

# SMY 133

## Power Monitor and Data Logger

**Typical applications:** wide area power quality monitoring in smart grids, live supervision with SCADA, industrial and commercial automation, sub-metering, energy and demand side management.

SMY 133 is an advanced 3-phase multimeter and data logger with large color LCD display. Instrument is designed for monitoring in single- and three-phase MV and HV distribution network stations as well as in regular LV cabinets.

It includes per-phase and three phase active energy meter with separated generation / consumption readings and reactive energy, measured in all four quadrants.

Programmable relays or pulse outputs can control other equipment based on measured values (fan control, over voltage/over current etc). S0 digital outputs translates embedded electricity meter energies to pulses.



### Key features:

- three-phase active and reactive energy meter (kWh, kvarh, L, C, +, -) measures in 4 quadrants
- energy: active 0.5S acc. IEC 62053-22, reactive class 2 (1) acc. IEC 62053-23
- voltage and current: class 0.2, active power 0.5 according to IEC 61557-12
- programmable pulse or relay outputs (option **RR**, **RI**, **II**), built-in temperature, binary input
- 512 MB of internal memory for data logging and energy recording
- continuous sampling 128 s./period, 6.4 kHz, direct & indirect measurement (with VT and CT)
- local USB, optional remote RS 485 or Ethernet communication

#### Standard

INPUTS <b>3U, 3I</b>	MEASUREMENT <b>U, I, P, Q</b>	<b>PF, cos, THD</b>	<b>Wh, varh</b>	HARMONICS <b>50</b>
SAMPLING <b>6,4kHz</b>	FLASH <b>512MB</b>	USB	STANDARDS <b>IEC 61557-12</b>	STANDARDS <b>class 0.5S</b> IEC 62053-22

#### Optional

CURRENT INPUT <b>X/5A</b>	CURRENT INPUT <b>X/100mA</b>	CURRENT INPUT <b>333mV</b>	ETH	WEBSERVER	NTP
RS485	MODBUS	SUPPLY <b>12V/24V/230V</b>	STANDARDS <b>EN 50160</b>	STANDARDS <b>class S</b> IEC 61000-4-30	
OUTPUTS <b>2xRELAY</b>	OUTPUTS <b>2xPULSE</b>	INPUTS <b>1xDIGI</b>			

## Technical specification

METERING	Voltage (ULN, ULL)	U1, U2, U3, U12, U23, U31 [act, avg, avg <sub>max</sub> , avg <sub>min</sub> ]
	Current (I)	IL1, IL2, IL3 [act, avg, avg <sub>max</sub> , avg <sub>min</sub> ]
	Power (P)	P1, P2, P3, 3P (import, export, total, 1 <sup>st</sup> harmonic) [act, avg, avg <sub>max</sub> , avg <sub>min</sub> ]
	Reactive Power (Q)	Q1, Q2, Q3, 3Q (import, export, total, 1 <sup>st</sup> harmonic) [act, avg, avg <sub>max</sub> , avg <sub>min</sub> ]
	Apparent Power (S)	S1, S2, S3, 3S [act, avg, avg <sub>max</sub> , avg <sub>min</sub> ]
	Harm. Distortion Power (D)	D1, D2, D3 [act, avg, avg <sub>max</sub> , avg <sub>min</sub> ]
	Power Factor (PF), cosφ	PF1, PF2, PF3, 3PF, cosφ1, cosφ2, cosφ3, 3cosφ [act, avg, avg <sub>max</sub> , avg <sub>min</sub> ]
	Symmetrical Components	zero, negative and positive sequence components of voltage and current
	Unbalance Factor	unbl, unbU, φnsl
	Voltage THD (THDU)	THDU1, THDU2, THDU3, THDU12, THDU23, THDU31
	Current THD (THDI)	THDI1, THDI2, THDI3
	Individual Harmonics	Harmonics 1 <sup>st</sup> to 50 <sup>th</sup> of Voltage and Current and their angles
	Fundament. Harmonic (Ufh, Ifh)	U1fh, U2fh, U3fh, I1fh, I2fh, I3fh
	Frequency (f)	f
	Active Energy	class 0.5S (62053-22), import/export, per phase, per tariff, total
	Reactive Energy	class 2 (62053-23), 4 quadrants, per phase, per tariff, total
DATALOGGING	Main Archive	min., max., avg. values of ULN, ULL, I, P, Q, S, D, THDU, THDI, f, Avg. values of harmonics and their angles, Ufh, Ifh, Symmetrical components, Unb. factors, state of I/Os
	Electricity Meter Readings	Active and reactive imp. and exp. energy per phase (L1, L2, L3) and per tariff (T1, T2, T3)
	Voltage Event logging	optional firmware module PQ S
	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: 1 digital input, 2 relays or 2 digital outputs
	Memory Size	512MB
	RTC	seconds, minutes, hours, days, months, years
	Communication	USB, RS485, Ethernet

POWER	aux. voltage	U: 85 ÷ 275 V <sub>AC</sub> / 80 ÷ 350 V <sub>DC</sub> S: 10 ÷ 26 V <sub>AC</sub> / 10 ÷ 36 V <sub>DC</sub> L: 20 ÷ 50 V <sub>AC</sub> / 20 ÷ 75 V <sub>DC</sub>
	power	3 VA / 3 W
INPUT	overvoltage cat.	CAT III / 300 V
	VOLTAGE	measuring range 230: 8 ÷ 620 V <sub>LL</sub> / 6 ÷ 360 V <sub>LN</sub> (1.2kV <sub>LN</sub> /1s) 100: 5 ÷ 310 V <sub>LL</sub> / 3 ÷ 180 V <sub>LN</sub> (0.6kV <sub>LN</sub> /1s) 400: 20 ÷ 865 V <sub>LL</sub> / 10 ÷ 600 V <sub>LN</sub> (2kV <sub>LN</sub> /1s)
		measurement category 230, 400: CAT III / 300V 100: CAT IV / 150V
	CURRENT	measuring range X/5A: 5 mA ÷ 7 A (max. 70A/1s) X/100mA: 1 mA ÷ 390 mA (max. 10A/1s) 333mV: 3 mV ÷ 500 mV

I/O	D	voltage levels	U <sub>L</sub> < 3 V, U <sub>H</sub> > 10 V, U <sub>MAX</sub> = 60 V <sub>AC</sub> / 100 V <sub>DC</sub>
	I	input current	1 mA @ 10V / 5 mA @ 24V / 10 mA @ 48V
R	—	semicond. ratings	60 V <sub>AC</sub> / 100 V <sub>DC</sub> , 100 mA
	—	relay switch ratings	250 V <sub>AC</sub> / 30 V <sub>DC</sub> , 5 A
OTHER	TEMP	operating	-25 ÷ 60°C, <95% non-condens. environ.
		storage	-40 ÷ 80°C, <95% non-condens. environ.
	EMC	emission	EN 61000-4-2, EN 61000-4-3, EN 61000-4-4, EN 61000-4-5, EN 61000-4-6, EN 61000-4-11
		immunity	EN 55011 - class A, EN 55022 - class A
		protection rating	IP 40 (optional IP 54) front panel
		dimensions	96W × 96H × 58D mm / 0,3 kg

COMMUNICATION	Local USB 2.0 (standard) KMBLong, MODBUS RTU protocols Connector type Mini-B
	RS-485 (opt. 4) galvanically isolated KMBLong, MODBUS RTU protocols 2400 ÷ 921600 baud
	Ethernet 10Base-T (opt. E) KMBLong, MODBUS TCP protocols 10 Mbit/s

ACCURACY (IEC 61557-12)	Voltage	0.2
	Current	0.2
	Active Power	0.5
	Reactive Power	1
	Apparent Power	0.5
	PF, cosφ	0.5
	Frequency	0.02
	Active Energy	0.5
	Reactive Energy	2
	Harm. and THD	2
	Unbalance	0.5

## Ordering options

	SMY 133	U	230	X/5A	RR	E
<b>Instrument Model</b>						
SMY 133 = Power analyser, datalogger, 3U, 3I						
<b>Auxiliary Power Supply</b>						
U = 85 V ÷ 275 VAC, 80 V ÷ 350 VDC						
S = 10 V ÷ 26 VAC, 10 V ÷ 36 VDC						
L = 20 V ÷ 50 VAC, 20 V ÷ 75 VDC						
<b>Nominal Measuring Voltage</b>						
230 = 230V/400V						
100 = 57,7V/100V						
400 = 400V/690V						
<b>Current Inputs</b>						
X/5A = 5A AC (standard indirect measurement)						
X/1A = 1A AC (standard indirect measurement)						
X/100mA = 100mA AC (indirect measurement)						
333mV = input for sensors with 333mV output						
<b>Digital I/O</b>						
N = without I/O						
RR = 2× relay output + 1× logical input 24V						
RI = 1× relay output + 1× pulse output + 1× logical input 24V						
II = 2× pulse output + 1× logical input 24V						
<b>Communication Interface</b>						
N = USB, no remote comm. link						
4 = USB, RS-485						
E = USB, Ethernet 10BaseT						

## Optional firmware modules

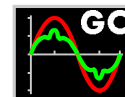
### PQ S Module

Module for evaluation of power quality according to EN50160 (class S). Enables measurement and recording of flicker indices, interharmonics and voltage events. Power quality is evaluated weekly and stored to special PQ Main archive for future processing.



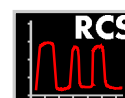
### GO module

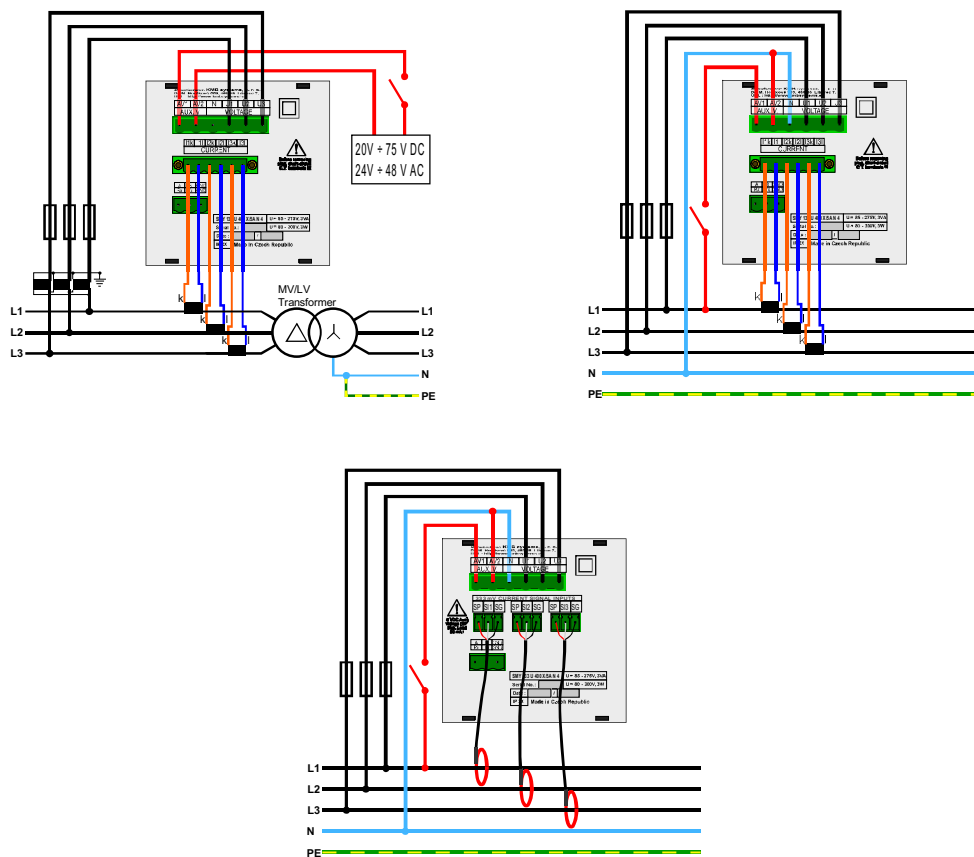
Module for detection and precise recording of various waveform distortions. This module records the so called oscillograms of voltages and currents in extended detail, capacity and trigger options into the flash memory.



### RCS module

The RCS module (ripple control signal, mains voltage or signalling voltage) activates an ability to detect, evaluate, decode and store RCS messages transmitted over the monitored distribution network. It precisely measures voltage on the selected frequency and stores the extracted information into a special archive in memory.





Technical drawing of the SMY 133 multifunctional panel meter. The drawing includes a front view and a side view.

**Front View Dimensions:**

- Width: 96
- Height: 96

**Front View Details:**

- Model Name: **SMY 133**
- Description: multifunctional panel meter
- Display Readings:
  - 250.1 V
  - 249.9 V
  - 250.3 V
  - 249.8 V
  - 123456789 kW
- Visual Elements: A circular gauge with a red needle and a sine wave diagram.
- Buttons: Five white triangular buttons at the bottom and a green button on the left side.
- Logo: **KMB SYSTEMS** at the bottom left.
- Icons: A USB icon and a Wi-Fi icon at the bottom right.

**Side View Dimensions:**

- Width: 59
- Height: 92

**Side View Details:**

- Shows the profile of the meter with a green button on the left side.