

# Not-So-Smart Power Plugs, but at Least No Cloud Required

Christian Leitold

[christian.leitold@gmail.com](mailto:christian.leitold@gmail.com)

Ostrava Python Pizza, 21 February 2026

# I just want to track my energy use, not have Jeff Bezos track it as well

A **smart plug** should

- ▶ switch on and off remotely,
- ▶ monitor energy consumption,
- ▶ and also log everything for later analysis.



## Amazon Basics 1 x Smart Wi-Fi Socket for EU Socket, Indoor Use Only Compatible with Alexa, White

[Visit the Amazon Basics Store](#)

4.4 ★★★★★ (2,489) | [Search this page](#)

2K+ bought in past month

-18% €9<sup>08</sup>

Was: €11.09

✓prime Tomorrow

Prices for items sold by Amazon include VAT. Depending on your delivery address, VAT may vary at Checkout. For other items, please see [details](#).

10% off on any 4 qualifying items [Shop items >](#)

Size Name: **1er-Pack**

**1er-Pack**

€9.08  
€11.09

**2.3\*2.3\*3.36  
in**

€34.32  
FREE Delivery  
Tuesday

**4er-Pack**

See available  
options

## A no-cloud alternative



### VOLTcraft SEM6000

- ▶ A Bluetooth-only *smart plug*.
- ▶ With an official Android and iPhone app...
- ▶ ...but luckily unofficial open source code is available as well!
- ▶ Side note: it is *expensive*!

<https://www.conrad.at/de/p/voltcraft-sem6000-energiekosten-messgeraet-bluetooth-schnittstelle-datenexport-datenloggerfunktion-trms-stromtarif-e-1558906.html>

# voltcraft-sem-6000 by Heckie75

Heckie75 Corrected doc acc. Issue #18 c3c794c · 2 years ago 53 Commits

API.md	Corrected doc acc. Issue #18	2 years ago
LICENSE	Initial commit	7 years ago
README.md	Added hint to synchronize before measuring	3 years ago
sem-6000.exp	Issue #14: Time is 1h ahead	4 years ago

README

MIT license

## voltcraft-sem-6000

*"A full-featured shell script in order to manage Bluetooth switch, scheduler and smart energy meter Voltcraft SEM 6000 with Linux and Raspberry Pi"*

The Voltcraft SEM-6000 is a remote 230V switch and smart energy meter. It was sold by *Conrad Elektronik* in Germany.

For details take a look at [Conrad](#). The device is also known as *Smart Power Plug EU* by Revogi, see <https://www.revogi.com/smart-power/power-plug-eu/#section0>

In comparison to many remote switches which use the 433MHz band the SEM-6000 is based on Bluetooth v4.0. The advantage is that there is no need to have additional hardware, e.g. via GPIO connected sender/receiver.

Full-featured shell script in order to control wall mount smart energy meter Voltcraft SEM-6000

Readme

MIT license

Activity

105 stars

6 watching

25 forks

Report repository

### Releases

No releases published

### Packages

No packages published

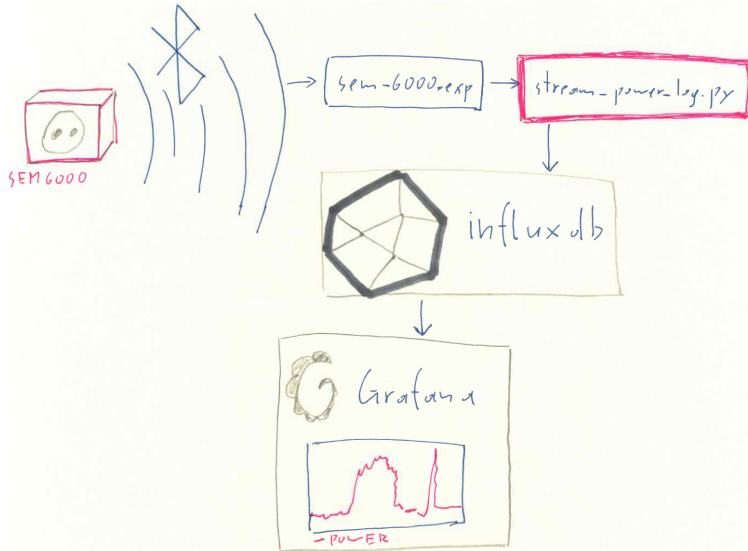
### Contributors

Heckie75 Heckie

moormaster

<https://github.com/Heckie75/voltcraft-sem-6000>

# Putting the pieces together



# Some lessons learned

- ▶ Set the Bluetooth device inside the Expect script!
- ▶ It will work just fine for some time...
- ▶ ...until it does not any more.
- ▶ Fix: queues, threads, sanity checks for invalid or stuck values.
- ▶ Rinse and repeat!
- ▶ Caveat: security is not great.

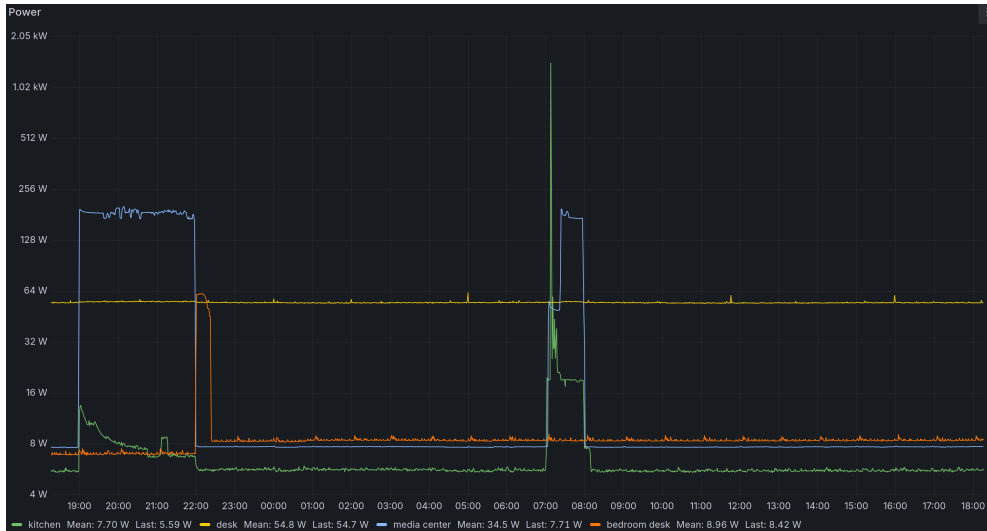
```
def measure_stream_function(device: str, the_queue: queue.SimpleQueue):
    exe = '/usr/bin/expect'
    measure_script = '/home/christian/projects/voltcraft-sem-6000/sem-6000.exp'
    while True:
        process = subprocess.Popen(
            [exe, measure_script, ALL_PLUG_IDS[device], '0000', '--measure'],
            stdout=subprocess.PIPE
        )
        power_ringbuffer = queue.deque(maxlen=RING_BUFFER_SIZE)
        sent_power_ringbuffer = queue.deque(maxlen=RING_BUFFER_SIZE)
        invalid_ringbuffer = queue.deque(maxlen=RING_BUFFER_SIZE)
        n_repetitions = 0

        while True:
            line = process.stdout.readline()

            line = line.decode().strip()
            columns = line.split('\t')
            try:
                power = columns[4]
            except IndexError:
                print(f'# No power reading found for {device}, terminating.')
                process.kill()
                break

            real_power = float(power)
```

## Some final results, visualized using a Grafana panel



Is it all worth it in the end?



Python script on Github:  
<https://github.com/leitold/powerlogger>