

LINDY Part No. 32710 SNMP Settings

FAQ EPM SNMP

General Remarks

SNMP can be used to retrieve status information from Expert Power Meter via UDP (port 161)

supported SNMP commands

SNMPGET : request status information

SNMPGETNEXT : request next status information

To scan Expert Power Meter via SNMP, you need a NetworkManagementSystem like HP-OpenView, OpenNMS, Nagios, etc... or simply the command line tools of NET-SNMP which are also used in the examples below.

SNMP Communities

SNMP authenticates the network requests based on so-called communities named public and private. The SNMP request must include the so-called public community in all status queries (read-only access) and the public community for all change requests (writing access).

The SNMP communities serve as passwords for reading or writing. In SNMP versions v1 and v2c, the communities are transmitted without encryption, and can easily be wiretapped within the collision domain by IP sniffers. Therefore we strictly recommend to use SNMP only within a Demilitarized Zone or with Expert Power Control's IP Access List IP-ACL activated!

MIBs

The values that can be handled, called 'Managed Objects', are described in Management Information Bases (kurz MIBs). Three different MIBs can be retrieved from Expert Power Meter:

System

subtree name	OID
system	1.3.6.1.2.1.1
sysDescr	1.3.6.1.2.1.1.1
sysObjectID	1.3.6.1.2.1.1.2
sysUpTime	1.3.6.1.2.1.1.3
sysContact	1.3.6.1.2.1.1.4
sysName	1.3.6.1.2.1.1.5
sysLocation	1.3.6.1.2.1.1.6
sysServices	1.3.6.1.2.1.1.7

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Interface

subtree name	OID
ifIndex	1.3.6.1.2.1.2.2.1.1
ifDescr	1.3.6.1.2.1.2.2.1.2
ifType	1.3.6.1.2.1.2.2.1.3
ifMtu	1.3.6.1.2.1.2.2.1.4
ifSpeed	1.3.6.1.2.1.2.2.1.4
ifPhysAddress	1.3.6.1.2.1.2.2.1.6
ifAdminStatus	1.3.6.1.2.1.2.2.1.7
ifOperStatus	1.3.6.1.2.1.2.2.1.8
ifLastChange	1.3.6.1.2.1.2.2.1.9
ifInOctets	1.3.6.1.2.1.2.2.1.10
ifInUcastPkt	1.3.6.1.2.1.2.2.1.11
ifInNUcastPkts	1.3.6.1.2.1.2.2.1.12
ifInDiscards	1.3.6.1.2.1.2.2.1.13
ifInErrors	1.3.6.1.2.1.2.2.1.14
ifInUnknownProtos	1.3.6.1.2.1.2.2.1.15
ifOutOctets	1.3.6.1.2.1.2.2.1.16
ifOutUcastPkts	1.3.6.1.2.1.2.2.1.17
ifOutNUcastPkts	1.3.6.1.2.1.2.2.1.18
ifOutDiscards	1.3.6.1.2.1.2.2.1.19
ifOutErrors	1.3.6.1.2.1.2.2.1.20
ifOutQLen	1.3.6.1.2.1.2.2.1.21
ifSpecific	1.3.6.1.2.1.2.2.1.22

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gadsEPM

subtree name	OID	description	r / w
GUDEADS-EPM-MIB	1.3.6.1.4.1.28507	Gude Analog- und Digitsysteme GmbH MIB (Private Enterprise)	r
GUDEADS-EPM-MIB::gadsEPM	1.3.6.1.4.1.28507.2	Expert Power Meter MIB	r
chanActive	1.3.6.1.4.1.28507.2.1.1	How many power channel are active	r
chanTable	1.3.6.1.4.1.28507.2.1.2	Expert Power Meter Channel SMI-Table	r
chanEnergyTotal	1.3.6.1.4.1.28507.2.1.2.1.2	Total accumulated energy of power channel	r
chanEnergyTotalReset	1.3.6.1.4.1.28507.2.1.2.1.3	Total (resettable) accumulated energy of power channel	r
chanEnergyActive	1.3.6.1.4.1.28507.2.1.2.1.4	Real active Energy (Watt)	r
chanEnergyApparent	1.3.6.1.4.1.28507.2.1.2.1.5	Active Apparent Energy (VA)	r
chanCurrent	1.3.6.1.4.1.28507.2.1.2.1.6	Actual Current on Power Channel (milliAmpere)	r
chanVoltage	1.3.6.1.4.1.28507.2.1.2.1.7	Actual Voltage on Power Channel (Volt)	r

system

interface

gadsepm

system und interface are standardised MIBs (MIB-II), gadsepm is in a MIB (GUDEADS-EPM-MIB::gadsEPM) especially designed for Expert Power Meter. Subordinated to these three structural branches are the OIDs (Object Identifiers). An OID position stands for the location of a value within the MIB structure. Every OID can alternatively be identified by its symbolic name (subtree name).

system

subtree name OID

system 1.3.6.1.2.1.1

sysDescr 1.3.6.1.2.1.1.1

sysObjectID 1.3.6.1.2.1.1.2

sysUpTime 1.3.6.1.2.1.1.3

sysContact 1.3.6.1.2.1.1.4

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sysName 1.3.6.1.2.1.1.5
sysLocation 1.3.6.1.2.1.1.6
sysServices 1.3.6.1.2.1.1.7

interface

subtree name OID
ifIndex 1.3.6.1.2.1.2.2.1.1
ifDescr 1.3.6.1.2.1.2.2.1.2
ifType 1.3.6.1.2.1.2.2.1.3
ifMtu 1.3.6.1.2.1.2.2.1.4
ifSpeed 1.3.6.1.2.1.2.2.1.4
ifPhysAddress 1.3.6.1.2.1.2.2.1.6
ifAdminStatus 1.3.6.1.2.1.2.2.1.7
ifOperStatus 1.3.6.1.2.1.2.2.1.8
ifLastChange 1.3.6.1.2.1.2.2.1.9
ifInOctets 1.3.6.1.2.1.2.2.1.10
ifInUcastPkt 1.3.6.1.2.1.2.2.1.11
ifInNUcastPkts 1.3.6.1.2.1.2.2.1.12
ifInDiscards 1.3.6.1.2.1.2.2.1.13
ifInErrors 1.3.6.1.2.1.2.2.1.14
ifInUnknownProtos 1.3.6.1.2.1.2.2.1.15
ifOutOctets 1.3.6.1.2.1.2.2.1.16
ifOutUcastPkts 1.3.6.1.2.1.2.2.1.17
ifOutNUcastPkts 1.3.6.1.2.1.2.2.1.18
ifOutDiscards 1.3.6.1.2.1.2.2.1.19
ifOutErrors 1.3.6.1.2.1.2.2.1.20
ifOutQLen 1.3.6.1.2.1.2.2.1.21
ifSpecific 1.3.6.1.2.1.2.2.1.22

gadsEPM

subtree name OID description r / w
GUDEADS-EPM-MIB 1.3.6.1.4.1.28507 Gude Analog- und Digitsysteme GmbH MIB (Private Enterprise) r
GUDEADS-EPM-MIB::gadsEPM 1.3.6.1.4.1.28507.2 Expert Power Meter MIB r
chanActive 1.3.6.1.4.1.28507.2.1.1 How many power channel are active r
chanTable 1.3.6.1.4.1.28507.2.1.2 Expert Power Meter Channel SMI-Table r
chanEnergyTotal 1.3.6.1.4.1.28507.2.1.2.1.2 Total accumulated energy of power channel r
chanEnergyTotalReset 1.3.6.1.4.1.28507.2.1.2.1.3 Total (resettable) accumulated energy of power channel r
chanEnergyActive 1.3.6.1.4.1.28507.2.1.2.1.4 Real active Energy (Watt) r
chanEnergyApparent 1.3.6.1.4.1.28507.2.1.2.1.5 Active Apparent Energy (VA) r
chanCurrent 1.3.6.1.4.1.28507.2.1.2.1.6 Actual Current on Power Channel (milliAmpere) r
chanVoltage 1.3.6.1.4.1.28507.2.1.2.1.7 Actual Voltage on Power Channel (Volt) r
[bearbeiten]NET-SNMP
NET-SNMP offers a very widespread collection of SNMP command line tools (snmpget, snmpset, snmpwalk, etc.) NET-SNMP is available for Linux and Windows, among others.

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After installation of NET-SNMP, the device-specific MIB for Expert Power Meter should be filed in net-snmp's share folder, e.g. under

c:\usr\share\snmp\mibs
resp.

/usr/share/snmp/mibs

This way, you can later use the 'subtree names' instead of the plain OIDs:

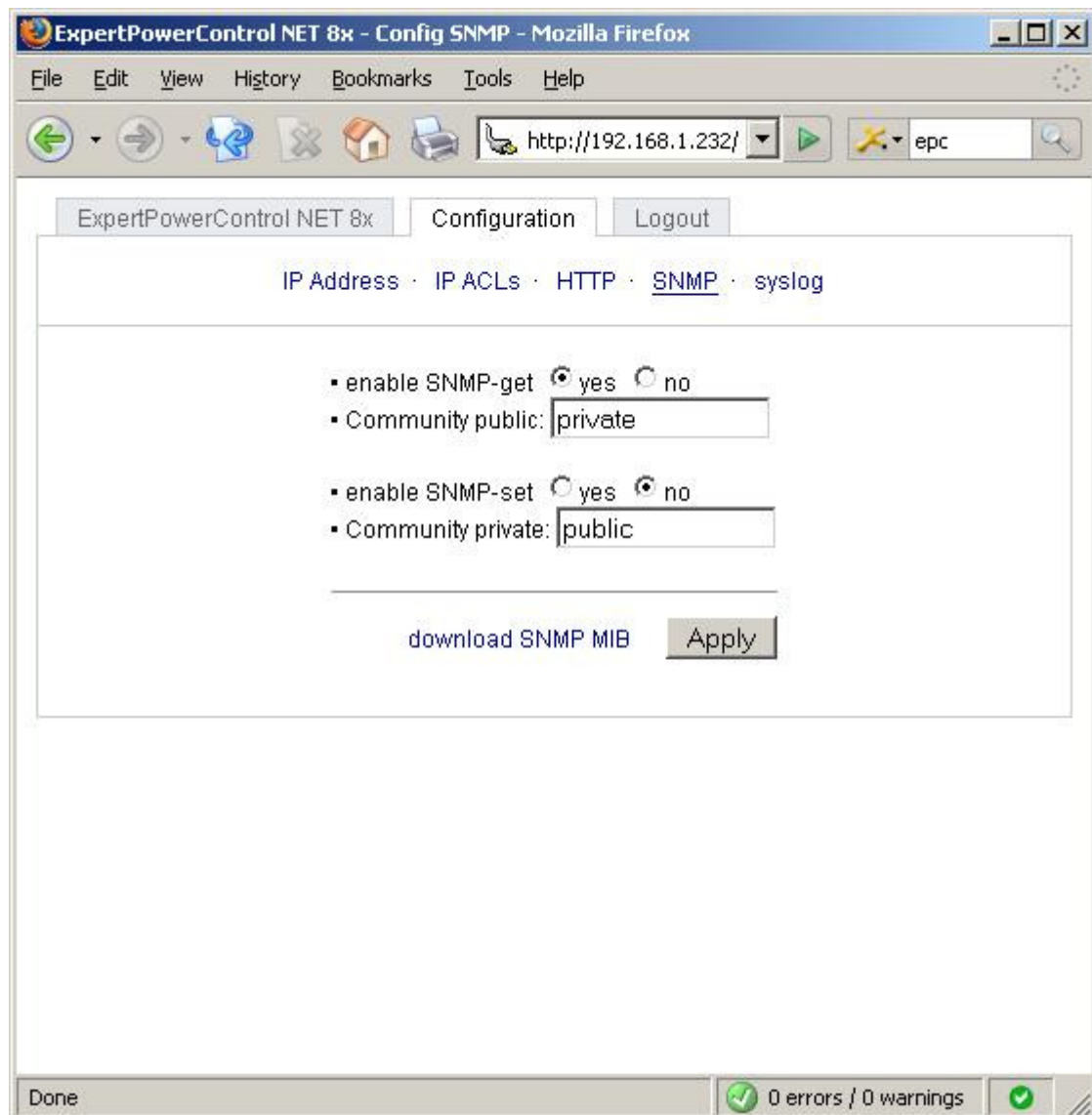
using subtree names

```
snmpwalk -v2c -mALL -c public 192.168.1.232 gadsEPM
```

same command using OID only

```
snmpwalk -v2c -mALL -c public 192.168.1.232 1.3.6.1.4.1.28507
```

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Examples

walk system oids

```
snmpwalk -v2c -mALL -c public 192.168.1.232 system
SNMPv2-MIB::sysDescr.0 = STRING: Expert Power Meter
SNMPv2-MIB::sysObjectID.0 = OID: GUDEADS-EPM-MIB::gadsEPM
DISMAN-EXPRESSION-MIB::sysUpTimeInstance = Timeticks: (141000) 0:23:30.00
SNMPv2-MIB::sysContact.0 = STRING: http://www.gudeads.com/
SNMPv2-MIB::sysName.0 = STRING: IPMETER
SNMPv2-MIB::sysLocation.0 = STRING:
SNMPv2-MIB::sysServices.0 = INTEGER: 0
```

walk interface oids

```
snmpwalk -v2c -mALL -c public 192.168.1.232 interfaces
IF-MIB::interfaces.0.0 = INTEGER: 1
IF-MIB::ifIndex.1 = INTEGER: 1
IF-MIB::ifDescr.1 = STRING: eth_cf52235
IF-MIB::ifType.1 = INTEGER: ethernetCsmacd(6)
IF-MIB::ifMtu.1 = INTEGER: 1500
IF-MIB::ifSpeed.1 = Gauge32: 10000000
IF-MIB::ifPhysAddress.1 = STRING: 0:19:32:0:1:1a
IF-MIB::ifAdminStatus.1 = INTEGER: up(1)
IF-MIB::ifOperStatus.1 = INTEGER: up(1)
IF-MIB::ifLastChange.1 = Timeticks: (0) 0:00:00.00
IF-MIB::ifInOctets.1 = Counter32: 6526336
IF-MIB::ifInUcastPkts.1 = Counter32: 7751
IF-MIB::ifInNUcastPkts.1 = Counter32: 1319
IF-MIB::ifInDiscards.1 = Counter32: 0
IF-MIB::ifInErrors.1 = Counter32: 0
IF-MIB::ifInUnknownProtos.1 = Counter32: 0
IF-MIB::ifOutOctets.1 = Counter32: 3314
IF-MIB::ifOutUcastPkts.1 = Counter32: 29
IF-MIB::ifOutNUcastPkts.1 = Counter32: 3
IF-MIB::ifOutDiscards.1 = Counter32: 0
IF-MIB::ifOutErrors.1 = Counter32: 32
IF-MIB::ifOutQLen.1 = Gauge32: 0
IF-MIB::ifSpecific.1 = OID: SNMPv2-SMI::zeroDotZero.0
```

[bearbeiten]walk gadsEPM

```
snmpwalk -v2c -mALL -c public 192.168.1.232 gadsEPM
GUDEADS-EPM-MIB::chanActive = Gauge32: 2
GUDEADS-EPM-MIB::chanEnergyTotal.1 = Gauge32: 0 Watt / hour
GUDEADS-EPM-MIB::chanEnergyTotal.2 = Gauge32: 0 Watt / hour
GUDEADS-EPM-MIB::chanEnergyTotalReset.1 = Gauge32: 0 Watt / hour
GUDEADS-EPM-MIB::chanEnergyTotalReset.2 = Gauge32: 0 Watt / hour
GUDEADS-EPM-MIB::chanEnergyActive.1 = Gauge32: 0 Watt
GUDEADS-EPM-MIB::chanEnergyActive.2 = Gauge32: 0 Watt
GUDEADS-EPM-MIB::chanEnergyApparent.1 = Gauge32: 0 Watt
GUDEADS-EPM-MIB::chanEnergyApparent.2 = Gauge32: 0 Watt
GUDEADS-EPM-MIB::chanCurrent.1 = Gauge32: 0 mili Ampere
GUDEADS-EPM-MIB::chanCurrent.2 = Gauge32: 0 mili Ampere
GUDEADS-EPM-MIB::chanVoltage.1 = Gauge32: 222 Volt
```

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GUDEADS-EPM-MIB::chanVoltage.2 = Gauge32: 225 Volt
[bearbeiten]Request Status Info for Current on Channel 1
snmpget -v2c -mAll -c public 192.168.1.251 chanVoltage.1
GUDEADS-EPM-MIB::chanVoltage.1 = Gauge32: 221 Volt

How to switch EPC via command line

Expert Power Control NET can only be switched via HTTP GET Request, i.e, via internet browser (or http://de.wikipedia.org/wiki/User_Agent HTTP User Agent). The command line, however, can also be used for switching, as numerous HTTP tools are available.

The following instructions include differences between ExpertPowerControl Revision 1 and Revision 2.

Revision 1 : up to Firmware Version 1.x

Revision 2 : up to Firmware Version 2.x

The CGI-parameters differ between the two versions so command line parameters will also have to look different.

wget

With wget, you can send an HTTP GET Request to Expert Power Control via command line.

wget, originally a Gnu Unix tool, ia also available for Windows.

CGI options

Revision 1 Expert Power Control

wget http://[admin:passwd]@[epc.ip.addr][:HTTP-Port]/SWITCH.CGI?s[x]=[y]

Revision 2 Expert Power Control

wget http://[admin:passwd]@[epc.ip.addr][:HTTP-Port]/?p=[x]&s=[y]

Command parameters:

[admin:passwd] in case Expert Power Control HTTP requires authentication - replace 'passwd' with the actual admin password.

[epc.ip.addr] IP address or hostname of Expert Power Control

[:PORT] if Expert Power Control does not use standard HTTP port 80, please indicate here the alternative port.

[x] PowerPort number (1, 1..4, 1..8, 1..12, or 1..24, depending on the number of PowerPorts in the Expert Power Control used.

[y] desired switching status (0=off, 1=on)

[bearbeiten]Examples

EPC at IP address 192.168.0.8, HTTP Port 80, no password active, switch off PowerPort2

Revision 1 Expert Power Control

wget --delete-after http://192.168.0.8/SWITCH.CGI?s2=0

Revision 2 Expert Power Control

wget --delete-after http://192.168.0.8/?cmd=1&p=2&s=0

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EPC at IP address 192.168.0.8, HTTP Port 80, Admin Passwort 'geheim23', switch on PowerPort4

Revision 1 Expert Power Control

```
wget --delete-after http://admin:geheim23@192.168.0.8/SWITCH.CGI?s4=1
```

Revision 2 Expert Power Control

```
wget --delete-after http://admin:geheim23@192.168.0.8/?cmd=1&p=4&s=1
```

EPC at IP address 192.168.0.8, HTTP Port 10080, switch off PowerPort1

Revision 1 Expert Power Control

```
wget --delete-after http://192.168.0.8:10080/SWITCH.CGI?s1=0
```

Revision 2 Expert Power Control

```
wget --delete-after http://192.168.0.8:10080/?cmd=1&p=4&s=0
```

EPC at IP address 192.168.0.8, HTTP Port 10080, Admin Passwort 'geheim23', switch on PowerPort4

Revision 1 Expert Power Control

```
wget --delete-after http://admin:geheim23@192.168.0.8:10080/SWITCH.CGI?s4=1
```

Revision 2 Expert Power Control

```
wget --delete-after http://admin:geheim23@192.168.0.8:10080/?cmd=1&p=4&s=1
```

Occasionally, the parameters in a string may not be recognized. To fix this, put the entire command in quotation marks.

E.g.:

```
wget --delete-after "http://192.168.0.8/?cmd=1&p=2&s=0"
```

[bearbeiten]More wget options

Learn about more wget options with

```
wget --help
```

A useful option is `--delete-after`, which ensures that wget deletes the download after completion.

wget Download

Win32: <http://users.ugent.be/~bpuype/wget/>

Linux: <http://www.gnu.org/software/wget/>

`epc_control.pl` / `epccontrol2.pl`

As Expert Power Control reacts to standard HTTP GET request, it is easily possible to build your own HTTP GET (this one is using `LWP::UserAgent`), in order to integrate Expert Power ControlSchaltkommandos into your own applications.

For Revision1 Expert Power Control : use `epc_control.pl`

For Revision2 Expert Power Control : use `epccontrol2.pl`

A Perl-Interpreter is needed to execute the program.

A description of the parameters is available under:

```
epc_control.pl --help
```

```
epc_control.pl
```

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[--host=192.168.0.2] : define the IP-Address of your device)
[--password=mypasswd] : define HTTP Password if needed
[--port=X],[--p=X] : select switch port no. X (default: 1)
[--switch_on], [--on] : switch PowerSwitch X ON
[--switch_off],[--off] : switch PowerSwitch X OFF
[--switch_toggle],[--t] : toggle PowerSwitch X from ON<->OFF
[--batch_onoff=T],[--bon=T] : switch port on, after T seconds switch off
[--batch_offon=T],[--bof=T] : switch port off, after T seconds switch on
T: 1=1s, 2=2s, 3=3s, 4=4s, 5=5s,
6=10s, 7=15s, 8=20s, 9=30s
[--batch_min], [--bm] : handle values for T (see above) as minute values
[--all],[--a] : switch all available ports
[--delay=X],[--d=X] : when --all, delay X seconds after
each port (default: 2s)
[--silent],[--s] : no console output

Run programs as a service

Generally, every program should be able to run as a service.

(If WinClk is currently running on your computer, first close the program.)

Start WinClk as the same user who shall later start WinClk as a service, using the command line parameter --notray to avoid generating an icon in the system tray!

Use the graphic user interface of WinClk to save all settings in a way that ensures correct serial communication and regular synchronisation of your PC system time.

Now you can try to start Winclk as a service with third-party-tools like srvany.exe from the Microsoft Ressource Kit:

<http://www.microsoft.com/downloads/details.aspx?FamilyID=9d467a69-57ff-4ae7-96ee-b18c4790cffd&DisplayLang=en> or

Tool RunAsSvc.exe by Dieter Schmeer, Pirmasoft <http://www.pirmasoft.de/runassvc.php> (the page also has an English translation).

Installation via Windows Ressource Kit's s srvany.exe

c:\reskit\instsrv.exe "WinClk" c:\reskit\srvany.exe c:\Programme\winclk\winclk.exe

Edit Registry for the Application:

Windows Registry Editor Version 5.00

```
[HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\WinClk\Parameters]
```

```
"Application"="c:\\Programme\\Winclk\\Winclk.exe --notray -l1
```

```
c:\\Programme\\Winclk\\WinClk.txt"
```

Next, it is essential to use the same account for system settings, administration, services to set up the service WinClk... the same user account which was used to set the options in WinClk. This is because the options are saved in HKEY_CURRENT_USER.

3rd Party instructions: <http://www.tacktech.com/display.cfm?ttid=197>

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[b]Troubleshooting[/b]

In case of an error please re-examine your settings thoroughly. If this does not help, please send us a ##LINK!!!Logfile##.

[b]Error reports in the logfile [/b]

What is the meaning of 'failed opening HKEY CURRENT USER\Software\GudeADS\WinClk' und 'Initvars failed'?

Von "<http://www.gudeads.com/wiki/index.php/Benutzer:Swaringer>"