

Charles Walk in Cabinet (WIC)

WIC-101610S1NT1






General Description and Installation

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1. ADMONISHMENTS USED IN THIS DOCUMENT

	<p>DANGER! Warns of a hazard the reader <i>will</i> be exposed to that <i>will likely</i> result in death or serious injury if not avoided. (ANSI, OSHA)</p>
	<p>WARNING! Warns of a potential hazard the reader <i>may</i> be exposed to that <i>could</i> result in death or serious injury if not avoided. This admonition is not used for situations that pose a risk only to equipment, software, data, or service. (ANSI)</p>
	<p>CAUTION! Warns of a potential hazard the reader <i>may</i> be exposed to that <i>could</i> result in minor or moderate injury if not avoided. (ANSI, OSHA) This admonition is not used for situations that pose a risk only to equipment, data, or service, even if such use appears to be permitted in some of the applicable standards. (OSHA)</p>
	<p>ALERT! Alerts the reader to an action that <i>must be avoided</i> in order to protect equipment, software, data, or service. (ISO)</p>
	<p>ALERT! Alerts the reader to an action that <i>must be performed</i> in order to prevent equipment damage, software corruption, data loss, or service interruption. (ISO)</p>
	<p>FIRE SAFETY! Informs the reader of fire safety information, reminders, precautions, or policies, or of the locations of fire-fighting and fire-safety equipment. (ISO)</p>
	<p>SAFETY! Informs the reader of general safety information, reminders, precautions, or policies not related to a particular source of hazard or to fire safety. (ISO, ANSI, OSHA)</p>

2. IMPORTANT SAFETY INSTRUCTIONS

2.1. General Safety Precautions

The following precautions shall be observed at all times when handling and installing the WIC:

- Observe all safety precautions against personal injury and equipment damage.
- The procedures outlined in this manual are only recommended guidelines. Ensure that all NEC (National Electric Code) and local codes for safety and wiring are followed.
 - Use listed two-hole compression connectors (lugs) to terminate all ground connections. Selected lug shall match wire and type, and crimped applied as specified by the lug manufacturer.
 - Apply NO-OX-ID-A to all ground connections.
 - Insulation of field-wire conductors should be rated no less than 105 °C, and sized in a manner that is consistent with the NEC and local codes.
- Always use a non-contact voltage detector, when approaching the WIC, to verify no leaks or shorts are presents on the external body.
- Read “WIC Placement” in its entirety prior to attempting to handle or secure the WIC.
- A minimum of two persons are required to safely install the WIC.
- Hard hats and steel-toed boots should be worn while maneuvering the WIC.
- Safety glasses should always be on while on-site.
- Safety gloves should be on when working in temperature extremes, with batteries, or with sharp objects.
- All electricians, operators, and technicians have been trained for the task at hand.
- Keep bystanders away.
- Ensure that all personnel on site are familiar with the first-aid kit location and emergency procedures in the event of an injury.
- Never leave the WIC unattended. If leaving the site, close and secure the WIC.

2.1.1. Follow Approved Safety Procedures

DANGER! Performing the following procedures may expose you to hazards. These procedures should be performed by qualified technicians familiar with the hazards associated with this type of equipment. These hazards may include shock, energy, and/or burns. To avoid these hazards:



1. The tasks should be performed in the order indicated.
2. Remove watches, rings, and other metal objects.
3. Prior to contacting any uninsulated surface or termination, use a voltmeter to verify that no voltage or the expected voltage is present. Check for voltage with both AC and DC voltmeters prior to making contact.
4. Wear eye protection.
5. Use certified and well maintained insulated tools. Use double insulated tools appropriately rated for the work to be performed.

2.2. Voltages

2.2.1. DC Output and Battery Voltages



DANGER! This system can be connected to customer supplied DC power and may have a battery source connected to it. Although the DC voltage is not hazardously high, the rectifiers and/or battery can deliver large amounts of current. Exercise extreme caution not to inadvertently contact or have any tool inadvertently contact an output terminal or battery terminal or exposed wire connected to an output terminal or battery terminal.

NEVER allow a metal object, such as a tool, to contact more than one termination or battery terminal at a time, or to simultaneously contact a termination or battery terminal and a grounded object. Even a momentary short circuit can cause sparking, explosion, and injury.

2.3. Specific Safety Precautions



DANGER! RISK OF ELECTRICAL SHOCK, GENERAL

All ground connections must be installed and verified prior to connecting any power cables (AC or DC) and turning-up the WIC.

When connecting any discrete power connection, make the connection first with the ground/return and break last with ground/return.

Do not install equipment showing any physical damage.



DANGER! RISK OF ELECTRICAL SHOCK, AC

Proper actions, include, but not limited to:

- Verify before contacting the WIC that no current leakage or ground fault condition is present.
- Verify a proper ground is in place.



DANGER! RISK OF ELECTRIC SHOCK

To properly work on the system, de-energize by disconnecting ALL power sources. Even with the batteries (if present) turned off by using a local battery (circuit breaker) disconnect, batteries are still "LIVE" and hazardous, including a voltage >50 VDC, and a source of high short circuit current.

Use extreme caution around the batteries and terminals.



DANGER! RISK OF ELECTRICAL SHOCK, OSP CABLES

If joint buried cables are used, check the cable sheath for voltage in accordance with local standards. If voltage is detected, do not proceed with the installation. Contact the supervisor and do not proceed until the voltage hazard is eliminated.



WARNING! PREVENT INJURIES, FROM LIFTING THE WIC

Follow all local safety practices while lifting the WIC. Safety equipment, signage, traffic control and all required Personal Protective Equipment (PPE) shall be used.

Keep unnecessary personnel and bystanders clear of work areas at all times.

Do not lift the WIC over people. Do not let anyone work, stand, or pass under a lifted WIC. Do not move or lift the WIC with a door open.

Only properly trained and certified operators shall operate any crane or lifting equipment. Do not allow the lifting equipment or WIC to touch any electrical wiring or equipment.

Operate all lifting equipment within safety constraints, as defined by the manufacturer and local practices; for example, do not exceed the capacity of reach.

Crane Operation:

Only properly trained operators shall operate the crane.

Do not operate the crane until all stabilizers are extended. The stabilizers must be in firm contact with the ground or other adequate support structure. Do not retract or extend the stabilizers when the WIC is suspended from the crane.

Only the crane rigging crew should set up the crane and rigging. Do not exceed the lifting capacity of the crane.

Use all four (4) provided lifting points (eyes) at the top corners of the WIC to lift the WIC. Use crane spreader frames to prevent WIC framework warping due to side loading.

Never route straps, cables or chains through the fork-lift channels in the base for a vertical crane lift. Do not use slings, clevises or shackles of insufficient capacity.

Forklift Operation:

Only properly trained operators shall operate the forklift. Do not exceed the lifting capacity of the forklift.

Forklifts shall have a minimum fork length of 72 inches (183 cm).



CAUTION! PREVENT EQUIPMENT DAMAGE, PROPER HANDLING

Do not stack nor lay the WIC on its side.



WARNING! RISK OF INJURY TO EYES AND SKIN, FROM OPTIC DEVICES

Do not look into a fiber cable or device, nor hold such cable or device against body, fabric or other material.



WARNING! RISK OF HAZARDOUS SUBSTANCES

After handling of the WIC or any such component, such as batteries, cables, bus bars, etc., always wash hands immediately after.



WARNING! RISK OF EXPLOSION

For safety reasons, never restrict or block the airflow through the door or entry panel ventilation openings.



CAUTION! PREVENT EQUIPMENT DAMAGE, FROM CONDENSATION

Until the WIC is turned up for service, the bags of desiccant shipped with the WIC must remain in the WIC to prevent condensation.

Once service is in-place, remove the desiccant.



CAUTION! PREVENT EQUIPMENT DAMAGE, OPERATING TEMPERATURE

The WIC is approved for operation in an environment with an expected temperature range of -40 °F to +115°F (-40°C to +46°C) and 0% to 95% relative humidity range, condensing. Do not use at temperatures or humidity exceeding these ranges.

The WIC is not for indoor use.



CAUTION! PREVENT DAMAGES CAUSED BY ELECTROSTATIC DISCHARGES (ESD)

When handling equipment containing static sensitive components, wear an appropriate antistatic device (a wrist strap for example) that is properly connected to a designated antistatic grounding point (on a framework, on an anti-static floor mat, etc.). ESD-protective packaging material shall also be used when carrying/shipping equipment containing static sensitive components.

2.4. Personal Protective Equipment (PPE)



DANGER! ARC FLASH AND SHOCK HAZARD.

Appropriate PPE and tools required when working on this equipment. An appropriate flash protection boundary analysis should be done determine the “hazard/risk” category, and to select proper PPE.

Only authorized and properly trained personnel should be allowed to install, inspect, operate, or maintain the equipment.

Do not work on LIVE parts. If required to work or operate live parts, obtain appropriate Energized Work Permits as required by the local authority, per NFPA 70E “Standard for Electrical Safety in the Workplace”.

2.5. Hazardous Voltage



DANGER! HAZARD OF ELECTRICAL SHOCK.

More than one disconnect may be required to de-energize the system before servicing.

2.6. Handling Equipment Containing Static Sensitive Components



ALERT! Installation or removal of equipment containing static sensitive components requires careful handling. Before handling any equipment containing static sensitive components, read and follow the instructions contained on the Static Warning Page.

2.7. Maintenance and Replacement Procedures



CAUTION! CAUTION! When performing any step in procedures that require removal or installation of hardware, use caution to ensure no hardware is dropped and left inside the unit; otherwise service interruption or equipment damage may occur.



NOTE! When performing any step in procedures that require removal of existing hardware, retain all hardware for use in subsequent steps, unless otherwise directed.

3. STATIC WARNING



This equipment contains static sensitive components. The warnings listed below must be observed to prevent damage to these components. Disregarding any of these warnings may result in personal injury or damage to the equipment.

1. Strictly adhere to the procedures provided in this document.
2. Before touching any equipment containing static sensitive components, discharge all static electricity from yourself by wearing a wrist strap grounded through a one megohm resistor. Some wrist straps have a built-in one megohm resistor; no external resistor is necessary. Read and follow wrist strap manufacturer's instructions outlining use of a specific wrist strap.
3. Do not touch traces or components on equipment containing static sensitive components. Handle equipment containing static sensitive components only by the edges that do not have connector pads.
4. After removing equipment containing static sensitive components, place the equipment only on conductive or anti-static material such as conductive foam, conductive plastic, or aluminum foil. Do not use ordinary Styrofoam™ or ordinary plastic.
5. Store and ship equipment containing static sensitive components only in static shielding containers.
6. If necessary to repair equipment containing static sensitive components, wear an appropriately grounded wrist strap, work on a conductive surface, use a grounded soldering iron, and use grounded test equipment.

4. PURPOSE OF THIS DOCUMENT

This document provides description and installation instructions for the WIC-101610S1NT1 Walk-In-Cabinet (WIC).

When using this document, consider the footprint for the WIC-101610S1NT1 you are installing as well as any installed options when determining which procedures contained within this document will be applicable for your installation.

Procedures related to the provisioning, start-up, and acceptance of associated telecom equipment are not covered in this document.

Documents that supplement the information in this document are referenced in "Sequence of Procedures".

5. PRODUCT DESCRIPTION

5.1. General

The WIC-101610S1NT1 Walk-In-Cabinet (WIC) ensures vital electronic equipment is protected from vandalism and environmental damage. The WIC is equipped with two AirSys VFD HVAC units for thermal control. See Figure 1 for overall views of the WIC.

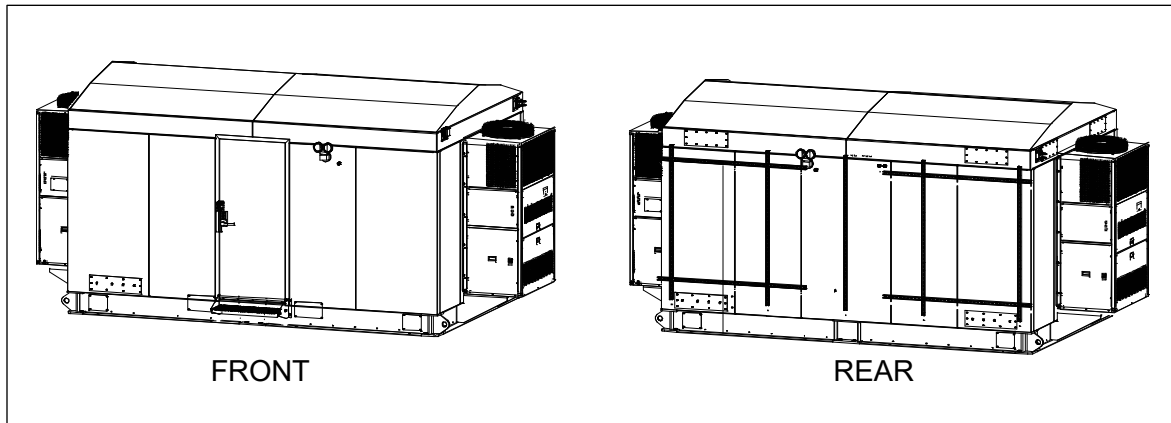


Figure 1 WIC, Front and Rear Views

5.2. Application

The WIC is designed to house and protect environmentally sensitive electronics at telecommunications sites including cellular, microwave radio, BBU pools for CRAN, and edge applications with virtualized networks.

The WIC is designed to provide secure and water-tight housing for equipment, power and batteries supporting wireless and wireline telecommunications applications.

The WIC depends upon a proven structural system and integrated mechanical components.

5.3. Standards Compliance

The WIC is designed to meet the following standards where applicable:

- Enclosure Type 3R



NOTE! The WIC is intended for industrial and/or power distribution equipment applications. These components are intended for the installation of industrial electrical equipment and/or power distribution equipment where the complete assembly is approved for installation in non-hazardous locations in accordance with the National Electric Code (NEC) and Canadian Electric Code (CEC).

APPLICABLE REQUIREMENTS:

- CSA C22.2 No, 94.1-07 / UL 50 12th Ed (Harmonized) Enclosures for Electrical Equipment, Non-Environmental Considerations.
- CSA C22.2 No. 94.2-07 / UL 50E 1st Ed (Harmonized) Enclosures for Electrical Equipment, Environmental Considerations.
- National Building Code - Canada, 2005.
- National Building Code - USA, 2012.
- ASTM A653 - Galvanized Steel.
- Welding Conformance to CWB - CSA Standard W47.1 and AWS – D1.2, D1.3 and D1.6.
- Designed to Meet Seismic Zone 4.
- Telcordia GR487 compliant for corrosion, water intrusion, ultraviolet radiation, and impact resistance.
- UL/CSA Compliant Climate and other miscellaneous electrical equipment.
- Electrical certification as per CSA and NFPA70 (NEC) requirements.
- Installation method compliant to AT&T TP76300.

5.4. WIC Dimensions, Weights, and Physical Specifications

5.4.1. *Dimensions*

- See Figure 2 for overall dimensions.
- See Figure 3 for mounting hole dimensions.
- See Figure 4 for working space clearances.

5.4.2. *Specifications*

- External Dimensions – 10'Hx16'Wx10'D
- Weight: 13,600 lbs.
- R13 Insulation for walls and ceiling
- One (1) hour fire rating
- Common equipment kit (lighting, cable rack, etc.)
- (2) 50k BTU AC powered HVAC systems
- Fully integrated internal grounding system
- Externally mounted GPS antenna mounting brackets
- Exterior and interior floor: Cool white
- Finish – Standard finish is multistage dry powder polyester paint for maximum durability and performance against corrosion. Optional exterior finishes also available upon request.
- Customer supplied DC Power and battery systems

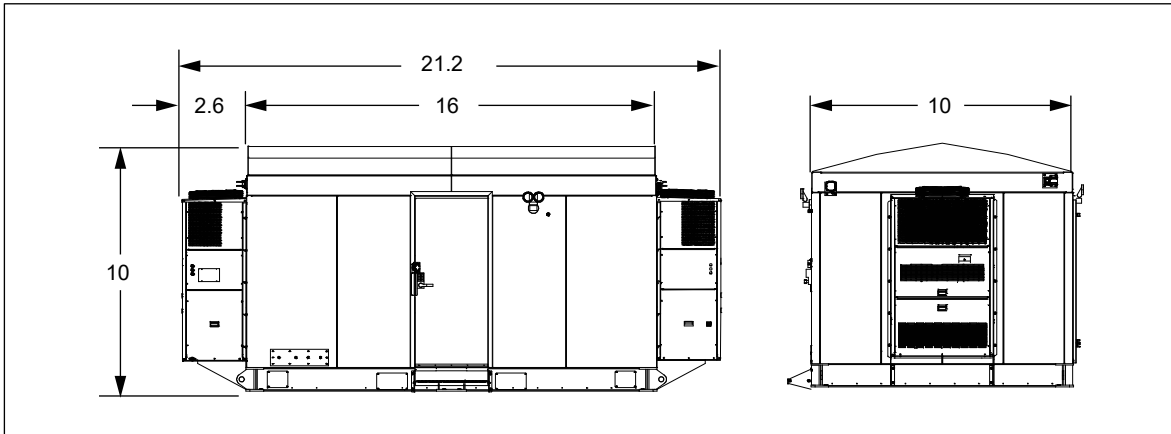


Figure 2 Overall Dimensions (in feet)

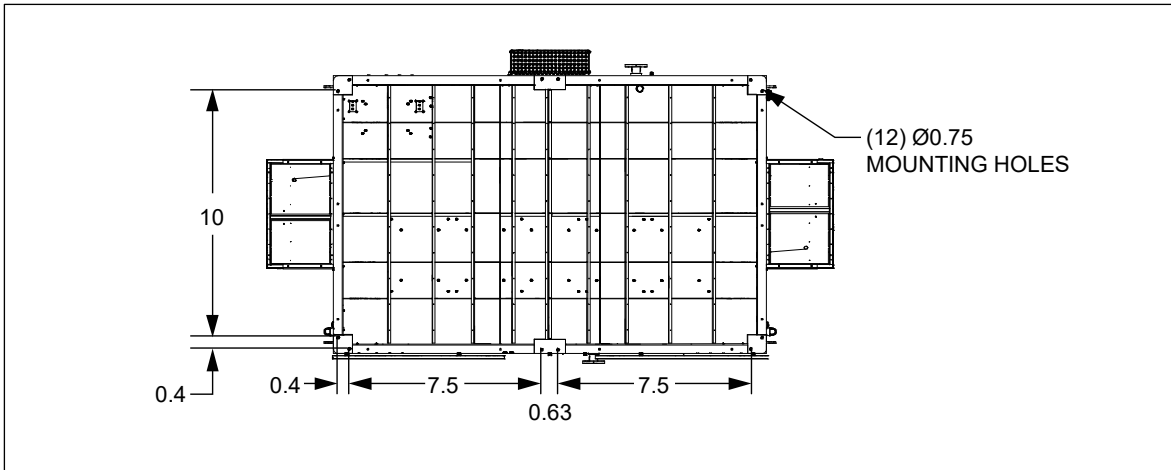


Figure 3 Mounting Hole Dimensions (in feet)

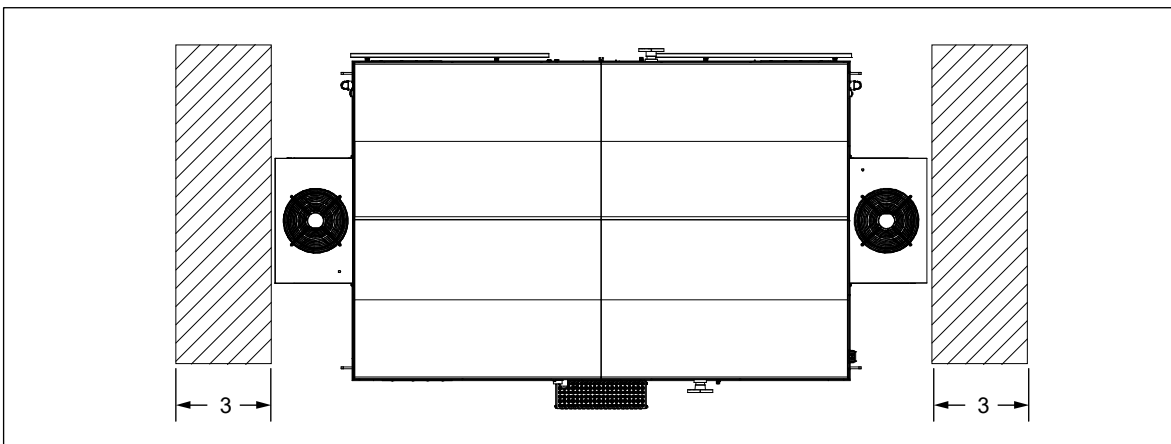


Figure 4 Working Space Clearances

5.5. WIC Features and Options

5.5.1. *Perspective Views*

For illustrations of the WIC, refer to Figures 5 and 6 for perspective views with major features identified.

5.5.2. *Construction*

Welded galvanized steel construction with outstanding impact and corrosion resistance.

- Welded steel panel construction.
- Walls, floor and ceiling are made of 12 gauge steel.
- Ceiling joists with 12 gauge steel.
- Floor Load: 100 pounds per square foot minimum (uniform with full-support foundation).
- Roof snow load to 100 pounds per square foot
- Wind Speed: 150 mph.

5.5.3. *Protection*

Powder coat finish. Meets GR487 Telcordia mechanical and environmental standards for telecom cabinets. This protects against rain, sleet, snow, splashing water and damage from external ice formation.

5.5.4. *Mounting Base*

- Forklift tubes on front.
- Base includes steel cover plates front and back to accommodate cabling.

5.5.5. *Interior Finish*

- Walls: White-textured ¾" plywood (1-hour fire-rated).

5.5.6. *Insulation*

- Walls: R-13 Thermax foam with vapor barrier in wall cavities.
- Roof: R-13 Thermax foam with vapor barrier in cavities between ceiling and roof.

5.5.7. *Common Equipment Kit*

- Motion Controlled 70 W Outside Light
- Interior -48 VDC Lights
- Door Contacts

5.5.8. *Access Doors and Hardware*

- Type: 16 gauge galvanized steel commercial grade insulated door.
- Size: 35" x 84" outward opening.
- Frame: 16 gauge galvanized steel frame.
- Door Lock: KABA Simplex L1000 Series, Model 1021B, Mechanical w/Best core with puck lock hasp on front
- Hinges: (3) stainless steel with non-removable pin (per door).
- Door Holder: positive engagement latch with bumper stop.
- Closer: adjustable-hydraulic.
- Drip Cap: 6" drip cap above doorway.

5.5.9. *Ground Bar*

The WIC contains one (1) 1/4" x 4" copper Master Ground Bar (MGB) located on the interior. The all-metal structure of the WIC is bonded together using the PANI method for grounding.

5.5.10. *Lifting*

The WIC is equipped with lifting lugs at each bottom corner that allow it to be lifted and lowered into position. The base is also equipped with forklift pockets on either side of the front door that allow the use of a forklift to move the WIC.

5.5.11. *Light Switches*

Located to the right of the door as you enter.

5.5.12. *Cable Entry Knockouts*

The WIC contains wall and floor cable entrances. The WIC has six (6) interior Ø2.5" knockouts in the floor. Multiple knockout panels on the front and rear each have four(4) Ø7/8" knockouts that can be enlarged using a Greenlee tool.

See Figures 5 and 6 for the location of the cable entry knockouts. It also has plates on the rear near the top of the WIC that can be removed for additional cable entry options.

5.5.13. *Climate Control*

The WIC is equipped with two (2) AC powered 51k BTU HVAC systems on the sides.

5.5.14. *Rack Units*

The WIC accommodates up to five (5) customer supplied 84" tall, 45 RU relay racks for 19" wide equipment mounting. These rack rails are installed by a third party, and are located across the rear half of the WIC.

In the front, to the left of the door, there is space for two (2) racks. These are intended for batteries and a DC power plant (customer supplied).

5.5.15. *Master Ground Bar*

- One (1) 4" X 16" X 1/4" Master Ground Bar (MGB) is included as standard WIC.
- The MGB will accommodate thirty-six (36) 2-hole lugs with 3/8" studs on 1" centers. Maximum lug width is 1.200".



NOTE: Two (2) hole lugs are required on all ground bar terminations.

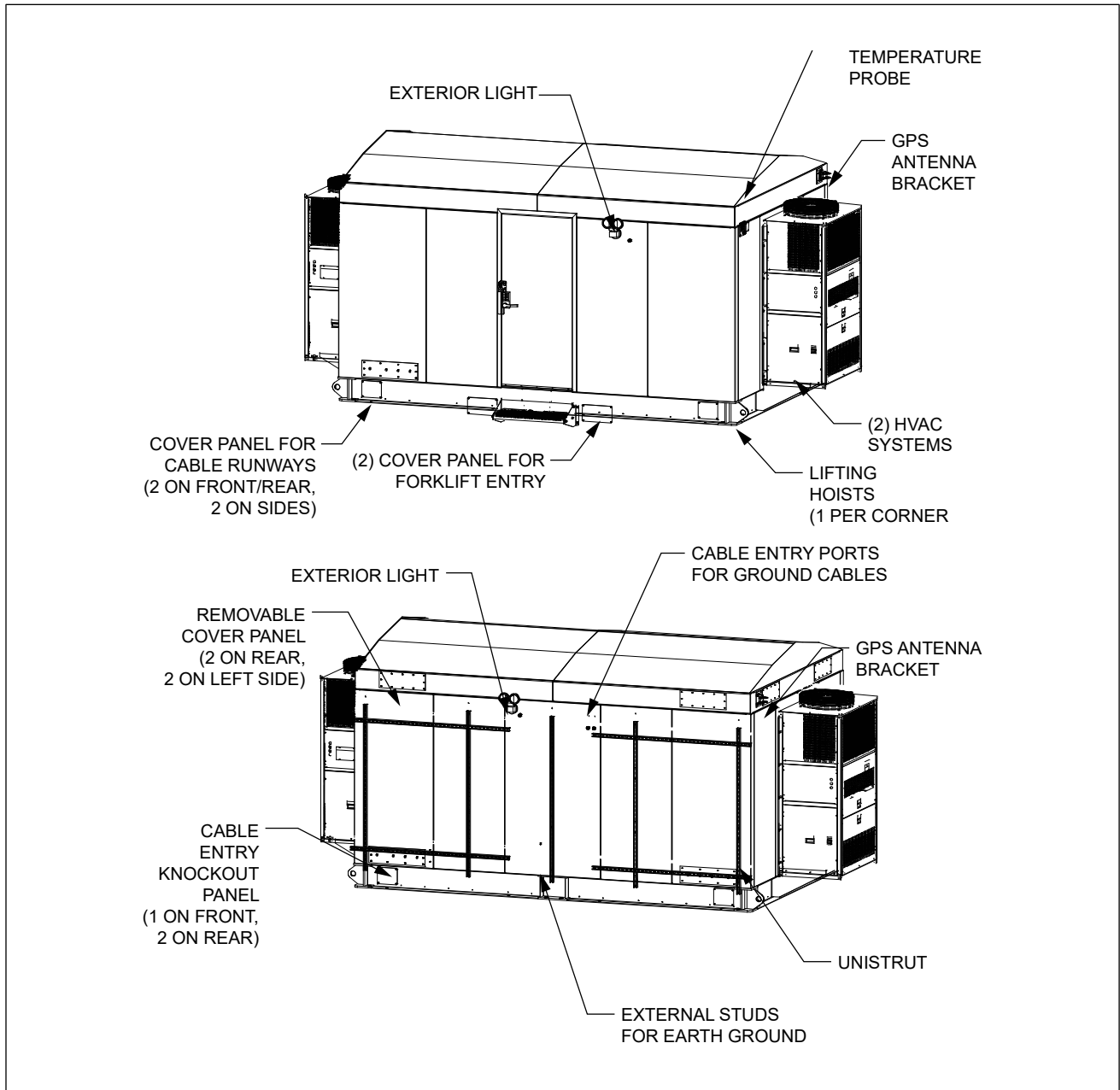


Figure 5 WIC External Components

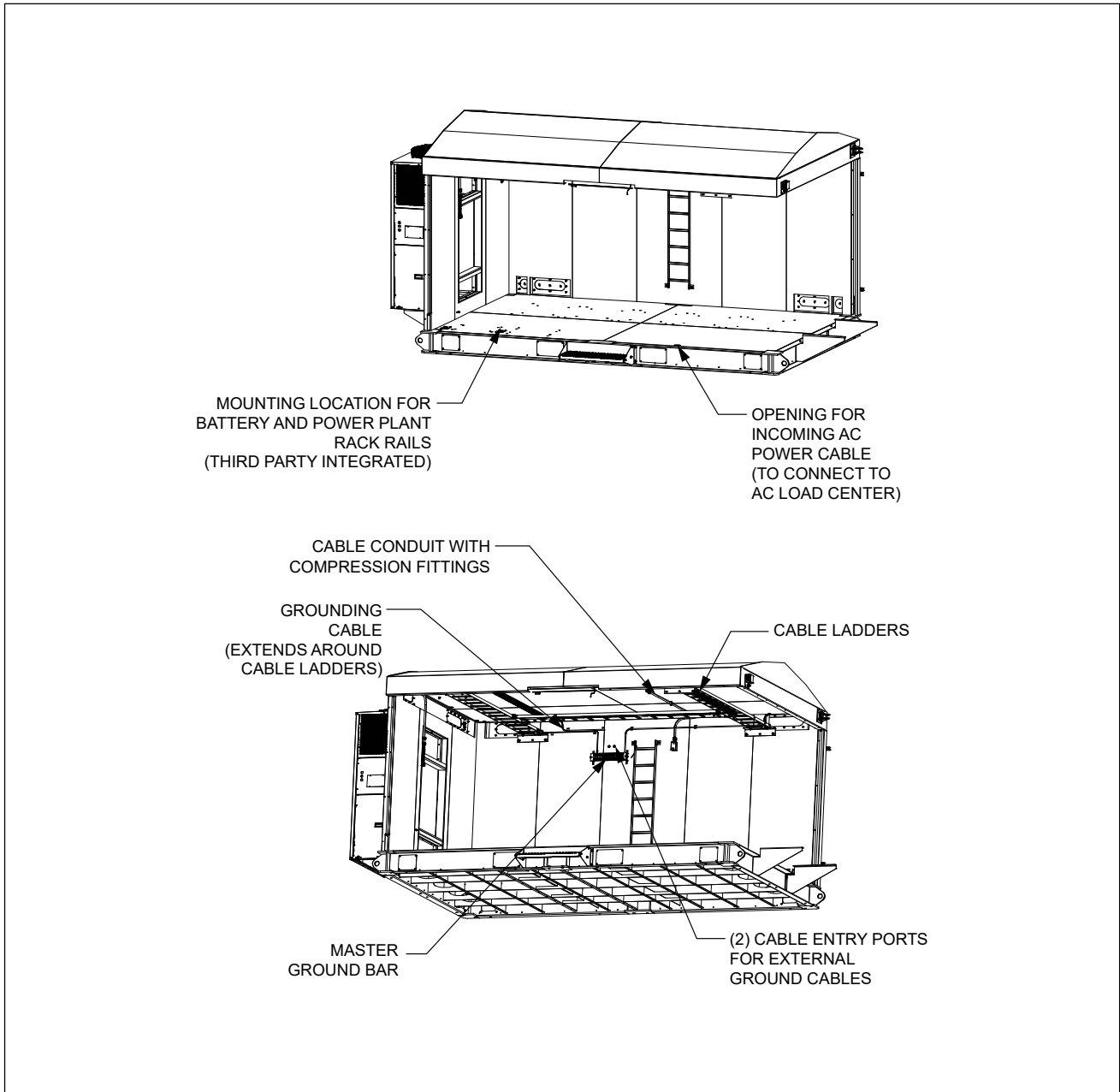


Figure 6a WIC Internal Components (front and right-side walls hidden)

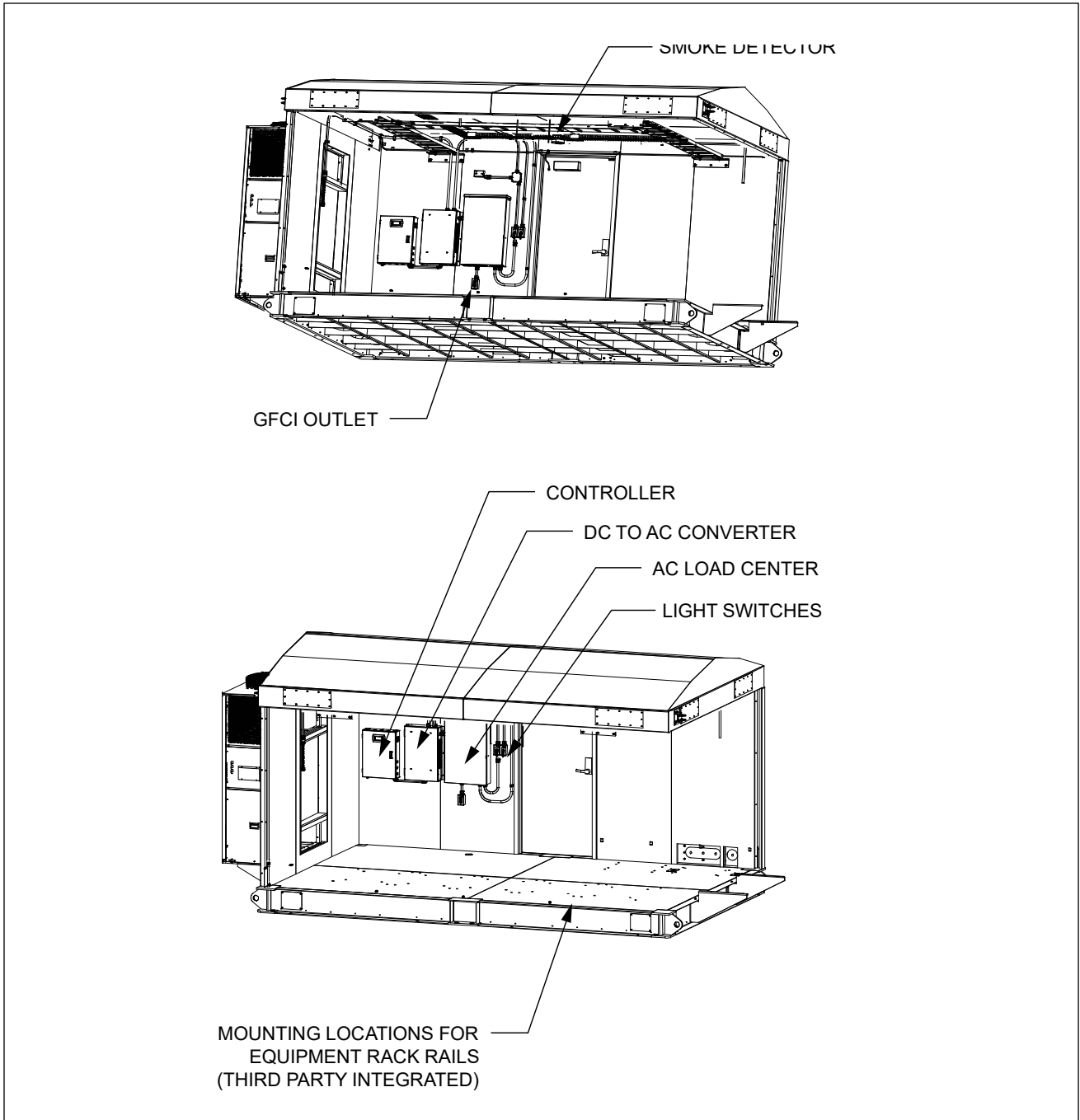


Figure 6b WIC Internal Components (rear and left-side walls hidden)

6. FRONT DOOR

6.1. Safety Precautions



DANGER! RISK OF ELECTRICAL SHOCK, AC

Proper actions, include, but not limited to:

- Verify before contacting the WIC that no current leakage or ground fault condition is present.
- Verify a proper ground is in place.



WARNING! RISK OF EXPLOSION

For safety reasons, never restrict or block the airflow through the door or entry panel ventilation openings.

6.2. Locking Mechanism

The front door is equipped with a KABA Simplex L1000 Series, Model 1021B, Mechanical w/Best core door lock. The electronic keypad on the door is used to operate the lock. The factory default code for unlocking the door is as follows:

1. Press 2 and 4 simultaneously, then release.
2. Press 3.
3. Open the door.

The installer must locate and install the door lock tumbler for key access entry. Charles recommends reprogramming the entry code.

A padlock hasp with a puck lock is located just above the keypad. Padlock is customer supplied.

6.3. Securing Mechanism

The front door is equipped with a positive engagement latch with bumper stop to secure the door in an open position and an adjustable hydraulic closure.

6.4. Intrusion Switch Operation

The front door is equipped with an intrusion switch at the top left corner of the doorway. If connected to an alarm sending device, an alarm can be sent whenever the front door is opened. Refer to Figure 7 for an illustration of the intrusion switch.



Figure 7 Door Intrusion Switch

7. INSTALLATION CONSIDERATIONS



NOTE: If holes are drilled into the exterior of this WIC and not filled using a seal tight connector, the manufacturer's warranty will be void.

7.1. Important Safety Instruction



DANGER!

Adhere to the "Important Safety Instruction" presented at the front of this document.

7.2. Installation Overview

The following is the recommended sequence for the installation and start-up procedures. The sequence may change according to job and site conditions.

- Ensure all site drawings and approvals are in place.
- Obtain the recommended tools and test equipment.
- Read "Important Safety Instructions" carefully.
- Check that all the equipment and materials have been delivered.
- Proceed with the physical installation of the WIC.
- Install and verify ground cables.
- Route, splice, and verify the OSP cables.
- Install and verify the alarm cables.
- Turn-up, verify, and adjust the system.

7.3. Tools and Test Equipment Required for Installation

The following tools, test equipment, and materials are required for the physical installation of the WIC.

- Non-contact voltage detector
- Digital multimeter (DMM), 0 to 200 VDC, 0 to 300 VAC
- Digital clamp-on meter, 0 to 30A DC, 0 to 60 VAC, recommended
- Torque wrench
- Ratchet drive, extensions, sockets
- Carpenter's level
- Lineman's scissors
- Lineman's strippers
- Lineman's cutters
- Appropriate crimping tool with dies
- Electrician's insulated screwdrivers, Phillips, No. 1 and 2
- Electrician's insulated screwdrivers, flat-blade, small and large
- Insulated nut drivers for battery installation.
- Silicone sealant (GE Silicone II, clear)
- NO-OX-ID-A or approved equivalent

Outside the scope of this document are the tools to fish, splice, and terminate OSP cables and laptop to set up the power system controller.

Equipment associated with lifting the WIC by the eyebolts is listed separately in a subsequent section.

8. WIC PLACEMENT

8.1. Site Selection

Obtain rights-of-way and other permits (building permit, electrical permit, etc.), depending on local codes and authorities, prior to installing the WIC.

The WIC is to be installed on a concrete pad. See Figure 3 for mounting hole dimensions.

8.1.1. *Site Location Considerations*

Consider the following when deciding on the location for the WIC.

- Place the WIC on servitudes, on dedicated (recorded) easements, or on property owned by the company. Avoid any unrecorded easements.
- Use public road and street rights of way only where there is enough space to place the WIC and provide safe working conditions. The WIC should be easily accessible with adequate parking to ensure safety for people and vehicles. Place the WIC where it will not create a visual or physical obstruction to either vehicles or pedestrians.
- Select locations that will minimize accidental or intentional vandalism. Consider the use of protective posts/bollards when the WIC is located near parking areas where vehicles could back into it.
- Do not place the WIC in ditches or areas subject to flooding.
- Figure 4 shows the minimum working space allowed between the WIC and any obstruction including fences, hedges, etc. Working space consists of adequate area for craft personnel to perform work and maintenance procedures as defined in the National Electric Code (NEC).
- Where ordinances or other standards require that the WIC be placed behind vegetation, preference should be given to evergreens that will not produce leaves, sticky pollen or waste that could fall and clog the climate control units vents.
- If the area is subject to freezing temperatures, be sure to comply with the local building codes and footing requirements to eliminate the possibility of frost heave.
- Minimize snow buildup around the WIC and its externally mounted components.
- Placement should support access for snow removal equipment in the event of a snow/ice storm.

8.2. Transportation and Storage

8.2.1. Safety Precautions

**WARNING!**

Follow all local safety practices while lifting the WIC. Safety equipment, signage, traffic control and all required Personal Protective Equipment (PPE) shall be used.

Keep unnecessary personnel and bystanders clear of work areas at all times.

Do not lift the WIC over people. Do not let anyone work, stand, or pass under a lifted WIC. Do not move or lift the WIC with a door open.

Only properly trained and certified operators shall operate any crane or lifting equipment. Do not allow the lifting equipment or WIC to touch any electrical wiring or equipment.

Operate all lifting equipment within safety constraints, as defined by the manufacturer and local practices; for example, do not exceed the capacity of reach.

Crane Operation:

Only properly trained operators shall operate the crane.

Do not operate the crane until all stabilizers are extended. The stabilizers must be in firm contact with the ground or other adequate support structure. Do not retract or extend the stabilizers when the WIC is suspended from the crane.

Only the crane rigging crew should set up the crane and rigging. Do not exceed the lifting capacity of the crane.

Use all four (4) provided lifting points (eyes) at the top corners of the WIC to lift the WIC. Use crane spreader frames to prevent WIC framework warping due to side loading.

Never route straps, cables or chains through the fork-lift channels in the base for a vertical crane lift. Do not use slings, clevises or shackles of insufficient capacity.

Forklift Operation:

Only properly trained operators shall operate the forklift. Do not exceed the lifting capacity of the forklift.

Forklifts shall have a minimum fork length of 72 inches (183 cm).

**DANGER! RISK OF ELECTRICAL SHOCK, GENERAL**

Do not install equipment showing any physical damage. If packaging is damaged, do not accept receipt from the shipper.

**CAUTION! PREVENT EQUIPMENT DAMAGE, PROPER HANDLING**

Do not stack nor lay the WIC on its side.

**WARNING! RISK OF INJURY, FROM UNSECURED WIC**

Do not pull cables or terminate cables until WIC has been properly secured in its mounted position.

**CAUTION! PREVENT EQUIPMENT DAMAGE, FROM CONDENSATION**

Until the WIC is secured and sealed, weather protection shall be maintained to prevent moisture and condensation from entering ports or openings into the conditioned space within.

8.2.2. General

For short-term storage, the WIC should not be exposed to temperatures that exceed the temperature range of -40°C (-40°F) to $+70^{\circ}\text{C}$ ($+158^{\circ}\text{F}$).

For long-term storage, the WIC and packaging should be kept dry and not be exposed to temperatures outside the range of -10°C ($+14^{\circ}\text{F}$) to $+40^{\circ}\text{C}$ ($+104^{\circ}\text{F}$).

Once packaging has been discarded and the WIC has been securely placed in its mounted position, the WIC may be exposed to conditions from -40°C (-40°F) to $+46^{\circ}\text{C}$ ($+115^{\circ}\text{F}$).

8.3. Unpacking and Preparing the WIC at the Installation Site

8.3.1. Safety Precautions

**DANGER!**

Do not install any additional equipment until the WIC is secured in its mounted position.

**CAUTION! TO AVOID EQUIPMENT DAMAGE:**

DO NOT REMOVE the exterior packaging or wrap from the WIC until the WIC is transported to the installation site. Control moisture and condensation inside the WIC until it is turned up for service.

8.3.2. General

- The WIC is shipped from the manufacturer with plastic wrap to protect the WIC during shipment.
- If the external packaging appears excessively damaged, do not accept the unit from the shipper as interior damage may not be apparent.
- CAREFULLY remove all packaging material from around the WIC. Dispose of the packaging according to local practices.
- On receipt at the site, inspect the WIC to make sure there is no damage to equipment. Check the packing slip to make sure all components are received. If any components are damaged or not received, contact your supervisor for further instructions.
- Close and latch all doors in preparation for WIC placement.

**WARNING!**

Do not open any doors on the WIC unless it is secured in its mounted position, or securely restrained against unexpected movement or tipping.

8.4. Preparing to Lift the WIC

8.4.1. Required Equipment When Using a Crane

- A crane capable of lifting the shipped weight of the equipped WIC plus a safety margin. The WIC weighs 13,600 lbs as shipped. Customer must calculate weight of third party integrated components and equipment.
- Four (4) wire-rope slings, 10-ft. long (minimum). Slings should each have the capacity to support the entire shipped weight of the equipped WIC to prevent potential cascading failures.
- Spreader frames are required for shorter slings to prevent WIC framework damage due to side-loading forces at the corner lifting hoists. Lifting forces shall be vertical only and applied only at the lifting hoists.
- Four (4) connecting links (clevises), to attach the wire-rope slings to the WIC lifting hoists. Connecting links should each have the capacity to support the entire shipped weight of the equipped WIC to prevent potential cascading failures.
- A 75-ft (20 m) rope, 5/8" (1.5 cm) in diameter, to use as a tagline. A tagline is used to guide the WIC into position while it is lifted and lowered.

8.4.2. Required Equipment When Using a Forklift

- A forklift capable of lifting the shipped weight of the equipped WIC plus a safety margin. The WIC weighs 13,600 lbs as shipped. Customer must calculate weight of third party integrated components and equipment.
- Forklifts shall have a minimum fork length of 72 inches (183 cm).

8.5. Lifting the WIC

8.5.1. Safety Precautions



DANGER!

The maximum WIC weight when lifted shall not exceed equipment ratings!

8.5.2. Procedure (When Using a Crane)

1. Close and latch all doors before lifting and placing the WIC.
2. Inspect the lifting hoists and ensure eyebolts and roof are secure and free of damage.
3. Install a clevis and shackle or a threaded shackle in each eyebolt at the bottom corners of the WIC as shown in Figure 8.
4. Insert all four (4) 10 feet minimum lifting slings securely through all four clevises or shackles as shown in Figure 8. Never route straps, cables, or chains through the forklift channels in the base for a vertical crane lift.



NOTE: Always use a spreader bar. Slings must be at least 10 feet long to clear the peak of the WIC roof.



NOTE: It is important that the length of each sling allow for an angle 45 degree or more. Failure to maintain a 45 degree angle or greater and using all four eyebolts will void any warranty or service claim.

5. Tie a 75-ft. rope to a lifting eyebolt so it can be used as a tag line.
6. Never work under the WIC while it is suspended above the ground.
7. Lift the WIC off the truck and place it into its mounted position using the tagline to guide it into position.

8.5.3. Procedure (When Using a Forklift)

1. Close and latch all doors before lifting and placing the WIC.
2. Lift the WIC using the forklift pockets located in the base of the WIC.
3. Never work under the WIC while it is suspended above the ground.
4. Lift the WIC off the truck and place it into its mounted position.

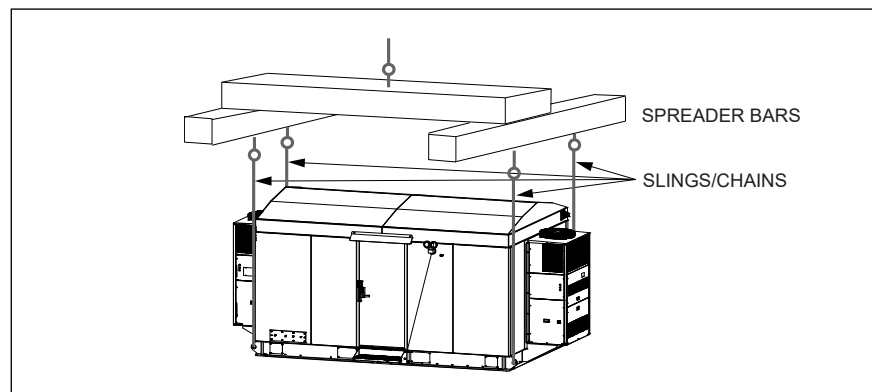


Figure 8 Lifting the WIC

8.6. Placing the WIC

The following is a typical guide. Consult your company policies for your specific installation requirements. Perform the following steps in placing and securing the WIC.

1. Drill into the concrete pad at the mounting hole locations (See Figure 3). Use $\text{Ø}3/4"$, 2" deep anchors in the pad.

**ALERT!**

During lifting, the WIC must be lowered so that the WIC is level and parallel to the concrete pad. Place the WIC so that it lines up with the bolt hole locations and clears any conduits.

2. Set WIC on the concrete pad (pre-drilled with mounting holes). Be sure to install and secure provided hardware between WIC base and concrete pad prior to setting the full weight of the WIC.
3. Ensure the WIC is properly placed.
4. Loosen the slings or remove forklift so that the full weight of the WIC rests on the concrete pad.
5. Secure the WIC by bolting it to the concrete pad using $\text{Ø}3/4"$, 2" long bolts in the pre-drilled anchors.
6. Verify hardware between WIC base and concrete pad is tight and secure.
7. Remove the slings, spreader bars, and tagline (if using a crane).

**ALERT!**

If the WIC will not be powered up for an extended period, place a heat source, such as two 120 VAC 150 W incandescent lamps inside the WIC to prevent condensation. Suspend lamps from cable racks to prevent contact with any structures or equipment inside the WIC.

8.7. Installing GPS Antenna

The GPS antenna can be installed in either of the two lifting u-bolt bracket points at the upper rear point of each side of the WIC. A Roxtec port is provided for sealing the antenna cable as it exits the WIC.

Refer to Figure 9 for an illustration of the GPS antenna mounting bracket.



NOTE: The tape covering the paint free areas on the WIC lifting bracket must be removed prior to GPS antennae mounting bracket installation.

1. Remove the GPS bracket from the WIC by removing the four nuts and washers that secure the bracket to the mounting studs.
2. Each u-bolt is secured to the bracket with two nuts. Remove the nuts.
3. Place the GPS antenna pipe against the mounting bracket. Secure the pipe in place by replacing and tightening the u-bolts.
4. Return the bracket to the mounting studs on the WIC using the nuts and washers removed previously.
5. Route antenna cables through the cable entry port adjacent to the bracket.

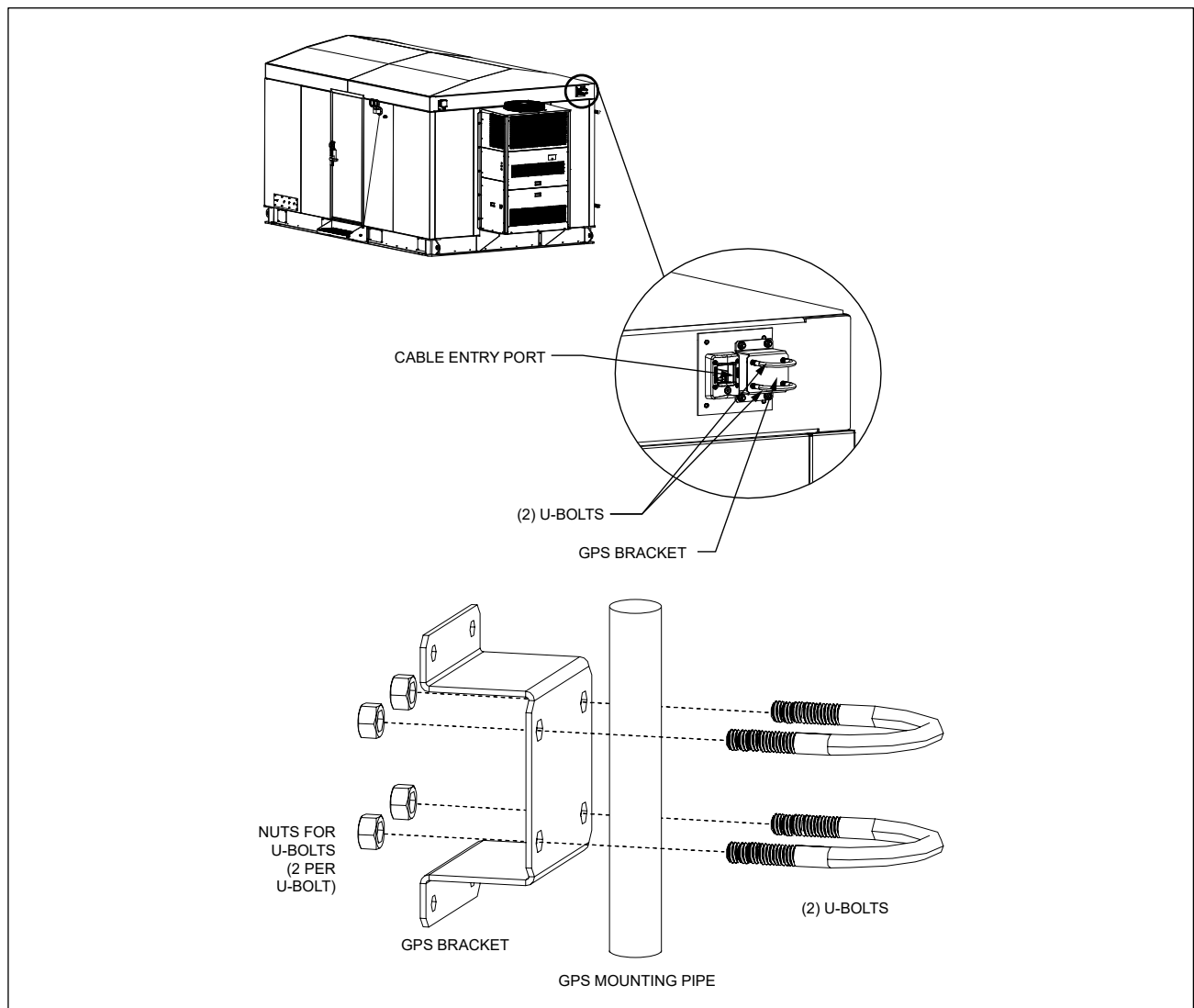


Figure 9 Attaching the U-Bolts

9. GROUNDING THE WIC

9.1. Safety Precautions



DANGER! RISK OF ELECTRICAL SHOCK, GENERAL

All WIC grounding must be installed and verified prior to connecting any power cables (AC or DC) and turning-up of the WIC.

Ensure that all NEC (National Electric Code), CSA (Canadian Electric Code) and local codes for safety and wiring are followed. Consideration for corporate standards also apply.

9.2. General

All internal ground wires shall be terminated to the Master Ground Bar on the interior rear wall of the WIC as reflected in Figure 10 prior to any externally derived electrical power being connected to the WIC.

All WIC grounding must be installed prior to tum up of WIC. The internal WIC frame and all attached equipment are factory grounded to the WIC Master Ground Bar.

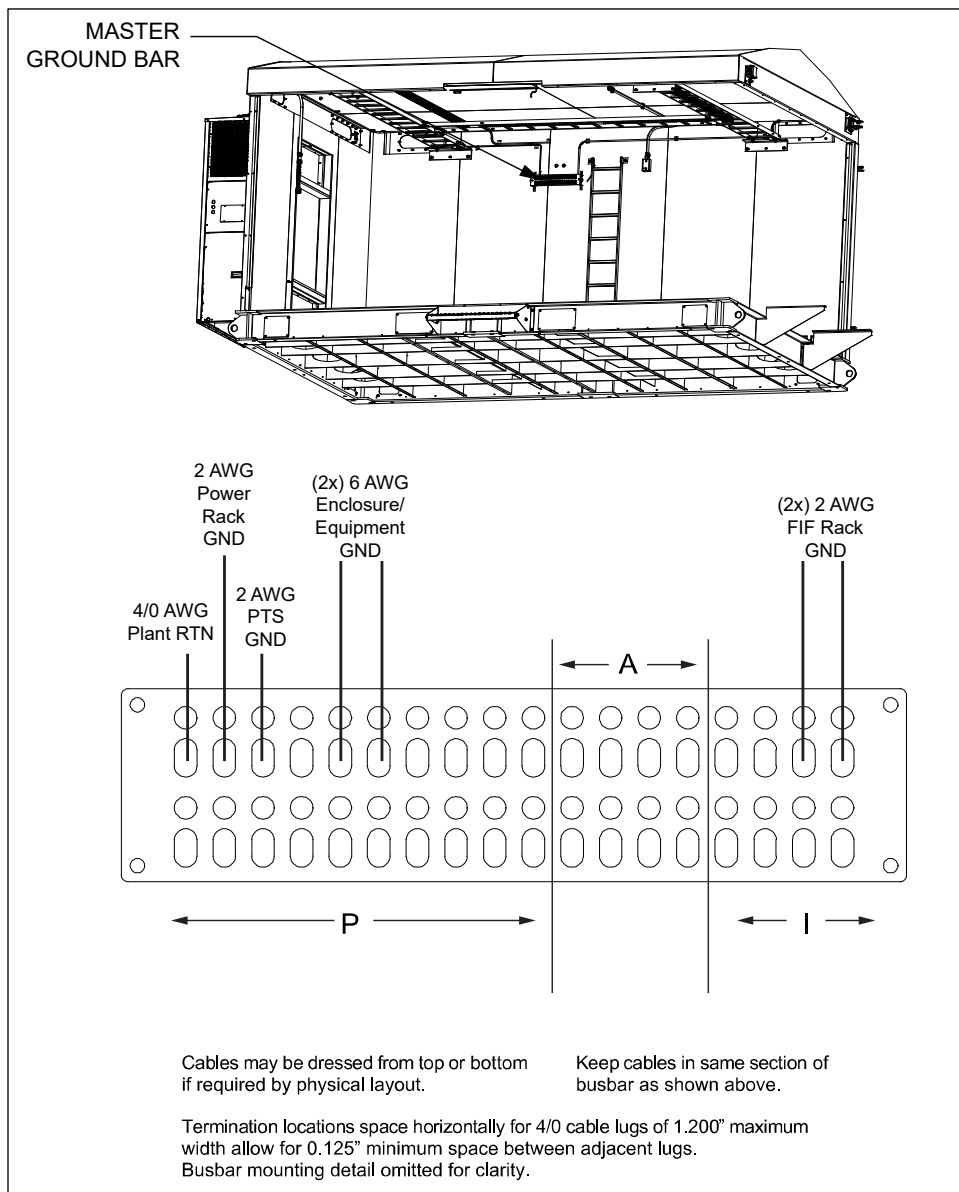


Figure 10 Master Ground Bar Location

9.3. Operating the Power System

Refer to the DC power system instruction manual(s) for information regarding the operation of the power system. This power system is customer supplied of Third Party Integrated.

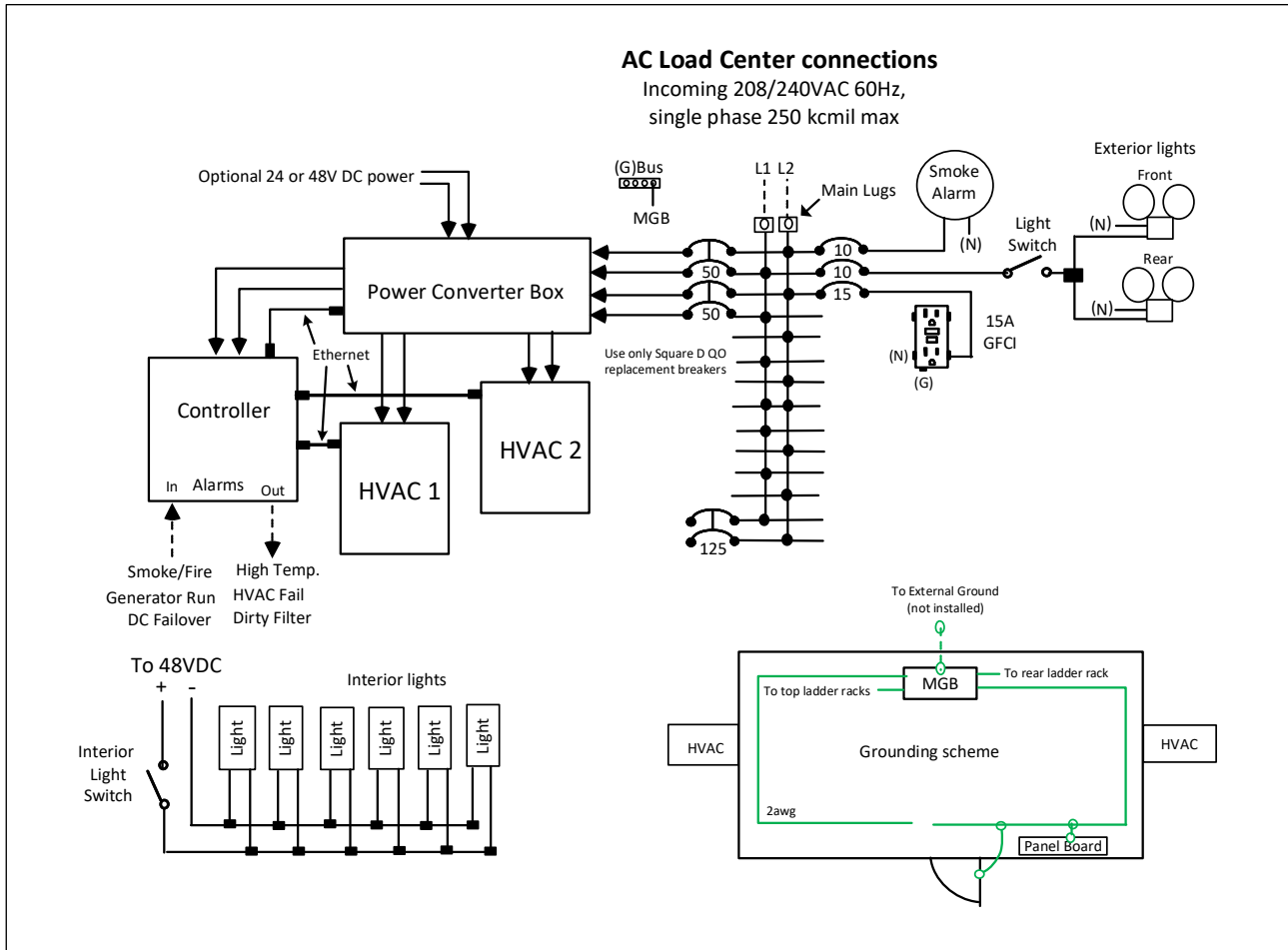


Figure 11 Electrical Diagram

10. OSP CABLES

10.1. Important Safety Instructions

**DANGER!**

Adhere to the "Important Safety Instructions" presented at the front of this document.

10.2. Safety Precautions

**DANGER! RISK OF ELECTRICAL SHOCK, GENERAL**

If buried cables are used, check the cable sheath for voltage in accordance with local standards. If voltage is detected, do not proceed with the installation. Contact the supervisor and do not proceed until the voltage hazard is eliminated.



NOTE: The following procedures are recommendations only, and are performed in conjunction with the procedures and training that adhere to local practices

10.3. Sealing Cable Entries

In keeping with best industry practices, seal all cable grommets penetrations against weather, rodent and insect intrusions.

It is extremely important to maintain a well-sealed WIC. Failure to do so can jeopardize the enclosed electronic equipment, as well as the proper functioning of the WIC systems. All cable transitions into the WIC must be properly sealed as required.

Refer to the following procedure to seal cable entries with duct sealing foam:

1. Route the cables into the WIC through bottom-entry conduits (preferred) or through side-entry conduits in the WIC base structure (if absolutely necessary). The bottom-entry and removable side-entry plates have pre-configured knockout stampings to facilitate conduit connections.
2. Route the OSP cables into the WIC conditioned space by removing a Roxtec port frame from the finished floor inside the WIC. Use a fiberglass fish tape from a side-entry port to extend to below the Roxtec port. Reach down through the finished floor to the fish tape, and use it to route pull cord or cables as required. Conduit knockouts are directly below each Roxtec port in the WIC base pan.
3. Route OSP cables to equipment through the Roxtec port frame, securing to cable rack and equipment frames as required.
4. Seal all conduit openings with Roxtec blocks, duct sealing foam or the equivalent against weather, animal and insect intrusion into the WIC.
5. Replace port covers, Roxtec port frames and any other material removed during installation.
6. Verify that cables are routed as required and that all cable entries are properly sealed.

10.4. Installing Fiber Cables

Install fiber cables using a 1.5" x 1.5" fiber routing duct provided along the length of cable rack for fiber management.

10.4.1. Site Equipment Alarms

Alarms from customer-provided equipment installed in the WIC relay racks or on the exterior of the WIC shall be cabled and connected to alarm blocks by the customer as required for the specific site installation.

10.4.2. Alarm Collection and Aggregation

Equipment and connection for alarm collection and aggregation or multiplexing for remote reporting to a customer Network Operations Center (NOC) shall be specified and installed by the customer as required for the specific site capabilities and installation.

11. INITIAL POWER UP

11.1. Important Safety Instructions

**DANGER!**

Adhere to the “Important Safety Instructions” presented at the front of this document.

11.2. Safety Precautions

**DANGER! RISK OF ELECTRICAL SHOCK, GENERAL**

All ground connections must be installed and verified prior to turning-up of the WIC.

**DANGER! RISK OF ELECTRICAL SHOCK, AC**

Proper actions, include, but not limited to:

- Verify before contacting the WIC that no current leakage or ground fault condition is present.
- Verify a proper ground is in place.

**CAUTION! PREVENT EQUIPMENT DAMAGE, FROM CONDENSATION**

Until the WIC is turned up for service, maintain WIC sealing to prevent weather and moisture entry. Provide humidity control (i.e.: two 150 W incandescent bulbs) as required.

Once the WIC is operational, the WIC system will maintain interior conditions.

11.3. Prerequisite

Verify that all procedures and safety notices in this document have been applied regarding the WIC and system grounding.

Verify that all procedures and safety notices accompanying customer-installed equipment have been applied.

Verify that the WIC has an approved connection to the local utility power supply.

**CAUTION!**

Prevent Equipment Damage: connect only 200 A, 240 VAC, 1-PH, 3 wire supply.

11.4. Initial Power Up Sequence

11.4.1. Checks

1. Use Non-Contact Voltage Detector to verify WIC is not unsafe.
2. Verify all battery disconnect circuit breakers located in the WIC are Off.
3. Verify all other breakers inside the WIC are Off.
4. Verify no open power leads are present.
5. Verify all cables and connections are secure.
6. Verify any installed batteries, including proper matching of polarity.
7. Use Non-Contact Voltage Detector to verify WIC safety.

**CAUTION!**

Always allow components like rectifiers and the RA-ECU a few minutes to complete their start-up sequences.

Refer to the power system instruction manual(s) supplied with the WIC or by the manufacturer for field- installed systems.

11.5. HVAC

The two 51k BTU HVAC units are VFD controlled. The variable speed controls always match the heat load inside the WIC to avoid sudden loading and unloading of the compressor. The compressor is always on, but it operates at only the speed needed to combat the heat inside the WIC. This operation increases the life of the compressor. For further information, refer to the HVAC documentation that ships with the WIC.



NOTE: Changing the cooling or heating cycles' default factory set points can lead to system performance issues, such as equipment failures, increased power use, unnecessary alarms, noise, condensation build up, compressor or fan failure caused by excessive runtimes and vibration.

Avoid placing items in front of the HVAC's return and supply vents. Maintain a minimum of 4" clearance to enable proper air flow.

12. OUTDOOR ENCLOSURE AND SERVICE CONTACTS

12.1. Technical Assistance and Repair Service

For questions on product repair or if technical assistance is required, contact Charles Technical Support.

847-806-8500

techserv@charlesindustries.com (email)

<http://www.charlesindustries.com/techserv.htm>

12.2. Warranty and Customer Service

Charles Industries LLC offers a one-year warranty on the WIC product. The Charles warranty is limited to the operation of the WIC hardware as described in this documentation and does not cover equipment which may be integrated by a third party. The terms and conditions applicable to any specific sale of product shall be defined in the resulting sales contract. For questions on warranty or other customer service assistance, contact your Charles Customer Service Representative.

847-806-6300

mktserv@charlesindustries.com (email)

http://www.charlesindustries.com/main/telecom_sales_support.htm