antonbauer®

One World. One Smart Choice.™

DUAL 2722

Charger / Power Supply

Owner's Manual

INTERACTIVE 2000™ BATTERY SYSTEM

A7595-0231 Rev J

TABLE OF CONTENTS

INTRODUCTION

The DUAL 2722 is a simultaneous 2 position Interactive® 2000 PowerCharger® fast charger with 70 watt DC camera power supply. It incorporates all of the Logic Series® circuits that are employed in every Anton/Bauer® charger. The InterActive® charge programming provides all charge termination and protection routines for safe, reliable, chemistry independent charging.

Like all Anton/Bauer chargers, everything is automatic. Once a battery is placed onto the charger, it will automatically go into one of the Three Stage Charging modes. The left side of the charger is dedicated to charging, while the right side operates simultaneously as selected between charging or operating as a camera power supply.

FEATURES

- Two independent 70 Watt Power Supplies – one for charging or DC power, and one exclusively for charging.
- Fast Charging. One hour with most batteries (approximately 2 hours with HyTRON™ series and 3 hours with Dionic® batteries).
- Multifunction LCD displays critical battery and charger data automatically.
- Regulated DC power supply output for camera operation from AC mains, eliminating the need for a separate bulky power supply.
- Wide range mains input compatibility (100-240 VAC 50-60 Hz) automatically adapts to any mains source worldwide.
- Six (6) Independent Charge Termination Systems.
- Lightweight (2.75lbs.)
- Slim, ultra-lightweight design for easy portability.
- Serial output port for printer and PC interface.

SAFEGUARDS

Power Sources: This unit was designed to operate at mains voltages from 100 - 240 Volts AC, 50-60 Hz.

Important: When powering a charger using a generator, the generator must produce a sine wave or modified sine wave output, otherwise the charger may be damaged.

Risk of Electrical Shock: Refer servicing to qualified service personnel.

TO PREVENT FIRE OR SHOCK HAZARD, DO NOT EXPOSE THIS UNIT TO RAIN OR MOISTURE.

GROUNDING/EARTHING

IMPORTANT WARNING: THIS APPARATUS MUST BE EARTHED.

To ensure safe operation, the three pin plug supplied must be inserted only into a standard three-pin power point which is effectively grounded through the normal household wiring. Extension cords used with the equipment must be three-conductor and be correctly wired to provide connection to earth ground. Improperly wired extension cords are a dangerous electrical hazard.

The fact that the equipment operates satisfactorily does not imply that the power point is properly grounded and that the installation is completely safe. If any doubt exists about the correct grounding of the power point, consult a qualified electrician.

IMPORTANT: The wires in this mains lead are colored in accordance with the following code:

Green and yellow	Earth
Blue	Neutral
Brown	Live

OPERATION

CHARGING

As with all Anton/Bauer chargers, charging with DUAL 2722 is fully automatic. Mount any Digital Logic Series® or Logic Series® battery to the DUAL 2722 and it will automatically determine the appropriate charge routine and execute it.

APPLICATIONS

The DUAL 2722 will charge any Anton/Bauer Logic Series Gold Mount® battery including model: ProPac® 14, Trimpac® 14, Digital ProPac® 14, Digital Trimpac® 14, HyTRON™ or Dionic® battery.

NOTE: Anton/Bauer recommends that each battery have a charge position, for when the battery is not in use. A battery can remain on an Anton/Bauer charger indefinitely.

The DUAL 2722 incorporates the exclusive InterActive communication between battery and charger, which allows the charger to identify any Anton/Bauer battery attached and determine the precise charge routine for that battery under the prevailing conditions.

NOTE: Due to the specialized communications between the charger and the battery, batteries without the Logic Series® construction and communication capability (manufactured by Anton/Bauer before 1989 as well as so-called "rebuilds") can not be charged with this charger. The InterActive communication of Logic Series® batteries is the key which allows the DUAL 2722 to safely identify and address new style and chemistry batteries as they are developed. Moreover, this communication ensures that batteries contain the quality cells, workmanship and safety of genuine Anton/Bauer products. If a non-Logic Series battery is placed on the charger, the red and green LED indicators will flash alternately. This indication means that the battery cannot communicate its identity to the DUAL 2722 and is not charging. After 45 seconds of flashing green and red LED's, the red LED will remain on, indicating a HOLD state.

WARNING: USE OF THIS CHARGER WITH ANY BATTERY NOT MANUFACTURED BY ANTON/BAUER MAY RESULT IN BATTERY DAMAGE AND CAUSE RISK OF FIRE OR PERSONAL INJURY. ANTON/BAUER ACCEPTS NO RESPONSIBILITY FOR ANY INJURY OR DAMAGE ASSOCIATED WITH THE USE OF BATTERIES NOT MANUFACTURED (OR BATTERIES SERVICED OTHER THAN) BY ANTON/BAUER. SUCH USE WILL VOID ANY WARRANTY.

THREE STAGE CHARGING METHODOLOGY

In general, the DUAL 2722 will deliver a **three stage charge routine** to each battery.

1. **STAGE ONE** will deliver a high rate charge matched to the capabilities of the battery (typically a one or two hour rate, depending on battery type). During this stage, seven separate cutoff methods are in operation, simultaneously, ensuring the fastest, safest charge for that battery:

   TCO - Temperature cutoff which stops the Stage one charge precisely when a temperature indicative of full charge is reached;

   Dt/dT - A microprocessor based algorithm which measures a rise in temperature over a specific time, very accurately indicating full charge. This method is also the recommended method for charging Ni-MH technology;

   ΔV - A method to determine the end of stage one charging by identifying a characteristic "reverse slope" of a Ni-Cd cell. Since this characteristic can be disguised by the age, temperature and the number of the cells in a battery, it can never be employed alone;

   CCO - This method requires the identification of the particular battery size (capacity) and chemistry, an exclusive Anton/Bauer Logic Series feature. The charger determines the maximum charge time for the particular battery and uses this information to ensure that overcharge conditions are avoided.

   FUL - This determination is made when a fully charged DIGITAL battery is returned to a charger within specified parameters of time, temperature, and battery voltage. The DIGITAL battery communicates its fully charged condition and the charger confirms the parameters and immediately indicates a fully charged condition, without additional verification.

   TEMPERATURE COMPENSATED VCO – For HyTRON™ series of batteries. Optimizes VCO cutoff to operate only within certain temperature parameters.

   I-Min – for Dionic batteries, a seventh cutoff method is employed. The battery is charged to specific voltage and I-Min current until full charge is reached. I-Min is the "minimum current" flow required for proper cutoff.

   In addition, a voltage limiting constant current Stage One routine address the critical parameters of DIONIC® batteries.

2. **STAGE TWO** charging is a BALANCING or "stabilizing" mode which calculates each battery pack type to offset any imbalance of the battery's cells, created by unequal self discharge or any capacity mismatch of the individual cells in the pack. This stage can vary in duration from zero to as much as 16 hours, depending

OPERATION CONTINUED

THREE STAGE CHARGING METHODOLOGY (CONT.)

on the condition of the battery. The Stage Two charge for DIONIC® batteries reduces current automatically as the battery charges maintaining the lithium ion cells at a safe voltage level. A battery will typically leave Stage Two in 2-4 hours under average operating conditions.

3. **STAGE THREE** charging is the Anton/Bauer exclusive Lifesaver maintenance mode. This patented pulse routine keeps batteries fully charged, free from self-discharge - indefinitely - without damaging heat associated with a so-called "trickle charge". The Stage Three programming for DIONIC® monitors the self discharge of the battery, providing charge only when the battery self discharges to about 95% of its capacity.

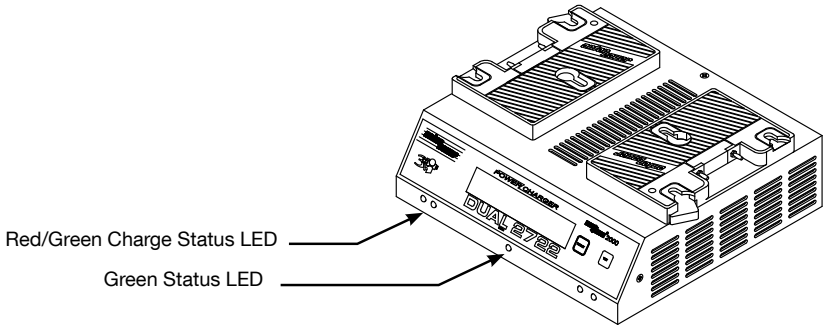
4. **NOTE: Batteries may be kept on a charger until ready for use. The LifeSaver® mode will keep them 100% charged**.

LED INDICATIONS

The DUAL 2722 has two sets of two LEDs (one red, one green) and one green status LED in the center. The green status LED indicates: Steady green – line voltage is present; Off – line voltage not present.

The red and green charge status LED's indicate the charging status of the battery. The following table identifies all of the LED indications and their meaning. Please note that the right side charge position will not illuminate the red or green LEDs when power is being drawn from the 4 pin XLR, unless a battery is present.

LED INDICATION	MEANING
Alternating Red & Green	Indicates that the DUAL 2722 is evaluating the battery and/or communicating with a DIGITAL battery, loading battery parameters and determining the appropriate charge routine. A low voltage (<11V) battery will cause this indication to continue until the battery reaches safe charging voltage.
Steady Red	Indicates that the battery is being held by the DUAL 2722 to stabilize an out-of-range temperature condition, or camera supply is in use (right side only). Or it can also indicate if a non-Anton/Bauer Logic Series® battery has been mounted on the charger. These batteries cannot identify themselves to the DUAL 2722 and will not be charged.
Flashing Red	Indicates that the battery is currently under Stage One charge.
Flashing Green (slow rate)	Indicates that the battery is currently under Stage Two charge.
Flashing Green (fast rate)	Indicates a fully charged DIGITAL battery is placed on the charger and a FUL cutoff condition cannot be met. The charger is VERIFYING that the battery is in a full charge condition.
Steady Green	Indicates that the battery is READY and in Stage Three LifeSaver® mode.

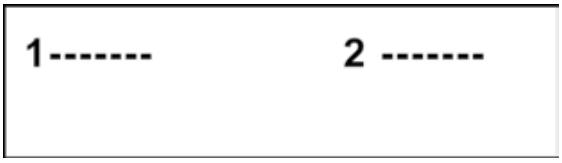


OPERATION CONTINUED

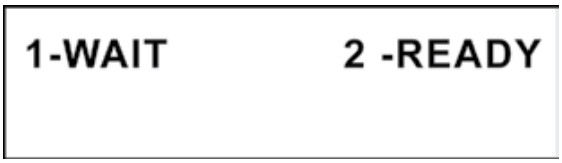
LCD INDICATIONS

Each PowerCharger's® liquid crystal display (LCD) will display the status of each battery, as well as, important PowerCharger® operating indications. The following information explains the indications which appear in the LCD.

The levels of the LCD display on each PowerCharger® can be obtained by pressing the DISPLAY, or in some cases TEST, button on the PowerCharger® front panel.



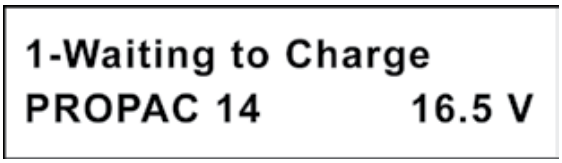
The Main Display shows the general status of each battery mounted to the PowerCharger®. This display is immediately returned to following self test and after viewing any other screen.



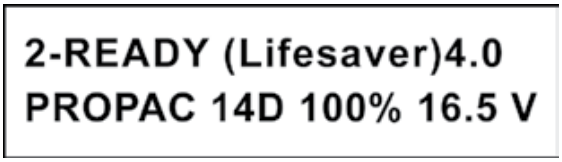
Both the two position (above) and four position Main Displays will show a series of dashes when a battery has not been mounted to the PowerCharger®.

The Main Display of the PowerCharger® will show the abbreviated status of each battery on the main unit.

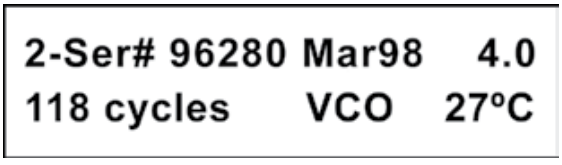
The Signature Display can be viewed by pressing and holding the TEST button from the Main Display on the PowerCharger® to obtain model information, Software revision number and installation of DDM (discharger).



The Primary Position Display is obtained by pressing the DISPLAY button repeatedly until the position number for the battery desired is displayed. This view further identifies the status of the battery, its model number (chemistry and voltage), as well as current battery voltage.



The Primary Position Display will additionally display the available capacity when a DIGITAL battery is used, both in percent and in ampere hours.



The Secondary Position is obtained by pressing and holding the DISPLAY button while viewing the primary position display. This Secondary display is available only with DIGITAL batteries and is used to obtain information transmitted from the battery to the charger including battery serial number, date of manufacture, number of cycles, "learned" capacity, type of stage one charging cut-off experienced and battery temperature.

DDM (DIAGNOSTIC/DISCHARGE MODULE)

A standard feature with the DUAL 2722, the DDM completes a battery management system, capable of testing battery capacity and identifying battery anomalies before they appear in the field.

The DDM will perform a standard or a 24 hour test. The standard test is a f**ull charge-discharge-full charge routine**, which will identify the capacity of the battery and indicate any performance issues, such as low battery voltage indicating a shorted cell. The 24 hour test is a **full charge-wait 24 hours-discharge-full charge routine** which will identify any excessive self-discharge or serious cell imbalance condition.

Test time will vary with battery condition and watt hour rating. The standard test will require a minimum of 6 hours to a maximum of about 12 hours. The 24 hour test will require an additional 24 hours as the battery undergoes a 24 hour rest time to identify self-discharge anomalies. It is recommended that the 24 hour test be performed only on weekends or when the battery is not scheduled to be used for 2-3 days.

The standard test is adequate for virtually all conditions to verify the capacity of the battery before taking it into the field. The 24 hour test need only be performed on a battery, typically an older one (2 years or more), which may have exhibited questionable performance.

Note: The DDM test mode should be used sparingly. Remember that a cycle performed in test is part of the battery's overall life. Anton/Bauer suggests that a typical management routine for your batteries might be to test them once every 90 days during the first two years and every 60 days thereafter. If a record is kept of the battery's performance on test, any anomaly will become apparent from the record. It is not necessary to fully discharge an Anton/Bauer battery before recharging. The PowerCharger's® charging routines and the high voltage design of the Anton/Bauer batteries precludes the problems which old 12 volt batteries had in the past. Don't waste battery life on unnecessary testing.

TO OPERATE THE DDM:

1. Mount the battery to any position on the PowerCharger®. When the PowerCharger® has completed its communication with the battery, the ALTERNATING RED and GREEN LEDs will stop and the battery will begin its charge routine. The battery information and position number will appear on the LCD display. (If the battery is already on the charger, press the DISPLAY button until the position for the battery to be tested is displayed.)

2. Press the TEST button on the front panel of the PowerCharger®. An audible alert will be heard and the LCD will display "HOLD TEST BUTTON 3 SECONDS TO SELECT A TEST".

3. Hold the TEST button as the unit beeps 3 times. Release the button and the unit will indicate that the test mode has been selected. This Standard test will charge-discharge-charge the battery. Testing time is approximately 6-8 hours per battery.

4. The PowerCharger® will ask if the 24 hour test is desired. If so, press the TEST button again to select this test. If not, the PowerCharger® will automatically begin the standard test. A 24 Hour Test will charge the battery, let the battery sit for a 24 hour period, test the battery and then charge the battery. This test will determine how much capacity the battery will lose over a 24 hour period, when not being used.

The "RS-232 Accessory Port" on the PowerCharger® transmits test information in ASCII format to any serial communications capable device, such as a terminal emulator or printer. A personal computer serial port can also be connected and by employing any number of communications applications (such as PROCOMM, or Windows "Terminal") test data can be saved in file format as a permanent record of battery performance.

A serial data capable printer can be attached to the PowerCharger® at the "RS-232 Accessory Port", enabling the printout of hard copy of performance data from a tested battery. The following is a partial list of printer manufacturer models which are compatible with the PowerCharger®:

- Okidata ML 184 Turbo
- Okidata ML 395
- Panasonic KX-P3200

Printers should be set for 1200 baud, 8 bit data length, one start bit, one stop bit. Consult the printer's owners' manual for setup instructions.

When testing is completed, the LCD Main Display will indicate "TEST DONE". To display or print test results:

5. Press the DISPLAY button on the PowerCharger® front panel to scroll to the Primary Position Display for the battery tested.

6. Press the TEST button. The LCD will display the capacity of the battery in ampere hours. If a printer is attached, performance data will simultaneously be printed out with all battery identification information. Consult your battery owners' manual for warranty information and cell capacity ratings.

Remove battery only when test data has been viewed or printed. Test data is retained only while the battery is on the PowerCharger®. Once battery is removed, data is no longer available.

"AUTOCAL" Feature

When a DDM is installed in the PowerCharger®, a special InterActive® mode is automatically enabled for DIGITAL batteries placed on the PowerCharger® at any time. The PowerCharger® will interrogate the status of the DIGITAL battery to determine whether the battery has received a "learning" cycle or "calibrate" cycle within certain parameters. This "learning" typically occurs in normal equipment operation, however, if the battery has not been fully charged and discharged in some time, a "double arrow" or "calibrate" indication will appear on the battery. The DIGITAL battery will continue to function normally with this indication. It is a request by the battery to fully charge and discharge the battery to the "EOD" point at the next opportune time so that the battery can verify its capacity. See DIGITAL battery Owner's Manual for complete description of this indication.

The PowerCharger® with DDM will detect a request from the DIGITAL battery and automatically enter an AUTOCAL mode when the battery is placed on the charger. This mode is indicated by the PowerCharger® with an audible alert and a message in the LCD advising that the AUTOCAL routine has been called. This mode can be canceled, for example, if time constraints do not allow for the test to be completed. The mode is identical to the charge-discharge-charge previously described.

The AUTOCAL mode can be canceled by following the prompts appearing in the LCD, using the TEST button to cancel the test. If the test is not canceled, it will commence automatically.

When the AUTOCAL operation is complete, the battery will be fully charged and ready for use.

OPERATION AS DC CAMERA SUPPLY FROM MAINS

The DUAL 2722 can operate cameras and camcorders using the four pin camera output connector located on the back of the DUAL 2722. To power the camera, attach one end of the XLR4 accessory cable (available separately) to the DUAL 2722. Attach the other end to the "DC in" four pin XLR on the camera/camcorder. Move the switch located next to the connector to the "CAMERA" position.

The DUAL 2722 will remember the point at which it left its charge routine for the battery positioned on the right side of the charger. The left side of the charger will continue as a dedicated charging position, regardless of the selected function of the right side of the DUAL 2722. When the switch is returned to the "CHARGER" position, the batteries will automatically continue charging where they left off.

During camera operation, with batteries on the PowerCharger®, the unit will indicate a solid RED LED for the right battery position. The right hand side of the display will indicate "CAMERA MODE".

FCC NOTICE

This equipment has been tested and found to comply with the limits for a Class A digital device pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

This equipment has been approved by one or more agencies. All changes and/or modifications not expressly approved by Anton Bauer, Inc. could void the users' warranty and authority to operate this equipment. There are no serviceable parts in this equipment.

SPECIFICATIONS

Size	7.75" x 8.50" x 3.13"
Weight	2.75lbs. (1.25kg)
Input Voltage	100-240VAC 50/60 Hz
Output Voltage*	16 VDC
Maximum Power*	70 watts at 16 volts
Fuse Rating	5 amp (PCB Mounted)

***IN CAMERA POWER MODE AT 4 PIN XLR CONNECTOR.**

FUSE/TYPE REPLACEMENT

The fuse of the DUAL 2722 is a PCB mounted device which should only be replaced by a qualified service technician.

LIMITED WARRANTY

This three (3) year limited warranty for the battery 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. TO REGISTER YOU MAY EITHER:

1. MAIL WARRANTY REGISTRATION CARD
2. REGISTER ON LINE AT 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.

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, NEGLECT, 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 WRITTE N 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 with any battery, charger or accessory not manufactured, produced or sold by Anton/Bauer. Anton/Bauer only authorizes the use of original Anton/Bauer products with this Product. Use only original Anton/Bauer equipment with this Product.

Anton/Bauer, Inc.
World Headquarters
14 Progress Drive, Shelton, CT U.S.A.
Tel (203) 929-1100 or (800) 541-1667
Fax (203) 929-9935
support@antonbauer.com

Anton/Bauer Europe, B.V.
Eurode Business Center, Eurode - Park 1-2
6461KB Kerkrade, The Netherlands
Tel (+31) 45 5639220
Fax (+31) 45 5639222
eurosupport@antonbauer.com

Anton/Bauer, Inc. - Signapore Office
6 New Industrial Road, # 02-02 Hoe
Huat Ind. Bld., Singapore 536199
Tel (+65) 62975784
Fax (+65) 62825235
asia@antonbauer.com

www.antonbauer.com

Anton/Bauer
A Vitec Group brand