

# SGU

with  
Conventional CT  
Technology

***Smart Grid Unit  
Now with Optional  
Digital and Analog I/O***

## SGU

---

In a Smart Grid Network you need to know if the network is OK, the amount of power and where the power is flowing. The SGU unit is designed to provide this information in an easy way on a real time basis.

The SGU can be configured with up to 10 I/O cards that can each either monitor 3 phases or be Analog/Digital I/O cards with each 8 I/O's. The shown version will measure Voltage, Current, Active and Reactive Power and the Direction of power in each of the up to 30 cables. Additionally frequency and the temperature in the central unit is monitored. The optional I/O cards can be configured as a mix of up to 8 DI/O, 4 AI/O or 8 AO.

The measured and calculated values are transmitted to a central computer for further evaluation in the Smart Grid Network. Protocols can be Modbus or IEC 60870-5-104 and communication modes RS 485 and Ethernet. Other types of communication can be implemented on request.

### Advantages of the SGU

- **Class 1,0 measurement of RMS Voltage, RMS Current, Frequency and Temperature.**
- **Calculates Active-, Reactive-, Apparent power,  $\cos\phi$  and the direction of power in each of the up to 10x3 cables.**
- **Forced data read-out intervals to build-in SD card can be set in intervals of X x 10sec. (10-20-30.....)**
- **Fast and easy installation without the need of special tools.**
- **No need for regular calibration.**
- **Reliable communication via RS485 or optional Ethernet.**
- **Analog and digital I/O cards each with 8 I/O's can substitute the 3 phase input cards.**
- **Setup is done through a simple web page interface.**

### Measurement Principle

---

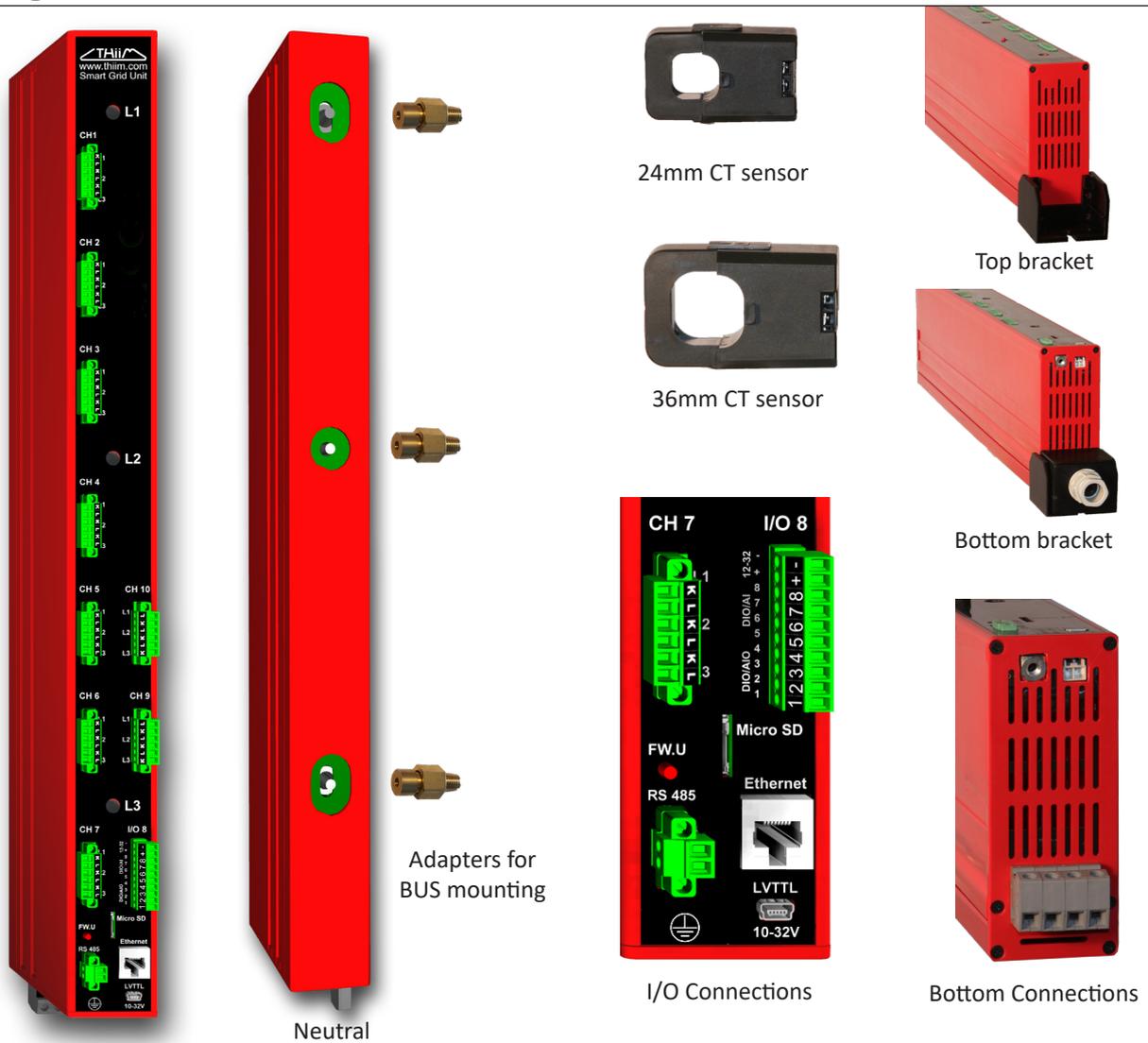
#### Central unit

A set of processors in the central unit are sampling the actual current value at a frequency of 5KHz. The measured and calculated data can, in the IEC 60870-5-104 mode, communicate direct with SCADA systems. In the Modbus mode, be requested down to 10 Sec. intervals or pushed at predefined intervals down to 2 sec. via RS485 or Ethernet to a central computer for further evaluation in the Smart Grid Network.

Optional individual alarm levels can be defined for each input enabling the system to send a message if a certain level is exceeded.

The function and the set points in the various processors in the central unit, can all be modified by sending a message with the relevant information, the firmware can at any time be upgraded by use of a simple USB to LVTTTL converter.

## Images



## Installation

### Central unit

The central unit is mounted directly on the current rails in a distribution panel or with optional brackets on a wall. The fixation is done from the front by 3 embedded isolated HEX screws that will fit the threads in the bus bar. By fastening the screws, the power for the unit is enabled automatically. Just a normal insulated 5 mm HEX key is needed for this installation as the screws are isolated from the bus

### CT's

The CT is simply clicked on the cable.

Connection between the sensor and the central unit is established with wires, connected to screw terminals in both ends. Max. current is 0,1A.

## Specifications

---

Sensor:	Cable Size	Max. Ø24 - 340A Max. Ø36 - 500A
	Cable Voltage	Limited only by the insulation of the CT. (Tested with 2,5/3,5kV)
	Current (measured)	0,8- 2,5A: Sensor/Cable alive 2,5A - 340/500A: RMS Value (Measuring range up to 680/1000A),
	Open circuit	Protected by a transient voltage suppressor
	Body dimension	75x46x35mm (HxDxW) 91x57x41mm (HxDxW)
Central Unit:	Channels	1 - 10. max 10 x 3 phase input cards, or 10 x A/D I/O cards)
	Supply Voltage	3 x 230 or 3 x 400V and 10-32Vdc
	Voltage (measured)	Supply voltage RMS. Resolution 0,1V
	Current (measured)	Resolution 0,1A RMS, CT coil ratio 20 windings/A
	Frequency (measured)	Resolution: 0,001Hz
	CosΦ	-1 to +1
	Power (calculated)	0 - 999,9 Active-, Reactive-, Apparent power & CosΦ
	Power Quality	Optional under development
	Power Consumption	6W
	Temperature	-25°C - +70°C
	Dimension	520 x 49 x 130mm (HxWxD)
IP Class	30	
Safety standard	IEC61010-1/61010-2-030,600V Cat III,300V Cat IV. EMC: IEC 61000-6-5	
Communication	IEC 60870-5-104, Modbus via RS485 or optional Modbus TCP via Ethernet. Planned support for IEC60850 Update time, Modbus RS485/Ethernet 10 sec. Other communication forms from 2 sec.	

We reserve the right to make product improvement.

---

Thiim A/S  
Transformervej 31  
DK 2860 Soborg  
Denmark  
  
+45 4485 8000  
www.thiim.com