

Hobbico® MicroPanel Plus™ PRO SERIES



Congratulations on your purchase of the MicroPanel Plus™ from Hobbico®! Combining very practical functions in a tiny package makes this power panel an excellent choice for discriminating modelers. MicroPanel Plus is capable of supplying power to 12V field equipment such as starters and fuel pumps, in addition to supplying 1.2V and adjustable heat to glow plugs, and charging 1.2V glow starters with a built-in charging terminal.

SPECIAL FEATURES

- Banana jacks for connecting 12V electric starter or fuel pump
- 1.2V driver for glow plug clips with heat adjustment and "ON" LED
- 1.25V charger for rechargeable glow starters with built-in terminal and "ON" LED
- Continuous, fixed 300-400mA charge rate
- Tiny and lightweight – easy to transport and doesn't take up much valuable room in the field box
- 18" input cord with pre-installed alligator clips
- Rear enclosure included for use as a stand-alone item, or mounts to a field box using the pre-drilled mounting holes
- Reverse polarity protection

IMPORTANT PRECAUTIONS

- Charge only NiCd or NiMH rechargeable batteries. Do NOT attempt to charge other chemistry types, as damage may occur to the battery and charger.
- Do not allow water, moisture or foreign objects into the charger.
- Do not charge batteries of greater or less than 1.2V.
- Do not leave the charger unattended while charging. Disconnect the battery immediately if the panel and/or glow starter becomes hot. Allow the panel and glow starter to cool before reconnecting. Do not charge hot batteries.
- Do not allow batteries to remain on charge indefinitely.
- Make sure to start glow driver the first time with heat setting at minimum, adjusting heat upward as needed.
- Keep out of reach of children.

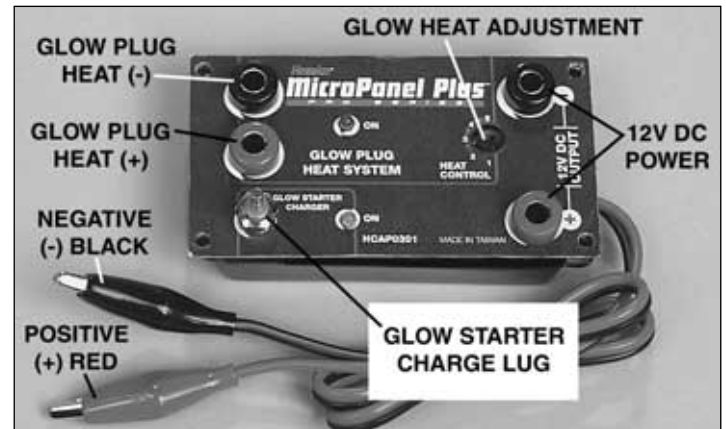
DC INPUT POWER

This panel accepts only 12V DC input power. Connect the red, positive (+) alligator clip on the panel to the positive (+) terminal on a 12V field battery. Connect the black, negative (-) alligator clip on the panel to the negative (-) terminal on the field battery. Make certain a very solid physical connection is made with each contact. For a more solid physical and electrical connection to the 12V field battery, solder the panel's input leads directly to the terminals on the field battery. This can be done as follows:

1. Remove one alligator clip, using wire cutters to cut the wire at the base of the clip.
2. Strip back approximately 1/4 inch of insulation from the end of the cut wire.
3. Tin the bare wire with 60/40 rosin core electrical solder.

4. Solder the wire to the appropriate terminal. Do not allow the soldering iron to apply heat to the battery terminal for an extended length of time.
5. Repeat the above steps for the other input wire on the panel, connecting it to the opposite battery terminal.

Caution: Never allow the positive and negative terminals of the field battery to touch each other in any way, as doing so could cause considerable harm to the battery, panel, and yourself.



12V OUTPUT JACKS

One set of banana jacks on the right side of MicroPanel Plus can be used for supplying power to any 12V DC field equipment. This is particularly useful for electric starters and fuel pumps. Simply plug the positive connector on the field equipment to the red, positive (+) jack, and the negative connector to the black, negative (-) jack.

GLOW PLUG IGNITOR

A set of banana jacks on the left side of MicroPanel Plus delivers current to glow plugs for starting nitro-powered engines. Observing proper polarity is not necessary for connecting MicroPanel Plus to glow plugs.

1. When applying heat to the glow plug for the first time, make sure the heat adjustment dial on the right side of the panel is at MINIMUM, or full counter-clockwise position. This is to avoid accidentally burning out the glow plug from excessive current.
2. Connect a glow plug clip to the jacks on the left side of the panel.
3. On the first use of the glow ignitor circuit, remove the glow plug from the engine and connect it directly to the glow plug clip. The red PLUG HEAT LED will illuminate to confirm current is being delivered to the glow plug.
4. Increase the plug heat until the glow plug's element maintains a solid glow. Make sure not to over-adjust and apply too much heat to the plug as the element may burn out, destroying the glow plug. Leave the adjustment in the setting in which the plug maintains a solid glow. **The glow plug might be hot following this step. Use caution when handling a hot plug.**
5. Remove the glow plug from the clip and re-install it into the engine.
6. Re-attach the glow plug clip to the glow plug and attempt to start the engine as normal.
7. If the engine does not start, slightly increase the amount of current being delivered to the glow plug by rotating the heat adjustment in a clockwise rotation, and try again. If repeating this step does not result in the engine being started, check all other engine settings to determine if something other than the glow plug is preventing the engine from being started.
8. Once a successful start has been achieved, there should be no need to re-adjust the heat setting unless extreme environmental conditions exist which could alter the overall operating characteristics of the engine. For example, a flooded plug might require an increase in the heat adjustment in order to burn off the excess fuel to start the engine. Using a different engine, fuel, or glow plug could require re-adjustment of the glow plug heat system.
9. Follow steps 6-8 for all subsequent starts of the engine.

CHARGING A GLOW STARTER

A built-in charger allows MicroPanel Plus to charge 1.2V rechargeable glow plug ignitors at the field. This charge circuit delivers approximately 300-400mA of current to the glow starter (varies depending on the condition of the power source and glow starter). This charge rate is fixed and cannot be adjusted. In addition, this is a continuous charge, and is not automatically terminated by a timer nor by peak detection. The charge process must be terminated manually.

In general, it is not necessary to fully charge a glow starter as it is only used for a very short duration each time. A partial charge should be sufficient to achieve multiple starts on an engine. To achieve partial charge, simply connect the glow starter onto the charge terminal on the left side of the panel. When charge current is being delivered to the battery, the green CHARGE LED will illuminate. See the table below to determine the approximate amount of charge that will be delivered based on charge time:

Charge time (in minutes)	Energy delivered to glow starter (in mAh)
10	50-67
20	100-133
30	150-200
40	200-267
50	250-333
60	300-400
75	375-500
90	450-600
120	600-800
4 hours	1200-1600
12 hours	3600-4800

Once adequate charge is believed to have been delivered to the glow starter, manually disconnect the glow starter from the charge terminal. It is not recommended to allow a glow starter to remain on charge for an extended period of time. If a glow starter is KNOWN to be completely discharged and a full charge is desired, determine the RATED capacity of the glow starter (should be printed on the side of the glow starter). Using the chart above, determine the amount of time needed to fully charge the glow starter. Most glow starters have capacities in the 1400-1600mAh range. Some heavy-duty starters have capacities near 5000mAh. Again, a partial charge is only needed in order to achieve multiple starts of an engine, and attempting to fully charge a glow starter is not recommended.

WARNINGS: Do NOT attempt to charge batteries having more than one cell. Do NOT attempt to charge other than NiCd or NiMH rechargeable batteries. Do NOT overcharge a glow starter. **If the MicroPanel Plus or the glow starter get hot during charge, terminate charge immediately.**

TROUBLESHOOTING

Please refer to the following tips in the event that the charger is not working properly.

Symptom: Glow starter is not receiving a charge – the CHARGE LED does not illuminate.

Causes/cures:

1. The panel may not have a solid connection to the 12V DC supply. Re-check the input connection.
2. The glow starter may be defective.
3. The glow starter may not be making solid contact with the charge terminal. Re-check the connection at the charge terminal.
4. The 12V DC field battery may be dead.
5. The charge circuit may be damaged. Contact Hobby Services for repair information.

Symptom: The glow starter usually contains enough charge for only a few starts.

Causes/cures:

1. The glow starter was not left on charge long enough. Re-charge for a longer period of time.
2. The charge circuitry is not delivering the specified charge current. Contact Hobby Services for repair information.
3. The glow starter is defective, and should be replaced.

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Symptom: The glow starter and/or MicroPanel Plus get HOT during charge.

Causes/Cures:

1. Unplug the glow starter immediately and allow it to cool down.
2. The glow starter may have been left on charge for an extended period of time.
3. An internal problem exists with either the panel or the glow starter. Contact Hobby Services for repair information on the MicroPanel Plus.

Symptom: Neither a starter nor fuel pump operate when connected to the panel.

Causes/Cures:

1. The panel may not have a solid connection to the 12V DC supply. Re-check the input connection.
2. A poor connection exists between the field equipment and the panel. Re-check all connections.
3. A malfunction exists inside the panel. Contact Hobby Services for repair information.

Symptom: Inadequate or excessive power is delivered to the glow plug.

Causes/Cures:

1. Make sure a solid connection exists to the 12V DC supply.
2. Make sure a solid connection exists between the panel and the glow plug clip, and between the glow plug clip and the glow plug. Re-check all connections.
3. Dimly lit glow plugs could result from a defective glow plug (replace the plug), a defective glow plug clip (replace the clip), insufficient heat adjustment setting (increase plug heat), or a weak 12V field battery (re-charge field battery).
4. Burned out plugs could result from excessive power being delivered to the glow plug (decrease plug heat adjustment), defective glow plugs (replace the plug), or a short circuit somewhere in the system (contact Hobby Services for repair information).

SPECIFICATIONS

Input Voltage:	11-14V DC
Unregulated Output:	12V DC
Glow Heat Output:	1.2V DC
Charge Circuit:	
Battery Types:	Single 1.2V NiCd (nickel-cadmium) or NiMH (nickel-metal hydride) cells
Charge Output:	300-400mA at 1.25V DC
Charge Termination:	Manual only
Weight:	2.3 oz. (66g)
Case Size:	1.8 x 1.3 x 3.4" (46 x 32 x 85mm)

HOBBICO PRO SERIES LIMITED WARRANTY

Hobbico warrants this product to be free from defects in material and workmanship for a period of two (2) years from the date of purchase. During that time, we will repair or replace, at our option, any product that does not meet these standards. You will be required to provide proof of purchase date (receipt with UPC proof-of-purchase or invoice).

If, during the two year warranty period, your Hobbico product shows defects caused by abuse, misuse, or accident, it will be repaired or replaced, at our option, at a service charge not greater than 50% of the current retail list price. Be sure to include your daytime telephone number in case we need to contact you about your repair.

Under no circumstances will the purchaser be entitled to consequential or incidental damages. This warranty gives you specific legal rights, and you may also have other rights, which vary from state to state. If you attempt to disassemble or repair this unit yourself, it may void the warranty.

For service on your Hobbico product, either in or out of warranty, send it post paid and insured to:

Hobby Services

1610 Interstate Drive
Champaign, IL 61822.
(217) 398-0007

E-mail: hobbyservices@hobbico.com
Internet Address: www.hobbico.com