ENERGY METERS S500 Series



SENECA

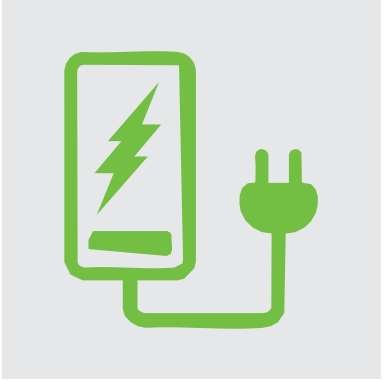
www.seneca.it

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FROM THE MID METER TO ENERGY COST CONTROL

The **SENECA S500 series** transforms metered data into operational insights, integrating data collection, energy monitoring, and automation. It supports bidirectional measurement for systems with self-generation and photovoltaic panels and monitors energy, power, voltage, current, and power factor. Available in single- and three-phase versions, direct or with CTs, it communicates via Modbus RS485/Ethernet and S0 output. MID certified, industrially robust, and easily integrated for submetering and energy efficiency.

DETECT



Lines, departments, machines, utilities

MEASURE



Certified measurement with S-type meters

01 **MID Tax Certification**
Suitable for official metering and allocation of consumption

02 **DATA READY FOR AUTOMATION**
Direct integration into PLCs, SCADA, and BMS without proprietary gateways

03 **INSTALLATION FROM ELECTRICAL PANEL**
Industrial format, quick wiring, and simple maintenance

04 **SYSTEM SCALABILITY**
From single-user applications to distributed multi-metering systems

05 **MEASUREMENT + COMMUNICATION IN THE SAME DEVICE**
Reduces components, installation time, and points of failure

06 **DATABASE FOR ENERGY EFFICIENCY**

Turns measurements into actionable information



Single-phase / three-phase system

Direct Connection / CT

APPLICATIONS

CERTIFIED BREAKDOWN OF CONSUMPTION

Submetering in multi-tenant buildings, industry, and services.
Precise allocation of energy costs and internal billing.

SUPE ENER

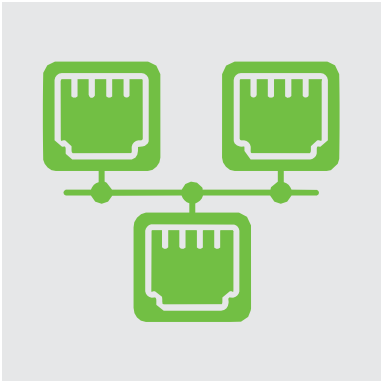
Energy data collection
Manage ment database

GETICI

TRANSMIT



to MID
00



Modbus, RS485, Ethernet, Pulse

PROCESS



BMS, SCADA, Energy Management, Cloud

DECIDE



Energy KPIs, actual costs, anomalies, optimization



Fiscal MID

Pulse Outputs

Integrated Communication

Local Display

DIN Rail Mounting

VISION ETHICS AND ISO 50001

Continuous data for KPIs, audits, and diagnostics.
i for energy management systems.

ENERGY BY LINE AND MACHINE

Energy measurement associated with production.
Cost per batch, efficiency, and predictive maintenance.

UTILITY AND ANOMALY MONITORING

Continuous monitoring of technical systems and auxiliary services.
Detection of faults, abnormal operations, and off-peak consumption.

MID ENERGY METER: WHAT SETS IT APART



MEASURE TO MANAGE

Reliable energy measurement is essential for controlling costs, consumption, and efficiency.

LEGAL VALIDITY OF THE DATA

The meter compliant with the MID Directive provides readings recognized for billing purposes, preventing disputes between users and utility providers.

QUALITY ASSURANCE

The certification attests to metrological accuracy and reliability in accordance with European standards.

APPLICATIONS

Sub-metering, consumption allocation, EV charging, industry, and the service sector.

KEY FEATURES

- Certified accuracy
- Regulatory compliance
- Continuous monitoring
- Single-phase and three-phase applications

CORRECT BILLING

Only certified instruments may be used when the data generates a payment.

CONTRACTUAL PROTECTION

Without a MID, the request for payment of consumption charges may be disputed.

DATA FOR THE DIGITA FACTORY

Integrated into monitoring systems, they enable energy analysis and KPIs.

INCENTIVE SUPPORT

Traceable data helps demonstrate energy efficiency in Transition 4.0/5.0 applications and tax incentives.

S500 SERIES ENERGY METERS

TECHNICAL DATA

	S501-45-MOD-MID	S504C6-ETH-MID-N	S504C-80-ETH-MID	S534-6-MOD-MID	S534-100-MOD-MID
					
	45A Energy Meter Single-phase 2-wire 1 DIN, Modbus, MID	1/5A Energy Meter 3-phase 3/4-wire 4 DIN, Ethernet,	80A Energy Meter 3-phase 4-wire 4 DIN, Ethernet, MID	1/5A Energy Meter Three-phase 3/4-wire 4 DIN, MID	100A Energy Meter 3-phase 3/4-wire 4 DIN, MID
GENERAL DATA					
Power Supply	Derived from the 176-276 Vac (or self-powered)	Self-powered	Self-powered	85–276 VAC; 120–380 VDC	100–276 VAC; 173–480 VAC
Max. power consumption	< 2 W / 10 VA	3.5 VA – 1 W per phase	3.5 VA – 1 W per phase	≤ 2 W / 10 VA per phase	≤ 2 W / 10 VA per phase
Accuracy class Active Power	Class C (MID) - EN 50470-3; Class 1 IEC 62053-21	Class C (MID) - EN 50470-3	Class B (MID) - EN 50470-3	Class C (MID) - EN 50470-3; Class 1 IEC 62053-21	Class C (MID) - EN 50470-3; Class 1 IEC 62053-21
Accuracy class Reactive Power	Class 2 - IEC 62053-23	Class 2 - IEC 62053-23	Class 2 - IEC 62053-23	Class 2 - IEC 62053-23	Class 2 - IEC 62053-23
Operating Temperature	25..+55°C	-25..+55°C	-25..+55°C	-25..+55°C	-25..+55°C
Protection rating	IP51 (front), IP20 (terminals)	IP51 (front), IP20 (terminals)	IP51 (front), IP20 (terminals)	IP51 (front), IP20 (terminals)	IP51 (front), IP20 (terminals)
DIN modules	1	4	4	4	4
Electrical system / Phases	Single-phase	Three-phase	Three-phase	Single-phase / Three-phase	Three-phase
Direct measurement connection	Direct up to 45 A	1/5 ACT	Rated up to 80 A	TA 1/5 A	Direct up to 100 A
Connection	2-wire	3/4-wire	4-wire	3 / 4 wires	3 / 4 wires
Mounting	35 mm DIN rail	35 mm DIN rail	35 mm DIN rail	35 mm DIN rail	35 mm DIN rail
Number of DIN modules	1	4	4	4	4
Display	LCD	LCD	LCD	LCD	LCD
Backlight	Yes	Yes	Yes	Yes	Yes
Dimensions	62x17x119 mm	72x90x64 mm	72x90x64 mm	95x72x65 mm	95x72x65 mm
INPUTS (MEASUREMENT)					
Rated voltage	230 VAC	3×230/400 VAC	3×230/400 VAC	3×230/400 VAC	3×230/400 VAC
Voltage range	85–276 V	±20% Un	±20% Un	±20% Un	±20% Un
Frequency	50/60 Hz	50/60 Hz	50/60 Hz	50/60 Hz	50/60 Hz
Rated current	5 A	1 A / 5 A (TA)	80 A	1 A / 5 A (TA)	100 A
Maximum current	45 A	Depends on the TA	80 A	Depends on the CTs	100 A
Start-up current	~40 mA	~1 mA	~20 mA	10 mA	40 mA
Number of phases	Single-phase	Three-phase	Three-phase	Three-phase	Three-phase
OUTPUTS					
Pulse outputs	2	1	1	2	1–2
Output type	S0/S1 optically isolated	S0 opto-isolated	S0 optically isolated	S0/S1 optically isolated	S0/S1 optically isolated
S1 output	Constant 1000 pulses/kWh (default)	X	X	3200 pulses/kWh	-
S0 output	Configurable	Constant (the weight varies depending on the TA used)	Constant 100 units/kWh (default)	Constant (the weight varies depending on the TA used)	Constant 1000 pulses/kWh (default)
Configurable pulses	Yes	NO (depends on the type of TA used)	NO	Yes	-
Pulse duration (S0)	60 / 100 (default) / 200 ms	50 ms ±2 ms	50 ms ±2 ms	60 / 100 (default) / 200 ms	50 ms ±2 ms
COMMUNICATION					
Interface	RS485	10/100 Mbps Ethernet	Ethernet 10/100 Mbps	RS485	RS485
Protocol	Modbus RTU	Modbus TCP / HTTP/NTP/ DHCP	Modbus TCP / HTTP/NTP/ DHCP	Modbus RTU	Modbus RTU
Baud rate	1200 / 2400 / 4800 / 9600 bps (Seneca default?)	n/a	n.a.	1200 / 2400 / 4800 / 9600 / 19200 bps (Seneca default?)	1200 / 2400 / 4800 / 9600 / 19200 bps (default?)
Parity	None / Even / Odd	n.a.	n/a	None / Even / Odd	None / Even / Odd
Stop bit	1 or 2	n/a	n/a	1 or 2	1 or 2
Addressing	ID 1–247 (default 1)	Static IP (Default 192.168.1.249)/DHCP	Static IP (Default 192.168.1.249)/DHCP	ID 1–247 (default 1)	ID 1–247 (default 1)
CONFIGURATION & APPLICATIONS					
Measured parameters	V, A, Hz, kW, kvar, kVA, PF, kWh/kvarh (1F)	V, A, Hz, kW, kvar, kVA, PF, kWh/kvarh/kVAh (3-phase)	V, A, Hz, kW, kvar, kVA, PF, kWh/kvarh/kVAh + historical data (3-phase)	V, A, Hz, kW, kvar, kVA, PF, kWh/kvarh, THD, demand (3-phase CT)	V, A, Hz, kW, kvar, kVA, PF, kWh/kvarh, THD, demand, DI (3-phase direct)
Active energy	Import / Export	4 quadrants	4 quadrants	Import / Export	Import / Export
Reactive power	Yes	Yes	Yes	Yes	Yes
Internal logging	No	8MB	8MB	No	No
Configuration	Front panel button + LCD	Ethernet web server + display	Ethernet web server + display	Front buttons + RS485	Front buttons + RS485
Software		E-MODBUS-PACK	E-MODBUS-PACK		
Typical Applications	EV charging	Sub-metering	Industrial billing	EMS / Photovoltaic	Industrial EMS
System target	Direct single-phase 45 A	Three-phase with CT	Direct three-phase 80 A	Single-phase / Three-phase with CT	Three-phase direct 100 A
STANDARDS AND CERTIFICATIONS					
MID Directive	2014/32/EU	2014/32/EU	2014/32/EU	2014/32/EU	2014/32/EU
Standards	EN 50470-1, EN 50470-3, EN 61010	EN 50470-1, EN 50470-3, EN 61010	EN 50470-1, EN 50470-3, EN 61010	EN 50470-1, EN 50470-3, EN 61010	EN 50470-1, EN 50470-3, EN 61010
Markings	CE, RoHS, UKCA	CE, RoHS, UKCA	CE, RoHS, UKCA	CE, RoHS, UKCA	CE, RoHS, UKCA

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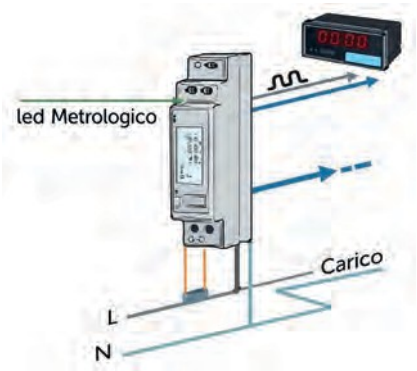
MEASUREMENT PARAMETERS

Parameter / Function	S501-45-MOD-MID	S504C6-ETH-MID-N	S504C-80-ETH-MID	S534-6-MOD-MID	S534-100-MOD-MID
Electrical Configuration	1F	3F	3F	1F / 3F	1F / 3F
Direct listing	✔	✖	✔(80 A)	✖	✔(100 A)
Input via CT	✖	✔(1A / 5A)	✔	✔(1 A / 5 A)	✖
MID certification	✔		✔	✔	✔
Two-way measurement (Import/Export)	✔	✔	✔	✔	✔
Voltage	✔	✔	✔	✔	✔
Current	✔	✔	✔	✔	✔
Active power (P)	✔	✔	✔	✔	✔
Reactive power (Q)	✔	✔	✔	✔	✔
Apparent power (S)	✔	✔	✔	✔	✔
Frequency (Hz)	✔	✔	✔	✔	✔
Power factor (PF)	✔	✔	✔	✔	✔
Active energy (kWh)	✔	✔	✔	✔	✔
Reactive power (kvarh)	✔	✔	✔	✔	✔
Voltage THD	✖	✖	✖	✔	✔
Current THD	✖	✖	✖	✔	✔
Demand / Max demand	✖	✔	✔	✔	✔
Digital Inputs (DI)	✖	✖	✖	✖	✔
External pulse counting	✖	✖	✖	✖	✔
Built-in LCD display	✔	✔	✔	✔	✔
S0 Pulse Output	✔	✔	✔	✔	✔
RS485 Modbus RTU	✔	✔	✔	✔	✔
Ethernet	✖	✔	✔	✖	✖
DIN rail mounting	✔	✔	✔	✔	✔
Typical application	Single-phase sub-metering	MV/LV switchgear	Compact three-phase switchgear	Advanced network analysis	EMS + field signals

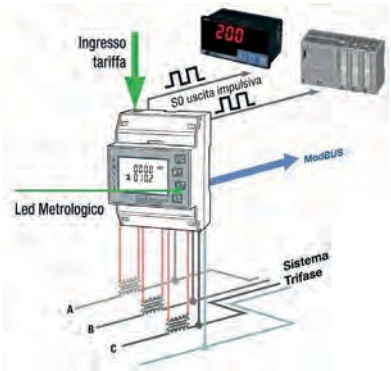
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CONNECTION EXAMPLES

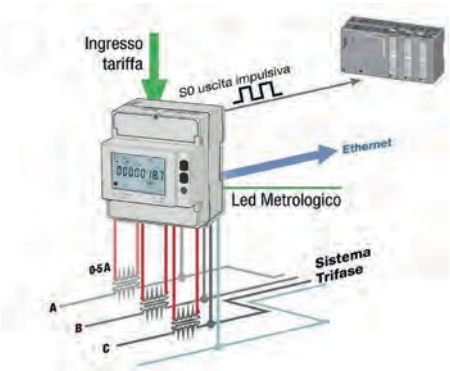
S501-45-MOD-MID



S504C6-ETH-MID-N



S534-100-MOD-MID



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