ELTEK
A Delta Group Company

User's Guide

Compack Controller

Monitoring and Control Units

Power Supply Systems

350011.013

356800.183, 3v6

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** 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 fuses, 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

Eltek's Part Number:

242100.400 Compack Controller
242100.900 Compack Interface Kit

Doc No: 350011.013 Issue 2.2, 2016 Dec
Published 2017-01-16 mafeno

Table of Contents

1. Introduction

The *Compack* controller is a powerful and cost-effective module, developed for monitoring and controlling *Eltek's* power supply systems. They are mounted on DIN rails, on panels, on power racks, etc. and are suitable in low power applications.

The controller is also used in larger *Eltek's Compack*-based power systems.

About this Guide

The booklet describes the *Compack* controller's building blocks, external connections and technical specifications. The booklet also provides the users of *Compack*-based power systems with the required information for connecting the system to a network.

Read also the generic documentation for your *Compack*-based power system.

For detailed functionality description, browse and search through the *CWUI Online Help* and *PowerSuite Online Help* systems.

For acronym descriptions, refer to section "Glossary", page 41 (rear cover page).

System Diagram — Micropack Power System

In the *Micropack PS* system shown in Figure 1, the *Compack* controller monitors and controls the whole system. Via the Ethernet port, the controller facilitates system configuration using a Web browser locally or remotely via Internet.

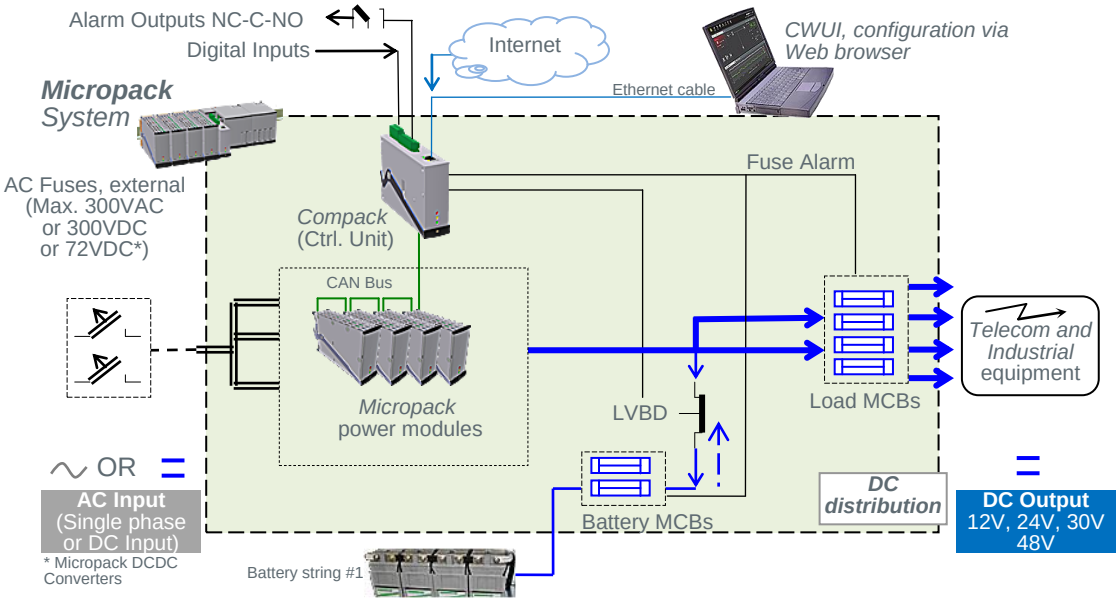


Figure 1 Example of a typical Micropack PS *system used as a power supply for telecom and industrial equipment. The system is fed from an external AC mains supply or DC supply, and consists of power modules, a control unit and DC distribution unit with LVBD contactor, all mounted on a DIN rail. External battery bank can be connected.*

2. The *Compack Controller*

The *Compack* controller is a monitoring and control unit mounted on a DIN rail, panel or power rack, and used in *Eltek's* power systems. The controller is also used in larger *Eltek's Compack*-based power systems.

It monitors and controls the whole system, and implements several network protocols for local and remote system configuration via Web browser (CWUI) and via existing network management systems (NMS).

Using the UDP tunnelling protocol, the powerful *PowerSuite* application may also be used for system configuration from a local or remote Internet connected personal computer.

See also section "Technical Specifications", on page 9.

For acronym descriptions, refer to section "Glossary", page 41 (rear cover page).

Key Features

- ✓ LEDs for local visual alarming (Major, Minor, Power ON)
- ✓ Ethernet for or remote/local monitoring and control via Web browser
- ✓ SNMP protocol with TRAP, SET and GET on Ethernet. Email of TRAP alarms
- ✓ 3 programmable relay outputs for "traditional" remote monitoring
- ✓ 3 programmable multipurpose inputs (temperature, "digital inputs", battery symmetry or analog signals)
- ✓ 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)
- ✓ Uploading and downloading of configuration files with PowerSuite (Windows™ application) or Web browser

Block Diagram

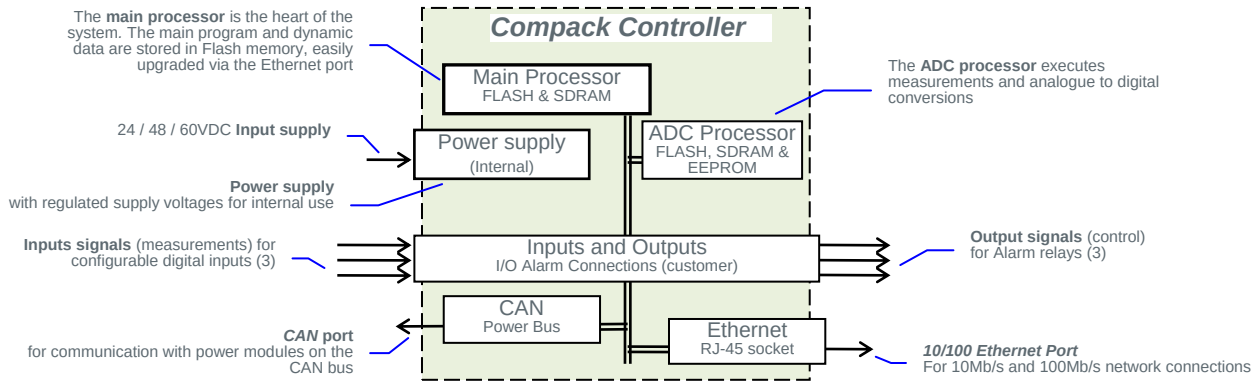
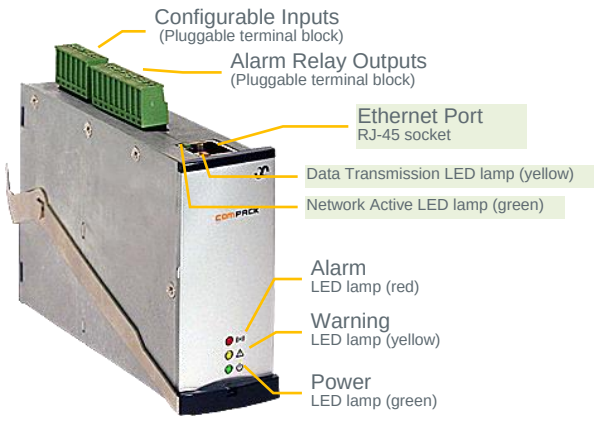


Figure 2 Block diagram of the Compack *controller showing the module's main functions*

Location of Terminals, Ethernet Port and LEDs

You can easily connect the *Compack* controller to an Ethernet networked computer, plugging a standard Ethernet cable to the RJ-45 socket on top of the controller and to any available Ethernet socket on the network.

For acronym descriptions, refer to section "Glossary", page 41 (rear cover page).



The *Compack* controller can also be connected directly to a computer using a standard Ethernet cable (straight-through or crossover cable, as the controller's port implements HP Auto MDI/MDI-X detection and correction).

For Ethernet network addressing, read also section "Networking the Compack Controller", page 14.

The *Compack* controller is configured from factory with ID number "1" for CAN bus communication. Read section "About Control Units", page 40.

Figure 3 Location of I/O terminals, Ethernet port and LED lamps.

The *Compack* controller's I/O cables are connected to pluggable terminal blocks located on the controller's top. These connections are used for monitoring and controlling the status of external equipment, using configurable inputs and voltage-free alarm relays contacts.

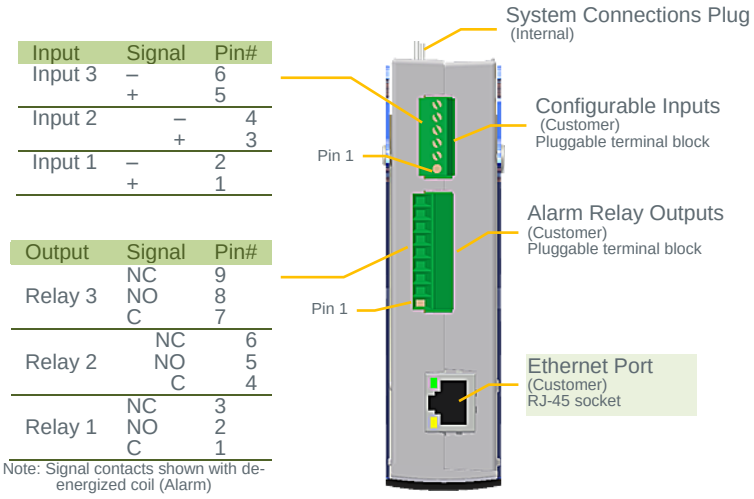


Figure 4 Pluggable terminal block connections on a Compack *controller*

LED indicators

The *Compack* controller has the following LED indications:

- Alarm (red) indicates an alarm situation (major alarm)
- Warning (yellow) indicates an abnormal situation (minor alarm)
- "Power" (green) indicates that the power supply is ON or OFF

Mounting and Removing the Controller

Get acquantied with the satety precautions on page 2, before installing or handling the equipment.

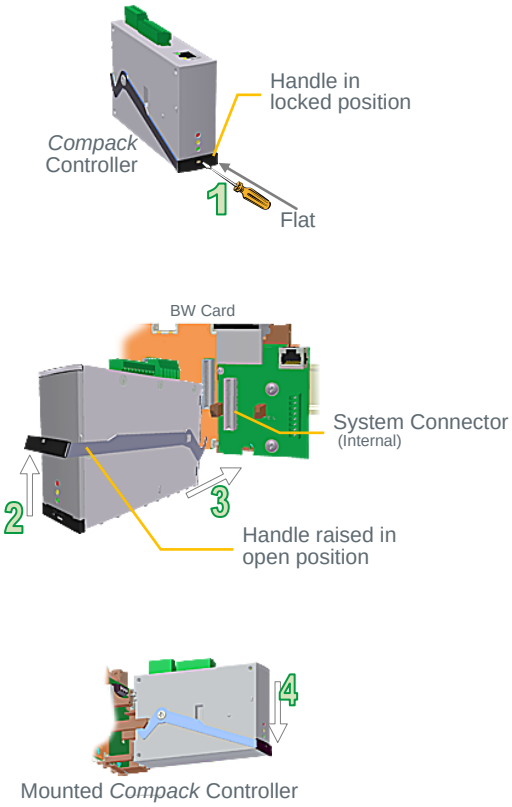
Device hazard

CAUTION: **Do not hand-carry** the controller by the handle. **Open the handle before plugging** the controller into the system.

Mount **blind panels** in unused module locations.

Electric shock

The *Compack* controller incorporates a handle that serves to lock the module into position in the power system or interface kit.



Mounting the *Compack* controller

1. **Open the handle** by inserting a screwdriver into the hole to release the spring mechanism
2. **Raise the handle** carefully until it reaches the stop-knobs on the sides (open position)
3. **Plug the module** fully into the system connector, mounted on the Battery Distribution Base or the Bulk Feed Output Base
4. **Lock the handle** by pushing the handle downwards (locked position), so that the module is securely locked

Removing the *Compack* controller

1. **Open the handle** by inserting a screwdriver into the hole to release the spring mechanism
2. **Raise the handle** carefully until it reaches the stop-knobs on the sides (open position)
3. **Pull the module** loose from the system connector. Do not pull from the handle!
4. **Lock the handle** by pushing the handle downwards (locked position)

Figure 5 Compack controller's locking mechanism

Technical Specifications – Compack Controller

ELECTRICAL SPECIFICATIONS		
Input Voltage	9 - 75 V_{DC}, shutdown < 8.5 V_{DC}*	
Temperature Range	Nominal: -20 to +60 C (-4 to 140 F) Reduced accuracy: -40 to +70 C	
Power Consumption	3W	
MTBF	> 550, 000 hours Telcordia SR-332 Issue I, method III (a) (Tambient : 25°C)	
Ethernet port	10/100 BASE-T HP Auto MDI/MDI-X	
Relay Outputs (1,5 mm2)	Form-C (dry contact NO-C-NC), Max 75V/2A/60W breaking capacity	
Configurable Inputs (1,5 mm2)	Temperature: External NTC, "Digital": open/closed, Analog: 0-75V, Battery Symmetry: 0-75V	
CONTROL FEATURES		
Control System	o Output Voltage Measurement o Load Current Calculation o Energy Calculation o Load/Battery Disconnect o Real Time Clock with Battery Backup o Stored Site Text/ID and Messages	o Output Voltage Measurement o Position (long/lat) for auto placement o Generator start/stop control setup o Test of Relay Outputs o Alarm grouping of events for relay outputs o Boolean AND of alarm groups
Battery	o Battery Current Measurement o Battery Temperature Measurement Battery Testing (acc. to discharge table or set time limit) o Setup of Battery Data/Table o Battery Capacity Indication o Battery Boost Charging - Auto – Ah discharge or voltage threshold - Interval or Manual	o Temperature Compensated Charging o Charge Current Limitation o Battery Low Voltage Disconnect - Temperature dependent (optional) - Mains independent (optional)
Rectifier	o Available information about each rectifier, e.g. serial number, version, internal temperature o Individual Rectifier Current Measurement o Individual Rectifier Input Voltage	o Energy calculation o Efficiency Management o Emergency Voltage o Startup delay o Detailed internal alarms summary
ALARMS / EVENTS AVAILABLE		
Alarms can be set up with monitoring of minor and major levels. Hysteresis and time delay is user configurable. All average and peak levels on analogue values are auto logged.		
Power & Control System	o AC Mains Low (2-level) o AC Phase Voltage x3 (2-level) o "Digital" Inputs (programmable descriptions) o Events trigger by inputs	o Service mode (block relays), Generator running, Lower charge current limit, Battery test, Boost Inhibit, Emergency low voltage , Clear manual reset alarms.
Load	o Load Disconnect - Voltage or Timer (from mains failure) based - Mains independent (optional)	o Load Fuse o Load Current
Battery	o Battery Voltage (4-level, optional 8-level) o Battery Temperature (2-level) o Battery Used Capacity (2-level) [Ah or %] o Battery Remaining Capacity (2-level) [Ah or %] o Battery Fuse	o Symmetry Failure (2-level) o Battery Quality after test (2-level) o Battery Current (4-level) o Battery Life Time (2-level) [from temperature log]
Rectifier/Converter	o Rectifier Failure (2-level) o Rectifier Capacity (2-level) o Rectifier Current (2-level)	o Rectifier Avg. Temperature (2-level) o Rectifier Current Share (2-level)
DATA LOGGING		
Control System	Event log, Data log (configurable up to 20 monitors), Configuration Change log, Account Access log	
Energy	Energy delivered from Rectifiers, Solar Charger and Battery, and consumed energy by the load for the last 52 hours, 52 days and 52 weeks	
Battery	10 last battery tests detailed, number of battery cycles for the last 52 hours, 52 days and 52 weeks	
Generator	Run time in minutes and fuel consumption for the last 52 hours, 52 days and 52 weeks	

Model	Compack	Compack Interface Kit
Part number	242100.400	242100.900
Dimensions (HxWxD)	75 x 30 x 115mm / 2.95 x 1.2 x 4.52"	107.6 x 41.4 x 175.5mm / 2.24 x 1.63 x 6.91"
Weight	240g / 0.53 lbs	380g / 0.84 lbs

* 12V support from HW rev. HW1.3. HW version 1.0 – 1.2 input voltage range: 17 – 75 V_{DC}

Firmware Upgrade of the *Compack* Controller

You can use the "*Eltek Network Utility*" program[1] running on a PC to upgrade the *Compack* controller's firmware, and also to find your controller's firmware version, or access the controller's configuration pages in a Web browser.

Do following:

1. **Connect a PC to the *Compack***
   Read section "Networking the Compack Controller", page 14
2. **Start the "Eltek Network Utility" program,**
   on the computer;

   On the "*Eltek Network Utility*" program:
3. **Select the Compack controller**
   that you want to update; Check correct MAC address and IP address
4. **Click the "Update Software" button**
5. **Click the "Browse" button,**
   and select the firmware file (s19-format) in the computer.
   The "Reboot when complete" check box must be checked (marked)
6. **Click the "Update" button**
   the utility will download and update the firmware to the Compack controller with the selected IP address

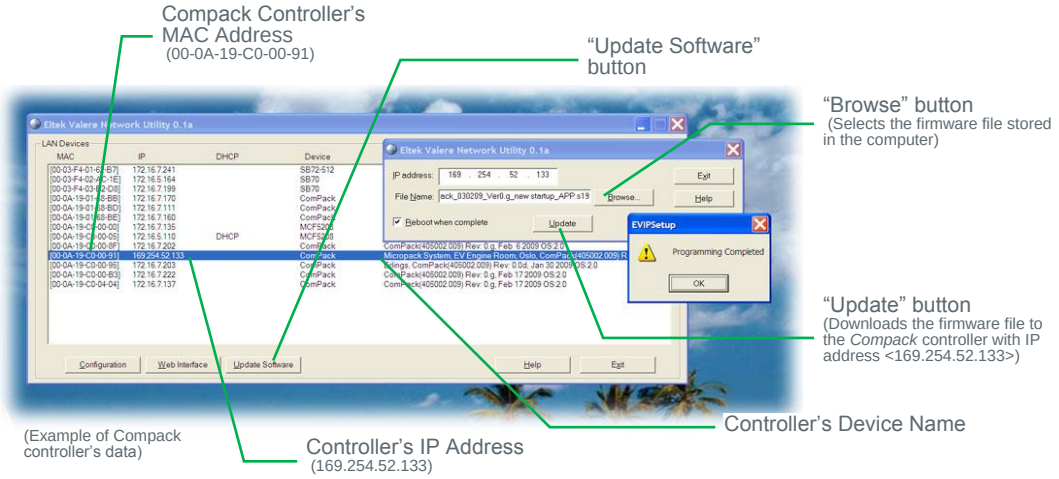


Figure 6 The "Eltek Network Utility" program

While the firmware is downloaded to the Compack controller, the utility program displays a progress bar.

Once the firmware has loaded, the Compack controller must restart. It will restart automatically, because you left the "Reboot when complete" check box checked (marked).

[1] You can visit http://msm.eltek.com/enu to download the free or licensed copy of the "*Eltek Network Utility*" program, or contact Eltek's Service Dep.

3. The *Compack* Interface Kit

In general, the *Compack* controller is integrated in standard power systems, such as: *Micropack* (on DIN rail), *Minipack 1U* (integrated in cabinets) and *Chameleon* (wall and pole mounted).

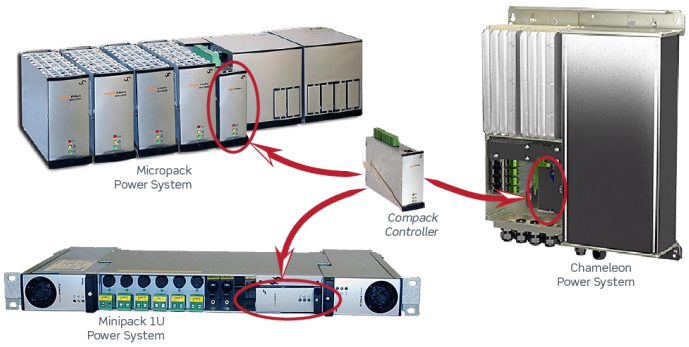


Figure 7 The Compack controller in standard power systems

The *Compack Interface Kit* expands the list of controller's applications, by making the internal system connections available on terminal blocks, for easy interfacing with existing power systems. The kit also facilitates separate mounting on DIN rails, on a surface or panel and in a *Flatpack2* power shelf slot.

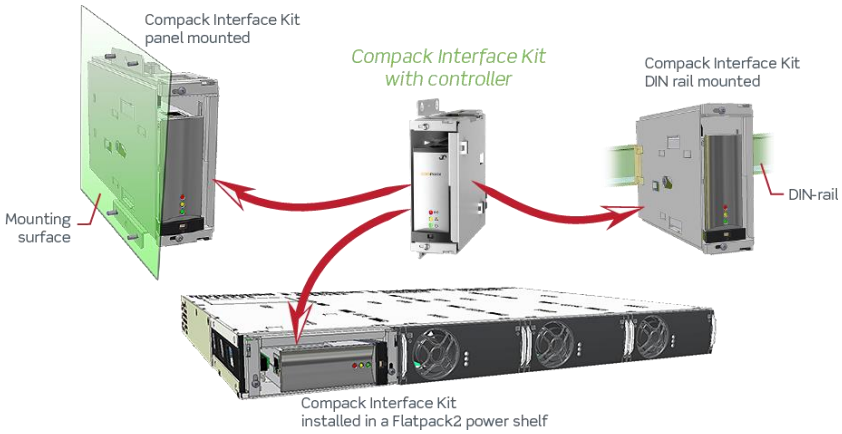


Figure 8 The Compack Interface Kit mounted on a surface, DIN rail and FP2 shelf

Dimensions

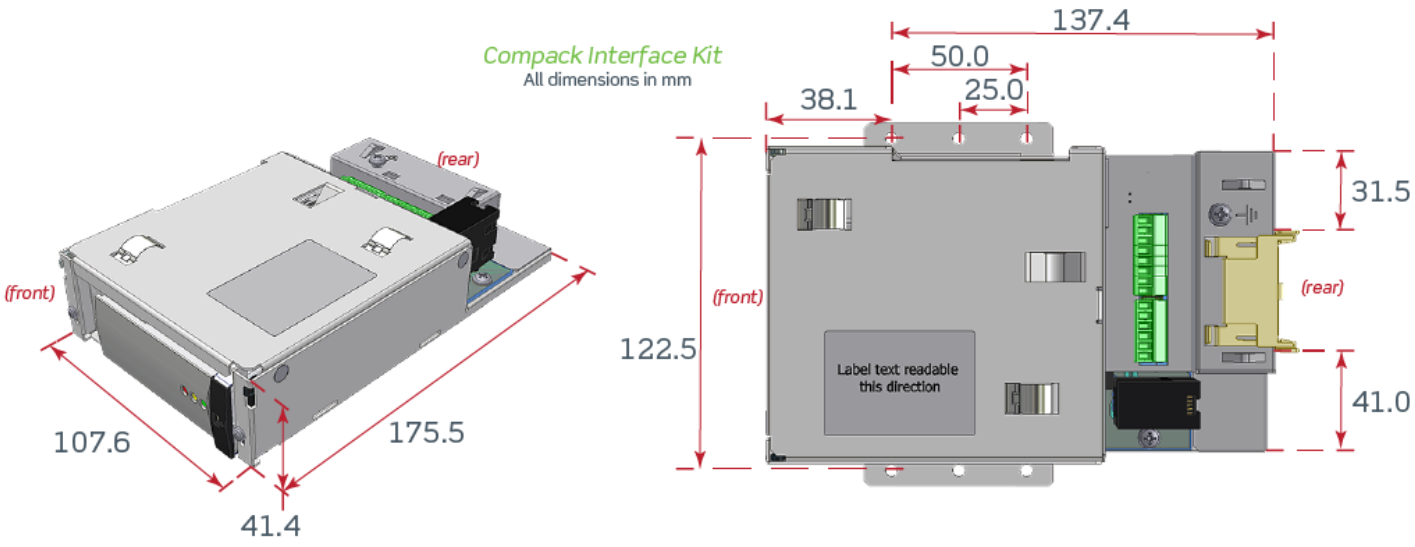


Figure 9 Mechanical dimensions Compack Interface Kit (Doc # 2173018, v2.0)

Fastening the Kit to a Surface or Panel

The *Compack Interface Kit* can be fastened anywhere on a suitable surface or panel.

The brackets (part 317176) and DIN rail clips (part 282523) are not included in the kit, and can be ordered when required.

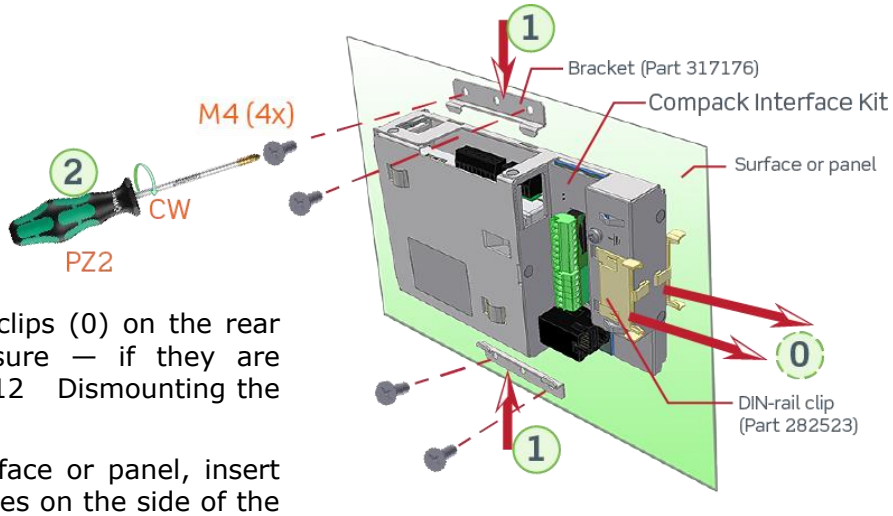


Figure 10 The Compack Interface Kit mounted on a surface

Remove the two DIN rail clips (0) on the rear of the kit's metal enclosure — if they are mounted. Refer to Figure 12 Dismounting the DIN rail clips, page 12

To fasten the kit to a surface or panel, insert two brackets (1) in the holes on the side of the metal enclosure, then fasten the enclosure to the surface using M4 screws or bolts (2).

Fastening the Kit to a DIN Rail

To be able to fasten the *Compack Interface Kit* to a DIN rail, fix the two DIN rail clips to the rear of the kit's enclosure and snap the kit into the DIN rail. Do following:

1. Hook the DIN rail clip (A) in the enclosure holes (B)
2. Press the clip's front (A) down until it snaps in the hole (C)
3. Repeat steps 1 & 2 to mount the second clip, as shown (D)(D)
4. Snap the clips into a suitable location on the DIN rail

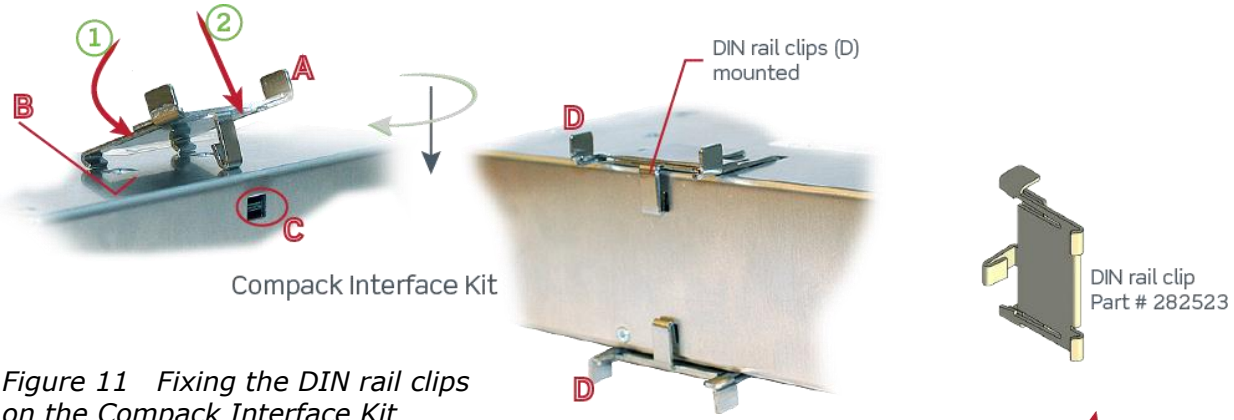


Figure 11 Fixing the DIN rail clips on the Compack Interface Kit

To remove the DIN rail clips from the *Compack Interface Kit:* press a flat screwdriver between the clip's single hook and the enclosure, and then turn the screwdriver (1) to disengage the clip. Lift the clip (2) to unhook it completely.

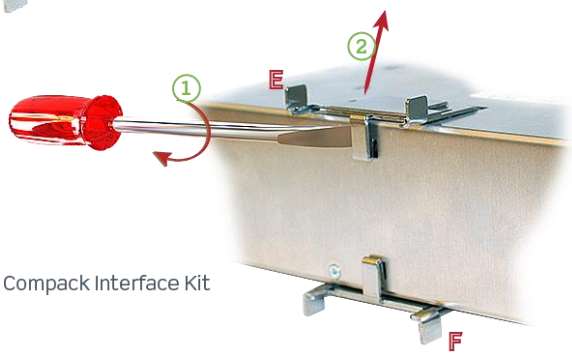
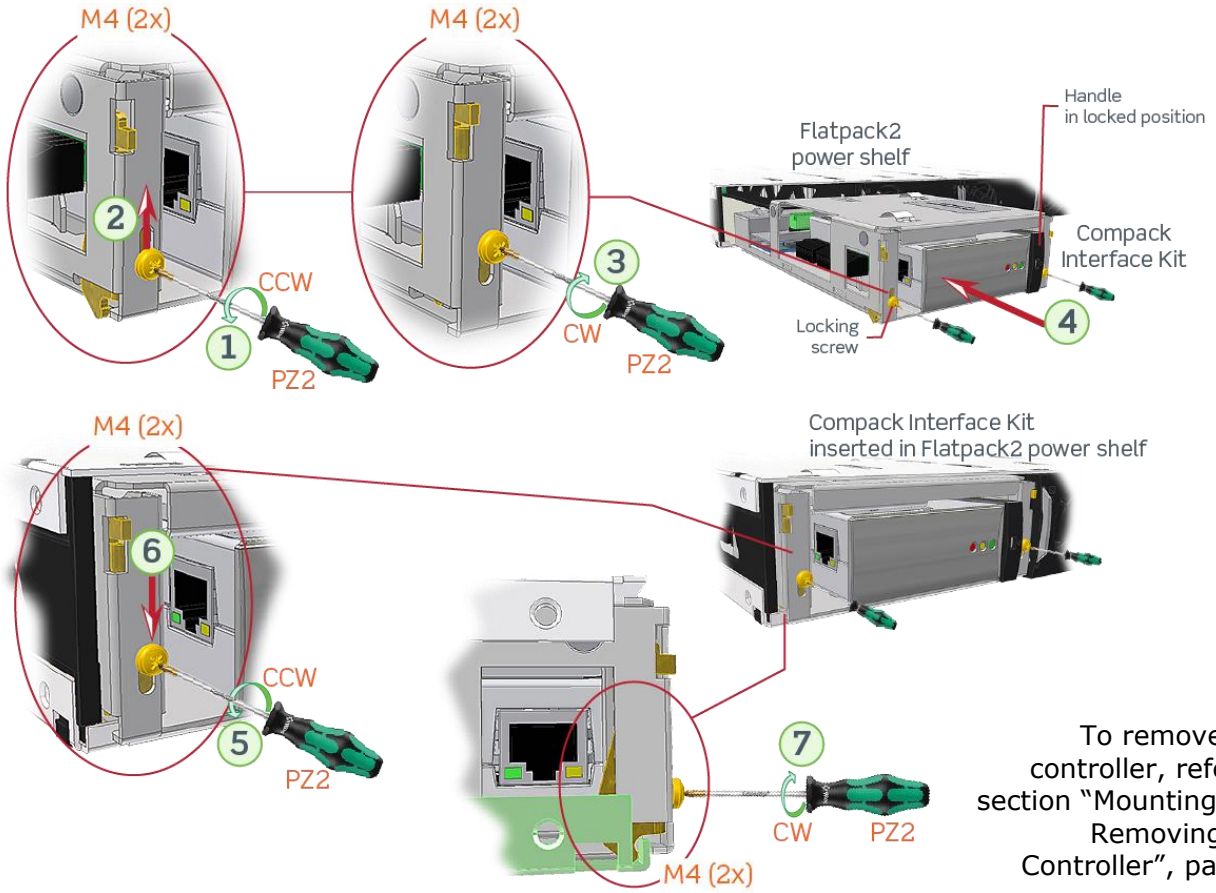


Figure 12 Dismounting the DIN rail clips

Installing the Kit in a Flatpack2 Power Shelf

The *Compack Interface Kit* can also be inserted and locked in a *Flatpack2* power shelf slot, then not requiring any brackets or clips. To do that, carry out steps 1 to 7 below.

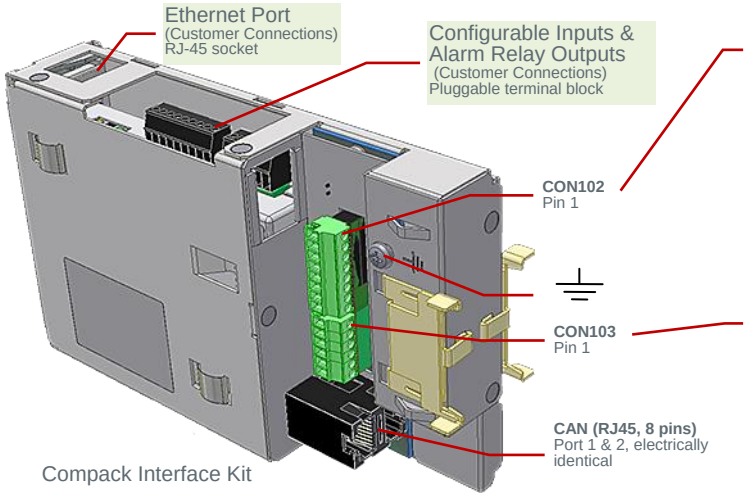


To remove the controller, refer to section "Mounting and Removing the Controller", page 8

Figure 13 Installing the kit in a Flatpack2 power shelf

Location of Ports and Terminal Blocks ~ CP IFK

For Customer Connections, read "Location of Terminals, Ethernet Port and LEDs" page 7



CON102: Max. 1.5mm², (14AWG) wire section

Signal	Pin#
Load Fuse Alarm –	1
Load Fuse Alarm +	2
Battery Fuse Alarm –	3
Battery Fuse Alarm +	4
Battery Current –	5
Battery Current +	6
Voltage Sense –	7
Voltage Sense +	8

Flat 3.5 mm; Torque: 0.4Nm

CON103: Max. 1.5mm², (14AWG) wire section

Signal	Pin#
LVD2 –	1
LVD2 +	2
LVD1 –	3
LVD1 +	4
Power –	5
Power +	6

Flat 3.5 mm; Torque: 0.4Nm

Figure 14 Compack Interface Kit's internal system connections (CON102 & CON103)

4. Networking the Compack Controller

This topic describes how to access the power system main controller from a computer, so that you can configure and operate the power supply system.

You can access the controller using a standard computer, which is either connected to an existing LAN or directly connected to the controller.

(Example of *Compack* controller access via LAN and via a stand-alone computer)

After accessing the controller, you can read a short description about available methods to configure and monitor the power supply system, which you find in topic "Configuring & Monitoring the Power System", page 27.

Controller's Default IP Address

Each main controller is shipped with a **unique *Eltek* MAC address** (Media Access Control) stored inside the controller and marked on the controller's label, e.g. [00-0A-19-C0-00-13].

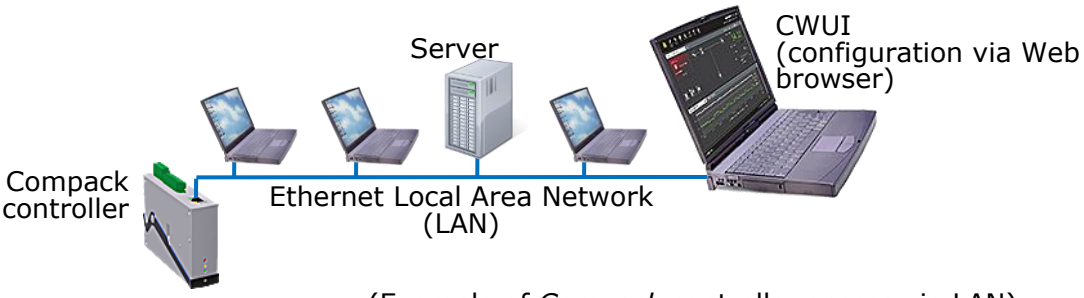
Also, the controllers are by default shipped with the **fixed, static IP address <192.168.10.20>**.

> WARNING:
> Some controllers may have the Dynamic Host Configuration Protocol (DHCP) enabled, instead of static IP address. Thus, they can automatically obtain necessary access data to operate in an existing Local Area Network (LAN), based on the Ethernet communication technique and the TCP/IP protocol suite.

> NOTICE:
> In short, two LAN devices (e.g. a controller and a computer) can communicate with each other, if they have different IP addresses and are in the same subnet.
> A Subnet Mask is used to determine what subnet an IP address or device belongs to. For example, all devices with IP address <169.254.52.XXX> and subnet mask <255.255.255.0> (where XXX can be 1 to 255) belong to the same subnet, and can "talk" to each other.

Controller Access — Via Ethernet LAN

If you have access to a Local Area Network (LAN) -- based on the Ethernet communication technique and the TCP/IP protocol suite -- you can simply connect the controller to the LAN, and get web browser access to the controller from your networked computer.



(Example of *Compack* controller access via LAN)

Contact your LAN administrator, if your computer has difficulties accessing the network.

Requirements

- Computer correctly configured and connected to the LAN
- Standard Ethernet cable (straight through cable), to connect the controller to the LAN
- "*Eltek Network Utility*" program (ENU), a free copy with a few limitations that you can download from http://msm.eltek.com/enu
  A licenced, full featured copy can also be purchased from *Eltek* (part number 406001.003)

In Short

To get access to the controller via your LAN networked computer just connect the controller to the LAN using a standard Ethernet straight-through** or crossover cable.

> NOTICE:
> By default, the controllers are shipped with a unique MAC address, e.g. [00-0A-19-C0-00-13] and a fixed, static IP address <192.168.10.20>.
> Some controllers may have DHCP enabled (automatically obtain necessary access data to operate in an existing LAN).

For the computer to be able to access the controller via the LAN network, both devices need to have different IP addresses, but in the same LAN subnet. If the networked computer's NIC IP address is e.g. <172.16.5.29>, so changing the controller's IP address from <192.168.10.20> to e.g. <172.16.5.30> will enable them to "talk" to each other via the LAN network.

> NOTICE:
> If the controller has DHCP enabled when you connect it to the LAN network, then the LAN network will automatically assign the controller with a spare IP address in the LAN subnet, e.g. the controller may get <172.16.6.130>, which will enable the networked computer to "talk" to controller.

Using the "*Eltek Network Utility*" program, identify the controller, access it via your web browser and change the controller's LAN device name, to facilitate later identification.

The "Controller Access -- Via Ethernet LAN" procedure involves following steps (as described in more detail in topic "More Detailed" on page 17):

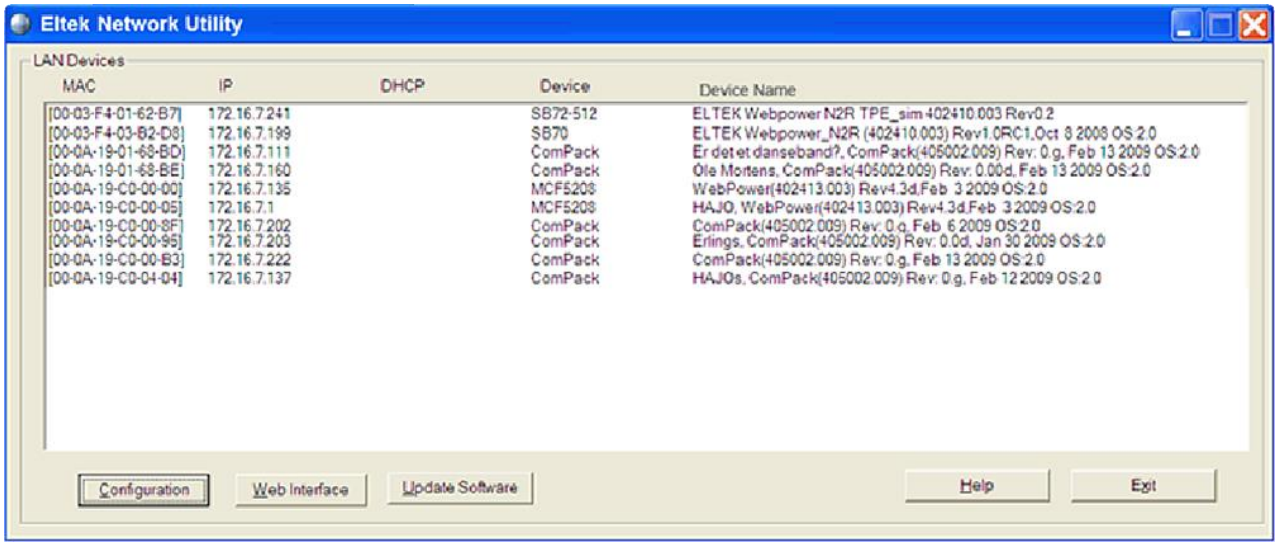
1. Start the "Eltek Network Utility" program
2. Connect the controller to the LAN
3. Identify the controller in the "Eltek Network Utility" program, and change the controller's IP address to be in the LAN subnet
4. Access the controller's configuration pages in your web browser
5. Log in with the <admin> account
6. Change the controller's Device Name

Read also topic "Controller's Default IP Address" on page 14.

More Detailed

Carry out the following steps to access the controller via the Ethernet LAN:

1. **Start the "*Eltek Network Utility*" program (*ENU)***
   which will display already connected LAN devices. The controller will be displayed after connection to the LAN.



(Example of connected LAN devices)

Notice that if the computer has installed wireless Ethernet Network Interface Cards, they should not be active; otherwise the *Eltek Network Utility* may display LAN devices accessed wireless.

2. **Connect the controller to the LAN**
   plugging one end of a standard Ethernet cable (straight through Ethernet cable) to the controller's RJ-45 socket, and the other end to one of the LAN's available RJ-45 sockets.

3. **In the "*Eltek Network Utility*", identify the controller and change its IP address**

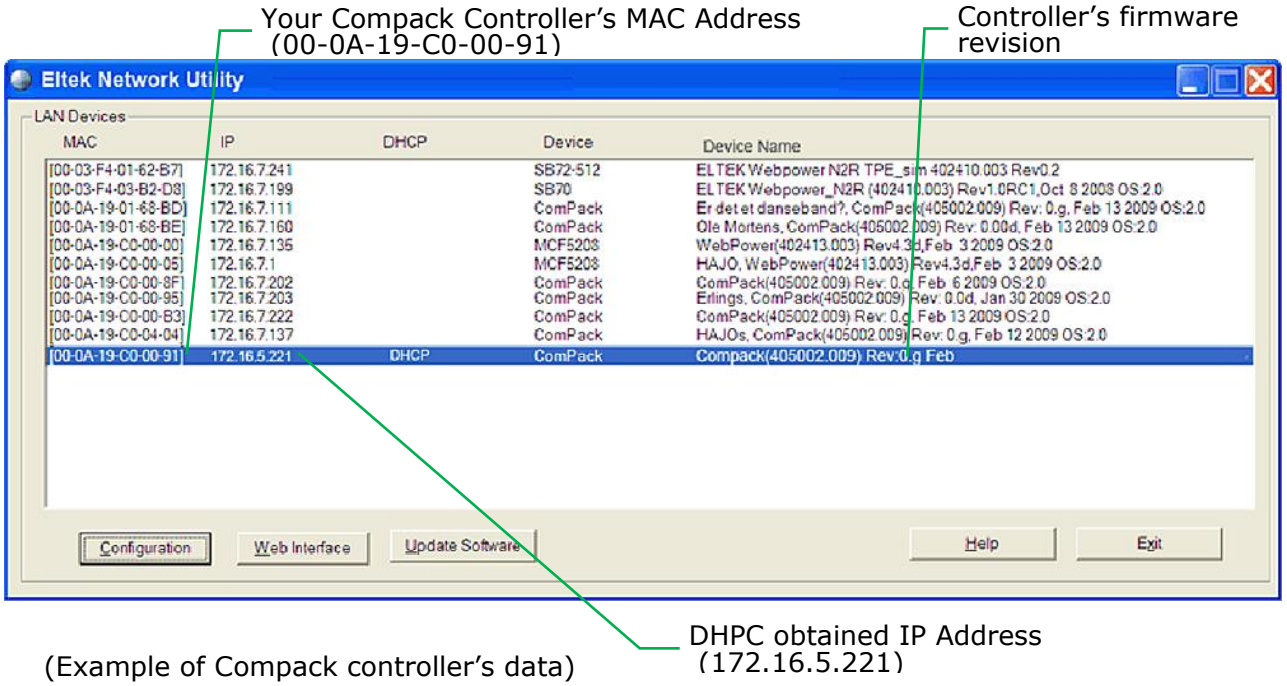
The utility program displays the controller as a connected LAN device with its unique MAC address and the default static IP address <192.168.10.20>
Note that it can take up to 1 minute before the connected controller is displayed in the utility program. Read also topic "Controller's Default IP Address" on page 14.

Then, change the controller's IP address to be in the LAN subnet by
— Selecting the controller in the *Eltek Network Utility* window
— Clicking on the "IP Config…" button ("Configuration" in earlier versions), to open the "IPSetup Configuration" window
— Changing the default static IP address <192.168.10.20> to e.g. <172.16.5.30>, if the networked computer's NIC IP address is e.g. <172.16.5.29>
Notice that the IP address you assign the controller must not be used by other devices.

— Changing the Network Mask from, e.g. <0.0.0.0> to e.g. <255.255.0.0>
— and clicking on the "Submit" button ("Enable Static IP" in earlier versions).

Now, the controller's and the computer's IP addresses are in the same LAN subnet and both devices can "talk" to each other via the LAN network.
Computer's: <172.16.5.29> <255.255.0.0>
Controller's: <172.16.5.30> <255.255.0.0>

Notice that you do not have to change the controller's IP address -- if the controller has the DHCP enabled instead of static IP address. The controller then automatically gets an IP address from the LAN, e.g. <172.16.5.221>, as displayed in the *Eltek Network Utility* screenshot below.



(Example of Compack controller's data)

4. **Access the controller's configuration pages in your web browser**
   by marking the controller (blue marking line in the above example), and clicking on the Web Interface button.
   or
   by opening your web browser (e.g. Internet Explorer) and entering the controller's IP address in the browser's address line.
   (E.g. <172.16.5.30>, or the IP address the controller got automatically, if DHCP was enabled: e.g. <172.16.5.221>
   Notice that entering "http://" before the address is not necessary)
5. **Log in with the <admin> account,**
   by clicking on the "Enter" link -- in the web browser, in the middle of the page -- and entering <admin> as user name and <admin> as password (case sensitive).

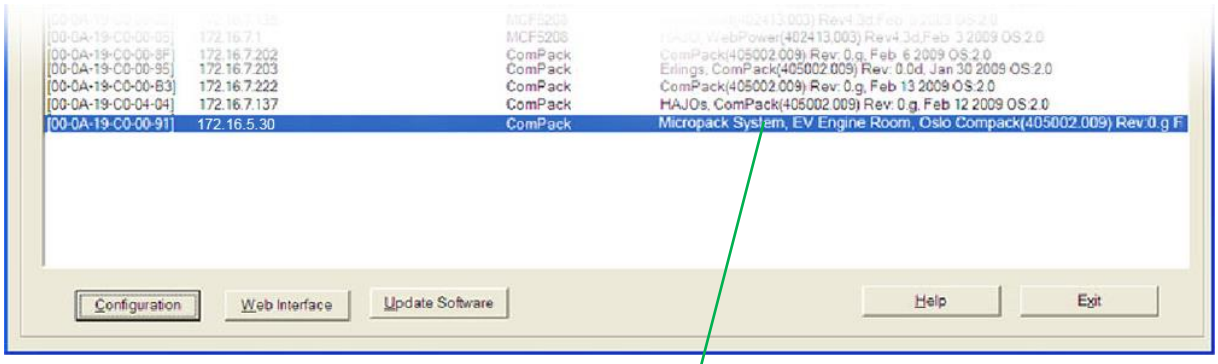
   Note that the web browser must have the Pop-ups function enabled, as the configuration web pages employ Java script navigation. Read topic How Tos, on page 26.

   For security reasons, it is advisable to change the default passwords with your own passwords.
   Read the topic How Tos, on page 26

6. **Change the controller's Device Name by,**
   (*In CWUI*)
   — Clicking on "System Config" icon, in the toolbar
   — Clicking on "Network Settings" in the command tree on the left, under Device Settings
   — Then clicking in the Device Name field and entering the Device Name that describes your power system, e.g. "Micropack System, EV Engine Room, Oslo"

   (*In WebPower 3 GUI*)
   — Clicking on "Network Config" button, in the Power Explorer's toolbar
   — Clicking on the "TCP/IP" tab
   — Then clicking in the Device Name field and entering the Device Name that describes your power system, e.g. "Micropack System, EV Engine Room, Oslo"
   Read topic How Tos, on page 26

   Now the *Eltek Network Utility* window will display the new device name.

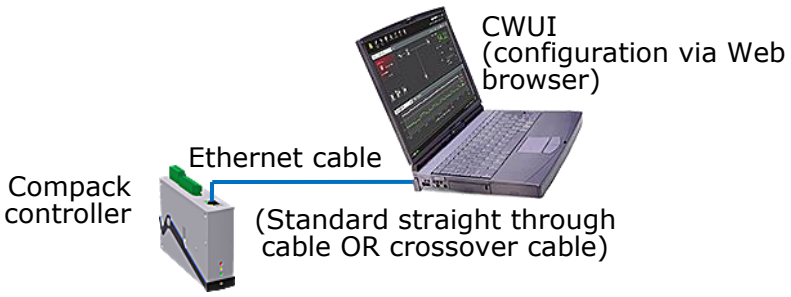


Changed Compack Controller's Device Name (Micropack System, EV Engine Room, Oslo)

(Example of Compack controller's data)

Controller Access — Via Stand-alone PC

You can also access the power system controller directly from a stand-alone computer.



(Example of *Compack* controller access via stand-alone PC)

**NOTICE:
You need an Ethernet crossover cable, if the controller is a *Smartpack* with hardware version 1.x (SB70) or previous.

Contact your IT Department, if your computer has difficulties while installing or configuring the network card.

Requirements

- Computer equipped with a standard Ethernet Network Interface Card (NIC) with RJ-45 socket. Wireless NICs may not be used to access the controller.
- The NIC's necessary network components have to be correctly installed, specially the Internet Protocol (TCP/IP)
- Ethernet cable to connect the controller to the LAN (straight-through** or crossover cable, as the controller's port implements HP Auto MDI/MDI-X detection and correction)
- "*Eltek Network Utility*" program (ENU),
  a free copy with a few limitations that you can download from
  http://msm.eltek.com/enu
  A licenced, full featured copy can also be purchased from *Eltek* (part number 406001.003)

**NOTICE:
You need an Ethernet crossover cable, if the controller is a *Smartpack* with hardware version 1.x (SB70) or previous.

Network components are software clients, services and protocols that the NIC uses to communicate with servers in the network.

In Short

To get access to the controller via a stand-alone computer, just connect the controller directly to the computer's NIC, using a standard Ethernet straight-through** or crossover cable.

NOTICE:
By default, the controllers are shipped with a unique MAC address, e.g. [00-0A-19-C0-00-13] and a fixed, static IP address <192.168.10.20>.
Some controllers may have DHCP enabled (automatically obtain necessary access data to operate in an existing LAN).

For the computer to be able to access the controller, both devices need to have different IP addresses, but in the same subnet. If the computer's NIC IP address is e.g. <169.254.52.132>, so changing the controller's IP address from <192.168.10.20> to e.g. <169.254.52.133> will enable them to "talk" to each other.

NOTICE:
If the controller has DHCP enabled when you connect it to the computer's NIC, then the controller and the computer will assign themselves a random IP address, e.g. the controller may get <0.0.0.1> and the computer <169.254.52.132>.

In this case, change the controller's IP address from e.g. <0.0.0.1> to e.g. <169.254.52.133> to enable them to "talk" to each other.

Then, access the controller via your web browser, and change its LAN device name, to facilitate later identification.

The "Controller Access — Via Stand-alone PC" procedure involves following steps (as described in more detail in the topic "More Detailed" on page 22):

1. Start the "*Eltek Network Utility*" program
2. Connect the computer to the controller and check its MAC address
3. Find the NIC's IP address and subnet mask used by the computer
4. Change the controller's IP address to the same subnet as the computer's
5. Access the controller's configuration pages in your web browser
6. Log in with the <admin> account,
7. Change the controller's Device Name

**NOTICE:
You need an Ethernet crossover cable, if the controller is a *Smartpack* with hardware version 1.x (SB70) or previous.

More Detailed

Carry out the following steps to access the controller via a stand-alone computer:

1. **Start the "*Eltek Network Utility*" program *(ENU)***
   which will not display any LAN devices, as the computer has now nothing connected to the NIC.

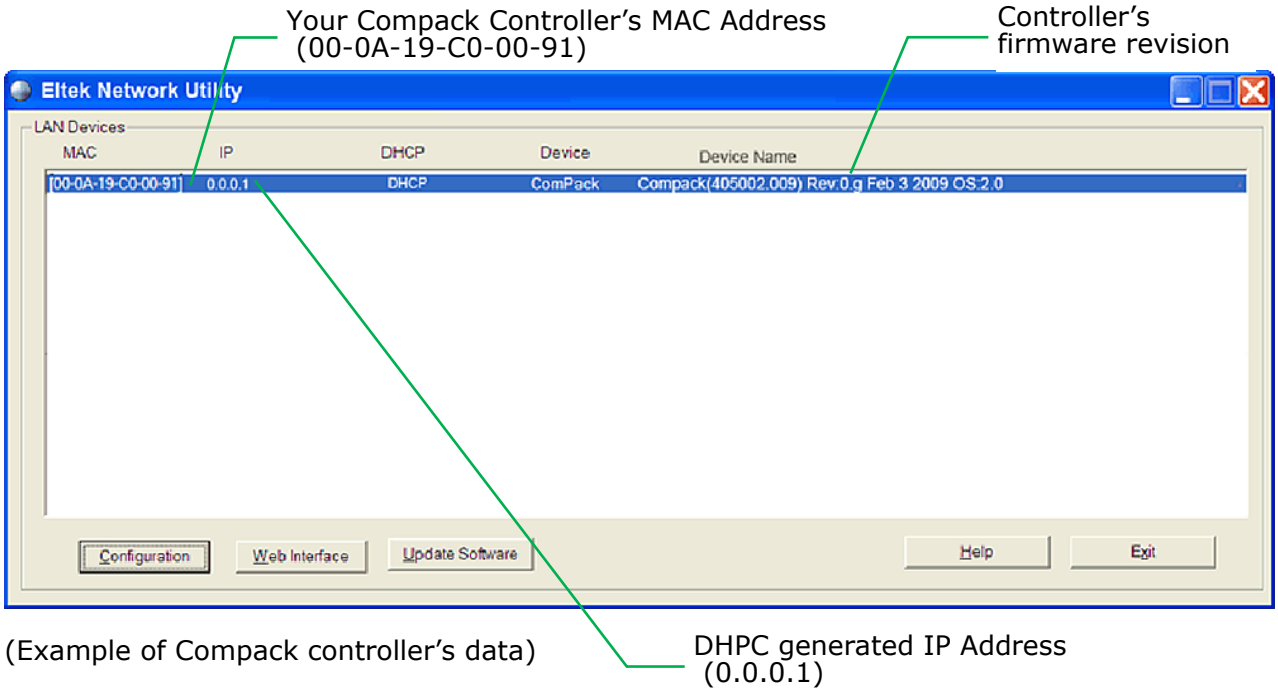
   Notice that if the computer has installed wireless Ethernet Network Interface Cards, they should not be active; otherwise the *Eltek Network Utility* may display LAN devices accessed wireless.

2. Connect the computer to the controller and check its MAC address plugging one end of the Ethernet cable to the controller's RJ-45 socket, and the other end to the computer's NIC.

The *Eltek Network Utility* displays the controller as a connected LAN device (may take up to 1 minute to display) with the default static IP address <192.168.10.20>

Notice that -- if the controller has the DHCP enabled instead of static IP address -- the controller automatically gets an IP address, e.g. <0.0.0.1>, as displayed in the *Eltek Network Utility* screenshot below.

Check that the displayed MAC address corresponds to the MAC address label on the controller.



(Example of Compack controller's data)

3. Find the NIC's IP address and subnet mask used by the computer by,
— Opening the computer's Network Connections window
— Selecting the actual network card (NIC) and
— Making a note of the IP address and Subnet mask displayed in the Details panel, on the left side of the window.
E.g. IP address: <169.254.52.132>, Subnet mask: <255.255.0.0>

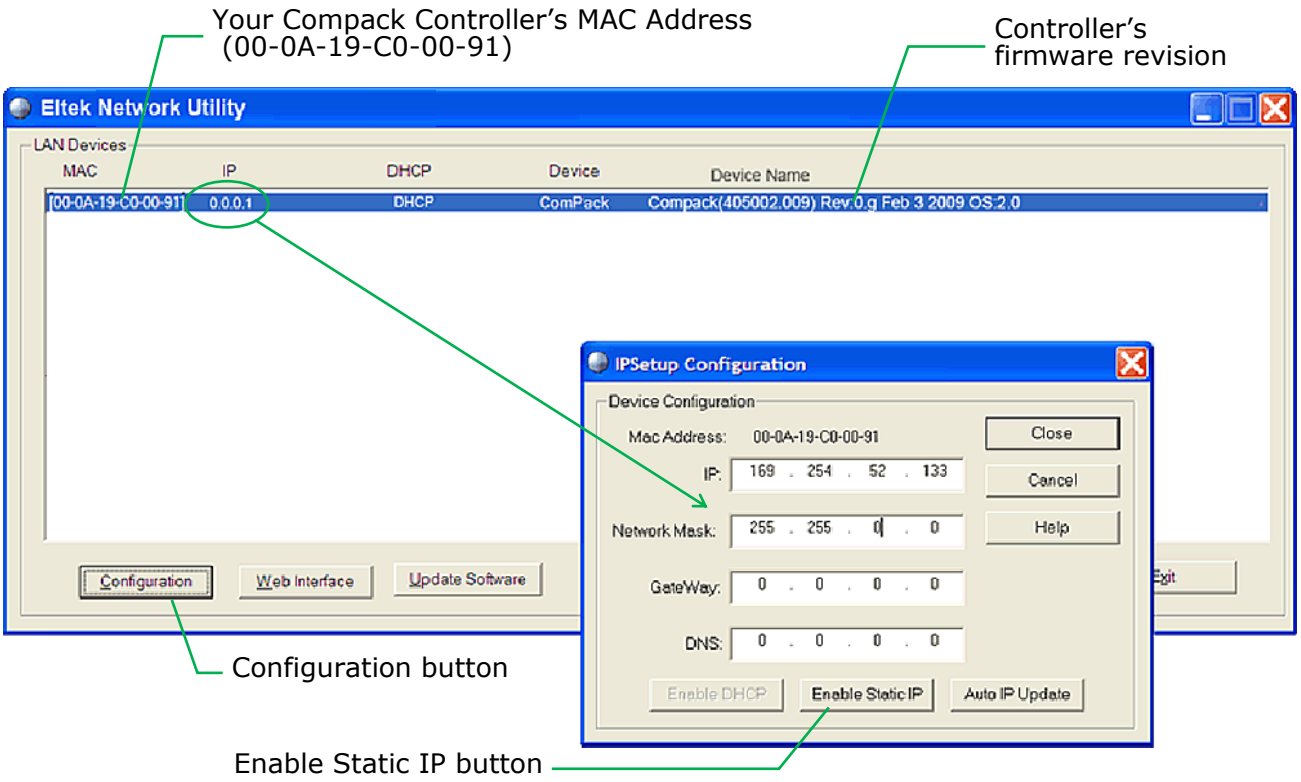
Read the topic How to Check or Change the Computer's IP Address in the FAQs section of Online Help

Notice that you can also get this information by opening a DOS window and running the command "IPCONFIG".

4. Change the controller's IP address to the same subnet as the computer's by,
— Selecting the controller in the *Eltek Network Utility* window
— Clicking on the "IP Config…" button ("Configuration" in earlier versions), to open the "IPSetup Configuration" window
— Changing the default static IP address <192.168.10.20> to e.g. <169.254.52.133>
OR from, e.g. <0.0.0.1> to e.g. <169.254.52.133>, if DHCP was enabled, as shown in the screenshot below.
Notice that the IP address you assign the controller must not be used by other devices.

— Changing the Network Mask from, e.g. <0.0.0.0> to e.g. <255.255.0.0>
— and clicking on the "Submit" button ("Enable Static IP" in earlier versions).

Now, the controller's and the computer's IP addresses are in the same subnet and both devices can "talk" to each other.
Computer's: <169.254.52.132> <255.255.0.0>
Controller's: <169.254.52.133> <255.255.0.0>



(Example of controller's data)

WARNING!
Never enter Network Mask (Subnet masks) <0.0.0.0> or <255.255.255.255> as they are not valid masks, and in the worst case may render the controller or LAN device inaccessible.

5. **Access the controller's configuration pages in your web browser**
   by opening your web browser (e.g. Internet Explorer) and entering the controller's new static IP address in the browser's address line.
   (E.g. <169.254.52.133>; entering "http://" before the address is not necessary)
6. **Log in with the <admin> account,**
   by clicking on the "Enter" link — in the web browser, in the middle of the page — and entering <admin> as user name and <admin> as password (case sensitive).

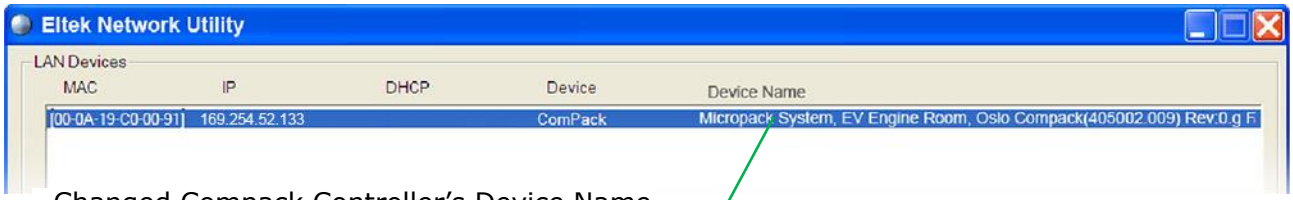
   Note that the web browser must have the Pop-ups function enabled, as the configuration web pages employ Java script navigation. Read topic How Tos, on page 26.

   For security reasons, it is advisable to change the default passwords with your own passwords.
   Read topic How Tos, on page 26

7. **Change the controller's Device Name by,**
   (*In CWUI*)
   — Clicking on "System Config" icon, in the toolbar
   — Clicking on "Network Settings" in the command tree on the left, under Device Settings
   — Then clicking in the Device Name field and entering the Device Name that describes your power system, e.g. "Micropack System, EV Engine Room, Oslo"

   (*In WebPower 3 GUI*)
   — Clicking on "Network Config" button, in the Power Explorer's toolbar
   — Clicking on the "TCP/IP" tab
   — Then clicking in the Device Name field and entering the Device Name that describes your power system, e.g. "Micropack System, EV Engine Room, Oslo"
   Read topic How Tos, on page 26

   Now the *Eltek Network Utility* window will display the new device name.



Changed Compack Controller's Device Name
(Micropack System, EV Engine Room, Oslo)

(Example of Compack controller's data)

NOTICE:
In general, if you connect a computer's NIC (while DHCP is enabled) to a LAN, the network server will automatically assign a new IP address to the NIC, so that the computer may access the LAN.

It may take up 1 or 2 minutes, but you can select the command “Repair this connection” — in the computer’s Network Connections window — and Windows will right away automatically assign the new IP address.

How Tos

In the Online Help system, you find a FAQs part with several frequently asked questions, among others these:

- How To Enable Pop-ups in the browser — Internet Explorer
- How To Change Default Log In Passwords — Compack GUI
- How To Change the controller’s Device Name
- How To Check the Status of your LAN Network Card (NIC)

5. Configuring & Monitoring the Power System

This section describes the available methods to configure and monitor the *Compack*-based Power supply system from a computer.

For more detailed description of configuration options and other advanced networking services implemented by the controller, refer to the *CWUI Online Help* system.

Before configuring and monitoring the power system, the computer must be able to access the *Compack* controller, which is described in section "Networking the Compack Controller", on page 14.

For acronym descriptions, refer to section "Glossary", page 41.

You can configure and monitor the *Compack*-based Power supply system from a computer — connected to a LAN or directly connected to the controller — using the following methods:

- **Via a standard Web browser.**
  The configuration Web pages (CWUI) are stored in the controller, so you do not need to install any programs in the computer.

- **Via PowerSuite application.**
  The powerful *PowerSuite* application must be installed in the computer.

- **Via Network Management System (NMS)**
  The NMS hardware and software must be installed in the network.

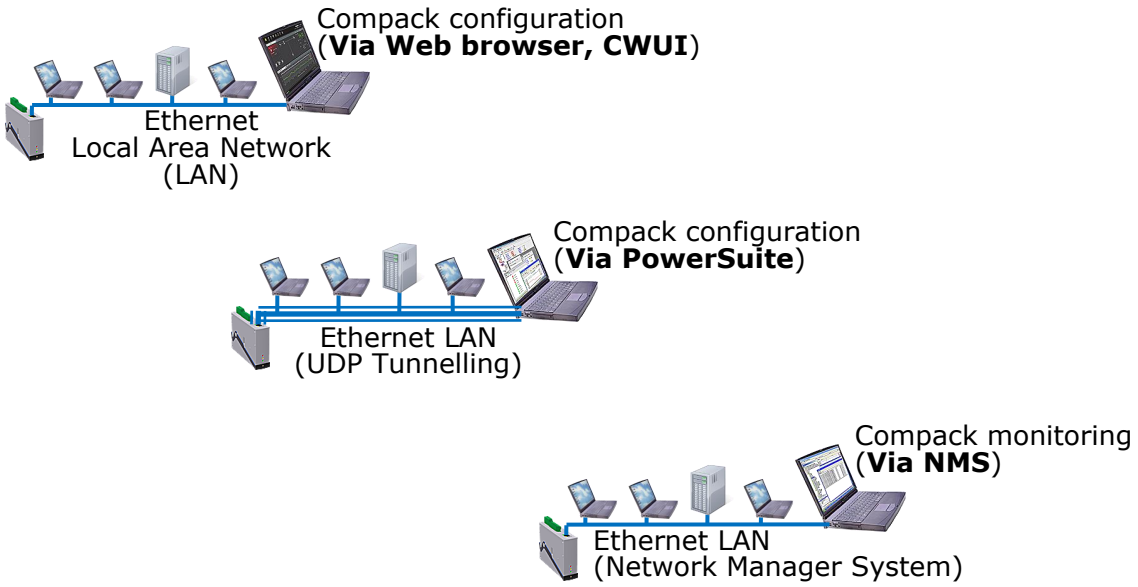


Figure 15 Power system configuration via Web browser, PowerSuite and NMS.

Configuration — via Web Browser

You can configure and monitor the *Compack*-based Power supply system from a computer — connected to a LAN or directly connected to the controller — using a standard Web browser to access the configuration pages (CWUI) stored in the *Compack* controller.

You do not need to install any programs in the computer.

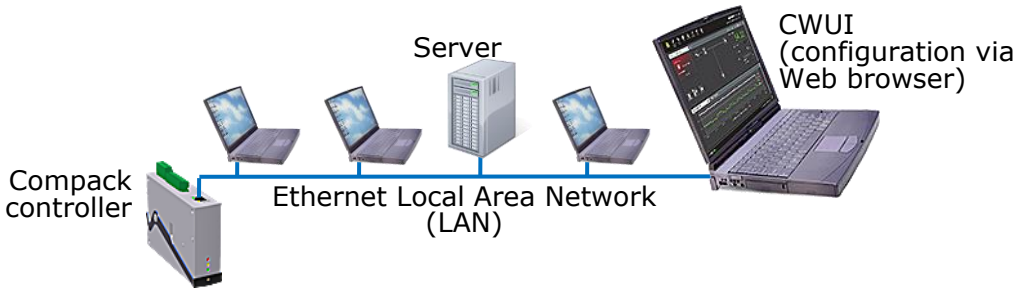


Figure 16 Power system configuration via Web browser.

For information about how to access the configuration pages stored in the *Compack* controller, read section "Networking the Compack Controller", page 14.

For more detailed description of configuration options and other advanced networking services implemented by the controller, browse and search through the *CWUI Online Help* system.

Configuration — via PowerSuite Application

You can configure and monitor the *Compack*-based Power supply system from a computer — connected to a LAN or directly connected to the controller — using the powerful *PowerSuite* application.

You need to install the *PowerSuite* application in the computer.

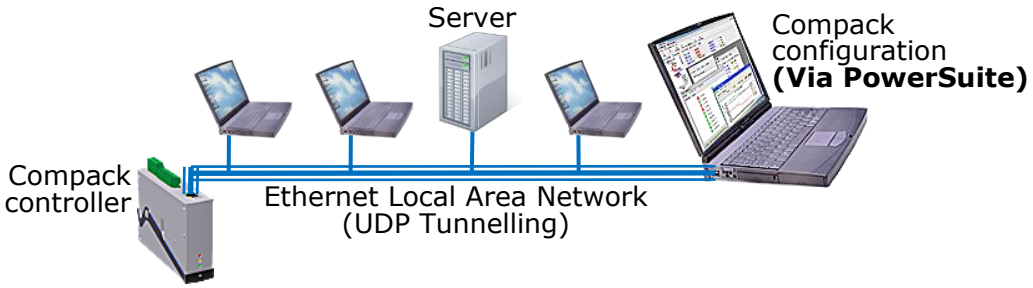


Figure 17 Power system configuration via PowerSuite application.

For acronym descriptions, refer to section "Glossary", page 41.

The *PowerSuite* application is originally developed for USB serial connection between the computer and the controller, using the pComm protocol.

When the controller is not equipped with an USB serial port — as is the case with the *Compack* controller — you can still use the *PowerSuite* application via an Ethernet LAN, using the UDP tunnelling protocol. *PowerSuite*'s pComm protocol is then embedded in the LAN's IP protocol.

In Short

To use *PowerSuite* to configure the power system via an Ethernet LAN connection, just connect the controller to the LAN. Using the "*Eltek Network Utility*" program, identify the controller and make a note of its IP address. Start *PowerSuite* in your LAN connected computer, click on the "Connect" button and in the Site Manager dialog box create a new Network site with the controller's IP address.

The "Configuration — via PowerSuite Application" procedure involves following steps (as described in more detail in the next section):

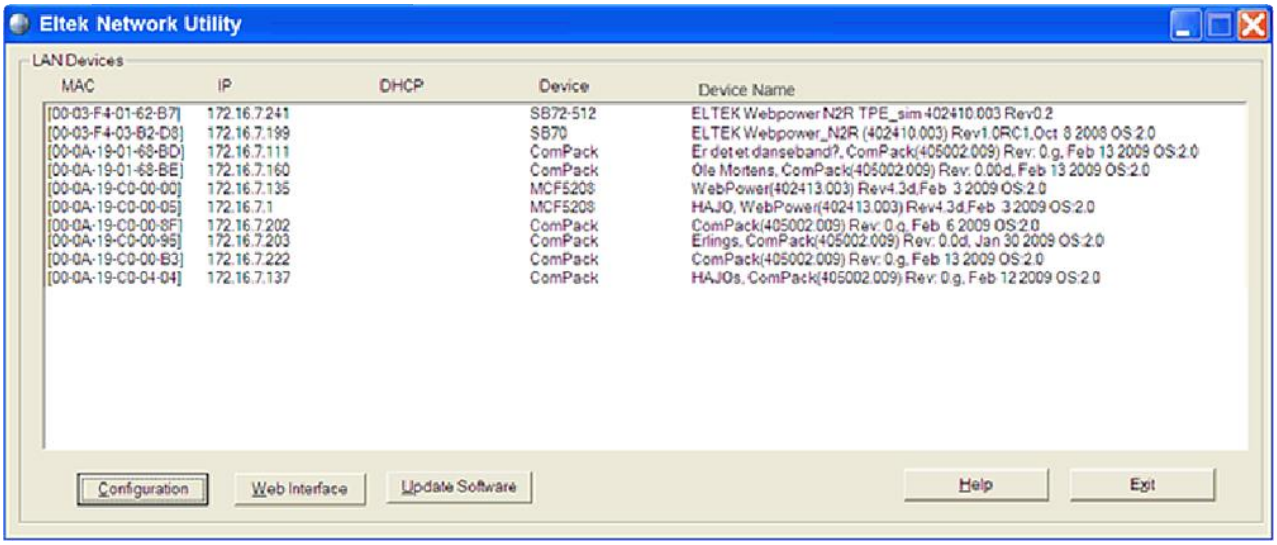
1. Start the "Eltek Network Utility" program
2. Connect the *Compack* controller to the LAN
3. Identify the controller in the "*Eltek Network Utility*" program
4. Start the *PowerSuite* application in your computer (connected to the LAN)
5. In *PowerSuite*'s Site Manager, create a new Network site for the controller

For more detailed description of configuration options and other advanced networking services implemented by the controller, click any time on the *PowerSuite*'s Help button and browse and search through the embedded Help, or through the more updated version in Internet *PowerSuite Online Help*.

More Detailed

Carry out the following steps to use *PowerSuite* via an Ethernet LAN connection:

1. **Start the "*Eltek Network Utility*" program**
   which will display already connected LAN devices. The *Compack* controller will be displayed after connection to the LAN.

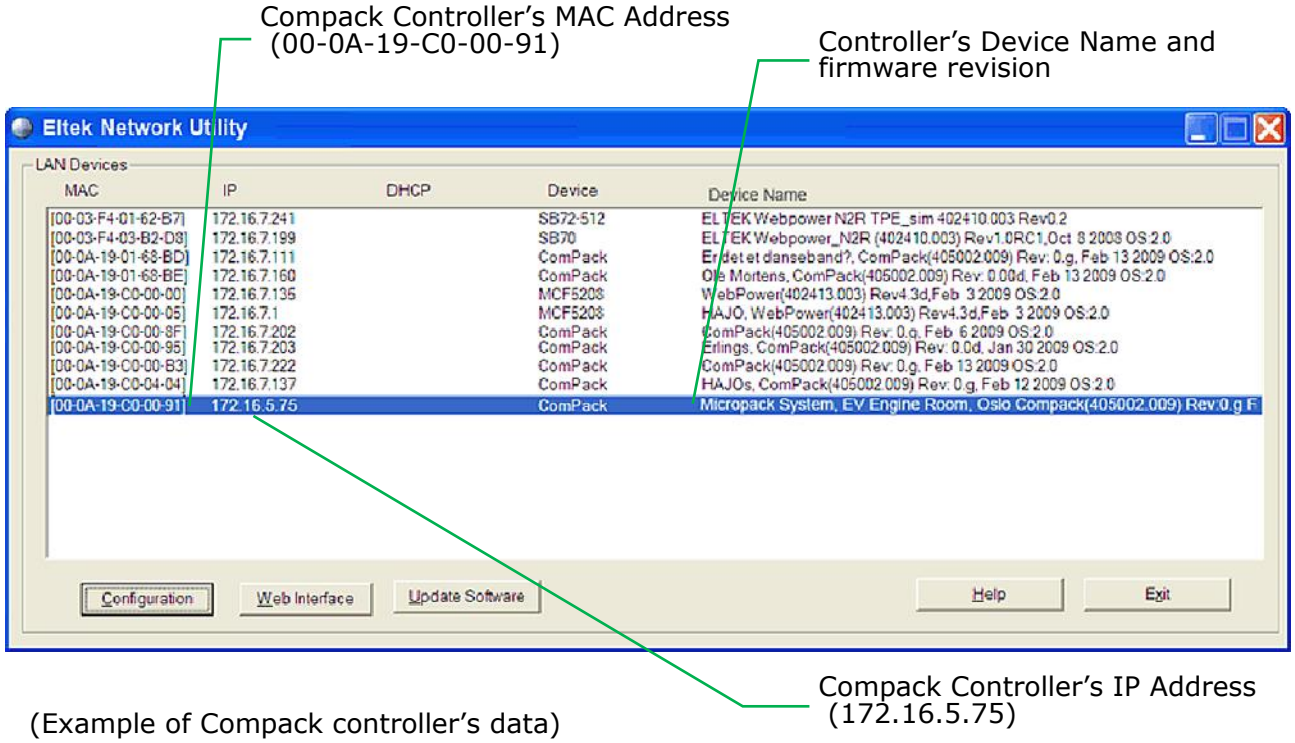


(Example of connected LAN devices)

2. **Connect the *Compack* controller to the LAN**
   plugging one end of a standard Ethernet cable (straight through Ethernet cable) to the controller's RJ-45 socket on its top, and the other end to one of the LAN's available RJ-45 sockets.

3. **Identify the controller in the "*Eltek Network Utility*" program**
by looking for your *Compack* controller's MAC address on the list of connected LAN devices. All controllers are shipped with a label specifying its unique MAC address. Check that the displayed MAC address corresponds to the MAC address label on the controller

Notice that it can take up to 1 minute before the connected controller is displayed in the utility program.



(Example of Compack controller's data)

Make a note of the controller's IP address and Device Name.

4. **Start the PowerSuite application in your computer by,**
(The computer has to be connected to the same LAN as the controller.)

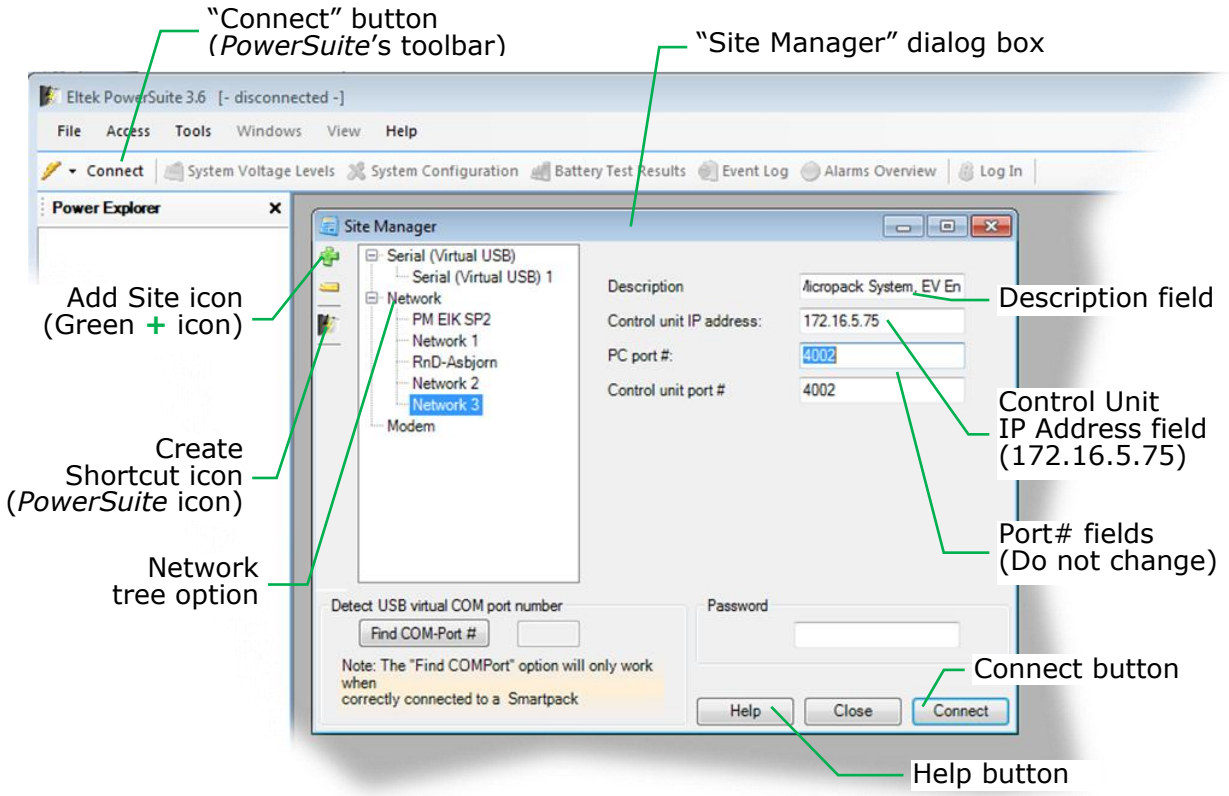
— Selecting from the Start menu, in MS Windows:
"Start > All Programs > Eltek > PowerSuite"

OR
— Clicking on the *PowerSuite* icon on your computer's desktop

5. Create and save a new Network Site for the controller by,
Carrying out the following:
— Click on the "Connect" button, on the *PowerSuite* toolbar
— Click on the "Network" tree option on the Site Manager dialog box
— Click on the Add Site icon (green **+**)
— Edit the "Description" field.
E.g. enter the controller's Device Name "Micropack System, EV Engine Room, Oslo"

— Edit the "Control Unit IP Address" field, and enter the controller's IP address:
e.g. "172.16.5.75". Do not change the Port# fields!

— Click on the "Connect" button, on the Site Manager dialog box



(Example of *PowerSuite*'s Site Manager dialog box)

PowerSuite will then connect to the *Compack* controller on the LAN with IP address "172.16.5.75".
You can any time click on the dialog box's Help button for additional description.

The set of communication parameters will be saved with the name you entered in the "Description" field, e.g.:"Micropack System, EV Engine Room, Oslo".
Next time you want to connect with this site (*Compack* controller), click on the "Connect" button on the toolbar, select the Site Name in the Site Manager tree and click on the dialog box's "Connect" button.

Monitoring — via Network Management System

You can remote monitor the *Compack*-based power supply system from a computer connected to an Ethernet LAN which has installed a Network Management System (NMS).

The NMS hardware and software must be previously installed in the LAN network.

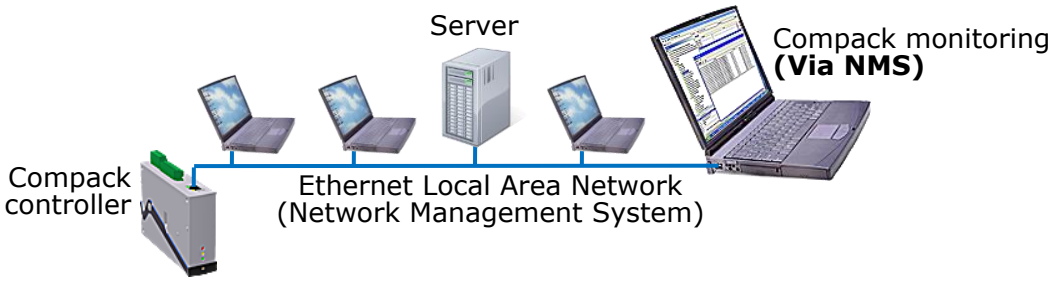


Figure 18 Power system remote monitoring via NMS.

For acronym descriptions, refer to section "Glossary", page 41.

Requirements

- Computer correctly configured, connected to the LAN and with access to the NMS
- Standard Ethernet cable (straight through cable),
  to connect the controller to the LAN
- Eltek's specific SNMP MIB files (Management Information Base)

Contact your IT Department, if your computer has difficulties while installing the MIB files or accessing the SNMP agent (Simple Network Management Protocol).

In Short

The *Compack* controller implements an SNMP agent which interfaces with the Network Management System (NMS), enabling remote monitoring via the standard SNMP messaging commands SET, GET and TRAP.

The SNMP agent is compatible with all major NMS on Ethernet, such as "HP Open View", "Sun NetManager", etc.

The SNMP agent responds to SNMP's GET and SET commands, and forwards TRAPs to designated recipients when critical conditions occur on the power system, as configured in the *Compack* controller.

The GET commands provide the NMS with remote monitoring status — e.g. Battery status, etc. — of the power system.

The SET commands enable the NMS to remote control the power system, e.g. changing the output voltage.

The TRAP commands are unsolicited alarm messages that the power system sends to the NMS, when critical situations occur.

You can regard SNMP agents (network devices) that send TRAPs as "clients", and network devices that receive TRAPs and poll devices (issue GETs and SETs) as "servers".

The "Monitoring — via Network Management System" procedure involves following steps (as described in more detail in the next section):

***Compack* controller SNMP configuration:**
(Refer to section "More Detailed", on page 33)

1. TRAP receiver IP addresses
   (Network Managers that receive alarm messages)
2. TRAP Community Strings
3. TRAP Repeat Rates
4. Read and Write Community Strings

NMS configuration:
(Refer to the NMS manuals for accurate instructions)

1. Compile the Eltek's device specific MIB files into the NMS database
   (Read section "About Eltek's SNMP MIB Files", page 37)

2. Add the *Compack* object to the Management Map
   (See an example of the *Compack* controller object added to the Management Map, in section "Example — NMS Configuration", page 39.)

3. "Ping" the *Compack* controller to ensure connectivity
4. Define and configure the TRAP event handling, as required

For acronym descriptions, refer to section "Glossary", page 41.

More Detailed — Controller SNMP Configuration

Carry out the following steps to configure the *Compack* controller's SNMP agent:

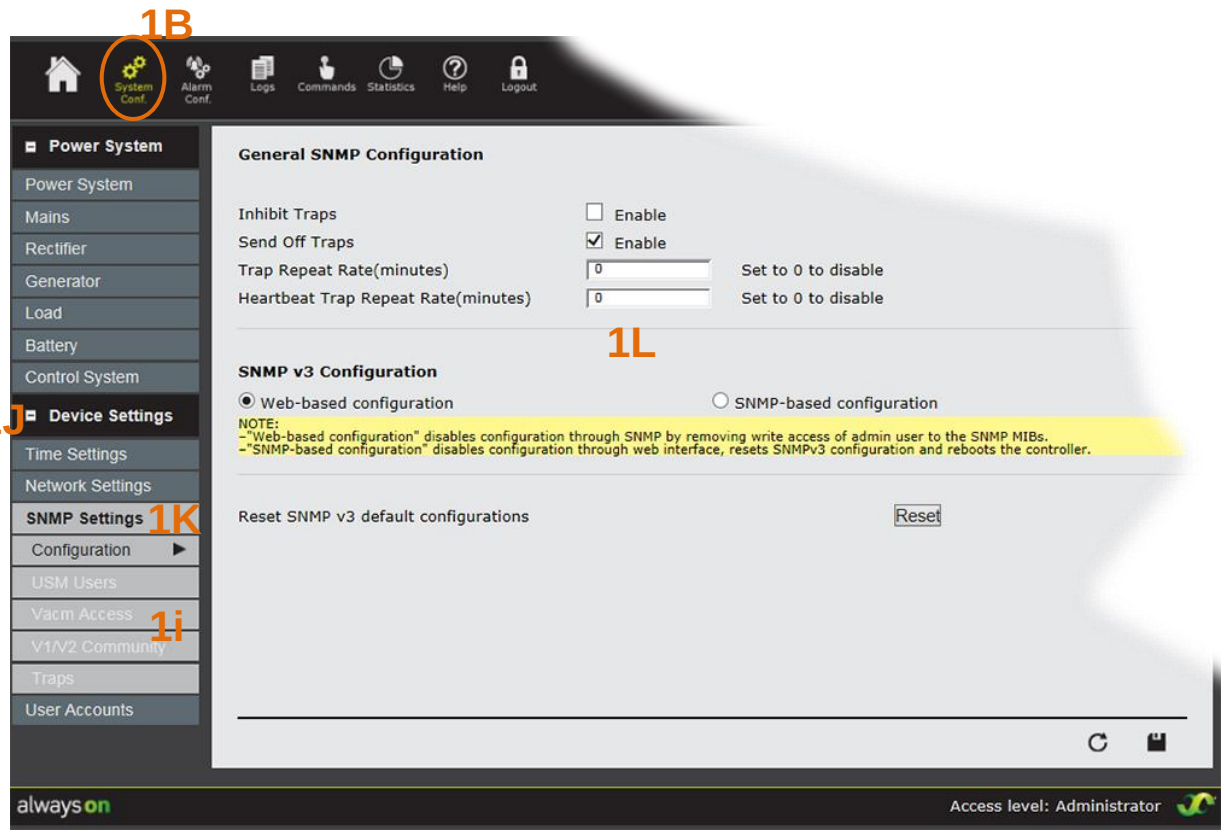
1. Access the controller's configuration pages in your Web browser by opening your Web browser (e.g. Internet Explorer) and entering the controller's IP address in the browser's address line. (E.g. <172.16.5.75>; entering "http://" before the address is not necessary)
2. Log in with the <admin> account, by clicking on the "Enter" link — in the Web browser, in the middle of the page — and entering <admin> as user name and <admin> as password. (case sensitive) Note that the web browser must have the Pop-ups function enabled, as the configuration web pages employ Java script navigation. Read topic How Tos, on page 26. For security reasons, it is advisable to change the default passwords with your own passwords. Read topic How Tos, on page 26
3. Configure the Compack controller's SNMP agent by, Follow either the section "*A — Controller's CWUI Interface*" or the section "*B — Controller's WebPower Interface*" below, depending on your Compack controller's embedded web-based interface is "CWUI" or "WebPower".

A — Controller's CWUI Interface

Using the controller's CWUI interface, configure the Compack controller's SNMP agent by: (see screenshot below)

— Clicking on the "System Config" button (1B), on the toolbar
— Clicking on the "Device Settings" (1J) to expand its options, then clicking on "SNMP Settings" (1K) to expand the SNMP configuration panes (1i)
— Entering the SNMP agent's data in the appropriate fields (1L), in the different SNMP configuration panes (1i): "*Configuration*", "*USM User*", "*Vacm Access*", "*V1/V2 Community*", "*Traps*" and "*User Accounts*".

For a detailed description of all the SNMP agent's data fields, read the *CWUI Online Help* topic <"SNMP Settings" Pane>, in the Internet.

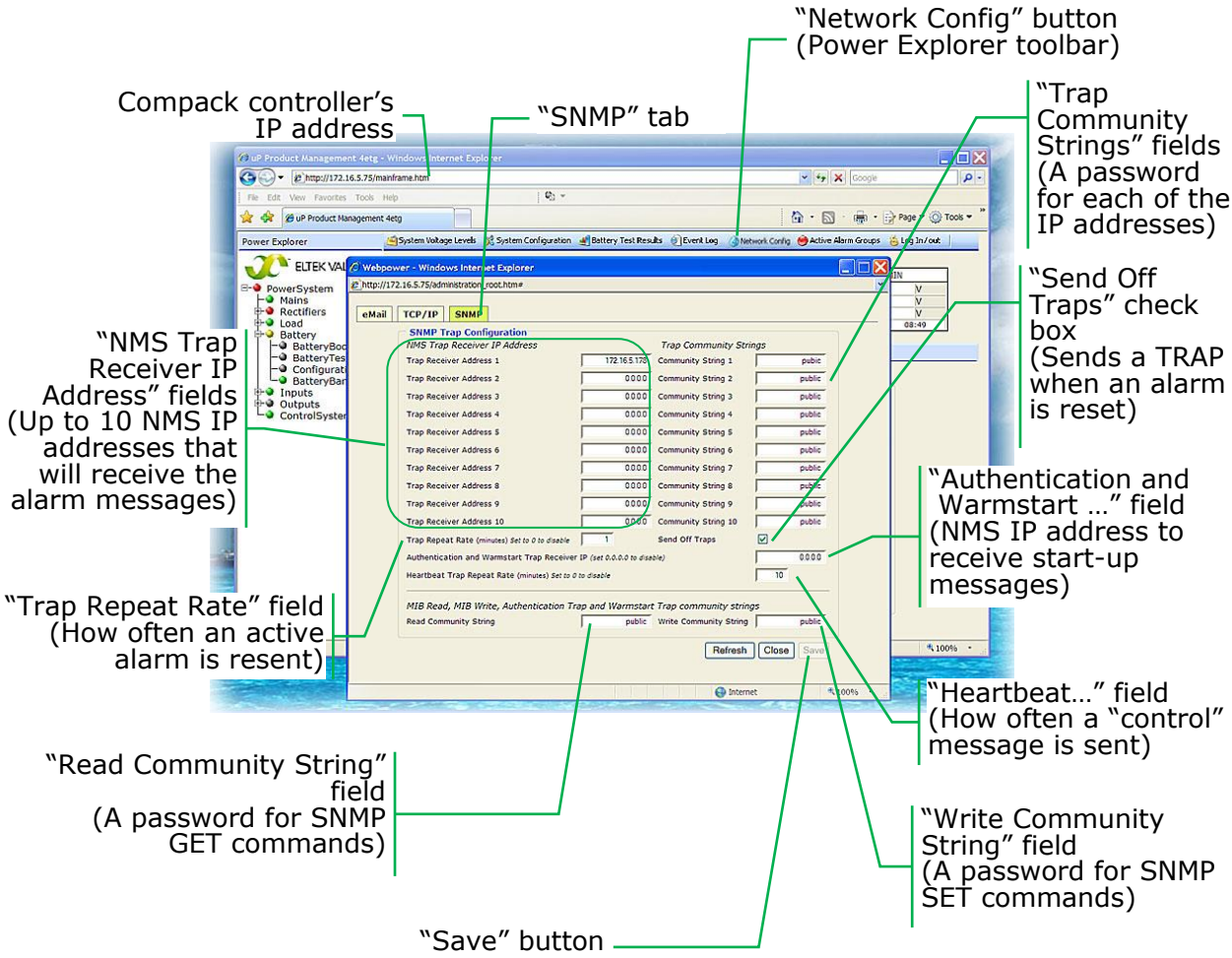


(CWUI interface: example of Compack controller's configuration pages)

B — Controller's WebPower Interface

Using the controller's WebPower interface, configure the Compack controller's SNMP agent by: (see screenshot below)

— Clicking on the "Network Config" button, on the Power Explorer toolbar
— Clicking on the "SNMP" tab, in the dialog box
— Entering the SNMP agent's data in appropriate fields, as described below
— Then clicking on the "Save" button, to activate the SNMP data



(WebPower interface: example of Compack controller's configuration pages)

"NMS Trap Receiver IP Address" fields:
Enter the NMS IP addresses of up to 10 TRAP hosts.
When critical situations occur in the power system, the *Compack* controller's SNMP agent can unsolicited send alarm messages to up to 10 different NMS IP addresses (TRAP hosts or managers).

"Trap Community Strings" fields:
Enter a password[2] for each of the 10 TRAP receivers or hosts. Default password is "public" (case sensitive). The password entered here for each TRAP receiver, is also to be entered in the NMS TRAP Receiver List.

"Trap Repeat Rate" field:
Enter how often (number of minutes 0-10) the TRAP message will be resent to the receiver, while the event or alarm remains in active condition. Enter "0" not to resend.

"Send Off Traps" check box:
Check the box to enable sending a TRAP message when an event or alarm is reset to normal condition. Uncheck the box to disable this function.

"Authentication and Warmstart Trap Receiver IP" field:
Enter NMS IP address (TRAP host or manager) that will receive start-up TRAP messages.

"Heartbeat Trap Repeat Rate" field:
Enter how often (number of minutes 0-10) the "heartbeat", control TRAP message, will be resent to the receiver. Enter "0" to disable sending "heartbeat" messages.

"Read Community String" field:
Enter a password[3] for the SNMP agent's Read access level. Default password is "public" (case sensitive). Network devices issuing the SNMP GET command must be configured with this password.

"Write Community String" field:
Enter a password for the SNMP agent's Write access level. Default password is "public" (case sensitive). Network devices issuing the SNMP SET command must be configured with this password.

About Community Strings

You can regard SNMP agents (network devices) that send TRAPs as "clients", and network devices that receive TRAPs and poll devices (issue GETs and SETs) as "servers".

The Community String is like a password that the "server" device issues to the "client" device during a remote query (e.g. a GET or SET command). Both the "server" and "client" devices have to use the same password.

Most network devices implement different levels of SNMP access (e.g. Read, Write, etc.) each with its password or community string.

[2] Community Strings or passwords can be max 19 characters long. Valid characters are A-Z, a-z, 0-9 and special characters ~@#%^&_-+=:,. Do not use any other characters.
[3] Community Strings or passwords can be max 19 characters long. Valid characters are A-Z, a-z, 0-9 and special characters ~@#%^&_-+=:,. Do not use any other characters.

About Eltek's SNMP MIB Files

The *Eltek's* device specific MIB files[4] (Management Information Base) contain device description data, which is used by other SNMP requester devices in the Network Management System (NMS).

For acronym descriptions, refer to section "Glossary", page 41.

The MIB files are in the plain-text, DOS End-of-Line format, and conform to the ASN1 coding syntax.

Eltek's SNMP compliant devices are described in one or several MIB files, which are required for configuration of the Network Management System (NMS).

There are 3 types of *Eltek* SNMP MIB files:

- The "**First-Time Installation Type**" MIB files.
  Describe a complete MIB tree structure (root and a branch) for *Eltek* SNMP devices.
  Use this type of MIB file if your NMS MIB tree does NOT already contain an *Eltek* SNMP MIB tree structure.
- The "**Root Type**" MIB files.
  Describe the *Eltek* MIB tree base or root (no branches for SNMP devices).
  Use this type of MIB file if you want to use several *Eltek* Branch MIB files simultaneously as branches in the NMS MIB tree.
- The "**Branch Type**" MIB files.
  Describe the *Eltek* MIB tree branches for SNMP devices (no root).
  Use this type of MIB file if you already have the *Eltek* MIB tree root compiled in the NMS MIB tree.
  You can compile several *Eltek* Branch MIB files in the NMS MIB tree, thus describing different *Eltek's* SNMP compliant devices (equipment).

Following table is an overview of some of the *Eltek* SNMP MIB files, their MIB file type and the equipment they describe:

MIB File Type	MIB File Name	Described Eltek Equipment
Root	Eltek_Root.MIB	Top file for all Eltek Branch SNMP MIB files in the NMS
Branch	EltekEnexusPowersystem_branch10_V37.mib	(SP2M)-(SP S) Smartpack2 Master controller with firmware version 2.4 and Smartpack S controller with firmware version 2.4.1
Branch	EltekEnexusPowersystem_branch10.mib	(CP) Compack controller with firmware version 2.3.1
Branch	EltekDistributedPowerPlantV8_branch9.mib	(SP) Smartpack controller with embedded WebPower with firmware version 4.9
Branch	EltekDistributedPowerPlantV2_branch9.MIB	(SP) Smartpack controller with embedded WebPower with firmware version 4.0
Branch	EltekDistributedPowerPlantV4_branch9.MIB	(SP)-(CP) Smartpack controller with embedded WebPower with firmware version 4.3, and Compack controller with firmware version 1.0

[4] You can visit www.eltek.com to download *Eltek's* device specific MIB files, or contact Eltek's Service Dep.

MIB File Type	MIB File Name	Described Eltek Equipment
Branch	EltekDistributedPowerPlantV3_branch9.MIB	(SP) Smartpack controller with embedded WebPower with firmware version 4.1 and 4.2
First Installation	EltekEnexusPowersystem_V37.mib	Complete Root and Branch file for (SP2M)-(SP S) Smartpack2 Master controller with firmware version 2.4 and Smartpack S controller with firmware version 2.4.1
First Installation	EltekEnexusPowersystem.mib	Complete Root and Branch file for (CP) Compack controller with firmware version 2.3.1
First Installation	EltekDistributedPowerPlantV8.mib	Complete Root and Branch file for (SP) Smartpack controller with embedded WebPower with firmware version 4.9
First Installation	EltekDistributedPowerPlantV4.MIB	Complete Root and Branch file for (SP)-(CP) Smartpack controller with embedded WebPower with firmware version 4.3, and Compack controller with firmware version 1.0
First Installation	EltekDistributedPowerPlantV3.MIB	Complete Root and Branch file for (SP) Smartpack controller with embedded WebPower with firmware version 4.1 and 4.2

Example — NMS Configuration

After completing the controller's SNMP configuration — see section "More Detailed — Controller SNMP Configuration", page 33 — you have to configure your NMS, to complete the "*Monitoring — via Network Management System*" procedure.

Refer to your NMS manuals for accurate instructions about how to configure the NMS (e.g. "HP Open View", "Sun NetManager", etc.)

For acronym descriptions, refer to section "Glossary", page 41.

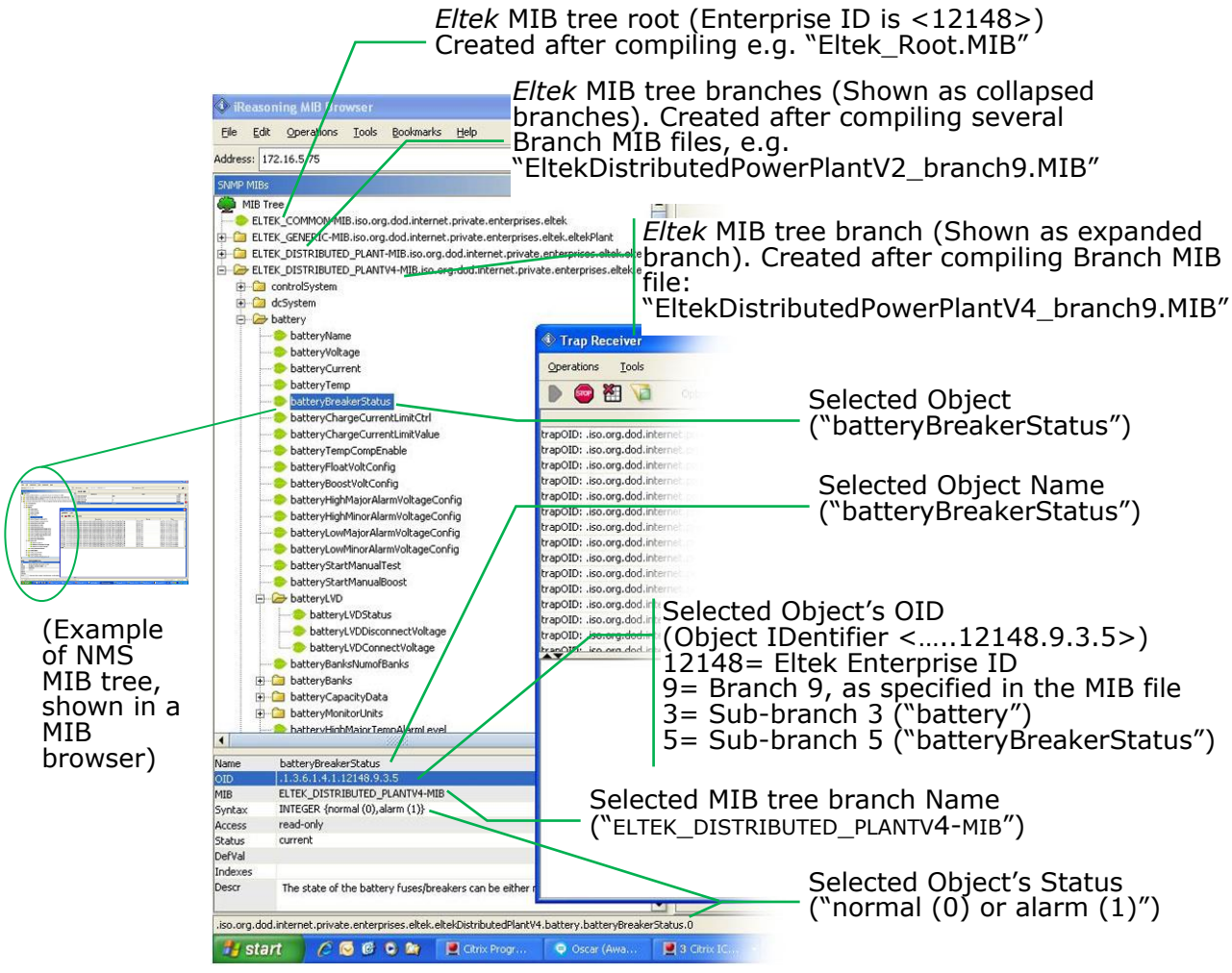
Follow these general steps to configure the Network Management System:

1. Compile the *Eltek's* device specific MIB files into the NMS database.
   Any suitable SNMP based NMS with MIB compiler may be used.
   (Read also section "About Eltek's SNMP MIB Files", page 37)

2. Add the *Compack* object to the Management Map
   (The figure below is an example of the *Compack* controller object added to the Management Map.)

3. "Ping" the *Compack* controller to ensure connectivity
4. Define and configure the TRAP event handling, as required

Eltek's unique Enterprise ID is <12148>



(Example of NMS MIB tree, shown in a MIB browser)

6. Appendix

About Control Units

The *Eltek* control system consists of control units or hardware devices connected to the system's CAN bus. Several types of control units may be connected, such as *Compack* controller, other *Eltek* controllers and other related CAN nodes.

CAN bus

The *Eltek* power systems utilize the CAN[5] bus — a digital interface architecture that supports a dedicated communication channel between the control units and each of the power modules.

CAN bus Addressing

All power modules and the *Compack* and other *Eltek* controllers (control units) connected to the *Eltek's* CAN bus must have a unique address or ID number.

Software Assignment — Power Modules

The control system's main controller assigns automatically the power modules' addresses (**software assignment**).

When the power modules are hot-plugged in the system the first time, the system's main controller dynamically assigns the power modules with the next available ID number (software-assignment), and automatically increases the number of communicating power modules on the CAN bus. Also, the controller registers the power modules' ID numbers, or CAN bus address (01, 02…), together with their serial numbers.

When a previously installed power module is again hot-plugged in the system, it retains its previous ID and serial number, unless reassigned during a Reset Rectifier command.

WARNING: To replace installed power modules with new ones, remove the installed power modules and wait for the controller to notify communication error with the extracted power modules. Push the new power modules firmly inwards — one module at a time, allowing a 2s delay — to plug them in the system. Start with the position with lowest ID number. Lock their handles.

When a new main system controller is inserted in an existing system, the controller will recalculate the number of connected power modules, reassigning them with the same ID numbers as they already have in memory.

Hardware Assignment — Control Units

All *Compack* controllers are factory configured with CAN bus ID number <1> (not changeable).

Most *Eltek* controllers and CAN nodes must be configured with a unique CAN bus ID number, using DIP switches on the side of the unit (**hardware-assignment**).

[5] Control Area Network. Serial protocol utilised for communication between *Eltek's* power modules and controllers

7. Glossary

You find a more updated Glossary of Terms in Online Help.

Term	Description 1v0_2009-03-31
Browser	Short for Web browser, a software application used to locate and display Web pages. The two most popular browsers are Microsoft Internet Explorer and Firefox. Both of these are graphical browsers, meaning that they can display graphics as well as text. In addition, most modern browsers can present multimedia information, including sound and video, though they require plug-ins for some formats.
CAN Bus	Controller Area Network (CAN or CAN bus) is a serial protocol utilized for communication between *Eltek's* power modules, controllers and other control units. The protocol is used in Power systems that use the *Smartpack* controller, the *Compack* controller and in Aeon systems. The CAN bus standard was originally designed to allow microcontrollers and devices to communicate with each other without a host computer. The CAN specification defines the Data Link Layer, while ISO 11898 defines the Physical Layer. The CAN bus is a 2-wire interface running over either a Shielded Twisted Pair (STP), Un-shielded Twisted Pair (UTP), or Ribbon cable. Each node uses a Male 9-pin D connector.
Crossover cable	An Ethernet crossover cable is a type of Ethernet cable used to connect computing devices together directly where they would normally be connected via a network switch, hub or router, such as directly connecting two personal computers via their network adapters. The 10BASE-T and 100BASE-TX Ethernet standards use one wire pair for transmission in each direction. The Tx+ line from each device connects to the tip conductor, and the Tx- line is connected to the ring. This requires that the transmit pair of each device be connected to the receive pair of the device on the other end. When a terminal device is connected to a switch or hub, this crossover is done internally in the switch or hub. A standard straight through cable is used for this purpose where each pin of the connector on one end is connected to the corresponding pin on the other connector.
DHCP	Dynamic Host Configuration Protocol (DHCP) is a network application protocol used by devices (DHCP clients) to obtain configuration information for operation in an Internet Protocol network. This protocol reduces system administration workload, allowing devices to be added to the network with little or no manual intervention.
Eltek Network Utility	The Eltek Network Utility program is a Windows-based utility program used to display the controller's network parameters, when connected to an Ethernet LAN. Also, it enables changing the controller's IP address, configuring the controller via a standard Web browser and upgrading the controller's firmware. The Eltek Network Utility program is free with a few limitations: "IP range search", "File Convert", etc. The program can be downloaded from http://msm.eltek.com/enu A licenced, full featured copy of the program — without the mentioned limitations — can be purchased from Eltek (part number 406001.003). Also available is an older and simpler Windows-based utility program (EVIPSetup.exe) that needs no software installation.
Ethernet	Local Area Network technology. Ethernet provides data transfer using a baseband (single-channel) communication technique. Ethernet uses carrier sense multiple access collision detection (CSMA/CD) that prevents network failures when two devices attempt to access the network at the same time. A 10/100 Ethernet port supports 10BASE-T and 100BASE-TX.
EVIPSetup.exe	Simple Windows-based utility program (EVIPSetup.exe) that needs no software installation. It is used to display the *Smartpack* and *Compack* controller's network parameters, when connected to an Ethernet LAN. Also, it enables changing the controller's IP address, configuring the controller via a standard Web browser and upgrading the controller's firmware.
FTP Server	Trivial File Transfer Protocol Server (TFTP). A host to provide services according to TFTP; a TCP/IP standard protocol for file transfer with minimal capability and overhead depending on UDP for ts datagram delivery service.
GUI	Pronounced GOO-ee. Acronym for graphical user interface. A program interface that takes advantage of the computer's graphics capabilities to make the program easier to use. Well-designed graphical user interfaces can free the user from learning complex command languages. On the other hand, many users find that they work more effectively with a command-driven interface, especially if they already know the command language.
HUB	A common connection point for devices in a network. Hubs are commonly used to connect segments of a LAN. A hub contains multiple ports. When a packet arrives at one port, it is copied to the other ports so that all segments of the LAN can see all packets.
I/O	Short for Input /Output. The term I/O is used to describe any program, operation or device that transfers data to or from a computer and to or from a peripheral device. Every transfer is an output from one device and an input into another.
IP Address	The Internet Protocol Address IP version 4 addresses (IPv4) uses 32-bit (4-byte) addresses, which limits the address space to 4,294,967,296 possible unique addresses. However, IPv4 reserves some addresses for special purposes such as private networks (~18 million addresses) or multicast addresses (~270 million addresses). IPv4 addresses are usually represented in dot-decimal notation (four numbers, each ranging from 0 to 255, separated by dots, e.g. 208.77.188.166). Each part represents 8 bits of the address, and is therefore called an octet.
LAN	Local Area Network A local area network is a computer network covering a small physical area, like a home, office, or small group of buildings, such as a school, or an airport. Current LANs are most likely to be based on Ethernet technology.
LVBD	Low Voltage Battery Disconnect contactor. System internal latching contactor that disconnects the battery bank from the load, when a certain voltage limit is reached or other battery critical events occur.

Term	Description 1v0_2009-03-31
MAC Address	Media Access Control Address. Every Ethernet network card has a unique 48-bit serial number called a MAC address, which is stored in ROM carried on the card. Every computer on an Ethernet network must have a card with a unique MAC address. Normally it is safe to assume that no two network cards will share the same address, because card vendors purchase blocks of addresses from the Institute of Electrical and Electronics Engineers (IEEE) and assign a unique address to each card at the time of manufacture.
MIB	Management Information Base, a database of objects that can be monitored by a network management system. SNMP uses standardized MIB formats that allows any SNMP tools to monitor any device defined by a MIB
Mini Hub	A common connection point for devices in a network. Hubs are commonly used to connect segments of a LAN. A hub contains multiple ports. When a packet arrives at one port, it is copied to the other ports so that all segments of the LAN can see all packets
NIC	Network Interface Controller. A network card, network adapter, network interface controller, network interface card, or LAN adapter is a computer hardware component designed to allow computers to communicate over a computer network. It is both an OSI layer 1 (physical layer) and layer 2 (data link layer) device, as it provides physical access to a networking medium and provides a low-level addressing system through the use of MAC addresses. It allows users to connect to each other either by using cables or wirelessly.
NMS	Network Management Station -An SNMP Manager application which interfaces with the SNMP Agent and provides communication capabilities through standard SNMP messaging commands (SET, GET). The NMS also serves to collect SNMP TRAP events. A Network Management System (NMS) is a combination of hardware and software used to monitor and administer a network.
pComm	RS232 serial protocol used by *Eltek's* controllers for communication with computers, modems, WebPower adapters and other equipment.
Pop-up	A window that suddenly appears (pops up) when you select an option with a mouse or press a special function key. Usually, the pop-up window contains a menu of commands and stays on the screen only until you select one of the commands. It then disappears. A special kind of pop-up window is a pull-down menu, which appears just below the item you selected, as if you had pulled it down.
PowerSuite	PC application used to configure and operate Micropack, Minipack, Flatpack2 and Powerpack Power supply systems. The program is to be run on computers using the MS Windows operating systems.
RJ-45	Short for Registered Jack-45, an eight-wire connector used commonly to connect computers onto local area networks (LAN), especially Ethernets. RJ-45 connectors look similar to the ubiquitous RJ-11 connectors used for connecting telephone equipment, but they are somewhat wider.
SNMP	Simple Network Management Protocol, a set of protocols for managing complex networks. The first versions of SNMP were developed in the early 80s. SNMP works by sending messages, called protocol data units (PDUs), to different parts of a network. SNMP-compliant devices, called agents, store data about themselves in Management Information Bases (MIBs) and return this data to the SNMP requesters.
SNMP Agent	An SNMP-compliant device that stores data about itself in Management Information Bases (MIBs) and return this data to the SNMP requesters.
TCP/IP	Transmission Control Protocol/Internet Protocol A protocol suite used by more than 15 million users with a UNIX association and widely used to link computers of different kinds. The Internet Protocol Suite (commonly known as TCP/IP) is the set of communications protocols used for the Internet and other similar networks. It is named from two of the most important protocols in it: the Transmission Control Protocol (TCP) and the Internet Protocol (IP), which were the first two networking protocols defined in this standard.
Tunnelling Protocol	The term tunnelling protocol is used to describe when one network protocol called the payload protocol is encapsulated within a different delivery protocol.
UDP	The User Datagram Protocol (UDP) is one of the core members of the Internet Protocol Suite, the set of network protocols used for the Internet. With UDP, computer applications can send messages, sometimes known as datagrams, to other hosts on an Internet Protocol (IP) network without requiring prior communications to set up special transmission channels or data paths. UDP is sometimes called the Universal Datagram Protocol.
USB	Universal Serial Bus is a serial bus standard to interface devices to a host computer. USB was designed to allow many peripherals to be connected using a single standardized interface socket and to improve plug and play capabilities by allowing hot swapping, that is, by allowing devices to be connected and disconnected without rebooting the computer or turning off the device. Other convenient features include providing power to low-consumption devices without the need for an external power supply and allowing many devices to be used without requiring manufacturer specific, individual device drivers to be installed.
VPN	A virtual private network (VPN) is a computer network in which some of the links between nodes are carried by open connections or virtual circuits in some larger network (e.g., the Internet) as opposed to running across a single private network. The link-layer protocols of the virtual network are said to be tunnelled through the larger network. One common application is secure communications through the public Internet, but a VPN need not have explicit security features, such as authentication or content encryption. VPNs, for example, can be used to separate the traffic of different user communities over an underlying network with strong security features.
WAN	Wide Area Network is a computer network that covers a broad area (i.e., any network whose communications links cross metropolitan, regional, or national boundaries [1]). Less formally, a WAN is a network that uses routers and public communications links [1]. Contrast with personal area networks (PANs), local area networks (LANs), campus area networks (CANs), or metropolitan area networks (MANs) are usually limited to a room, building, campus or specific metropolitan area (e.g., a city) respectively. The largest and most well-known example of a WAN is the Internet.

Term	Description 1v0_2009-03-31
WebPower	A common name for the firmware installed in *Eltek's* controllers -- *Compack* and *Smartpack*, web option – and in the external *WebPower* adapter module. The firmware provides a communication protocol translator, a physical layer conversion and Web server software. *WebPower* translates the controller's internal protocol into the HTTP protocol over TCP/IP, used to communicate in an Ethernet network, LAN, WAN, VPN or even across the Internet. The *WebPower* firmware provides a platform-independent graphical user interface (GUI), employed to configure and operate *Micropack, Minipack, Flatpack2* and *Powerpack* Power supply systems using a standard Web browser. In addition, *WebPower* provides an SNMP Agent, allowing *Eltek* Power systems to be interoperable with SNMP enterprise management solutions, which are commonly in use within the Telecommunications industry.

www.eltek.com

Headquarters:
Eltek
Visitor Address: Gråterudveien 8, 3036 Drammen, Norway
Phone: +47 32 20 32 00 Fax: +47 32 20 32 10