



Plogg – the Smart Energy meter Plug Terminal Software User Guide

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Introduction

This document serves as a guide to operating the Plogg power meter products. These are electrical power metering and logging products aimed at the appliance level.

This document describes the main software features that can be configured using the CLI (Command Line Interface) on the Plogg product using any of the three communication modes, Bluetooth, Zigbee or RS232 direct serial connection.

The CLI supports many additional test features, these features are not described in this document and are not intended to be used by the end user, and use of any features not described in this document may result in data loss and/or damage to the device.

Communication Modes

There are three methods of communication with the Plogg module, these are:

- RS232 Serial (Direct cable connection)
- Bluetooth
- Zigbee

For all of these modes of communication the PloggTerminal.exe can be used.

This application should be launched with one of the following command line parameters:

RS232 Serial:

PloggTerminal -s <serial port number>

Bluetooth:

PloggTerminal -b

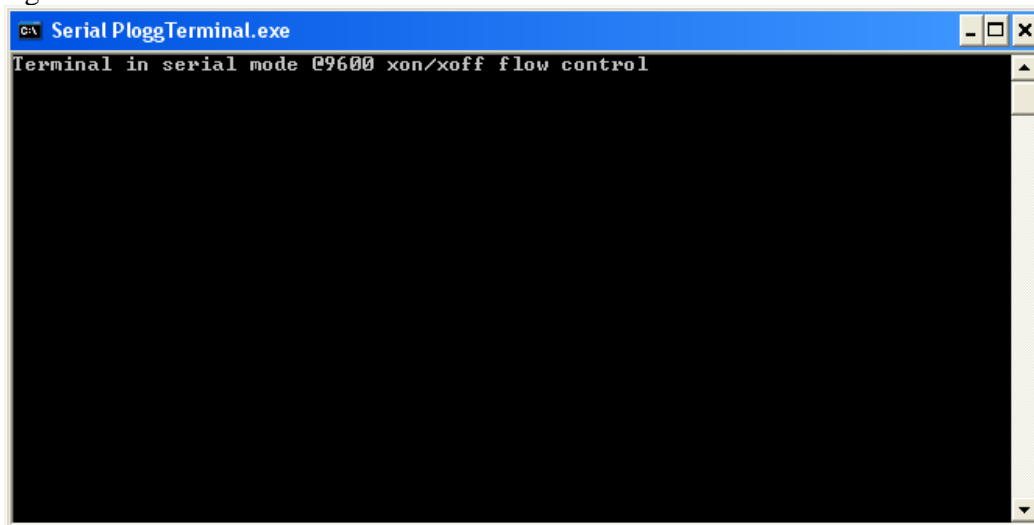
Zigbee:

PloggTerminal -z <serial port number>

Where <serial port number> is the COM port number on the PC side.

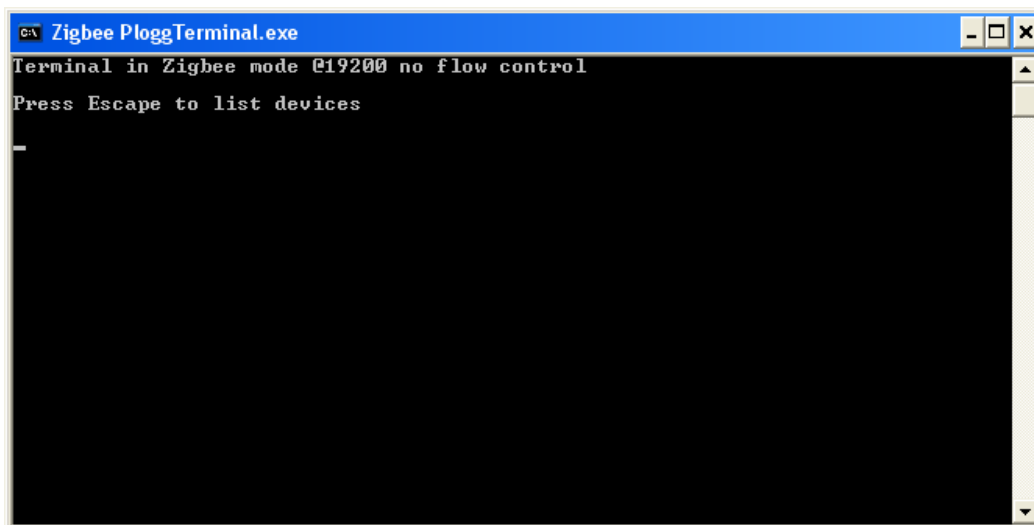
PloggTerminal (RS232 Serial Mode)

When running directly connected with a serial cable the terminal will output all commands directly to the PC and all keyboard input is sent directly to the device. This mode is the most reliable and ensures that the connection will not be lost due to signal or interference.



PloggTerminal (Zigbee)

When running in this mode the user must scan for nearby Zigbee devices, if any are found the user can then select a device to then communicate with.



When using this transport communication, commands between the PC and the Plogg device are not guaranteed. If the signal to the device is lost then commands to/from the meter device may not be executed, if the signal is regained the terminal application may continue sending/receiving information to the device without a rescan of the network.

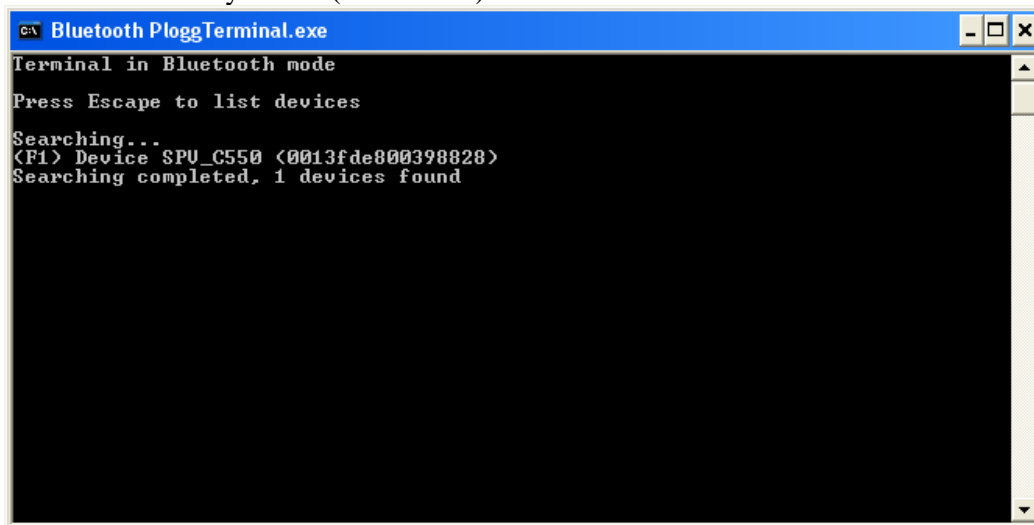
To scan for devices press 'Escape' when running the terminal in Zigbee mode, if any devices are found these will be printed out to the user with a corresponding number against them, to connect to a particular device press the function keys F1-F12 (corresponding to devices 1-12).



```
Terminal in Zigbee mode @19200 no flow control
Press Escape to list devices
Searching for devices...
Device 1 <000d6f00000aacda> found
Searching completed, 1 devices found
```

PloggTerminal (Bluetooth)

When running in this mode the user must scan for nearby Bluetooth devices, if any are found the user can then select a device to then communicate with, note in this mode all Bluetooth capable devices will be lists with their BT network address along with their 'Friendly' name (if available).



```
C:\ Bluetooth PloggTerminal.exe
Terminal in Bluetooth mode
Press Escape to list devices
Searching...
(F1) Device SPU_C550 <0013fde800398828>
Searching completed, 1 devices found
```

CLI functions

The CLI interface is used to configure the Plogg device, the commands that are available are:

Command	Description
?	Print help
,	Repeat last command
s?	Show Meter Setup Commands
ss	Set Tariff cost
st	Set Tariff times
si	Set logging interval
sc	Print (and reset if required) accumulative costs
sr	Reset KW/KVar Accumulators to zero
sd	Print (and reset if required) logged values
sln	Select items to be logged
sx	Delete old log entries without printing
sm	Print out max values
sv	Print out all values as of this instant
so	Set AC ON/OFF timers
se	Enable/Disable AC timers
RT	Real Time Clock controls
RTDy.m.d	Set the year month and day of the RTC
RTTh.m.s	Set the hour minute and second of the RTC

Print Help (?)

This command prints the main CLI help page

Repeat Last Command (?)

This command repeats the last command sent.

Show Meter Setup Commands (?s)

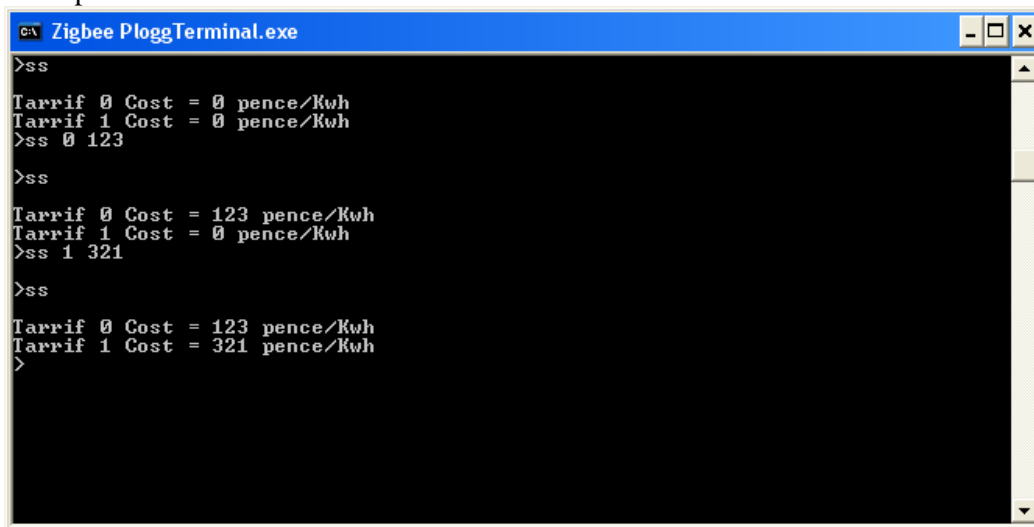
This command shows all the meter setup commands

Set Tariff cost (ss)

This command set the tariff cost for tariffs 0 and 1, without any parameters the current settings are printed.

ss <tariff 0/1> <cost in pence per Kwh>

Example:



```
ca\ Zigbee PloggTerminal.exe
>ss
Tarrif 0 Cost = 0 pence/Kwh
Tarrif 1 Cost = 0 pence/Kwh
>ss 0 123

>ss
Tarrif 0 Cost = 123 pence/Kwh
Tarrif 1 Cost = 0 pence/Kwh
>ss 1 321

>ss
Tarrif 0 Cost = 123 pence/Kwh
Tarrif 1 Cost = 321 pence/Kwh
>
```

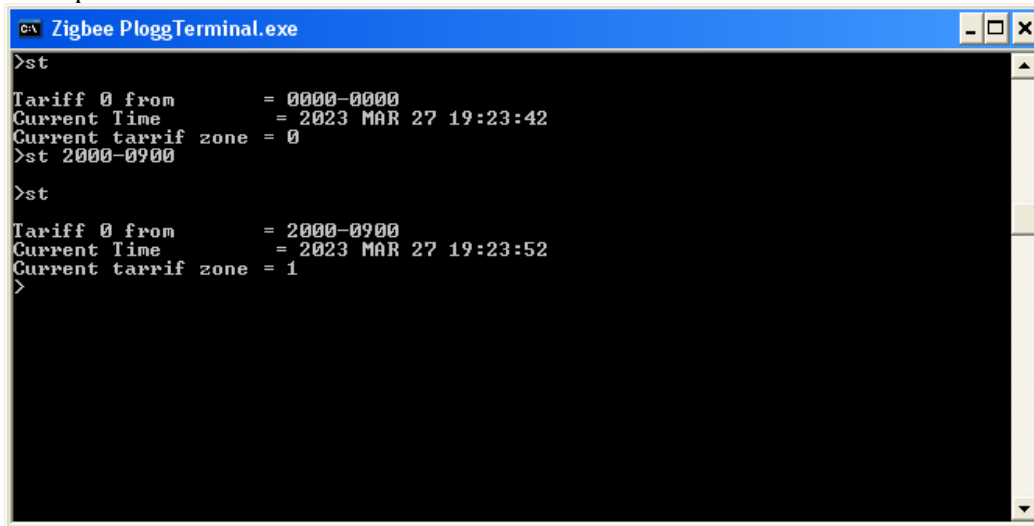
Set Tariff Times (st)

This command sets when the tariff time for tariff 0 is valid; when this tariff is not valid tariff 1 is assumed.

When no parameters are given the current settings, current time and currently tariff zone are printed.

st <start time for tariff 0>-<end time for tarrif 0>

Example:



```
c:\ Zigbee PloggTerminal.exe
>st
Tariff 0 from      = 0000-0000
Current Time      = 2023 MAR 27 19:23:42
Current tarrif zone = 0
>st 2000-0900
>st
Tariff 0 from      = 2000-0900
Current Time      = 2023 MAR 27 19:23:52
Current tarrif zone = 1
>
```

Set Logging interval (si)

This command sets the time between logging events. This time is specified in minutes, when no parameters are specified the current settings are printed. Logging interval is set in minutes from 1 minute up to 45 days (65535 minutes)

Note that if the logging interval is changes all currently stored logs are erased.

si <logging interval in minutes>

Example

```
cmd Zigbee PloggTerminal.exe
>si
Logging interval is 1 minute(s)
>si 3600
Logging interval is 3600 minute(s)
>_
```

Print Accumulative Costs (sc)

This command prints and optionally resets the accumulative costs.

sc <1=reset>

Example:

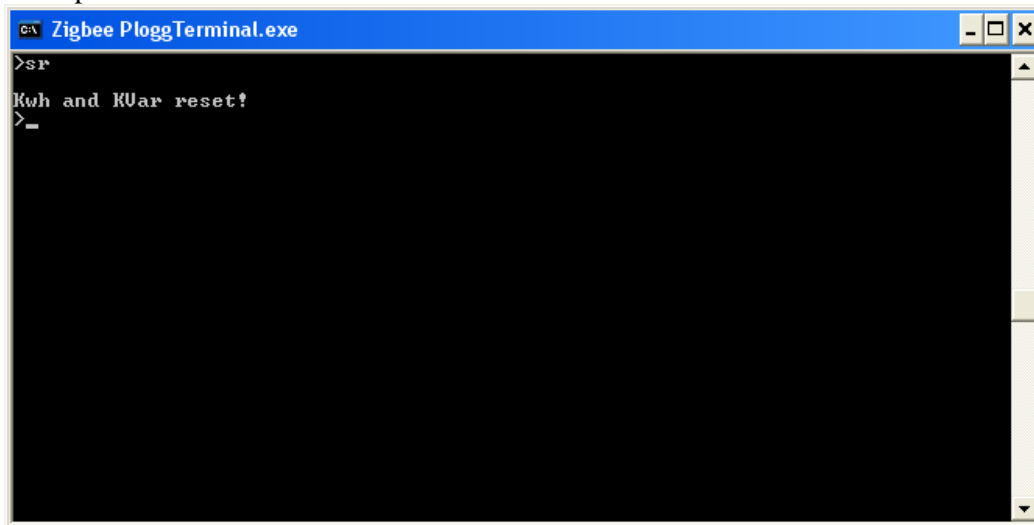
```
cmd Zigbee PloggTerminal.exe
>sc
Costs:
Tariff0 : - 6.957kWh, Cost 8.55
Tariff1 : - 0.000kWh, Cost 0.00
>sc 1
Costs:
Tariff0 : - 6.957kWh, Cost 8.55
Tariff1 : - 0.000kWh, Cost 0.00
Resetting accumulated costs
>sc
Costs:
Tariff0 : - 0.000kWh, Cost 0.00
Tariff1 : - 0.000kWh, Cost 0.00
>_
```

Reset KW/KVar Accumulators (sr)

This command resets KW/KVar Accumulators to zero.

sr

Example:



```
c:\ Zigbee PloggTerminal.exe
>sr
Kwh and KVar reset!
>_
```

Print logged values (sd)

This command prints and optionally resets all logged values.

sd <1=reset>

Example:

```

c:\ Zigbee PloggTerminal.exe
>sd
Printing logged values...

Log contains <1 of 13 > entries

Log entry[0000] - Time entry           = 2023 MAR 27 19:32:14
Log entry[0000] - Watts                = 7.200 W
Log entry[0000] - Cumulative Watts     = 0.000 kWh
Log entry[0000] - Frequency           = 50.0 Hz
Log entry[0000] - RMS Voltage         = 239.063 V
Log entry[0000] - RMS Current         = 0.112 A
Log entry[0000] - Unit on time        = 0 days 00:17:24
Log entry[0000] - Reactive Power      = 14.400 VAR

>_

```

This command also shows the maximum number of items that can be logged calculated by the remaining storage space and the number of items being logged.

Select logged values (sln)

Use this command to select items to be logged, available items are:

- 0 – Time Entry as date format from the RTC, support is from 2000 to 2063
- 1 – Last seconds wattage usage
- 2 – Cumulative wattage usage (since user reset or unit initialisation)
- 3 – Frequency (hz) of last seconds monitored value
- 4 – RMS voltage of last seconds monitored value
- 5 – RMS current of last seconds monitored value
- 6 – Unit on time (will wrap at 497 days) shown in seconds since CPU reset
- 7 – Reactive power of last seconds monitored value
- 8 – Cumulative reactive power (since user reset or unit initialisation)
- 9 – Phase angle V/I in degrees of last seconds monitored value

Run this command without any parameters to print out the items currently being logged.

sln <list of items to be logged 0-9>

Example:

```

c:\> Zigbee PloggTerminal.exe
>s1 012

Current Log values :
0 Time entry           - On
1 Watts                - On
2 Cumulative Watts    - On
3 Frequency            - Off
4 RMS Voltage          - Off
5 RMS Current          - Off
6 Unit on time         - Off
7 Reactive Power       - Off
8 Cumulative Reative Power - Off
9 Phase Angle <U/I>   - Off
Clearing old log values as logging values have changed!
>_
  
```

Each log entry is 32 bits in size, therefore reducing the number of logging values will increase the number of log entries that can be created.

Log entries are wrapped currently when no free space is available for logging; this means old values will be lost to store new data.

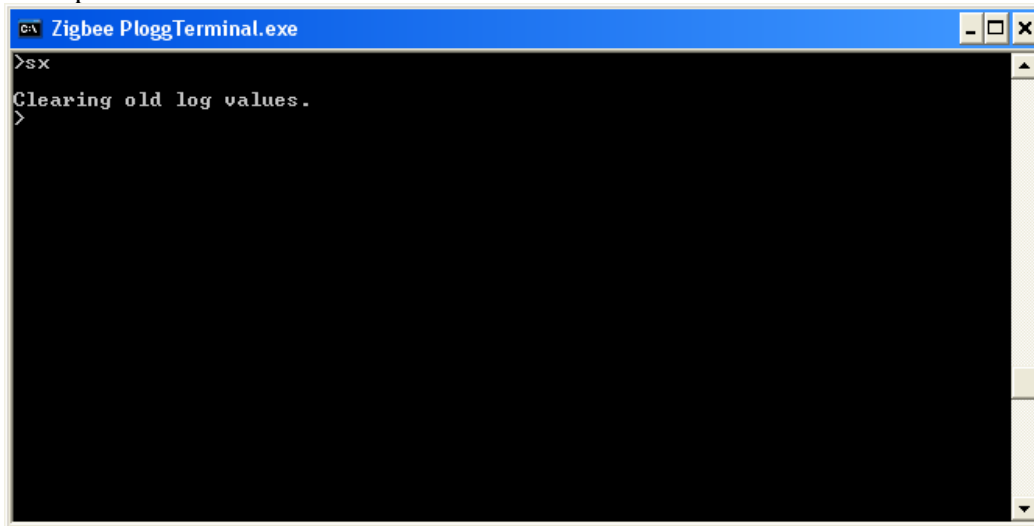
Changing the values that are stored in each log (i.e. adding frequency) will erase all old log values.

Delete old log entries (sx)

Delete old log entries without printing,

sx

Example



```
ca\ Zigbee PloggTerminal.exe
>sx
Clearing old log values.
>
```

Print out max values (sm)

This command prints out max values for:

- RMS Voltage
- RMS Current
- Wattage

Along with a time entry for each, if any are unavailable (i.e. there haven't been any reported values yet) then this information is reported.

sm <1=reset>

Example

```

c:\ Zigbee PloggTerminal.exe
>sm
Highest RMS voltage was 242.242 U at 2001 JAN 01 02:31:04
Highest RMS current was 4.939 A at 2001 JAN 01 02:29:26
Highest wattage was 1177.200 W at 2001 JAN 01 02:29:26
>sm 1
Highest RMS voltage was 242.242 U at 2001 JAN 01 02:31:04
Highest RMS current was 4.939 A at 2001 JAN 01 02:29:26
Highest wattage was 1177.200 W at 2001 JAN 01 02:29:26
Resetting max voltages/current/wattage values
>sm
Highest RMS voltage was 238.644 U at 2023 MAR 27 19:38:52
Highest RMS current was 0.110 A at 2023 MAR 27 19:38:52
Highest wattage was 7.200 W at 2023 MAR 27 19:38:52
>_

```

Print out values at the current time(sv)

Print out all values as of this instant in time,

sv

Example

```

c:\ Zigbee PloggTerminal.exe
>sv
Live Meter results are:
Time entry           = 2007 MAR 27 19:40:59
Watts                = 7.200 W
Cumulative Watts     = 0.001 kWh
Frequency            = 50.1 Hz
RMS Voltage          = 237.970 U
RMS Current          = 0.110 A
Unit on time         = 0 days 00:26:08
Reactive Power       = 14.400 VAR
Cumulative Reactive Power = 0.002 KUARh
Phase Angle (U/I)   = 303 Degrees
>_

```

Set On/Off AC Timers (so)

This command set the times for the 4 AC ON/OFF timers in the system. Each timer has an on and an off time, these can be wrapped around midnight (i.e. 23:00 -> 02:00).

Timers can be globally disabled; in this case the AC power will be continuously on (see the 'se' command)

If the timers are enabled and there are valid timer values (i.e. at least one time is **not** set to 00:00 to 00:00) then the system will turn on the AC power when the RTC is within any of the timers (0-3) that are found, if the RTC lies outside of all the timers the AC power will be turned off.

Timers can overlap, i.e. timer 0 – 12:30 -> 18:00, timer 1 – 16:00 -> 20:00, this will result in the AC power being on between 12:30 and 20:00

Without any parameters the times are printed out along with information detailing if the timers are enabled or not and if any of the timer zones are on:

so <timer 0-3> <time on>-<time off>

Example

```

c:\ Zigbee PloggTerminal.exe
>so
Enter <timer group 0-3> <on time HHMM> <off time HHMM>
Timers are enabled
Current Time = 2007 MAR 27 21:10:42
Timer 0 from = 0000-0000
Timer 1 from = 1900-2200 (valid now)
Timer 2 from = 0000-0000
Timer 3 from = 0000-0000
>so 3 0700-0900

Timers are enabled
Current Time = 2007 MAR 27 21:10:54
Timer 0 from = 0000-0000
Timer 1 from = 1900-2200 (valid now)
Timer 2 from = 0000-0000
Timer 3 from = 0700-0900
>

```

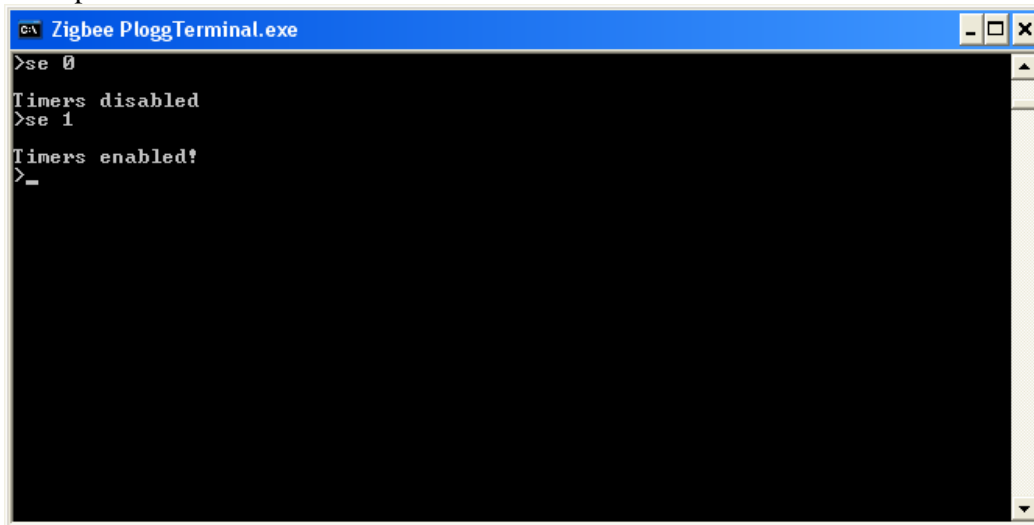
Above you can see that the timers are enabled, the timer '1' is valid between 1900-2200, and the current time is 21:10 which indicates that timer 1 is valid.

Enable/Disable AC Timers (se)

This command globally enabled or disabled the AC timers (0-3)

se 0/1

Example:



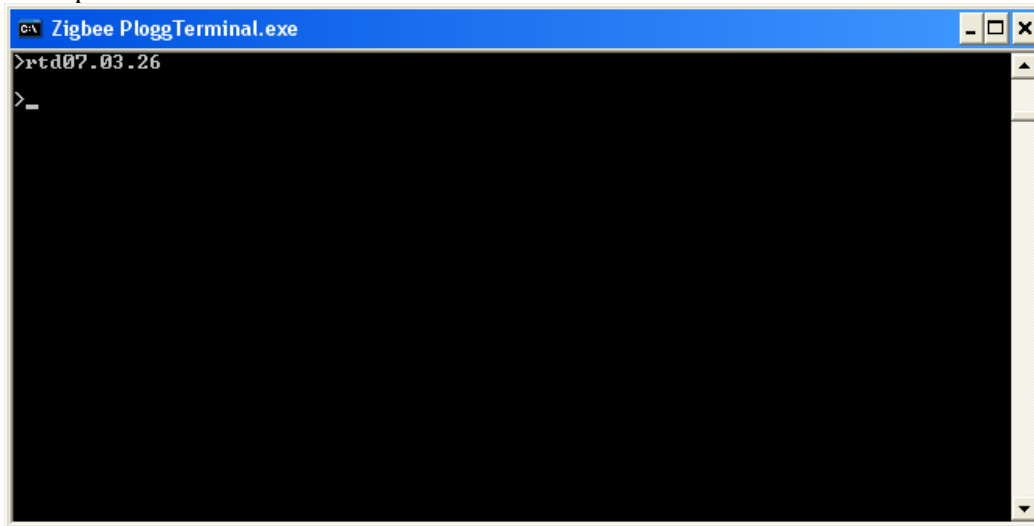
```
c:\ Zigbee PloggTerminal.exe
>se 0
Timers disabled
>se 1
Timers enabled!
>_
```

Set the RTC date (RTD)

This command sets the RTD date:

rtd<year 00-99>.<month 1-13>.<day 1-31>

Example:



```
ca\ Zigbee PloggTerminal.exe
>rtt07.03.26
>_
```

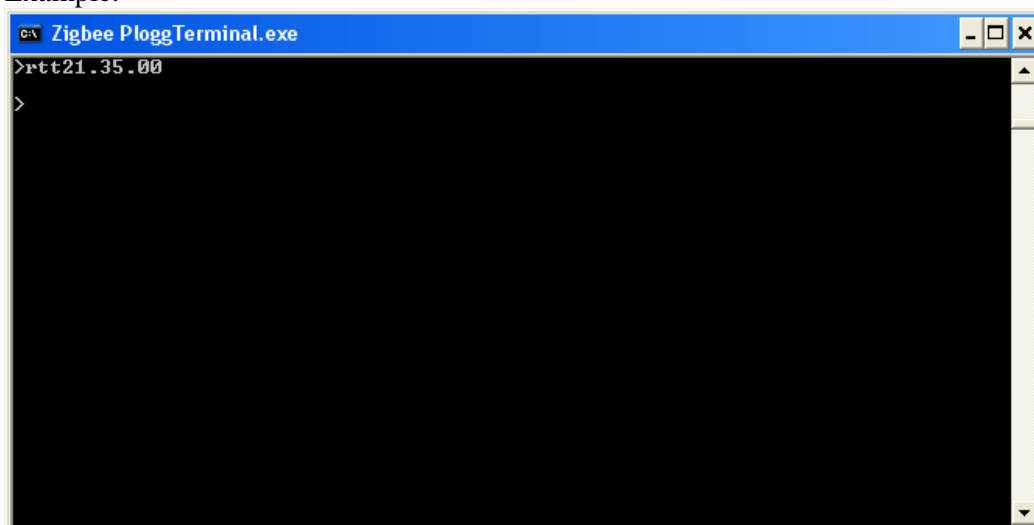
The above example sets the date to 2007 March 26th.

Set the RTC time (RTT)

This command sets the RTC time:

rtt<hour>.<minute>.<second>

Example:



```
ca\ Zigbee PloggTerminal.exe
>rtt21.35.00
>
```

The above example sets the time to 21:35:00

Masc. device information

Maximum Logged Values

KHz and KVARh used for logging will support values up to 4294967.296Kwh, after this they will wrap back to 0Kwh

Unit up time will wrap after 497 days

RTC values are supported up to the year 2063

Current wattage and reactive power is supported up to 3515Kw/KVar

Unit startup

The unit will reset all settings if both the Ram settings are found to be corrupted as well as the backup copy in EEPROM.

If the Ram settings are corrupted (but the EEPROM is intact) then all logging values and unit settings will be retained, but the accumulative KVAR and KWh values will reset back to 0.

On the device powering up, the unit up time will be reset to 0