inRAC3®

More than Just a Racking Device

Instruction Manual

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Conditions of Sale and Product Warranty

inoLECT, LLC (inoLECT) and the Buyer agree to the following terms and conditions of Sale and Purchase:

1. Buyer may not copy, alter, disassemble, or reverse-engineer the software. Buyer may not provide the software to a third party.

2. The inoRAC and accessories are guaranteed against defects in materials or workmanship for a period of one year from the date of shipment from inoLECT to the Buyer. Any inoRAC or accessory which is found to be defective will, at the discretion of inoLECT, be repaired or replaced.

3. inoLECT will not be responsible for the repair or replacement of any inoRAC or accessory damaged by user modification, negligence, abuse, improper application, or mishandling.

4. inoLECT is not responsible to the Buyer for any loss or claim of special or consequential damages arising from the use of the inoRAC or accessory. The product must not be used in applications where failure of the product could lead to physical harm or loss of human life. Buyer is responsible to conduct their own tests to meet the safety regulation of their respective industry.

5. inoLECT reserves the right to alter any feature or specification at any time.

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Revision

Revision No.	Date	Revision Description
Rev. 0	1-3-19	New Manual

1.0 Technical Specifications

- Power Supply: Standard is 120Vac, 5A, 50-60Hz (240Vac input is optional)
- Dimensions (L x W x H): 42” x 26” x 62”
- Weight: 250 lbs.
- Minimum Height Needed for Clearance, with boom retracted: 62”
- Maximum Height Needed for Clearance, with boom fully extended: 104”
- Racking screw capability: floor level to 84” high
- Minimum Working Clearance for Operation:
  - 50” for the “Standard” inoRAC
  - 27” for the 90° inoRAC
  - **Note*** - Working clearance will vary for “Lever Drive” style.
- Maximum Breaker Travel during Racking:
  - 11.5” for the “Standard” inoRAC
  - 14” for the “Long Travel” inoRAC
- Remote operation from 75’ as standard. Longer lengths are available.

1.1 Features

- Real-time feedback of entire racking process, including breaker position and racking torque.
- Equipment protection is optimized by limiting the level of available torque at all points in the racking process.
- Continuous breaker position monitoring insures the breaker has fully travelled the proper racking distance.
- Operation of rotary and lever driven racking in a single device through modularity.
- Operation of low and medium voltage circuit breakers in a single device.
- Customizable by the end user for racking of many different breaker types.
- Auto recognition of “Rotary” and “Lever Drive” Modules.
- UPS backup for continued use during power outages.
- Wireless control capability.

2.0 Description

The design of medium voltage metal clad switchgear and low voltage switchgear commonly incorporates a manual method of operating the circuit breakers while physically positioned in front of the circuit breaker including: circuit breaker racking operation, push button operation, and manual close/open operation.

The interaction with switchgear circuit breakers is most often performed with the switchgear energized, due to typical operation requirements. These tasks potentially expose the operator to severe arc flash hazards. An electrical failure in the circuit breaker or switchgear during the racking process can result in serious injury or death of the operator.

The inoRAC is a device designed for the specific purpose of racking medium voltage and low voltage switchgear circuit breakers while allowing the operator to be at a safe distance from the energized switchgear and circuit breaker. The inoRAC utilizes the latest technology for position control and monitoring to protect the circuit breaker and switchgear from damage during operations.

2.1 inoRAC Components

1	Handle	**16**	Accessory Block
2	Operator Panel Communication Cable	**17**	Accessory Plug
3	Operator Panel Mount	**18**	Local Boom Up/Down Control
4	Operator Panel	**19**	Rotary Module Center
5	Controller and Enclosure	**20**	Rotary Module 90 degree
6	Brake Assembly	**21**	Lever Drive Module
7	Rear Wheels		
8	Receptacle		
9	Switch		
10	Lifting Chain		
11	Sliding Boom		
12	Fixed Boom		
13	Motor Carriage		
14	Base		
15	Casters		

3.0 Receiving

IMPORTANT NOTICE TO CUSTOMER

The customer is responsible for informing the appropriate persons, including any third party, of these receiving instructions. The appropriate persons are those responsible for safely and correctly receiving shipments from our company.

IMPORTANT NOTICE TO THE RECEIVER

The receiver is responsible for safely and correctly receiving shipments. If the receiver signs the receiving paperwork (carrier's delivery receipt) to accept a shipment without correctly following our receiving instructions, they do so at their own risk.

All claims for loss, shortage, or damage on shipments sent FOB origin must be made against the carrier directly by the receiver or customer. Contact inoLECT, LLC regarding claims against a carrier for loss, damage, or shortage on shipments sent FOB destination. Delivery charges on shipments sent FOB destination include shipping, insurance, and logistics. Under no circumstances will inoLECT, LLC accept responsibility for any shortage or damage on incorrectly received shipments.

Complete the steps for PROPER INSPECTION and make any required notations BEFORE ACCEPTING this shipment. To be considered valid, any and all notations must appear on every copy of the receiving paperwork (carrier's delivery receipt) and be signed by the releasing agent (carrier's driver) and initialed by the receiver. If the shipment is refused, do NOT sign the receiving paperwork (carrier's delivery receipt). The shipment is considered ACCEPTED IN NEW CONDITION, except for any valid notations resulting from a proper inspection, when the receiver signs the receiving paperwork (carrier's delivery receipt).

STEPS FOR PROPER RECEIVING:

1) Inspect the pallet and inoRAC for mishandling. Make notations of any damage to the packaging. Examples of damage include punctures, crushes, scrapes, broken boards, & other visible damage.

2) In rare cases of total loss, the receiver may refuse the entire shipment. In such a case, do not unpack the equipment and conclude the inspection with a notation of the date and the specific reason for refusal.

STEPS FOR PROPER UNPACKING AND INSPECTION:

The inoRAC shall arrive as shown in the picture below.

1) Remove overall shrink wrap.

2) Remove the cardboard box from the pallet.

3) Cut (2) banding straps holding the inoRAC on the pallet.

4) Stand inoRAC upright and remove from pallet.

5) Remove bubble wrap from inoRAC handle.

6) Remove shrink wrap and bubble wrap from inoRAC boom.

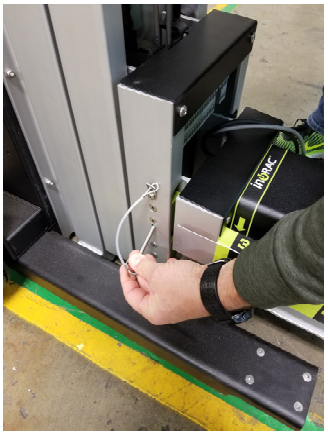
7) Carefully open the cardboard box to access the modular motor carriage and accessories.

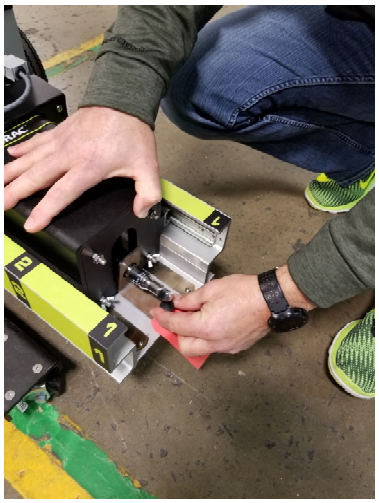
8) Remove the motor carriage from the box and install onto the boom assembly. **See next step.**

9) Carefully insert the motor carriage into the motor carriage hanger by making sure the (4) mounting pins are aligned with their respective hanger blocks.

10) With the motor carriage inserted and align, push the motor carriage downward to fully seat the mounting pins into the hanger blocks.

11) Once the motor carriage is fully seated into the mounting blocks, insert the two locking pins located on each side of the assembly.





12) Set the brakes on the racking unit and hold the motor box stationary in the rearward position. While holding the motor, remove the rubber bump stop and shipping bracket. **Please retain the shipping bracket for the inoLECT Customer Service Technician.**

13) Once the shipping bracket is removed carefully allow the motor box to slowly slide forward. **The motor box is spring loaded.**

14) Move the inoRAC to the final location for use.

4.0 UPS/Battery Equipped Racking Instructions

Using a Remote Racking Unit Equipped with a Battery Power System

1. To Power 'ON':
   Press and hold the power toggle switch unit you hear a short beep. The indicator light should turn RED.

2. To Power 'OFF':
3. Press and hold the power toggle switch until you hear a short beep. The indicator light should go out.

4. To Charge the Battery:
   a. When the battery needs to be charged, the unit will make a continuous beeping sound. Plug in the unit to a power source using the standard power receptacle, located by the 'ON/OFF' switch. Leave the unit plugged in to recharge the battery. Battery will charge when powered 'ON' or 'OFF'.

5. A periodic 'beep' will sound if the unit is running on battery power

6. A continuous 'beep' means the unit's battery is low and needs to be charged. (See steps 3 and 4 above).

7. Leave the unit turned off and plugged into an adequate power supply while being stored.

4.1 Moving and Lifting Instructions

STEPS FOR MOVING AND LIFTING:

Method of Lifting:
Manual lifting using specific lift points.

5.0 Circuit Breaker Racking Instructions

1. Connect the required accessories to the inoRAC by following the accessory instructions.

2. Connect the inoRAC to an adequate power source via the receptacle on the side of the control enclosure.

3. Turn on the inoRAC by placing the ON/OFF switch on the side of the control enclosure into the “ON” position. For UPS/Battery units follow steps in section **4.0** above.

4. Start the inoRAC by pressing the “Racking Unit Control” button on the Operator Panel.

5. Ensure the inoRAC is not connected to a circuit breaker. Ensure the inoRAC is free to operate all accessories. Follow the Operator Panel instructions for calibrating the inoRAC.

6. Select the operation to be performed, “Rack Breaker” on the Operator Panel.

7. Follow the Operator Panel instructions for selecting the breaker to be racked.

8. Confirm the object circuit breaker is open position via a visual inspection.

9. Adjust the inoRAC height to the level of the circuit breaker racking mechanism via the “Raise” and “Lower” buttons on the Operator Panel.

10. Align the inoRAC breaker connection accessory to the circuit breaker racking mechanism via the “Jog CW” and “Jog CCW” buttons on the Operator Panel.

11. Connect the inoRAC to the circuit breaker racking mechanism.

12. Set the brakes on the inoRAC.

13. Move to a safe location outside the arc flash hazard boundary with the Operator Panel.

14. Follow the Operator Panel instructions for racking the circuit breaker.

15. Disconnect the inoRAC from the circuit breaker.

16. Turn off the inoRAC by placing the ON/OFF switch on the side of the control enclosure into the “OFF” position.

5.1 Pushbutton Operation Instructions

1. Connect the required accessories to the inoRAC by following the accessory instructions.

2. Connect 120 VAC to the inoRAC via the receptacle on the side of the control enclosure.

3. Turn on the inoRAC by placing the ON/OFF switch on the side of the control enclosure into the “ON” position.

4. Start the inoRAC by pressing the “Racking Unit Control” button on the Operator Panel.

5. Ensure the inoRAC is not connected to a circuit breaker. Ensure the inoRAC is free to operate all accessories. Follow the Operator Panel instructions for calibrating the inoRAC.

6. Select the operation to be performed, “Operate Pushbutton” on the Operator Panel.

7. Adjust the inoRAC height to the level of the pushbutton to press via the “Raise” and “Lower” buttons on the Operator Panel.

8. Place the inoRAC 2” from the pushbutton you are needing to press.

9. Set the brakes on the inoRAC.

10. Move to a safe location outside the arc flash hazard boundary with the Operator Panel.

11. Follow the Operator Panel instructions for pressing the pushbutton.

12. Turn off the inoRAC by placing the ON/OFF switch on the side of the control enclosure into the “OFF” position.

6.0 User Setup Instructions

1. Connect the inoRAC to an adequate power supply via the receptacle on the side of the control enclosure.

2. Turn on the inoRAC by placing the ON/OFF switch on the side of the control enclosure into the “ON” position.

3. Start the inoRAC by pressing the “Racking Unit Control” button on the Operator Panel.

4. Ensure the inoRAC is not connected to a circuit breaker. Ensure the inoRAC is free to operate all accessories. Follow the Operator Panel instructions for calibrating the inoRAC.

5. Select the operation to be performed, “Setup” on the Operator Panel.

6. A Logon screen will appear. You must have administrative rights to log into the unit. **Warning**: Altering Breaker Profile Parameters may cause damage to your equipment.

7. Re-select the operation to be performed, “Setup” on the Operator Panel.

8. Press the text on the respective button to edit the text. An editor will appear. Type the desired text via the on screen keyboard. Hit the return key to accept.

    a. The labels for each of the eleven screens can be changed.

9. Press the number next to the respective button to edit the pointer. An editor will appear. Type the desired number via the on screen keyboard. Hit the return key to accept.

    a. This number is the pointer to the specific breaker profile in the master breaker list. Contact inoLECT for the pointer for your specific breakers.
    b. Improper pointers will likely result in improper and unsafe breaker racking operation.

10. Press the “OK”, and “NO” buttons to show or not show the respective button.

11. Follow the on screen instructions for saving the user setup.

7.0 Calibration Operation Instructions

1. Connect the required accessories to the inoRAC.

2. Connect the inoRAC to an adequate power supply via the receptacle on the side of the control enclosure.

3. Turn on the inoRAC by placing the ON/OFF switch on the side of the control enclosure into the “ON” position.

4. Start the inoRAC by pressing the “Racking Unit Control” button on the Operator Panel.

5. Ensure the inoRAC is not connected to a circuit breaker. Ensure the inoRAC is free to operate all accessories.

6. Select the operation to be performed, “Calibrate” on the Operator Panel.

7. Acknowledge each of the three checklist questions by selecting the “NO” buttons to the right of each item. After all three checklist items are acknowledged, the “CALIBRATE” button will display.

8. Select the “CALIBRATE” button. “CALIBRATING” will be displayed for approximately 45 seconds.

9. When “CAILBRATION COMPLETE” is displayed, the actuator of the connected accessory’s position reference is calibrated and the accessory is ready for use.

8.0 Maintenance

The inoRAC is designed to be a very low maintenance device. However as with all equipment it should be checked for proper operation and condition on a periodic basis.

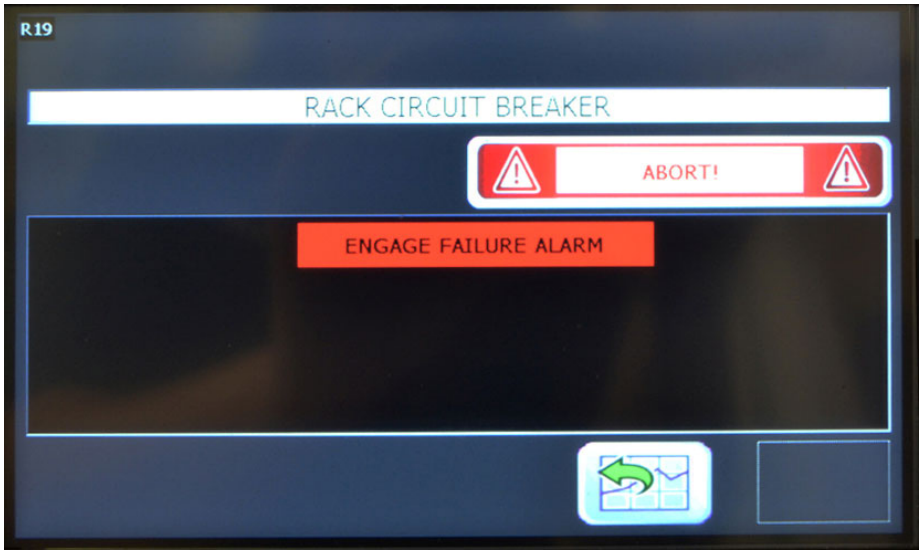
The following maintenance items should be performed on a periodic basis.

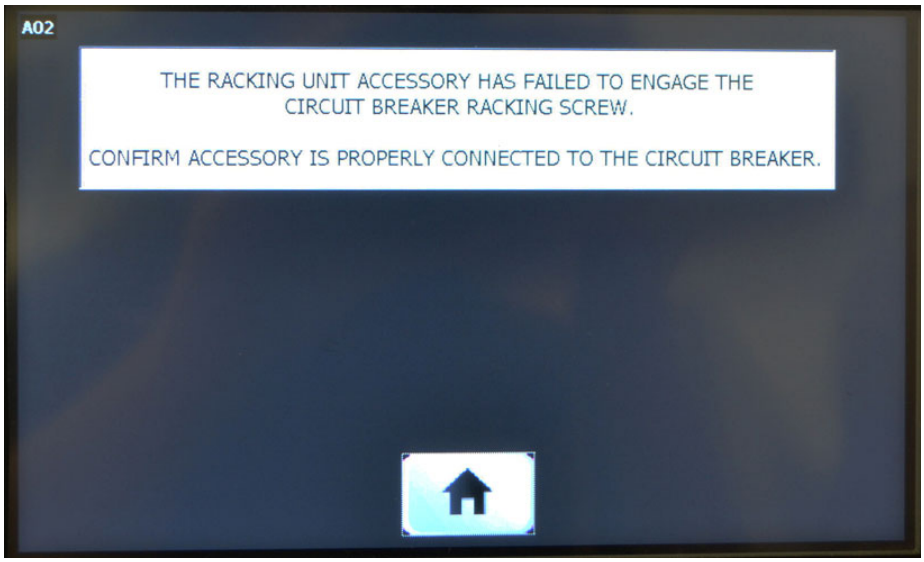
- Power up the inoRAC without connecting the inoRAC to an actual circuit breaker.
- Check that all hardware and fasteners are in good condition and check for tightness.
- Check actuator lift track slides for hardware tightness and for smooth, free operation. Lubrication is not required.
- Check motor base slides for hardware tightness and for smooth, free operation. Lubrication is not required.
- Check linear springs for wear or damage. Check hardware for tightness.
- Check brakes for loose or damaged hardware. Check brakes for proper adjustment.
- Check the cable to the operators panel touch screen for wear or damage.
- Inspect the control components in the control box for loose or damaged items and for loose or damaged wiring.

The first maintenance period should be 6 months after receiving inoRAC and then continue at 12 month intervals.

9.0 Alarms and Troubleshooting

Engage Failure Alarm:

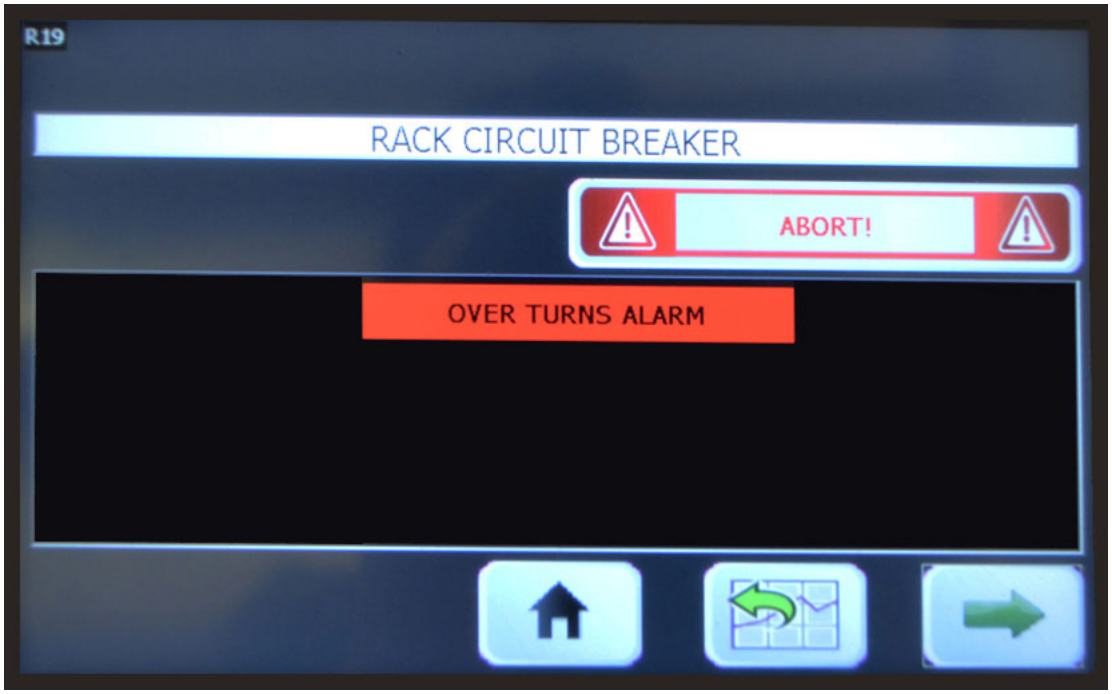




Problem:
The Unit has failed to engage the breaker racking screw.

Solution:
Confirm accessory is properly connected to the circuit breaker and retry.

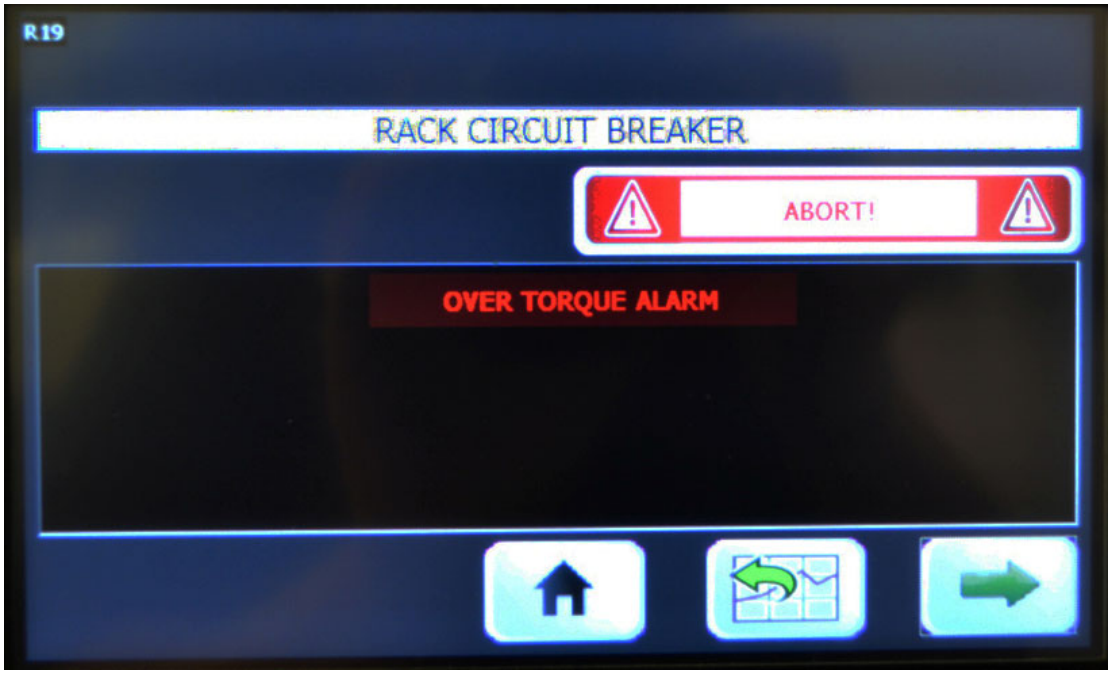
Over Turns Alarm



Problem:
The unit racked beyond the predetermined number of turns without recognizing the required torque.

Solution:
Check the position and retry racking procedure.

Over-Torque Alarm



Problem:
The unit experienced over-torque conditions.

Solution:
Disconnect the unit and check the switchgear and breakers for mechanical obstructions.

10.0 Battery Power Troubleshooting

Battery Power System - Troubleshooting

Status	LED Indicator	Audible Indicator On	Audible Indicator Terminates
Power On The Back-UPS is supplying utility power to connected equipment.	The green LED illuminates.	None	N/A
On Battery Back-UPS supplying battery power to battery backup outlets.	The green LED illuminates.The LED is not illuminated during the beeps.	Back-UPS beeps 4 times every 30 seconds.	Beeping stops when utility power is restored or the Back-UPS is turned off.
Low Battery warning The Back-UPS is supplying battery power to the battery backup outlets and the battery is near a total discharge state.	The green LED illuminates with rapid green flashes every 1/2 second.	The Back-UPS emits rapid beeping every 1/2 second.	Beeping stops when utility power is restored or the Back-UPS is turned off.
Replace Battery • The battery is disconnected. • The battery needs to be charged, or replaced.	• **Power On/Replace Battery** LEDs flash alternately green/red. • **Replace Battery** LED flashes red.	Constant tone Constant tone	Back-UPS is turned off.
Overload Shutdown While on battery power an overload condition has occurred in one or more of the battery backup outlets while the Back-UPS is operating on battery power.	None	Constant tone	Back-UPS is turned off.
Overload Alarm While on utility power the online power exceeds the Back-UPS capacity.	**Power On** LED illuminates green.	Constant tone	Beeping stops when equipment power plugs are moved from battery backup outlets to surge protection outlets.
Sleep Mode While on battery power the battery is completely discharged. The Back-UPS will "awaken" once utility power is restored.	None	The Back-UPS beeps once every four seconds.	Beeping stops when: • Utility power is restored • If utility power is not restored within 32 seconds • The Back-UPS is turned off
Building Wiring Fault The building wiring presents a shock hazard that must be corrected by a qualified electrical.	**Building Wiring Fault** LED illuminates red	None	The Back-UPS is unplugged from the wall outlet or is plugged into an improperly wired outlet.

11.0 Spare Parts List

Part Number	*Description*
99-1039	Receptacle
99-1044	Control Power Transformer
99-1045	Rectifier
99-1047	On/Off Switch
99-1050	Fuse Holder
99-1051	10A Fuse
AC-029	inoLECT Cover
99-1070	Caster Wheel
99-1074	Motor Spring
99-1080	Brake Assembly
99-1081	Brake Pad
99-1341	Touch Panel Remote
99-1348	Motor Drive
SA-028	Battery UPS System

99-1359	7 Point Terminal Plug
99-1360	8 Point Terminal Plug

12.0 Contact Information

Designed and Manufactured by inoLECT, LLC

9330 North Interstate Dr.
Baton Rouge, LA 70809

For questions or 24-hour assistance, please call
(225) 751-7535

inoLECT.COM
Innovation in electric power.

inoRAC3®
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