Part #: GDR

Issue: 1

Rev: E

1/06/2014

Service Entrance Rated

Rotary Transfer Switch Docking Station Up To 480V

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.

Introduction

This manual covers up to 480 Volt, 600 Amp three phase and 120/240 Volt, 600 Amp single phase Rotary Transfer Switch Docking Station 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 or damaged 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 mounted in place. A safety program must be established, verified and followed by all personnel involved with the cabinets.

Warning

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

Cabinet Mounting & Spacing

Make sure cabinet is mounted at all anchor points. There must be at least 36 inch clearance in front of panel.

Caution

Cabinet is top heavy.

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. This docking station is rated for copper or aluminum conductors of the appropriate size:

Current	Cam Lock Inlet Wire Size Cu	Hardwire Inlet Size Cu or AL	Line/Utility Connection Size Cu or AL	Load Connection Size Cu or AL	Grounding Size Cu or AL
100A	1/0 Awg-4/0 Awg	6 Awg-350 kcmil	6 Awg-350 kcmil	6 Awg-350 kcmil	6 Awg-350 kcmil
200A	1/0 Awg-4/0 Awg	6 Awg-350 kcmil	6 Awg-350 kcmil	6 Awg-350 kcmil	6 Awg-350 kcmil
300A	1/0 Awg-4/0 Awg	6 Awg-800 kcmil	6 Awg-800 kcmil	6 Awg-800 kcmil	4 Awg-600 kcmil
400A	1/0 Awg-4/0 Awg	6 Awg-800 kcmil	6 Awg-800 kcmil	6 Awg-800 kcmil	4 Awg-600 kcmil
600A	1/0 Awg-4/0 Awg	6 Awg-600 kcmil	6 Awg-600 kcmil	6 Awg-600 kcmil	4 Awg-600 kcmil

Note: The Rotary Docking Stations will have either Cam Lock Inlet, or Hardwire Inlet. Inlet would be the means of connecting a back-up generator.

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.

Technical Specifications

This unit is Nema 3R Rated. 100-200 A models have a SCCR of 14KA, 300-400 A models have a SCCR of 25KA, and 600 A models have a SCCR of 30KA, at a maximum of 480V. Ideal operating climate of this unit is: 5%-95% Humidity and a Temperature of 0-40°C

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.

Warning! If the Rotary Transfer Switch Docking Station does not have overcurrent protection, overcurrent protection must be provided immediately adjacent thereto. The size of the overcurrent protection should not be over the current rating of the rotary transfer switch.

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 appropriately 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 the conduits into enclosure by creating holes as needed. Conduit entry is permitted in the top, sides, and back of the enclosure.
7. Connect the Line and Load wires to the appropriate labeled terminals.
8. Use properly sized cable determined by the NEC. Cabinet is rated for copper and aluminum conductors.
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 insolated by another means.

12. Replace all access covers and removable doors, and make sure the rotary transfer switch is in the normal operating position (ex. Utility, Permanent Generator).
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.

Installation Outdoors

- Select appropriate location, cable, installation, and mounting hardware to meet applicable codes.
- Use water tight fittings 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. Torque 2S600 and 2-800T 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 use generator,

1. 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.

2. Ensure that the rotary transfer switch is switched to Portable Generator position.

3. Connect generator via Cam Lock (Hardwire Lug) connection located behind front door of the docking station; connect the Cam Locks in the order of Ground, Neutral, A Phase, B Phase, and C Phase. Ensure that the Cam Locks are locked in place.

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 generator. Test for correct voltage at the generator. If voltage is correct, turn the 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 generator power.

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

NEVER BOND THE GROUND AND NEUTRAL IN BOTH THE DOCKING 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, but never in the on position when the Main Utility power is on.**

To Return to Utility Power,

1. Turn off generator breaker if provided or required.

2. Turn off Generator

3. Unplug generator cables from the Cam Lock (Hardwire Lug) connections

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

5. Rotate the transfer switch handle into the Utility position.

6. Turn on integral utility breaker (if equipped)

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

8. Close and secure docking station doors.

Optional Items

If optional outlets for items such as Block Heaters or Battery Chargers have been provided they must be connected to utility power so they are operational only when main power is on to operate correctly.

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 docking station, never both can be energized at any given time.

Maintenance

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

All power to the docking 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 warning badges

1. Make sure all warning badges are clean and legible.
2. If warning 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.

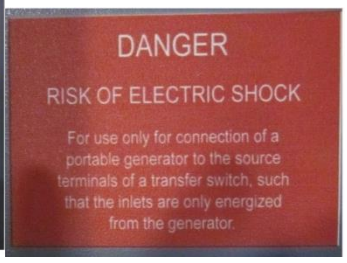
Check bottom access panel (rake system).

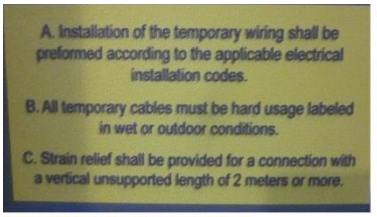
1. Make sure panel opens and closes without binding.
2. Make sure that the latches on panel are tight.

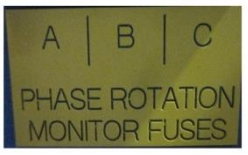
Optional Items

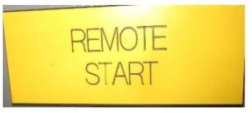
If optional Kirk Key system is installed make sure it operates correctly and lube the locking mechanism with a graphite based lubricant.

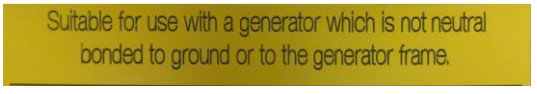
Warning/Cautionary Markings











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	I	-	II	III	IV	V	VI	VII	VIII

Models

I – Basic Model Number

II – Current rating

01 - 100A
02 - 200A
03 - 300A
04 - 400A
06 - 600A

III – Voltage rating

1 - 120/240V (2H + N + G)
2 - 120/240V Delta (3H + N + G)
3 - 208/120V (3H + N + G)
4 - 480V (3H + G)
5 - 480/277V (3H + N + G)

IV – Mounting style

W - Wall
L - Leg Kit
F - Flush

V – Normal Service

L - Mechanical Lugs (Circuit Breaker)

VI – Load Connection

L - Mechanical Lugs Internal

VII – Generator Connection

M - Male Cam-Loks
L - Hardwire lugs (Rotary Switch)

VIII – (Other Options - list all after dash)

A - Auto Start - 5-Way Binding Posts
G - 100% Ground Bus
I - Stainless Steel construction
J - Bottom conduit access (increased panel depth - contact factory for details)
K# - Kirk-Key door interlock (# - number of key cylinders)
P - Custom powder coat color (ANSI grey is standard)
R - Service Entrance Rated Circuit Breaker Part Number
S - Special (explain)
T - 750-MCM mechanical lugs
V - Volt Meter
X - No Rotary Transfer Switch

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.

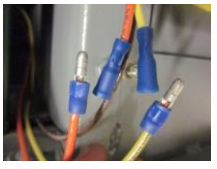
1. With facility running on normal utility power, one must use a hand held phase rotation monitor to test the existing load at the point where this unit will be tied in. The test will determine clockwise or counter- clockwise direction.

2. If the test concludes that the facility has a clockwise rotation, you can then skip down to step 8 and sign off at the bottom of this 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 unplug 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 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 below so when another person hooks up a temporary generator they can be sure that the phase rotation monitor is set up correctly.

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

X_____/___/____

Installation Electrician Company Name Date