SMU33, SMU44

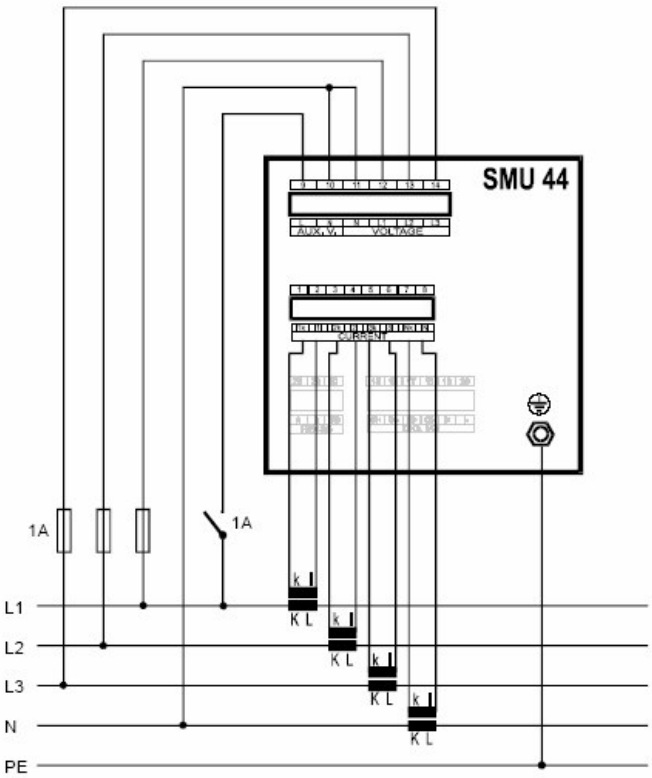
Measuring and logging panel instruments

- measuring of electric quantities in three phase (from three- to five-wire) networks of nominal voltage up to 440V AC directly, or via voltage transformers
- 5A and 1A nominal current inputs
- SMU33…3 voltage + 3 current inputs; SMU44…4 voltage + 4 current inputs
- sampling rate 128 samples/period, Total Harmonic Distortion and harmonics of voltage and current evaluation up to the 25. order
- four-quadrant three tariff electricity meter, single phase and three phase energies, automatic reading savings
- quarter-hour maximum demand recording
- built-in temperature sensor
- record into the memory of up to 512 kB or 8 MB
- real time counter with time synchronization capability
- USB 2.0 local communication link at front panel for comfortable setting and recorded data download
- Retis software for both on-line supervising and off-line processing of recorded data
- remote link interface : optionally RS-232, RS-485, Ethernet, Wifi, Bluetooth
- optionally two relay or pulse outputs, programmable function
- one logic input (for monitoring or time synchronization)
- wide range auxiliary voltage
- panel dimensions 96x96 mm

Displayed quantities

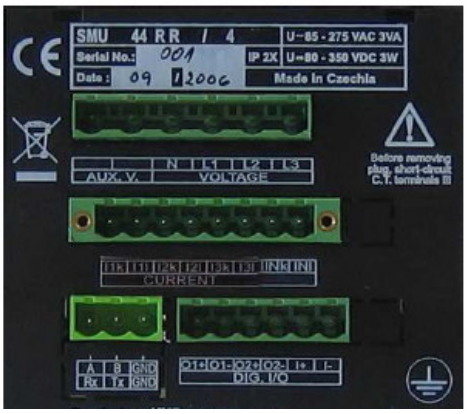
Indication	Displayed quantities
V_{LL}	line voltages + voltage unbalance
V_{LN}	phase voltages
A	phase currents
W	1-phase active powers + 3-phase active power
var	1-phase reactive powers + 3-phase reactive power
VA	1-phase apparent powers + 3-phase apparent power
PF	1-phase power factors + 3-phase power factor
cos	1-phase power factors of fundamental harmonic
THD - V_{LN}	THD of phase voltages
THD – A	THD of phase currents
harm - V_{LN}	harmonics of phase voltages (1st ÷ 25th)
harm - A	harmonics of phase currents (1st ÷ 25th)
En 1p	1-phase energies (4 quadrants)
En 3p	3-phase energies (4 quadrants x 3 tariffs)
1/4h P	quarter-hour sliding avg active 3-p power, instantaneous + maximum
Hz, °C	frequency + temperature

Typical connection

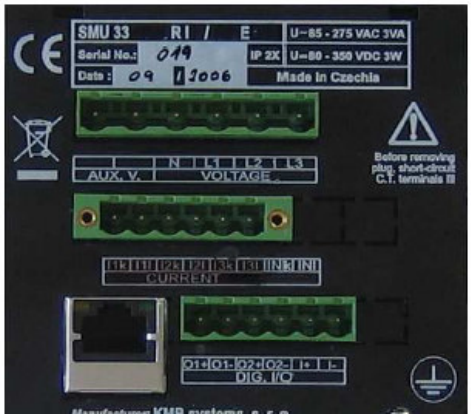


Rear panel

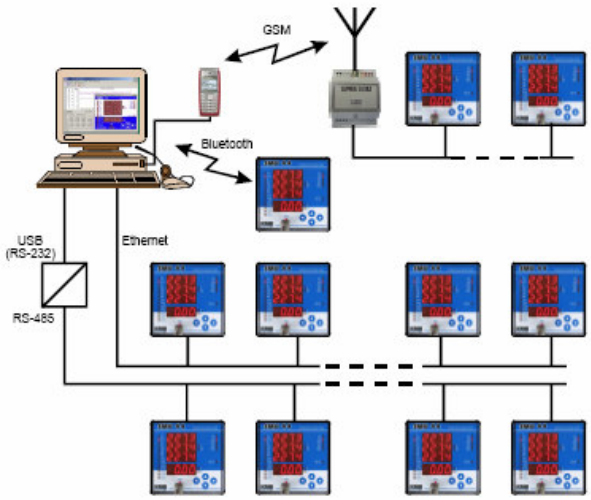
SMU44 RR / 4 (4 current inputs, 2 output relays, 1 logic input, RS-485)



SMU33 RI / E (3 current inputs, 1 output relay, 1 pulse output, 1 logic input, Ethernet)



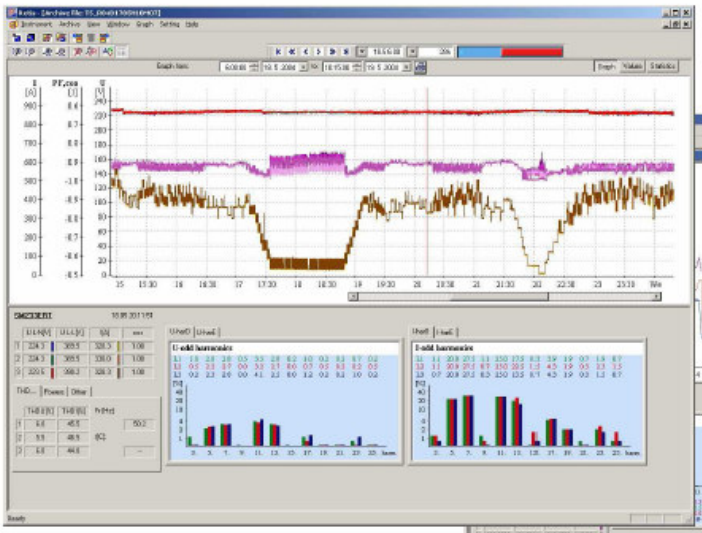
Remote communication possibilities



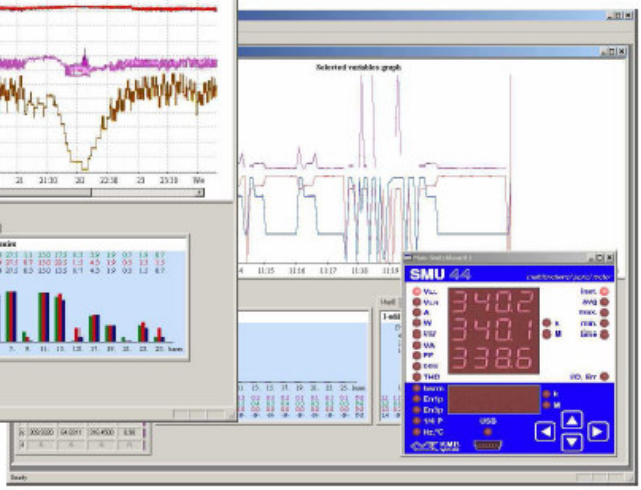
Software „RETIS“

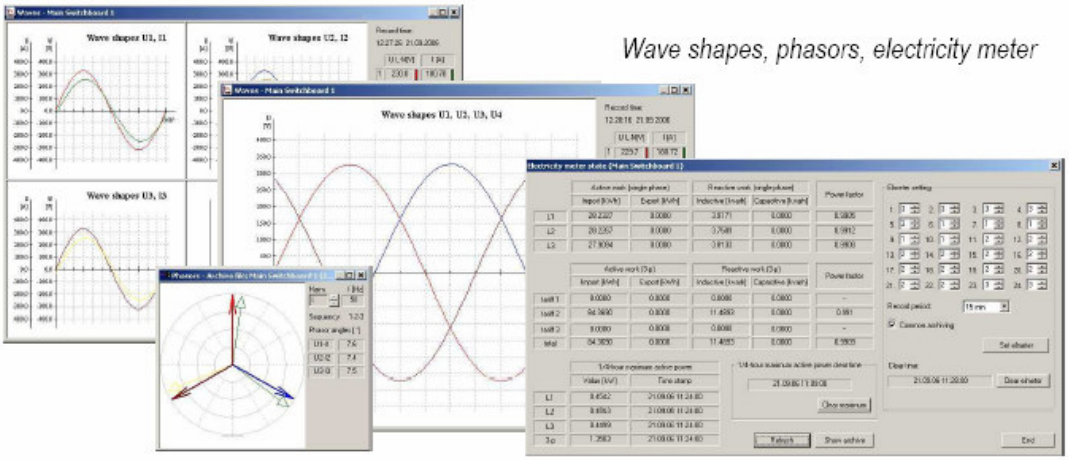
- setting of instruments, viewing, transfer and archiving of the data measured
- viewing values of variables in a graphic format with a digital cursor and multiple zoom-in
- voltage and current wave shape display, phasor diagram
- energy reading periodic recording
- statistic processing – sliding window average, min/max, energy calculation
- data export into CSV files (for further processing in spreadsheets)
- printing of measuring reports, graphs and others

Data recorded



Actual data





Wave shapes, phasors, electricity meter

Technical parameters

Measured quantities

voltage : direct connection connection via VT	5÷1380V_{AC} / 3÷800V_{AC} (line / phase) 2÷270V_{AC} / 1÷160V_{AC} (line / phase)
voltage accuracy	± 0.5 % of rdg ± 0.1 % of range ± 1 digit
frequency	45 ÷ 65 Hz
frequency accuracy	± 0.02 %
current : for CTs xxx / 5 A for CTs xxx / 1 A	0.002 ÷ 8 A_{AC} 0.002 ÷ 1,6 A_{AC}
current accuracy	± 0.5 % of rdg ± 0.1 % of range ± 1 digit
active, reactive, apparent power	corresponds to U and I ranges
power accuracy	± 0.5 % of rdg ± 0.5 % of range ± 1 digit
active, reactive energy (4 quadrants)	corresponds to U and I ranges
energy accuracy	class 2, EN 62053-21, EN 62053-23
power factor (accuracy)	0.00 ÷ 1.00 (±1 % ± 1 digit)
cos φ (accuracy)	-1.00 ÷ +1.00 L,C (±1 % ± 1 digit)
THD (accuracy)	up tp 25th order, 0÷200%, (±2 % ± 1 digit, for U, I > 10 % of measuring range)
temperature (inside instrument), accuracy	-25 ÷ 60 °C, typically ± 3 °C

Other parameters

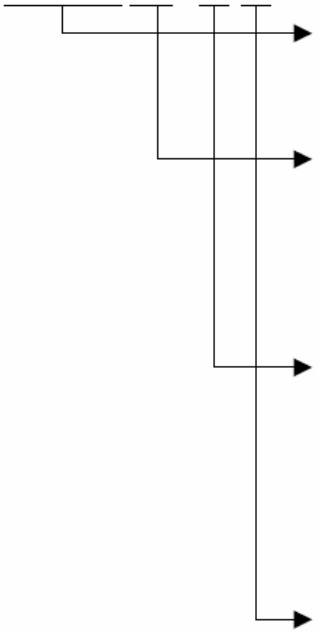
voltage inputs impedance	880 kΩ (L – PE)
voltage inputs permanent overload (IEC 258)	800V_{AC} - U_L - U_{PE}
voltage inputs peak overload	1200V_{AC} - U_L - U_{PE} / 1 minute
current inputs burden	< 0.5 / 0.02 VA (R_i < 10 mΩ)
current inputs permanent overload (IEC 258)	14 A_{AC}
current inputs peak overload	70 A_{AC} / 1 second
auxiliary voltage	85 ÷ 275 V_{AC} / 45 ÷ 450 Hz, 80 ÷ 350 V_{DC}
auxiliary supply power	5 VA / 4 W
overvoltage class, pollution degree	III / 2 – in compliance with EN 61010-1
operational environment	class C1, IEC 654-1
operational temperature	-25 ÷ 60°C
storage temperature	-40 ÷ 85°C
operational humidity	< 95 % - non-condensing
EMC – noise suppression level	EN 50081-2, EN 55011 , class A EN 55022 , class A (not for home use)
EMC – immunity	EN 61000-6-2
local communication port	USB 2.0
remote communication port	opt. RS485 / RS232 / Ethernet / Wifi / Bluetooth

Design

protection class	IP 41 (IP 54 with protection sheet), rear panel IP 20
dimensions, weight	panel - 96x96 mm, built-in depth 80 mm, 0.3 kg
panel cutout	91x91 mm

Model marking

Example : **SMU33 RI / 4 8**



instrument model :

SMU33	3 voltage + 3 current inputs
SMU44	4 voltage + 4 current inputs

inputs / outputs

	without I / O
RR	2 relay outputs + 1 logic input
II	2 pulse outputs+ 1 logic input
RI	1 relay output + 1 pulse output + 1 logic input

remote communication link interface type

–	without remote communication link
2	RS-232
4	RS-485
E	Ethernet 10BaseT
W	Wifi 802.11b
B	Bluetooth

memory

–	512 kB
8	8 MB