

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

Christian Leitold

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% €9⁰⁸

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

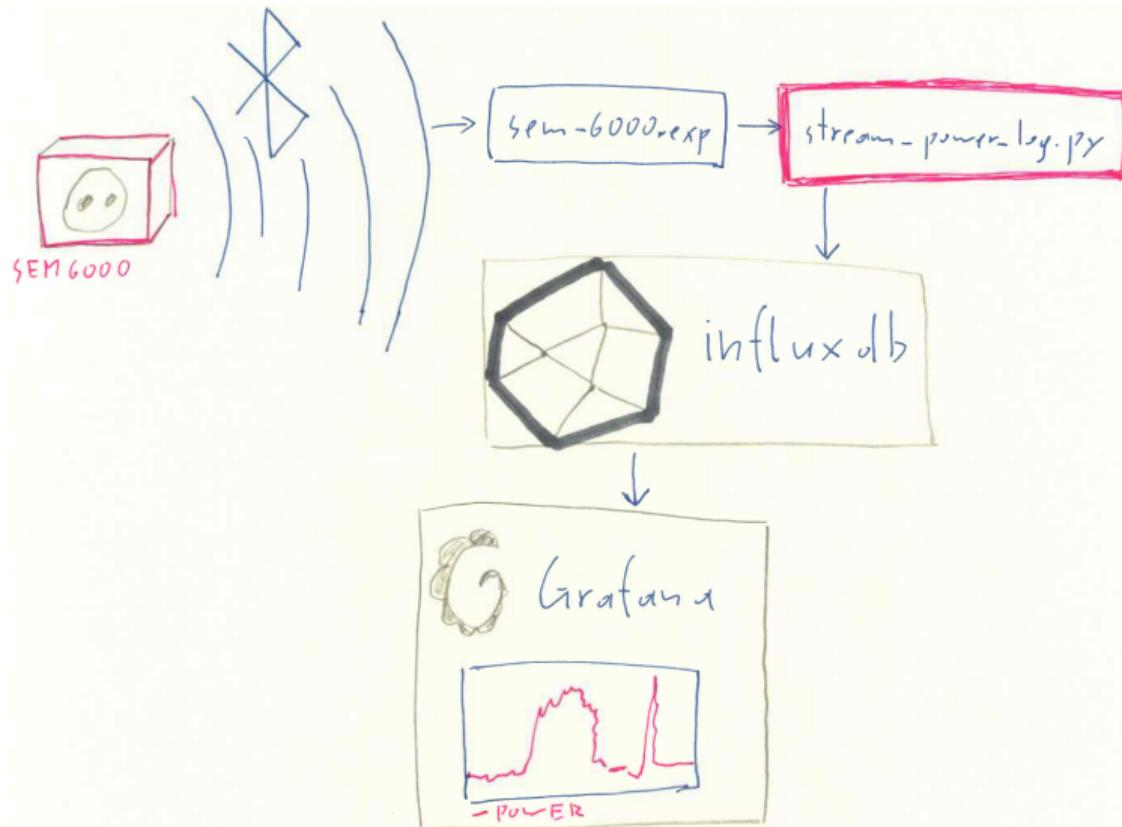
Contributors 2

 Heckie75 Heckie

 moormaster

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

Putting the pieces together

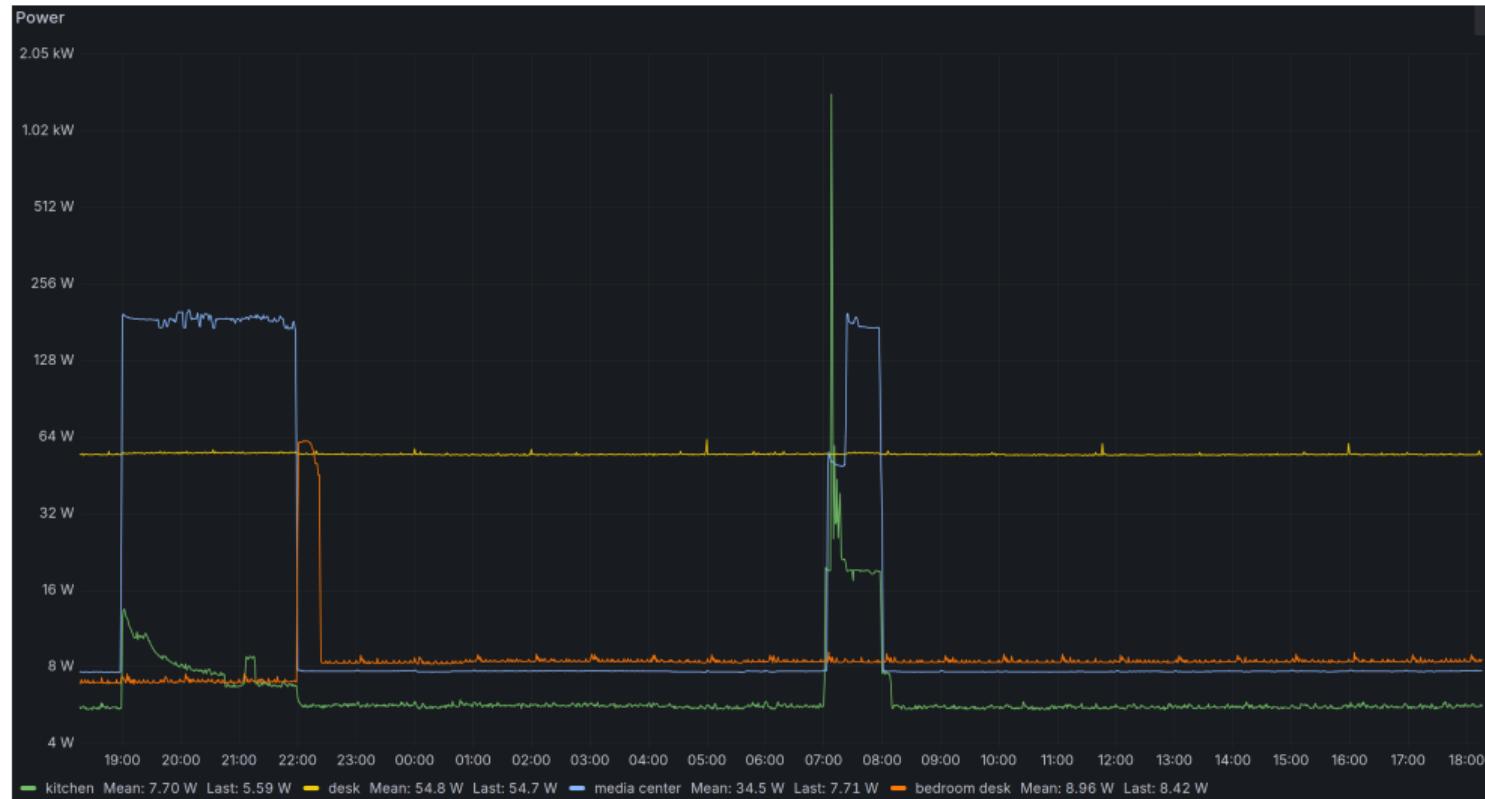


Some lessons learned

- ▶ 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>