

in RAC2™

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 inoRAC2™ 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 inoRAC2™ 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 inoRAC2™ 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 inoRAC2™ 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.

Notes to Buyer: If you disagree with any of the above terms or conditions, you should promptly return the inoRAC2™ and accessories to inoLECT within 30 days from the date of shipment from inoLECT.

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inoLECT, LLC (inoLECT) makes no representations or warranties with respect to the contents hereof. In addition, information contained herein are subject to change without notice. Every precaution has been taken in the preparation of this manual. Nevertheless, inoLECT assumes no responsibility for errors or omissions or any damages resulting from the use of the information contained in this publication.

Revision

Revision No.	Date	Revision Description
Rev. 5	12-20-16	Document Edit

1.0 Technical Specifications

- Power Supply: 120Vac, 5A
- 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"
- Maximum Breaker Travel During Racking: 11.5" without accessory
- 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 each point 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.
- Operation of low and medium voltage circuit breakers in a single device.
- Customizable by the end user for racking of 100 different breaker types.

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 operation of switchgear circuit breakers is most often performed with the switchgear energized, due to typical operating 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 inoRAC2™ is a device designed for the specific purpose of operating 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 inoRAC2™ utilizes the latest technology for position control and monitoring to protect the circuit breaker and switchgear from damage during operations.

▶ 2.1 inoRAC2™ Components



1	Handle	16	Accessory Block
2	Operator Panel Communication Cable	17	Accessory Plug
3	Operator Panel Mount		
4	Operator Panel		
5	Controller and Enclosure		
6	Brake Assembly		
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. Shipments are carefully packed and released in perfect condition. 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. However, an insurance claim for damage or shortage filed against a carrier on an incorrectly received shipment is rarely successful. 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 PERFECT 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 inoRAC2™ 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.

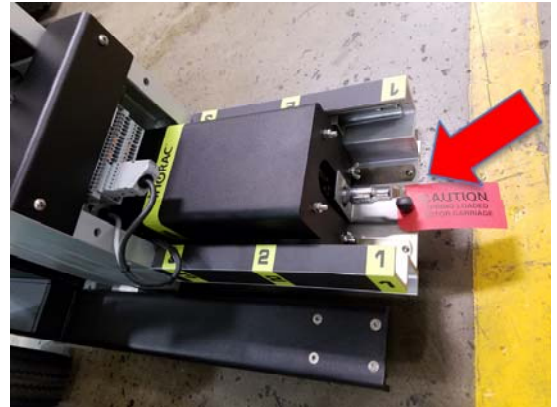
STEPS FOR PROPER UNPACKING AND INSPECTION:

The inoRAC2™ shall arrive as shown in the picture below.

- 1) Remove overall shrink wrap.
- 2) Cut (2) banding straps holding inoRAC2™ on pallet.
- 3) Stand inoRAC2™ upright and remove from pallet.
- 4) Remove bubble wrap from inoRAC2™ handle.
- 5) Remove shrink wrap and bubble wrap from inoRAC2™ boom.



- 6) Remove shrink wrap from inoRAC2™ motor carriage. Hold the motor in place and remove the transport bracket by unscrewing the black rubber bump stop. **(Please retain the transport bracket for the inoLECT Customer Service Technician).**



- 7) Next carefully allow the motor carriage to spring forward to its normal resting position as shown in picture to the right.



- 8) Place the rubber bump stop into the threaded hole on the side of the motor carriage as shown in picture to the right.



- 9) Inspect the contents of every accessory case in the shipment. Make notations of any shortage (the absence of content listed on the shipment packing list) or damage including breakage, chipped edges, deep scratches or scuffs. To be considered valid, these notations must reference the quantity, identity and damage or shortage specifics of all affected content. inoLECT must be notified within 48 hours of receipt of any damaged or missing accessories.
- 10) Move the inoRAC2™ to the final location for use.

► 4.0 Battery Equipped Racking Instructions

FOR UNITS EQUIPPED WITH THE BATTERY POWER SYSTEM:

FOLLOW THESE INSTRUCTIONS BEFORE POWERING THE UNIT ON! **** Failure to follow these instructions will damage UPS system and VOID Warranty.**

1. CONNECT THE BATTERY CABLES. THERE ARE TWO (2) CONNECTIONS.



2. CONNECT THE UPS FUSE. FUSE IS LOCATED IN ENVELOPE. PLUG UNIT IN TO EXTERNAL POWER AND TURN UNIT 'ON'.



3. PLUG UNIT IN TO EXTERNAL POWER AND TURN UNIT 'ON'. THE INDICATOR LIGHT WILL TURN RED AND SHORT BEEP WILL SOUND.



► **4.1 Moving and Lifting Instructions**

STEPS FOR MOVING AND LIFTING:

Method of Lifting 1:

Optional Lifting Eyes for moving with crank or hoist.

Optional Lifting Eyes



Method of Lifting 2:
Manual lifting using specific lift points.



5.0 Circuit Breaker Racking Instructions

1. Connect the required accessories to the inoRAC2™ by following the accessory instructions.
2. Connect 120 VAC to the inoRAC2™ via the receptacle on the side of the control enclosure.
3. Turn on the inoRAC2™ by placing the ON/OFF switch on the side of the control enclosure into the “ON” position.
4. Start the inoRAC2™ by pressing the “Racking Unit Control” button on the Operator Panel.
5. Ensure the inoRAC2™ is not connected to a circuit breaker. Ensure the inoRAC2™ is free to operate all accessories. Follow the Operator Panel instructions for calibrating the inoRAC2™.
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 inoRAC2™ height to the level of the circuit breaker racking mechanism via the “Raise” and “Lower” buttons on the Operator Panel.
10. Align the inoRAC2™ breaker connection accessory to the circuit breaker racking mechanism via the “Jog CW” and “Jog CCW” buttons on the Operator Panel.
11. Connect the inoRAC2™ to the circuit breaker racking mechanism.
12. Set the brakes on the inoRAC2™.

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 inoRAC2™ from the circuit breaker.
16. Turn off the inoRAC2™ by placing the ON/OFF switch on the side of the control enclosure into the “OFF” position.

Using a Remote Racking Unit Equipped with a Battery Power System

1. To Power ‘ON’:
Press and hold the power toggle switch until 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:
5. 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’.
6. A periodic ‘beep’ will sound if the unit is running on battery power
7. A continuous ‘beep’ means the unit’s battery is low and needs to be charged. (See 3 above).

5.1 Pushbutton Operation Instructions

1. Connect the required accessories to the inoRAC2™ by following the accessory instructions.
2. Connect 120 VAC to the inoRAC2™ via the receptacle on the side of the control enclosure.
3. Turn on the inoRAC2™ by placing the ON/OFF switch on the side of the control enclosure into the “ON” position.
4. Start the inoRAC2™ by pressing the “Racking Unit Control” button on the Operator Panel.
5. Ensure the inoRAC2™ is not connected to a circuit breaker. Ensure the inoRAC2™ is free to operate all accessories. Follow the Operator Panel instructions for calibrating the inoRAC2™.
6. Select the operation to be performed, “Operate Pushbutton” on the Operator Panel.
7. Adjust the inoRAC2™ height to the level of the pushbutton to press via the “Raise” and “Lower” buttons on the Operator Panel.
8. Place the inoRAC2™ 2” from the pushbutton to press.
9. Set the brakes on the inoRAC2™.
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 inoRAC2™ by placing the ON/OFF switch on the side of the control enclosure into the “OFF” position.

6.0 User Setup Instructions

1. Connect 120 VAC to the inoRAC2™ via the receptacle on the side of the control enclosure.
2. Turn on the inoRAC2™ by placing the ON/OFF switch on the side of the control enclosure into the “ON” position.
3. Start the inoRAC2™ by pressing the “Racking Unit Control” button on the Operator Panel.
4. Ensure the inoRAC2™ is not connected to a circuit breaker. Ensure the inoRAC2™ is free to operate all accessories. Follow the Operator Panel instructions for calibrating the inoRAC2™.
5. Select the operation to be performed, “Setup” on the Operator Panel.
6. A Logon screen will appear. The User is “Admin”. The Password is “9330”. Log in.
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.

6.1 Factory Setup Instructions

This button allows for new breaker profiles to be created. Contact inoLECT for instructions.

7.0 Calibration Operation Instructions

1. Connect the required accessories to the inoRAC2™.
2. Connect 120 VAC to the inoRAC2™ via the receptacle on the side of the control enclosure.
3. Turn on the inoRAC2™ by placing the ON/OFF switch on the side of the control enclosure into the “ON” position.
4. Start the inoRAC2™ by pressing the “Racking Unit Control” button on the Operator Panel.
5. Ensure the inoRAC2™ is not connected to a circuit breaker. Ensure the inoRAC2™ 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 “CALIBRATION 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 inoRAC2™ 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.

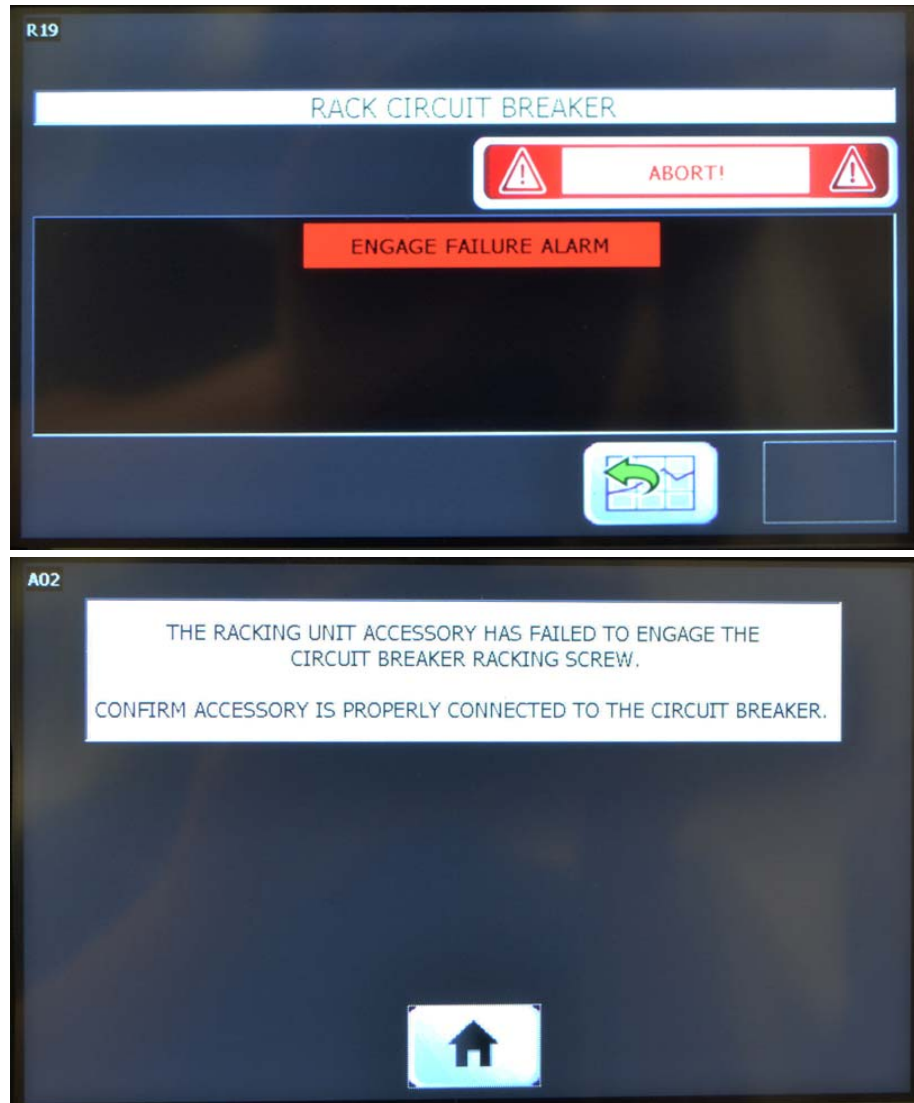
The following maintenance items should be performed on a periodic basis.

- Power up the inoRAC2™ without connecting the inoRAC2™ to an actual circuit breaker.
- Check that all hardware and fasteners are in good condition and check for tightness.
- Lubricate actuator lift chain.
- Mobilgrease® 28 lubricant is recommended.
- Lubricate wheels and casters.
- Mobilgrease® 28 lubricant is recommended.
- 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 inoRAC2™ 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 past the 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.

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 <ul style="list-style-type: none"> The battery is disconnected. The battery needs to be charged, or replaced. 	<ul style="list-style-type: none"> 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: <ul style="list-style-type: none"> 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.

 **10.0 Spare Parts List**

<i>Part Number</i>	<i>Description</i>
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

 11.0 Contact Information

**Designed and Manufactured by inoLECT, LLC
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**For questions or 24-hour assistance, please call
(225) 751-7535**

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