

Bulk 380VDC Rectifier Power Core



IMPORTANT: Read installation instructions before connecting to supply!

The latest version of this document and other Eltek product documents are available online at eltek.sharefile.com.

Related documents include:

- Smartpack2 Master Controller, Doc. No. 350020.013
- Smartpack2 Basic Industrial Controller, Doc. No. 350025.013
- Configuration Guide: Eltek Smartpack and Compact Controllers, Doc. No. 370013.063
- Eltek Controller Web Interface, Doc. No. 370035.013
- Navigation and Menu Tree: Smartpack2 Controller, Doc. No. 370017.033

Contact Information

To order parts and request documentation, please contact Customer Service by email at sales.us@eltek.com or by phone at 1-469-330-1665.

For assistance with technical questions and solutions, please contact Technical Support by email at tech.support@eltek.com or by phone at 1-800-435-4872.

IMPORTANT: READ THIS FIRST **SAFETY NOTICES – DC Power Systems**

Read and observe all safety statements and requirements before performing any installation or operation work on the power equipment.

Failure to comply with the safety statements and requirements contained in this document may result in injury and/or equipment damage.

Full product manuals are available online at: eltek.sharefile.com

For use in restricted access locations only
Only suitable for mounting on concrete or other non-combustible surface

The Bulk DC Power Core uses the FP2 380/3000 HE rectifier. The Power Core accepts a nominal, single-phase AC voltage between 100 V and 277 V, 50 to 60 Hz, with an input current up to 18.5A per rectifier. It is capable of delivering a maximum DC output of 380VDC at 8.5A per rectifier-at an ambient operating temperature range of -40°C to +65°C.



WARNING: HAZARDOUS VOLTAGE AND ENERGY LEVELS CAN PRODUCE SERIOUS SHOCKS AND BURNS AND/OR DEATH. Only authorized, qualified, and trained personnel should attempt to work on this equipment. Refer to datasheets for full product specifications. The dc output voltage of the Power Core is **380 VDC**.



WARNING: For safety, the power AC supply chassis is required to be reliably connected to PROTECTIVE GROUND. The equipment is to be connected to supply mains by qualified personnel in accordance with local and national codes (e.g., NEC, CEC, etc). To avoid risk of being struck by lightning, do not disconnect or reconnect input and output power connectors during lightning storms. The output of the power supply is not intended to be accessible due to energy hazards and hazardous voltages.



WARNING: High leakage current is present. Earth connection is essential before connecting the supply.



WARNING: This product is intended to be protected by a surge protector. Failure to utilize appropriate surge protector could result in susceptibility to lightning surges or create a potential hazard due to power



CAUTION: All rectifiers employ internal double pole/neutral fusing. Fuses are not field-replaceable. **Observe all local and national electrical, environmental, and workplace codes.**



CAUTION: Keep hands, hardware and tools clear of the fans. Fans are thermostatically controlled and will turn on automatically as a function of temperature.

Each rectifier should be fed from a dedicated AC branch circuit of a terra neutral (TN) or isolated terra (IT) power system.

A readily accessible disconnect device shall be incorporated in the building installation wiring for all AC connections. Select wall breakers according to national and local electric codes.

Multiple AC sources may be present. Disconnect all power before servicing.

If a line cord is used and the plug end of an AC line cord is considered to be the primary disconnection means, reasonable access must be given to the plug and receptacle area.

The rectifier must be fed with a breaker or fuse according to input current specifications of the rectifier; refer to national and local electric codes.

Use Underwriters Laboratories (UL)-listed, double-hole lugs for all DC connections to prevent lug rotation and inadvertent contact with other circuits. Terminal strip connections require only single-hole lugs.

Wire rated for 90C is recommended for all DC connections. In practice, wires of a size larger than the minimum safe wire size are selected for loop voltage drop considerations. Follow national and local codes as well as company standards for wire sizing. All wiring must be rated 600V.

Alarm contacts are rated for a maximum voltage of 220V and a maximum continuous current of 1A.

Heat dissipation greater than the objectives listed in GR-63-CORE may occur. Additional equipment room cooling may be required. To cope with high heat release, aisle spacing may be increased and high heat-dissipating equipment may be located adjacent to equipment generating less heat.

Eltek does not recommend shipping the power shelf with rectifiers installed. Rectifiers should be shipped in separate boxes.



WARNING: Protection of persons against electric shock:

Power cabling may be performed only by qualified personnel in accordance with local and national electric codes. Improper wiring can cause physical damage or injury. Input voltage from the power supply might be present. Improper connection may cause damage or serious injury. Ensure that the AC power supply source switch is in the OFF position. Use a voltmeter to check the presence of voltage from the SOURCE. Ensure that all power switches are in the OFF position – in the system, devices, and at supply. Improper wiring may cause bodily injury and equipment damage. Before performing maintenance, either unplug or disconnect the equipment from the power supply source in order to reduce the risk of electric shock or other possible hazards.

When working on electrical equipment in and for applications in Germany, regulations for the prevention of electrical accidents – as stated in DIN VDE 0105 – are summarized in the following five safety rules:

1. De-energize
2. Secure from re-energizing (“lockout”)
3. Verify that the equipment is de-energized
4. Ground and short-circuit
5. Insulate or cover any live or energized areas of nearby equipment

These five safety rules should be followed in order before starting work on electrical systems.



Only qualified electricians are to work on this equipment.

The owner/operator is responsible for the safety of its personnel. **CUSTOMER/OWNER MUST PREPARE PROPER ARC FLASH LABELING. LABEL FORMAT AND CONTENT MUST BE IN ACCORDANCE WITH NFPA 70E.**

FCC Compliance Statement

This device complies with Part 15 of FCC Rules. Operation is subject to the following two conditions:

1. This device may not cause harmful interference, and
2. This device must accept any interference received, including interference that may cause undesired operation.

WARNING: Changes or modifications to this unit not expressly approved by Eltek could void the user's authority to operate this equipment, as unauthorized changes may invalidate compliance.

Torque Settings

The following table shows recommended torque settings for mechanical and electrical connections according to screw or nut size. Not all screw sizes listed are necessarily present. These are recommendations only. Different torque values may be specified in the installation instructions.

The alarm contact wiring is connected to the Smartpack Basic industrial with #16-24AWG wire with a suggested torque of 3 in-lbs.

Table 1 - Recommended Torque Settings

Screw or Nut Size	Torque (in-lbs)	Torque (n-m)
#8-32	22	3
#10-32	37	4.25
#12-24	50	5.75
1/4"-20	65	7.5
5/16"-18	135	15
3/8"-16	240	28

Insulated Required Tools

- Cable Crimpers
- Multimeter
- Torque wrench
- Lifting equipment
- Wire cutters and strippers
- Socket set, ¼ - 1"

Overview

The Smartpack2 Controller Shelf incorporates the Smartpack2 Master Controller and Smartpack2 Basic Industrial Controller.

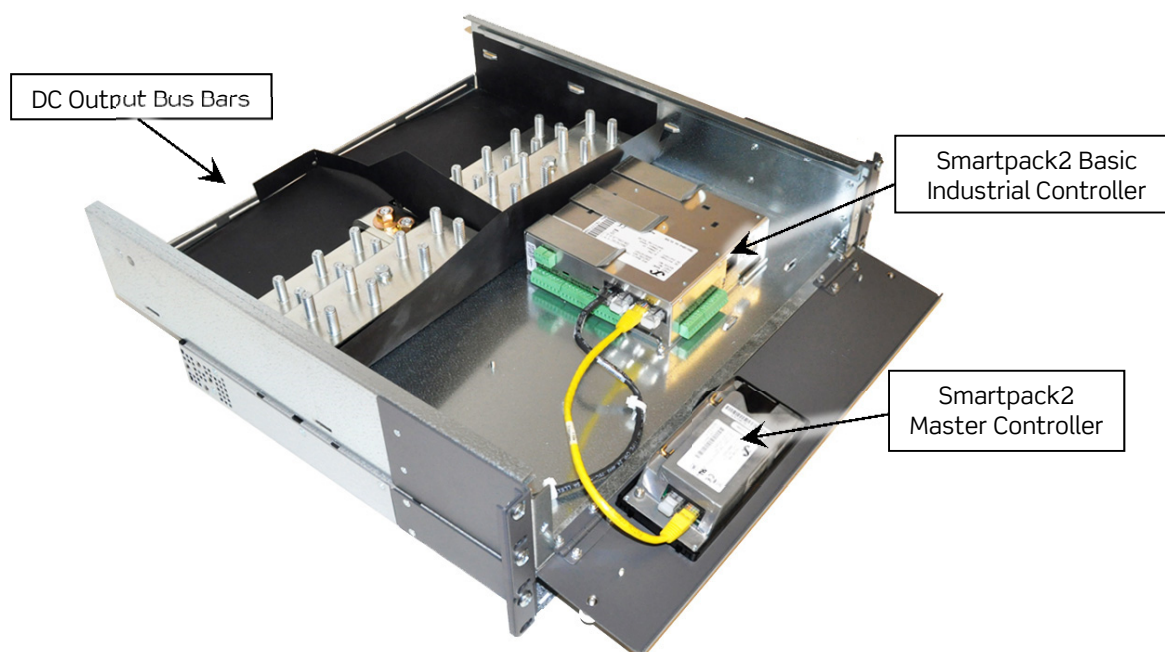


Figure 1 – Example System-Cover Removed and Door Open

Mounting the System

The shelf mounts in a standard 19" rack. It can be mounted in 23" racks with a 2U extender, ordered separately (Part No. 503457).

Removing the Cover

In order to make DC connections, the top cover on the shelf must first be removed.

To remove the cover on the shelf:

1. Loosen the thumbscrews on the front cover, and lower the door.
2. Slide the cover through the front slot to gain access to controllers and connections.

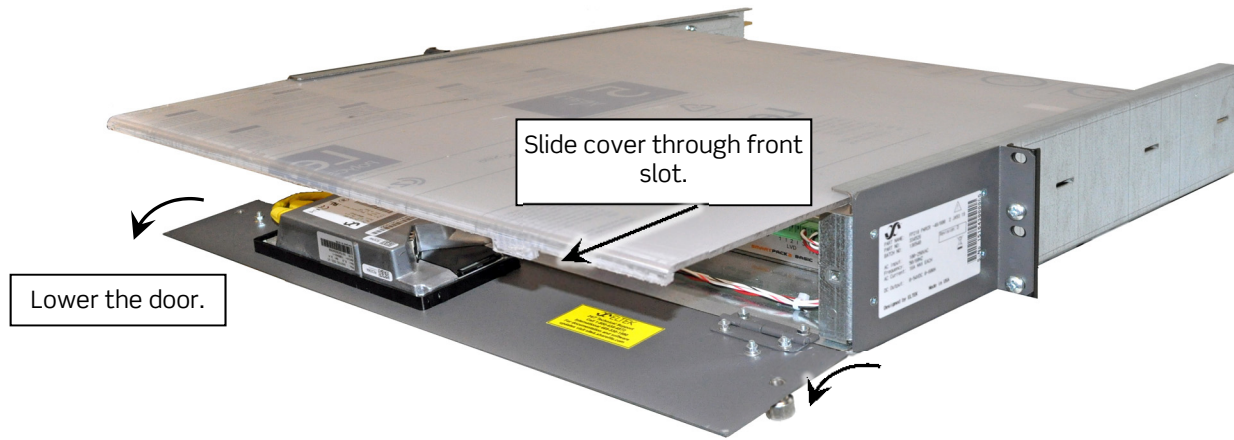


Figure 2 - Removing the cover

Note: Prior to making controller connections, ensure that ALL power is OFF at the incoming AC breakers.



WARNING: Opening the equipment may cause terminal injury. Care must be taken to ensure safety when accessing the power core.

Chassis Ground

Make the ground connection using a minimum of #14 AWG wire. Connect to the ground terminals at the inside rear left of the chassis with a 2-hole crimp lug with the 1/4-20 hardware provided.

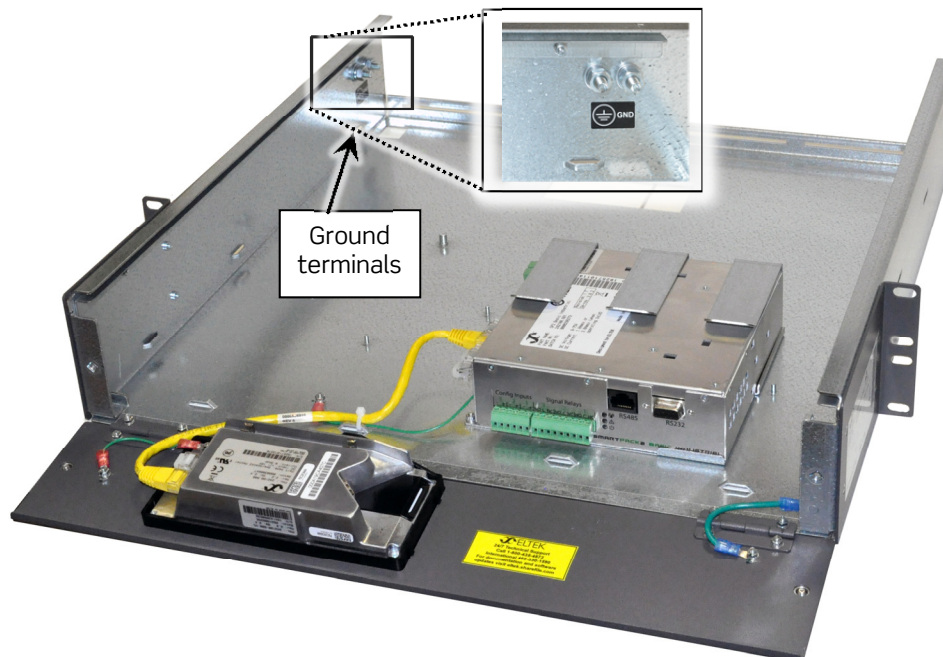


Figure 3 - Ground Connection

AC Connections

To make AC connections:

1. Turn OFF AC breakers before making connections.
2. Remove plastic covers shielding the terminals.
3. Connect earth ground first.
4. Connect input wires to termination corresponding to the rectifier positions. Rectifiers are numbered from left to right (rear view). Use 12AWG wire with the 0.250" wide push-on terminals.
5. Make sure that all wires are secured.
6. Replace the plastic covers previously removed in step 2.

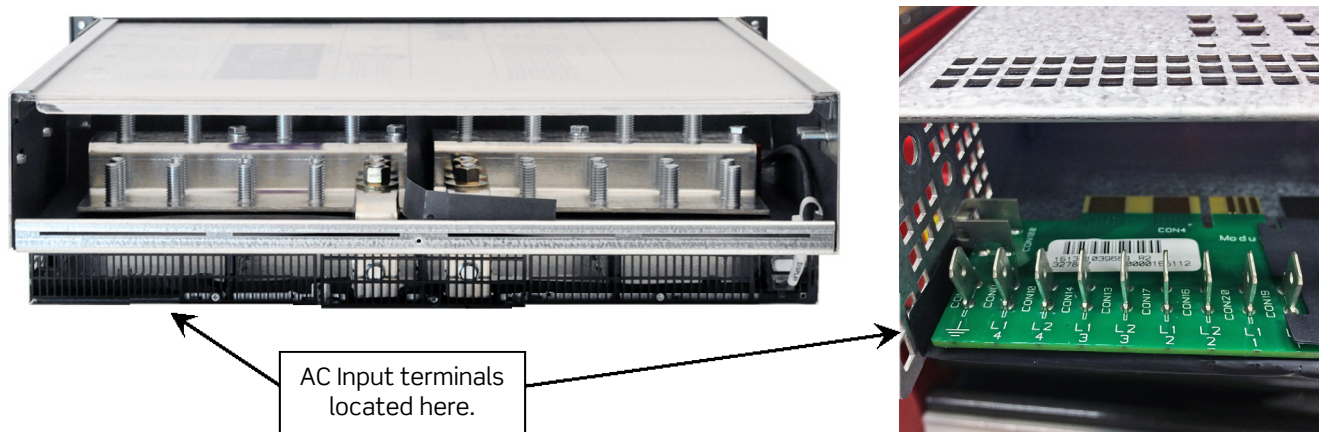


Figure 4 - Power Core-Rear View

DC Output Connections

The DC Output connections are made at the bus bars at the rear of the top chassis. There are fourteen (14) landings per polarity for battery or load connections, plus an extra set of landings for CO ground. Each landing consists of two 3/8" studs with 1" spacing.

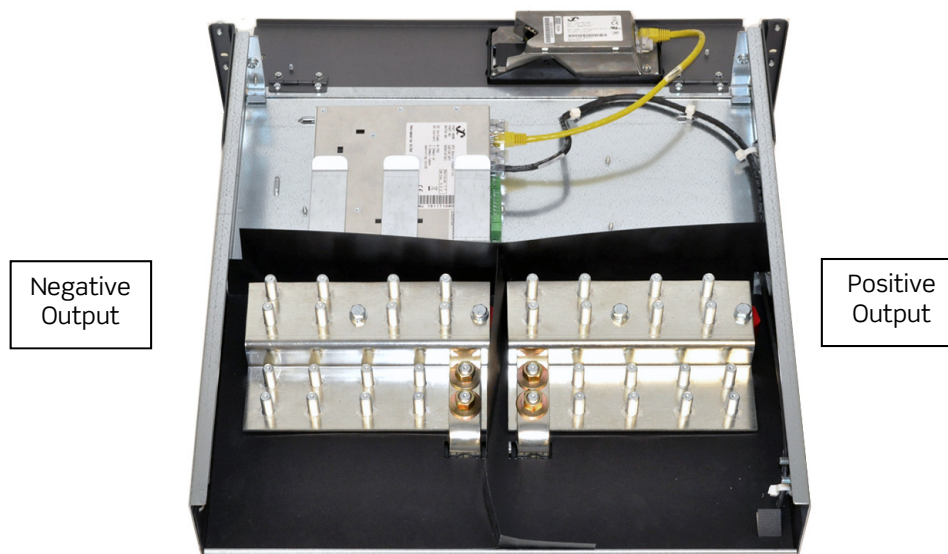


Figure 5 - DC Output Bus Bars

Controller Connections

Based on your system, make controller connections as illustrated in 6 (also shown on Doc. No. 2242157). For details regarding the controller, see the *User's Guide: Smartpack2 Basic Industrial*, Doc. No. 350025.013.

The Basic Industrial Controller is connected to the rectifier shelf using a standard CAT 5 cable. A CAT 5 cable, of appropriate length can be ordered from Eltek.

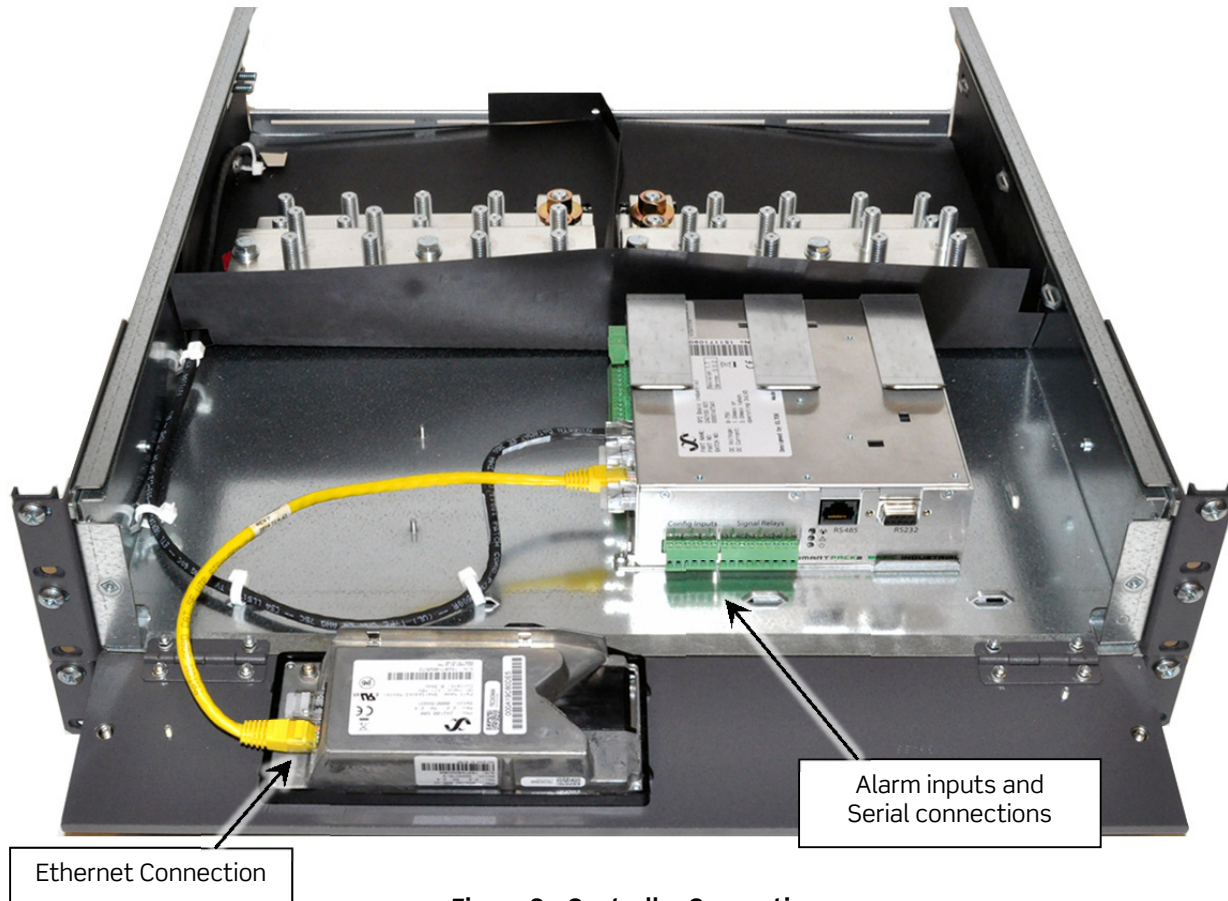


Figure 6 - Controller Connections

SD Card

The Smartpack2 Controller contains an SD card, which may be used to restore the factory default configuration. (The card also includes the Smartpack2 user guides.)

To access the SD card:

1. Slide the release lever on the controller from right to left, to open the controller. The card is located on the open end.)
2. Remove the SD card.
3. Refer to your rectifier or converter system for the factory default configuration



Figure 7 - Controller SD Card

Replacing the Cover

Verify that all connections are secure; then replace the cover, reversing the process described in the section on “Removing the Cover,” on page 5.

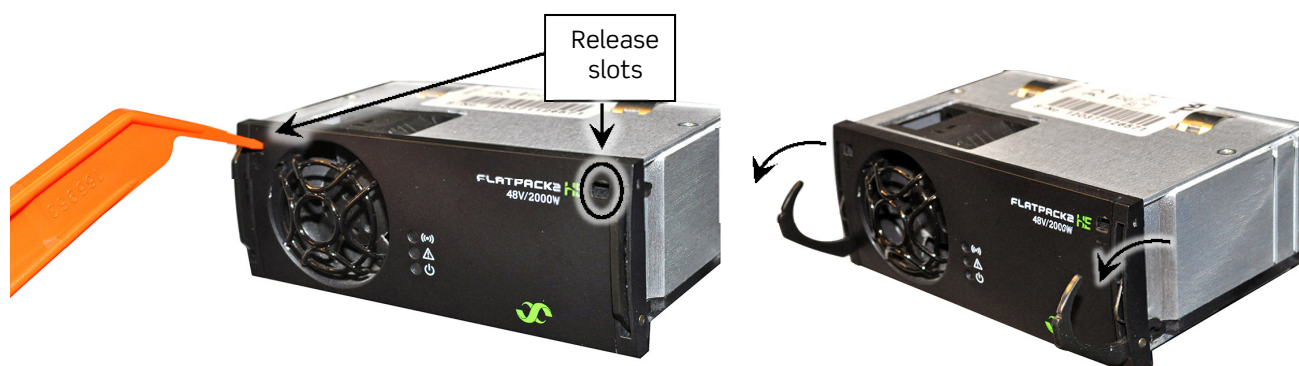
Turn-Up

To turn-up the system:

1. Check that all AC and DC connections are secure.
2. Check that all external AC breakers are in the off position.
3. Install one module, as indicated in the following procedure.

To install Flatpack2 modules:

1. Release the handles by inserting an unlock tool or a small flat-blade screwdriver into the release slots and pressing the tip upward; extend each handle.



Release Handles on Modules

2. Slide the first module firmly into the shelf, into the leftmost position.
3. Activate external breaker for position #1, but leave all others off. (**Note:** the rectifier slots are numbered from left to right.)
4. Latch the handles to lock the rectifier in place.
5. Allow the controller to power-up.
6. Verify system polarity with a voltmeter.
7. Install any remaining modules, repeating steps 1 – 4, above.

Basic Controller Functions

The Smartpack2 Master controller can be connected to a local area network (LAN) or connected directly to a computer in order to make use of the embedded web interface. This section describes the requirements and basic procedure for connecting to the controller via an Ethernet connection.

NOTE: Due to the innumerable network and computer settings that can be encountered in the field, various issues may prevent the web interface connection from succeeding. Please refer to additional controller documentation provided by Eltek and, if necessary, contact Eltek Technical Support group for help.

To connect to the controller:

1. Open the Smartpack2 Master Controller display, to access the Ethernet port.



2. Connect an Ethernet cable to the controller and computer Ethernet ports.
3. Open a web browser window on the computer.
4. Type the controller's IP address in the address bar of the web browser and press the <ENTER> key.

NOTE: By default, Eltek controllers are shipped with a static IP address of **192.168.10.20**.

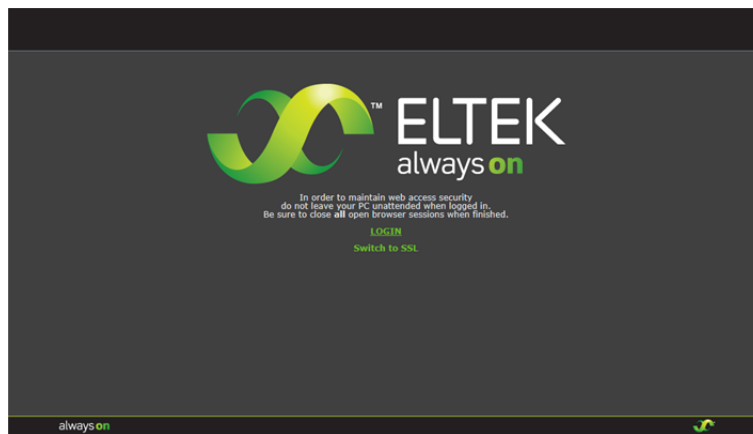
If you suspect the controller's IP address has been changed, the current address can be found at the following path through the Smartpack2 Master's display:

Main Menu > Sys. Config. > PowerSystem > General System Config. > Agent IP Address

5. Does the login page appear in the web browser? (See following figure.)

If YES, then continue to the next step.

If NO, then please contact Eltek Technical Support to help troubleshoot connectivity issues (current contact information is on the front page of this document).



Web Interface Login Page

6. Click the “**LOGIN**” link.
7. At the prompt, type in the username and password. The defaults are:

Username: admin

Password: admin

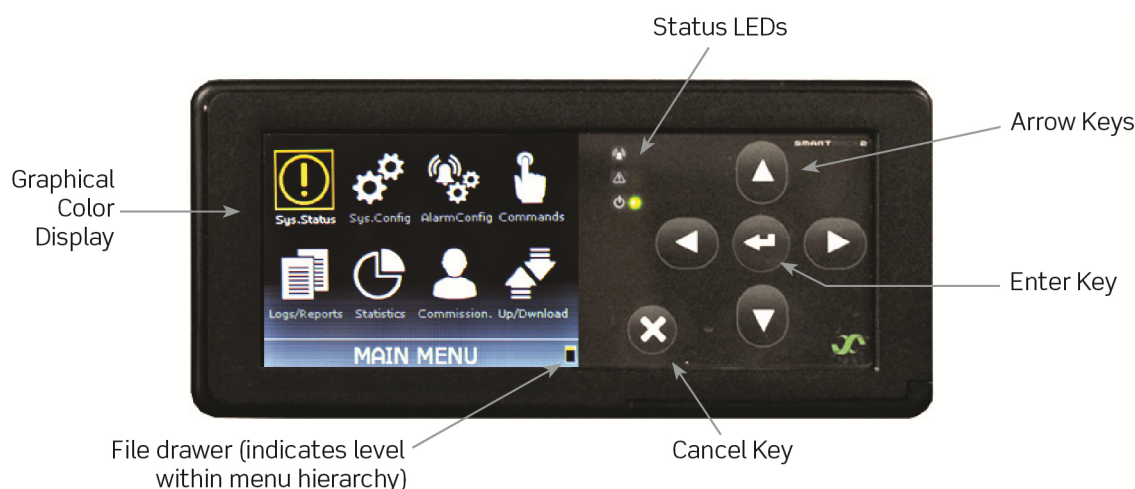
NOTE: The username and password are case-sensitive. If these credentials do not work, then they have been changed on site. Consult site personnel and/or documentation for the current credentials.

Controller connection is now established. Make sure to logout from the controller when finished.

NOTE: If the controller is to be connected to a local area network (LAN), contact the local network administrator to determine if a static IP address is to be assigned or if the IP address will be assigned dynamically (DHCP). Use the "IP configuration" window to set the controller IP configuration according to the instructions from the network administrator.

RECOMMENDATION: If connecting the controller to a LAN after setup, make sure to check connectivity through the network!

Controller Navigation Panel



Navigation Keys

	Enter Key	To change from Status mode to Menu mode and to select options, enter values		Left or Right Key	To navigate one page up or down and to highlight options
	Cancel Key	To navigate to previous level, view alarms, and cancel options and values		Up or Down Key	To navigate up or down, highlight options and increase or decrease value.

For assistance with technical questions and solutions, please contact Technical Support by email at tech.support@eltek.com or by phone at 1-800-435-4872.



Ordering information: sales.us@eltek.com, (469) 330-9100