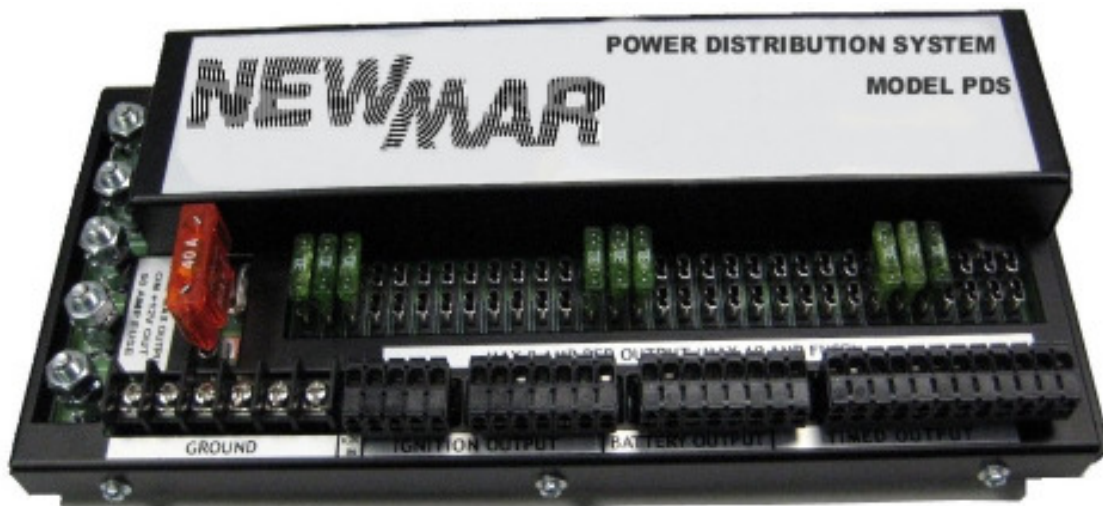


INSTALLATION & OPERATION MANUAL

Model: PDS POWER DISTRIBUTION SYSTEM

12 VDC



NEWMAR

DC Power Dashboard - Emergency & Specialty Vehicles

www.newmarEVpower.com

Manual Part #: M-PDS
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INTRODUCTION

The *Power Distribution System (PDS)* is a compact and convenient point of load power distribution product for installed electrical devices. By using this device and carefully planning the distribution of mobile equipment power feeds, complex independent wire runs and unreliable fuse panel connections can be avoided. The *PDS* is directly connected to the vehicle battery and ground, thus providing a direct easily traceable route to the input power source avoiding interfering with the vehicles factory wiring harness. The specifics for safely connecting the *PDS* to a vehicles electrical system are outlined in the detailed instructions to follow. Each circuit can be individually fused further reducing risk of damage to devices from circuit overload. **Each fused output has a red LED to indicate when a circuit fuse has blown.**

The *PDS* unit provides a single 40A high current output and up to 31 additional outputs divided into “Constant/battery”, “Ignition controlled” and “Timed” outputs to meet the typical in-vehicle equipment installation requirements. These output features have the following characteristics;

1) Constant/Battery Outputs

There are 8 output connections each individually fused, that are on at all times providing the *PDS* is connected to the battery.

2) Ignition Controlled Outputs:

The 11 output power connections, also individually fused, provide +12V output while the vehicle ignition is on. Power will be immediately turned off at these outputs when the vehicle is shut down and the ignition key removed (some vehicles still maintain any “ignition on” signal when the key is still in the ignition switch) careful selection of the proper ignition control wire can help avoid this situation..

3) Timed Outputs:

There are 12 output power connections again with individually fused. These outputs are on while the ignition control signal is applied to the *PDS*, and will go through a pre-set timed off sequence once the ignition is turned off. The time interval to “OFF” is user selectable by the installer based on the system design. This timed off sequence is also controlled by an onboard battery voltage monitor, if the battery voltage becomes too low the timing sequence is interrupted and a shut-down of the timed outputs will begin. This feature prevents a total discharge of the vehicle battery while the ignition is and the equipment is in use.



INSTALLATION & MOUNTING

1. Any device used inside a vehicle, may cause severe personal injury if not properly mounted and secured. Objects used in the vehicle may become airborne during a collision or other sudden changes in vehicle speed or direction, such as braking, acceleration or turns.
2. Be sure to mount unit through the steel of the vehicle. Avoid mounting through plastic or other non-structural materials.
3. **POINT OF INSTALLATION MUST NOT INTERFERE WITH DEPLOYMENT OF VEHICLE AIR BAGS.**
4. **Newmar recommends this product be installed by qualified professionals.**

MOUNTING THE PDS UNIT

The *PDS unit* may be mounted anywhere inside the vehicle away from heat, moisture or the elements. **NOTE: the PDS is not watertight** do not mount it in the engine compartment or on the exterior of the vehicle. Typical acceptable locations include: vehicle's truck, center console and under a car seat.

Ensure that mounting location is flat and the device is secured to solid vehicle body parts

To mount the *PDS* unit proceed as follows:.

1. Determine an appropriate mounting location
2. Confirm there is adequate access and clearance for the wiring and its connections.
3. Secure the *PDS* with 4 self tapping mounting screws (not supplied).



WIRING & SET-UP INSTRUCTIONS

1. Good wiring practice and thorough knowledge of vehicle power system is required by the installer of this and any other product.
2. Looms, grommet, cable ties or other installation hardware should be used to anchor and protect wires
3. All wire should conform to the minimum wire size as specified by the manufacturer.
4. Splices should be minimized and made in a fashion so as to protect from corrosion to reduce loss of conductivity.

Note: The exact number of available connections varies by application, refer to the specifications and typical output fusing combinations to ensure that the safety and reliability of this product is not compromised.

The wiring to the PDS will be determined by the installers design of the power distribution and wire routing for the installed equipment. Fuses and wire for the screw terminal outputs are selected based on equipment power requirements and their manufacturers recommendations. The maximum fuse sizes and some possible combinations are shown in a table on page 5. The fuses are indicated as 10A maximums, the x is no fuse or no connection and the N/A means that the limit of that area has been reached with the indicated maximum fuse values and that spot is not available. Many combinations can be derived based on the *PDS* specifications and the equipment power requirements. The table on page 5 shows one of these possible combinations, this can be used as a starting point to help plan the power distribution for the intended application.

NOTE: Interconnect Wire, Mounting Hardware, Fuses and any termination or additional hardware mentioned in the installation procedure ARE NOT SUPPLIED. These are auto industry standard items and are provided by the installer at the time of installation.

Please see: Input and High current output wiring diagram on page 6.

CONNECTING THE INPUT POWER (12 VDC) TO THE “PDS”

Page 6 shows a typical wiring connection to the battery, both the +12V IN (input) and GROUND IN (input) are wired directly to the battery terminals. This is the “**best**” method of supplying reliable power to the installed equipment. If a good “solid” chassis Ground is available then the GROUND IN terminal may be connected to the vehicle chassis close to the installed *PDU*. NOTE: it is recommended that the “+” positive power feed from the battery be fused. The interconnect wires must be 4 AWG if the total power distribution load will be at or close to the maximum rating of the *PDS* (see specifications).



SPECIAL NOTES:

1 All wires make connections to the PDS studs, battery and chassis ground should be terminated with the appropriate “ring” terminations, either crimped or soldered in place.

2. Making a good solid ground connection requires the removal of the paint right down to the shiny bare metal at the point of securing the ground wire to the chassis.

3. All ground returns for equipment connected to the PDS should be terminated at the PDS an additional GROUND stud is provided for this purpose. The extra GROUND stud can be used with the GROUND terminal block to minimize wire bunching and exceeding the current capacity of each individual terminals on the output block (10A max per connection).

The 4 AWG wire connection to the battery must be made via 100A circuit breaker or replaceable fuse link this is necessary to protect the wire run from the battery against accidental short circuit. It is recommended that the 12+ IN be connected first and the GROUND IN be connected last, and that the circuit breaker be “OFF” fuse be left out until the installation is complete and the PDS is secured firmly to the vehicle chassis. *Please refer to page 6 for diagram.*

CONNECTING THE IGNITION CONTROL TO THE “PDS”

To activate the ignition control and timed outputs feature the PDS must receive a control signal from the vehicle. The installer must locate the ignition output from the vehicles wiring harness and run an 18 AWG wire from this point to the ignition input on the PDS. Care must be taken to connect ignition control wire from the vehicle wiring harness, some of the newer vehicles have more than one type of ignition control wires. **The installer must consult the factory specifications and wiring diagrams for the vehicle that is being retrofitted with the equipment and this PDS.**



PDS TERMINAL BLOCK OUTPUTS

See below for possible Terminal Block Fuse combinations.

Ignition	1	10A	10A	10A	10A	10A	10A	10A	10A
	2	10A	10A	10A	10A	10A	10A	10A	10A
	3	10A	10A	10A	x	x	x	x	x
	4	10A	10A	x	x	x	x	x	x
	5	10A	x	x	x	x	x	x	x
	6	N/A	x	x	x	x	x	x	x
	7	N/A	x	x	x	x	x	x	x
	8	N/A	x	x	x	x	x	x	x
	9	N/A	x	x	x	x	x	x	x
	10	N/A	x	x	x	x	x	x	x
	11	N/A	x	x	x	x	x	x	x

AND 12V Battery	1	10A	10A	10A	10A	10A	10A	10A	10A
	2	10A	10A	10A	10A	10A	10A	10A	10A
	3	10A	10A	10A	10A	10A	10A	10A	x
	4	10A	10A	10A	10A	10A	10A	x	x
	5	10A	10A	10A	10A	10A	x	x	x
	6	10A	10A	10A	10A	x	x	x	x
	7	x	x	x	x	x	x	x	x
	8	N/A	x	x	x	x	x	x	x

AND Outputs on Timer	1	x	10A	10A	10A	10A	10A	10A	10A
	2	x	x	10A	10A	10A	10A	10A	10A
	3	x	x	x	10A	10A	10A	10A	10A
	4	x	x	x	x	10A	10A	10A	10A
	5	x	x	x	x	x	10A	10A	10A
	6	x	x	x	x	x	x	10A	10A
	7	x	x	x	x	x	x	x	10A
	8	x	x	x	x	x	x	x	N/A
	9	x	x	x	x	x	x	x	N/A
	10	x	x	x	x	x	x	x	N/A
	11	x	x	x	x	x	x	x	N/A
	12	x	x	x	x	x	x	x	N/A

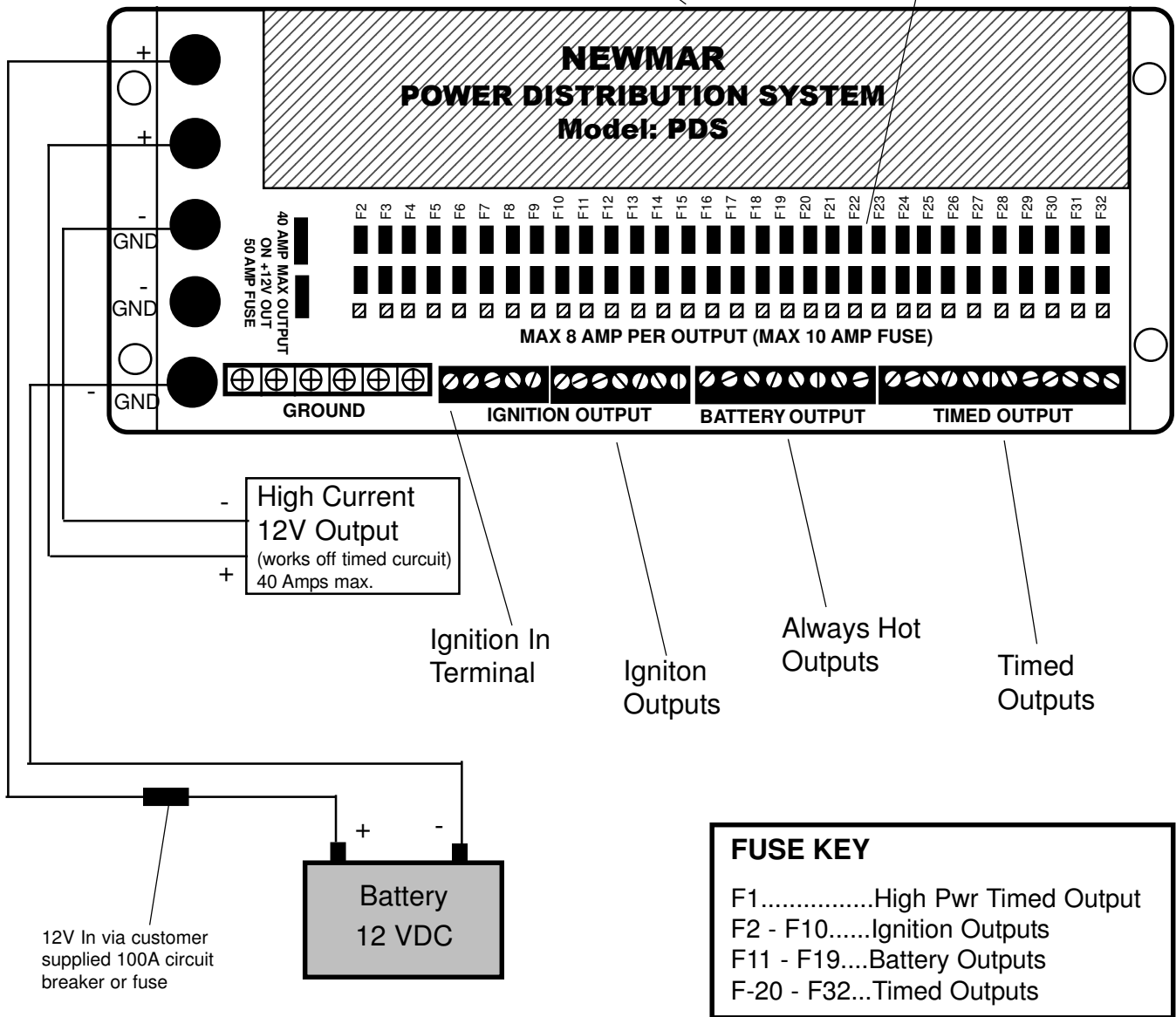
Typical Fuse and output combination showing maximum fuse ratings. You may use a 1, 3, 5, 7.5 or 10 Amp "ATO" or "ATC" fuses in these slots.



INPUT AND OUTPUT WIRING DIAGRAM

Time Delay Switch
Setting on side (see page
8 for details on settings)

ATO/ATC Fuse Positions



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CONNECTING HIGH CURRENT (AMP) POWER OUTPUT FROM THE “PDS”

To studs are provided for a high current output to power a high current device such as a light-bar. Connection to these outputs are via 8 AWG power wires terminated with a “ring” terminal. This output is rated at 40A DC continuous current and should be fused by a 50A MAXI fuse (not supplied, MAX50 or AMT50 are the best part numbers for this fuse). *Please refer to page 6 for diagram.*

1. Leave the fuse out until the attached equipment is properly wired and secured.
2. Terminate the wire(s) to be connected to this output with “ring” terminals (not supplied).
3. If a single connection (one power and one ground) is to carry the full current then the wires must be 8AWG in size. Otherwise the wire supplied by the manufacturer for the equipment will be used to connect to these output stud.

CONNECTING THE POWER OUTPUT FROM THE “PDS”

Install the supplied terminal connector strips onto the output pins of the PDS. This will allow the connection of a terminated wire to the PDS output. Determine the type of power required by the connecting equipment (i.e. ignition controlled, constant/battery or timed) and start connecting the vehicle equipment according to the system design requirements.

1. All power connections will terminate at the *PDS*, bring the POWER and GROUND (return) wires for the equipment to be connected directly to the *PDS*.
2. Connect the power wire from the equipment to the appropriate output on the *PDS* (i.e. ignition controlled, constant/battery or timed).
3. Connect the return wire from the equipment to one of the terminals screws on the GROUND terminal block .

As you install the equipment and there are too many ground return wires to be connected to terminal block the extra ground stud on the end of to PDS can be used. It is highly recommended that connecting wires to the screw terminals on the GROUND terminal stud be terminated with spade/ fork terminals to make neat reliable connections.

Again any wires connected to the output Ground stud must be terminated with an appropriate “ring” terminal to form a neat reliable connection.

4. Once all of the wire connections to and from the *PDS* are completed the output fuses can be installed according to the required rating of the connected equipment.

The *PDS* accepts a standard Automotive Blade ATO/ATC Type fuses, each fuse location has an LED indicator to show that the fuse is in place and working. The LED indicator will glow RED if the fuse is “MISSING” or “BLOWN” otherwise it will be off.



SETTING THE TIME DELAY ON TIMED OUTPUTS

The time delay for the timed outputs is user selectable and is set by a 4 position miniature switch that is accessible through the cover at the back of the PDS. The delay time can range from 2 minutes to 13 hours, this function is triggered by turning the vehicle ignition "OFF". When the selected time has elapsed power to all timed outputs will be shut "OFF". If during the timing cycle the ignition is turned back on the timer will reset and the time cycle will restart when the ignition is turned off again. The PDS has a built in Voltage Monitoring circuit, this will automatically shut down any timed outputs if the battery voltage is reaching a "CRITICAL LOW" point (11.5 VDC). Similarly this Voltage monitor circuit will cut off power to the timed outputs if the battery voltage exceeds 18 VDC.

To set the time delay follow these steps;

1. Locate the Miniature (Dip) switches at the back of the PDS.
2. Refer to the attached label or the Table 1 listed below to determine the switch settings.
3. Use a pen tip or other suitably small tools to set the switches. This will select the time increments to the output off time delay.

Table 1 Time Delay Switch Settings

Factory Default = 2 Hours

TIME	SW-1	SW-2	SW-3	SW-4
2 MIN.	ON	ON	ON	ON
10 MIN.	OFF	ON	ON	ON
30 MIN.	ON	OFF	ON	ON
1 HR.	OFF	OFF	ON	ON
2 HR.	ON	ON	OFF	ON
3 HR.	OFF	ON	OFF	ON
4 HR.	ON	OFF	OFF	ON
5 HR.	OFF	OFF	OFF	ON
6 HR.	ON	ON	ON	OFF
7 HR.	OFF	ON	ON	OFF
8 HR.	ON	OFF	ON	OFF
9 HR.	OFF	OFF	ON	OFF
10 HR.	ON	ON	OFF	OFF
11 HR.	OFF	ON	OFF	OFF
12 HR.	ON	OFF	OFF	OFF
13 HR.	OFF	OFF	OFF	OFF

Default Setting

SPECIFICATIONS

No. of Available Connections

Power Inputs:

4 AWG +12V @ 80A max input current on 1/4" connecting stud	1
4 AWG Ground on 1/4" connecting stud	1
8 AWG @ 40A Max +12V (fused up to 50A, works off the timed circuit)	1
8 AWG Ground on 1/4" connecting stud	1
Additional Ground on 1/4" connecting stud	1

Terminal Block Power Outputs:

Ignition Controlled Power-70A relay the total current not to exceed 40A	6
Continuous Power - the total current not to exceed 60A	6
Ground return path for the Output terminal blocks the total return current not exceed 60A	5

NOTE:

All combined output power (using any combination of outputs) not to exceed 90A. For higher Amperage requirements, use the optional Newmar NRB-3 or NRB-5 external relay banks.

Timed Outputs With Voltage Protection Specification:

Operating Voltage (monitored/allowed by protection feature)	9.0V—18V
Stand-by Current	8mA
Operating Current	350mA
Selectable Time Delay	2 min. - 13hrs.
Input Voltage Low Sensing Threshold	13.0V



OPTIONAL ACCESSORIES

NRB-3 3 Circuit External Relay Box
rated at 30 Amps each,
90 Amps total @12 VDC

NRB-5 5 Circuit External Relay Box
rated at 30 Amps each,
150 Amps total @12 VDC



WARRANTY

Newmar warrants the model PDS to be free from defects in material and workmanship for (2) two years from the date of purchase. Liability is limited to repairing or replacing at our factory, without charge, any material or defects which become apparent in normal use within 2 years from the date the equipment was shipped.

PRODUCT REGISTRATION

If you wish to register your product with us and provide comments or questions, please log onto www.newmarpower.com/product_registration.html or for immediate response to your questions or comments, please call tech service at 1-800-241-3897 or E-mail: techservice@newmarpower.com.

