

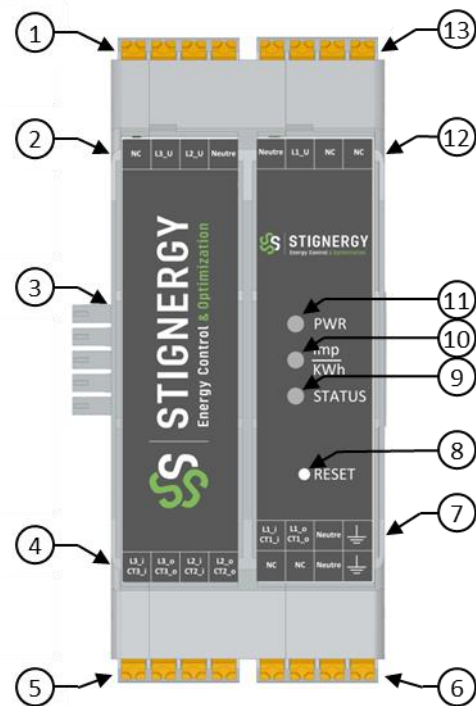
Description

SEMS Metering Terminal is able to measure multiple electrical parameters in real time with a sample rate up to 1kHz. From the devices it is related to, the terminal get (total and partial) energy, current, voltage, active and reactive power, $\cos \varphi$, frequency and the first harmonic.

Several SEMS Metering Terminals can be grouped into clusters and each Terminal sends all its information through RS485 communication interface.

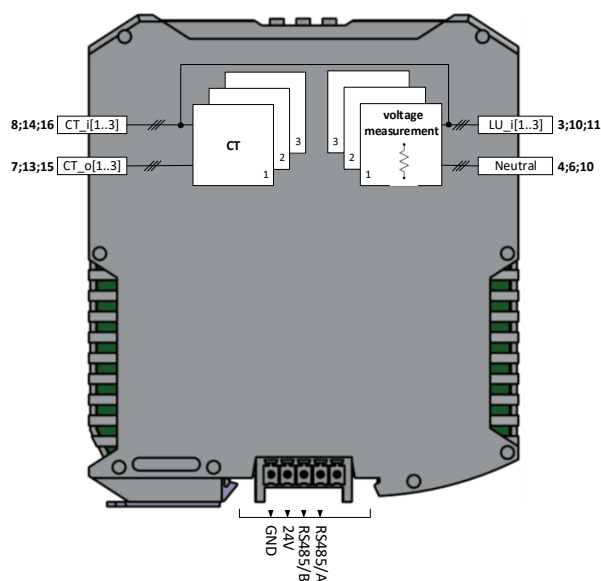
Features

- Class 0.2 S energy accuracy according to European standard EN 62053-22
- Modular structure, due to TBUS connectors, thus up to 255 terminals can be connected together.
- RS485 communication interface
- Current measurement using internal CT up to 16A and external CTs or Rogowski coils up to 10kA

Assembly

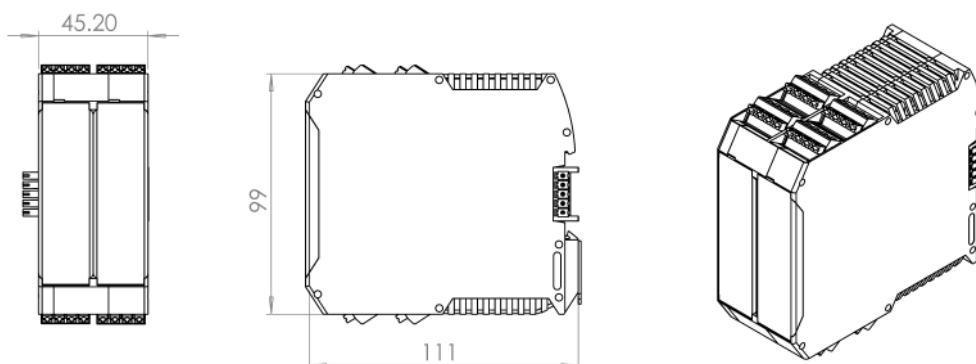
Position	Designation
1, 5, 6, 13	Spring connections for Input/Output
2, 4, 7, 12	Mapping of Input/Output
3	TBUS connector
8	RESET button
9	LED STATUS (Program running)
10	LED Imp/KWh impulse indicator
11	LED PWR (Power supply)

Connections



Technical specifications

Dimensions



Dimensions

W x H x D 45.2mm x 99mm x 111mm

General specifications

Overvoltage category	III
Mounting position	Any, on 35 mm DIN mounting rail acc. to EN 60715
Degree of protection according to VDE 0470-1	
Housing	IP20
Connection terminal	IP20
Mounting position	IP54 min
Housing material	Polyamide PA non-reinforced
Degree of pollution	2
Flammability rating according to UL 94	V0

Supply

Rated voltage	24V DC via TBUS connector
Voltage range	20V to 30 V DC
Max. current consumption	50mA /24VDC à 25°C
Protection against transient overvoltage	Yes (bidirectional TVS Diode)

Serial interface RS485 (2-wire)

Connection	TBUS connector
Baud rate	Up to 1 Mbps

Connection data

Connection method	Spring connection
Conductor cross section solid	0,2mm ² to 2,5mm ²
Conductor cross section flexible	0,2mm ² to 2,5mm ²
Conductor cross section	24AWG/kcmil to 14AWG/kcmil
Stripping length	10 mm

Ambient conditions

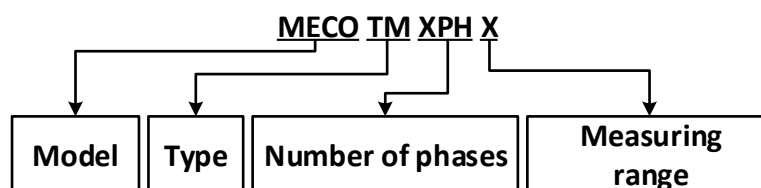
Ambient temperature (operation)	-20°C to 70 °C
Ambient temperature (storage/transport)	-40°C to 80 °C
permissible relative humidity (operation)	10% to 95%

Standards

Conformance	CE-compliant
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Directive conformity

Electromagnetic compatibility	Low voltage 2006/95/CE CEM-EMC 2004/108/CE
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Ordering

Type : Terminal Metering

MECO TM XPH X	Measuring range [A]	Current sensor	Accuracy class	Resolution
MECO TM 1PH5	0.1 – 5	Internal CT	0.2%	900 µA
MECO TM 1PH16	0.1 – 16	Internal CT	0.2%	900 µA
MECO TM 3PH5	0.1 – 5	Internal CT	0.2%	900 µA
MECO TM 3PH16	0.1 – 16	Internal CT	0.2%	900 µA
MECO TM 3PH100	0.1 – 100	External CT	0.2%	3.6 mA
MECO TM 3PH300	0.1 – 300	External CT	0.2%	11.0 mA
MECO TM 3PH600	0.1 – 600	External CT	0.2%	21.0 mA
MECO TM 3PH1000	0.1 – 1000	External Rogowski coils	0.2%	1.0 mA
MECO TM 3PH3000	0.1 – 3000	External Rogowski coils	0.2%	1.0 mA

Electrical measured parameters

Measured parameters	Unit	Total	Phase
Current: RMS and instantaneous I (t)	[A]		X
Peak current	[A]		X
Peak to peak current	[A]		X
Voltage: RMS and instantaneous V(t)	[V]		X
Peak voltage	[V]		X
Peak to peak voltage	[V]		X
Active power	[kW]	X	X
Reactive power	[kVAR]	X	X
Apparent power	[kVA]	X	X
Fundamental active power	[kW]	X	X
Quarter-hourly power	[kW]	X	X
Power factor (Cos ϕ)	-	X	X
Active Energy	[kWh]	X	X
Reactive Energy	[kVARh]	X	X
Apparent Energy	[kVAh]	X	X
Fundamental active energy	[kWh]	X	X
Frequency	[Hz]	X	X

Operating mode and diagnostic LEDs of SEMS Metering Terminal

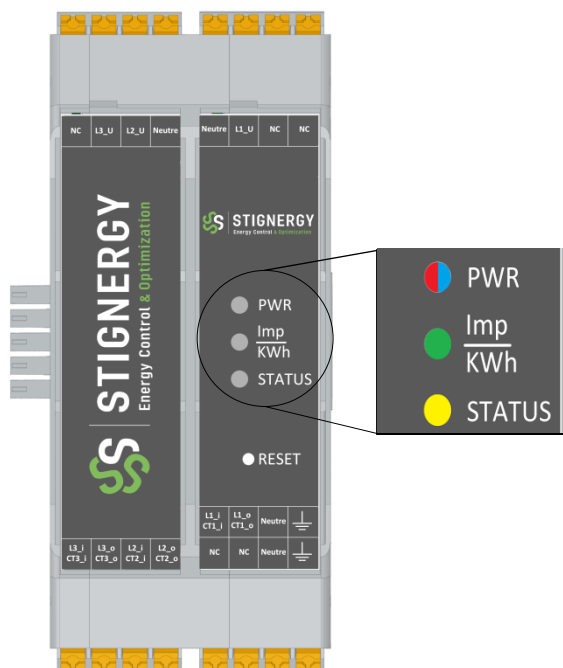


Table 1. Operating mode of Terminal SEMS Metering

Operating mode	Meaning
Normal	SEMS Metering Terminal in normal mode.
Boot	SEMS Metering Terminal in boot mode

Status display

Three LEDs to indicate the different states of the SEMS Metering Terminal.

LEDs symbols mean :

LED OFF ●

LED ON ☀

Blinking LED ●/☀

Slow blinking : f = 1Hz

Fast blinking : f = 2Hz

Table 2. LED state

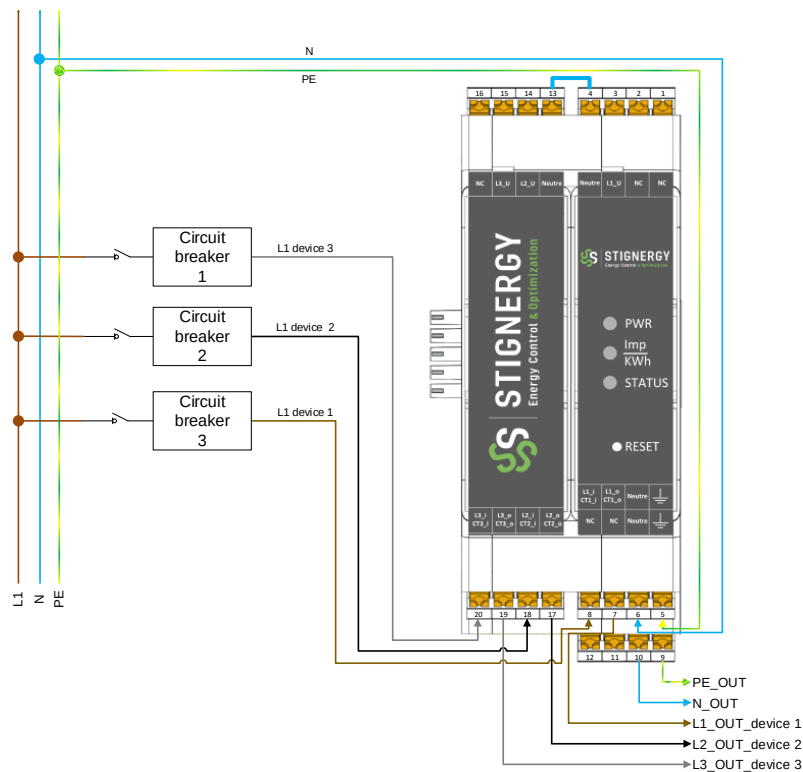
LED	State	Meaning
PWR	●	Power supply OFF
	Blue ☀	Power supply ON
	Red ☀	Error
	Purple ☀	Warning
Imp kWh	●	Power supply OFF
	Green ●/☀	Impulse/KWh
STATUS	●	Power supply OFF
	Yellow ●/☀	Program is running

Table 3. Status of Terminal SEMS Metering

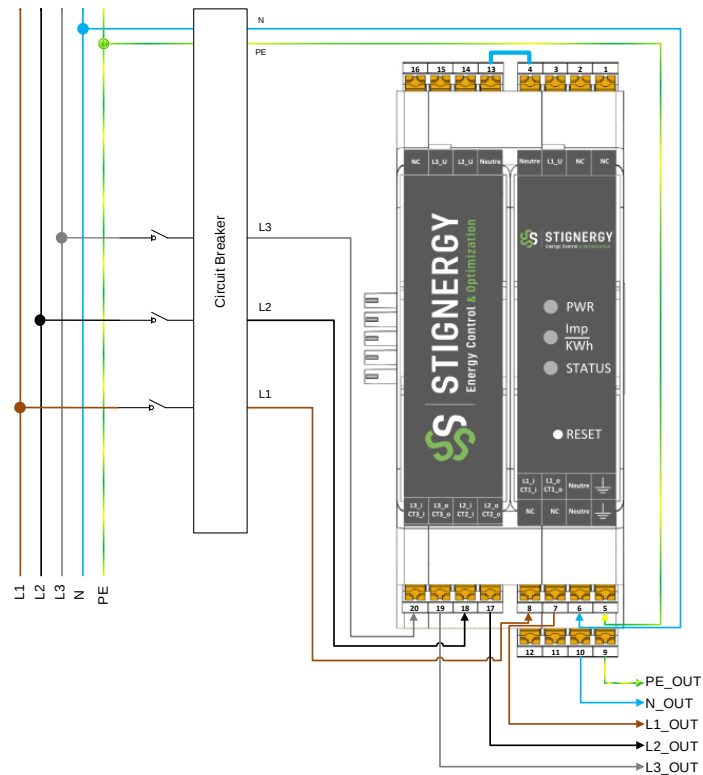
PWR	Imp KWh	STATUS	Meaning
•	•	•	➡ Power is off. No power supply from the TBUS
Blue	Green	Yellow (slow)	➡ Terminal SEMS Metering is in normal mode
Blue	Green and Orange (fast)	Yellow (fast)	➡ Terminal SEMS Metering is in boot mode

Connections

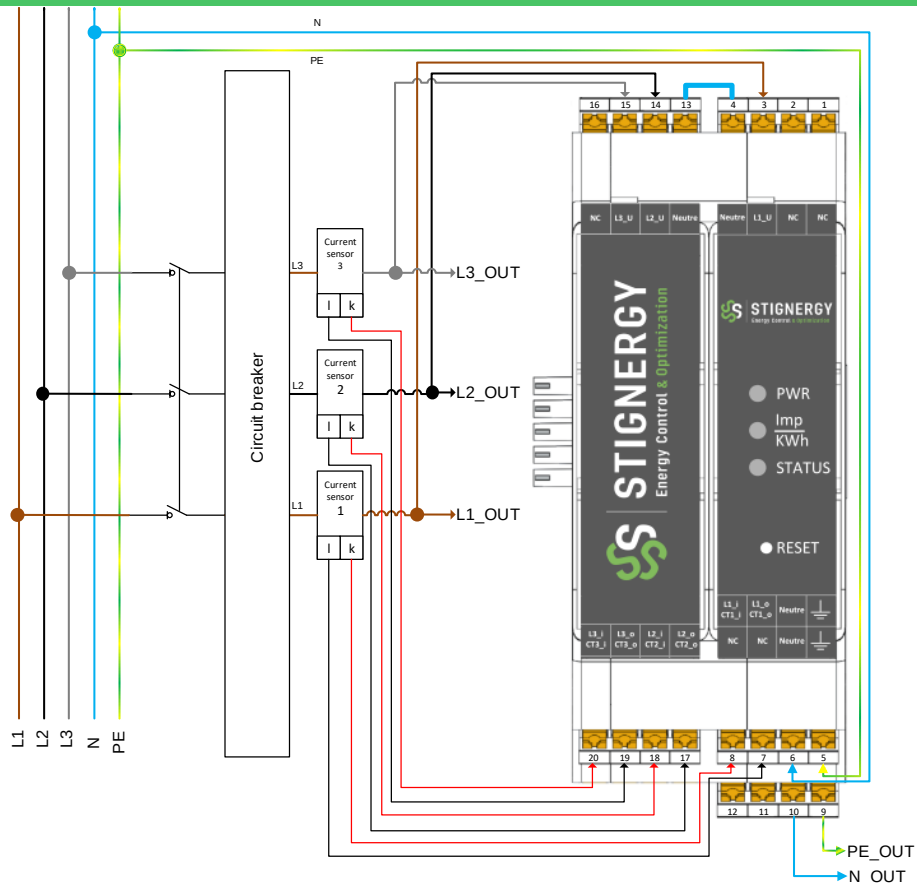
Connection of model MECO TM XPH5 and MECO TM XPH16



Connection of model MECO TM 3PH5 and MECO TM 3PH16



Connection of model MECO TM 3PH100/300/600/1000/3000



Connection Terminals

Designation	Terminal bloc N°	Function	
		Measure $\leq 16A$	Measure $> 16A$
NC	1	Not connected	
NC	2	Not connected	
L1_U	3	-	Input external voltage L1
Neutre	4	Neutral	
Terre (PE)	5	Earth	
Neutre	6	Neutral	
L1_L/CT_o	7	Output phase L1	Terminal L of external CT, phase L1
L1_L/CT_i	8	Input phase L1	Terminal K of external CT, phase L1
Terre (PE)	9	Earth	
Neutre	10	Neutral	
NC	11	Not connected	
NC	12	Not connected	
Neutre	13	Neutral	
L2_U	14	-	Input external voltage L2
L3_U	15	-	Input external voltage L3
NC	16	Not connected	
L2_L/CT_o	17	Output phase L2	Terminal L of external CT, phase L2
L2_L/CT_i	18	Input phase L2	Terminal K of external CT, phase L2
L3_L/CT_o	19	Output phase L3	Terminal L of external CT, phase L3
L3_L/CT_i	20	Input phase L3	Terminal K of external CT, phase L3

Communications

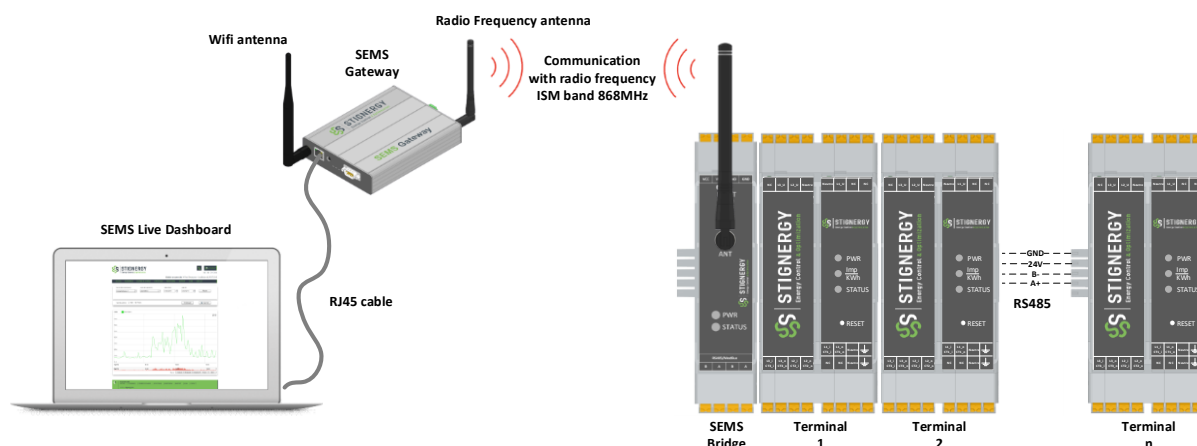
All the measurements of one or multiple SEMS Metering Terminals (MECO TM XPH X) are sent to the SEMS Gateway.

The SEMS Gateway is a bridge between SEMS and internet or a local network. It locally collects and stores all the measured data and sends them to our remote server or a remote computer through a simple IP connection with Ethernet or WiFi.

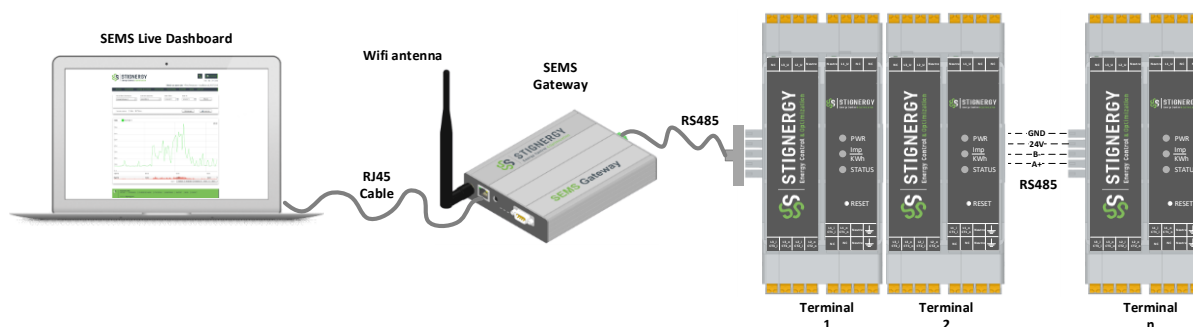
The SEMS live Dashboard is a dynamic website with a secure access; it displays in real time to the users all the data collected from the SEMS Metering Terminals through an intuitive interface.

Two types of configuration exist between SEMS Terminals and SEMS Gateway:

Wireless communication (Radio frequency ISM band 868 MHz, 25 or 500 mW)



RS485 wire communication



SEMS Dashboard



Load curve
Statistics

Analysis & Comparisons
Monitoring & Control

CO2 Equivalent
Reporting

The dashboard allows you to monitor your electricity network and energy consumption.

The main benefits :

- Visualization of the load curves and graphical representation of all the electrical parameters measured by the SEMS terminals.
- Monitoring and remote controlling the electrical appliances with timers.
- Diagnostics, troubleshooting and equipment problems.
- Evaluation of the CO2 equivalent of the building energy consumption.
- Reports generation and analysis of the energy efficiency.

Accessories

- TRACO - TBL 030-124

Power module for SEMS Terminals : 24VDC rated output currents of up to 1.25A via the TBUS connector

- DIN Rail Terminal Blocks, PHOENIX CONTACT, ME 22.5TBUS1.5/5-ST 5P DIN RAIL BUS CONN – 2713722

Plug component, Nominal current $I_n = 8\text{ A}$

- Printed-Circuit board connector -, PHOENIX CONTACT, IMC 1,5/ 5-ST-3,81 – 1857919

Type : Plug component

Nominal current: $I_n 8\text{ A}$

Rated voltage (III/2): 160V

Number of positions: 5

Pitch: 3.81mm

Connection method: Screw connection with tension sleeve

Color: Green