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ips2 Commands

User Commands

show_power

Show each phase's active, reactive and apparent power, as well as RMS voltage and current.

Example output of 3-phase module:

```
#          P(W)     Q(var)      S(VA) U_RMS(V)  I_RMS(A) Name
CH1      -0.005     -0.054    12.887 230.3891    0.0559 L1
CH2       0.000      0.000     0.000 230.8328    0.0000 L2
CH3       0.000      0.000     0.000 231.5803    0.0000 L3
CH4                                             0.0000 N
Pre-defined channel groups:
PG1      -0.005     -0.054    12.887            0.0559 Total CH1-3
```

show energy

Shows the latest energy counters.

Example output of 3-phase module:

```
#             Active    Reactive (L)    Reactive (C) Name
                kWh           kvarh           kvarh
CH1            0.000           0.000           0.000 L1
CH2            0.000           0.000           0.000 L2
CH3            0.000           0.000           0.000 L3
```

show env

Show the latests environmental sensor readings.

Example output:

```
Internal Sensor:        25.6 deg-C
External Sensor 1:      n/a
External Sensor 2:      n/a
```

show ports

Shows what kind of sensors are plugged into the sensor ports.

```
Internal Sensor:        internal
External Sensor 1:      none
External Sensor 2:      none
```

show status

Show various system status values:

```
Network: <address> <netmask> gw <gateway>
System uptime: <uptime>
System time: <system time>
PLC state: <states>
PLC PHY symbols: <phy-flash>,<phy-eeprom>
PLC heartbeat skips: <plc-hb-skips>
PLC UART RX errors: <uart-rx-errors>
PLC RX packets: <plc-rx-packets>
PLC RX mod: <plc-rx-modulations>
PLC RX SNR: <plc-rx-snr>
PLC RX FEC: <plc-fec-ok> good, <plc-fec-corr> corrected
PLC TX packets: <plc-tx-packets>
```

```
PM hangs: <pm-hangs>
Free memory: <free-memory>
Upgrade: <upgrade-info>
Privilege level: <privilege>
```

- `Network`: IP address, netmask and gateway.
- `System uptime`: time since the device started.
- `System time`: wall-clock time if synchronized (either by PLC or by SNTP).
- `PLC state`: state of the PLC part. This is one of:
    - `INIT`
    - `LEAVE`
    - `RESET`
    - `CONNECT`
    - `REGISTER`
    - `REGISTERED`
    - `ERROR`
    - `BRIDGE`
    - `SHUTDOWN`
    - `FLOOD`
    - `ECHO`
- `PLC PHY symbols`: PHY symbols found in the flash and in the EEPROM. Possile values:
    - 0: FCC 60 Hz
    - 1: CENELEC-B 50 Hz
    - 253: Incomplete symbols
    - 254: Unreadable symbols
    - 255: Unknown symbols
- `PLC heartbeat skips`: Number of times the PLC heartbeat wasn't received in time.
- `PLC UART RX errors`: List of counters counting framing errors, parity errors, breaks and UART overrun events (in that order).
- `PLC RX packets`: List of values counting various PLC reception events:
    - Number of packets received
    - Number of packets received without being connected
    - Number of packets received with a wrong origin (not CTR)
    - Number of packets received with the wrong packet size
    - Number of packets received which couldn't be decrypted
- `PLC RX mod`: List of values counting packets received with standard mode, robust mode, extremely robust mode, turbo mode.
- `PLC RX SNR`: Number of received packets received with very good SNR (1st value) to not so good SNR (4th value).
- `PLC RX FEC`: Forward error correction packet counters.
- `PLC TX packets`: Number of sent and ACKed packets.
- `Sensor 1` and `Sensor 2`: debug counters.
- `PM hangs`: Number of times the ADCs had to be reset.
- `Free memory`: Operating system free memory status.
- `Upgrade`: Upgrade information.
- `Privilege level`: Either `user`, `admin` or `factory`.

show version

Show hardware and software revisions:

```
Serial: <s/n>
Model: <model>
Board revision: <rev>
Firmware: <major.minor>
Build: <build>
Bootloader: <bootloader-version>
PLC Version: <plc-version>
```

show log

Show system log.

show configuration

Shows the current configuration:

```
Device configuration:
device_label    <device-label>
hostname        <hostname>
plc_enable      <on|off>
plc_netsize     <netsize>
plc_crypto_key_sha1     <key-digest>
display_orientation     <0|1|2|3>
display_blank_mins      <blank-minutes>
net_enable      <on|off>
ip_address      <ip-address-specification>
snmp_enable     <on|off>
snmp_community  <community>
snmp_location   <location>
snmp_contact    <contact>
snmp_trap_receiver1     <receiver1>
snmp_trap_receiver2     <receiver2>
snmp_trap_community     <community>
syslog_reports  <reports>
syslog_server   <server-ip>
syslog_facility <facility>
syslog_interval_s       <interval-seconds>
webserver_mode  <webserver-mode>
telnet_enable   <on|off>
sntp_server     <sntp-info>
timezone        <offset>

Alarm                    lo_crit lo_warn hi_warn hi_crit
current_l1                   n/a     n/a     n/a     n/a
temp_int                     n/a     n/a     n/a     n/a
temp_ext1                    n/a     n/a     n/a     n/a
temp_ext2                    n/a     n/a     n/a     n/a
rh_ext1                      n/a     n/a     n/a     n/a
rh_ext2                      n/a     n/a     n/a     n/a

Channels:
<channel-information>

User-defined channel groups:
<channel-groups>

Pre-defined channel groups:
<channel-groups>
```

- `device_label`: Device label as shown on the display.
- `hostname`: Hostname as used e.g. by the syslog messages.
- `plc_enable`: On if the PLC part is on, off otherwise. Only shown if PLC is available.
- `plc_netsize`: PLC network size. Only shown if PLC is available.
- `plc_crypto_key_sha1`: SHA1 digest of the AES256 crypto key used by the current device. Only shown if PLC is available.
- `display_orientation`:
    - 0: 0 degrees
    - 1: 90 degrees
    - 2: 180 degrees
    - 3: 270 degrees
- `display_blank_mins`: Minutes of inactivity until the display is blanked.
- `net_enable`: Ethernet network administrative state.
- `ip_address`: Either `dhcp` if DHCP should be used, otherwise this shows the configured IP address, subnet mask and gateway.
- `snmp_enable`: SNMP on/off.
- `snmp_community`: Configured SNMP community.
- `snmp_location`: Configured SNMP location.
- `snmp_contact`: Configured SNMP contact.
- `snmp_trap_receiver1` and `snmp_trap_receiver2`: IP address which should receive SNMP traps.
- `snmp_trap_community`: Community string to use for trap messages.
- `syslog_reports`: Bitset denoting what reports should be sent by syslog (bit 0: "analyzer" reports, bit 1: "meter" reports). Possible values:
    - 0x00: No reports
    - 0x01: Analyzer reports
    - 0x02: Meter reports
    - 0x03: Both analyzer and meter reports
- `syslog_server`: IP address of the server receiving the syslog messages.
- `syslog_facility`: A value between 0 and 23 denoting the syslog facility.
- `syslog_interval_s`: Report interval in seconds (min. 10 seconds)
- `webserver_mode`: Possible values:

    - ♦ `off`: Webserver is switched off.
    - ♦ `open`: Webserver requires no authentication for reading live values.
    - ♦ `restricted`: Values are only reported to a logged in user of privilege `user` or higher.

- `telnet_enable`: Shows whether telnet is switched on or off.

- `sntp_server`: Shows the IP address of the configured SNTP server.

- `timezone`: Holds the timezone offset in minutes.

- `Alarm`: Show the alarm values configuration. For each alarm, four values are possible: critical low, warn low, warn high, critical high. Unconfigured values are shown as `n/a`.

- `Channels`: Holds the channel configuration. For every channel, the following values can be configured:
    - ♦ i_max: Max. admissible current (not yet implemented)
    - ♦ name: Name of the channel as shown on the web page.

- `User-defined channel groups` and `Pre-defined channel groups`: Shows how groups are configured (only shown if there are any).

Administrator Commands

set alarm

Description: Define values which trigger alarms (in the form of SNMP traps).

Usage: `set alarm <alarm> <lo_crit> <lo_warn> <hi_warn> <hi_crit>`

Arguments:

- `<alarm>`: Alarm to configure (e.g. `current_l1`). The list of available alarms can be seen with the `show configuration` command.

- `<lo_crit>`, `<lo_warn>`, `<hi_warn>`, `<hi_crit>`: Alarm values (critical low, warn low, warn high, critical high) between -100.00 and 100.00. Values can be uset by specifying them as `n/a` or `na`.

Notes:

- Changes to the alarm values are active immediately, but they are saved to flash only after `configuration save`.

- The four given values must be consistent, i.e. `<lo_crit>` must be less than `<lo_warn>`, which must be less than `<hi_warn>`, which must be less than `<hi_crit>`.

set channel

Description: Configure channel properties.

Usage: `set channel <channel> <i_max> <name>`

Arguments:

- `<channel>`: Channel number with 1 being the first channel.
- `<i_max>`: Max supported current for this channel (currently not used anywhere).
- `<name>`: Name of the channel, will be reported as given here on the web interface and via SNMP.

set device_label

Description: Configure the device label shown in the display.

Usage: `set device_label <label>`

Arguments:

- `<label>`: The desired label. Must not be longer than 15 characters.

Notes:

- Requires reboot.

set display_blank_mins

Description: Set the time after which the display is blanked.

Usage: `set display_blank_mins <mins>`

Arguments:

- `<mins>`: Number of minutes after which the display is blanked. Must be between 1 and 254 minutes.

set display_orientation

Description: Set the display orientation

Usage: `set display_orientation <orientation>`

Arguments:

- `<orientation>`: `0` for 0 degrees, `1` for 90 degrees, `2` for 180 degrees and `3` for 270 degrees.

set net_enable

Description: Enable or disable the built-in Ethernet interface.

Usage: `set net_enable <on_off>`

Arguments:

- `<on_off>`: `on` to enable the Ethernet interface, `off` to disable it.

Notes:

- Requires reboot.

set group

Description: Configure a channel group.

Usage: `set group <group> <members> <i_max> <name>`

Arguments:

- `<group>`: Group number (1-4).
- `<members>`: Bitmask indicating which channels should be part of the group. Can be given either in decimal or hexadecimal notation. Examples:
- `1`: Channel 1
- `0x2`: Channel 2
- `0x0003`: Channel 1 and channel 2
- `<i_max>`: Max supported currentfor this group (currently not used anywhere).
- `<name>`: Name of the group.

set hostname

Description: Configure the hostname.

Usage: `set hostname <name>`

Arguments:

- `<hostname>`: Desired hostname, not longer than 15 characters.

Notes:

- The hostname is used for the syslog messages and for the DHCP client.
- Requires restart.

set ip_address

Description: Set the IP address to DHCP or to a static IP address.

Usage:

- `set ip_address dhcp`: Configures the IPS to use DHCP to configure an IP address.

- `set ip_address <address> <netmask> gw <gateway>`: Configures a static IP address.

Arguments:

- `<address>`, `<netmask>`, `<gateway>`: The static IP address,

netmask and default gateway to use.

Notes:

- Requires restart.

set plc_crypto_key

Description: Set encryption key for power line communication.

Usage: `set plc_crypto_key <key>`

Arguments:

- `<key>`: SHA 256 key in hexadecimal notation (32 bytes represented using 64 characters). If fewer characters are entered, the input is zero padded.

Notes:

- Requires restart.

set plc_enable

Description: Switch PLC on or off.

Usage: `set plc_enable <on_off>`

Arguments:

- `<on_off>`: `on` to enable PLC, `off` to disable it.

Notes:

- Requires restart.

set snmp_community

Description: Configure the community name used for querying the SNMP server.

Usage: `set snmp_community <community>`

Arguments:

- `<community>`: Community string, not longer than 15 characters.

set snmp_contact

Description: Configure the SNMP contact.

Usage: `set snmp_contact <contact>`

Arguments:

- `<contact>`: Contact string, not longer than 47 characters.

set snmp_enable

Description: Enable or disable the SNMP server.

Usage: `set snmp_enable <on_off>`

Arguments:

- `<on_off>`: Either `on` if you wish the IPS to respond to SNMP read requests or `off` if no SNMP read functionality is desired.

Notes:

- Requires reboot.

set snmp_location

Description: Configure the SNMP location.

Usage: `set snmp_location <location>`

Arguments:

- `<location>`: Location string, not longer than 31 characters.

set snmp_trap_community

Description: Configure SNMP trap community

Usage: `set snmp_trap_receiver <community>`

Arguments:

- `<community>`: Community string used in the SNMP trap packets sent by the IPS.

set snmp_trap_receiver

Description: Configure SNMP trap receivers.

Usage: `set snmp_trap_receiver <number> <address>`

Arguments:

- `<number>`: Trap receiver number, either `1` or `2`.
- `<address>`: IP address of the host receiving the SNMP traps. An

address of `0.0.0.0` deactivates this trap receiver.

set sntp_server

Description: Configure the SNTP server to use for time synchronization.

Usage: `set sntp_server <address>`

Arguments:

- `<address>`: The IP address of the server to use for time synchronization. If `off` is given, time synchronization is disabled.

Notes:

- Requires restart.

set syslog_facility

Description: Set facility code of syslog message.

Usage: `set syslog_facility <facility>`

Arguments:

- `<facility>`: An integer value between 0 and 23 (inclusive) signifying the facility code of syslog messages sent by the IPS.

Notes:

- Requires restart.

set syslog_interval_s

Description: Set syslog interval.

Usage: `set syslog_interval_s <interval>`

Arguments:

- `<interval>`: The number of seconds to wait between two reports. Must be number between 10 and 43200 (12 hours).

Notes:

- Requires restart.

set syslog_reports

Description: Set the desired syslog reports.

Usage: `set syslog_reports <reports-mask>`

Arguments:

- `<reports-mask>`: A bitmask selecting the desired reports:
  - 0: no reports
  - 1: meter data
  - 2: live data
  - 3: meter data and live data

Notes:

- Requires restart.

set syslog_server

Description: Set syslog server address.

Usage: `set syslog_server <address>`

Arguments:

- `<address>`: The IP address of the server which receives syslog messages. If `off` is given, no syslog messages will be sent.

Notes:

- Requires restart.

set telnet_enable

Description: Enable or disable the telnet server.

Usage: `set telnet_enable <on_off>`

Arguments:

- `<on_off>`: Either `on` for telnet or `off` for no telnet access to the IPS.

Notes:

- Requires reboot.

set timezone

Description: Set the timezone.

Usage: `set timezone <offset>`

Arguments:

- `<offset>`: Offset in minutes from UTC.

Notes:

- Requires reboot.

set webserver

Description: Configure the webserver mode.

Usage: `set webserver_mode <mode>`

Arguments:

- `<mode>` must be one of:
- `open`: The webserver shows the current readings to all users, without authentication.
- `restricted`: Users must be authenticated in order to see the current readings.
- `off`: The webserver is off.

Notes:

- Requires reboot.

switch

Switches the relay (if available):

- `switch on`: Switches the relay on.
- `switch off`: Switches the relay off.
- `switch cycle`: Switches the relay off and back on 15 seconds later.