SERVICING

This Train Power 4 is built with pride by USA Trains and is covered by a limited warranty. (See limited warranty terms). Please follow these instructions carefully before sending your power pack for service:

1. Return power pack in its original box with the proper inserts and then pack the original box in a proper shipping carton so it is well protected in shipment. The package must be fully insured and prepaid. USA Trains is not responsible for damage or loss during shipment.

2. Include a note explaining the problem and servicing you need performed. Be sure to include your name, street address, (NO P.O. BOXES PLEASE) City, State, Country (if outside U.S.A) and zip code along with a daytime phone number including area code. If the power pack service is not covered by warranty, a reasonable service fee will be charged. For any power pack to be returned outside the continental U.S.A., please include $50.00 U.S. currency to cover return postage. Any power pack returned to customers in the continental U.S.A. will be pre-paid by USA Trains.

3. Ship your item to:

USA TRAINS
662 CROSS STREET
MALDEN, MA. 02148

LIMITED ONE YEAR WARRANTY

This Train Power 4 is warranted for one year from the original date of purchase. The power pack will operate to the specifications stated within or it will be repaired or replaced at our option. The pack must have been operated with the proper input voltage and not have been damaged by careless handling, by immersion in water, or storage in a damp place. This pack must be returned to USA Trains packed in its original box with the proper inserts and then packed in a proper shipping carton so it is well protected in shipment. The package must be fully insured and prepaid. USA Trains is not responsible for damage or loss during shipment. If unit is to be serviced under the terms of the warranty, proof of the original purchase from an authorized USA Trains dealer must be furnished. Do not send the original receipt, it may not be returned. Transportation costs incurred by the customer are not covered under this warranty.

USA TRAINS

TRAIN POWER 4

OWNERS MANUAL

USA TRAINS
662 CROSS STREET
MALDEN, MA 02148, USA
www.usatrains.com
781-322-6084

Dear Customer,

We would like to thank you for your selection and purchase of our power pack. You have selected a product designed with state of the art engineering and will provide you with many years of enjoyment. As with all electrical products be sure to read the entire owners manual prior to operation.

Happy Railroading
USA TRAINS

CAUTION: Electrically operated product. Do not allow children to operate. This product is not a toy. It is designed for indoor use only. Use outdoors only under dry conditions and store indoors when not in use. Use caution when you use any electrical device outdoors.

www.usatrains.com

TROUBLE SHOOTING CHART

PROBLEM	POSSIBLE CAUSE	POSSIBLE CURE
Unit dead, no lights.	Power switch OFF or unit unplugged.	Plug unit into wall outlet. Turn power switch ON.
Unit quits after hot.	Thermal shutdown.	Allow time for unit to cool. Reduce load.
Track power ON/OFF	Electronic shut-down working.	Reduce load or increase speed slowly.
Power ON, slow or no response to speed control.	No power to track.	Check track connections.
All accessories working but no track power.	Broken or loose wire to the track terminals.	Replace wire or re-install the wires.
Loco erratic, stops off and on.	Dirty track.	Clean tracks as as explained.
Loco stops running after 20 min. of running.	Probable overload.	Reduce load.
Loco overheats or is hard to run, or will not run slow.	Bad motor or tight brushing or bearing.	Replace motor or lube the gears. See dealer.
Loco will not run at slow speeds.	Bad motor armature	Replace the motor
Loco stopped but lamp in cab or headlight on.	Damaged loco motor switch not set properly.	Repair loco or set the switch to the correct position.
Train slows in certain areas of the layout.	Track wiring is too light in these areas.	Use heavier gauge wires or run extra wires to the affected area.
No power from power supply; power on & LED glowing.	Internal fault or faulty component.	Requires factory repair.
No AC accessory voltage at terminals.	Open wire in power supply.	Requires factory repair.

TROUBLE SHOOTING

The most common problems associated with power packs are the initial wiring to the layout. Be sure that the wires that are connected to the power supply are securely connected to the terminal connectors. The wires must neat and not frayed. Check the wires connecting the track to the power pack. Make sure there are no shorts or openings in the connections.

Make sure the power supply is connected to the wall outlet and the outlet is providing electricity. If the pilot LED is on and glowing green the unit has power.

The Train Power 4 provides automatic output shutdown to the track terminals if there is a short in the wires. If you cannot get a locomotive to move on the main layout, connect the power pack to a short length of test track and see if the problem is in the pack, or the layout wiring.

Dirty track can cause a locomotive to run in an erratic manner. Cleaning the tracks may be required.

The over-current protection system designed in the power pack will cause the units to shut down if the design current is exceeded. When a DC motor is at rest, the armature impedance is very low, and when power is applied to the motor, very high currents can flow through the motor. The currents can be several times the running currents used by the motors. If you have several motors connected to the same power pack, and the pack starts to turn off, then on and off again, you may be exceeding the design limitations of the pack. To pull a large current load, start by applying the voltage very slowly until the locomotive(s) starts to roll. When the armatures of the motors are rotating, the current drops, and you can now slowly increase the speed as desired.

The power packs are designed to overcome this problem by delaying the effect of the short circuit shutdown system for a short time after the power is applied. This time is limited, however, to a short duration to prevent stress to the output device.

The power transformer is protected by an internal circuit breaker that has been designed to open if the transformer internal temperatures exceed the safe design limits for heat protection. When this occurs, the entire power pack will shut down and appear dead. If this happens, turn "OFF" power pack and wait until the temperature drops low enough for the circuit breaker to reset. If the transformer circuit breaker opens, the load you are demanding from the pack is too large. Reduce the number of locomotives or reduce the size of load in some other way. Transistor power packs must protect the internal devices in this way to prevent rendering the pack useless in the event of a short, or excess temperature of the output device. The Train Power 4 can produce in excess of 4 amps. before the short circuit systems shuts down the output circuit, and even higher currents for very short durations. The power transformer circuit breaker will open though, if this high current is sustained for a long period. The accessory outputs are protected by a special fast acting circuit interrupt device. It will automatically reset after the load is returned to normal.

GENERAL INFORMATION

The "Train Power 4" is designed to operate all standard DC powered model trains. The output voltage is high enough for G Scale. DC output connectors are for powering the train track and AC output connectors for AC accessories. When the power switch is placed in the "ON' position, there is a green pilot light to indicate there is power output. The voltage from the wall outlet is isolated and reduced by the transformer. This voltage is supplied to the DC output terminals and the AC accessory terminals. There is also a circuit that provides output voltage (speed) and polarity (direction) controls to the track terminals.

FEATURES

- Operates All DC Trains
- Input: 120VAC 60Hz 150W Max
- Output: Track 1-24V DC, 4A /Accessories 18V AC, 2A
- 1-24 Volts DC Track Power (Adjust by FULL-LOW slide switch)
- 18 Volts AC Accessory Power
- Thermal Overload Circuit with Indicator Light
- Directional Control
- Range of environmental conditions:
  a. Altitude: 6500 Feet
  b. Temperature range: 41°F to 104°F
  c. Relative humidity: 50% at 104°F
  d. Pollution degree: 2

SAFETY

Many model trains are operated by experienced modelers that exercise common sence when using a product that plugs into a wall outlet. Other users are small children that are not aware of the many dangers of using the power supplied by a wall outlet. To the adult supervising these children, please make sure the plug and wire connected to the plug are in good condition, not frayed, or cut. The wall outlet should be in good condition and not be overloaded with other electrical products or extension cords. The operating surface should be dry and not around standing water. Do not use in a damp basement or outdoors. The power pack must be kept dry and free of moisture when operating or in storage. This product is designed for adult operation and any child under the age of fourteen (14) should use this product under adult supervision.

The power pack is only designed to operate model trains. Any other use may impair the protection provided by the power supply and could result in injury.

Use the power pack in a well ventilated area with easy access to the wall plug.

TRACK CONNECTION

To connect your power supply to your track, simply strip back at least 1/2 inch (bare wire) from your track wire. Unloosen the two track terminal screws (right side), wrap the bare wire around the screws clockwise and retighten the two screws.

Figure 1

The two on the left side are labeled "AC" and are for connection of any accessories that operate 18 volts AC. Common uses of these terminals would be switch machines, lighting of buildings or railroad signals. When using multiple accessories, we recommend the use of a Buss Bar to accommodate multiple connections. The two right side terminals are used for connection to the train track and are used to power DC trains (1-24 volts). The power controller can supply all of the rated power to the train, but only if power is not lost in the wire or in the tracks. For best results, use at least a wire size of 20 gauge stranded wire. If the layout has a lot of track or track length, use jumper wires to the portion of the layout furthest from the power supply. These jumper wires should parallel the track voltage. Longer wires on large layouts may require a larger wire such as 18 gauge to prevent voltage drop from the power pack to the track at long distances. There are two ways to do this.

(1) Run several smaller gauge wires to several points on the layout.

(2) Run one larger gauge set of wires to the furthest point in the layout.

This is done since the track has more voltage drop than the wire. Check to make sure there are no loose strands that may touch the other track or accessory terminal. Keep wires neat and away from traffic areas. The wires from the accessory voltage terminals on the left must be kept away from the track voltage wires and terminals. Make all connections with the power "OFF." After each connection is made turn the power "ON" to ensure proper connection and there is no short circuit.

CAUTION: Use DC connections for track power. Do not use the AC terminals to operate the track as this may cause damage to your locomotive. Use AC terminals for accessories only.

DIRECTION CONTROL

The locomotive should come to a complete stop before changing direction. This will avoid any possible damage to the motors or gears of your locomotive.

CIRCUIT PROTECTION

This feature has a thermal circuit protector when overloaded will shut the power supply down and the "overload" indicator light will illuminate red. Should the power supply "shut down," turn off the power switch and allow the unit to cool in order to reset the thermal overload circuit to normal operation. Once cool, turn on the power switch and begin normal operation. Refer to the trouble shooting section for possible causes of overload,

CARE AND MAINTENENCE

The Train Power 4 was designed to run in a dry environment. If using outdoors, care should be used to keep the unit dry at all times. Do not leave unit outdoors - store in a dry environment indoors. To clean it, use only a soft, damp cloth with water; if needed, use a small amount of glass cleaner sprayed on the cloth first. Do not allow any solvents to set on the surface on the power supply.

The placement of the power supply is critical to have the unit provide the maximum amount of power it was designed to furnish. Place the unit in a dry location where it can get some air movement. You need not provide any other source of cooling air beside the internal fan, but please do not fence (or box) it in.

TRAIN POWER 4 FEATURE AND FUNCTION DIAGRAM