LIMITED WARRANTY

12 MONTHS FROM DATE OF PURCHASE

The manufacturer warrants to the consumer that this product will be free from defects in material or workmanship for a period of twelve (12) months from the date of original purchase.

Products that fail within this 12 month warranty period will be repaired or replaced at the manufacturer's option to the consumer, when determined by the manufacturer that the product failed due to defects in material or workmanship. This warranty is limited to the repair or replacement of parts and the necessary labor by the manufacturer to effect the repair or replacement of the product. In no event shall the manufacturer be responsible for special, incidental or consequential damages or costs incurred due to the failure of this product. Improper use, accident, water damage, abuse, unauthorized repairs or alterations voids this warranty. The manufacturer disclaims any liability or consequential damages due to breach of any written or implied warranty on its test equipment.

WARRANTY AND SERVICE INFORMATION

Warranty claims to the manufacturer's service department must be transportation prepaid and accompanied with dated proof of purchase. This warranty applies only to the original purchaser and is non-transferable. Shipper damage incurred during return shipments is not covered under this warranty. It is the responsibility of the shipper (the customer returning the Test Equipment) to package the tester properly to prevent any damage during return shipment. Repair costs for such damages will be charged back to shipper (customer returning the Test Equipment). Protect the product by shipping in original carton or add plenty of over-pack cushioning such as crumpled up newspaper.

AutoMeter Products Inc.

413 West Elm Street
Sycamore, IL 60178

Sans-frais (866)-883-TEST (8378)

www.autometer.com/test

2650-2107-77 Rev. A 1/7/25

AutoMeter® TEST EQUIPMENT

Fully Automatic 4 Station Battery Charger and Maintainer

Conforms to UL Std. 1236

BusPro-420

Owner's Manual

Warning: Failure to follow instructions may result in damage or explosion. **READ ENTIRE MANUAL BEFORE USE.**

CONTENTS

WHAT TO EXPECT

MAINTENANCE AND CLEANING

Always keep your Battery Charger clean and looking like new! Unplug the Battery Charger, and use a slightly dampened cloth to clean the housing and lead sets. Use no solvents or soaps.

IMPORTANT!

A clean battery and battery terminals insure proper operation of the Battery Charger and the vehicle charging system. Dirty terminals may put a constant slow drain on the battery. If your battery and terminals have a white or blueish crust on them, your charging system may be having problems. Have the vehicle electrical system checked by a qualified service technician.

MOUNTING

Mounting holes are provided in each corner of the unit. It is recommended that you mount the Battery Charger to a wall or other secure surface. This will keep it out of the way and prevent damage due to accidents. #10 or 5mm screw size is recommended for mounting the charger to a wall.

WHAT TO EXPECT

AVOID THE ANNUAL DEAD BATTERY SURPRISE WHEN YOUR VEHICLE COMES OUT OF STORAGE.

MAXIMIZES BATTERY LIFE
The Battery Charger is designed to maximize the life of a serviceable lead acid battery. A serviceable battery is a battery that is not defective or damaged.

PREVENTS PREMATURE BATTERY FAILURE
The Battery Charger keeps your battery at full charge on a continuous basis. Batteries not kept at a full charge become sulfated, which is the main reason for premature battery failure.

MAINTAINS STORED BATTERIES AT FULL CHARGE
The Battery Charger should be used to charge and maintain all 12V starting and deep cycle batteries in storage or that don't receive daily use. Some examples are: automobiles, boats, race cars, campers, RV's, 4 wheelers, motorcycles, personal water craft, farm machinery (tractors, combines, etc.), heavy equipment, rental equipment (trucks, compressors, portable signs, bulldozers, stationary pumps, etc.), and any equipment that receives occasional use or is in storage. The Battery Charger is also fully compatible with 12V Standard, AGM, and LiFePO4 batteries. (DO NOT USE WITH DRY CELL, NICKLE CADMIUM, NICKLE METAL HYDRIDE, OR SIMILAR BATTERIES. Refer to the enclosed instructions.)

NOTE: Never use the Battery Charger in a boat or water craft. Always remove the battery from the boat or water craft and use the Battery Charger on shore.

VALUABLE PROTECTION
The Battery Charger provides full off-season protection for seasonally used batteries. It keeps your stored batteries ready for their next use.

PROTECTION FROM COMPUTER DRAIN
Cars are often equipped with computers that require continuous battery power to maintain data in memory. The Battery Charger's superior circuitry automatically delivers the correct charge to compensate.

LONG LASTING PERFORMANCE
The Battery Charger has been designed and manufactured to provide superior performance from the High Tech housing to the last internal detail. Quality is built in and assured with circuit burn-in, computerized testing and inspection. Care in handling and occasional cleaning of the leads and housing will help keep it looking like new, and give you many years of satisfaction.

CONGRATULATIONS!

You have purchased an AutoMeter 4-Station, 20A per station Battery Charger. This is a fully automatic battery charger and battery maintainer. It is designed to work on LiFePO4 12 V batteries and all types of 12V lead acid batteries, including Standard (Flooded) and AGM. It will use a constant current bulk charge mode, and then switch to a constant voltage absorption mode. For Standard (Flooded) and AGM batteries only, the stations will have a maintenance (float) and desulfation modes. All 4 charge stations operate independent of one another. If you should have any questions about your Battery Charger or charging procedures, please see the back cover for contact information.

SPECIFICATIONS

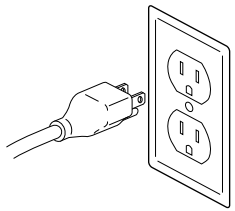
Model Number	BusPro-420
Charger Type	Fully Automatic
Battery Voltage	12 V
Charge Current (Max.)	20A
Battery Compatibility	Standard (Flooded), AGM, LiFePO4
Battery Capacity Range	Standard (Flooded) and AGM: 40-140Ah LiFePO4: 25-140Ah
Charging Modes (Desulfation, Bulk, Absorption, and Maintain)	Yes
Fully Automatic / Overcharge Protection	Yes
Reverse Polarity Protection	Yes
Spark Free Connection	Yes
LED Indicators	6 LED's /Charge Station
AC Input	108 -132V AC / 60Hz 14A
Ambient Temperature	-4 ºF to +122 ºF
Size	16.0" W X 11.5" H X 2.8" H
Weight	13 lbs.
Conforms to UL Std. 1236	Yes
(CEC) and DOE Compliant	Yes
RoHS Compliant	Yes

IMPORTANT SAFETY INSTRUCTIONS SAVE THESE INSTRUCTIONS

1. This manual contains important safety and operating instructions for battery charger Model BusPro-420
2. Do not expose charger to rain or snow.
3. Use of an attachment not recommended or sold by the battery charger manufacturer may result in a risk of fire, electric shock, or injury to persons.
4. To reduce risk of damage to electric plug and cord, pull by plug rather than cord when disconnecting charger.
5. An extension cord should not be used unless absolutely necessary. Use of improper extension cord could result in a risk of fire and electric shock. If an extension cord must be used, make sure:
   a) That pins on plug of extension cord are the same number, size, and shape as those of plug on charger;
   b) That extension cord is properly wired and in good electrical condition; and
   c) That wire size is large enough for ac ampere rating of charger as specified in Table 1.
6. Do not operate charger with damaged cord or plug, replace the cord or plug immediately.
7. Do not operate charger if it has received a sharp blow, been dropped, or otherwise damaged in any way; take it to a qualified serviceman.
8. Do not disassemble charger; take it to a qualified serviceman when service or repair is required. Incorrect reassembly may result in a risk of electric shock or fire.
9. To reduce risk of electric shock, unplug charger from outlet before attempting any maintenance or cleaning. Turning off controls will not reduce this risk.
10. WARNING – RISK OF EXPLOSIVE GASES.
    a) WORKING IN VICINITY OF A LEAD-ACID BATTERY IS DANGEROUS. BATTERIES GENERATE EXPLOSIVE GASES DURING NORMAL BATTERY OPERATION. FOR THIS REASON, IT IS OF UTMOST IMPORTANCE THAT YOU FOLLOW THE INSTRUCTIONS EACH TIME YOU USE THE CHARGER.
    b) To reduce risk of battery explosion, follow these instructions and those published by battery manufacturer and manufacturer of any equipment you intend to use in vicinity of battery. Review cautionary marking on these products and on engine.
11. PERSONAL PRECAUTIONS
    a) Consider having someone close enough by to come to your aid when you work near a lead-acid battery.
    b) Have plenty of fresh water and soap nearby in case battery acid contacts skin, clothing, or eyes.
    c) Wear complete eye protection and clothing protection. Avoid touching eyes while working near battery.
    d) If battery acid contacts skin or clothing, wash immediately with soap and water. If acid enters eye, immediately flood eye with running cold water for at least 10 minutes and get medical attention immediately.
    e) NEVER smoke or allow a spark or flame in vicinity of battery or engine.

OPERATING INSTRUCTIONS

PROPER DISCONNECT PROCEDURE



1. Always disconnect the AC extension cord first (if used). Then unplug the AC power cord of the Battery Charger..

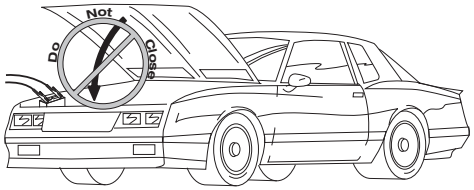
2. For the spring clip lead set, always disconnect the BLACK (-) spring clip first and the RED (+) spring clip second.

3. If you accidentally disconnect the Battery Charger from the battery while it is in operation, it will shut itself off in approximately one second. You must complete the disconnection procedure after this happens by performing steps 1 and 2.

NOTE: It is normal for case to be hot to the touch in charge mode. Thermal protective circuitry provides for safe, unattended operation.

OPERATING INSTRUCTIONS

You may use the spring clip lead set for installed batteries on a temporary basis. However we do not recommend doing this for long term connections. The clips can accidentally come in contact with compartment covers, hoods and other items that may cause dangerous high current shorts across the battery terminals. To temporarily connect the spring clips to an installed battery, follow these steps:



WARNING: Do not close hood, doors, or covers when using spring clips on installed batteries. This can cause dangerous high current shorting across the battery terminals.

1. Check that the Battery Charger is ***NOT*** plugged in to an AC outlet before connecting the spring clips to the battery.
2. Locate the positive (+) terminal post of the battery, it is usually larger than the negative (-) terminal post. Connect the RED (+) spring clip to this battery terminal post.
3. Connect the BLACK (-) spring clip to a bolt or screw on the chassis or engine block. These should be heavy steel parts not sheet metal. Do not connect to fuel lines, carburetor, or moving parts. Make the connection as far from the battery as the leads allow.
4. Plug in the AC cord, and observe the indicator lights for operation.
5. Set the Battery Type button to match the battery type you are charging. (Standard, AGM, or LiFePO4).

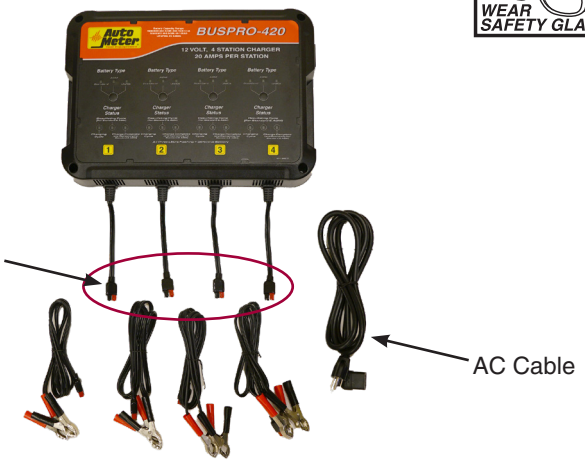
NOTE: The BusPro-420 must only be used with 12 Volt batteries.

SAFETY

f) Be extra cautious to reduce risk of dropping a metal tool onto battery. It might spark or short-circuit battery or other electrical part that may cause explosion.
g) Remove personal metal items such as rings, bracelets, necklaces, and watches when working with a battery. A battery can produce a short-circuit current high enough to weld a ring or the like to metal, causing a severe burn.
h) Use charger for charging 12V LEAD-ACID and LiFePO4 battery's only. It is not intended to supply power to a low voltage electrical system other than in a starter-motor application. Do not use battery charger for charging dry-cell batteries that are commonly used with home appliances. These batteries may burst and cause injury to persons and damage to property.
i) NEVER charge a frozen battery.

12. PREPARING TO CHARGE
    a) If necessary to remove battery from vehicle to charge, always remove grounded terminal from battery first. Make sure all accessories in the vehicle are off, so as not to cause an arc.
    b) Be sure area around battery is well ventilated while battery is being charged.
    c) Clean battery terminals. Be careful to keep corrosion from coming in contact with eyes.
    d) Add distilled water in each cell until battery acid reaches level specified by battery manufacturer. Do not overfill. For a battery without removable cell caps, such as valve regulated lead acid batteries, and LiFeP04 batteries carefully follow manufacturer's recharging instructions.
    e) Study all battery manufacturer's specific precautions while charging and recommended rates of charge.
    f) Determine voltage of battery by referring to car owner's manual and make sure that output voltage selector switch is set at correct voltage.
    g) Determine voltage of battery by referring to car owner's manual and make sure it matches output rating of battery charger.
13. CHARGER LOCATION
    a) Locate charger as far away from battery as dc cables permit.
    b) Never place charger directly above battery being charged; gases from battery will corrode and damage charger.
    c) Never allow battery acid to drip on charger when reading electrolyte specific gravity or filling battery.
    d) Do not operate charger in a closed-in area or restrict ventilation in any way.
    e) Do not set a battery on top of charger.
14. DC CONNECTION PRECAUTIONS
    a) Connect and disconnect dc output clips only after setting any charger switches to "off" position and removing ac cord from electric outlet. Never allow clips to touch each other.
    b) Attach clips to battery and chassis as indicated in 15(e), 15(f), and 16(b).

NOTE: SEE ILLUSTRATION ON NEXT PAGE

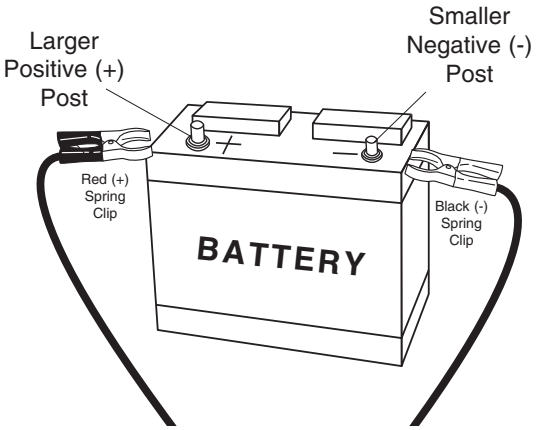


15. FOLLOW THESE STEPS WHEN BATTERY IS INSTALLED IN VEHICLE. A SPARK NEAR BATTERY MAY CAUSE BATTERY EXPLOSION. TO REDUCE RISK OF A SPARK NEAR BATTERY:
    a) Position ac and dc cords to reduce risk of damage by hood, door, or moving engine part.
    b) Stay clear of fan blades, belts, pulleys, and other parts that can cause injury to persons.
    c) Check polarity of battery posts. POSITIVE (POS, P, +) battery post usually has larger diameter than NEGATIVE (NEG, N,–) post.
    d) Determine which post of battery is grounded (connected) to the chassis. If negative post is grounded to chassis (as in most vehicles), see (e).If positive post is grounded to the chassis, see (f).
    e) For negative-grounded vehicle, connect POSITIVE (RED) clip from battery charger to POSITIVE (POS, P, +) ungrounded post of battery. Do not connect clip to carburetor, fuel lines, or sheet-metal body parts.
    f) For positive-grounded vehicle, connect NEGATIVE (BLACK) clip from battery charger to NEGATIVE (NEG, N, –) ungrounded post of battery. Do not connect clip to carburetor, fuel lines, or sheet-metal body parts.
    g) When disconnecting charger, turn switches to off, disconnect AC cord, and then remove clip from battery terminal.
    h) See operating instructions for length of charge information.
16. FOLLOW THESE STEPS WHEN BATTERY IS INSTALLED IN VEHICLE. A SPARK NEAR BATTERY MAY CAUSE BATTERY EXPLOSION. TO REDUCE RISK OF A SPARK NEAR BATTERY:
    a) Check polarity of battery posts. POSITIVE (POS, P, +) battery post usually has a larger diameter than NEGATIVE (NEG, N, –) post.
    b) Connect POSITIVE (RED) charger clip to POSITIVE (POS, P, +) post of battery.
    c) Do not face battery when making final connection.
    d) When disconnecting charger, always do so in reverse sequence of connecting procedure.
    e) A marine (boat) battery must be removed and charged on shore. To charge it on board requires equipment specially designed for marine use.

post. It's a good idea to wiggle the clip on the battery post to insure a good connection.

7. Connect the BLACK spring clip to the negative (-) battery terminal post.

NOTE: The BusPro-420 must only be used with 12 Volt batteries.



Two Pin Connector

OPERATING INSTRUCTIONS

Your Battery Charger is equipped with sophisticated circuitry that will safely charge and maintain batteries without overcharging. Make sure you read and follow the “Safety” section of this manual before proceeding with this operating instruction.

BATTERY CHARGER INDICATOR LIGHTS

No Charge Status Lights: Means one of the following:

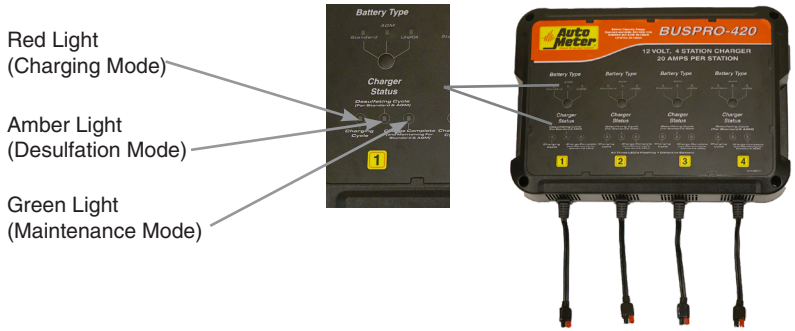
- You reversed the connections by connecting the red spring clip to the negative (-) battery post and the black spring clip to the positive (+) battery post.
- You have a poor connection at the battery.
- There is no AC power.
- Check all three conditions above before proceeding.

Red Light (Charging): The Battery Charger is charging the battery.

Amber Light (Desulfation): The Battery Charger is in desulfation mode. (For Standard and AGM Batteries only. No desulfation for LiFePO4 batteries.)

Green Light (Maintain): The Battery Charger is safely maintaining your battery at a full charge. (For Standard and AGM Batteries Only) Or Charge complete for LiFePO4 batteries only. Note: No maintain mode for LiFePO4 batteries. Your battery is ready to go when you need it.

All Lights Flashing: Possible defective battery or excessive parasitic draw from vehicle loads. Test battery using battery tester and check for excessive parasitic draw from vehicle. Resolve issue before continuing to charge the battery.



Follow these steps for connection and operation

1. Double check that the square two pin connector on the lead set is firmly plugged into the square output connector of the Battery Charger.
2. Make sure the Battery Charger is safely located away from the battery and in a non hazardous location.
3. Set the Battery Type button to match the battery type you are charging. (Standard, AGM, LiFePO4). (For 12V Batteries only).
4. Use only one charging station per battery.
5. Plug the AC cord in to a grounded outlet.
6. Locate the positive (+) terminal post of the battery, it is usually larger than the negative (-) terminal post. Connect the RED spring clip to this battery terminal

SAFETY

Table 1

Recommended minimum AWG size for extension cords for BusPro-420 battery chargers

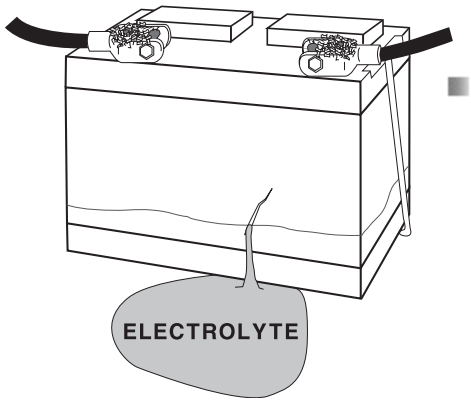
Length	Cord Size AWG
25 FT	16
50 FT	12
100 FT	8

PERSONAL SAFETY PRECAUTIONS

1. Wear protective goggles or a full face shield.
2. Wear protective clothing. Leave no exposed skin.
3. Have plenty of fresh water and hand soap available for use if acid should contact your eyes, skin or clothing.
4. Remove all metal objects (pens, tools, jewelry etc.) from your body. These items can create a direct short between the battery terminals and can cause serious burns.
5. **DO NOT** carry tools or metal objects in the vicinity of a battery. These items can fall on the battery terminals creating a high current short. This could result in a fire, burns, explosion, etc.
6. **DO NOT** touch your face, eyes or other body parts without first washing your hands. Battery acid can burn and irritate eye and skin tissue.
7. Use the one hand rule! Keep one hand in your pocket whenever you make an electrical connection. This reduces the risk of electric shock to the user.
8. **DO NOT** attempt to open or modify the unit.

INSPECTION

Carefully perform the following before attempting any battery charging.



- **Inspect Battery** for terminal corrosion, loose or broken posts, cracks in the case, loose hold-downs, low electrolyte level, moisture, and dirt around the terminals.

- **Important Note:** A damaged battery must be replaced before proceeding.

INTRODUCTION

How Batteries Charge:

The charger does not force current into the battery. The charger makes available a limited amount of charge current to the battery. The battery itself determines how much charge current it needs.
Typically the lower the state of charge of the battery, the higher the charge current will be. As the battery charges up, the charge current will taper off.
Some battery types require an activation period when they are deeply discharged before they will accept charge current. The time may take many hours before the battery begins to accept charge current. If your battery has been sitting in a discharged state for a long period of time, it can become sulfated. Sulfated batteries exhibit the characteristic of not accepting any charge current for a long period of time. This may also take many hours. Once the sulfate barrier breaks down, the battery will begin accepting charge current. Severely sulfated batteries may never accept charge current and should be replaced. When a battery charges, the electrolyte will bubble slowly. This is normal when charging a battery. The gases given off while charging a battery can be very explosive. Make sure there are no flames or sparks near a charging battery. Always unplug the charger before connecting or disconnecting the clamps to the battery to prevent sparks.