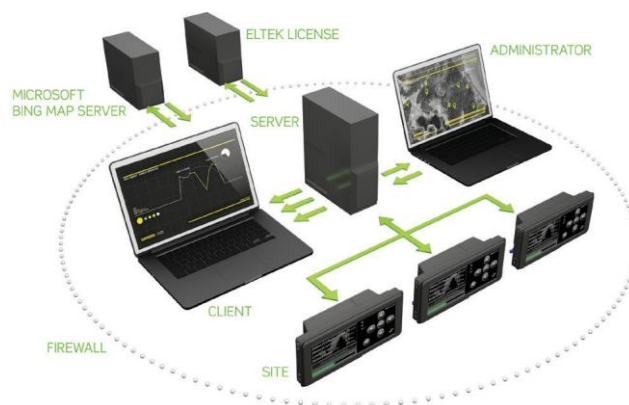


Remote Monitoring of All Sites in One Tool

Monitor energy and performance on multiple sites

- Statistics on energy produced
- Instant status overview
- KPI (Key Performance Indicators)
- Alarms
- Detect underperforming sites
- Email reports



MultiSite Monitor

Server-based Monitoring Software

v2.10.1

Doc 4061xx.DS3 – rev 2.10.1

PRODUCT DESCRIPTION

Server-based Monitoring Software

The *MultiSite* software is a server-based tool that gathers statistical data from connected sites and stores it in a database.

The software also includes web pages for viewing the data from the database. The tool support up to 25000 connected sites.

Monitor the sites energy performance

The *MultiSite* software is a tool for monitoring multiple sites' energy performance and status.

The site owner gets access to performance data that can be used to evaluate investments in hybrid DC power system and for marketing of site fleet's reduced carbon emission.

The instant status of sites makes *MultiSite* a 1st line site maintenance tool; whenever there is a site in alarm, it is easily seen in the map, the list and top bar. One click in the site's details view will open the site's web pages in a new tab for further investigation of the alarm.

KEY FEATURES

- **EASY ACCESS**
Through web browser for both clients and administrators
- **CLIENT MONITORING**
Not dependent on access to site network
- **CENTRAL DATABASE SERVER**
Holds statistical data, resulting in decreased browsing latency
- **SERVER TO SITE DATA TRANSFER THROUGH HTTP PORT 80**
Fire-wall friendly (SSL on port 443 is fully supported)
- **MAP VIEW**
Comprehensive sites overview
- **SITE LIST**
Grouping of sites enables a greater overview
- **SUPPORTS UP TO 25 000 SITES**
Based on multiple server installations
- **SUPPORT FQDN**

KEY FEATURES

- **AUTOMATIC DETECTION OF UNDERPERFORMING SITES**
Use of battery, energy, generator and network connectivity
- **COMPREHENSIVE ALARM VIEWS**
Rolling alarm view, alarm details view and alarm ranking of sites
- **KEY PERFORMANCE INDICATORS**
Set KPI targets and measure site energy and performance
- **EMAIL REPORTS**
- **SITE SURVEILLANCE**
Allows for site specific IP cameras to be monitored through *MultiSite Monitor*
- **BATTERY STATUS**
Remaining battery life and battery backup time
- **GRID AVAILABILITY**
- **CLOUD COMPUTING**
VMware platforms compatible

SPECIFICATIONS

AVAILABLE PACKAGES

	Small	Medium	Large	Enterprise
Included clients/user accounts	2	5	15	15
Maximum no. of clients/user accounts	5	15	30	30
Included sites/connected power system controllers	5	50	200	3000
Max. no. of sites/connected power system controllers	49	199	3000	25000

SUPPORT AGREEMENTS

	Limited	Maintenance & Service
Email support	No minimum response time	Reply within 2 business days
Telephone support (free support hours per year)	-	Small 4h
		Medium 15h
		Large 40h
Support availability	09:00-15:00 CET (not included)	09:00-15:00 CET
On-site support	-	Upon request
Free MSM software upgrade	-	Yes

SERVER REQUIREMENTS

Sites	Recommended Server Hardware	Recommended Free Disk Space after installation
0 - 100	2 CPU Cores, 3 GB RAM	100 GB
100 - 250	3 CPU Cores, 5 GB RAM	250 GB
250 - 500	5 CPU Cores, 8 GB RAM	500 GB
500 - 1000	8 CPU Cores, 16 GB RAM	1 TB
1000 - 2000	8 CPU Cores, 32 GB RAM	2 TB
More than 2000	<i>Contact MSM.support@eltek.com</i>	

CLIENT REQUIREMENTS

Web browser with Silverlight (v4.0) plug-in on client computer

SITE AND CONTROLLER REQUIREMENTS

- Eltek system controller with Ethernet and JSON support: ..General requirement
- Smartpack2 Master: All versions
- Smartpack (only .242100.118): WebPower version >4.6 (not compatible with SNMP auto config.)
- Smartpack S: All versions
- Compact: Firmware version > 1.05
- Delta Orion: Firmware version v7.00 or newer
- 3rd party controllers/SNMP Devices: SNMP v1, v2c, v3. MIB Compiler and mapping feature in MSM

NETWORK INFRASTRUCTURE REQUIREMENTS

Bandwidth to sites (no dial-up)	Minimum 256 kB/s
Daily data usage on each site	Typically from 50kB to 3.0 MB, dependent on configuration
Maximum response time	700 ms
Transport layer/MSMJsonService: TCP Port 80 / TLS Port 443	MSMJsonService: TCP port 8082
Data Set/Get SNMP, Alarms SNMP Traps: UDP Port 161/162	MSMSNMPService: TCP port 8083
Transport layer/MSMNetworkUtilityService: UDP Port 20034	MSMNetworkUtilityService: TCP port 8084
Transport layer/MSMSNMPTrapReceiver: TCP port 8083	MSMNorthboundService: TCP port 8085
Transport layer/MSMRestrictedSiteService: TCP Port 8087	MSMSNMPNorthboundService: TCP port 8086
Transport layer/MSMSNMPDataCollectorService: TCP port 8088	

SECURITY

User login required, min 4 letters, upper/lower case & number

Specifications are subject to change without prior notice

FEATURES AND STATISTICS

DASHBOARD

- Total number of sites connected
- Number of sites in alarm
- Number of offline sites
- Solar energy generated in the last 24 hours

MAP VIEW

- Server data update interval every 10 minutes
- Map data from BING or similar service
- Use of JPG or BMP image as replacement to BING maps
- Site locations
- Visible monitors (6)

LIST VIEW

- Site Name
- IP Address
- Controller Type
- Number of Major Alarms
- Number of Minor Alarms
- Connection Status
- Alarm monitors (6) (default: Mains Voltage, Battery Voltage, Rectifier Current, Battery Temperature, Solar Current)
- SNMP for 3rd party controllers

ENERGY TREND, SINGLE SITE

Server data update interval, typical	• Daily
Energy from solar, wind, generator, rectifiers, DC load (Multi Tenant) and auxiliary equipment on mains	• Pie chart 24h/30d/50w (%) • Line chart 30h/30d/30w (kWh)
Generator run time, fuel consumption and efficiency (hybrid sites only)	• Line chart 30h/30d/30w (m), (l), (kWh/l)
Battery charge and discharge	• Bar Diagram (Ah) total
Battery back-up time	• Instant elimination and target (h)
Alarm Report	• Hourly
Solar CO ₂ /OPEX savings trends	•

RUN HOURS

Generator, Grid, Battery	• Table min/day, Hours/week, Hours/Month
Eltek Cooling box (ECB), Aircondition	• Line chart 30d/30w/30months

COMPARE (COMPARISON OF SITES)

Server data update interval, typical	• Daily
Energy from solar, wind & renewable in total, Renewable versus total DC system or Mains energy	• Site versus Site • Group versus Site • Group versus Group • Bar diagram 30h/30d/30w (kWh), (%)
Energy usage DC Load, Multi tenant: (up to 8 channels)	• Site versus Site • Group versus Site • Group versus Group • Bar diagram 30h/30d/30w (kWh), (%)
Generator run time, fuel consumption and efficiency	• Site versus Site • Group versus Site • Group versus Group • Line chart 30h/30d/30w (m), (l), (kWh/l)
Battery temperature	• Site versus Site • Group versus Site • Group versus Group • Bar Diagram average (°C or °F)
Alarm Report	• Hourly

Table continues on next page

Specifications are subject to change without prior notice

FEATURES AND STATISTICS - CONTINUED

KPI VIEW [ENERGY]

Energy (Solar/Wind/Generator/Grid)	• Total • Last 30 days • Average run hours (generator only) • Average fuel efficiency (generator only) • Low fuel level (generator only)
---------------------------------------	--

KPI VIEW [PERFORMANCE]

Energy	• Solar energy • Wind energy • Grid, other • Grid availability
Battery	• Near end of life • Backup time • Average battery temperature • Charge condition • Symmetry alarms
Generator	• Average run hours • Average fuel efficiency • Low fuel level
Connectivity	• Quality • Frequent loss of connectivity
Cooling	• ECB (Eltek Cooling Box) run time • Air conditioner run time

DETECTION OF UNDERPERFORMING SITES

Automatic detection of underperforming sites	• Use of Battery, Energy, Generator and network Connectivity, Cooling • KPI
--	--

BATTERY STATUS

Presentation of Battery Condition	• Bar diagram • Battery Life Days Remaining • Battery Backup Time
Smartpower & Grid Services Features	• Battery health / quality statistics • Battery testing / config • Battery detailed test overview with SoH

GRID STATUS

Grid Availability	• Run time • Bar diagram 30h/30d/30w (h), (%) • Pie chart 30h/30d/30w (h) (%)
-------------------	---

ALARMS (SNMP, ELTEK / DELTA)

Rolling alarm view	• See all alarm traps sent from controllers connected to the MSM • Filter by status, system template, search on site/ alarm description and time interval
Alarm details view	• See all active and historical alarms on a site/group • Filter by severity and date • Statistics about how long the site has been in alarm, and on witch level
Ranking of sites "In Alarm" time (all sites ranked)	• Shows an overview of how long a site has been in alarmstate compared to the other sites
Polling alarms (other)	• Alarm traps

Table continues on next page

Specifications are subject to change without prior notice

FEATURES AND STATISTICS - CONTINUED

LOGS

Event log	Log of site status change and email report sent
Change log	Logs when sites are altered: - Configuration upload - Firmware upgrade - SNMP configuration changed

EMAIL REPORTS

Trigger type

Alarm Report	Active alarm
Underperforming report	Underperforming
Energy report	- Hourly, Daily, Weekly interval - Daily Energy summary (new) - Weekly Energy summary(new) - Daily Energy usage per site for last days(new)
Site summary report	- Hourly interval - Daily interval - Weekly interval - Monthly interval - Quarterly interval - Yearly interval
Run hour report	Monthly interval
KPI report (global report)	KPI Trigger

SITE SURVEILLANCE

IP camera integration	Visual surveillance of remote sites
-----------------------	---

3RD PARTY APPLICATION SUPPORT

- Launch 3rd party applications through MultiSite Monitor
- Ticketing system

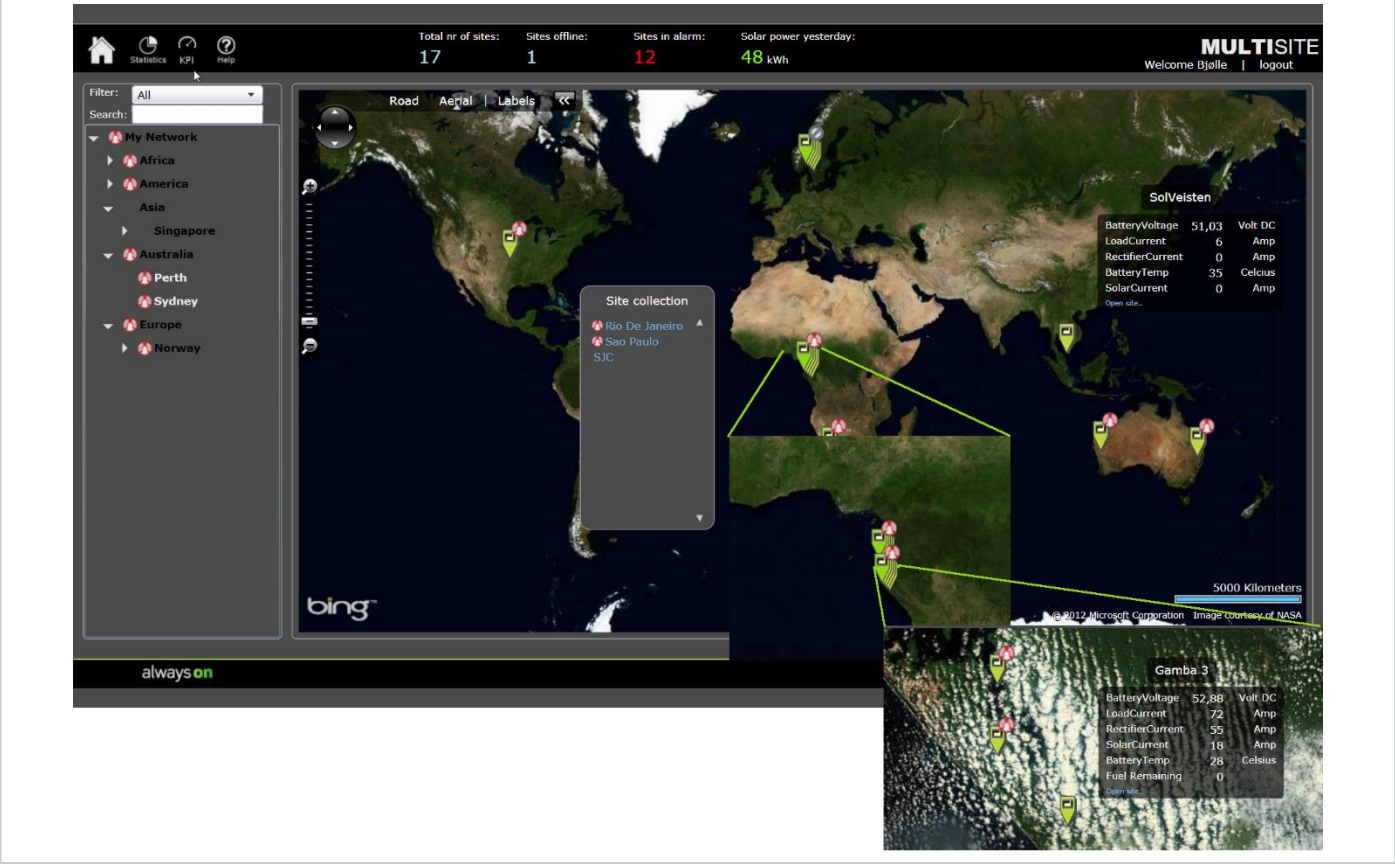
SITE INVENTORY

Serial numbers
Warranty alert
Module type
Part numbers
Hardware version
Software part numbers
Software version
Warranty period
Delivery date
Battery
Serial numbers etc. from Smart batteries

SITE MANAGEMENT

Deployment of configuration to multiple controllers	
Automatic SNMP configuration on connected controllers	(requires controller software v.2.3 or higher)
Compare controller configurations	
Show and upgrade controller firmware	
Northbound Communication	• EDM Panama (XML format) • SNMP w/MultiSite Monitor KPIs

MAP VIEW / DASHBOARD (EXAMPLE)



CUSTOM JPG/BMP VIEW/ DASHBOARD (EXAMPLE)



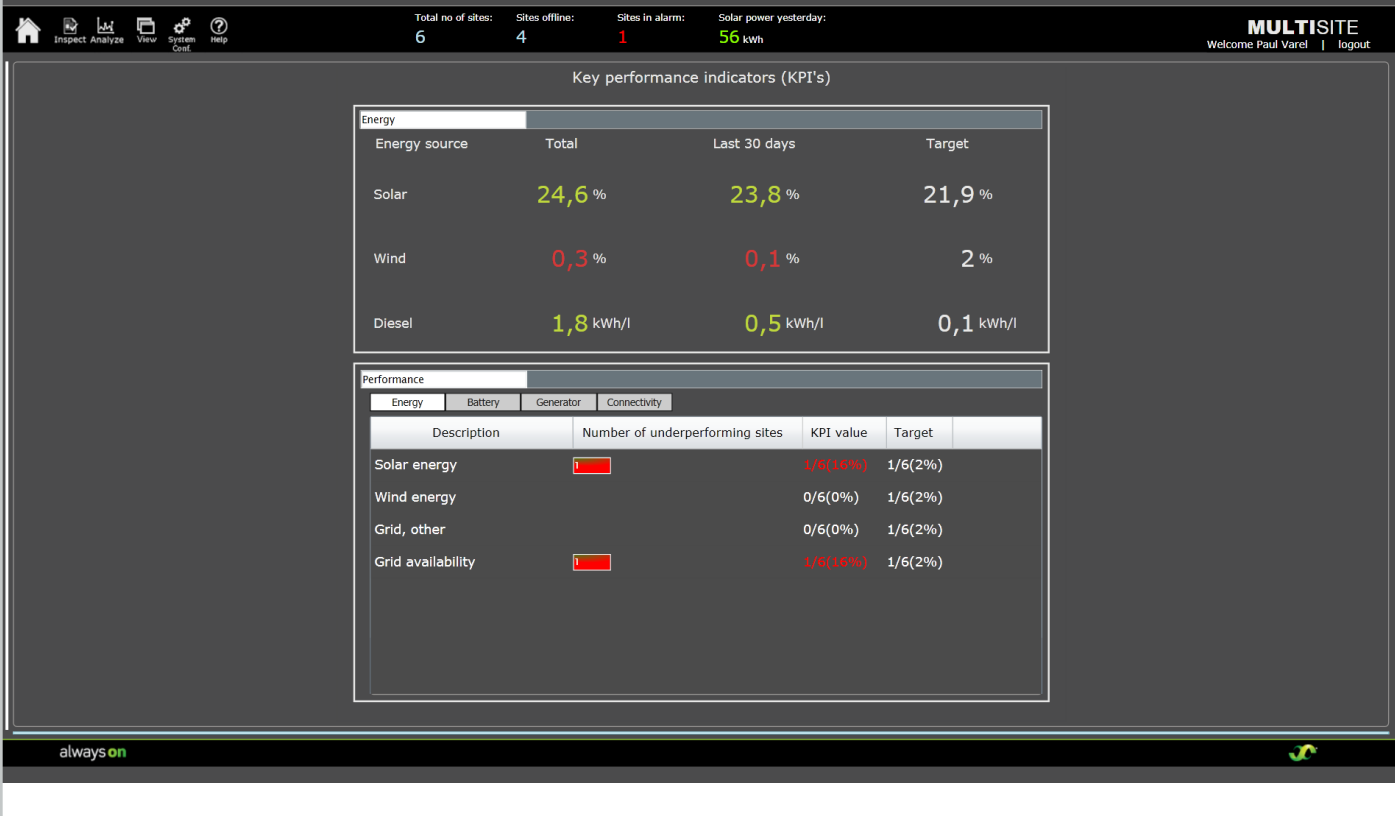
ENERGY TREND, SINGLE SITE (EXAMPLE)



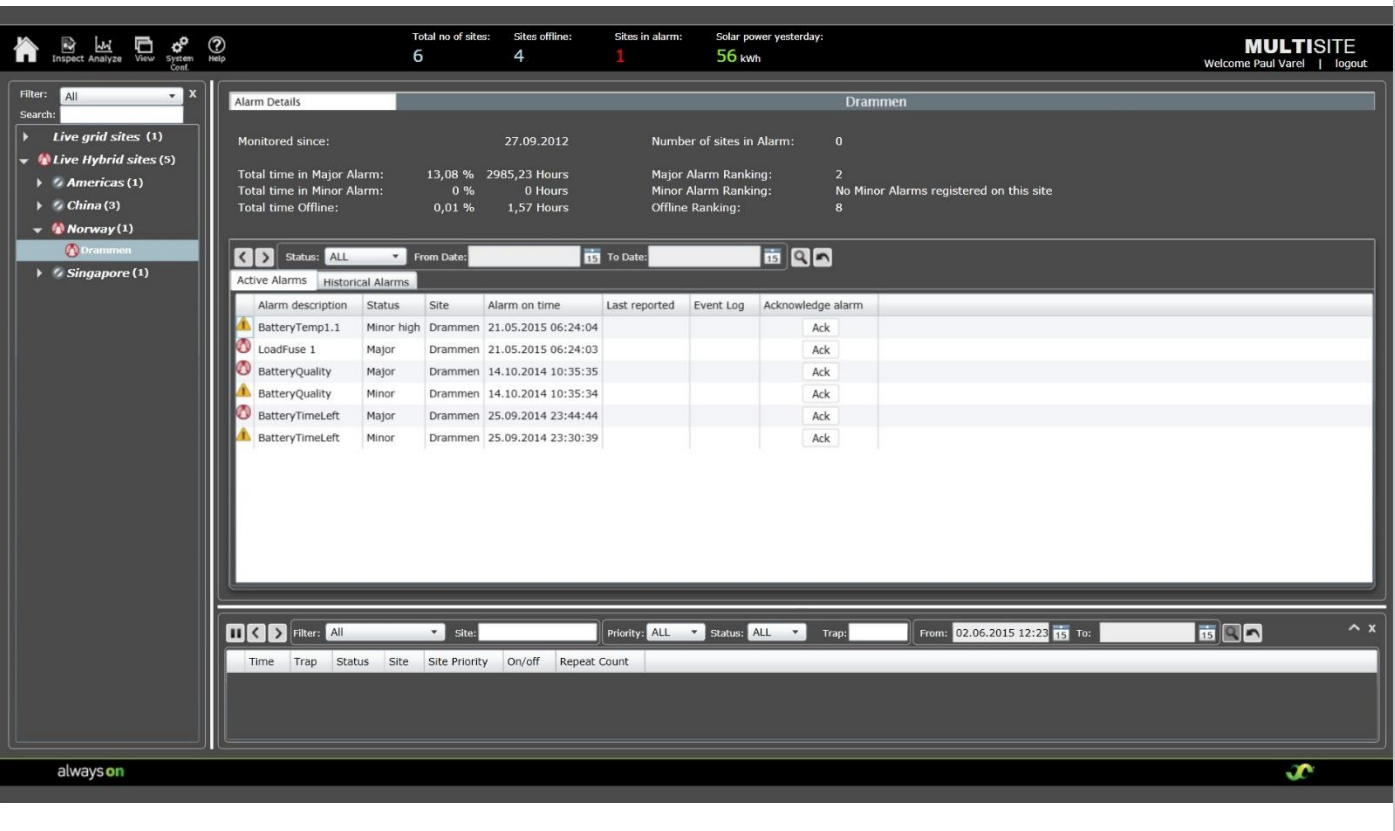
COMPARE (COMPARISON OF SITES) (EXAMPLE)



KPI VIEW [ENERGY] & [PERFORMANCE] (EXAMPLE)



ALARM DETAILS VIEW (EXAMPLE)



ALARM RANKING (EXAMPLE)

Home Inspect Analyze View System Config Help

Total no of sites: 6 Sites offline: 4 Sites in alarm: 1 Solar power yesterday: 56 kWh

MULTISITE
Welcome Paul Varel | logout

Filter: All Search:

- Live grid sites (1)
- Live Hybrid sites (5)
 - Americas (1)
 - China (3)
 - Norway (1)
 - Drammen**
 - Singapore (1)

Site Ranking

Major Alarm Minor Alarm Offline

Active:

#	Site	Hours in major alarm	Detected major alarm
1	Drammen	793,99	30.04.2015 12:20:09
2	Eltek demo site	684,45	05.05.2015 01:52:37

Historical:

#	Site	Total % in major alarm	Total hours in major alarm	Monitored since
2	Drammen	13.08	2985.23	27.09.2012 08:46:51
4	Eltek demo site	9.74	489.533	08.10.2014 13:49:44
5	Rooftop Singapore	9.66	1462.2	13.08.2013 15:11:51
6	Top roof	6.05	1086.38	17.04.2013 09:58:33
7	Top roof	1.59	286.183	17.04.2013 09:57:36
8	SJC	0	0.666666	10.09.2013 15:18:15

Page 1 of 1

always on

ROLLING ALARM VIEW (EXAMPLE)

Home Inspect Analyze View System Config Help

Total no of sites: 6 Sites offline: 4 Sites in alarm: 1 Solar power yesterday: 50 kWh

MULTISITE
Welcome admin | logout

Filter: All Search:

- Live grid sites (1)
- Eltek demo site
- Live Hybrid sites (5)
 - Americas (1)
 - China (3)
 - Norway (1)
 - Drammen**
 - Singapore (1)

Rolling Alarm View

Map: Road Aerial Labels

Drammen

- BatteryVoltage: 54.0 Volt DC
- LoadCurrent: 9.6 Amp
- RectifierCurrent: 4.2 Amp
- SolarCurrent: 7.5 Amp
- BatteryTemp: 15 Celsius
- Fuel Remaining: 0
- Open site...

Eltek demo site

- BatteryVoltage: 54.55 Volt DC
- LoadCurrent: 0.0 Amp
- RectifierCurrent: 0.0 Amp
- BatteryTemp: Celsius
- Open site...

5000 Kilometers
© 2009 Microsoft Corporation

Filter: All Site: Priority: ALL Status: ALL Trap: From: 01.04.2015 08:18 To: 03.06.2015 08:18

Time	Trap	Status	Site	Site Priority	On/off	Repeat Count
22.05.2015 10:07:05	Heart beat trap		Drammen	3	On/off	
22.05.2015 10:06:32	BatteryTemp1.1	Minor high	Drammen	3	On	13244
22.05.2015 10:06:31	LoadFuse 1	Major	Drammen	3	On	13244
22.05.2015 10:06:02	Heart beat trap		Drammen	3		
22.05.2015 10:05:30	BatteryTemp1.1	Minor high	Drammen	3	On	13243
22.05.2015 10:05:29	LoadFuse 1	Major	Drammen	3	On	13243
22.05.2015 10:04:56	Heart beat trap		Drammen	3		
22.05.2015 10:04:27	BatteryTemp1.1	Minor high	Drammen	3	On	13242
22.05.2015 10:04:26	LoadFuse 1	Major	Drammen	3	On	13242

always on

COMPARE CONFIG

Home

Inspect

Analyze

View

System

Help

136

2

131

1 kWh

Work in progress

MULTISITE

Welcome Paul Varel | Logout

Filter: All

Search:

My Network (136)

10.20.7.68

burnin127

Compacts (85)

Drammen

Dummy sites

Green day

Hybrid solar 2

Local sites

Smartpack (44)

Smartpack 124

Test site - Drammen

Top Test

New Comparison

Recent Comparison

settings_data.xml

Select File

Description	Value
1 Company	
2 Model	FlatPack2 System
3 Message 1	
4 Message 2	
5 Smartpack Globals - Number of battery cells	24
6 Smartpack Globals - System capacity scale	0
7 Smartpack Globals - Temperature Scale	0
8 Smartpack Globals - System Polarity	0
9 System config cfgDesiAmpere	0
10 Low Float Voltage(Batt Test Standby voltage)	4440
11 Battery Disconnect Voltage	4300
12 Battery Reconnect Voltage	4700
13 Control system Number of control units	1
14 Control unit Com error alarm Enable(1)/Disable (0)	1
15 Control unit Com error alarm Major High	1
16 Control unit Com error Alarm group Major High	1
17 Control unit Com error alarm Minor High	1
18 Control unit Com error Alarm group Minor High	2
19 Control unit Com error delay	0
20 Control unit Com error Description	CtrlUnitError
21 Control unit Com error Manual reset Major High Only (2)/All Levels(1)/Disable (0)	0
22 SmartNode Com error alarm Enable(1)/Disable (0)	1
23 SmartNode Com error alarm Major High	1
24 SmartNode Com error Alarm group Major High	1
25 SmartNode Com error alarm Minor High	1
26 SmartNode Com error Alarm group Minor High	2
27 SmartNode Com error delay	0

Comparison Description: settings_data.xml

Compare

Cancel

Filter: All

Site:

Priority: ALL

Status: ALL

Trap:

From: 12.10.2015 14:57

To:

Time	Trap	Status	Site	Site Priority	On/off	Repeat Count
------	------	--------	------	---------------	--------	--------------

always on

ELTEK COOLING BOX (ECB)

Home

Inspect

Analyze

View

System

Help

141

6

132

1 kWh

Work in progress

MULTISITE

Welcome Paul Varel | Logout

Filter: All

Search:

My Network (136)

10.20.7.68

burnin127

Compacts (85)

Drammen

Dummy sites

Green day

Hybrid solar 2

Local sites

Smartpack (44)

Smartpack 124

Test site - Drammen

Top Test

ECB Run time

10.20.7.68

Last 30 days

Rect. capacity: 0%

Zoom:

Select time frame:

Last 30 days

Last 30 weeks

Last 30 months

Select group compare type:

Group Summary

Group Average

Log

Target

AirCon Run time

10.20.7.68

Last 30 days

Log

Target

always on

10

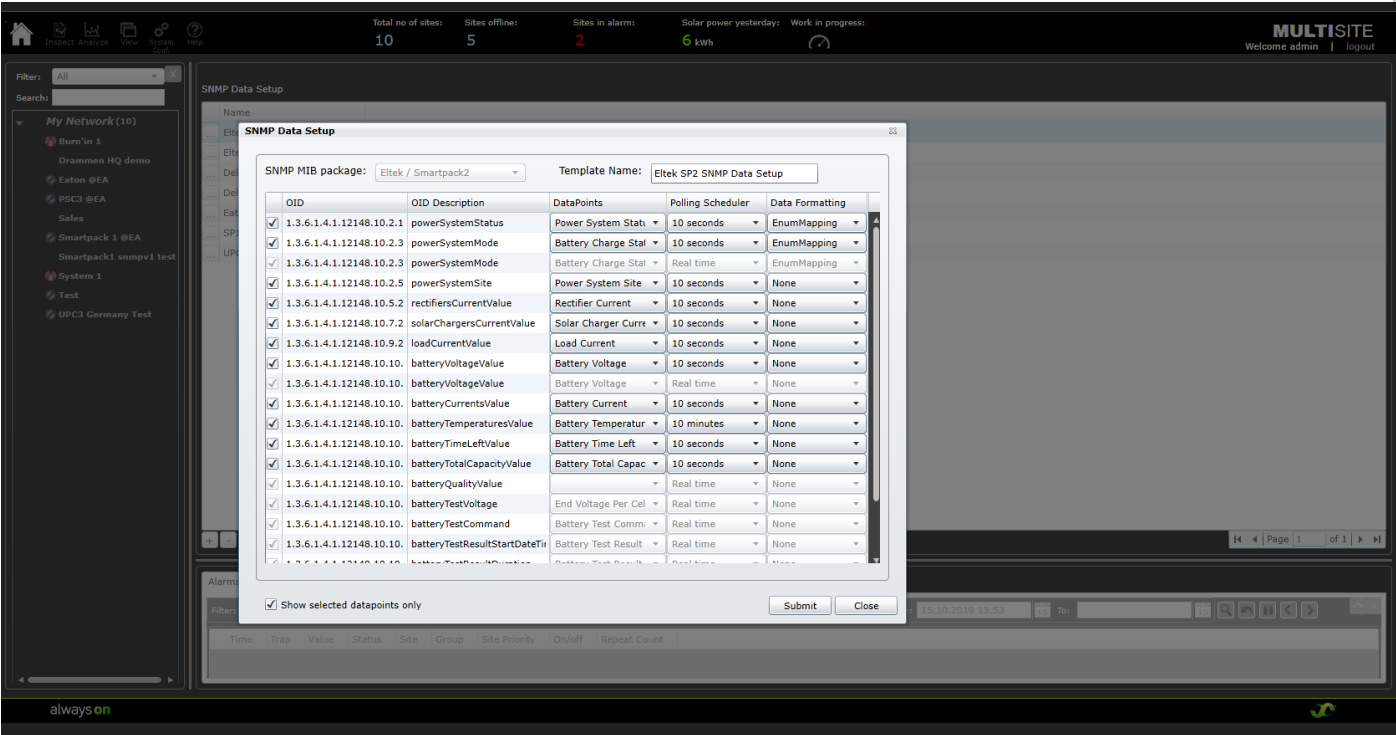
Eltek — Gråterudveien 8, 3003 Drammen, Norway Phone: +47 32 2032 00 Eltek © 2019 – www.eltek.com

4061xx.DS3, rev 2.10.1

ENERGY SAVING FROM RENEWABLES (EXAMPLE)



MONITORING REMOTE SITES BY CONFIGURABLE SNMP (EXAMPLE)



Copyright © Eltek 2019
This document may be changed without notice
4061xx.DS3, rev 2.10.1, Published 2019-10-23

This product is CE marked and complies with
all current requirements for relevant
standards and directives.



www.eltek.com

Headquarters: **Eltek**
Visitor address: Gråterudveien 8, 3036 Drammen, Norway Phone:
+47 32 20 32 00 Fax: +47 32 20 32 10
For *Eltek* local offices, select the office in www.eltek.com/contact

