SMC 118

Analyser and Data Logger for Energy Management Systems

SMC 118 is designed for remote or standalone supervision of single phase loads and sources such as offices, households but also DC converters and chargers, photovoltaic systems etc. It supports measurement of 1 voltage and up to 8 AC or DC (X/4V) currents/powers. It is developed with fast and simple installation on din rail in mind. With split core current sensors the installation can be performed without necessary system decommissioning. Broad range of communication interfaces and protocols allows simple integration into the supervisor systems. Display less design minimizes the attention in places with general public access.

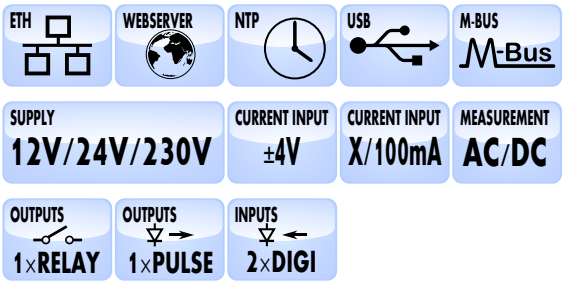
In complex energy management and automation systems the instrument can be well accompanied by other components like SMC 144 and PA 144.

Key features:

- 1 voltage and up to 8 current inputs (8×1 line)
- AC and/or DC measurement of current and voltage
- fully programmable digital output (relay or impulse)
- standard embedded RS-485 interface, optionally Ethernet, USB
- optional second BUS for external modules or 2 additional digital inputs
- features can be upgraded via external I/O modules (with ModBus Master fw. module)

Standard

Optional



Technical specification

METERING	Voltage (ULN)	U [act, avg, avg_{max}, avg_{min}]
	Current (I)	I1, I2, I3, I4, I5, I6, I7, I8 [act, avg, avg_{max}, avg_{min}]
	Power (P)	P1, P2, P3, P4, P5, P6, P7, P8 (import, export, total, 1st harm.) [act, avg, avg_{max}, avg_{min}]
	Reactive Power (Q)	Q1, Q2, Q3, Q4, Q5, Q6, Q7, Q8, (import, export, total, 1st harm.) [act, avg, avg_{max}, avg_{min}]
	Apparent Power (S)	S1, S2, S3, S4, S5, S6, S7, S8 [act, avg, avg_{max}, avg_{min}]
	Harm. Distortion Power (D)	D1, D2, D3, D4, D5, D6, D7, D8 [act, avg, avg_{max}, avg_{min}]
	Power Factor (PF), cosφ	PF1 ÷ PF8, cosφ1 ÷ cosφ8 [act, avg, avg_{max}, avg_{min}]
	Symmetrical Components	-
	Unbalance Factor	-
	Voltage THD (THDU)	THDU
	Current THD (THDI)	THDI1, THDI2, THDI3, THDI4, THDI5, THDI6, THDI7, THDI8
	Individual Harmonics	Harmonics 1st to 50th of Voltage and Current and their angles
	Fundament. Harmonic (Ufh, Ifh)	Ufh, I1fh, I2fh, I3fh, I4fh, I5fh, I6fh, I7fh, I8fh
	Frequency (f)	f
	Active Energy	Import (E1, E2, E3, E4, E5, E6, E7, E8, ΣE), Export (E1, E2, E3, E4, E5, E6, E7, E8, ΣE), Total Import (Tariff 1, Tariff 2, Tariff 3), Total Export (Tariff 1, Tariff 2, Tariff 3)
	Reactive Energy	Ind. (E1, E2, E3, E4, E5, E6, E7, E8, ΣE), Cap. (E1, E2, E3, E4, E5, E6, E7, E8, ΣE), Total Inductive (Tariff1, Tariff2, Tariff3), Total Capacitive (Tariff1, Tariff2, Tariff3)
DATALOGGING	Main Archive	min., max., avg. values of ULN, ULL, I, P, Q, S, D, THDU, THDI, f Avg. values of individual harmonics and their angles, Ufh, Ifh, Symmetrical components, Unbalance factors, state of I/Os
	Electricity Meter Readings	Active and reactive imp. and exp. energy
	Voltage Event logging	-
	Waveforms recording	optional firmware module GO
OTHERS	Alarms	Logical functions, under/over limit of U, I, P, Q, S, unbl, THD, cos, f
	Inputs/Outputs	Optionally: 2 digital inputs, 1 relay or 2 digital output
	Memory Size	512MB
	RTC	seconds, minutes, hours, days, months, years
	Communication	RS485, Ethernet, USB, M-Bus

POWER	aux. voltage	**U**: 75 ÷ 510 V_{AC} / 80 ÷ 350 V_{DC}
		S: 10 ÷ 26 V_{AC} / 10 ÷ 36 V_{DC}
		L: 20 ÷ 50 V_{AC} / 20 ÷ 75 V_{DC}
	power	14 VA / 6 W
	measurement cat.	CAT III / 300 V
INPUT VOLTAGE	measuring range	**230**: 8 ÷ 360 $V_{AC/DC}$
	input impedance	3,24 MΩ (L_i↔N)
	connection	wye, delta, aron
	permanent overload	1500 V_{RMS}
	surge overload	2300 V_{RMS} for 1s
INPUT CURRENT	measuring range	0,02 ÷ 1,2 × I_{NOM}
	permanent overload	2 × I_{NOM}
	surge overload	10 × I_{NOM} for 1s

I/O D	voltage levels	U_L < 3 V, U_H > 10 V, U_{MAX} = 30 V
	input current	3 mA @ 12V / 8 mA @ 24V
I	sr. ratings	60 V_{AC} / 100 V_{DC}, 300 mA
R	relay ratings	230 V_{AC} / 30 V_{DC}, 3 A
OTHER TEMP	operating	-25 ÷ 60°C, <95% non-condens.
	storage	-40 ÷ 85°C, <95% non-condens.
OTHER EMC	emission	EN 61000 – 4 – 2, 3, 4, 5, 6, 11
	immunity	EN 55011, EN 55022 - class A
	protection rating	IP 20
	dimensions	105W × 90H × 58D mm / 0,2 kg

RS-485 (standard), galvanically isolated KMBlong, MODBUS RTU protocols
RS-485 (secondary, **B**), galvanically isolated KMBlong, MODBUS RTU protocols
Ethernet (opt. **E**) KMBlong, MODBUS TCP, 100 Mbit/s
USB 2.0 (opt. **U**) KMBlong, MODBUS RTU protocols
Wi-Fi (opt. **W**) KMBlong, MODBUS
M-Bus (opt. **M**)

voltage	0.1
current	0.2
active power	1
reactive power	2
apparent power	1
PF, cosφ	0.5
frequency	0.05
active energy	1
reactive energy	2
harm. and THD	2
unbalance	0.5
flicker	5

Ordering options

SMC 118 U X/4V R N E

Instrument model
- SMC = Power analyser and datalogger, RS-485
- PA = Power meter and sensor, RS-485

Measuring inputs
- 112 = 1 voltage + 2 current inputs
- 114 = 1 voltage + 4 current inputs
- 118 = 1 voltage + 8 current inputs

Auxiliary power supply
- U = 75 V ÷ 275 VAC, 75 V ÷ 350 VDC
- S = 10 V ÷ 26 VAC, 10 V ÷ 36 VDC
- L = 20 V ÷ 50 VAC, 20 V ÷ 75 VDC

Current inputs
- X/100mA = 100mA AC (indirect measurement)
- X/4V = input for sensors with ±4V output (AC and DC currents)
- Snnn = with low current output CTs, split-core
- Pnnn = with low current output CTs, through-hole

Optional digital output
- N = without output
- R = relay output
- I = pulse output

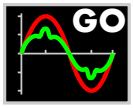
Optional peripheral
- N = without optional peripheral
- B = bus for connection of external modules
- D = two digital inputs

Optional expanding module
- N = without expanding module
- U = USB
- E = Ethernet interface (not combinable with option M)
- W = USB, WiFi

Optional firmware modules

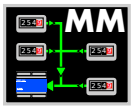
GO module

Module for detection and precise recording of various waveform distortions. This module records the so called oscillograms of voltages and currents in extended detail, capacity and trigger options into the flash memory.



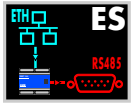
MM Module

The Modbus Master module enhances instruments data logging abilities. By using this module you can configure the instrument to read and store any Modbus registers from any instruments of any manufacturer connected to it's RS-485 line.

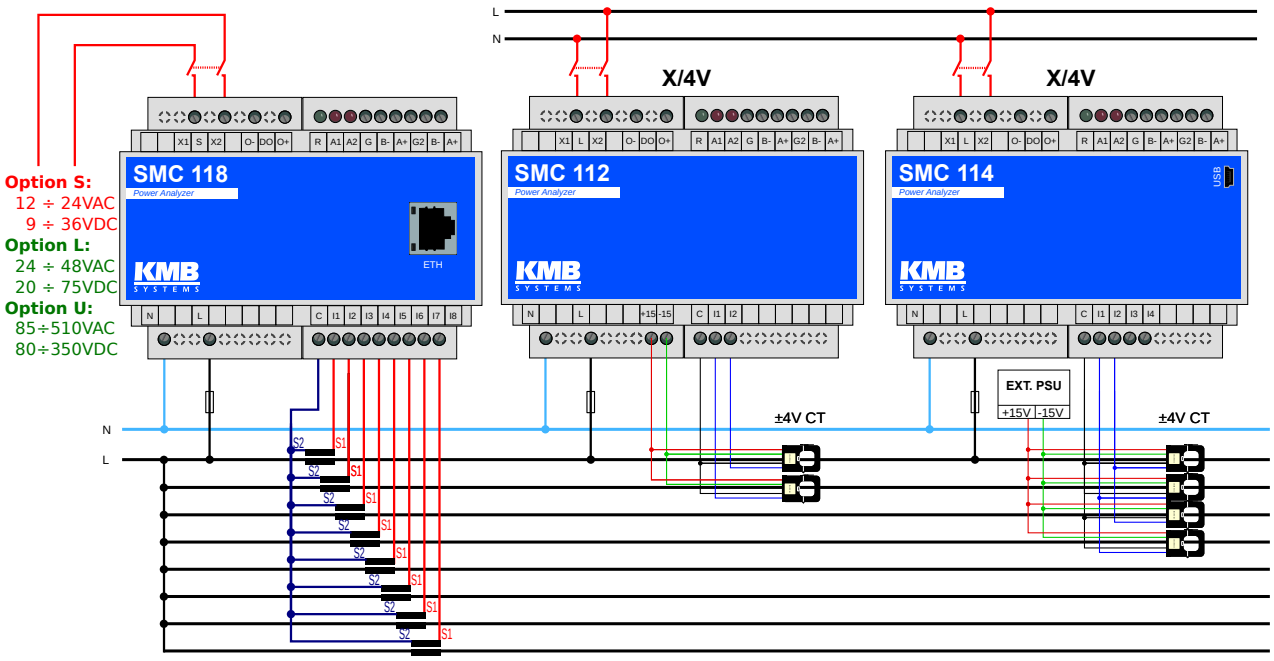


ES Module

The Ethernet to Serial module makes gateway between Ethernet and serial line (RS-485). By using this module you can access your RS-485 instruments over Ethernet.



Typical connection schema



Mechanical dimensions