ELTEK
A Delta Group Company

User's Guide

Smartpack2 Touch Controller

Monitoring and Control Unit

350130.013

356800.183, 3v7

SAFETY and ENVIRONMENTAL PRECAUTIONS

The **product warranty** becomes invalid if the following safety precautions are not followed during handling, installation, commissioning and general use/operation of *Eltek* power supply systems.

General Precautions


Device Hazard

CAUTION: Even though the product incorporates protection circuitry and other safeguards, it can be **damaged, perform poorly or have a reduced lifetime** if it is exposed to **incorrect treatment** during transport, installation or service. Always handle the equipment using proper lifting techniques, do not roll, climb or drill hole in the cabinets or enclosures. G1


Electric Shock

WARNING: Opening the equipment may cause personal injury — even if the mains AC supply is disconnected. Hazardous voltages may be present inside, as large capacitors may still be charged. G2

Environmental Precautions


Ventilated Hot Surface

CAUTION: To avoid damage the equipment, **keep objects clear of system ventilation inlets, outlets and system fans**, if any, ensuring the **airflow** through the units is **not obstructed**, and that the fans rotate freely. Use caution with power modules, as they can reach **extreme temperatures** under load and normal operation. E1


Current Surge Protection

WARNING: The installer/user is responsible for ensuring that the power system is not damaged by current surges, over-voltages, etc. caused by external transients, lightning, electrostatic discharge, etc. To avoid damage and obtain the expected system reliability, it is mandatory to always install SPDs in Eltek's power supply systems. Follow the instructions given in "Requirements for Surge Protection", doc. 2024623. E2


Humidity & Dust Protection

WARNING: The electronics in the power supply system are designed for indoor, clean environment. When installed in outdoor enclosures — using heat sinks or closed loop heat management systems — it is important to maintain the equipment closed and tight during operation, to avoid external air entering the enclosure. Also, when using open loop heat management systems, it is important to replace the filters on a regular basis. Indoor installations in dusty or humid areas require appropriate air filtering of the room, or filtering of the air entering the power system. Follow the instructions given in "Generic Guidelines Environmental Protection.", doc. 2038879 E3

Precautions during Installation


Qualified Personnel

CAUTION: Read the user documentation carefully before installing and using the equipment, as installation and operation is to be performed as described in it. Always tighten screws and bolts with the **torque values recommended by the supplier** of the terminals, breakers, etc. Also, refer to **Eltek's Typical Torque Recommendations** in the documentation. For safety reasons, the **commissioning and configuration of the equipment is only to be performed** by *Eltek*'s personnel or by authorized and qualified persons. I1


EMC, NEC/CEC Regard

CAUTION: This product is tested and verified according to international safety, environmental and EMC standards. Any **non-*Eltek* equipment** installed into this product after delivery might influence the performance and **could infringe the original approvals**. The **installer is responsible** for ensuring that the environmental properties of this product/ system do not deteriorate during installation, and that it is performed in accordance with applying regulations.

Installations in USA and Canada must comply with NEC/CEC requirements. I2


Device Hazard

CAUTION: Before you start the electrical installation, you must **always disconnect** all external supply circuit breakers, as well as internal battery and load fuses/ breakers, if any. I3


Electric Shock

WARNING: For safety reasons (high leakage current / high touch current) you must always connect the AC earth wire (PE) to the terminals, before you connect the AC input cable(s).

The batteries, if any, represent a major energy hazard. To avoid short-circuit of battery poles, you must always remove metallic objects — uninsulated tools, rings, watches, etc. — from the vicinity of the batteries. I4


Electric Shock

WARNING: 60V power systems, and higher voltage systems, are only to be installed in Restricted Access Locations (RAL). Access must be limited by use of tool, i.e. lock and key. I5

Part number for *Smartpack2 Touch Controller:* 242100.510

350130.013 Issue 1.0, 2018 May

Published 2018-05-29

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Table of Contents

1. Introduction

The advanced *Smartpack2 Touch* controller is developed for Eltek power systems with the Smartpack2 based distributed control system.

About this Guide

This booklet provides users of Smartpack2-based power systems with the required information for operating the *Smartpack2 Touch.*

Read also the generic and site specific documentation for your power system.

For detailed functionality description, browse and search through the many topics in the *Online Help* and *Online Controller Functionality* pages at the web.

NOTE

- you must log in to access Online Help and Controller Functionality - contact your Eltek representative

System

To build a complete Smartpack2 Control System - three units are required:

1. Smartpack2 Touch:
- the master controller and visible part of the system.

2. Smartpack2 Basic / Basic Industrial:
- handles housekeeping: supplying CAN bus power, input monitoring, output signaling (BI) and LVD outputs.

3. I/O Monitor Type2:
- handles external inputs and outputs.

Other:
- The system can be expanded with several Basic Industrial, I/O units and other CAN nodes in the Smartpack family, all connected via the CAN bus.

2. The Smartpack2 Touch Controller

The Smartpack2 Touch controllers are powerful modules used as master controllers in the distributed control system of Smartpack2-based power supply systems. It is equipped with a graphical display with capacitive touch interface to show and control functions of system.

SP2Touch is the interface for system information, and communicates with SP2 Basic, SP2 Basic Industrial and other nodes and power modules via CAN.

Connecting to the Ethernet port allows easy access to the SP2Touch embedded web pages.

The Smartpack2 Touch controller have the same shape as the older Smartpack2 Master (2U high and 160mm wide) and can easy replace it in the power system's front panel or door.

Figure 2: Smartpack2 Touch front view

Key Features

A wide range of features are implemented in the *Smartpack2 Touch* controller:

- ✓ Touch Screen 4.4'' running the web interface
- ✓ LEDs for local visual alarming (Major, Minor, Power ON)
- ✓ Ethernet port at the back for permanent connection for monitoring and control
- ✓ Ethernet port at the front - a 'Craft port' with limited functionality and fixed ip-adr.
- ✓ USB port in the front and back for flash drives, Wi-Fi Adapter Dongle etc.
- ✓ RS-232 and RS-485- for communication w/3rd party equipment
- ✓ SNMP protocol with TRAP, SET and GET on Ethernet.
- ✓ Email of TRAP alarms
- ✓ Comprehensive logging
- ✓ Automatic battery monitoring and test
- ✓ Battery lifetime indication
- ✓ Battery used and remaining capacity (Ah or %) monitoring
- ✓ User defined alarm grouping (Boolean logic for grouped alarms)
- ✓ Comprehensive generator/hybrid/DC solar system control and monitoring features

For detailed functionality description, browse and search through the many topics in the Online Help and Online Controller Functionality pages at the web - see chapter 5 in this user guide.

Connector and Communication Ports

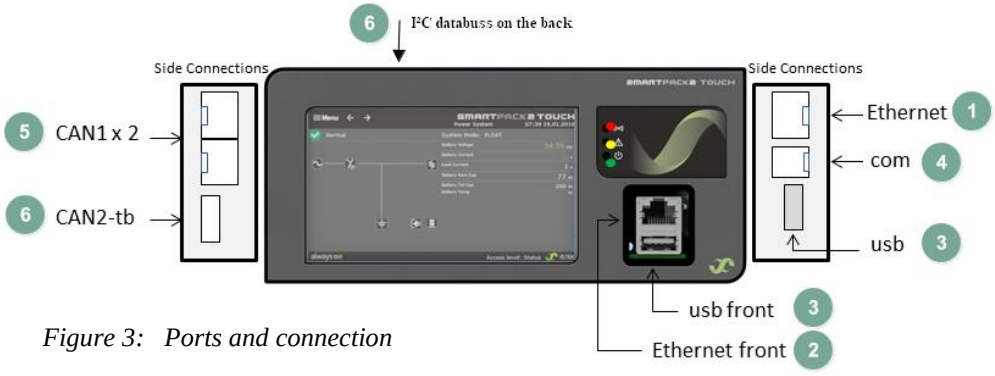


Figure 3: Ports and connection

1. **Ethernet1 (rear):** - intended for permanent connection to a local area network.
2. **Ethernet2 (front):** - 'Craft port' with limited functionality.

> NOTE
> *- Fixed ip-address for accessing the controller 10.10.0.1*
> *- There is no routing functionality, and no access to any external lan from this port.*

3. **2x USB 2.0** Host port (front and back)
4. **RS-232 & RS-485**
5. **2xCAN1**: - for connection to other controller modules.
6. **1x CAN2-tb** - a three-pin terminal block connector is used to connect the SP2T to third party equipment

> NOTE
> *- CAN1 and CAN2 are isolated from each other.*

7. **I²C databus** (on the back) - for future possible expansion of the controller.

CAN Bus Termination

To ensure a correct bus communication and avoid data reflection, you must always terminate the CAN bus with a 120Ω resistors.

Eltek power systems are shipped from factory with the CAN bus already terminated with a 120Ω resistors.
The CAN bus termination is implemented with a special RJ45 plug with built-in 120Ω end-of-line resistor.

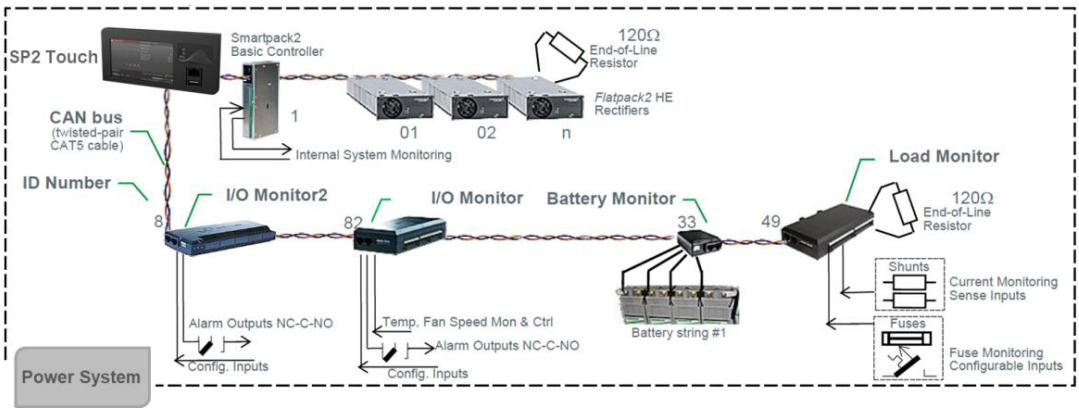


Figure 4: Example of CAN bus addressing and termination in a Smartpack2-based control system with several modules connected the CAN bus.

CAN Bus Cabling

In addition to the two dedicated wires for communication, the CAN bus multi-wire cable must integrate wires for the CAN power supply and other signals. In standard industrial environments, the CAN bus can use standard cabling without shielding or twisted pair wiring. If very low interference (EMI) is required, a CAT-5 twisted-pair cable is recommended.

Front Panel Operation

This section describes the Smartpack2 Touch controller display and indicators, and how to operate the Smartpack2-based power system from the controller front panel.

For detailed functionality description, browse and search through the many topics in the Online Help and Online Controller Functionality pages at the web - see chapter 5 in this user guide.

Graphical Display

Smartpack2 Touch has a 4.4" responsive touch screen to run the web interface, i.e. you have the same feature available in the front panel as in the PC browser.

Navigation:

Use your finger to move around the touch screen and touch navigation point as with the mouse in the pc browser.

NOTE

- zoom not supported!

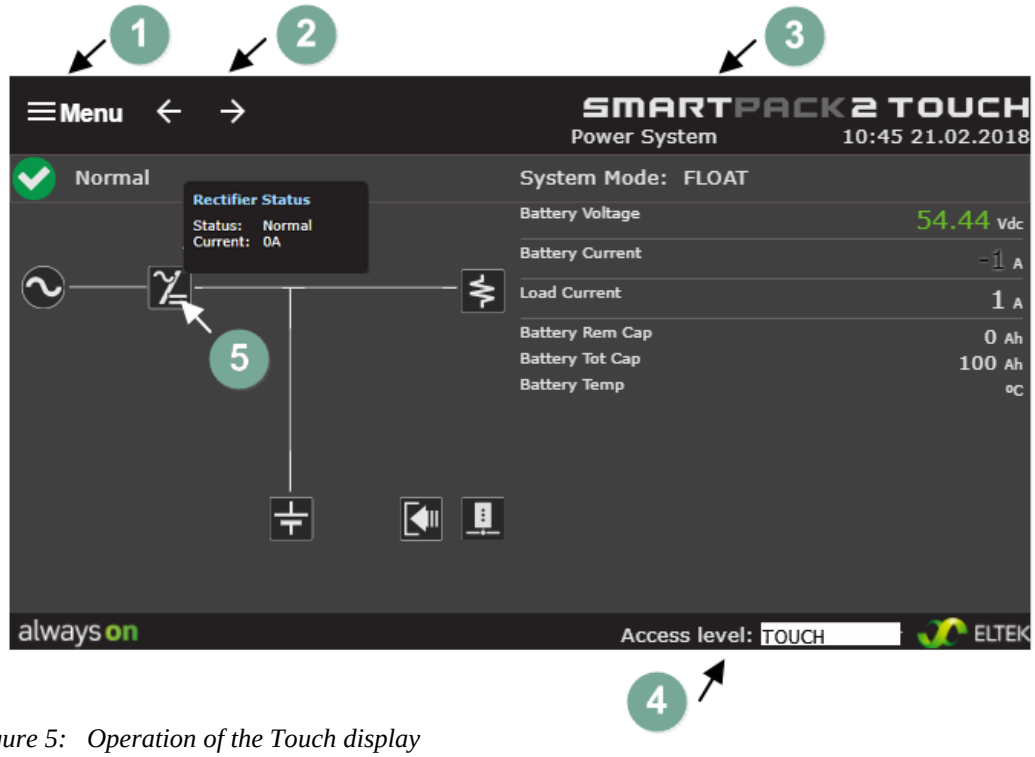
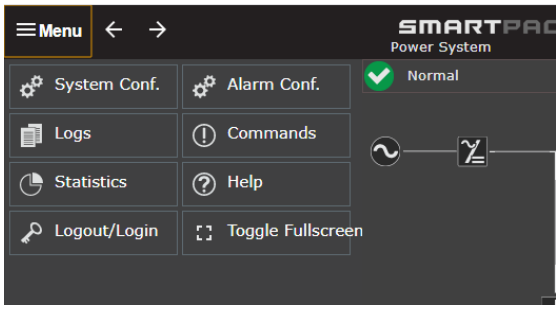
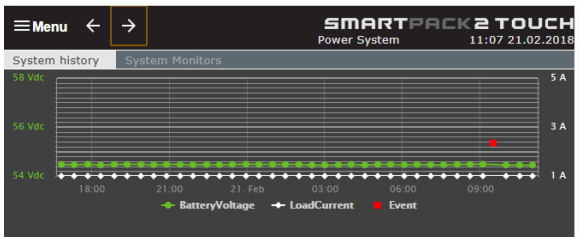


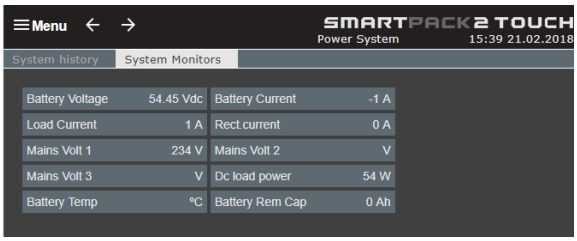
Figure 5: Operation of the Touch display

1. **Menu**
   Press the Menu symbol to enter the main menu.



2. **Arrows:**
   Moving ← → in navigation.
   - pressing → in the start screen take you to the System History / System Monitors section:

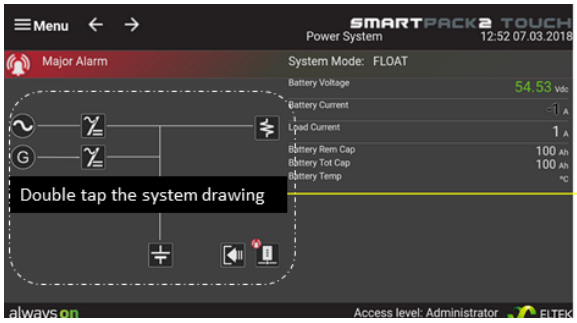


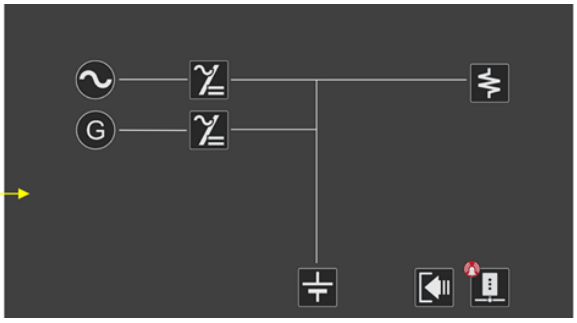


3. **Refresh of web front page:**
   Press the SMARTPACK2 TOUCH logo and it will refresh / reload the web front page – just like using the F5 key at a pc keyboard. fig.5
4. **Access level:**
   To be able to do any changes you have to login.
   The users name and password are the same as on the PC web interface.
   – By default, the Touch is logged in with a “read only” user called “Touch” - fig.5
5. **Status (mouse over):**
   Sliding your finger into any system symbol in the system drawing, gives you a popup box with status of the actual component - like “mouse over” in the pc browser. fig.5

Double-Tap:

When you double-tap in the system drawing at the Touch screen, it zooms in to cover the entire screen:





LED indications

The Smartpack2 Touch controller has the following LED indications:

LED Indicator	Represents	Status	Description
Green	Power	OFF ON	NO Power supply Supply OK
Amber	Warning	OFF ON	No Alarm Minor Alarm
Red	Alarm	OFF ON	No Alarm Major Alarm

Controller Access

Three ways to access the *Smartpack2 Touch* controller:

1. Locally from a stand-alone computer through the Ethernet port in the front.
2. Locally from a stand-alone computer through a Wi-Fi dongle connected to one of the two USB ports.
3. Remote through the Local Area Network (LAN) connected to the main Ethernet port located in the rear of the Touch.

Each controller is shipped with a unique Eltek MAC address stored inside the controller and marked on the controller's label, and with the default IP address <192.168.10.20> for the Ethernet LAN port.

NOTE

All configuration for the Smartpack2 Touch controller requires administrator (admin) permissions.

Setting up TCP/IP communication

In the front display at the Touch or in the PC web browser, when logged in as administrator, – you have access to the TCP/IP settings.

Navigate in to the Device Settings / Network Settings / TCP/IP Setup – where you'll find 3 tabs – eth0, eth1 and wlan0:

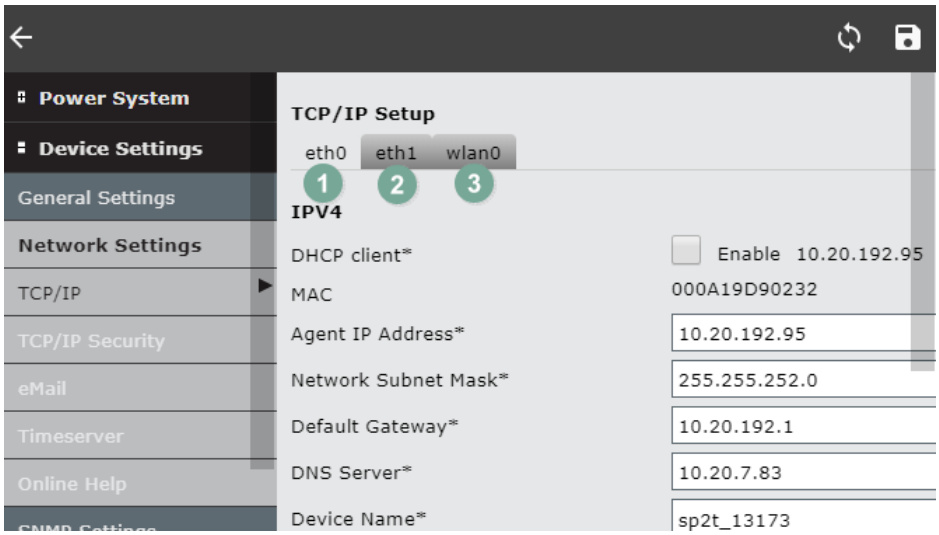


Figure 6: Settings for TCP/IP communication

Each controller is shipped with a unique Eltek MAC address stored inside the controller and marked on the controller's label, and with the default IP address <192.168.10.20> for the Ethernet LAN port.

1. eth0 *(fig.6)*
   Setup for the main Ethernet port located on the rear/side of the controller. The configuration is identical to other Eltek controllers.

2. eth1 *(fig.6)*
   Displaying IP-address for the front Ethernet Craft port where you can connect directly to a PC and log on to the controller with address 10.10.0.1 (not changeable).

- continued from previous page:

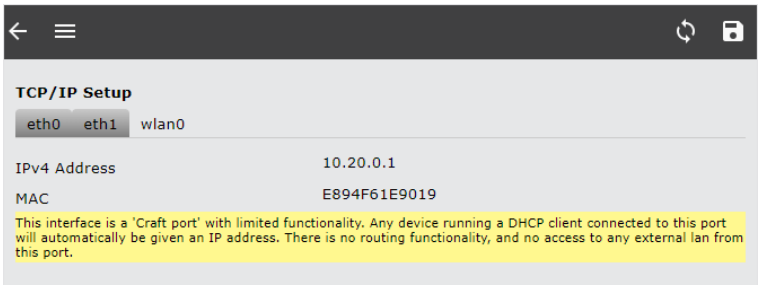
3. wlan0 *(fig.6)*

Displaying IP-address for the front USB Craft port where you can connect a USB Wi-Fi dongle (not all types supported).

- The Wi-Fi network is given a fixed name = “sp2t_12345” where the numbers is the last 5 of the serial number of the Touch controller.

- Find the network at your device (PC, mobile or tablet)
  connect by using password = network name (“sp2t_12345”)

- Access the controller web pages by address 10.20.0.1 (not changeable).



NOTE

The USB port supports a limited range of Wi-Fi dongles.
For list of tested dongles - see Online Controller Functionality pages at the web.
- URL can be found in Chapter 5 of this user guide.

Connecting with ENU

Eltek Network Utility (ENU) program is a administration tool for IP Network connected Eltek power system controllers and is a MS Windows PC application.

NOTE

Free version: *Simple broadcast search, Firmware upgrade and Setup of IP parameters.*

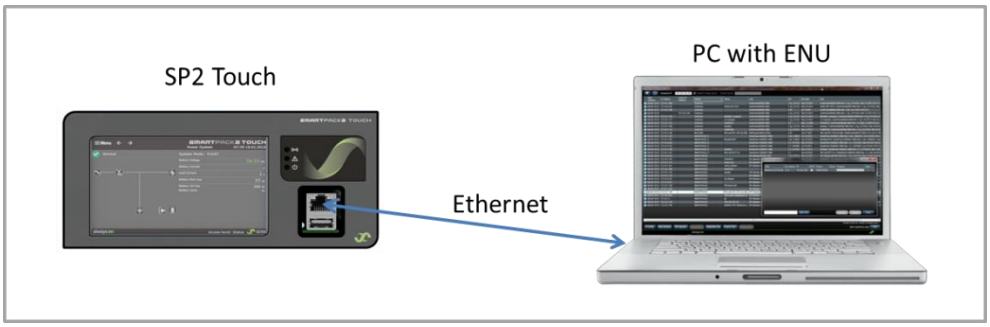
License version: *Advanced subnet and IP range search, Bulk firmware upgrade of controllers, Store «recent search» IP ranges, Bulk xml configuration upload to controllers.*

For license request contact reseller or Eltek support at enu.license@eltek.com

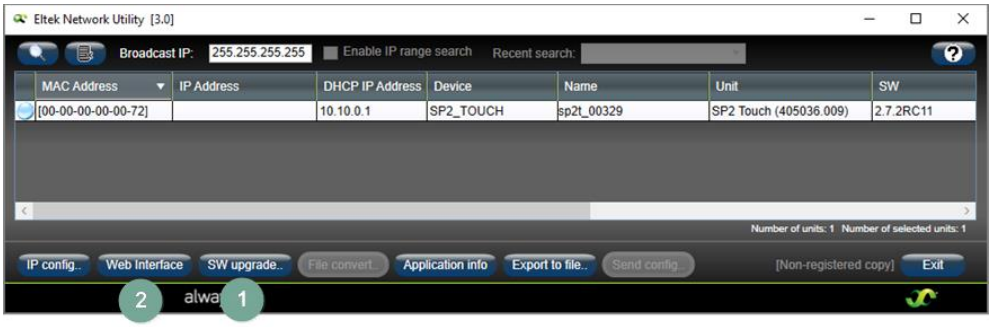
Two ways to access the Touch controller using ENU:

Front Ethernet Craft Port

- Connect direct from the front Ethernet port to a PC with an Ethernet cable.



- Do a search in ENU and the SP2 Touch will display with IP address 10.10.0.1



Facilities:

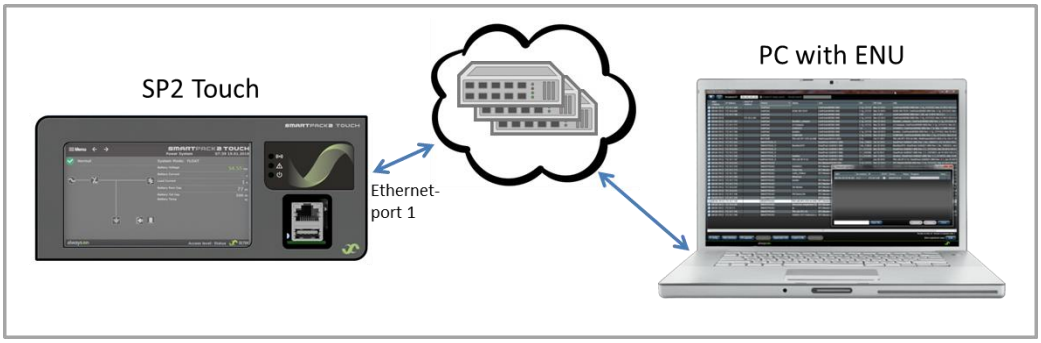
1. SW upgrade - see topic *Firmware Upgrade.*
2. Web interface.
   - opens the SP2 Touch web page in your default web browser.

NOTE

Not possible to configure any IP-settings with ENU when connected to the Craft Port (fixed IP) – to config. the network port, use the web interface, see page 11.

Ethernet Network

- Remote connection from a PC through a Ethernet Network:

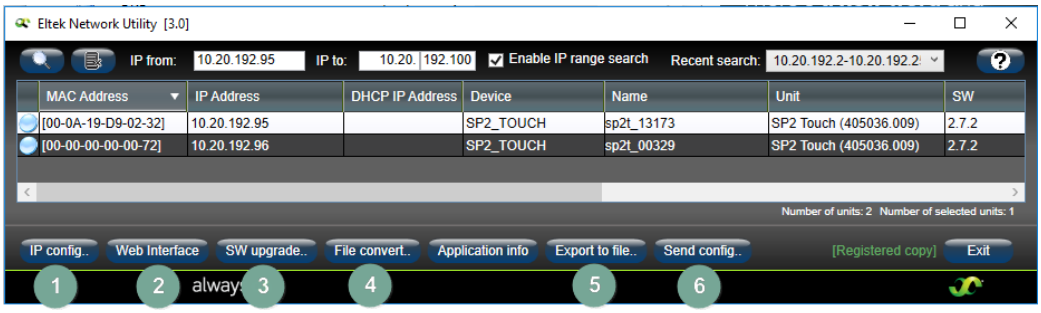


Same subnet:
If the SP2 Touch is on the same subnet as your computer – do a broadcast search (IP 255.255.255.255) and the controller will show up.

> NOTE
> *You can check your computer network setup by using the IPCONFIG command in the Command Prompt Window on your computer.*

Outside your subnet:
If the controller is on another subnet - use the Enable IP Range function in ENU and define the range to search (*in licensed version only*).

Facilities:



1. IP Config – opportunities to change ip-configuration settings.
2. Web Interface - opens the SP2 Touch web page in your default web browser.
3. SW Upgrade - see topic *Firmware Upgrade*
3. Web Interface - opens the SP2 Touch web page in your default web browser.
4. File Convert – converts software (.s19) files to binary files.
5. Export to file – saves controller info to a xml-file
6. Send Config – send system configurations files (xml) to one or several controllers.

Firmware Upgrade Controller

Downloading software to a SmartPack2 Touch can be done in 3 ways:

1. Using ENU (Eltek Network Utility)
2. Download from USB memory stick
3. Download via SFTP using any free open source FTP client.

Upgrading the firmware does not delete or change any of the configuration and calibration values stored in the controllers.

> NOTE
> *All configuration for the Smartpack2 Touch controller requires administrator (admin) permissions.*

Software download using ENU (remote)

A quick and easy way to download software for a SmartPack2 Touch is to use The Eltek Network Utility (ENU) program - a Windows-based software that download SW from your PC to the controller through Ethernet LAN using SFTP.

1. Enter the ENU program, search up your controller and click “SW upgrade”

2. Open the upgrade fil xxx.CRY

3. Click “Submit”

4. Fill inn user authentication level 3 (administrator) to start updating the SP2 Touch

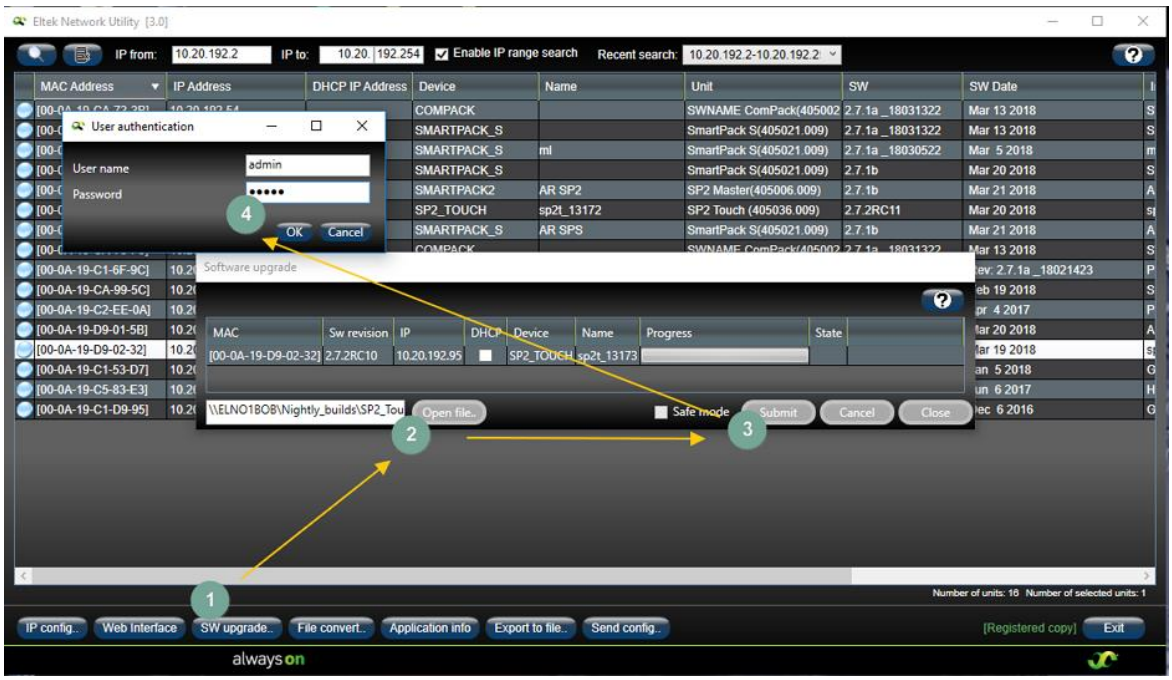
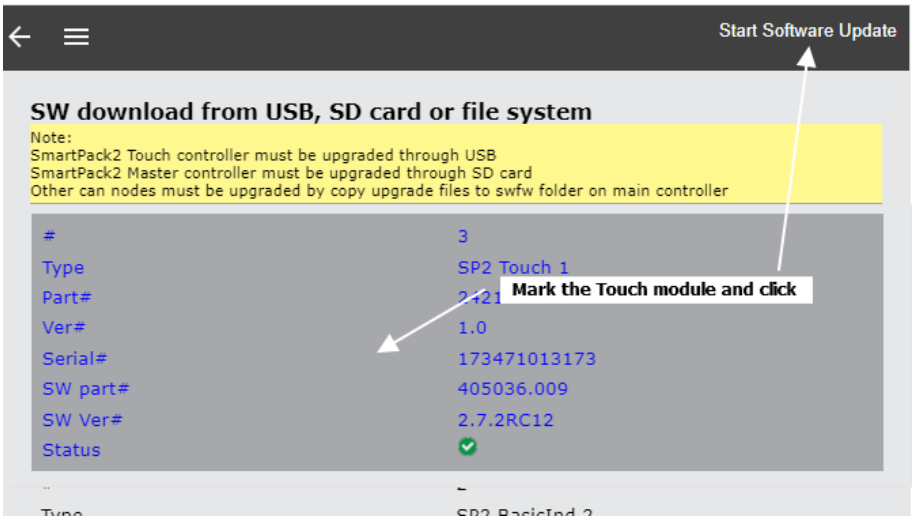


Figure 7: Software download using ENU – sequentially from 1 to 4.

Software download using USB memory stick (local)

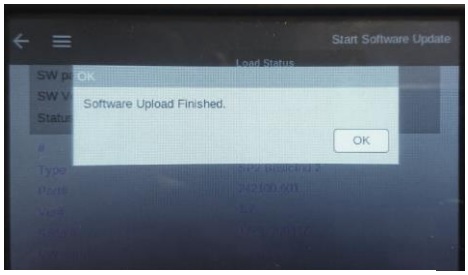
A easy "on-site" option to load SW to the SmartPack2 Touch is to use a USB memory stick

- Download the .CRY file to the USB stick
  - must be named in uppercase letters: SP2TOUCH.CRY
- Plug in the USB stick in ether the front or the back USB slot.
- Use either web browser at a pc, or the front panel at the Touch, and access "Command/Software Upgrade" to start the Software Update process.
- Mark by clicking the Touch in the list and click the "Start Software Update":



Display when updating Touch SW :

Updating ongoing



Update finished

NOTE

It's only the Smartpack2 Touch that can be updated from USB – for other CAN modules follow step 3. "Software download via SFTP".

Software download via SFTP (remote)

From remote log on to the Touch through sftp://<ip.adr.>/swfw/ and use your admin (level 3) username and password.

NOTE

Ex. - use any open source FTP client – FileZilla, WinSCP etc.

- Copy the software file SP2TOUCH.CRY into the swfw

NOTE

SW file must be named in uppercase letters

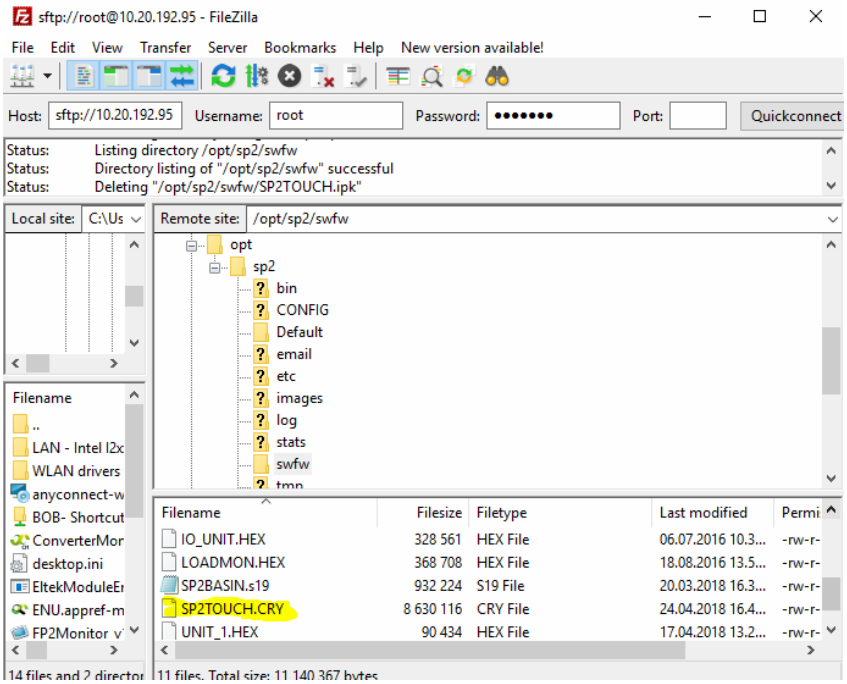


Figure 8: File structure in the SP2 Touch and where to put the software update file. - shown here using a freeware FileZilla client.

- The Software update process will start automatically when the software is copied into the swfw folder with right filename and designator. (SP2TOUCH.CRY)

SW for other CAN nodes

SW for other CAN nodes can also be loaded into this swfw folder via SFTP and upgraded trough the same process in the front panel at the Touch or in a PC browser in the menu “Command/Software Upgrade”.

The upgrade files must have predefined filename according to the list below:

Type	HW Part#	SW Part#	Fil name	Comment
SmartPack2 Touch	242100.510	405036.009	SP2TOUCH.CRY	
SmartPack2 Basic Industrial	242100.601	405019.009	SP2BASIN.s19	
SmartPack2 Basic	242100.501	405007.009	SP2BAS.MHX	Use the latest bootloader HW 3.1/4.0
BatteryMonitor V1	242100.300	402086.009	BATTMON.HEX	
BatteryMonitor V2	242100.300IA	405033.009	BATTMON2.s19	
IO Unit - outdoor - type3 - type2	 242100.304 242100.306 242100.502	402088.009	IO_UNIT.HEX	
LoadMonitor	242100.301	402087.009	LOADMON.HEX	
MainsMonitor	242100.305	402093.009	MAINSMON.HEX	
FlexiMonitor	242100.603	405028.009	FLEXIMON.s19	

Figure 8: List of Software update file names for different controllers.

NOTE

All firmware upgrade and configuration files stored in the swfw folder must have specific file names.

WARNING:
Uploading the firmware may take a long time. Do not power down the system or controller during firmware upgrade, as it may corrupt the program memory and require service of the unit.

3. Power System Configuration

The *Eltek* power supply system's functionality represents a vast set of functions, characteristics or capabilities implemented in the hardware and software of the controllers, control units and nodes connected to the system's CAN bus.

You can use following types of user interfaces to access the functions and parameters:

- The Touch controller's responsive display running the Controller Web-based User Interface
- A standard web browser
  to access Controller Web-based User Interface
- The *PowerSuite* program
  A PC application run on computers using MS Windows operating systems

For detailed functionality description, browse and search through the many topics of the *Functionality Description* of *Online Help*.

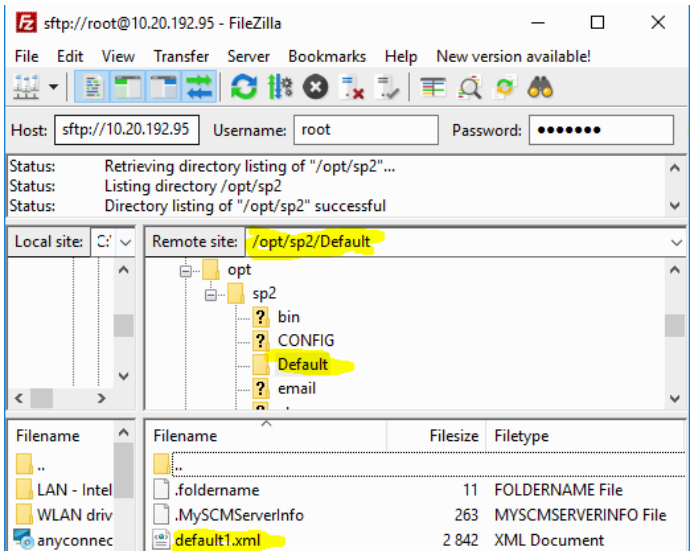
Configurations files

Configurations files in XML or HEX format can be load or saved through functions in the Commands section – Set Default with XML-file and Save/Load functions.
Loading can be done from internal memory or PC while saving is just done to the PC.

Set Default Configuration with XML Default Files

Set Default Configuration with Default-xml files – resets system values using a properly-formatted Eltek XML file. An XML file can be used to configure all controller parameters.

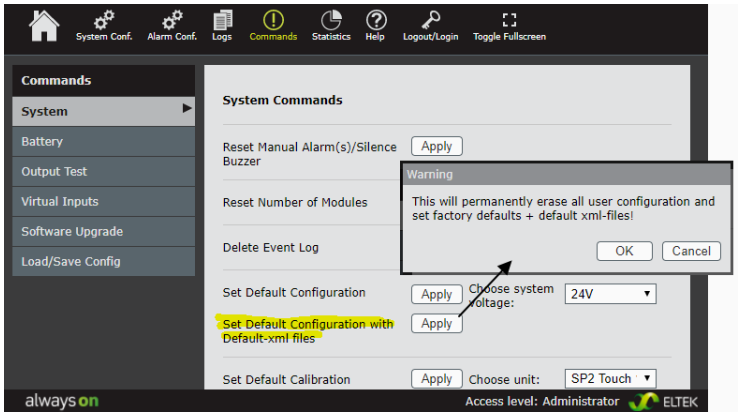
Use ftp to access the "default folder" in the file system ftp://x.y.z.a./opt/sp2/Default :



Upload the default files to the file system - up to 3 files where the name of the files should be Default1.xml, Default2.xml and Default3.xml.

Use the power suite, the web or the front touch display to apply this function.

When using the “Set Default Cfg with default-xml files” the system is first set to Default Configuration and then the 3 xml files will load into the system sequentially.



Save/Load Configuration files

The “Load/Save Config” pages in the Commands section facilitate loading and saving of controller configuration files.

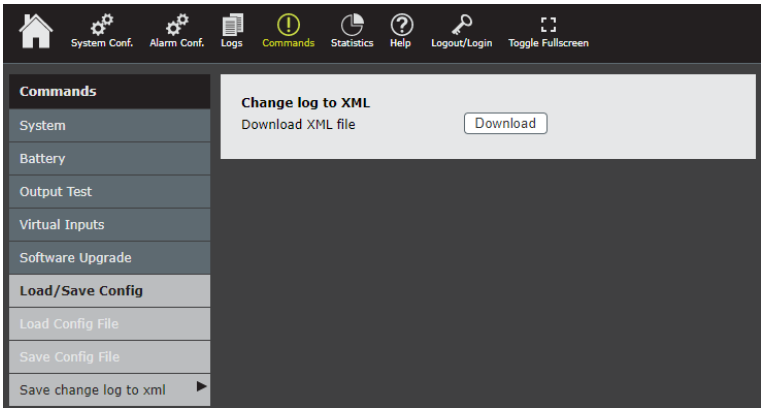
Load Config File: - page for loading XML or HEX configuration files from the computer into the controller.

Save Config File: - page for saving HEX configurations file to the computer.

Save Change LOG to XML: - makes a XML fil of changes in configuration for the controller modules.
Recommended way to make a ChangeLog file is to start with doing a “Set default” for your system. Do the changes and settings you want for your system – then Save Change Log to file and you can have this for backup or for setup to other similar systems.

Use of the saved Change Log file:

- Load it to a system with the “Load Config Fil” function. (Do a “Set default” first).
- Make it a default fil by renaming to “Default1.xml".



NOTE

- Product cfg, TCP/IP cfg and calibration is not included in the change file.
- For configuration values set more than one time, only the latest change is in the file.

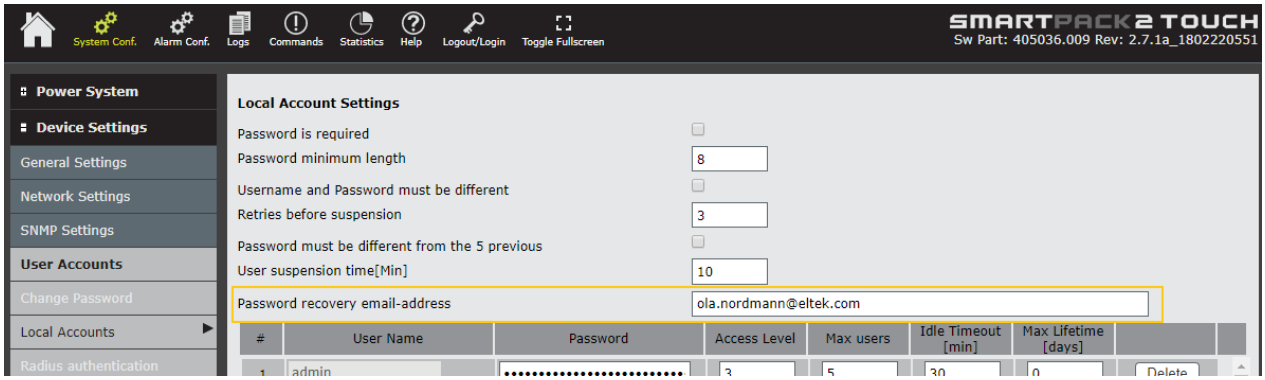
4. Master password

If you have forgotten the password to log in to the SP2 Touch, you have to use the Master Password function to reset all user accounts with associated passwords.

Setup

IMPORTANT

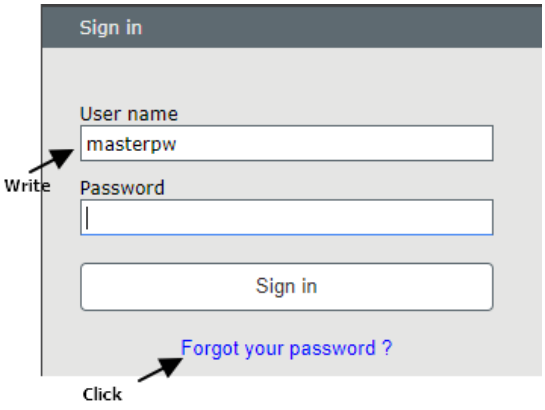
To be able to receive a Master Password - be sure that the **Recovery Email** is filled out:



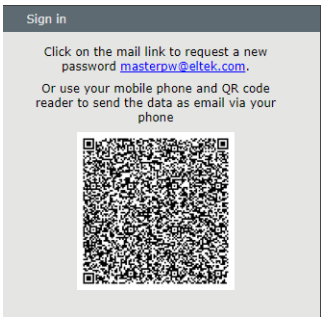
How it works

1. **When in the "sign in window" and have forgotten the password:**

   - write *"masterpw"* in the user field.
   - press the "tab" key
   - Click the *"Forgot your password"* link.



2. **After clicking the "Forgot your password" link - a new page for requesting the Master Password appears:**



It is two ways to ask for the Master Password:

1. **In a PC Browser:**
   Click on the mail link - a generated email will show up - send it!
2. **At the front GUI:**
   Use your phone with a QR-code reader and scan the code - a generated email will show up - send it!

- continued from previous page:

Once you have sent the Master Password email request, you will return an email to the email address stored in the "Recovery Email Address" field.

- For more details – see the Online Controller Functionality Help.

NOTE

When you have used the master password all accounts, user name and password, is set back to default, you must now log in with the default users and passwords admin, status, and control.

Every custom made accounts will be deleted.

5. References

Technical Specifications

For technial spesification: – see the Datasheet Smartpack2 Touch Doc
Part.No. 242100.510.DS3

Connections and Mounting

For spesification about Connections and mounting: – see Doc No. 2251004

NOTE

For the documents above - contact your Eltek representative.

Online Help

For detailed functionality description, browse and search through the many topics in:

- Online Controller Functionality – Link
  - a online manual with controller functionality specific topics.

- Online Help – Link
  - a online manual which cover a bit of everything in the Eltek Power System.

NOTE

- You must log in to access Online Help and Controller Functionality - contact your Eltek representative

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