

MIDTRONICS

Battery Management Innovation

ChargeXpress

PRO 50-2






INSTRUCTION MANUAL

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PRECAUTIONS

Always use the following precautions when working with batteries

DANGER / POISON	
	SHIELD EYES EXPLOSIVE GASES CAN CAUSE BLINDNESS OR INJURY
	NO SPARKS NO FLAMES
	SULFURIC ACID CAN CAUSE BLINDNESS OR SEVERE BURNS

SAFETY INSTRUCTIONS

IMPORTANT: READ AND SAVE THIS SAFETY AND INSTRUCTION MANUAL. KEEP IT WITH OR NEAR CHARGEEXPRESS PRO ALL TIMES.

IMPORTANT SAFETY INSTRUCTION

1. WORKING IN THE VICINITY OF A BATTERY CAN BE DANGEROUS. BATTERIES GENERATE EXPLOSIVE GASES DURING NORMAL BATTERY OPERATION, AND WHEN DISCHARGED OR CHARGED. FOR THIS REASON, IT IS OF UTMOST IMPORTANCE THAT EACH TIME BEFORE USING YOUR CHARGEEXPRESS PRO, YOU RE-READ THIS MANUAL AND MAKE CERTAIN YOU FULLY UNDERSTAND IT AND FOLLOW THE SAFETY AND OPERATING INSTRUCTIONS EXACTLY.
2. To reduce risk of battery explosion, follow these safety instructions and those published by the battery manufacturer and the manufacturer of any equipment you intend to use in the vicinity of a battery. Review cautionary marking on these products and on engine, and on vehicle or equipment containing the battery.
3. CAUTION: To reduce the risk of injury, charge only rechargeable LEAD-ACID TYPE batteries, which may include MAINTENANCE-FREE, LOW-MAINTENANCE, AGM/SPIRAL, GEL or DEEP CYCLE batteries. Other types of batteries may burst causing personal injury and damage. NEVER RECHARGE NON- RECHARGEABLE BATTERIES.
4. If you are uncertain as to the type of battery you are attempting to charge, or the correct procedure for checking the battery's state of charge, contact the seller or battery manufacturer.
5. 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.
6. To reduce risk of damage to electric plug and cord, pull by plug rather than cord when disconnecting CHARGEEXPRESS PRO.
7. Position AC and DC leads to avoid tripping over them and to prevent damage by hood, doors, or moving engine parts; protect from heat, oil, and sharp edges.
8. Do not operate CHARGEEXPRESS PRO if it has received a sharp blow, been dropped, or otherwise damaged in any way; take it to a qualified service center.
9. Do not disassemble CHARGEEXPRESS PRO; take it to a qualified service center when repair is required. Incorrect reassembly may result in a risk of electric shock or fire.
10. If the CHARGEEXPRESS PRO is in need of service, call Midtronics at +31 (30) 6868 150
11. To reduce risk of electric shock, unplug CHARGEEXPRESS PRO from the AC outlet before attempting any maintenance or cleaning. Turning off the controls only will not reduce this risk.
12. BOAT BATTERIES MUST BE REMOVED AND CHARGED ON SHORE. TO SAFELY CHARGE THEM ON BOARD REQUIRES EQUIPMENT ESPECIALLY DESIGNED AND UL/CE LISTED FOR MARINE USE.
13. Do not overcharge battery. See Safety Instructions (3)
14. Connect and disconnect battery leads only when AC supply cord is disconnected.
15. When charging a battery, locate in a dry, well-ventilated area.
16. Never place articles on or around CHARGEEXPRESS PRO, or locate CHARGEEXPRESS PRO in a way that will restrict the flow of cooling air through cabinet.
17. An extension cord should not be used unless absolutely necessary.
18. Have damaged cord or plug replaced immediately only by a qualified service center to prevent risk of electric shock or fire.
19. Do not expose CHARGEEXPRESS PRO to wet weather conditions.

PERSONAL PRECAUTIONS

1. Always have someone within range of your voice, or close enough to come to your aid, when working around batteries.
2. Have plenty of fresh water and soap nearby in case battery acid contacts skin, clothing or eyes.
3. Wear complete eye protection, clothing protection, and wear rubber soled shoes. Place damp cloth over battery to protect against acid spray. When ground is very wet or covered with snow, wear rubber boots. Avoid touching eyes while working near battery.
4. If battery acid contacts skin or clothing, wash immediately with soap and water. If acid enters eye, immediately flush with running cold water for at least 10 minutes and get doctor's attention.
5. NEVER smoke or allow a spark or flame in vicinity of battery or engine.
6. Be extra cautious to reduce risk of dropping a metal tool onto battery. It might spark or short circuit the battery or other electrical part that may cause an explosion.
7. Before working with a battery, remove personal metal items such as rings, bracelets, necklaces, watches, etc. A battery can produce a short circuit current high enough to weld such items causing a severe burn.
8. Use charger for charging LEAD ACID batteries only. The CHARGEEXPRESS PRO is not intended to supply power to a low-voltage electrical system other than applications using rechargeable type batteries. Do not use battery charger for charging dry-cell batteries commonly used with home appliances. These batteries may burst and cause personal injury and property damage.
9. NEVER charge a frozen battery, thaw it out first. Charging will then be safer and more efficient.

PREPARING THE BATTERY

1. 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.
2. Use stud adapters on side-post and/or Truck batteries that are not in the vehicle.
3. Be sure area around battery is well ventilated while battery is being charged. Using a piece of cardboard or other nonmetallic material as a fan can forcefully blow gas away.
4. Clean battery terminals. Be careful to keep corrosion from coming into contact with your eyes.
5. Add distilled water in each cell until battery acid reaches level specified by manufacturer. This helps purge excessive gas from cells. Do not overfill. For a battery without caps, carefully follow the manufacturer's recharging instructions.
6. Study all battery manufacturers' specific precautions such as removing or not removing cell caps while charging and recommended rates of charge.
7. Determine the voltage of the battery and make sure that the output voltage menu selection is set at the correct voltage.

DC CONNECTION PRECAUTIONS

1. Set the CHARGEEXPRESS PRO switch in the OFF position and AC cord should be DISCONNECTED from electrical outlet before you connect and disconnect CHARGEEXPRESS PRO clamps.
2. When attaching CHARGEEXPRESS PRO clamps, be certain to make the best possible mechanical as well as electrical connection. Clamps should be kept clean.

AC POWER CORD CONNECTION INSTRUCTIONS

1. CHARGEEXPRESS PRO should be grounded to reduce risk of electric shock. CHARGEEXPRESS PRO is equipped with an electric cord having an equipment grounding-conductor and a grounding plug. The plug must be plugged into an outlet that is properly installed and grounded in accordance with all local codes and ordinances.
2. **DANGER: NEVER ALTER AC CORD OR PLUG PROVIDED-IF IT WILL NOT FIT OUTLET, HAVE PROPER OUTLET INSTALLED BY A QUALIFIED ELECTRICIAN. IMPROPER CONNECTION CAN RESULT IN THE RISK OF AN ELECTRIC SHOCK.**
3. 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 extension cord must be used, make sure that:
 - a) Pins on extension cord are the same number, size, and shape as those of plug on CHARGEEXPRESS PRO;
 - b) Extension cord is properly wired and in good electrical condition; and
 - c) Wire size is large enough for AC ampere rating of CHARGEEXPRESS PRO.

CHARGEEXPRESS PRO CONNECTION - BATTERY IN VEHICLE

1. Before working on vehicle, firmly apply emergency brake and place gearshift to NEUTRAL – shift an automatic transmission to P.
2. Locate CHARGEEXPRESS PRO as far away from battery as CHARGEEXPRESS PRO cords permit and position AC and DC cords to avoid stepping on or tripping over them and to prevent damage by hood, doors, or moving engine parts.
3. Stay clear of fan blades, belts, pulleys, and any other parts that can cause physical injury.
4. Turn OFF all vehicle loads, including door lights, and correct any defects in car's electrical system that may have caused low battery.
5. Check polarity of battery posts. The POSITIVE (+) post usually has larger diameter than NEGATIVE (-) post.
6. Determine which post of battery is grounded (connected) to chassis. If negative post is grounded see step 7. If positive post is grounded see step 8.
7. For negative-grounded vehicle, first connect POSITIVE (red) clamp from CHARGEEXPRESS PRO to POSITIVE (+) ungrounded post of battery. Then connect NEGATIVE (BLACK) clamp to NEGATIVE (-) post of battery. Do not connect clamp to carburetor, fuel lines, or sheet metal body parts. Connect to a heavy gauge metal part of frame or engine block. When disconnecting charger, turn switches OFF, disconnect AC cord, remove clamp from vehicle chassis, and then remove clamp from battery terminal.
8. For positive-grounded vehicle, connect NEGATIVE (BLACK) clamp from charger to NEGATIVE ungrounded post of battery. Then connect POSITIVE (RED) clamp to vehicle chassis or engine block away from battery. Do not connect clamp to carburetor, fuel lines, or sheet metal body parts. Connect to a heavy gauge metal part of frame or engine block. When disconnecting charger, turn switches OFF, disconnect AC cord, remove clamp from vehicle chassis, and then remove clamp from battery terminal.

CHARGEEXPRESS PRO CONNECTION – BATTERY NOT IN VEHICLE

If necessary to remove battery from vehicle or equipment, always remove grounded terminal from battery first.

WARNING – Make sure all vehicle loads are **OFF** to prevent a possible arc.

FOLLOW THESE STEPS WHEN BATTERY IS OUTSIDE VEHICLE. A SPARK NEAR BATTERY MAY CAUSE AN EXPLOSION. TO REDUCE RISK:

1. Check polarity of battery posts. POSITIVE (+) post usually has larger diameter than NEGATIVE (–) post.
2. Connect POSITIVE (RED) CHARGEEXPRESS PRO clamp to POSITIVE (+) post of battery.
3. Connect NEGATIVE (BLACK) CHARGEEXPRESS PRO clamp to NEGATIVE (–) post of battery.

SPECIFICATIONS

GENERAL

Lead-acid batteries: GEL, AGM / SPIRAL, Flooded, Power supply
Number of cells: 6
Rated capacity: 20 to 250Ah

Note: A 24 V operation consists of two 12 V (6cell) batteries connected in series.

INPUT RATINGS

230 V AC (16A) 50 / 60Hz

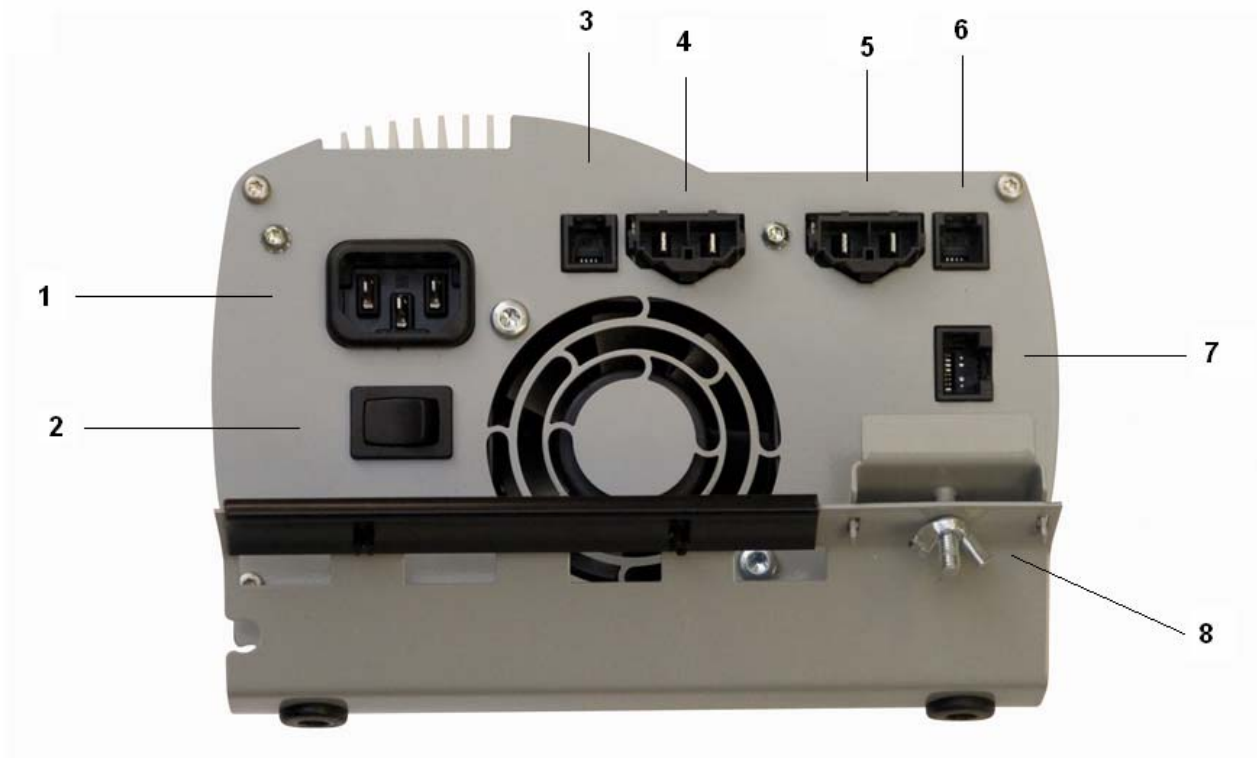
OUTPUT RATINGS

Charger	DC Voltage	Amps	Watts
PRO 50	12 V	50 A	660

GETTING STARTED

Before connecting the unit to the mains please connect the charge cables to the unit. Cable #1 goes into position 1, cable #2 goes into position 2. Make sure the cables are connected nice and tidy under the strain relieve shown in position 3 using the bracket with the wing nut. Plug in the main lead at position 4.

1. AC power cable
2. ON / OFF switch
3. Volt sensing connector 1
4. Charge cable 1
5. Charge cable 2
6. Volt sensing connector 2
7. Programming connector
8. Strain relief



FITTING INSTALLATIONS

The charger can be mounted vertically or horizontally, while maintaining a free area of 15 cm (6") all around.

This allows an optimal cooling with air circulation.

OPERATION

VISUAL INSPECTION

Visually inspect the battery before charging. If there are any signs of a leaking or cracked case, discard the battery.

Do not attempt to charge a battery that is in this condition.

FRONT PANEL



1. Function selection LED's
2. Multi Function ON/OFF buttons
3. Status LED's

Multi function ON/OFF buttons

Charger is OFF

Toggle the ON/OFF switch to position ON. A self test is performed by the charger, if everything is OK both status LEDs will turn to green. If LEDs don't turn green, check the error code under the Trouble codes section in this manual.

With the charger switched ON press the Multi function buttons consequently to scroll through the available battery technologies. When the button is no longer pressed, the charger automatically accepts this selection.

Charger is now ready to charge a battery.

Charger is ON

Press Multi function ON/OFF button short. This stops the charge cycle (if active). When Multi function ON/OFF button is pressed for more than 2 seconds the charger switches completely off.

Status LED's

Located at the bottom of the charger are two multi coloured LEDs. Each charger channel has one LED assigned. When the charger is switched on a self-test is performed. If something is not according to specification the multi coloured LED will turn RED.

Possible colours:

Green:

- o Indicates charger is OK
- o Continuous; fully charged battery

Red:

- o Solid Red LED. Charger internals are not OK.
- o Blinking RED LED Blink rate indicates a fault. Count the blink rate and check trouble-shooting section for more details.

Orange:

- o Solid lit LED indicates that battery is being charged.

Function LED

Each charger channel has 4 LEDs to indicate the selected function. A blinking LED indicates a fault, see therefore the code table.

CHARGE SEQUENCE

Select a battery technology to ensure that the battery is properly charged. To select any of the 4 positions press the Multi function ON/OFF button shortly. The top LED (lead-acid) starts blinking. Pushing the Multi function ON/OFF button again within 4 seconds will scroll to the next selection. This can be continued until the proper selection is made. When the button is no longer pressed, the LED will turn solid green indicating that that selection is activated. With the charger clamps connected to a battery the LED will turn to solid orange and starts charging.

The Multi function ON/OFF button can be pressed at any time during a charge cycle to stop the charger.

Position

- 1 Lead Acid charge curve
- 2 AGM / ESPIRAL charge curve
- 3 GEL charge curve

POWER SUPPLY MODE

Integrated in the charger is also a Power Supply function. This mode ensured that the battery is kept fully charged during programming of ECU's or regular vehicle maintenance.

When the charger is not yet switched on, press and hold down one of the Multi function ON/OFF buttons for more then two seconds. The unit will perform a self-test and the green STATUS LED's will light up to indicate charger is ready and OK. In case of a problem the red LED will be lit. This red LED is also used to indicate any error code in the charger. The LED will blink at a certain rate.

To select the Power Supply Mode press any of the two Multi function ON/OFF buttons shortly until position 4 is reached. The LED will now turn to solid green. With the charger clamps connected to a battery the LED will turn to solid orange to indicate that it is in progress.

Any consumer in the vehicle that needs current will get this from the charger. Only then, when current is needed in the vehicle the charger will provide this, in any other situation no current flows.

Position

- 4 Power Supply Mode

24V CHARGING (TRUCK SYSTEMS)

The charger is capable of charging 24V battery systems without removing the bridge in between both batteries.

- Connect charger clamps from output 1 to battery one
- Connect charger clamps from output 2 to battery two
- Switch on the charger and activate both charger channels
- Select the battery technology for the battery set

The batteries will each be charged with 25A simultaneously.

CHARGEEXPRESS PRO OPERATING STEPS

IMPORTANT NOTES:

- Clean the battery terminals. If stud adapters are required, fasten them with the proper tool. Do not use the battery clamps to tighten adapters.
- Use stud adapters on Side-Post and/or Truck batteries that are not in the vehicle.
- Never remove the clamps from a battery to abort an active charging session. Always push the Multi function ON/OFF button shortly before removing the clamps.
- Do not leave clamps lying in battery acid.
- Clean up any acid spills immediately (e.g., with baking soda and water).
- Clamps must be cleaned after every use.

1. CONNECT CHARGEEXPRESS PRO TO BATTERY

Connect the CHARGEEXPRESS PRO charging clamps to the battery in accordance with all precautions and safety instructions.

IF YOU ACCIDENTALLY REVERSE THE CLAMP CONNECTIONS, THE CHARGEEXPRESS PRO WILL INDICATE THIS WITH A RED LED AND BLINK RATE (01). SWITCH CHARGER OFF BEFORE CHANGING CLAMPS.

2. CONNECT TO POWER AC

Plug the CHARGEEXPRESS PRO into a dedicated, grounded 16 Amp AC outlet.

Do not use an AC line cord adapter or extension cord.

Switch on the charger.

3. SELECT CHARGEEXPRESS PRO MODES

Use the Multi Function ON/OFF button to activate charger and selecting the battery technology used for charging the battery:

Lead acid, AGM/SPIRAL, GEL, or Power supply

After selecting one of the modes the charger will start charging automatically.

This is indicated by the Orange LED.

CHARGEEXPRESS PRO FUNCTIONS

To charge the different battery technologies the CHARGEEXPRESS PRO has got a button to select one of the following:

Battery technology	U Boost	U Float
Flooded Lead acid; Calcium, Antimony	16,50 / 14,20	Pulse 13,5 – 14,8
AGM / SPIRAL	16,50 / 14,40	Pulse 13,5 – 14,8
GEL	16,50 / 14,30	Pulse 13,5 – 14,8
Power Supply	N/a	13,10

TROUBLE-SHOOTING

OPERATION

The Multi Function ON/OFF button is pressed but the CHARGEEXPRESS PRO does not power-up.

- a. Make sure the AC power cord is completely inserted into the AC outlet.
- b. Make sure the switch is set to I
- c. Make sure the AC outlet is live (check fuse or circuit breaker).
- d. Check the AC power cord for damage.

ERROR CODES

Through the red STATUS LED's error codes can be transmitted, the selected green function LED will blink at the same with the same frequency.

Error code	Description	Action
01	Reverse polarity	Correct clamps, red to plus and black to minus pole
02	Connection problem	Correct connection and restart charge sequence
03	Non 12V battery connected	Connect correctly to 12 V
04	Battery voltage too low (< 5,5 V)	Battery deeply discharged, consider replacement battery might be damaged
05	Charge voltage problem, no increase	Consider battery replacement
06	Charge current problem, no increase	Battery replacement recommended
07	Too low charge current	Battery replacement recommended
08	Internal current failure	Switch off unit (press ON/OFF button for 2 seconds) and try again. If problem is consistent call for service.
09	Internal voltage failure	
10	Internal charger temperature too high	Switch off unit (press ON/OFF button for 2 seconds). Switch on again and leave the fan running. If fan is not running call for service.

The charger will display any error in the charger as a blink code. The blink rate is:



Sample: this blink rate means error code 3 (non 12V battery connected)

WARRANTY

This battery charger is warranted to be free of defects in materials and workmanship for a period of two (2) years from date of purchase. Midtronics will, at our option, repair the unit or replace the unit with a remanufactured charger. This limited warranty applies only to Midtronics battery charger and does not cover any other equipment, wear and tear parts such as the cable, static damage, water damage, over-voltage, dropping the unit or damage resulting from extraneous causes including owner misuse. Midtronics is not liable for any incidental or consequential damages for breach of this warranty. The warranty is void if owner attempts to disassemble the unit, or to modify the cable assembly.



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