



**UFS Corporation  
Getting Started  
Power Supply**

**For the Following:**

UFSc PN	Rating
221019	+/- 15 volts @ 3 amps
221029	5 volts @ 9 amps

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**[www.ufsc.com](http://www.ufsc.com)**

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<b>Contents</b>	<b>Page</b>
Welcome to UFS Corporation .....	1
Product Support and Customer Service .....	1
References .....	1
Introduction .....	2
Safety .....	2
Advanced Users .....	3
Unpacking the Power Supply.....	4
Description and Function .....	4
System Requirements .....	4
Basic Schematic and Diagram.....	4
Pre-Installation Planning.....	4
Installation .....	4
Checkout .....	5
Quality Assurance .....	5
Operation.....	5
Maintenance .....	6
Power Supply Troubleshooting.....	7
Spare Parts and Accessories .....	7
Limited Warranty and Liability.....	8
Frequently Asked Questions (FAQ's) .....	9

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## Welcome to UFS Corporation

This guide is intended to be an overview of a typical Power Supply and how it works. It is presented to the owners, system designers, installers, and members of the paint-finishing department where the equipment is to be used. Also included are drawings specific to your system. It is important that you keep this documentation in an easily accessible place for future reference.

## Product Support and Customer Service

For customers in the **United States** and **Canada**:

You may call (219-464-2027) or fax (219-464-8646) our office during normal business hours (7:30 a.m. - 4:30 p.m., CST). Technical Service can be reached at extension 22 and Customer Service can be reached at extension 28.

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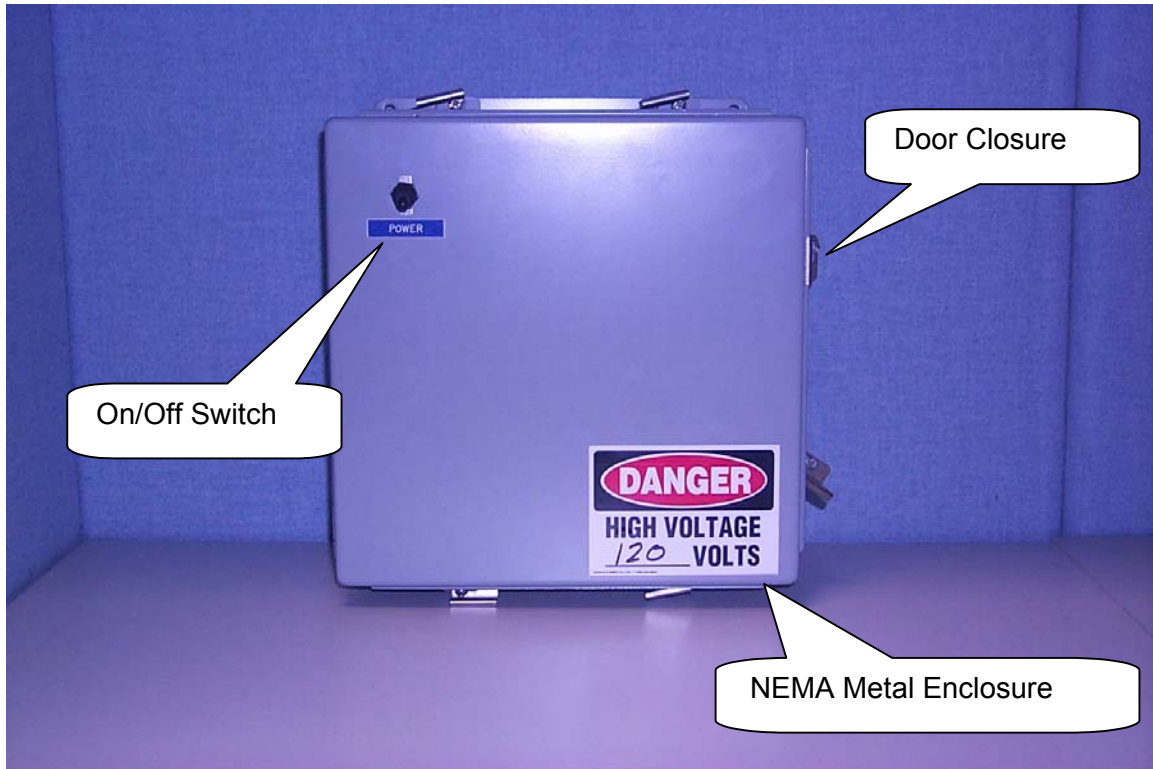
Many of the Getting Started manuals are available in Portuguese and Spanish. Please contact UFS for assistance. Persons with disabilities should contact UFS and request assistance.

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## References

1. Power-One specifications and application data drawing number 51281 Rev. L

## Introduction



This guide provides general instructions for installing, operating, and maintaining a Power Supply Panel. It is able to deliver the rated voltage up to its current limit, and the power supply module is UL recognized.

UFS uses linear power supplies rather than switching power supplies types for several reasons. With industrial applications, you often have noisy incoming power and some switching power supplies seem to be more failure prone. Some models of switching power supplies need a minimum load to hold output regulation (no load or minimum load and the output voltage goes up), this is not always apparent in the documentation for the supply. Switching power supplies often have much more high frequency noise in their output than linear power supplies.

At the end of this guide you will find drawings for your specific Power Supply Panel.

## Safety

A safe work environment for our customers (their employees and outside contractors) is of utmost importance to UFS Corporation. All applicable OSHA and owner's safety requirements must be followed when performing any maintenance, inspection, repair or testing on Electrodes and/or Electrode Systems. This includes, but is not limited to, the following safety regulations: Lockout/Tagout (Energy Control); Hazard Communication; Confined Spaces; Personal Protective Equipment; Electrical Safe Work Practices; Ergonomics and Material Handling; Accident Prevention signs (Danger – Energized Equipment).

Before installing or working on the DC rectifier, Lockout/Tagout procedures are to be followed. Use a Splash Guard (UFSc PN 175101 or equal) on top of the Electrode Holder with ED tanks that do not have an enclosure wall surrounding the Electrodes.

On going training of employees on ED equipment and system installation, operation, and maintenance of UFSc components is strongly recommended. MSDS (Material Safety Data Sheets) are provided for UFSc materials. Replacement or missing copies are available upon request from the UFSc Safety Coordinator.

## **Advanced Users**

This is for advanced users only. After reading this manual, you can then read the Quick Start (Bulletin #994406) and begin the installation of the Power Supply.

## Unpacking the Power Supply

Carefully remove the packing from around the outside of the panel. Loosen the two screws and remove the compressible material separating the door from the back of the panel.

## Description and Function

The Power Supply Panel is used to provide a quality source of DC voltage. For UL purposes, you can only use  $\frac{1}{2}$  of the total current. For example, PN 221019, the UL current rating would be 1.5 amps.

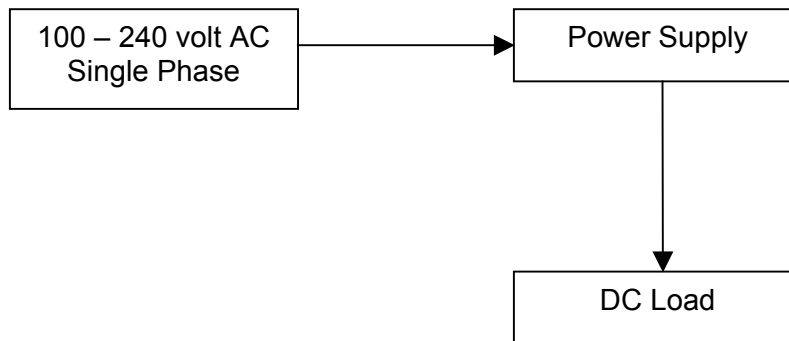
For more information see the FAQ's section at the end of this guide.

## System Requirements

The Power Supply Panel requires 120 VAC +10% -13% 47- 63 Hz line input power. Alternatively, you can use 100, 220, or 240 VAC single phase power.

## Basic Schematic and Diagram

A basic schematic of the Power Supply Panel is shown below.



## Pre-Installation Planning

Some easy planning steps will result in a better installation and more satisfying results. Estimate the load expected under the heaviest load conditions. Ask yourself if you will have to obey the UL regulation to just use  $\frac{1}{2}$  of the rated output.

## Installation

The Power Supply Panel installation is comprised of mechanical support, electrical installation, and cabling. Refer to the drawings at the end of this guide.

### A. Mechanical Support

The Power Supply panel should be mounted so that anyone in the plant can easily reach it for inspection and maintenance purposes. Mount it to a steel structure that is grounded. Make sure the door (hinge on left side) can open fully.

## B. Electrical Installation

Size AC line wire and conduit for 3 amps. The suggested entry is on the right hand top surface of the enclosure. Size the output wires and conduit accordingly. The suggested exit is the left-hand top surface on the enclosure.

## C. Wiring Detail

See the wiring plot for your Power Supply in the drawing section. You can then see a detailed view of the internal and external electrical connections. There are terminal strips for up to five independent load connections.

## D. Alternate Input Line Voltages

120 VAC is the default input line power voltage. If the site has something else, then the input connections to the transformer of the power supply module must be reconfigured.

<u>Voltage, AC</u>	<u>Jumper Together</u>	<u>Apply AC To</u>
100:	1 & 3, 2 & 4	1 and 5
220:	2 & 3	1 and 5
230/240:	2 & 3	1 and 4

## Checkout

After all the installation steps are completed, it is time to test and debug the field wiring to look for shorts and poor connections. If there are problems, refer to the Troubleshooting section.

Turn on the input line AC power. Measure the DC voltage at the appropriate output terminals to confirm that you have appropriate voltage.

## Quality Assurance

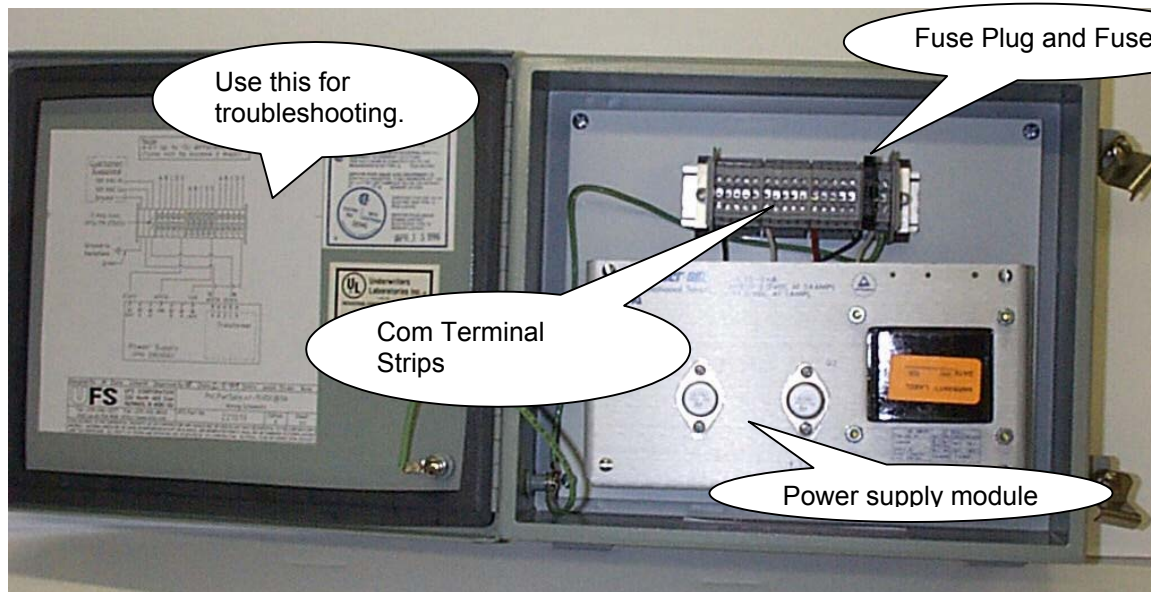
In the back of this Guide is a copy of an Inspection and Certification report. All product(s) are tested and certified before they leave the factory. The matters of the testing and the results are shown on this report.

## Operation

**NOTE: Please read all of this Section, the “Maintenance” and “Troubleshooting” sections before beginning operation. The “Troubleshooting” section explains the most common kinds of Power Supply Panel problems and what to do about them.**

Turn on the input line AC power.

## Maintenance



The routine maintenance required for the Power Supply is minimal. The largest task is to make sure all the bolted electrical joints stay tight. Each electrical joint will experience great thermal stress. As current flows, the joint will warm up and when the current stops, the joint will cool off. This cycle is repeated many times each hour.

### A. Open Panel Door

To open the front of the Power Supply, first make sure the DC rectifier to the e-coat system is turned off and locked out with your own key. Open the door slowly and make sure it will stay where you leave it.

### B. Wiring Problems

Refer to the wiring schematic on the inside cover of the Power Supply to correct any suspected wiring problems.

### C. Blown Fuses

Check the small glass fuse and ensure it is still in tact.

### D. Spare Parts

Refer to the Spare Parts Drawingt at the end of this manual for complete information on end-user, serviceable parts.

## Power Supply Troubleshooting

Problem	Possible Cause	Remedies
A. DC Power Supply malfunctions	Applied wrong voltage.	Order 1 x DC Power Supply, PN 281xxx. See drawing for spare part number.
B. No Load present	Fuse is blown. Input line power is down. Fuse Plug is missing.	Replace with UFSc PN235024. Investigate and fix. Order 1 each of UFSc PN235020 and UFSc PN235024.

## Spare Parts and Accessories

UFSc offers several add-on products to complete the instrumentation of your project. UFSc has a Current Monitor™ Panel, which is used to display current levels to each Cell. UFSc also offers signal-conditioning products so the PLC can measure and record information.

## **Limited Warranty and Liability**

### **WARRANTY**

We warrant all equipment manufactured by us to be free from defects in material and manufacture at the time of shipment for a period of one (1) year from the date of shipment. We will furnish without charge F.O.B. our factory, but will not install, replacements for such parts as we find to have been defective.

This warranty shall not apply to any equipment which has been subjected to misuse, neglect or accident, or has been altered or tampered with, or if corrective work has been done thereon without our specific written consent. No allowances will be made for such corrective work done without such consent. Improper maintenance, deterioration by chemical action, and wear, do not constitute defects. Equipment manufactured by others, and included in our offering, is not warranted in any way by us but carries only the manufacturer's warranty, if any. All electrodes (and or cathodes), of any material, are not warranted by us in any way since they by nature are sacrificial and will erode or corrode away with time.

All warranty claims must be submitted within ten (10) days of discovery of defects or shall be deemed waived. All parts returned for inspection must be sent prepaid. No representative of our company has any authority to waive, alter, vary or add to the terms hereof without prior approval in writing. The foregoing is in lieu of all other warranties (including that of merchantability), whether express or implied.

### **LIABILITY**

It is expressly understood that our liability, including that for breach of Contract, negligence, strict liability in tort, or otherwise, for our products is limited to the furnishing of such replacement parts, and that we will not be liable for any other expense, injury, loss or damage, whether direct or consequential, including but not limited to loss of profits, production, increased cost of operation, or spoilage of material, arising in connection with the sale or use of, or inability to use, our equipment or products for any purpose, except as herein provided.

## **Frequently Asked Questions (FAQ's)**

### **1. Why are there five terminal strips for + VDC, - VDC, and Common?**

The Power Supply panel was developed to supply power for five loads that were each about 1/5 of the current rating.