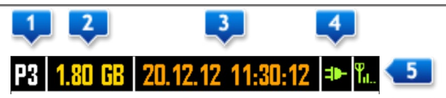
Sonel PQM-702 / 702T / 703 / 710 / 711

Power Quality Analyzers ● Quick Start

v1.00 | 12.09.2019

CLASS A (IEC 61000-4-30) · CAT IV 600 V · EVENTS · TRANSIENT RECORDER (PQM-703 • PQM-711) · OR-1 (PQM-702 • PQM-702T PQM-703) · WiFi (PQM-710 • PQM-711) · GSM · GPS · 55°C HEAVY DUTY -20°C · TEMPERATURE PROBE (PQM-702T) · IP65

Top bar



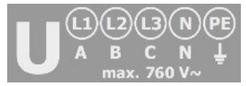
1 Number of active measurement configuration
2 Available space on the memory card
3 Date and time (DD:MM:YY, HH:MM:SS)
4 Power supply indicator
5 GSM signal indicator

Li-Ion BATTERY
3.7 V
4.4 Ah

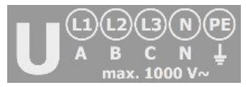
External AC power
MAX. 100…690 V AC
MAX. 40…70 Hz

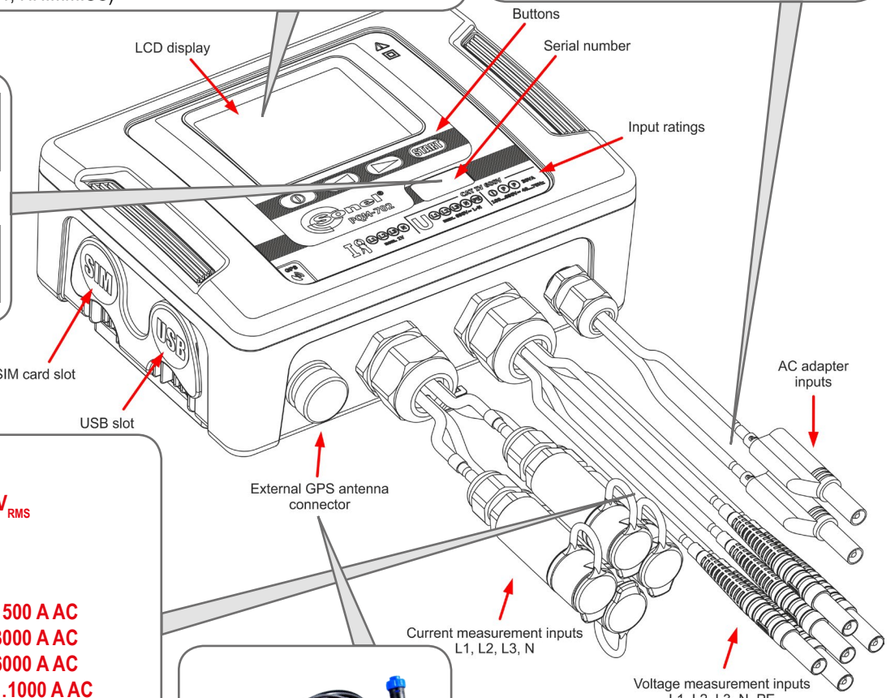
External DC power
MAX. 140…690 V

Maximum input voltage



or





Measurement inputs

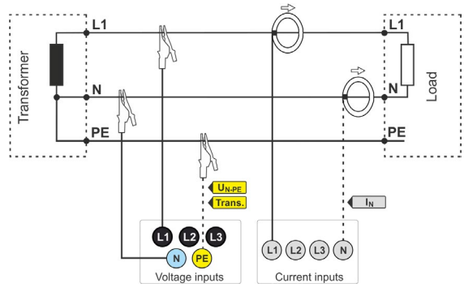
Voltage - 5 inputs
L1, L2, L3, N, PE
AC: **MAX. 760 V_{RMS}** or **1000 V_{RMS}**
DC: **±760 V** or **±1000 V**
referred to ground

Current - 4 inputs
Flexible probes: **F-xA1: 1…1500 A AC**
F-xA: 3…3000 A AC
F-xA6: 6…6000 A AC
Hard clamps: **C-4A: 0.1…1000 A AC**
C-5A: 0.5…1000 A AC/DC
C-6A: 0.01…10 A AC
C-7A: 0.1…100 A AC

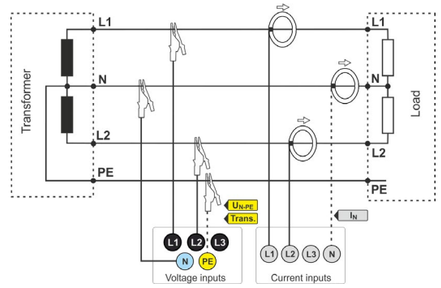
Only flexible current probes can be used outside of rooms (IP65 ingress protection).

Mains systems

Single-phase

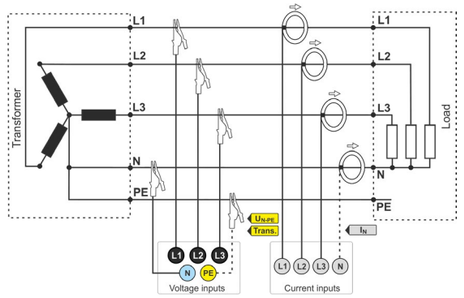


Split-phase

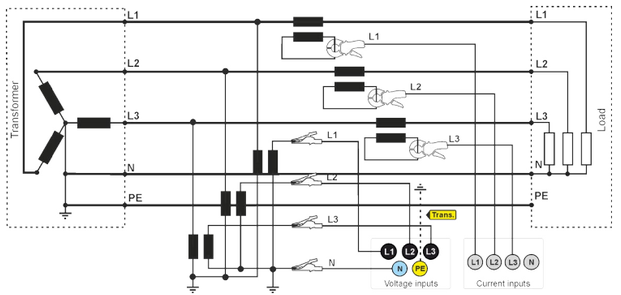


3-phase 4-wire (WYE with a neutral conductor)

Direct connection

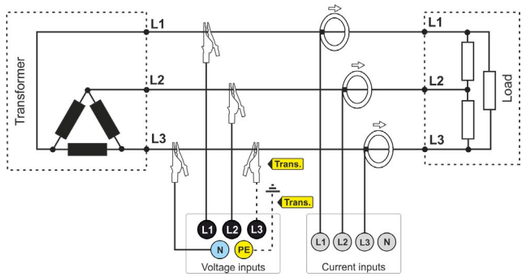


Connection with transducers

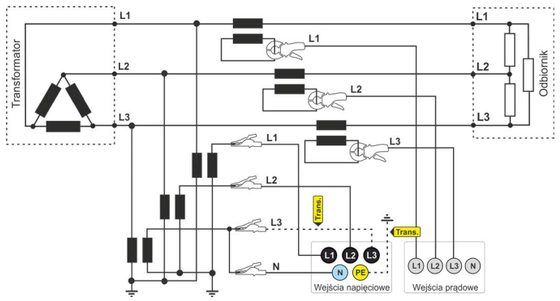


3-phase 3-wire (Delta)

Direct connection



Connection with transducers



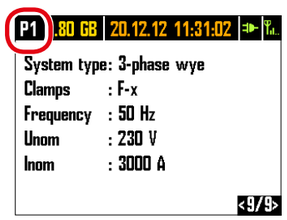
In the Delta system, in order to ensure the correct of measurements, the N conductor must be connected to the L3 phase.

Quick start

1 Turn on the analyzer

2 Check the configuration

Check if the desired configuration of the analyzer is active.



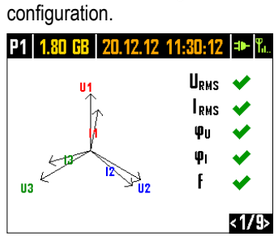
3 Connect

Connect the analyzer to the measured network acc. to this configuration. Check if the connection is correct.

Arrows on all clamps are to be pointed towards the electrical load.

4 Check

Check if you have connected the analyzer according to the configuration.



5 Start

Press **START/STOP** to start recording.

P1 Active configuration symbol flashes. **Tone notice** sounds: 3 short signals.

6 Stop

Press **START/STOP** to finish recording.

P1 Active configuration symbol stops flashing. **Tone notice** sounds: 1 long and 3 short signals.

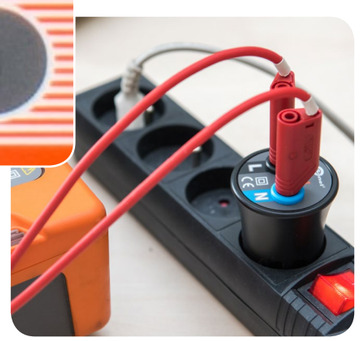
7 Turn off the analyzer

Hold the button to turn off the analyzer.

From preparations to data analysis

1 Turn on the analyzer and check the battery

Turn the instrument on and check the battery status. If it is depleted ( ) connect the analyzer to external power.



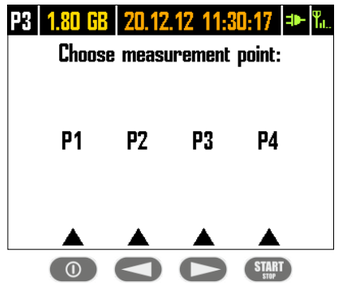
Remember to upload the measurement configuration to the instrument (using **Sonel Analysis** software) before going into the field.

2 Activate a configuration

To change the active configuration, press simultaneously buttons ◄ ► and hold them for ≥1 s.

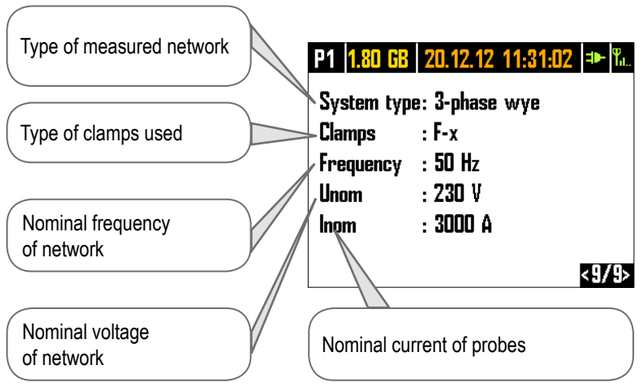
Choose the desired configuration (**P1**, **P2**, **P3**, **P4**) by pressing the assigned button.

Alternatively, use the **Sonel Analysis** software (**Control** menu) to activate the configuration.

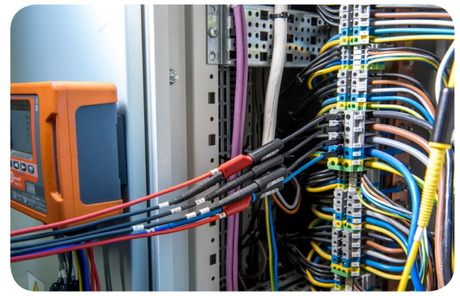


3 Check the configuration

Using buttons ◄ ► go to screen no. 9 in order to get information about the selected measurement configuration.



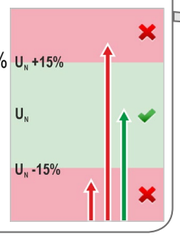
4 Connect the analyzer to the network acc. to the configuration



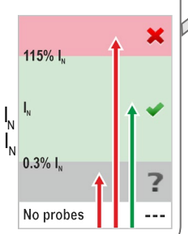
- Arrows on all clamps are to be pointed towards the electrical load.
- Pay special attention to connecting the analyzer in systems with transducers. In these systems, C-6A clamps will be useful - they are dedicated to measure current at transducers.

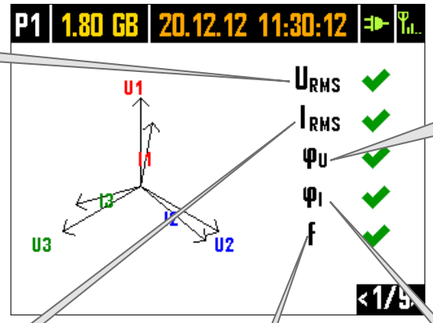
5 Check the network status and the analyzer connection status

RMS voltages
- ✔ U_{RMS} within ±15% U_N range
- ✖ U_{RMS} outside of ±15% U_N range



RMS currents
- ✔ I_{RMS} within 0.3%...115% I_N range
- ✖ I_{RMS} exceed 115% I_N
- ? I_{RMS} below 0.3% I_N
- - - current probes not selected

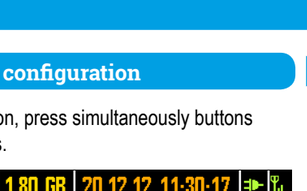




Frequency
- ✔ is within ±10% f_N range
- ✖ is outside the ±10% f_N range
- ? too low voltage: <10 V

In Sonel instruments, the clockwise phase sequence is assumed to be correct.

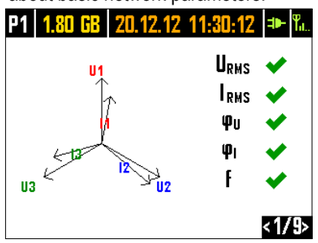
Voltage angles - phase succession (clockwise)
- ✔ angles of the range of ±30% of the theoretical values 0°, 120°, 240°
- ? too low voltages: <1% U_N
- ✖ incorrect angles

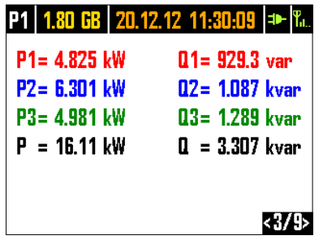


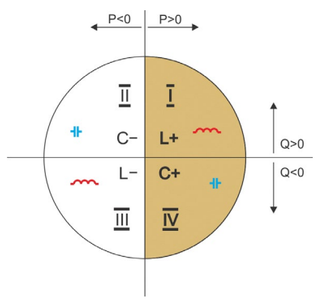
Current angles - relative to voltage
- ✔ current vectors are within ±55° range in relation to corresponding voltage vector
- ✖ at least one current vector is outside the acceptable range ±55°
- ? too low currents: <0.3% I_N

6 Check the readings

Using buttons ◄ ► switch the screens. This way you will see information about basic network parameters.







Energy reception
- Active power P:
  P > 0 - in each phase
- Reactive power Q:
  Q > 0 - inductive character
  Q < 0 - capacitive character

Energy generation
- Active power P:
  P < 0 - in each phase
- Reactive power Q:
  Q < 0 - inductive character
  Q > 0 - capacitive character

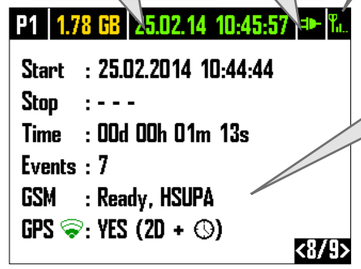
7 Verify additional information

Using buttons ◄ ► go to screen no. 8 in order to verify additional parameters of the recording process.

Time sync:
- according to GPS
- according to RTC

Power

GSM antenna status



GSM modem status:
- ready (GPRS, EDGE, HSUPA, UMTS)
- off
- no SIM card

Before starting measurements, make sure that:
- the correct configuration is active and the memory is available,
- RTC clock is synchronized with GPS (**green date and time**),
- power is connected ( ) (**battery life only up to 2 hours**),
- the SIM card is correctly installed in the socket,
- GSM signal is sufficient (GPRS connection is the slowest),
- unused sockets and holes are secured with plugs.

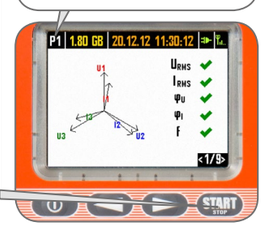
8 Start recording

START/STOP Press **START/STOP**

or

use **Sonel Analysis** software.

P1 Active configuration symbol flashes. **Tone notice sounds**: 3 short signals.

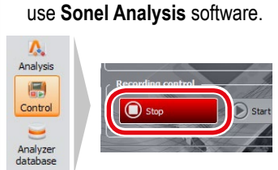


9 Finish recording

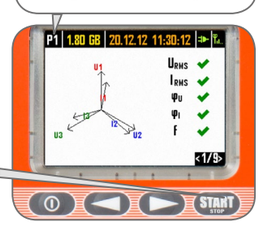
START/STOP Press **START/STOP** for 3 s

or

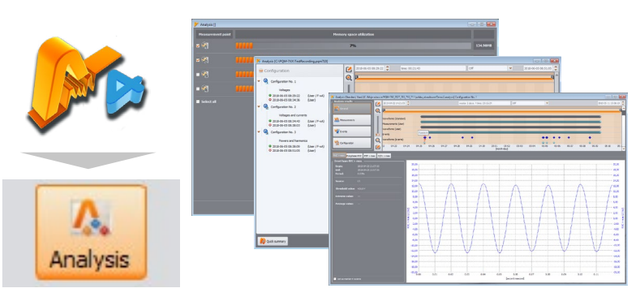
use **Sonel Analysis** software.



P1 Active configuration symbol stops flashing. **Tone notice** sounds: 1 long and 3 short signals.



10 Read data



Use the latest version of **Sonel Analysis** to download and analyze data.

11 Turn off the analyzer and disconnect it from the network

Press and hold the button to turn off the analyzer.

The saved data can be read directly at the measurement site or after returning to the office - after switching the instrument on again.