

# S203 Line

## POWER METERS



**ModBUS  
Interface**

**Configurable  
analog  
output**

**Bi-Directional  
energy  
metering**

**Pulse  
output for  
energy**

**CT, VT  
Rogowski  
connection**

**Programming  
through  
USB port  
& keypad**

# S203 Line

## POWER METERS WITH ADVANCED FUNCTIONS

### VOLTAGE INPUT

**600 Vac**

The analyzer of S203 line support voltage input with max load up to 600 Vac (50- 60 Hz).

### CURRENT VOLTAGE

**100 mA  
5 Arms  
4.000 A**

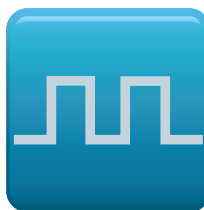
The analyzer of S203 line support current input up to 100 mA (S203T), 5 Arms (S203TA, S203TA-D), 4.000 A (S203RC-D).

### MEASURED VALUES



The analyzers of S203 line provide single or three phase value of the main electrical measures: RMS voltage, RMS current, active power, reactive power, apparent power, frequency, power factor, energy (bi-directional). Configurable analog output allows to use the analyzer as measure converter.

### ENERGY COUNTER



S203TA-D and S203RC-D have pulse digital output and retentive memory for the energy counter.

### COMMUNICATION

**ModBUS**

Mini-USB port for programming (S203TA-D and S203RC-D) and RS485 port. All models support the ModBUS RTU protocol up to a max of 32 nodes and 115.200 bps without using amplifiers or repeaters.

### CONFIGURATION



All models are configurable through free software EASY SETUP and connection from USB port easily accessible. Versions without display are programmable also via DIP-switch, the ones with display also via keypad protected by password.

### DISPLAY



S203 line includes models with high brightness backlit LCD display (2 rows x 16 characters)

### CONNECTIONS



Single phase, Aron 3-phase, 3-phase at 4 wires. The analyzers are connected to commercial CTs with secondary max 5A, current transformers with f.s. from 15 to 100 A, Rogowski sensors 4000 A.

### PRECISION CLASS

**<0,5%**

Characterized of a 7 kHz bandwidth and re-transmission errors on output of 0,1%, all models have precision class between 0,2 and 0,5%.





### ISOLATION

**4.000 Vac**



The analyzers have protection against ESD up to 4 kV, isolation between power input and other circuits up to 4.000 Vac and isolation between communication (or analog output) and power supply of 1500 Vac.

# POWER METERS

|                                 | S203T  | S203TA   | S203TA-D  | S203RC-D  |
|---------------------------------|--|--|---|---|
|                                 |   |   |   |    |
|                                 | 3-phase power meter, up to 100 mA current input  | 3-phase power meter, up to 5 A current input   | 3-phase power meter, with display, up to 600Vac voltage input and 5 A current range   | 3-phase power meter, with display and input from Rogowski sensors   |
| Order Code                      | S203T  | S203TA   | S203TA-D  | S203RC-D  |
| <b>TECHNICAL SPECIFICATIONS</b> |  |  |   |   |
| Power Supply                    | 10-40 Vdc, 19-28 Vac (50-60 Hz)  | 10-40 Vdc, 19-28 Vac (50-60 Hz)  | 10-40 Vdc, 19-28 Vac (50-60 Hz)   | 10-40 Vdc, 19-28 Vac (50-60 Hz)   |
| Power consumption               | 2,5 W  | 2,5 W  | 2,5 W   | 2,5 W   |
| Isolation                       | 4 kVdc between input measurement and other circuits<br>1.500 Vac between power supply and communication // retransmitted output  | 4 kVdc between input measurement and other circuits<br>1.500 Vac between power supply and communication // retransmitted output  | 4 kVdc between input measurement and other circuits<br>1.500 Vac between power supply and communication // retransmitted output   | 4 kVdc between input measurement and other circuits<br>1.500 Vac between power supply and communication // retransmitted output   |
| Installation Category           | 350 V CAT II   | 350 V CAT II   | 350 V CAT II  | 350 V CAT II  |
| Status indicator                | Power supply, Fail, RS485 communication  | Power supply, error, RS485 communication   | Power supply, Fail, RS485 communication   | Power supply, Fail, RS485 communication   |
| Display                         | -  | -  | Front LCD 2 lines x 16 characters alphanumeric (backlighting)   | Front LCD 2 lines x 16 characters alphanumeric (backlighting)   |
| Retransmission error            | 0,1% (full range)  | 0,1% (full range)  | 0,1% (full range)   | 0,1% (full range)   |
| Band-Pass                       | 7 kHz  | 7 kHz  | 7 kHz   | 7 kHz   |
| Accuracy class                  | 0,2%   | 0,2%   | 0,2%  | 0,5% (except the Rogowski error)  |
| Insertion Type                  | 1- phase, 3-phase Aron, 3- phase with 4 wires  | 1- phase, 3-phase Aron, 3- phase with 4 wires  | 1- phase, 3-phase Aron, 3- phase with 4 wires   | 1- phase, 3-phase Aron, 3- phase with 4 wires   |
| Connections                     | Precision CT full scale between 15 to 100 A, accuracy 0,1%   | CTs with max 5A output standard accuracy 0,5%  | CTs with max 5A output standard accuracy 0,5%   | Rogowsky sensors with output max 200 mV RMS   |
| Protection Degree               | IP20   | IP20   | IP20  | IP20  |
| Mounting                        | 35 mm DIN rail guide   | 35 mm DIN rail guide   | 35 mm DIN rail guide  | 35 mm DIN rail guide  |
| Connection                      | Screw terminal, pitch 5,08 mm  | Screw terminal, pitch 5,08 mm  | Screw terminal, pitch 5,08 mm   | Screw terminal, pitch 5,08 mm   |
| Operating Temperature           | -10...+65°C  | -10...+65°C  | -10...+65°C   | -10...+65°C S203RC-D, -20...+70°C Rogowski sensor   |
| Dimensions [W*H*D]              | 105 x 89 x 60 mm   | 105 x 89 x 60 mm   | 105 x 89 x 60 mm  | 105 x 89 x 60 mm  |
| Weight                          | 200 g  | 200 g  | 200 g   | 200 g   |
| Enclosure                       | Plastic Material UL V0   | Plastic Material UL V0   | Plastic Material UL V0  | Plastic Material UL V0  |
| <b>COMMUNICATION</b>            |  |  |   |   |
| Interface                       | RS485, 2 wire  | RS485, 2 wire  | N°1 RS485, N° 1 Mini-USB, for programming (software EASY SETUP)   | N°1 RS485, N° 1 Mini-USB, for programming (software EASY SETUP)   |
| Speed                           | Sampling time 25 ms  | Sampling time 25 ms  | Sampling time 25 ms   | Sampling time 25 ms   |
| Protocol                        | ModBUS RTU slave   | ModBUS RTU slave   | ModBUS RTU slave  | ModBUS RTU slave  |
| Distance                        | Up to 1.200 m  | Up to 1.200 m  | Up to 1.200 m   | Up to 1.200 m   |
| Connectivity                    | Max 32 nodes   | Max 32 nodes   | Max 32 nodes  | Max 32 nodes  |
| <b>I/O</b>                      |  |  |   |   |
| Channels Numbers                | 1 input, 2 output (Baud Rate max 115.200 b/s)  | 1 input, 2 output (Baud Rate max 115.200 b/s)  | 1 input, 3 output (Baud Rate max 115.200 b/s)   | 1 input, 3 output (Baud Rate max 115.200 b/s)   |
| Input Type                      | Voltage: max 600 Vac, 50-60 Hz<br>Current: 15, 25, 100mA from CT (S203T)<br>-Single phase<br>-Aron (three phase with N.2 CT)<br>-Four wires (three-phase with N.3 CT/ current)   | Address setting<br>Baud rate setting<br>Selection of insertion type<br>Selection of 3 phase or 1 phase   | Voltage: max 600 Vac, 50-60 Hz<br>Current: 5 Arms (from CT)<br>Single phase, Aron (three phase with N.2 CT), Four wires (three-phase with N.3 CT)   | VOLTAGE up to 600 Vac (50-60 Hz);<br>CURRENT from Rogowski transducers with max output 200 mV   |
| Output Type                     | n° 1 RS485 output modbus slave<br>n° 1 analogue output, voltage/current (Voltage 0..5, 0..10Vdc, min load resistance 2KOhm. Current 0..20, 4..20mA, max load resistance 500 Ohm) | n° 1 RS485 output modbus slave<br>n° 1 analogue output, voltage/current (Voltage 0..5, 0..10Vdc, min load resistance 2KOhm. Current 0..20, 4..20mA, max load resistance 500 Ohm) | n° 1 RS485 output modbus slave<br>n° 1 analogue output, voltage/current (Voltage 0..5, 0..10Vdc, min load resistance 2KOhm. Current 0..20, 4..20mA, max load resistance 500 Ohm)<br>n° 1 digital output (pulse for produced/ consumed energy or to report the direction of the current) | n° 1 RS485 output modbus slave<br>n° 1 analogue output, voltage/current (Voltage 0..5, 0..10Vdc, min load resistance 2KOhm. Current 0..20, 4..20mA, max load resistance 500 Ohm)<br>n° 1 digital output (pulse for produced/ consumed energy or to report the direction of the current) |
| <b>PROGRAMMING</b>              |  |  |   |   |
| Configuration                   | DIP-switch or software (EASY SETUP)  | DIP-switch or software (EASY SETUP)  | Software EASY SETUP (all the parameters), or keypad   | Software EASY SETUP (all the parameters), or keypad   |
| <b>STANDARD</b>                 |  |  |   |   |
| Approval                        | CE   | CE   | CE  | CE  |
| Norms                           | EN 61000-6-4, EN 61000-6-2, EN 61010-1, EN 60742   | EN 61000-6-4, EN 61000-6-2, EN 61010-1, EN 60742   | EN 61000-6-4, EN 61000-6-2, EN 61010-1  | EN 61000-6-4, EN 61000-6-2, EN 61010-1  |

## SOFTWARE & ACCESORIES



**EASY SETUP**  
Plug&Play  
configuration software

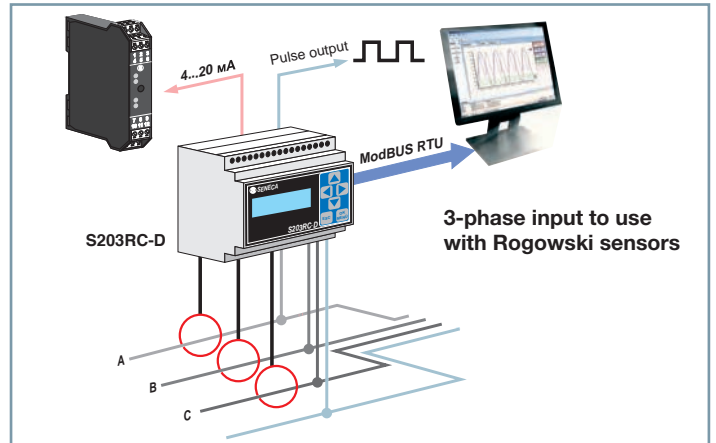
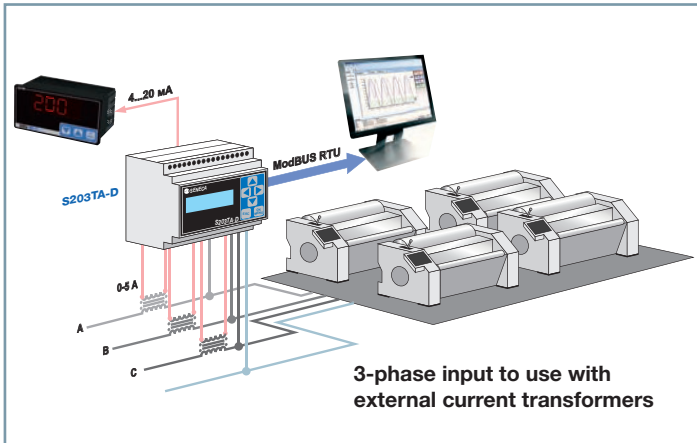


| Code        | Description   |
|-------------|---|
| RC-V250-100 | Rogowski sensor max 2.000A, 50-60Hz, length 250, Ø 68mm, cable 2 m  |
| RC-V400-100 | Rogowski sensor max 2.000A, 50-60Hz, length 400, Ø 115mm, cable 2 m |
| RC-V500-100 | Rogowski sensor max 2.000A, 50-60Hz, length 500, Ø 147mm, cable 2 m |
| RC-V400-050 | Rogowski sensor max 4.000A, 50-60Hz, length 400, Ø 115mm, cable 2 m |

## SPECIAL FEATURES S203TA-D, S203RC-D

- Double MODBUS registers produced/consumed energy
- Average power calculation
- Backlighting display
- Frontal mini-USB Programming port
- Possibility to transmit measured energy or the direction of the current through digital output
- VT support
- Diagnostics on display

## APPLICATION NOTE



**Rogowski sensor** (RC-V250-100, RC-V400-100 e RC-V500-100, RC-V400-050) are shielded rings designed for measurements of AC waveforms, pulse DC or complex.

For their proper use is necessary to wrap the ring on the wire so that the current direction in the ring is oriented in the same direction of the conductor current. For a proper fit, the cable conductor should be placed in a central position to the ring. To get a more precise measurement, it is necessary to calibrate the Rogowski sensor through software or using the menu on the display.



## Z203-1 Single phase power meter



- Input: Voltage range up to 500 Vac, current up to 5 A (da 35 a 75Hz).
- Electrical measurements: Vrms, Irms, Watt, Var, Frequency, Energy, Cosfi
- Serial communication RS485 with protocol ModBUS RTU max 32 nodes
- Isolation up to 3750 Vac
- Analog output configurable as voltage or current
- Possibility to connect to an external CT
- Every counter: digital pulse output, reading on Modbus register (counting saved into retentive memory)
- Easy configuration via software Easy SETUP free of charge and downloadable from the website [www.seneca.it](http://www.seneca.it)

## APPLICATION NOTE

