



# SmartMeterDashboard

Energy Insight For You

## S0 Pulse Counter Module V0.6

The S0 Pulse Counter Module (S0PCM) enables you to read the pulses of so-called S0 contacts of a (electricity/gas/heat/water) meter that conforms to DIN 43684 / EN IEC 62053-31.

The S0PCM modules are microprocessor based and have no serviceable parts inside. The housing is "hot-glued" resulting in occasional excess-glue or glue removal scratches on the outside of the module. These optical marks have no effect on the functionality or usability of the module.

**Please note: The USB Cable is connected permanently to the S0PCM-5 version of the module. If you try to disconnect the cable on the module side, you will damage the module severely. This damage is NOT covered by any warranty!**

The S0PCM-5 module has 5 terminals, labelled 1 to 5 and 'G'.

The S0PCM-2 module has either 3 terminals (labelled 1, 2 and G) or 3 wires (white, red and ground)

The 'G' terminal or ground wire is the common Ground

The 1 to 5 terminals match the indicated S0PCM register.

To count pulses in register 1 of the module, you connect terminal '1' (or the white wire) to the S0+ terminal of your meter and common Ground to the S0- terminal of you meter.

To count pulses in register 2 of the module, you connect terminal '2' (or the red wire) to the S0+ terminal of your meter and common Ground to the S0- terminal of you meter.

To count pulses in register 3/4/5 of the module, you connect terminal '3'/'4'/'5' to the S0+ terminal of your meter and common Ground to the S0- terminal of you meter.

Wiring the signal wires to your meter is supposed to be done by a qualified electrician because most likely the meter terminals are located in the installation cabinet of your meter.

S0PCM modules are to be connected to a host computer via the USB cable.

As soon as the S0PCM is connected between a meter and a computer, the S0 pulses will be counted and delivered on the COM port that is emulated on the USB hardware port of the computer.

In the download section of [www.smartmeterdashboard.nl](http://www.smartmeterdashboard.nl) you will find a driver installation manual and a driver archive to download (applicable to Windows only, Linux and MacOS support the module natively).

To read the S0PCM and to log the values you may want to use the S0 Datalogger, to be downloaded from [www.smartmeterdashboard.nl](http://www.smartmeterdashboard.nl). The S0PCM is fully compatible with Domoticz ([www.domoticz.com](http://www.domoticz.com))

If you want to build your own datalogging software, please use following COM port settings:  
9600 baud / Even parity / 7 Databits / 1 Stopbit / No xon/xoff / No rts/cts

### S0PCM telegram layout

Header record (once, after start-up):

```
/a: S0 Pulse Counter V0.6 - 30/30/30/30/30ms
```

Data record (repeated every interval):

```
For S0PCM-5: ID:a:I:b:M1:c:d:M2:e:f:M3:g:h:M4:i:j:M5:k:l
```

```
For S0PCM-2: ID:a:I:b:M1:c:d:M2:e:f
```

Legenda:

a -> Unique ID of the S0PCM

b -> interval between two telegrams in seconds, this is set in the firmware at 10 seconds.

c/e/g/i/k -> number of pulses in the last interval of register 1/2/3/4/5

d/f/h/j/l/ -> number of pulses since the last start-up of register 1/2/3/4/5

### Configuration setting

S0PCM modules are designed to recognize S0 pulses that have a fixed length of approx. 30ms by default. Although this value (30ms) is part of the S0 standards, some meters do not comply. Starting with firmware V0.6 you can configure the threshold the S0PCM uses to identify separate pulses generated by your meter.

You can verify the configuration setting of your S0PCM by checking the header record that is generated by the module after start-up: "S0 Pulse Counter V0.6 - 30/30/30/30/30ms"

The part after the "-" shows the set thresholds for registers 1 to 5. (In the example above the setting is the default 30ms for every register).

You can configure any custom value in milliseconds per register in the form of: Tx=y;

Where x -> register 1/2/3/4/5

And y -> threshold value in milliseconds

Examples:

- Set all thresholds to the default: T1=30;T2=30;T3=30;T4=30;T5=30
- Set threshold for register 2 to 40ms (and leave the others untouched): T2=40;
- Set threshold for register 3 to 50 and threshold for register 5 to 90: T3=50;T5=90;

The configuration setting has to be sent to the S0PCM module **within 10 seconds** after it is connected to a computer. You can use any terminal program (cu on Linux or PuTTY on Windows) or the "S0set.py" configuration tool that can be downloaded from [www.smartmeterdashboard.nl](http://www.smartmeterdashboard.nl)

**DISCLAIMER:** Although [www.smartmeterdashboard.nl](http://www.smartmeterdashboard.nl) has made every effort in developing a reliable pulse counter module, you might encounter issues when you connect the module to your meter.

In any case, before connecting a meter to the module, please make sure:

1. That the USB port the S0PCM module is connected to can deliver enough power. When the module does not get enough power, the counted values may show unrealistic values. The use of a powered USB hub is advised.
2. Connected meters conform to S0 standards DIN 43684 / EN IEC 62053-31
3. There is no voltage on the terminals of your meter
4. To maintain enough distance (preferably 1 meter) between the module / its wires to other electronic devices.
5. There is appropriate shielding of the signal wires, e.g. by using shielded cable or (S0+/S0-) twisted wires to avoid interference. Be aware that inside a lot of meter cabinets there is a lot of interference that might affect the functioning of the module.
6. To keep the signal wires as short as possible (as they may function as an antenna that might result in interference).

WARRANTY:  
SMARTMETERDASHBOARD.NL WARRANTS THAT ALL MODULES ARE FREE FROM DEFECTS IN WORKMANSHIP AND MATERIALS, UNDER NORMAL USE AND SERVICE. SMARTMETERDASHBOARD.NL'S SOLE OBLIGATION UNDER THIS LIMITED LIFETIME WARRANTY SHALL BE, UNDER SMARTMETERDASHBOARD.NL'S OPTION AND EXPENSE, TO REPAIR THE DEFECTIVE PRODUCT OR PART, DELIVER TO THE CUSTOMER AN EQUIVALENT PRODUCT OR PART TO REPLACE THE DEFECTIVE ITEM, OR, IF NEITHER OF THE THREE FOREGOING OPTIONS ARE REASONABLY AVAILABLE, SMARTMETERDASHBOARD.NL MAY, IN ITS SOLE DISCRETION, PROVIDE A REFUND TO THE ACTUAL PURCHASE PRICE PAID FOR THE DEFECTIVE PRODUCT. ALL PRODUCTS THAT ARE REPLACED WILL BECOME THE PROPERTY OF SMARTMETERDASHBOARD.NL. REPLACEMENT PRODUCTS MAY BE NEW OR RECONDITIONED. SMARTMETERDASHBOARD.NL WARRANTS ANY REPLACED OR REPAIRED PRODUCT.  
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