10 Amps = 20AWG

15-20 Amps = 16AWG

CAN BUS WIRING

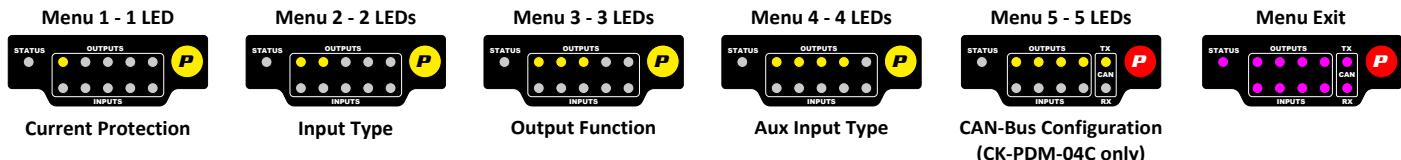
The CAN-Bus should consist of two wires twisted together (0.5-1 twist per cm), with 120R terminating resistors at each end of the bus. The PDM does not have an internal terminating resistor. The maximum length of the bus is 16 meters and maximum 'stub' length is 500mm.



USER MANUAL
CONFIGURATION

To enter Configuration Mode, press and hold the pushbutton 'P' for 2 seconds. After this time, the user can select any one of five menus by observing the Yellow LEDs and releasing the pushbutton when the required menu is displayed.

Configuration Mode can be exited by pressing and holding the pushbutton until all LEDs display Purple or by simply removing power from the device.


CURRENT PROTECTION (MENU 1)

On selecting Menu 1 the user should now select the required Channel by pressing and holding the pushbutton again and observing the LEDs:



When the LED of the required channel is lit then the pushbutton should be released. This LED will now flash to indicate the stored setting and subsequent presses will adjust and save the new setting.

There are 8 options:

| LED Pattern | Nominal current Limit | LED Pattern | Nominal current Limit |
|-------------|--------------------------|-------------|-------------------------|
| 1 Flash | 5 Amps | 5 Flashes | 15 Amps |
| 2 Flashes | 5 Amps with Soft Start | 6 Flashes | 15 Amps with Soft Start |
| 3 Flashes | 10 Amps (Default) | 7 Flashes | 20 Amps |
| 4 Flashes | 10 Amps with Soft Start | 8 Flashes | 20 Amps with Soft Start |

When you have completed adjusting the setting for the channel press and hold down the pushbutton to scroll to the next channel, or keep pressing until all LEDs display purple to exit configuration.

INPUT TYPE (MENU 2)

On selecting Menu 2 the user should now select the required Channel by pressing and holding the pushbutton again and observing the LEDs:



When the LED of the required channel is lit then the pushbutton should be released. This LED will now flash to indicate the stored setting and subsequent presses will adjust and save the new setting.

There are 6 options:

| LED Pattern | Input Type | LED Pattern | Input Type |
|-------------|-------------------------------|-------------|-------------|
| 1 Flash | Active Low (Default) | 4 Flashes | Active High |
| 2 Flashes | Edge Trigger (without memory) | 5 Flashes | Always On |
| 3 Flashes | Edge Trigger (with memory) | 6 Flashes | PWM driven |

When you have completed adjusting the setting for the channel press and hold down the pushbutton to scroll to the next channel, or keep pressing until all LEDs display purple to exit configuration.

USER MANUAL
OUTPUT FUNCTION (MENU 3)

On selecting Menu 3 the user should now select the required Channel by pressing and holding the pushbutton again and observing the LEDs:



When the LED of the required channel is lit then the pushbutton should be released. This LED will now flash to indicate the stored setting and subsequent presses will adjust and save the new setting.

There are 6 options:

| LED Pattern | Output Function | LED Pattern | Output Function |
|-------------|------------------------|-------------|--------------------|
| 1 Flash | Input driven (Default) | 4 Flashes | Timer On (10 mins) |
| 2 Flashes | Flashing (1Hz) | 5 Flashes | Over-run (5 mins) |
| 3 Flashes | Timer On (5 mins) | 6 Flashes | Over-run (10 mins) |

When you have completed adjusting the setting for the channel press and hold down the pushbutton to scroll to the next channel, or keep pressing until all LEDs display purple to exit configuration.

AUX INPUT TYPE (MENU 4)

On selecting Menu 4 the main STATUS LED will now flash to indicate the stored function and subsequent presses will adjust and save the new function .



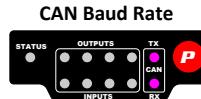
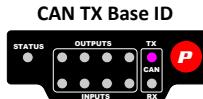
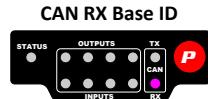
There are 6 options:

| LED Pattern | Input Type | LED Pattern | Input Type |
|-------------|------------------------------|-------------|------------------------------------|
| 1 Flash | No Function | 4 Flashes | Hazard Indicator Input |
| 2 Flashes | Ignition Input (High) | 5 Flashes | Car Lights Controller (PDM-5 only) |
| 3 Flashes | Ignition Input (Low) Default | 6 Flashes | Spot Lamps Controller (PDM-5 only) |

When you have completed adjusting the setting for the channel press and hold down the pushbutton until all LEDs display purple to exit configuration.

USER MANUAL
CAN BUS CONFIGURATION (MENU 5)

On selecting Menu 5 you will now go into a 'Sub menu' where there are 3 settings to choose from


CAN BUS RECEIVE BASE ID

The RX LED will flash first indicating the Base ID setting for CAN Receive. Subsequent presses will adjust the setting. There are 6 Base ID options:

| LED Pattern | CAN Receive Base ID | LED Pattern | CAN Receive Base ID |
|-------------|---------------------|-------------|---------------------|
| 1 Flash | 0x030 (Default) | 4 Flashes | 0x360 |
| 2 Flashes | 0x140 | 5 Flashes | 0x470 |
| 3 Flashes | 0x250 | 6 Flashes | 0x580 |

When you have completed adjusting the setting for the CAN Receive Base ID press and hold down the pushbutton to scroll to the next CAN setting or keep pressing until all LEDs display purple to exit configuration.

CAN BUS TRANSMIT BASE ID

The TX LED will flash indicating the Base ID setting for CAN Transmit. Subsequent presses will adjust the setting. There are 7 Base ID options:

| LED Pattern | CAN Transmit Base ID | LED Pattern | CAN Transmit Base ID |
|-------------|----------------------|-------------|-----------------------|
| 1 Flash | 0x038 (Default) | 5 Flashes | 0x478 |
| 2 Flashes | 0x148 | 6 Flashes | 0x588 |
| 3 Flashes | 0x258 | 7 Flashes | No Data Transmissions |
| 4 Flashes | 0x368 | | |

When you have completed adjusting the setting for the CAN Receive Base ID press and hold down the pushbutton to scroll to the next CAN setting or keep pressing until all LEDs display purple to exit configuration.

CAN BUS BAUD RATE

The TX LED and RX LED will flash indicating the CAN Baud Rate setting. Subsequent presses will adjust the setting. There are 4 options:

| LED Pattern | CAN Baud Rate | LED Pattern | CAN Receive Base ID |
|-------------|---------------|-------------|---------------------|
| 1 Flash | 125KB/s | 3 Flashes | 500KB/s |
| 2 Flashes | 250KB/s | 4 Flashes | 1 MB/s (Default) |

When you have completed adjusting the setting for the CAN Receive Base ID press and hold down the pushbutton until all LEDs display purple to exit configuration.

USER MANUAL
CAN MESSAGING (RECEIVE)

To control the PDM through CAN you must send a message in this format:

| ID | DLC | BYTE 0 | BYTE 1 | BYTE 2 | BYTE 3 | BYTE 4 | BYTE 5 | BYTE 6 | BYTE 7 |
|-----------|-----|-------------|-------------|-------------|-------------|--------|--------|--------|--------|
| Base ID | 4 | CH1 control | CH2 control | CH3 control | CH4 Control | | | | |
| Base ID+2 | 2 | Trip Reset | Power Cycle | | | | | | |

Channels can be activated through CAN when you send a message in the above format. The channels will turn on when the PDM receives a data byte with a value greater than 00.

Example:

Channels 1 + 4 to be activated:

| ID | DLC | BYTE 0 | BYTE 1 | BYTE 2 | BYTE 3 | BYTE 4 | BYTE 5 | BYTE 6 | BYTE 7 |
|-------|-----|--------|--------|--------|--------|--------|--------|--------|--------|
| 0x030 | 4 | 01 | 00 | 00 | 01 | | | | |

You can also send a CAN message to the PDM to reset any tripped outputs or to perform a Power cycle on Base ID+2

Example:

Trip Reset:

| ID | DLC | BYTE 0 | BYTE 1 | BYTE 2 | BYTE 3 | BYTE 4 | BYTE 5 | BYTE 6 | BYTE 7 |
|-------|-----|--------|--------|--------|--------|--------|--------|--------|--------|
| 0x032 | 2 | 01 | 00 | | | | | | |

Note: If you have more than one CARTEK PDM-04C on the CAN line then you must make sure that each one has a different Base ID set for CAN receive and CAN transmit.

USER MANUAL
CAN MESSAGING (TRANSMIT)

The PDM will output these CAN messages:

| ID | DLC | BYTE 0 | BYTE 1 | BYTE 2 | BYTE 3 | BYTE 4 | BYTE 5 | BYTE 6 | BYTE 7 |
|-----------|-----|--------------------------|--------------------------|--------------------------|--------------------------|----------------------|--------|--------|-------------------|
| Base ID | 4 | CH1 Amp Setting | CH2 Amp Setting | CH3 Amp Setting | CH4 Amp Setting | | | | |
| Base ID+1 | 4 | CH1 Input Setting | CH2 Input Setting | CH3 Input Setting | CH4 Input Setting | | | | |
| Base ID+2 | 4 | CH1 Function Setting | CH2 Function Setting | CH3 Function Setting | CH4 Function Setting | | | | |
| Base ID+3 | 4 | CH1 Input Status | CH2 Input Status | CH3 Input Status | CH4 Input Status | | | | |
| Base ID+4 | 4 | CH1 Output Status | CH2 Output Status | CH3 Output Status | CH4 Output Status | | | | |
| Base ID+5 | 4 | CH1 Input Signal Voltage | CH2 Input Signal Voltage | CH3 Input Signal Voltage | CH4 Input Signal Voltage | | | | |
| Base ID+6 | 4 | CH1 Output Current | CH2 Output Current | CH3 Output Current | CH4 Output Current | | | | |
| Base ID+7 | 8 | Total Output Current | Battery Voltage | Internal Temperature | Aux Input Voltage | Aux Function Setting | | | Error Flag Status |

CAN DATA FORMAT

The PDM will output these CAN messages:

| Name | Type | Byteorder | Length | Multiplier | Offset | Data |
|---------------------------|----------|-----------|--------|------------|--------|--|
| CH() Amp Setting | Unsigned | Motorola | 1 | 1 | 0 | AMP Setting: 1-8 (as set by Configuration Menu 1) |
| CH() Input Setting | Unsigned | Motorola | 1 | 1 | 0 | INPUT Setting: 1-6 (as set by Configuration Menu 2) |
| CH() Function Setting | Unsigned | Motorola | 1 | 1 | 0 | FUNCTION Setting: 1-6 (as set by Configuration Menu 3) |
| CH() Input Status | Unsigned | Motorola | 1 | 1 | 0 | 0 =Inactive, 1 =Active |
| CH() Output Status | Unsigned | Motorola | 1 | 1 | 0 | 0 =Inactive, 1 =Active, 2 =High-Current, 3 =Over-Current Error. |
| CH() Input Signal Voltage | Unsigned | Motorola | 1 | 1 | 0 | Value = Volts e.g. 49 (0x31) = 4.9V |
| CH() Output Current | Unsigned | Motorola | 1 | 1 | 0 | Value = AMPs e.g. 12 (0x0Ch) = 12A |
| Total Output Current | Unsigned | Motorola | 1 | 1 | 0 | Value = AMPs e.g. 12 (0x0Ch) = 12A |
| Battery Voltage | Unsigned | Motorola | 1 | 1 | 0 | Value = Volts e.g. 49 (0x31) = 4.9V |
| Internal Temperature | Unsigned | Motorola | 1 | 1 | 0 | Value = °C (e.g. 20 = 20°C) |
| Aux Input Voltage | Unsigned | Motorola | 1 | 1 | 0 | Value = Volts e.g. 49 (0x31) = 4.9V |
| Aux Mode Setting | Unsigned | Motorola | 1 | 1 | 0 | Aux Mode Setting: 1-6 (As set by Configuration Menu 3) |
| Error Flag Status | Unsigned | Motorola | 1 | 1 | 0 | 1 (0x01h) = Battery Voltage is too Low. 2 (0x02h) = Battery Voltage is too High. 3 (0x04h) = Temperature is too High. 4 (0x08h) = Total output current is too High. 5 (0x10h) = Any individual output current is too High. 6 (0x20h) = Ignition input is OFF. |

A DBC File with all the CAN Transmit information can be downloaded at www.cartekmotorsport.com/downloads

USER MANUAL**FACTORY RESET**

The pushbutton can be pressed at anytime to reset any over-current errors.

The pushbutton can also be used to reset all configurations back to factory/default settings. This is done by firstly disconnecting power, then pressing and holding the pushbutton while power is then re-applied. Keep pressing the pushbutton until the LEDs all display Blue, then release the pushbutton.

The factory/default settings are:

Current Protection on all channels: 10A (Setting 3).

Input Type on all channels: Active Low (Setting 2).

Function on all channels: Input Driven (Setting 1).

AUX input: Ignition Input (Low) (Setting 3).

PDM-4C only:

CAN Receive Base ID: 0x030 (Setting 1)

CAN Transmit Base ID: 0x038 (Setting 1)

CAN Baudrate: 1Mb/s (Setting 4)