

Flatguard was designed to monitor the energy consumption of rental properties. The user can set 2 kinds of alarms: one if the power consumption exceeds a settable limit and one if the energy consumption exceeds a settable limit. An SMS will be sent to the user's cell number when an alarm is triggered.

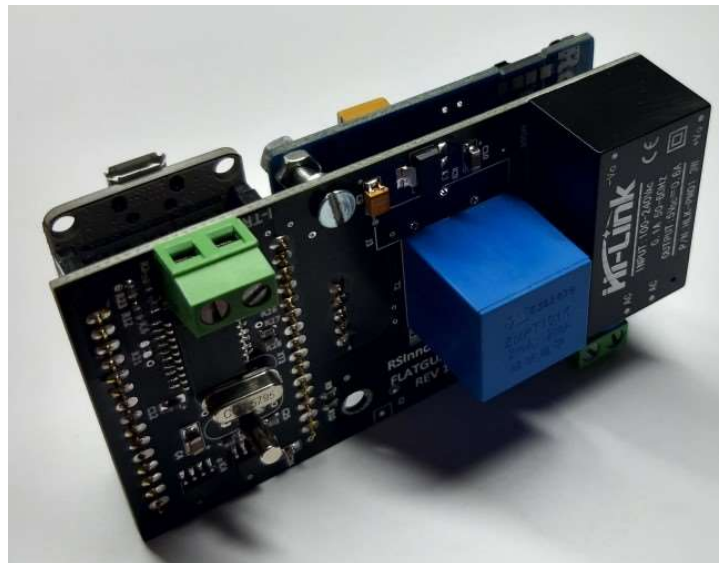
The unit also keeps track of the consumption for each day of the month. *Flatguard* is a smart meter with reporting capabilities: a weekly and a monthly report of the consumption will be sent.

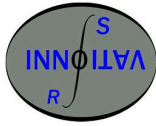
The unit is capable of bi-directional communications by SMS, i.e. it can receive instructions by SMS and it can send reports to a designated cell number anywhere in the world.

Installation is very simple depending on the local laws of the country you are in, it may have to be carried out by a qualified/certified electrician.

For the GPRS unit to function, a SIM card needs to be inserted. The SIM card needs to be enabled and loaded with airtime. If the unit is installed in a different country than where you reside, you have 2 options:

- Purchase a SIM card contract in the country where the unit is to be installed (a Top-up package will usually not work in the long run). This may result in cheaper charges, but keeping a contract active in a foreign country may be a challenge in itself. As a visitor to a country, you will often receive a tourist SIM card. That number usually expires after a certain time.
- The easier option is to purchase a SIM card in the country where you reside. You can keep it topped up with ease. On installation, you will have to enable roaming on that SIM card. Roaming SMS's are a lot more expensive than local SMS's, however the unit will only send 5 SMS's per month. As an example, an SMS from Thailand to South Africa will cost around R3. That amounts to R15/month. International SMS rates vary from service provider and between countries. The example given, is one of the most expensive roaming rates.





Indicators

The unit has 2 LED's:

GREEN led	Flashes every second. This indicates the unit is working properly
RED led	Is ON when an SMS has been received AND when an SMS is being sent. If the RED led is permanently ON, the unit encountered a problem. Removing the power for a few seconds may resolve the problem.

Installation

The electrical cord is connected to the mains supply of 230V AC. As with most AC appliances, reversing the polarity doesn't matter, but it is good practice to connect BROWN to live and BLUE to neutral. As the unit is double insulated, there's no need for an earth connection.

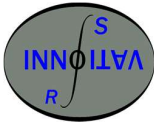
The split-core current transformer must be clamped around the main supply cable, either LIVE or NEUTRAL, but NOT both. As the unit is capable of measuring both positive and negative energy (positive being energy to a load and negative when energy is being pushed back into the grid), the correct polarity of the coil is important. When starting up the unit, the correct polarity is shown by the RED led. For the first 3 minutes, the RED led will flash at the same rate as the GREEN led if the polarity is correct. Switch on a stove plate or a kettle during this period.

If the RED led is lit continuously, turn the coil around. After 3 minutes, the unit will go to normal logging mode and the RED led will go off.

Programming and setup

The following messages can be sent to the unit by SMS to change various parameters. Commands are separated by a space:

SN=xxxxx	Replace xxxxx with the 5-digit serial number shown on the unit. This must ALWAYS be included and must be at the start of the message.
SM#+27824553176#	the contact cell number where reports must be sent to, in international format. Must only be programmed once.



ALE=2.3	Energy alarm level. If the energy consumption during a 24hr period exceeds this number in kWhr, a warning SMS will be sent, regardless of the hour offset. A value of 0 indicates no alarm. Allowed values are 0.2 to 99.9 in 0.1 increments.
ALP=1200	Power alarm level. If the power consumption exceeds this number in Watts at any time, a warning SMS to be send immediately, regardless of the hour offset. A value of 0 indicates no alarm. Allowed values 0 to 9999.
HO=13	The unit sends a weekly and a monthly report. To avoid be woken up in the middle of the night, specify an hour time offset from midnight at the time zone where the unit is installed. If the unit is installed in South Africa (GMT+2) and HO=13, the report will be sent at GMT+15. If you reside in London (GMT=0), you will get the report just after 3h in the afternoon. Allowed values 0 to 23.
MD=28	Sets the day for the month-end report. The day given is included in the report and the meter will be set to 0 at midnight (local time) at the end of that day.
@P=xxx	Set a location name. The name can be 20 characters long. Example “Miami beach, Flat 105A”
RST@	Reset the daily, monthly and running counters to 0. Use with extreme caution as you lose all previously stored data. This should only be used in case of moving the meter to a different location. A new unit will have those registers set to 0 already. Thus normally, there’s no need to reset the counters.

Use only 1 of the following 3 instructions in 1 SMS

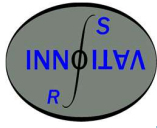
SMW	Request a Weekly report
SMM	Request a Monthly report
SMP	Request Setup summary. The SMS will also contain the current power consumption in Watts. It will take 10s to measure the power.

Several instructions can be sent in 1 SMS message, for example:

Sending the following SMS (The quotes are NOT to be included in the message. Use ONLY upper-case letters. Fields can be separated by multiple spaces)

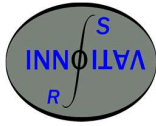
“SN=12345 ALE=2.3 HO=11 SMW”

to the unit’s SIM card number will change the energy Alarm Level, the Hour Offset and send a weekly report back to the cell number previously programmed with the SM# command.



FLATGUARD™ smart meter

rev 1.0



Weekly Report

Flatguard at "my location"
Week2 in AUG19

13 Mo	5.6
14 Tu	9.8
15 We	10.2
16 Th	0.7
17 Fr	41.0
18 Sa	12.7
19 Su	-3.0

Units in kWhr

Monthly Report

Flatguard at "my location"
Month JUL19 with 31 days

Month tot:	127.1
Month avg:	4.1
Meter tot:	12345.6

Units in kWhrs

Specification

AC Voltage range: 100 to 240V, 50Hz or 60Hz

Maximum current with standard pickup coil: 90A

Daily energy measured: -3276 to 3276kWhr

Energy registers: Daily, Weekly and Monthly

Operating temperature: -10 to 50°C