

## TROUBLESHOOTING

Almost all problems are caused by poor or loose connections that trip the peak detector when the wires are bumped or moved. You must make certain the charger is well connected to the battery pack. Any connectors should be clean (use motor spray) and tight. Alligator clips are best clipped to a piece of multi-strand flexible wire so the teeth can sink in.

- When using a 12 volt automotive battery charger or unregulated power supply sometimes line surges or dropout will cause problems. Use a better power supply.
- If the unit slow charges, but will not fast charge when the button is pressed, the output wires may be shorted or hooked up backwards. Check connections.
- Be very careful not to hook up the charger backwards as the fuse may blow. Pull the fuse straight out and make sure the little wire element in the middle is not burned out. You can replace the fuse yourself with a 15 amp unit.
- Do not hook 2 chargers up to one power supply and charge 2 battery packs with different number of cells in them at once, unless the power supply is filtered, regulated, or is a battery.
- If the power supply, battery, fuse, and all connections all check out ok, and the charger either stays on or off all the time or blows fuses, then the MOSFET transistor inside of the charger may have been damaged. This can happen if the unit is shorted, overheated or connected to an improper power supply. If you wish you may replace the transistor yourself (Part #854), or return the unit for service.
- If it should ever be necessary to return the unit to factory for repair, be sure to enclose a note stating nature of problem, return address, shipping instructions and any special instructions. Non-warranty repairs are shipped back out usually within 2 days, C.O.D., or billed to a credit card. Please allow up to 2 weeks total for shipping.

## WARRANTY

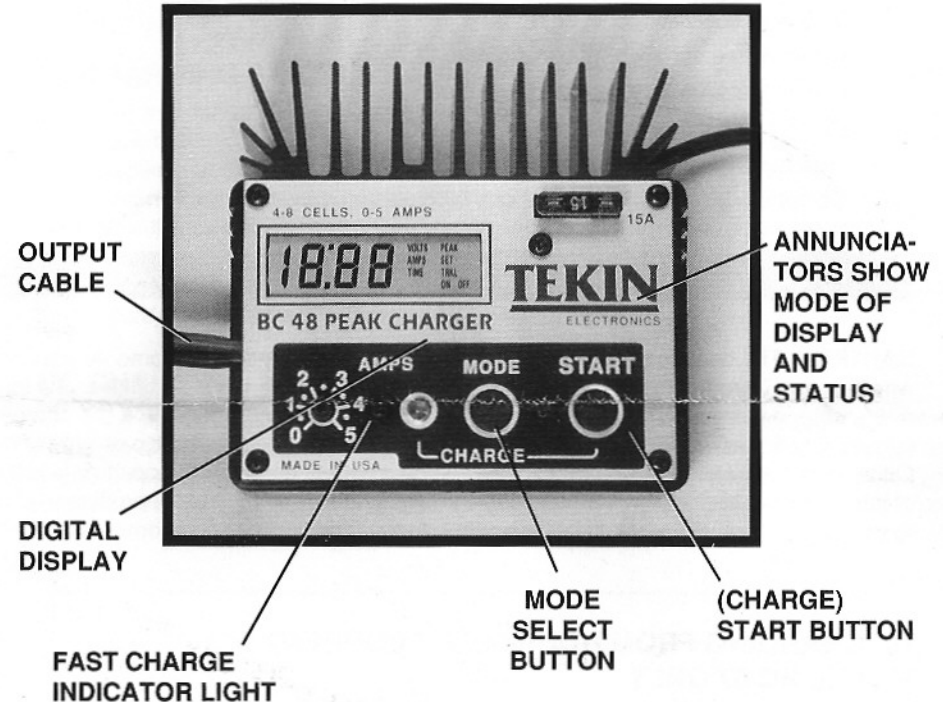
TEKIN Electronics, Inc. guarantees this battery charger to be free from factory defects in materials and workmanship for a period of 120 days from date of purchase, verified by sales receipt. This warranty does not cover: Suitability for specific application, components worn by use, application or reverse or improper voltage, tampering, misuse or shipping. Our warranty liability shall be limited to repairing unit to our original specifications. By the act of using this battery charger the user accepts all resulting liability. Batteries and other equipment damaged in connection with the use of this device are **not** covered. We reserve the right to modify the provisions of this warranty without notice.

**BC 48  
NOW GOES UP  
TO 8 AMPS**

# BC48 & BC67

## DIGITAL PEAK CHARGERS

### USER'S GUIDE



Team  
**TEKIN**  
USA

## FEATURES

- All digital circuitry, microprocessor controlled.
- Multiple charger modes, with computer controlled and optimized charge profiles.
- Protection against shorts and overloads.
- Cold Start™ mode for discharged battery packs.
- Dual 12 bit high precision analog to digital converters.
- Large easy to read digital display, with several display modes to monitor charge.
- 0 - 5 amp linear output charge current.
- Works with a variety of power sources.
- Built-in 5 amp AC power supply on model BC 67.
- No dropping diodes in the power path, for a full charge of 7 cells from 12 volts.
- Compact, dependable, light weight, high performance construction.

## POWER SUPPLY

**CAUTION:** The heatsink and panel on the top of the charger may become very warm when in use. Do not touch the heatsink or panel while charging. If the heatsink on the top of the charger, or the front panel, become excessively warm, then reduce the charge current slightly, reduce the power supply voltage slightly, or use a small fan to cool the unit. Once you have selected a suitable power source, connect the large red positive (+) clip of the charger to the pos. (+) terminal of the power source, and the black negative (-) clip to the neg. (-) terminal of the power source.

### AC CHARGING FROM HOUSEHOLD CURRENT MODEL BC 67 ONLY

**WARNING:** This household appliance is not a toy! While this unit uses materials for safety, improper or unsafe use of this or any AC powered device can be hazardous. Do not operate or plug the unit into an outlet in the vicinity of water or moisture. Not for outdoor use except under controlled, dry conditions. Unplug unit when not in use. Do not open the unit yourself. If the AC power cord should ever become burned, frayed, worn, or damaged you should immediately turn off the power at the breaker box, unplug the unit from the wall and discontinue use until you can get the power cord properly serviced. Do not insert objects into the cooling vents on the front or back. The BC 67 has a built-in 5 amp AC power supply that will charge 6 - 7 NI-CD cells to a full peak at up to 5 amps. The built-in power supply is strong enough to charge most 8 cell packs including the large Tamiya JuicePaks. You will be able to get from 2-5 amps of charge current, depending on household voltage. Four or five cells can be charged at up to 2.00 amps. If you try to charge at more than 2 amps, the charger will shut off. To use, first unplug the DC power cord from the back of the charger. This will keep the clips from shorting. If you do not unplug the DC

power cord, (the 6' long black cord with clips on the end) and the clips short together, the 15 amp fuse may blow. If a fuse rated higher than 15 amps was also installed when the clips short, then a non-warranty internal fuse may blow, and the unit will have to be serviced. After the DC power cord is removed, plug the AC power cord into any suitable outlet. Be sure to keep soldering irons and sharp objects away from the power cord. The BC 68 is available for use with different input voltages. Standard is 120 V AC for the U.S. If your charger is built for a voltage other than 120V, it will have a tag on the power cord. In this case, use only the voltage specified on the tag.

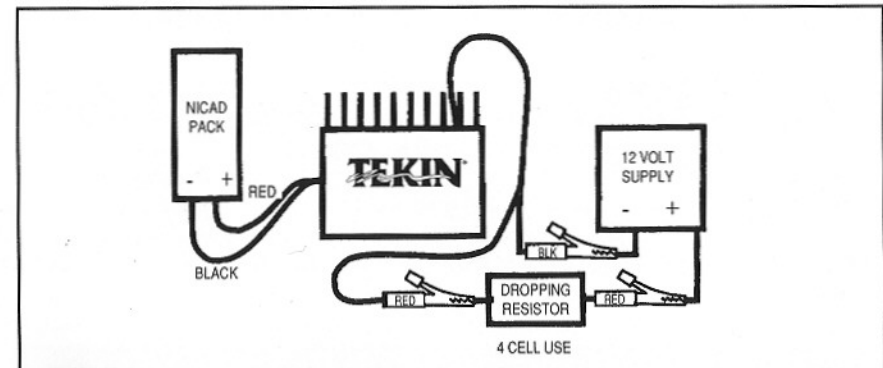
The BC 67 is designed to work and fully charge your batteries even if you have weak or low AC line voltage (less than 120 volts) which is often the case at racetracks. Because the BC 67 has a linear mode output regulator, it can become hot in use, especially if the AC line voltage is strong. If it becomes too hot it will shut down. In this case either reduce the charge current slightly, to 4 amps maximum, or set the charger on its side (not back) so it can cool better with the front panel vertical. You may also use a small fan to help cool the unit.

### DC CHARGING 6-8 CELL PACKS

A 12 volt automotive battery or regulated power supply is the best. A 4-5 amp automotive battery charger may also be used, but sometimes causes problems due to voltage spikes or dropouts. If you are using a 12 volt battery while it is installed in an automobile, be very careful not to let the wires or the heat sink on the top of the charger touch the auto ground, or a short could occur, and the fuse will blow. If you are using a CB, or other regulated power supply, it should put out no more than 14.5 volts under load, and at least 3 amps, or whatever current you wish to charge at. On the BC-67 model, wrap the AC cord up and store it in the opening in the back of the charger.

### DC CHARGING 4 AND 5 CELL PACKS

Your power supply must not put out more than 13.8 volts. Any more than this can cause the charger to overheat and fail on the BC. The most you can do a full charge at is 4.00 amps. If you try to charge at more than 4.00 amps the charger will shut off. (To charge all the way at up to 10 amps use a TEKIN BC 112 series charger.) You must also use the dropping resistor whenever charging a 4 cell pack, or the charger can overheat and fail.



**CAUTION:** If you use a lead-acid (automotive) battery as the power source, make sure you have good ventilation. Lead-acid batteries give off explosive hydrogen gas when they are being charged. Lead-acid batteries should not be charged anytime a TEKIN charger is also connected to them.

## FUSE

If an overload occurs the fuse will blow out. Pull the fuse straight out to remove, and replace with a 10 - 15 amp automotive style plug in fuse.

## INDICATOR LIGHT

The L.E.D. indicator light shows that a fast charge is occurring if glowing solid bright. When the fast charge is complete it will blink if the "TRKL" (trickle) charge is selected "on" and going.

## MODE SELECT BUTTON

Displays the following modes, one after the other, as the button is pressed.

## DISPLAY VOLTS PEAK

Shows the peak voltage the battery finished charging at. Helpfull to assure a full charge was obtained. Not for use as an indicator of how well a battery will run. Saves the reading at the end of the charge until the start button is pressed again.

## DISPLAY VOLTS

Displays voltage from 0 to 19.99 volts. With no NI-CD battery connected to the charger, the power supply input voltage is shown. When a NI-CD battery is connected to the charger, the voltage of the NI-CD is displayed.

## DISPLAY CHARGE AMPS

Displays the amperage flowing in to the battery pack. Will read 0.00 unless a NI-CD battery is connected to the charger and either the trickle (slow) or fast charge is turned on.

## TIME

Displays how long the battery has been fast charging, in hours and minutes. At the end of the fast charge, the reading is stored until the next fast charge.

## SET TRKL

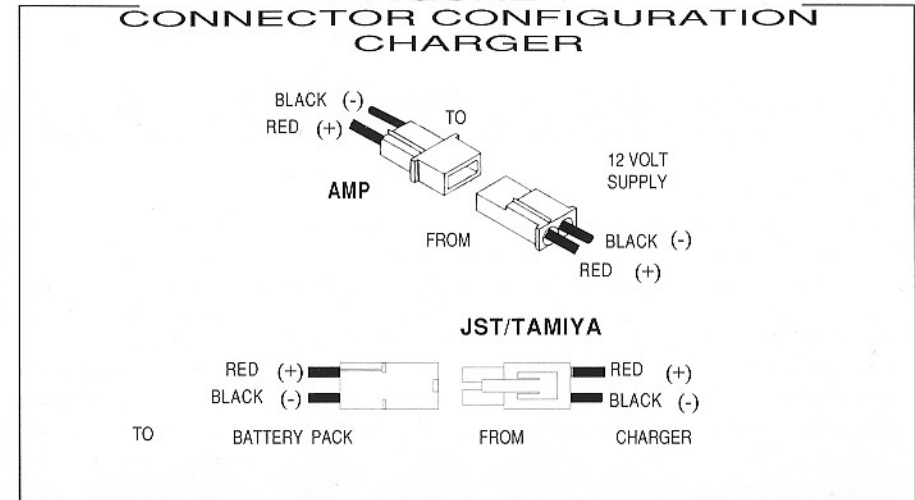
Lets you set the trickle (slow) charge either on or off. The trickle current adjusts in proportion to the fast charge current, from 0 to about 200 MA. If you fast charge your battery pack, then leave it on trickle charging a few hours more to equalize, top off and balance the battery pack. Doing this is highly recommended if the battery has not been fully discharged (with a discharge resistor or other device) recently. To toggle the trickle charge on or off, when in the trickle set mode, press the start button. The power up default setting is off.

## CONNECTING THE NI-CD BATTERY PACK

The charger comes with a Tamiya/JST connector with clip lead adapter. Most battery packs use the Tamiya configuration. Just unplug the clips and plug the pack in. Kyosho battery packs use the JST connector, but are wired opposite from Tamiya, and will not work unless you rewire the connector. (see figure 1)

If you are using other connectors on your battery pack you may want to install a mating connector on the charger. If you use the alligator clips, you should solder some stub wire leads to the battery pack to connect the clips to. The alligator clips should have soft multiple strand wiring to clip on to, in order to assure a good connection. A poor connection can cause the charger to false peak and shut off before the charge is complete.

- FIGURE 1 -  
CONNECTOR CONFIGURATION  
CHARGER



## SELECTING THE CHARGE AMPERAGE

Most NI-CD batteries can be fast charged at 2 - 3 times their rated hourly capacity, without adverse effect. Charging a NI-CD at more than 3 times the rated capacity is not recommended, unless you are just momentarily peaking the battery. NI-CD batteries are usually rated for capacity in milli-amp hours. A Milli-amp is 1/1000 of an amp. A 1700 MA battery should be charged at 3400 (1700 \*2) to 5100 (1700 \*3) milli-amperes, which would be equal to 3.4 to 5.1 amps (charger goes to 5.0 amps). Unless you are in a rush, it is usually better to charge at the lower end of the range.

## START BUTTON AND CHARGE MODES

Pressing the start button begins the fast charge (unless you are in the trickle set mode). The first time the button is pressed the display will show "OFF". The next time the button is pressed the display will show a "P" for "peak" charge. This will give you a normal peak charge and is used if the batteries already have some charge in them. The third time the button is pressed is "P2" mode. This is a peak charge with a delay at the end to warm up the cells more. If the button is pressed again within 3 seconds a "CS", for "Cold Start", will appear. Use the "CS" charge profile if the batteries are totally discharged. The sensitivity and other characteristics of the peak detector will be adjusted for discharged cells, to obtain optimum performance.

**WARNING:** Using the cold start ("CS") profile on the battery that is already nearly fully charged can result in excessive charging, and possibly cause battery damage or explosion. If you are not sure the batteries are discharged at least half-way, then use the "P" charge profile.



## START BUTTON AND CHARGE MODES (cont)

Once you have selected which charge profile to use, check and set the charging current with the amps set knob. Turn the knob until the desired charge amperage flows. Once the "amps set" annunciator goes out the amps knob should not be moved again until the charge is complete. Also, if for some reason the amps setting or battery pack is bad, or connected incorrectly, the charger will abort at this time.

## COMPETITION BATTERY CHARGING

### DISCHARGING

If you wish to charge your batteries for the best possible performance, you will need to first of all discharge the pack before charging. Discharging the cells fully is one of the most effective ways to prevent memory, power loss, and capacity loss. With SCE and SCRC cells this should always be done, as they are the most sensitive. The pack should first of all be run down in the car the normal amount. Then either: A) Place an approximately 30 OHM, 10 watt resistor across the positive (+) and negative (-) terminals of the battery pack. The resistor will become warm, but will cool off in about 30 minutes after the cells fully discharge. It can then be removed and the pack allowed to rest for preferably at least 24 hours; B) Instead of a single resistor you can place a 1 OHM, 5 watt resistor across each individual single cell. This method is slightly better, as each cell then gets discharged independently of the others, thereby assuring a full matched discharge. These resistors are available as accessories at better hobby shops.

A few hours before you are ready to run the pack, put it on the charger and select the cold start "CS" charge profile. Unless you are trying to obtain the maximum capacity, turn the trickle charge off, or you will lose a slight amount of voltage.

Charge the pack at 3.8 - 4.0 amps for a modified motor class pack, where you want good capacity (run time) and voltage (power). If you are running stock class where voltage (power) is all that matters, you can get slightly more voltage by charging at 5 amps. The pack will shut off after about 30-45 minutes. Let the battery cool fully, about 20 - 30 minutes. It is essential that the batteries are cool in order to accept the most charge. Anytime the cell is warmer than 75 F it will not accept a completely full charge. Then re-peak with the peak "P" charge profile. This will help insure that all the cells are fully charged especially if they are not well matched. Just before running it is recommended to use the peak "P" profile once, but at 5 amps, to get the most top charge voltage from the battery. If the button is pressed a second time a "P2" will appear. This is a "PEAK" mode with a time delay at the end. The cells will become warmer after charging than in the "P" mode.

## PRECAUTIONS

The heatsink or panel may become warm in operation. USE CAUTION!  
Adaptor cables for the output should be no more than 7 inches longer than the original cables.

The heatsink and panel are electrically live, and should not be allowed to short to any wires, batteries, or the automobile ground, or the fuse may blow.

**DO NOT** use a fuse rated higher than 15 amps, or the charger could be damaged!  
**DO NOT** connect an electric motor to the battery charger.

Try to stay at least 3 feet (1 meter) away from operating transmitters, to avoid erratic operation.

**NEW BATTERY WARNING:** Brand new battery packs may exhibit unusual voltage characteristics the first time they are fast charged. There may be erratic voltage, and no peak. This can cause the charger to overcharge the batteries. For this reason you should manually monitor the battery the first charge, and take it off the charger if it becomes excessively warm.

## ERROR CODES

If something abnormal occurs while charging, the display may show an error code.

### ECO:

Internal reset has occurred. Usually caused by static. Charge has shut off.

### EC2:

The charge current has dropped below the selected value. Either the current adjust knob was moved while charging, or the power supply is not strong enough to maintain the selected charge current. Try charging again at a lower amperage.

### EC4:

The output clips are shorted, or less than 4 cells are connected.

### EC5:

Excessive current flow, or the battery is connected backwards.

### EC6:

The NI-CD battery is connected to the charger backward.

### EC8:

You were trying to charge a 4-5 cell pack at more than 2.00 amps, reduce the current to 2 amps maximum.