
Generator Roll Up Box (GRUB)

Docking Stations

Installation, Operation, and Maintenance Manual

IMPORTANT:

**Save this instruction sheet for future use of
the product**

Warning

Electrical potentials hazardous to human life can exist within this equipment when energized. Disconnect all input power before opening case or touching internal parts. Use proper lock-out/tag-out procedures.

The Information contained herein may not cover all variations in equipment or provide for all contingencies. Failure to follow instructions may result in death or serious injury.

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Introduction


This manual covers 0-4000 amp/ 600V class single and three phase Generator Roll Up Box (GRUB) cabinets. These instructions set out the limiting factors for satisfactory performance of the cabinets. The information contained herein outlines and describes the proper inspection, installation and maintenance of the cabinets.


Inspection upon Receiving

Cabinets should be carefully inspected upon receipt to ensure that no damage has occurred during shipment. Any damage should be reported at once and a claim should be placed against the transportation company. If any problems are found or parts are missing please contact Trystar at 1-866.TRYSTAR.

Installation and operating safety

The cabinets are provided with access panels to facilitate installation and should never be operated without these access covers securely

**Warning**

**Only qualified personnel should install, inspect, or maintain cabinets since the normal operating voltages can be hazardous.**

mounted in place. A safety program must be established, verified and followed by all personnel involved with the cabinets.



Caution

Cabinet is top heavy.

Cabinet Mounting

Make sure cabinet is mounted at all anchor points. Cabinet must have at least 36 inch clearance in front of panel. (Some pad-mounted units may require 46 inches of clearance in the front of the cabinet to accommodate a large swinging door.)

Grounding

The cabinet should be grounded securely and effectively as a safety precaution. Grounding must be in accordance with NEC and local electrical codes.

Wire Selection

Connection cables must be rated for at least 90 degrees C insulation. Connection cables must meet NEC and local electrical codes.

Inspection during Installation

The cabinet should be carefully inspected for any damage due to handling after receipt. The nameplate rating on the unit should be checked against the job specifications to ensure installation of the correct cabinet. The cabinet should be connected only as described on its nameplate to match the available line voltage. All bolted electrical connection should be

checked and tightened since fasteners may have loosened during shipment.

Installation Procedures

Warning! If the unit has Cam Lock/quick connect type inlets built in, it is NOT suitable for indoor use. Carbon monoxide could enter a facility through unsealed temporary wire entry points. Cam Lock docking stations need to be mounted outdoor, with in close proximity to where the back-up generator will be parked.

1. Ensure the area is well ventilated and free from explosive or corrosive gas or vapors. Ensure area will be easily accessible to allow for easy connection of an appropriate sized back-up generator.
2. Check the cabinet nameplate and verify that it is the correct line and load voltage for the application.
3. Mount the cabinet securely using the provided holes to mount to a wall, or use the holes in the stainless steel legs to mount to a pad.
4. Shut off primary voltage using approved lock-out/tag-out procedures
5. Remove the cover over the wiring compartment.
6. Route conduits into enclosure by creating holes as needed.
7. Connect the Line and/or Load wires to the appropriate terminals.
8. Use properly sized conductors as determined by the NEC.
9. Ground the cabinet in accordance with NEC and local electrical codes.

10. If the unit has optional phase rotation monitor, follow “Initial Installation Setup Procedure for Phase Rotation Monitor”. Instructions located at the end of this manual and on the inside door of the docking station unit.
11. Before energizing the unit, check all terminations for loose connections and proper torque values.

Note: After installation of cables and connectors, a minimum of 1” clearance should be maintained between the enclosure and any energized parts, unless insulated by another means.

12. Replace all covers and access panels.
13. If for any reason you suspect the unit has been exposed to moisture during transit or storage, it should be dried out before being energized.
14. Energize the unit.

Attention! The input badge on the Generator Docking Station will say “When used to power a structure this inlet must be used in conjunction with a transfer switch.” If the unit was sent with an optional Kirk Key System built in, then this does not apply. The built in Kirk Key System acts as the transfer switch needed to separate the Utility/Permanent Generator from the Back-up Power source.

Installation Outdoors

- Select appropriate location, cable, installation, and mounting hardware to meet applicable codes.
- Use water tight couplings on all electrical connections.

Torque Values for Screws and Bolts

When attaching the wires to the terminals use the recommended bolts for the wiring lugs. It is recommended to use two wrenches “where applicable” when tightening or loosening bolted connections to prevent damage. Torque 2S350 lugs to 375 IN. LBS and 2S600 lugs to 500 IN. LBS. The chart below shows recommended torque values for standard size bolts.

Torque Values for Screws and Bolts	
Screw/bolt Size (SAE Grade 5)	Torque Value (+/-5%)
1/4	8 ft-lbs
5/16	17 ft-lbs
3/8	30 ft-lbs
7/16	50 ft-lbs
1/2	75 ft-lbs

Operation

To Load Bank a Standby Generator

1. Ensure power source (standby generator) is turned off and locked out.
2. Pick an outdoor location for the load bank equipment that is well ventilated free from explosive or corrosive gas or vapors. The load bank equipment will exhaust great amounts of heat, so choose a safe location where the equipment will not endanger the surrounding environment or personnel.
3. Connect the load bank equipment to the GRUB Station output mechanical lugs located behind the dead front door of the docking station. Connect the cables in the order of Ground first, Neutral second, then the three phases. Make sure that the cables are fully inserted into the lug and torque the lug to the specifications on the unit.

4. All portable power cabling must be lashed together or braced in accordance with the short circuit current rating of your system.
5. Return all doors and access panels to their closed position. (Bottom cable entry rake door must remain open for back-up generator cables to enter the GRUB Station).
6. Start the standby generator and check for correct voltage at the GRUB Station.
7. If voltage is correct, then initiate the load bank test.
8. When load bank test is complete, turn off the stand by generator. Verify no voltage is present with a voltage meter. Then disconnect all portable power cables from the GRUB Station and return all doors and access panels to the closed and/or locked position.

To Use a Back-up Generator:

1. Ensure Main Power source/ Utility is turned off and locked out.
2. Pick an outdoor location for the back-up generator that is well ventilated and free from explosive or corrosive gas or vapors. Ensure that the generator is installed away from doors, windows, and ventilation systems that can cause potential carbon monoxide hazards.
3. Connect the back-up generator to the inlet mechanical lug connections located behind dead front door of the GRUB Station, Connect in labeled sequence making sure that the connections are fully inserted and torqued to proper value.
4. All portable power cabling must be lashed together or braced in accordance with the short circuit current rating of your system.

5. Return all doors and access panels to their closed position (except portable wire entry door).

6. Turn on back-up generator. Test for correct voltage at the generator. If voltage is correct, turn the back-up generator circuit breaker to the on position. (If docking station is equipped with a load side protection breaker, then it also must be turned to the on position.)

7. Your facility should now be running on back-up generator power.

Please note if the grounding (green) conductor and the grounded (neutral) conductor are bonded together in the **GRUB station**, the generator should **not** be bonded. Unless otherwise required by authorities having jurisdiction.

If the grounding (green) conductor and the grounded (neutral) conductor are bonded together in the **generator**, the GRUB station should **not** be bonded. Unless otherwise required by authorities having jurisdiction.

NEVER BOND THE GROUND AND NEUTRAL IN BOTH THE GRUB STATION AND THE GENERATOR!



Warning



If Local Code requires a secondary breaker to protect incoming generator power, make sure it is in the on position at this time and never in the on position when the Main Utility power is on.

To Return to Utility Power:

1. Turn off the back-up generator breaker if provided.

2. Turn off the back-up generator

3. Verify no voltage is present with a voltage meter.

4. Disconnect generator cables from the Mechanical Lug connections.

4. Close and lock out all GRUB Station doors, and access panels.

5. Check voltage to make sure utility power is available and correct.

6. Turn on the Main Utility breaker.

7. Your facility should now be running on utility power.

Optional Items

Kirk Key Interlock System:

If Cabinet comes with optional Kirk Key Interlock make sure that only one key is provided and that only the Main utility or the GRUB station; never both can be energized at any given time.

Maintenance

GRUB station shall only be maintained, serviced and inspected by qualified personnel.

All power to the GRUB station must be disconnected and tested to confirm that the box is safe to work on.

Check Integrity of the enclosure by visually inspecting it for any defects.

Check all badges

1. Make sure all badges are clean and legible.

2. If badges are losing adhesion, replace.

Check door latches and cams

1. Make sure that the door latches turn freely.
2. Make sure that when latched the door is firmly closed so that the gasket creates a good seal.

Check door hinges

1. Make sure door hinges swing freely and do not bind.
2. Make sure the fasteners for door hinges are tight.

Check bottom access panel (rake system).

1. Make sure panel opens and closes without binding.
2. Make sure that the latches on panel are tight.

If optional Kirk Key system is installed make sure it operates correctly and lube the locking mechanism with a graphite based lubricant.

Initial Installation Setup Procedure for Phase Rotation Monitor

WARNING! This procedure is to be performed by a qualified electrician. All appropriate PPE must be worn at all times and NFPA 70E must be followed when working on energized equipment.

The setup of the docking station phase rotation monitor will require the use of a hand held phase rotation meter! The phase rotation monitor provided in the Generator Docking Station is factory configured to indicate (light up) when clockwise direction is sensed.

1. With facility running on normal utility power, one must use a hand held phase rotation monitor to test the existing load at the point where this unit will be tied in. The test will determine clockwise or counter-clockwise direction.
2. If the test concludes that the facility has a clockwise rotation, you can skip down to step 8 and sign off at the bottom of the page.
3. However, if the test concludes that the facility has a counter-clockwise rotation, then you will need to change the GDS phase rotation monitor so that it will indicate (light up) when a counter-clockwise direction is sensed.

4. Locate the phase colored wires that feed into the back of the phase rotation monitor. Follow these wires until you come across a male/female connector set.



5. Unplug the B phase male connector from the female connector, and the C phase male connector from the female connector. (Connectors could be on A and C or A and B phase on some units, follow the same procedure)



6. Next plug the A phase male connector into the B phase female connector, and the B phase male connector into the A phase female connector.



7. The GDS phase rotation monitor is now set up to indicate (light up) when a counter-clockwise direction is sensed.
8. Sign and date at the bottom of this page. Then if another person hooks up a temporary generator, they can be sure that the phase rotation monitor is already set up correctly.

I, _____, hereby certify the phase rotation monitor in this unit has been set in accordance with these instructions.

X _____ / ____ / ____

Installation Electrician

Company Name

Date