

# antonybauer®

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## HyTRON®

Nickel Metal Hydride Battery Owner's Manual



**LOGIC SERIES®**

7595-0424  
Revision A

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# IMPORTANT

## READ AND UNDERSTAND THIS MANUAL BEFORE OPERATION

The HyTRON® Logic Series® battery is designed to be charged with current InterActive® chargers. Older model InterActive MP4D, Quad, Lifesaver Dual, ABC800 cannot charge these batteries.

Do not attempt to charge on non-InterActive chargers or chargers not manufactured by Anton/Bauer, Inc. Safety circuits in the battery will prevent charging on any charger, which cannot properly address the battery communication.

Precautions and handling instructions contained in this manual should be strictly adhered to for safe and reliable operation.

Contact Anton/Bauer Field Support at (203) 925-4991 or support@antonbauer.com with any questions regarding this product.



# INTRODUCTION

The development of the HyTRON battery has been made possible through the incorporation of InterActive technology with the latest Nickel Metal Hydride (NiMH) cell formulations. HyTRON batteries feature an on-board “fuel computer” to monitor energy put into and taken out of the battery, as well as critical operating characteristics and conditions. This data is communicated to the InterActive charger to optimize safe and reliable performance.

Remaining battery capacity information is available to the operator by means of the on-board RealTime® LCD and in the viewfinder of most broadcast and professional camcorders. The patented interface from the battery to the camera viewfinder is factory standard equipment on most camera/camcorder models from all major camera manufacturers.

Anton/Bauer InterActive chargers were designed in anticipation of new cell technologies, so chargers in the field only require an update (software or firmware available separately depending on model) to effectively address new battery systems. This upward and downward compatibility allows Anton/Bauer to introduce new high performance cell technologies safely and seamlessly into existing inventories.

The HyTRON battery will automatically identify itself to the InterActive charger, activating the proper charge routine(s) necessary to effectively utilize this technology.



# FEATURES

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1. **Microprocessor Fuel Computer** - Accurately monitors the energy in the battery which take into account battery age, self discharge, charge/discharge rate, operating conditions and previously experienced charge/discharge cycles. The battery constantly “learns” its precise state of charge and remaining capacity. This data is automatically transmitted to an InterActive charger.
2. **RealTime® ‘LCD’** – This exclusive Anton/Bauer feature simultaneously displays both the remaining run-time and the percentage of remaining battery capacity at all times. No special adapters or set up is required. (see complete explanation page 3)
3. **Viewfinder Fuel Gauge Display** - Cameras which include the Anton/Bauer InterActive viewfinder feature connect with the batteries “Fuel Computer” to display an accurate “Fuel Gauge” of remaining battery capacity in the viewfinder. Reference your camera/camcorders owner’s manual for proper menu settings.
4. **Impac® Case design** - High impact case construction protects the cells from damage.
5. **Gold Mount® Interface** - The patented Gold Mount connector is compatible with all Anton/Bauer mounts and accessories.
6. **Individual Computer Testing** – All Anton/Bauer batteries are individually tested to assure optimum capacity, voltage and overall quality.
7. **Deep Sleep Motion Sensor** – The HyTRON incorporates a “Deep Sleep” feature that minimizes the self discharge rate of the battery when it is inactive and stored for a period of time when not on a charger. See complete explanation page 4.

# CHARGING

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- DO NOT ATTEMPT TO CHARGE THIS BATTERY WITH ANY CHARGER OTHER THAN THE ANTON/BAUER INTERACTIVE CHARGERS SPECIFIED IN THIS MANUAL.
- **Allow the battery to reach a STEADY GREEN (LifeSaver) mode before using for the first time. Please read the individual charger Owner’s Manual for specific operating features.**
- The battery will be approximately 90% charged when the LED’s on the charger indicate FLASHING GREEN. The battery is 100% charged when the charger indicates STEADY GREEN. The battery may be removed from the charger and discharged in either condition.
- **The battery can remain on the charger until just prior to being used.** The LifeSaver maintenance routine keeps the battery charged and ready for use. If the battery will not be used for an extended period (more than 60 days) see “Operating Guidelines” on page 4.

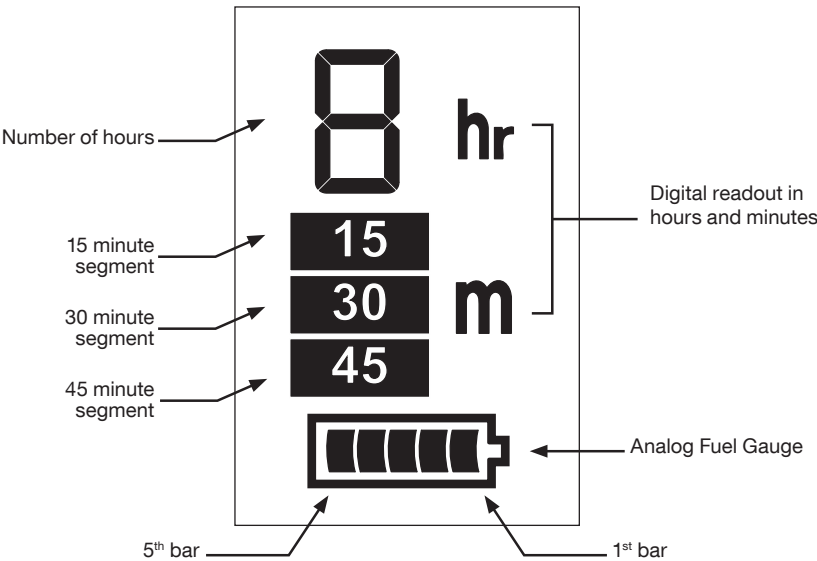
For best results this battery should be used or returned to the InterActive charger within 48 hours of being removed from the charger.

Note: On some older chargers it may be necessary to install the battery on charger, wait one (1) minute, then remove battery and reinstall. This procedure may need to be repeated more than once to “wake up” a low voltage battery.

# BATTERY DISPLAY

Anton/Bauer Logic Series® batteries feature the RealTime® LCD providing on-the-fly remaining run-time estimates in 15 minute increments as well as simultaneously providing remaining capacity information using the analog “Fuel Gauge” approach. RealTime® automatically calculates the load and displays capacity information and battery status at all times.

Additional electronic circuits protect the battery cells from damage and help ensure safe operation. These electronics work in conjunction with the digital battery electronics and will give the operator additional indications in the RealTime® display of the battery’s status as outlined below.



The following is a description of the features of the remaining run-time LCD:

1. The remaining run-time is calculated using the present available capacity and a measure of the present power load.
2. If no load has been detected, or if the battery is coming off a charger, the default assumed power for remaining run-time calculations is 20 watts.
3. When the battery determines that a load is attached, the default 20 watt load will be abandoned and a new remaining run-time will be calculated based on the new load presented to the battery.
4. The battery will “learn” this new load and retain that load information in non-volatile memory.
5. If the battery is removed from a load and placed on a shelf for extended periods, the remaining run-time calculation will continue to use the learned load value for up to 30 minutes.
6. After 30 minutes, the remaining run-time calculation will again use the default 20 watt load as criteria.
7. When the battery approaches EOD (end of discharge), the LCD will begin flashing the 15 minute icon until the battery is returned to a charger.
8. When the battery has reached EOD (12.0 VDC) the 15 minute icon will disappear and 5<sup>th</sup> bar of the Analog Fuel Gauge will flash until the battery is returned to a charger.
9. If the battery voltage drops below the Fuel Gauge cut out circuit voltage (10.0 to 10.8 VDC) the Fuel Gauge will be disabled and the LCD will go blank until the battery is returned to a charger.

## I. ANALOG FUEL GAUGE

LCD Segments	% Capacity
1 <sup>st</sup> Bar, 2 <sup>nd</sup> Bar, 3 <sup>rd</sup> Bar, 4 <sup>th</sup> Bar, 5 <sup>th</sup> Bar	100
2 <sup>nd</sup> Bar, 3 <sup>rd</sup> Bar, 4 <sup>th</sup> Bar, 5 <sup>th</sup> Bar	80
3 <sup>rd</sup> Bar, 4 <sup>th</sup> Bar, 5 <sup>th</sup> Bar	60
4 <sup>th</sup> Bar, 5 <sup>th</sup> Bar	40
5 <sup>th</sup> Bar	20
5 <sup>th</sup> Bar flashing	EOD (12.0 VDC)

## II. REMAINING RUN-TIME GAUGE EXAMPLES

6 hrs. 100% capacity remaining	3 hrs. 45 mins. 80% capacity remaining	1 hr. 30 mins. 60% capacity remaining	≤ 15 mins. ≤ 20% capacity remaining

# OPERATING GUIDELINES

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1. **STORAGE** - Keep batteries cool or at room temperatures whenever possible. Sustained elevated temperatures are the primary reason for premature failure of batteries:

- a. **Charging** - Charge batteries at room temperature. In warm climate keep batteries/chargers in air conditioned rooms for best performance.
- b. **On assignment** - Do not leave batteries in a hot location (such as a vehicle) or out in direct sunlight.
- c. Do not leave a battery attached to a camera/device during storage. "Keep warm" circuitry in the camera can drain the battery, because the HyTRON battery has specialized circuits which will not allow a battery to over discharge, the battery will protect itself and shut down.
- d. **Sleep Mode** - Batteries should always be stored in a charged state and kept cool. If batteries must be stored for a long period (over 14 days), the battery electronics will enter a "sleep" mode. It will reactivate when the battery is picked up, (via its internal motion sensor) subjected to a load, or placed on a charger.
- e. **Deep Sleep Mode** - Anton/Bauer Logic Series batteries come standard with a Deep Sleep feature, which allows the user to place the battery's circuitry into a shut down mode, protecting the battery from self-discharge when not in use. You can "wake" the battery in one of three ways:
  - Installing on an InterActive charger
  - Attaching to a camera/device
  - Pressing the reset button on the battery face.
  - Users can place the batteries back into Deep Sleep Mode using the required AB-BMS Gold Mount and software (download available from [www.antonbauer.com](http://www.antonbauer.com)).

2. **DISCHARGE** - Do not over-discharge batteries - It is quite common to discharge a battery until a low voltage warning in the camera or device is observed. However, a switch to a fresh battery should occur as soon as possible following such indication. Never leave a battery operated device unattended while it is running.

- a. Discharging the battery for diagnostic purposes should only be performed on an occasional basis (once every 6-8 weeks at most). Unnecessary discharging only detracts from overall life.
- b. Routine use of a battery at discharge rates greater than the battery rating (e.g. 150 watts maximum, 75 watts or less for lighting load) can reduce overall service life. Always select the proper size battery for your application.
- c. Low voltage batteries can also be caused by allowing batteries to remain off the charger for extended periods causing the LCD display to be blank, indicating that the electronic circuitry has removed all load from the battery cells – including the display. In the case that the battery is in a low voltage condition the battery should be returned

to the charger. The charge routine will not be initiated by the charger until all other batteries have completed their fast charge routines. Therefore, a low voltage battery can be installed on an InterActive charger without the charger indicating recognition. The battery should remain on the charger until charging is complete. It may be helpful to remove other batteries before placing a battery with a blank display on the charger. If the battery display goes from blank to flashing, remove from charger and reinstall. If flashing display condition remains, contact customer support.

3. **CLEANING** - Periodic cleaning of both the charger terminals and battery terminals will ensure continued reliable operation. Clean the terminals occasionally with a pencil eraser or lightly scrape the surface with a blunt instrument to help reduce this possibility.

Anton/Bauer publishes a comprehensive "Video Battery Handbook" to help you further understand the care and use of video batteries. This guide can be downloaded from the web at [www.antonbauer.com](http://www.antonbauer.com) or, by contacting Anton/Bauer at 1-800-422-3473 or 203-929-1100 or fax 203-929-9935.

# SERVICE

In the event a HyTRON battery fails to deliver acceptable performance, it must be returned to Anton/Bauer. No other facility is qualified and equipped to service the HyTRON battery or calibrate the electronic components and sensors. Any attempt by the user or any other unauthorized persons to service this battery will surely result in improper calibration of the electronic components resulting in severe battery damage and/or safety hazards, including potential personal injury and/or damage to property. Any such attempt will void any/all unconditional warranties.

Therefore:

1. **NEVER** attempt to service this battery. If there is a problem, send this battery only to Anton/Bauer for evaluation.
2. **NEVER ATTEMPT TO OPEN THIS BATTERY.** The electronic circuits inside the battery can be damaged causing malfunction and/or potential hazard to person and property.
3. **NEVER** attempt to replace the cells in this battery – it cannot be rebuilt. At the end of its useful life contact the Anton/Bauer Field Support Group.

# PRECAUTIONS

1. Do not expose this battery to high temperatures (above 50°C/120°F). This includes storage in direct sunlight, in cars in hot weather, or in close proximity to heating devices. This may cause electrolyte leakage, impaired performance and shortening of battery service life.
2. When not using the battery for prolonged periods, the battery should be charged to approximately 50% capacity and removed from the charger. Long term storage in the full charge state will result in deterioration of capacity, which is unrecoverable in subsequent use.
3. All Nickel Metal Hydride batteries have a finite life. If the battery exhibits noticeably shortened run-time the battery should be replaced immediately. Shortened run-time is indicative of at least one cell having reached end of life. **UNDER NO CIRCUMSTANCES** attempt to “recondition” this battery by repeated charging and discharging.
4. This battery contains specialized electronic circuits, which are designed to protect the NiMH cells from overcharge, over discharge and overcurrent. Redundant protection devices are designed to operate if the battery voltage is abnormally high or low and if the temperature of the battery exceeds operating specifications. These electronic devices can be damaged if the battery is subject to abuse or damage. Do not use a battery that has been subjected to excessive mechanical shock or water damage.
5. Do not drop, puncture or crush this battery. Do not use the battery if the case is damaged or broken.

# SPECIFICATIONS

HyTRON 140	
OUTPUT VOLTAGE	14.4v Nominal 12.4 ~ 16.8 VDC Operating
CAPACITY	140 WH Nominal (10 AH Rated)
FUSE	Internal 12.5 amp/125 volt
RECOMMENDED OPERATION (MAXIMUM DISCHARGE RATE)	15 - 100 watts <sup>1</sup> (175 watts)
TYPICAL RUN-TIME	@ 20w - 7 hrs. @ 25w - 5.6 hrs. @ 40w - 3.5 hrs.
WEIGHT	5.5 lbs. (2.5 kg)
SIZE	5.45 x 4.75 x 2.90" (13.84 x 12.06 x 7.37 cm)
OPERATING TEMPERATURE	-30° - +50° C

HyTRON 100	
OUTPUT VOLTAGE	14.4v Nominal 12.4 ~ 16.8 VDC Operating
CAPACITY	100 WH Nominal (7 AH Rated)
FUSE	Internal 12.5 amp/125 volt
RECOMMENDED OPERATION (MAXIMUM DISCHARGE RATE)	15 - 100 watts <sup>1</sup> (175 watts)
TYPICAL RUN-TIME	@ 20w - 5 hrs. @ 25w - 4 hrs. @ 40w - 2.5 hrs.
WEIGHT	5.5 lbs. (2.5 kg)
SIZE	5.45 x 4.75 x 2.90" (13.84 x 12.06 x 7.37 cm)
OPERATING TEMPERATURE	-30° - +50° C

HyTRON 50	
OUTPUT VOLTAGE	14.4v Nominal 12.4 ~ 16.8 VDC Operating
CAPACITY	50 WH Nominal (3.5 AH Rated)
FUSE	Internal 7 amp
RECOMMENDED OPERATION (MAXIMUM DISCHARGE RATE)	15 - 50 watts <sup>1</sup> (75 watts)
TYPICAL RUN-TIME	@ 10w - 5 hrs. @ 25w - 2.5 hrs. @ 25w - 2 hrs.
WEIGHT	2.0 lbs. (0.9 kg)
SIZE	5.25 x 3.50 x 2.13" (13.39 x 8.89 x 5.39 cm)
OPERATING TEMPERATURE	-30° - +50° C

<sup>1</sup> Routine use of a battery at discharge rates greater than the battery rating can reduce overall service life. Always select the proper size battery for your application.



# WARRANTY

This warranty for the product specified in this document ("Product") is given by Anton/Bauer, Inc. ("Anton/Bauer"), 14 Progress Drive, Shelton, Connecticut 06484. If you (the purchaser of the Product from Anton/Bauer, or the person for whom the Product was purchased, if it was a gift) have any questions regarding Product applications, Product specification, or to obtain warranty service on this or any Anton/Bauer product, contact the company at the address above.

THIS PRODUCT MUST BE REGISTERED WITH ANTON/BAUER WITHIN 30 DAYS OF PURCHASE TO ASSURE WARRANTY COVERAGE.

**REGISTER ONLINE AT [www.antonbauer.com](http://www.antonbauer.com)**

Warranty registration, including the serial numbers of Anton/Bauer chargers used with this battery, must be supplied to Anton/Bauer. Anton/Bauer will warranty the Product only against defects in material and workmanship for the period as follows from the date of purchase, in accordance with the terms set forth below, and then, only if the Product is used exclusively in conjunction with compatible Anton/Bauer chargers. If this battery is returned to Anton/Bauer for warranty service it will be required that you provide model names and serial numbers of compatible Anton/Bauer chargers with which this product was used.

## **MAXX III WARRANTY**

**0-36 MONTHS: HyTRON 140**

## **MAXX II WARRANTY**

**0-24 MONTHS: HyTRON 100**

## **MAXX 1.5 WARRANTY**

**0-18 MONTHS: HyTRON 50**

Anton/Bauer will repair or replace the Product at Anton/Bauer's option and cost.

This warranty shall be effective only if Anton/Bauer receives notice of such defects in materials or workmanship during the period of the warranty. Minimum battery capacity is defined under this warranty as 60% of nominal specified capacity for this Product at time of purchase.

The liability of Anton/Bauer hereunder is expressly limited to a claim for repair or replacement of the Product or as otherwise stated herein at Anton/Bauer's sole discretion. Notice of any claim under this warranty shall be delivered to Anton/Bauer during the period of the warranty and the Product shall be returned with its packaging promptly, at your expense, to an Anton/Bauer Customer Support Center or to the address above. Upon receipt of the Product and a record of your compliance with the conditions of this warranty, Anton/Bauer will repair or replace the Product and return it to you, or issue a credit, as applicable. You are responsible for all shipping and handling charges to and from authorized facility.

**THIS WARRANTY DOES NOT APPLY TO AND IS VOID IN THE CASE OF DEFECTS OR DAMAGE RESULTING FROM ACCIDENTS, DISASTER, NEGLIGENCE, MISUSE, IMPROPER INSTALLATION, IMPROPER OR UNAUTHORIZED SERVICE OR MAINTENANCE, UNAUTHORIZED REPLACEMENT PARTS OR ATTACHMENTS; OR DYSFUNCTION OR MALFUNCTION OF, OR CAUSED BY, ANY**

## **OTHER PRODUCT OR DEVICE.**

**Misuse includes any use of the Product in other than its intended application, including the use of this Product with any charging device or accessory not manufactured by and/or specified by Anton/Bauer. This warranty does not cover, and Anton/Bauer assumes no responsibility for, any equipment or devices used in conjunction with the Product.**

**ANTON/BAUER DISCLAIMS ANY LIABILITY FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES FOR BREACH OF ANY WRITTEN OR IMPLIED WARRANTY OF THE PRODUCT. UNDER NO CIRCUMSTANCES WILL ANTON/BAUER BE RESPONSIBLE FOR ANY SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES.**

This Warranty is to be construed and enforced in accordance with the law of the State of Connecticut, including the provisions of the Uniform Commercial Code as adopted and from time to time amended in the State of Connecticut, and not the Convention for the International Sale of Goods. This choice of Connecticut law is exclusive of any Connecticut law that would require reliance on any law foreign to Connecticut. Should any action of law or in equity be brought by any person under this Warranty, such action shall be brought only in the United States District Court for the District of Connecticut, or in any Superior Court in Fairfield County, Connecticut, USA. Some states do not allow limitations on how long a warranty lasts, so the time period limitation herein may not apply to you. Some states do not allow the exclusion or limitation of incidental or consequential damages, so the above limitation or exclusion may not apply to you. This warranty gives you specific legal rights and you may have other legal rights which may vary from state to state.

Use of unauthorized equipment in conjunction with Anton/Bauer products constitutes misuse under our warranties and may limit or void those warranties. Anton/Bauer does not authorize, condone, recommend, or otherwise assume any liability or responsibility resulting from the use of any battery, charger or accessory made by Anton/Bauer manufacture with any battery, charger or accessory not manufactured, produced or sold by Anton/Bauer. Anton/Bauer only authorizes the use of original Anton/Bauer product with this product. Use only original Anton/Bauer equipment with this product.





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Due to continuing product development, all specifications and prices are subject to change without prior notification.

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