



Technical Services

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www.solaheviduty.com

Product Warranty Registration at <http://www.solaheviduty.com/support/index.htm>
Click on **Warranty** and fill in the form.

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**SOLA/
HEVI-DUTY**

SOLATRON™ PLUS

Three Phase Voltage Regulator



Instruction Manual

Important Safety Instructions

SAVE THESE INSTRUCTIONS

!!! WARNING !!!

*The Line Voltage Regulator is to be installed and accessed
by
QUALIFIED PERSONNEL ONLY*

!!! WARNING !!!

*Disconnect incoming power while installing unit and before
accessing interior of enclosure
The unit contains components which are at line Voltage
whether or not a load is being supplied*

!!! WARNING !!!

*All enclosures must be grounded, using the provided
grounding lugs and/or studs, and all applicable National
Electrical Codes and local codes must be observed*

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Notes

Notes

Introduction

General

The Sola/Hevi-Duty "SOLATRON™ PLUS" Line Voltage Regulator is designed to provide a tightly regulated, isolated voltage source to sensitive loads, increasing reliability, improving efficiency and extending the useful life of protected loads. Input Voltages of +15%/-25% are corrected to +/-3% typical (+/-5% maximum) with a response time of 1 cycle (typical). Output voltage regulation is accomplished using silicon rectifier switches and a multi-tap transformer arrangement. Tap transitions are made in a secondary control circuit and at less than full load current eliminating voltage notching during each transition. There are no brushes or moving parts to replace.

Features

Rugged Construction: All magnetic and electronic components have been designed to insure that the SOLATRON™ PLUS Line Voltage Regulator will provide the specified voltage regulation to the most demanding electrical loads.

Protection: All units protect against system transients and overvoltages using a Surge Protection Device (minimum 80 kA surge current rating).

No Harmonic Interactions: The unit is unaffected by harmonic voltages and currents, and produces no distortion during normal operation.

High Overload Capacity: Motor starting and momentary overloads will not trip the unit, and output short circuits will not damage the unit.

Diagnostic Display: Panel mounted indicating lights for bypass and high temperature conditions

Failsafe Bypass: SCR, power supply, and other component failures will result in an automatic electronic bypass with no interruption to the load – nominal input/output voltage with isolation & surge suppression active.

Installation

Unpacking

Upon receipt of the unit, immediately inspect the enclosure(s) and contents for obvious signs of damage and/or mishandling (loose parts, enclosure dents/holes). If damaged, photograph the unit, inform carrier, and contact Sola/Hevi-Duty for a Return Material Authorization (RMA) number in order to return the unit.

Mounting

The unit must be mounted on a concrete floor or other non-flammable surface. The minimum spacing around the enclosure must be as indicated in Figure 1 to ensure adequate ventilation.

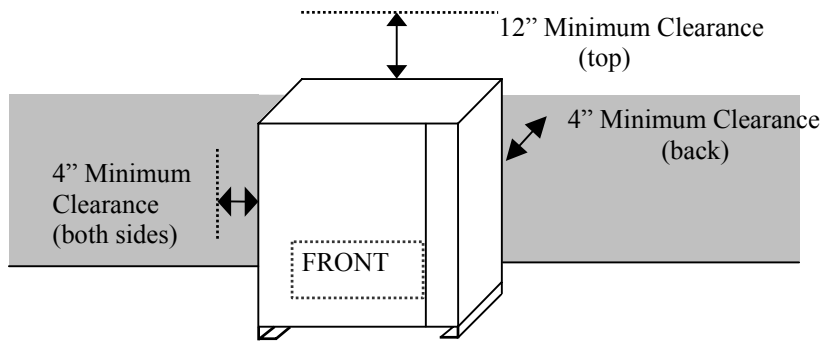


Figure 1. Minimum Spacing Requirements, excluding space required for conduit entry/exit

Environmental

The following environmental conditions must be met:

1. Ambient temperature: 0°C - 40°C (32°F - 104°F)
2. Relative Humidity 95% non-condensing
3. Surrounding air free of flammable or combustible materials
4. Enclosure not subjected to falling or splashing water, unless specific precautions have been taken to protect unit (i.e., NEMA 3 or 3R enclosure)

!!! WARNING !!!

Failure to comply with the above environmental conditions voids the Warranty

Warranty

Sola/Hevi-Duty warrants its standard catalog products to be free from defects in materials and workmanship and agrees to correct by repair or replacement, at the option of Sola/Hevi-Duty, products that may fail in service provided that the product has been installed, operated and maintained in accordance with accepted industry practice. Warranty can be registered online in the Technical Support section at www.solaheviduty.com. Warranty commences upon date of manufacture and is according to the following schedule:

1. Standard catalog transformer and single phase, power conditioning products – 10 years plus an additional 2 years if warranty for the transformer is registered within 14 days after installation.
2. Series SOLATRON™ PLUS (Three Phase Power Conditioner) – 2 years.
3. Uninterruptible Power Systems – 1 or two years depending on models unless otherwise stated. Extended warranties are available. Warranty is void if battery is not charged every 6 months when not in use.
4. DC Power Supplies – 1 year unless otherwise stated.
5. Surge Suppression Products – 10 years unless otherwise stated.
6. Products manufactured to a purchaser's specifications – 1 year.

Our obligation under the foregoing warranty, which is in lieu of all other expressed and implied warranties including warranties of merchantability and fitness, is limited to replacement or repairing of defective product provided we have received written notice of any alleged defect within thirty (30) days after its discovery and, at our discretion, return of products to the factory. This warranty is void on products with removed or altered serial numbers or date codes. This warranty does not cover any losses or damages due to sources external to the product (misuse, accident, abuse, negligence, unauthorized alteration or repair, use beyond rated capacity, or improper installation or maintenance, or act of God). This warranty does not cover damages caused by application or use in a manner contrary to the accompanying instructions or use in violation of applicable codes. Sola/Hevi-Duty shall not be liable for consequential, contingent, incidental or other damages.

UPC Manufacturers Identification Number: 78-3472

Product Specifications

Power Ratings: 20, 30, 50 and 75 KVA

Voltage Configurations:

Catalog No. Legend:
"63T**3(KVA)"

VOLTAGE 60 Hz.	VOLTAGE CODE **
208-208Y/120	AA
480-208Y/120	CA
480-480Y/277	CC
600-208Y/120	DA

Primary (3-Phase):
Secondary (3-Phase):

Frequency: 60 Hz.
Output Voltage Regulation: +/- 5% (Maximum) of nominal output voltage
Response Time: One (1) cycle typical

Dimensions:

NEMA 1 Enclosure	Height	Width	Depth
Inches	42	28	26
Millimeters	1066	712	661

Weight (lb/kg):

KVA	20	30	50	75
Pounds	600	750	950	1200
Kilograms	273	341	432	545

General Electrical Characteristics:

Voltage Range -25% to +15% of Nominal
Power Factor No restriction
Isolation Common Mode - 150 db, Normal Mode - 65 db
Surge Protection 80 kA per phase (ANSI C62.41 A & B)
Overload Capability 1000% for 1 second; 200% for 1 minute
Protection Input circuit breaker and failsafe auto-bypass
Efficiency Minimum 96%

Status Indication:

Green LED Illuminated - Input/Output conditions normal
Middle Amber LED Illuminated - Over Temperature condition
Right Amber LED
Remote Alarm Contact Normally Open - Rated 0.6A, 120 VAC

Environmental:

Operating Temperature 0 to 40 Degrees C
Relative Humidity 0 - 95% Non-condensing
Operating Altitude Up to 10,000 feet (3,030 m) above MSL
Audible Noise Less than 50 db

Agency: cULus to UL 1012 and UL 1449-2

Electrical Connections

The SOLATRON™ PLUS Line Voltage Regulator is designed to operate from a voltage source as indicated on the nameplate and to power loads whose maximum continuous kVA does not exceed that indicated on the nameplate. **Insure that the source voltage and maximum load kVA conform to the nameplate rating on the front of the unit.**

The Line Voltage Regulator is installed much like a transformer, between the supply lines and the load(s) being protected as shown in Figure 2.

Conduit Entry/Exit Locations

The conduit entry/exit holes must be punched in the sides or back of the rear portion of the enclosure (the side with the transformers), so that the power conductors run to the circuit breaker and output lugs through the hole(s) provided in the barrier panel.

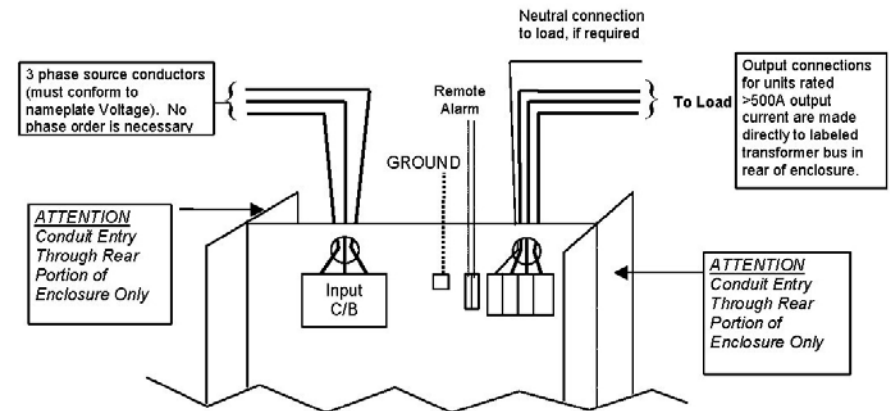


Figure 2. Electrical Connections (3 Phase Unit Shown)

Lug Size (per phase, all lugs accept Al/Cu wire)

3 Phase	INPUT		OUTPUT	
	208/240V	480/600V	208/240V	480V/600V
20	#10-1/0	#10-1/0	#14-2/0	#14-2/0
30	#14-4/0	#10-1/0	#14-2/0	#14-2/0
50	#14-4/0	#10-1/0	#14-2/0	#14-2/0
75	#14-4/0	#10-1/0	(2) #6-350	#14-2/0

Startup

Power may be applied to the unit AFTER the following conditions have been met:

- 1) All power and ground cable connections have been secured.
- 2) The enclosure has been closed.
- 3) The circuit breaker operating mechanism is in the 'Off' (open) position. The smaller, auxiliary circuit breakers should be in the 'On' (closed) position

Diagnostics

The SOLATRON™ PLUS Line Voltage Regulator contains 3 diagnostic lights on the front panel and a remote alarm relay. The indicator lights function as follows:

Green light

Condition normal. The remote alarm relay is open.

Middle Amber Light

A transformer over-temperature has been detected. The output voltage is not regulated under this condition in order to minimize transformer losses. The remote alarm relay is closed.

In order to reset this condition, the unit must be turned off, allowed to return to normal temperature and turned back on.

Check to ensure load kVA does not exceed nameplate kVA. Also check that ambient temperature does not exceed 40C

Right Amber Light

The unit has gone into bypass due to a failed SCR or firing board malfunction. Under this condition the unit will not regulate the output voltage. The remote alarm relay is closed.

The unit should be reset to determine whether there is a permanent problem by a qualified electrician.

Procedure:

1. Open main circuit breaker
2. Remove front cover
3. Reset auxiliary breaker by opening and re-closing breaker (so both breaker handles are in the up position)
4. Replace front cover
5. Close input circuit breaker
6. If the unit auto-bypasses immediately or after a short period of time, the unit requires service – Call Sola/Hevi-Duty Technical Service.

Diagnostics (cont.)

Remote Alarm

The unit is equipped with a normally closed remote alarm contact rated .6A, 120VAC, accessible at TB1 next to the output connector block. The alarm contact will be CLOSED under the following circumstances:

1. There is no power applied to the unit
2. Power is applied, but the main input circuit breaker is open.
3. The power supply has failed
4. There is an overtemperature condition or the unit has auto-bypassed

!!! Warning !!!

All troubleshooting and/or maintenance is to be performed by **Qualified Personnel Only, with Incoming Power Disconnected**, except as required to measure voltages. Such personnel must be familiar with industrial electrical apparatus and all safety and other precautions required to service such equipment.

Maintenance

The Line Voltage Regulator requires no maintenance to operate reliably when operating under proper environmental conditions. If the unit is equipped with fans for forced air cooling, the air intake filters must be checked once per month and cleaned if necessary.

Troubleshooting

Symptom	Correction
No lights are lit after power is applied	1) Ensure Circuit Breaker is "On" 2) Check source voltage
Input circuit breaker trips	1) Ensure continuous load kVA does not exceed nameplate kVA
Green light out, Amber light lit	See Startup section