



SOLOBOX INSTALLATION GUIDE



| TABLE OF CONTENTS: | PG |
|---------------------------|-----------|
| SAFETY INSTRUCTIONS | A |
| PRODUCT OVERVIEW | B |
| INSTALLATION PREP | C |
| INSTALLATION STEPS | D |
| INSTALLATION STEPS CONT. | E |
| OPTIONAL RAIL MOUNTING | F |
| DIN RAIL MOUNTING | G |
| SPECIFICATIONS & RATINGS | H |

| TABLE OF CONTENTS (CONT): | PG |
|--|-----------|
| APPENDIX A: TYPICAL COMPONENTS AND LIST OF APPROVED SEALANTS | A |
| APPENDIX B: COLD WEATHER TECHNICAL BULLETIN | B |
| APPENDIX C: CONDUIT HUB & FITTING LOCATIONS | C |

GENERAL NOTES:

If provided refer to construction drawings for project specific details. Construction drawings have precedence over these installation guidelines.

READ ALL INSTRUCTIONS AND SAFETY WARNINGS PRIOR TO INSTALLATION

SAVE THESE INSTRUCTIONS: This manual details important instructions that must be followed prior to installation, during installation and during service and/or maintenance. This manual must always be readily available.

SAFETY SYMBOLS:



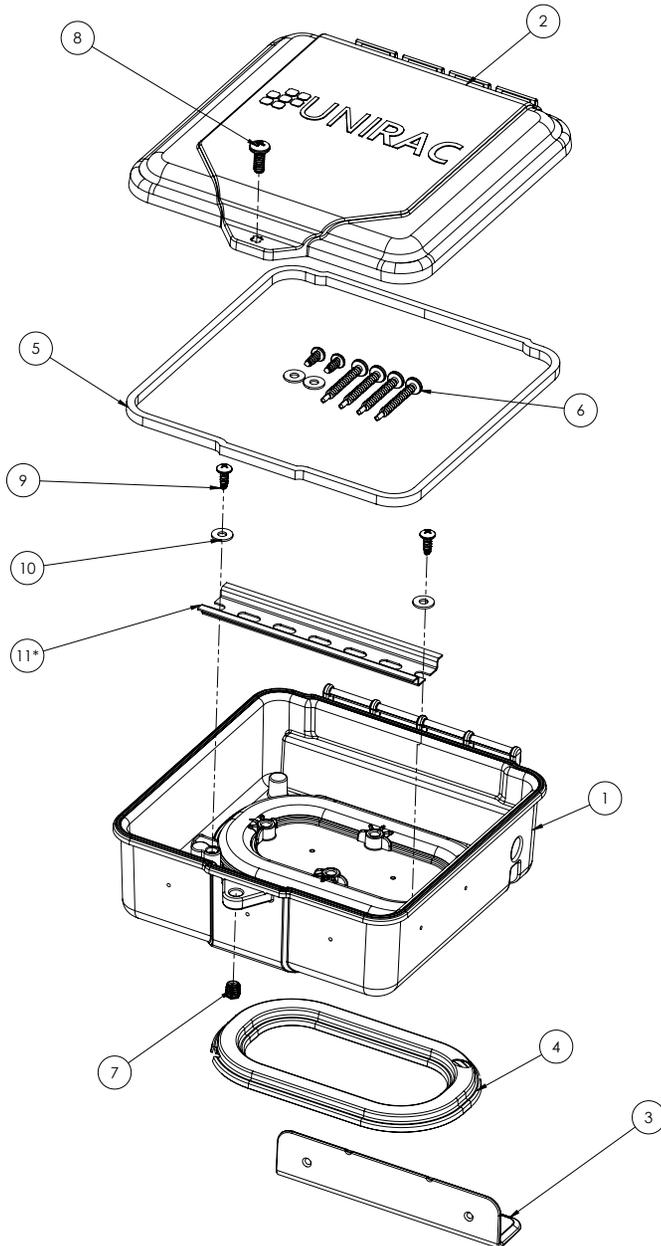
WARNING: IDENTIFIES CONDITIONS OR PROCEDURES, WHICH IF NOT FOLLOWED, COULD RESULT IN SERIOUS INJURY, DEATH OR PROPERTY DAMAGE.



CAUTION: IDENTIFIES CONDITIONS OR PROCEDURES, WHICH IF NOT FOLLOWED, COULD RESULT IN SERIOUS DAMAGE OR FAILURE OF EQUIPMENT.

SAFETY WARNINGS AND CAUTIONS:

- All instructions contained in this manual must be performed by a licensed electrician or qualified personnel and the installation must comply with all applicable national, federal, state, municipal and local codes. All wiring methods must be in accordance with the National Electric Code, ANSI/NFPA 70.
- Lethal voltages may be present prior to installation, during installation, maintenance and/or operation of this equipment, ensure that all electrical connections are at zero voltage and properly disconnected before installing or when performing maintenance.
- Always de-energize circuits prior to installation or service. When disconnecting inverter, allow the appropriate amount of time for all electrical storage components to discharge before servicing.
- Proper safety equipment and personal protective equipment must be worn at all times.
- Do not install this equipment in wet conditions or if roof surface is wet or when covered in frost, ice or snow.
- Prior to drilling into attic, ensure no electrical wires, circuits or components are on the other side.
- This equipment must be installed as specified in this manual. Failure to do so may result in a roof leak, void the warranty or cause property damage.
- Do not exceed maximum voltage or wire sizes specified in this manual.



| ITEM NO. | DESCRIPTION | SOLOBOX QTY | SOLOBOX-D QTY |
|----------|--|-------------|---------------|
| 1 | BOTTOM | 1 | 1 |
| 2 | TOP | 1 | 1 |
| 3 | DEFLECTOR & BRACKET | 1 | 1 |
| 4 | BOTTOM SEAL | 1 | 1 |
| 5 | TOP GASKET | 1 | 1 |
| 6 | SCREW, #12 x 1.75 SELF-DRILLING PHILLIPS ROUND HEAD SS | 4 | 4 |
| 7 | INSERT, 0.25x20 PRESS FIT TWIST RESISTANT | 1 | 1 |
| 8 | SCREW, 0.25-20 x .625 PAN HEAD PHILLIPS SS | 1 | 1 |
| 9 | SCREW, #10 x 0.5 THREAD FORMING PHILLIPS ROUND HEAD SS | 2 | 4 |
| 10 | WASHER, #10 X 0.500 OD FLAT SS | 2 | 4 |
| 11* | 35mm x 7.5mm SLOTTED DIN RAIL | 0 | 1 |

*Only available on SOLOBOX-D

DETERMINE LOCATION: It is best to determine the location of the junction box during the system design process to ensure proper installation and code compliance. Note the following requirements to determine the proper location.

⚠ CAUTION

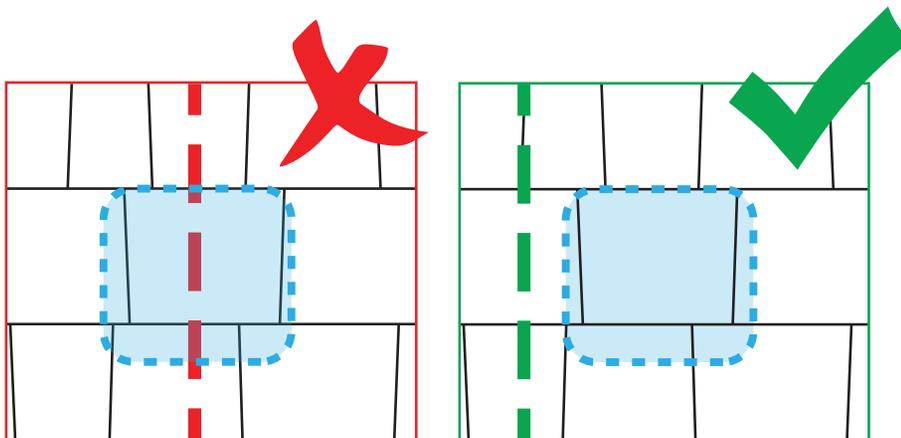
LOCATION REQUIREMENTS:

- **JUNCTION BOX MUST BE INSTALLED BETWEEN RAFTERS. DO NOT INSTALL JUNCTION BOX DIRECTLY OVER RAFTER.**
- **THE SEALING AREA OF THE JUNCTION BOX MUST BE INSTALLED ON A FLAT, COPLANAR SURFACE. DO NOT INSTALL THE JUNCTION BOX SEALING AREA DIRECTLY ON TOP OF SEAM, VERTICAL JOINT OR ON TWO SHINGLE COURSES OR LAYERS. SEE BELOW.**
- **PRIOR TO DRILLING INTO THE ATTIC ENSURE NO ELECTRICAL WIRES, CIRCUITS OR COMPONENTS ARE ON THE OTHER SIDE.**

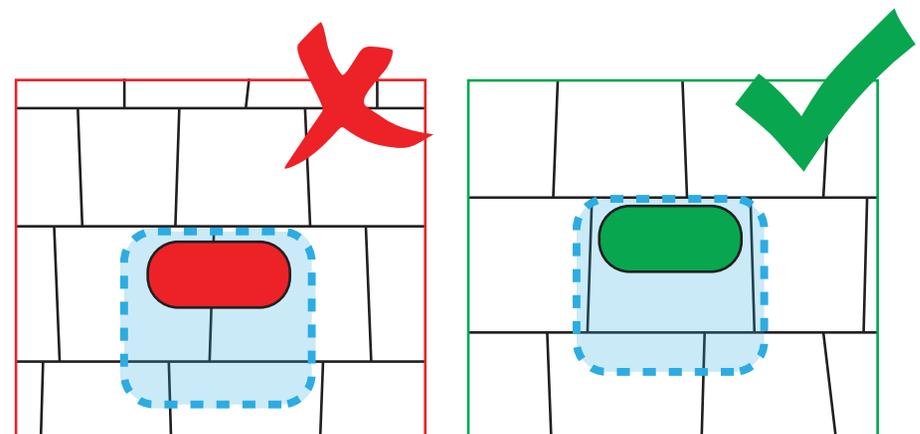
⚠ WARNING

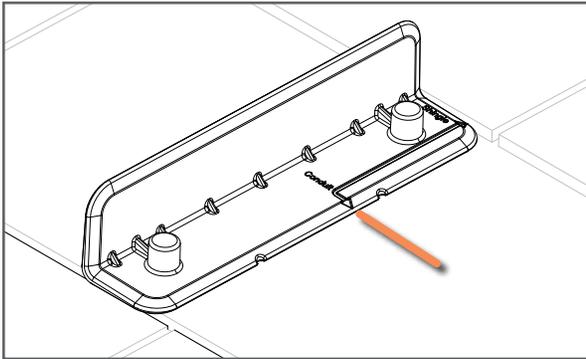
IF INSTALLING JUNCTION BOX UNDERNEATH MODULES, ENSURE THE SYSTEM GROUND PATH WILL NOT BE DISTURBED OR BROKEN DURING SERVICING. FAILURE TO DO SO COULD RESULT IN SERIOUS INJURY, DEATH OR PROPERTY DAMAGE.

DO NOT PLACE JUNCTION BOX DIRECTLY OVER RAFTER.



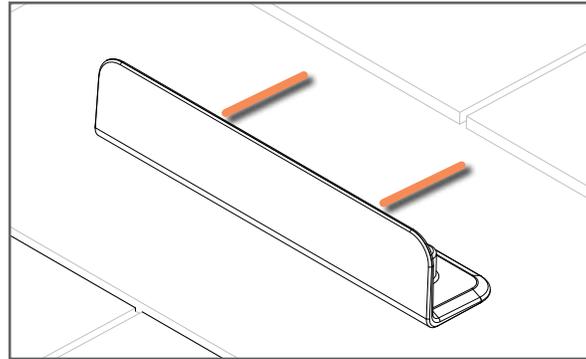
DO NOT INSTALL JUNCTION BOX DIRECTLY OVER SEAM, VERTICAL JOINT OR ON TWO SHINGLE COURSES OR LAYERS.





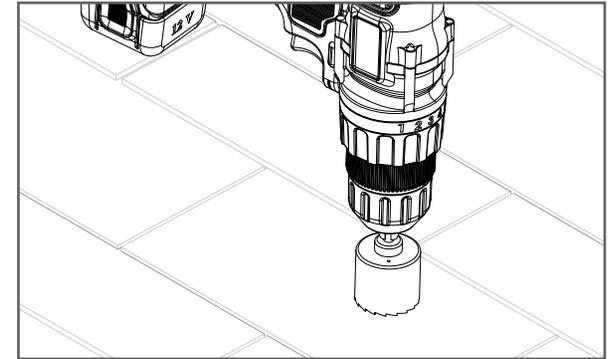
MARK HORIZONTAL LINES:

Mark drill hole location(s) by using jig located on deflector. Alternatively, drilling the hole in the bottom of the box and marking the location may be used.



MARK VERTICAL LINES:

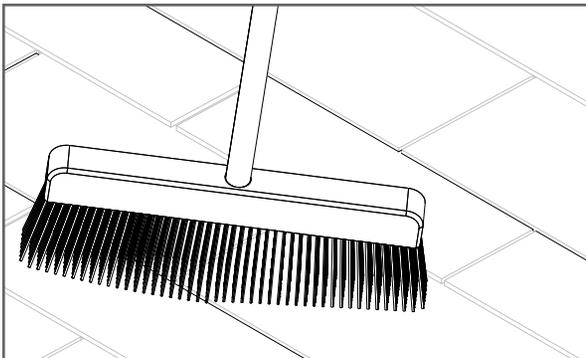
Mark drill hole location(s) by using jig located on deflector. Alternatively, drilling the hole in the bottom of the box and marking the location may be used.



DRILL HOLES:

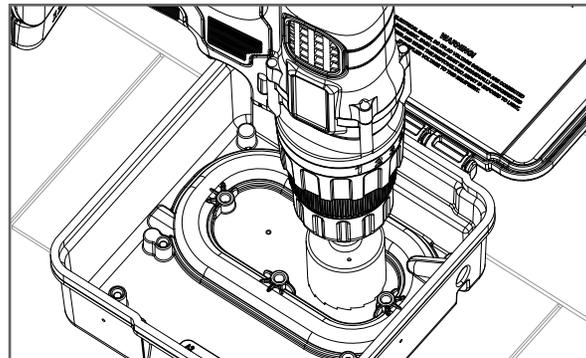
Drill hole(s) as needed using preferred bit.

DO NOT EXCEED 1-7/8" DRILL BIT WHEN DRILLING THROUGH THE ROOF.



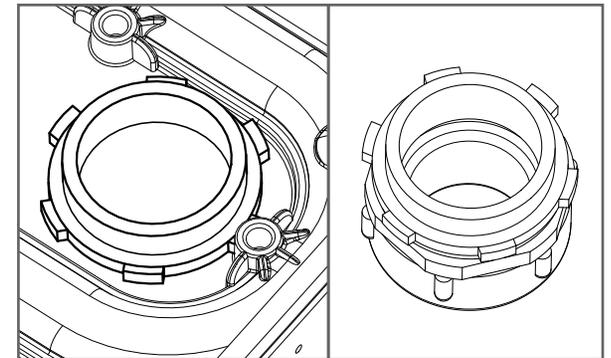
CLEAN ROOF SURFACE:

Properly clean roof surface. ROOF SURFACE MUST BE FREE OF DEBRIS, FROST, ICE AND SNOW. Refer to Addendum B for installing in temperatures below 40 degrees F.



DRILL CONDUIT HOLES:

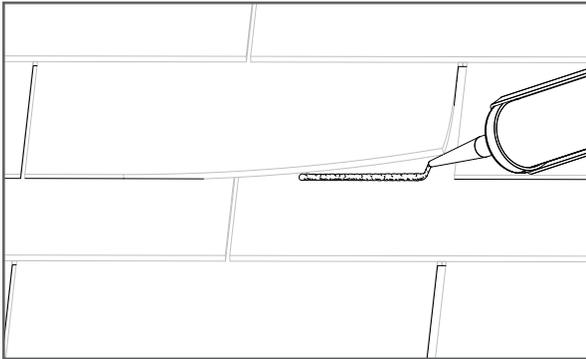
Drill conduit holes as required in bottom and side of box. MAKE SURE TO USE DRILL POINTS INTEGRATED INTO SIDES AND BOTTOM OF BOX.



INSTALL CONDUIT HUB:

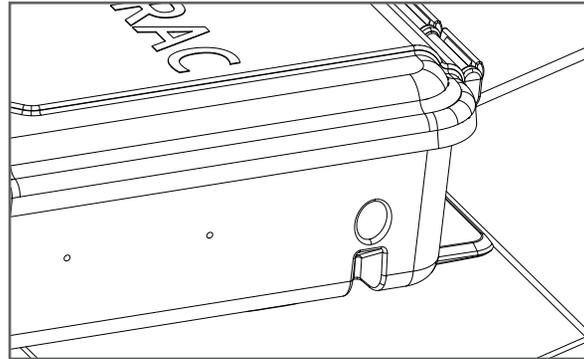
Attached conduit fittings, as necessary. DO NOT EXCEED 1" CONDUIT FITTINGS. CONDUIT FITTINGS MUST BE UL APPROVED AND RATED FOR OUTDOOR USE.

TOOLS REQUIRED: Drill, spade bit or hole drill (1-7/8" max), brush, caulking gun, Unirac approved sealant, lumber crayon, #3 Philips screwdriver/bit.



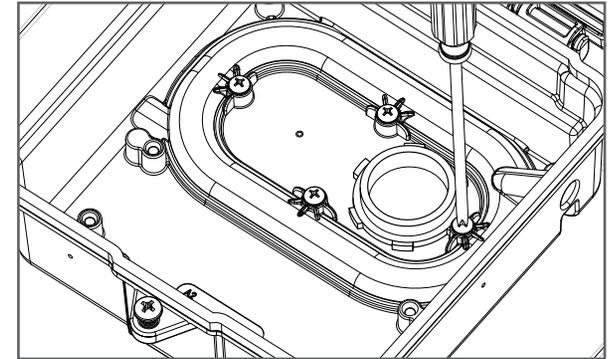
LIFT SHINGLE AND APPLY SEALANT:

Directly above junction box locations lift upper course of shingles and place a thick horizontal bead of sealant. This will help adhere shingle back to the lower course. **IMPORTANT: FOR 3-TAB SHINGLES ADD A VERTICAL BEAD OF SEALANT TO THE KEYWAY ON THE UPPER COURSE OF SHINGLES UPSLOPE OF BOX.**



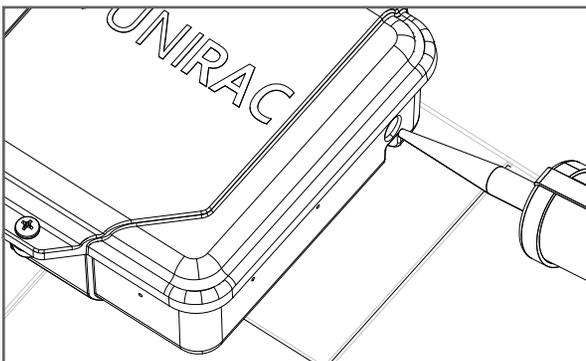
PLACE DEFLECTOR UNDER SHINGLE:

Lift upper course of shingle and slide deflector under, align conduit fitting(s) with drilled holes and locate junction box.



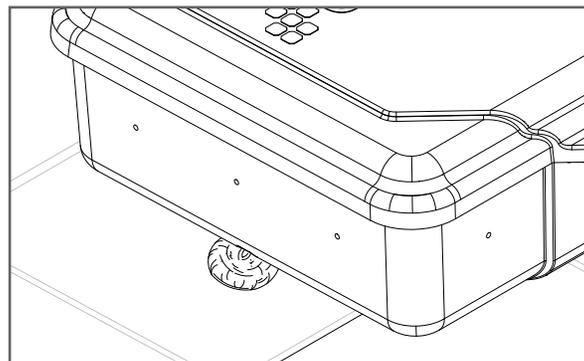
SECURE TO ROOF:

Screw all four (4) #12 fasteners through the mounting holes and into roof surface (Torque to 15-24 in-lbs or until box is fully seated). **IMPORTANT: MAKE SURE TO TIGHTLY SECURE JUNCTION BOX TO ROOF SURFACE TO ELIMINATE ANY POTENTIAL BLOW OUT OF SEALANT.**



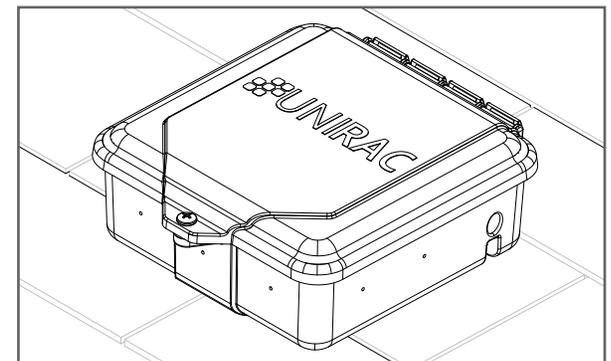
INJECT SEALANT:

Place one hand on top of junction box applying a slight but firm pressure. With the other hand inject sealant into the port on the upper right-hand side of the box. Continue until the sealant vents out the left-hand side of the box through the vent.



ENSURE SEAL:

Verify sealant has properly vented out left-hand side of box to ensure a proper seal.

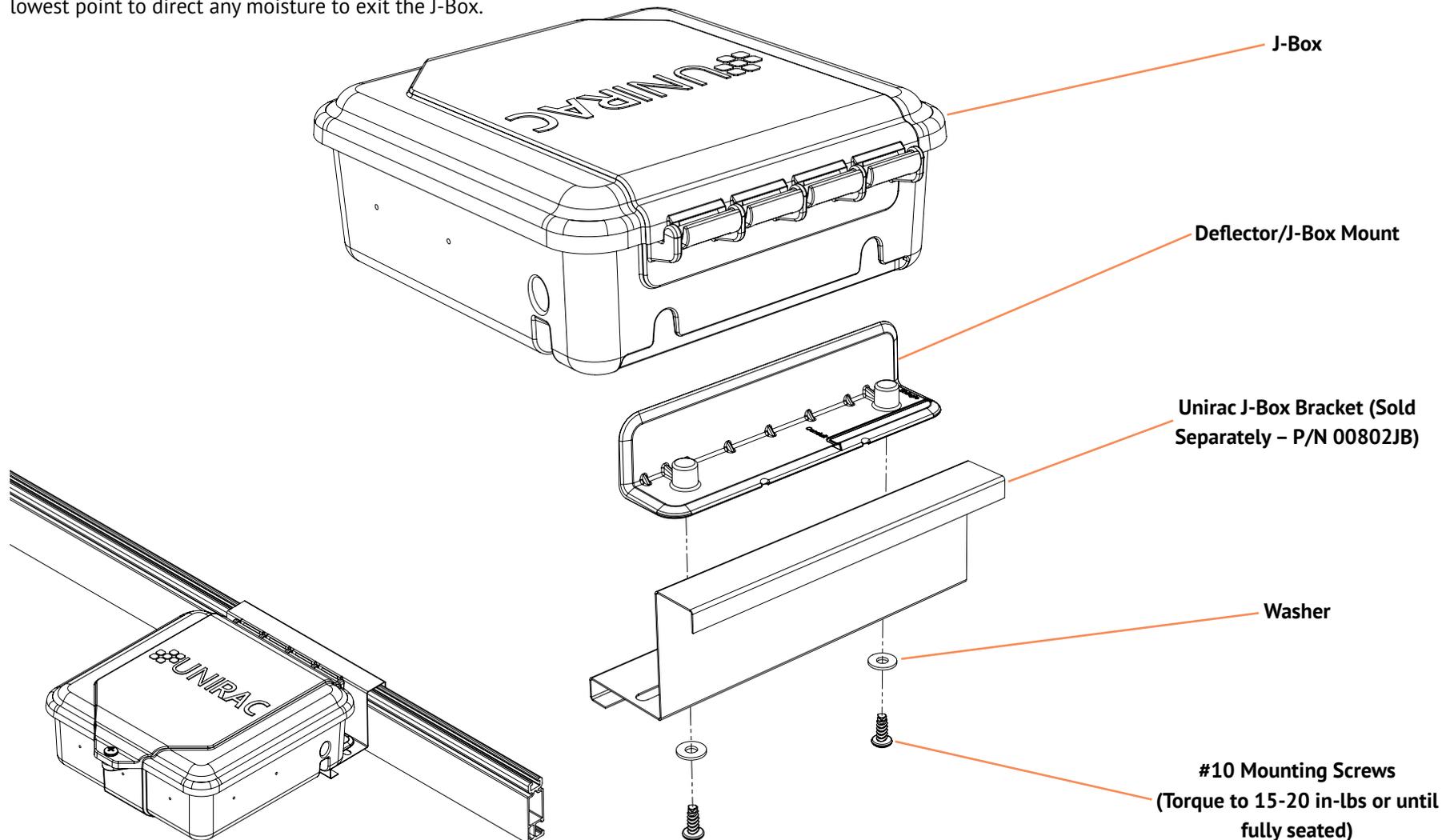


CLOSE LID:

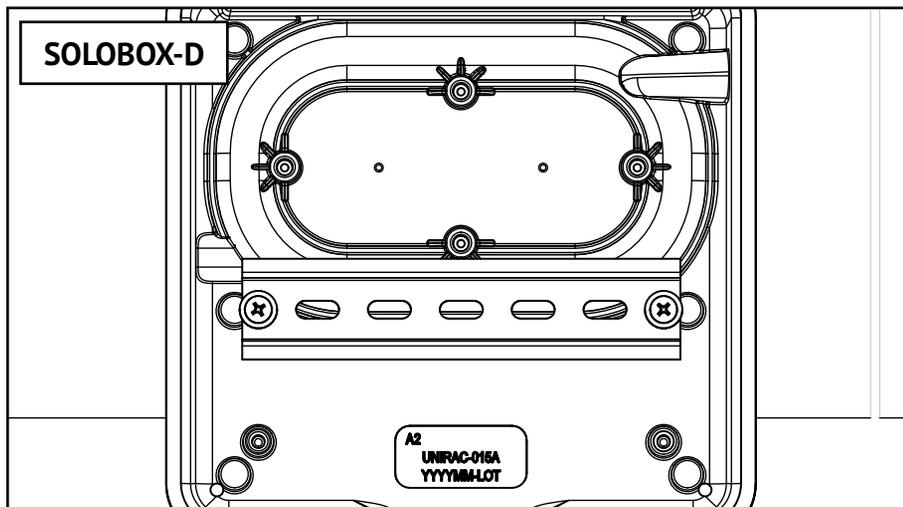
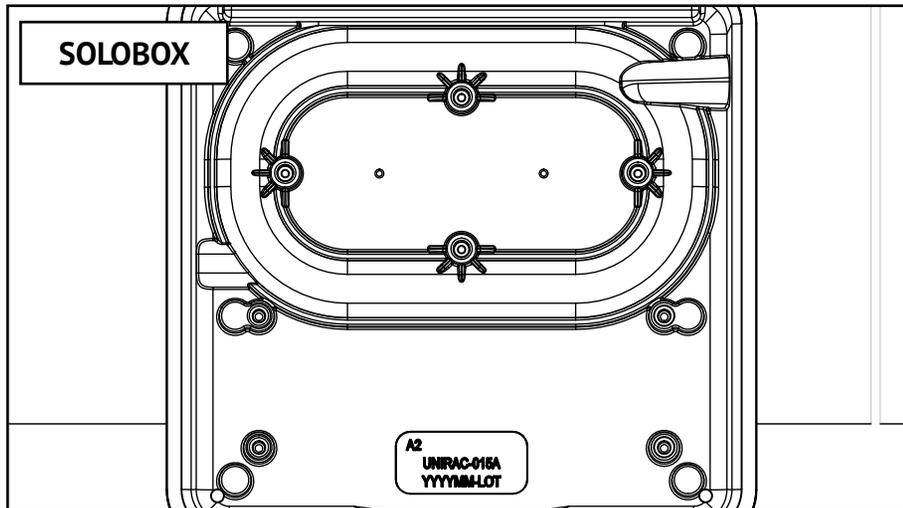
Close lid and screw bolt into bottom of box until the top and bottom tabs are secured and flush (Torque to 50 in-lbs).

J-Box Optional Bracket to Rail Attachment

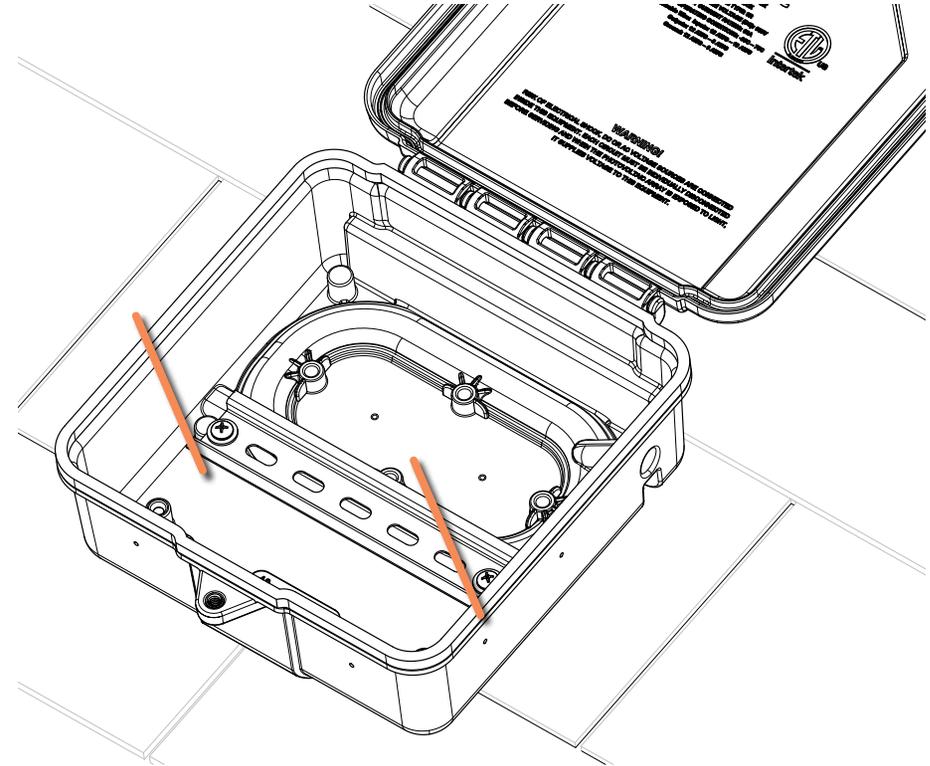
Optionally the J-Box may be mounted directly to a solar rail via the Unirac J-Box Bracket. The dual-purpose Deflector/J-Box Mount can be flipped for mounting to the J-Box Bracket or used as a “Deflector” when slid underneath a course of shingle. NOTE: When mounting on north side of rail, seal existing weep holes with approved sealant and drill new weep holes using a 4mm or 5/32” drill bit on the bottom of the box in the corners nearest to the deflector. Place weep holes at the lowest point to direct any moisture to exit the J-Box.



SOLOBOX-D Version and Din Rail Mounting



SOLOBOX-D Version and Din Rail Mounting DIN RAIL COMES PREASSEMBLED AS SHOWN (SOLOBOX-D only)



OPTIONAL: DIN RAIL CAN ALSO BE INSTALLED INTO A BOX IF A NON-PREASSEMBLED BOX WAS PURCHASED.

Din rail should be cut and positioned as shown in the image above with two (2) #10 screws. If installing your own din rail, using standard 35mm x 7mm din rail is recommended.

NOTE: IT IS RECOMMENDED THAT THE UPSLOPE MOUNTING POINTS BE USED FOR DIN RAIL AND THE DOWNSLOPE MOUNTING POINTS BE USED FOR GROUNDING DEVICES SUCH AS LUGS OR GROUNDING BLOCKS. ENSURE THAT TERMINAL BLOCKS NEVER CONTACT CONDUIT HUBS.

J-Box Specifications and Ratings

- Product Certifications:
 - UL 1741
 - UL 441
 - TAS 100
- Enclosure Rating: Type 3R
- Maximum Voltage: 600 Volts
- Maximum Current: 60 Amps
- Allowable Number of Strings: 2
- Allowable Wire:
 - Inputs: 12 AWG – 10AWG
 - Outputs: 12 AWG – 8 AWG
 - Ground: 12 AWG – 6 AWG
- Roof Slope Range: 2:12 – 12:12
- Max Side Wall Fitting Size: 1"
- Max Attic Pass-Through Fittings: 2
- Attic Pass-Through Fitting Size Range: ½" - 1"
- Ambient Operating Conditions: -35°C to 75°C



WARNING: DO NOT EXCEED MAXIMUM VOLTAGE, CURRENT OR FITTING SIZES. FAILURE TO DO SO COULD RESULT IN SERIOUS INJURY, DEATH OR PROPERTY DAMAGE.



CAUTION: ALL CONDUIT HUBS AND CABLE FITTINGS MUST BE RAINTIGHT, RATED FOR WET LOCATIONS AND COMPLY WITH THE UL STANDARD FOR CONDUIT, TUBING AND CABLE FITTINGS, UL 514B.

J-Box Typical Internal Components

- Mounting Hardware:
 - (4) #12 x 1.75" Philips Pan Head Screw
 - (2 or 4) #10 x 0.5" Thread Forming Phillips Round Head Screw
 - (2 or 4) #10 Flat Washers
- ½" - 1" Conduit Hub/Fittings
- 12 AWG – 8 AWG (PV/THHN Wire)
- 12 AWG – 6 AWG (Ground Wire)
- 35mm Din Rail w/
 - Terminal Blocks, fuse holder, rail stop and/or end plates.
- Standard Wire Nuts
- Push-In Wire Connectors
- Grounding Lugs
- Conduit Hub Grounding Bushings

Unirac Approved Sealants

- ChemLink DuraLink 50
- ChemLink DuraLink 35
- ChemLink M1



CAUTION: DO NOT USE NON-APPROVED SEALANTS. FAILURE TO DO SO COULD RESULT IN SERIOUS DAMAGE OR FAILURE OF EQUIPMENT.



TECHNICAL BULLETIN

DATE: JAN 23, 2014

DOCUMENT NO: CLTB 00122

TO: Contractors, Distributors, Architects & Homeowners

FROM: CHEM LINK Technical Services Division 1-800-826-1681

SUBJECT: *Cold Environment Installation Guidelines*

INSTALLATION AT TEMPERATURES BELOW 40 DEGREES F (4 DEGREES C) CAN BE DONE WHEN THE FOLLOWING PROCEDURES ARE FOLLOWED BY THE INSTALLER. AT THESE TEMPERATURES FROST AND ICE BECOME THE BIGGEST CONCERN AND HAVE TO BE ADDRESSED. IT IS THE INSTALLER'S RESPONSIBILITY TO ASSURE A CLEAN, FROST AND ICE FREE SUBSTRATE. THIS CAN BE ACCOMPLISHED BY USING IPA (ISOPROPYL ALCOHOL) TO REMOVE FROST OR ICE. A 90% IPA IS THE MOST RECOMMENDED, DUE TO HAVING LOWER WATER CONTENT. APPLY THE IPA IN ONE MOTION WITH A RAG, LET IT SIT FOR A MINUTE, THEN WIPE OFF IN THE OPPOSITE DIRECTION IT WAS APPLIED. DO NOT USE A CIRCLE MOTION. TO TEST FOR ICE AFTER THE IPA CLEANING SIMPLY USE YOUR HAND PRESSED ONTO SUBSTRATE, IF WATER IS LEFT BEHIND AFTER LIFTING IT, IT WILL NEED TO BE CLEANED AGAIN. ONCE THE SUBSTRATE IS CLEAN OF FROST AND ICE THE ADHESIVE OR SEALANT CAN BE APPLIED. NOTE IF THE SUBSTRATE CAN BE HEATED PRIOR TO INSTALLATION, THIS WILL ALSO ENSURE FROST AND ICE IS REMOVED.

CURE TIMES AT LOWER TEMPERATURES WILL BE DELAYED THE LOWER THE TEMPERATURE GETS. IT CAN TAKE SEVERAL DAYS FOR THE PRODUCT TO CURE (DEPENDING ON HUMIDITY AND TEMPERATURE). EXTRUSION RATE AT LOWER TEMPERATURES CAN BE AFFECTED, OUR PRODUCT DOES NOT FREEZE, BUT CAN BE HARDER TO EXTRUDE. THIS PROBLEM CAN BE RESOLVED BY WARMING THE PRODUCT BEFORE INSTALLATION FOR EASE OF USE.

CLEANERS TO AVOID INCLUDE MEK, TOLUENE, XYLENE, MINERAL SPIRITS AND ANY OTHER PETROLEUM BASED CLEANERS. THESE CLEANERS WILL PROHIBIT OUR PRODUCT FROM BONDING TO THE SUBSTRATE IN COLD OR NORMAL ENVIRONMENTS.

OPTIMAL TEMPERATURE OF 40F (4C) TO 80F (27C) IS WHERE MOST ASTM TESTING IS DONE. IF THE GUIDELINES ABOVE ARE FOLLOWED OUR HIGH PERFORMANCE MOISTURE CURING POLY ETHER ADHESIVES AND SEALANTS CAN BE APPLIED IN MOST COLD ENVIRONMENTS.

FOR MORE INFORMATION ON APPLICATION GUIDELINES, PLEASE REFER TO ASTM C1193 STANDARD FOR USE OF JOINT SEALANTS AND ADHESIVES.

FOR FURTHER QUESTIONS OR INFORMATION, PLEASE CONTACT US AT 800-826-1681.

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CAUTION: DO NOT USE NON-APPROVED SEALANTS. FAILURE TO DO SO COULD RESULT IN SERIOUS DAMAGE OR FAILURE OF EQUIPMENT.

Conduit Hub and Cable Fitting Locations

