



DURATRAX® **ONYPXTM200**

The DuraTrax® Onyx™ 200 charger is great for a wide variety of applications! Charge current options of 1.5A, 3A, and 5 amps plus 4 to 7 cell NiCd or NiMH compatibility makes it great for batteries for 1/18th to 1/8th scale electrics, even nitro receiver packs. A tiny built-in AC power supply plus DC input capability is perfect for use at home or at the track. A unique jack is built-in which is handy for charging 4 to 5 cell nitro Rx batteries.



It is strongly recommended to completely read this manual before use! Damage resulting from misuse or modification will void your warranty.

INDEX

SPECIFICATIONS.....	1	STARTING CHARGE.....	4
SPECIAL FEATURES.....	2	TRICKLE CHARGE.....	5
IMPORTANT PRECAUTIONS.....	2	RESETTING THE CHARGER.....	5
GLOSSARY OF TERMS.....	2	CARE & HANDLING OF NiMH BATTERIES.....	5
INPUT POWER.....	3	ERROR INDICATORS & TROUBLESHOOTING GUIDE.....	6
CONTROLS & CONNECTIONS.....	3	5-YEAR LIMITED WARRANTY – U.S.A. & CANADA ONLY.....	6
DETERMINING BATTERY TYPE & SPECIFICATIONS.....	4		
GETTING STARTED.....	4		

SPECIFICATIONS

AC input:	110V AC 60Hz
DC input:	11 to 15V DC, built-in lead with alligator clips
Battery types:	4 to 7 NiCd or NiMH (4.8 to 8.4V)
Battery capacity range:	750 to 7500mAh
Fast charge current:	1.5A, 3A, 5A linear (40W)
Fast charge termination:	peak detection
Fast charge safety timer:	90 minutes
Peak sensitivity:	8mV
Auto-trickle current:	1/20 fast chg setting
Input control:	pushbutton, slide switch
Display type:	5 LEDs (four red, one green)
Audible tones:	indicate start, stop, errors
*Output connections:	built-in lead with standard connector, built-in jack for charging 4 or 5 cell Rx packs
Protective devices:	solid-state reverse polarity and current overload
Case size:	5.74" x 4.60" x 1.61" [146 x 117 x 41mm]
Weight:	17.0 oz. [484g]

* Adapter - Standard to Deans® Ultra® male available separately (GPMM3131)

* Adapter - Standard to Vendetta, MiniQuake, RS4 Battery available separately (DTXC2210)

SPECIAL FEATURES

- A tiny, lightweight built-in switching AC power supply is great for portability and cramped pit areas, yet can still deliver up to 5 amps charge current!
- A DC power lead with alligator clips easily connects to many 12V DC power sources.
- NiCd and NiMH compatibility, with custom peak detection.
- Selectable charge currents of 1.5A, 3A, and 5 amps.
- An automatic trickle charge fills packs completely after peak charge, for optimum battery performance.
- Pushbutton controls, audible tones, and five LEDs makes for no-frill simplicity and convenience.
- A built-in jack is included for charging 4 or 5 cell NiCd or NiMH receiver batteries for nitro models, or for monitoring charge voltage of the battery connected to the main output with a separate digital voltmeter.
- Solid-state reverse polarity and current overload protection ensure trouble-free operation.

IMPORTANT PRECAUTIONS



Disconnect the battery and remove input power from the charger immediately if the charger becomes hot!!

- Do not attempt to charge incompatible types of rechargeable batteries as permanent damage to the battery and charger could result.
- Do not use automotive type battery chargers to power the charger.
- Do not allow water, moisture or foreign objects into the charger.
- Do not block air intake holes, which could cause the charger to overheat.
- Do not attempt to use batteries with more cells or total voltage than listed in the specifications.
- Do not leave the charger unattended while in use.
- Do not place the charger or battery on flammable surfaces or near combustible materials while in use such as carpet, cluttered workbench, paper, plastic, vinyl, leather, and wood, inside an R/C model or full sized automobile!
- Do not overcharge batteries as permanent damage could result. Do not use a charge current that exceeds the safe level of the battery.
- Do NOT connect the charger's AC and DC input connectors to any power source at the same time.
- Allow the charger or battery to cool down before reconnecting.
- Always disconnect from power source when not in use.

GLOSSARY OF TERMS

Amps (A): The unit of measure for charge current.

Milli-amps (mA): A unit of measure for current, being amps (A) multiplied by 1000 and listed as "mA". So 2.5A is the same as 2500mA (2.5 x 1000). To convert mA to amps, divide the mA number by 1000. So 25mA is the same as 0.025A (25 divided by 1000).

Capacity and milli-amp hours (mAh): The amount of energy a battery can store is called its **capacity**, which is defined as how much current a battery can supply constantly over one hour of time. Most hobby batteries are rated for capacity in "**mAh**" or **milli-amp hours**. A 650mAh battery can deliver 650mA of current for one hour ($650\text{mA} \times 1\text{hr} = 650\text{mAh}$). A 3200mAh battery can deliver 3200mA (3.2A) of current for one hour ($3200\text{mA} \times 1\text{hr} = 3200\text{mAh}$), etc.

"C" rating: Capacity is also referred to as the "C" rating. Some battery suppliers recommend charge currents based on the battery's "C" rating. A battery's "1C" current is the same number as the battery's rated capacity number, but noted in mA or amps. A 600mAh battery has a 1C current value of 600mA, and a 3C current value of (3 x 600mA) 1800mA or 1.8A. The 1C current value for a 3200mAh battery would be 3200mA (3.2A), etc.

INPUT POWER

AC Input: For indoor use, this charger includes a built-in switching AC power supply that delivers power by connecting the AC power cord to a common 110V AC outlet.

DC Input: This charger can be powered by a portable 12V DC power source for use at the track. On the left side of the charger, connect the DC power cord's alligator clips directly to the output terminals on the 12V DC power source. Always match polarities (red lead to red "+" terminal, black lead to black "-" terminal). To utilize the charger's **absolute maximum** power capabilities the DC power source must be capable of delivering at least 4 amps while maintaining 12 volts DC.

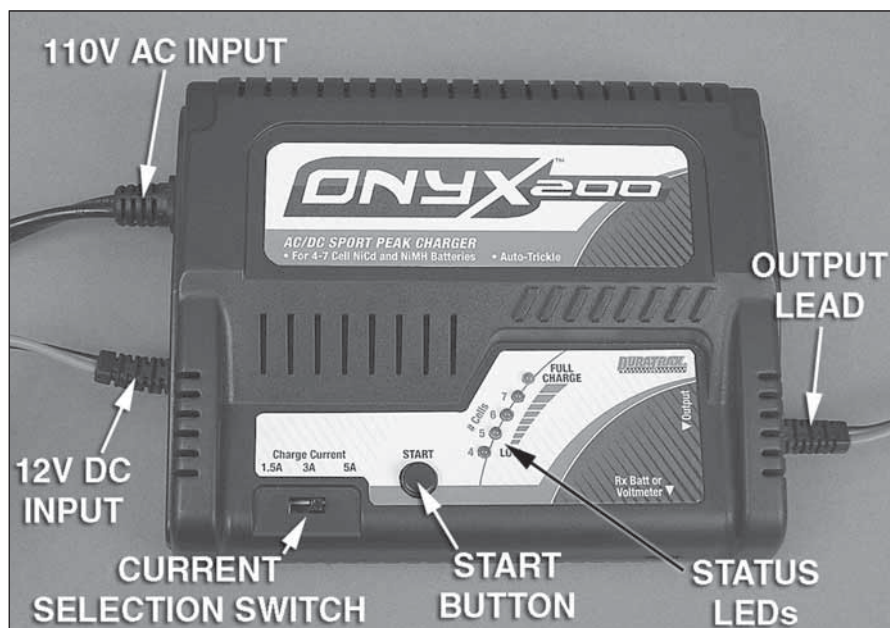


WARNING! Never accidentally short together the positive (+) and negative (-) input connections when connected to 12V DC power. Failure to do so could result in permanent damage to the power source and the charger.

This charger is rated for a maximum output power of 40 watts. Depending on certain conditions (e.g. if charge current is set to maximum, the maximum number of cells are connected to the output, and input voltage is low), the actual current delivered to the battery might be slightly less than the setting. This is normal.

The charger will be on at all times when connected to input power. Disconnect the charger from input power when not in use.

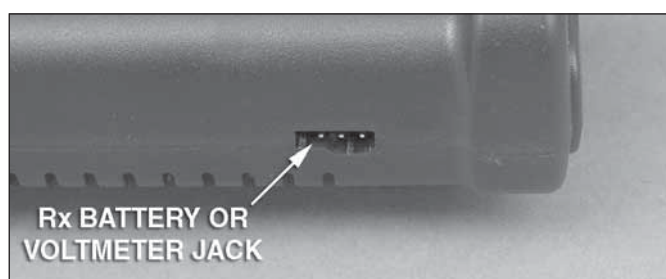
CONTROL & CONNECTIONS



OUTPUT LEAD: The standard connector is compatible with most R/C car batteries. See the SPECIFICATIONS chart on page 1 for a list of additional adapters for charging battery types with different connectors.

START BUTTON: For starting charge, and setting the number of cells in the pack. Also for manually stopping a charge.

STATUS LEDS: For identifying the number of cells in the pack during setup, and monitoring pack capacity during charge.



Rx BATTERY OR VOLTMETER JACK: A unique jack is located on the front edge of the charger, for charging of NiCd or NiMH 4 or 5 cell receiver batteries for nitro vehicles. This jack is universal – compatible with Futaba-J, Airtronics-Z, Hitec, JR, and Spektrum receiver battery connectors, and BEC type connectors.

If charging a battery through the main output lead on the right side of the charger, the voltage of that battery can be monitored with a separate digital voltmeter through this Rx BATTERY JACK on the front of the charger.



WARNING! Do NOT attempt to charge one battery through the main output lead, and another through the jack on the front edge of the charger at the same time!! Failure to do so might permanently damage the charger.

DETERMINING BATTERY TYPE & SPECIFICATIONS

Always read your NiCd or NiMH battery's label and/or instruction sheet before use. Check your battery's label or instruction sheet to determine how many cells it contains or its nominal rated voltage. The chart at right is a quick reference for determining this information.

Battery Voltage Chart	
Number of cells	Rated Nominal Voltage
4 cells	4.8V
5 cells	6.0V
6 cells	7.2V
7 cells	8.4V

GETTING STARTED

Do NOT connect the battery at this time.

1. Connect the charger to input power.
2. All LEDs will flash slowly for 3 seconds. Then, only the LED for 6 cell batteries will flash quickly (all other LEDs will turn off). If charging a 6 cell battery (7.2V), skip to step 4.
3. To charge a 4, 5, or 7 cell battery you must change the cell count in the charger (so the proper condition of the battery can be shown on the LEDs):
 - a. Pressing the pushbutton briefly will scroll through the cell counts on the LEDs. Each successive push of the button will scroll to the next setting - starting at 6 cells, then 7 cells, 4 cells, 5 cells, 6 cells, etc.
 - b. Once the cell count that matches your battery is found, proceed to the next step.
4. Set the appropriate charge current for your battery with the "Charge Current" switch on the left. Refer to the chart at right for recommendations. Do not exceed the maximum rated charge current for the battery.

Charge Current Recommendations	
Battery's rated capacity	Charge Current Setting
700-1400mAh	1.5A
1500-2400mAh	3.0A
2500-5000mAh	5.0A

STARTING CHARGE

Linear current will be supplied to NiCd and NiMH batteries during charge. The peak detection method will be used to find the highest battery voltage during charge. Once peak voltage is detected, the charger will automatically stop fast charge, and start trickle charge.

1. **For 6 or 7 cell batteries**, connect the battery to the charger's output lead. Make sure the polarities of the battery and charger's leads match (red charger wire to red battery wire, black charger wire to black battery wire). Skip to step 3.
2. **For 4 or 5 cell receiver batteries for nitro applications**, insert the battery's plug in the Rx BATTERY jack on the front edge of the charger. Make sure the battery's black or brown wire is on the right side when inserting into the jack.

Caution: Make sure the charge current setting is safe for your battery to prevent overheating of the cells. "AAA", "AA", "A", or "2/3A" size batteries generate heat more quickly than large sub-C batteries. It's NOT recommended to charge batteries having a rated capacity less than 750mAh with this charger. Most radio batteries should NOT be charged at currents greater than 1.5A. Failure to follow these recommendations could permanently damage your battery!
3. To **START CHARGE**, press and hold the pushbutton for 3 seconds. All LEDs will flash for 3 seconds to indicate charge has started.
4. The LEDs will then show the amount of charge on the battery. Batteries with low charge might only cause the bottom LED to show. As the battery becomes more fully charged, more LEDs will turn on moving upwards.
5. As the charger detects the battery has reached peak, the top, green LED will flash slowly and tones will sound (one second on, one second off, etc.). The charger will automatically go to trickle charge mode at this time, but the battery is ready for use and can be disconnected.

To manually stop charge, either push the button or disconnect the battery from the charger.

A backup safety timer is built into this charger to automatically stop fast charge if peak is not detected in 90 minutes. If you attempted to charge a battery and later found the top and bottom LEDs were flashing, this means the 90 minute safety timer stopped charge (not the peak detection circuit). You could try to re-peak charge the battery. Refer to the Troubleshooting Guide for more details.

TRICKLE CHARGE

The trickle charge current value is automatically set by the charger as shown in the chart at right. The charger will remain in trickle charge mode until the battery is disconnected from the charger, or the START button is pressed again.

Fast Charge Current Setting	Approx. Trickle Current
1.5A	100mA
3.0A	150mA
5.0A	250mA

Caution: For batteries with capacity ratings of less than 1000mAh, do not allow them to remain on trickle charge for indefinite periods. It's best to disconnect them from the charger no longer than an hour or so after peak charge has ended.

RESETTING THE CHARGER

If you changed the number of cells from 6 to 4, the charger will remember this setting until you either manually change the setting again, or remove input power from the charger (where it will automatically reset back to 6 cells). So if you first charge a 6 cell battery, then change to charge a 7 cell battery, then again want charge a 6 cell battery, you must reset the charger to handle 6 cells before starting charge. Otherwise, the status LEDs might not show the proper charge condition of the battery.

CARE & HANDLING OF NIMH BATTERIES

- Do not to allow NiMH batteries to overheat. Disconnect overheated batteries from the charger immediately and allow to cool.
- Store NiMH packs with some voltage remaining on the cells (refer to battery supplier).
- It is important to recharge NiMH batteries immediately prior to use, as they have a high self-discharge rate.
- "AAA", "AA" and "A" size radio batteries can safely be peak charged at currents up to 1.5C to 2C (battery capacity x 1.5 or 2.0). High charge currents can overheat batteries and thus reduce service life, especially for smaller size cells.

ERROR INDICATORS & TROUBLESHOOTING GUIDE

Several safety features are included in this charger to protect itself and the battery against certain unwanted conditions, as follows:

LED ACTION

Top and bottom LEDs flash

PROBLEM AND SOLUTION

90 minute safety timeout occurred. Charge current setting is too low. Battery might have internal problem and require replacement.

Fourth and top LEDs flash

The voltage of the battery does not match the voltage setting in the charger. Reset the number of cells in the charger's programming to match that of the battery.

Third and top LEDs flash

The battery is connected backwards. Reverse connections.

Second and top LEDs flash

A battery has become disconnected from the output, or a problem exists with the connection. Re-check all connections for good physical and electrical contact.

All five LEDs flash

The voltage on the input is out of the 11-15V range. Check the voltage on the input, and adjust as necessary.

5-YEAR LIMITED WARRANTY – *U.S.A. & CANADA ONLY

DuraTrax warrants this product to be free from defects in materials and workmanship for a period of five (5) years from the date of purchase. During that period, DuraTrax will, at its option, repair or replace without service charge any product deemed defective due to those causes. You will be required to provide proof of purchase (invoice or receipt). This warranty does not cover damage caused by abuse, misuse, alteration or accident. If there is damage stemming from these causes within the stated warranty period, DuraTrax will, at its option, repair or replace it for a service charge not greater than 50% of its then current retail list price. Be sure to include your daytime telephone number in case we need to contact you about your repair. This warranty gives you specific rights. You may also have other rights, which vary from state to state.

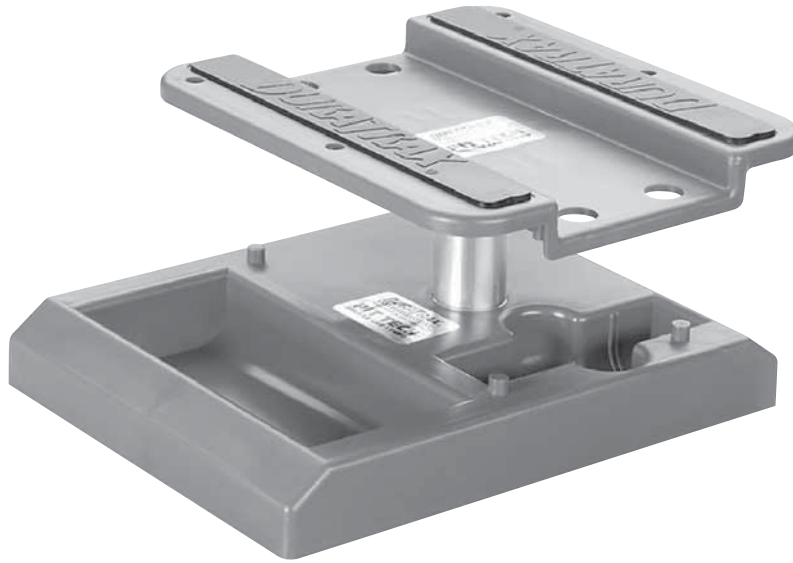
For service on your DuraTrax product, warranty or non-warranty, send it post-paid and insured to:

HOBBY SERVICES
3002 N. Apollo Drive, Suite 1
Champaign, IL 61822
(217) 398-0007
www.hobbyservices@hobbico.com

*For warranty and service information if purchased outside the USA or Canada, see the additional warranty information insert (if applicable) or ask your retailer for more information.



OTHER ITEMS AVAILABLE FROM DURATRAX



DuraTrax Pit Tech™ Deluxe Car Stand

This convenient workstation for R/C cars and trucks features a rotating top plate for easy access from all sides and a dropped center section that provides a stable work platform for models with uneven chassis bottoms. Includes an extra-large parts tray and built-in holes to keep shocks handy when rebuilding. **DTXC2370**



DuraTrax Ultimate Tool Set w/Pouch

DuraTrax Ultimate tools have hardened steel tips plus a blue-anodized aluminum handle that's knurled for a no-slip grip. This set has 'em all – 4 each of metric and SAE hex drivers, 3 each of slotted and Phillips screwdrivers – plus an Ultimate Body Reamer. And to keep them handy and organized, DuraTrax includes a 15-pocket, book-style tool pouch with zipper. **DTXR0400**



DuraTrax Ball End Tool

Simplify car ball end adjustments! Machined from anodized aluminum, this ball end tool has a slotted end that fits most open-style ball ends. The enlarged, knurled handle makes installation and adjustments seem almost effortless. **DTXR1125**



DuraTrax Deluxe Car Wrench

Shaped for extra turning torque, the chromed, cast metal Deluxe Car Wrench has threaded holes for storing up to 4 glow plugs, plus 6 socket head sizes: 7mm, 8mm, 10mm, 10mm pilot shaft wrench, 12mm and 17mm. **DTXR1170**



DuraTrax Kwik Trak™ 7" Racing Cones

Make tracks anywhere! Turn any driveway or parking lot into an R/C race track with these durable cones. At 7" tall and molded in bright orange, they offer maximum visibility – without taking up too much room or obscuring your view of the action. Sold in sets of six. **DTXC2377**