

# Sonei PQM-702 / 702T / 703 / 710 / 711

Power Quality Analyzers • Quick Start



Top bar

1 2 3 4 5

**P3 1.80 GB 20.12.12 11:30:12**

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

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**

U<sub>A</sub> (L1, L2, L3, N, PE) max. 760 V<sub>RMS</sub>  
 or  
 U<sub>B</sub> (L1, L2, L3, N, PE) max. 1000 V<sub>RMS</sub>

**Measurement inputs**

**Voltage - 5 inputs**  
 L1, L2, L3, N, PE  
 AC: **MAX. 760 V<sub>RMS</sub>** or **1000 V<sub>RMS</sub>**  
 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.

**P1** .80 GB 20.12.12 11:31:02

System type: 3-phase wye  
 Clamps : F-x  
 Frequency : 50 Hz  
 Unom : 230 V  
 Inom : 3000 A

**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.

U<sub>RMS</sub> ✓  
 I<sub>RMS</sub> ✓  
 φ<sub>U</sub> ✓  
 φ<sub>I</sub> ✓  
 F ✓

**5 Start**

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

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

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

**6 Stop**

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

**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

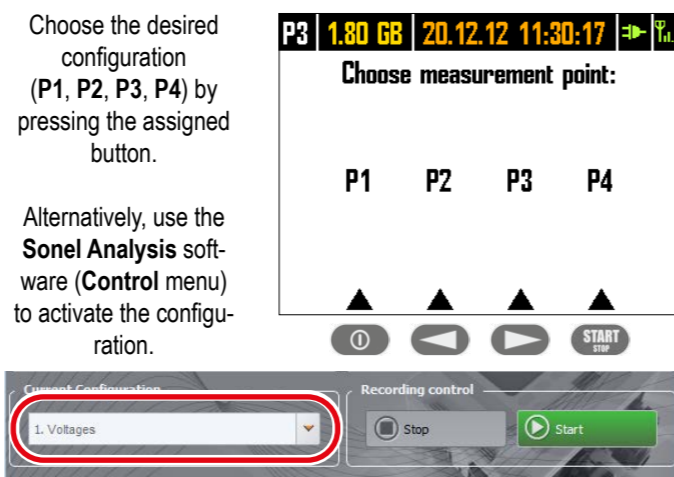
Turn the instrument on and check the battery status. If it is depleted connect the analyzer to external power.



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

## 2 Activate a configuration

To change the active configuration, press simultaneously buttons  $\leftarrow$   $\rightarrow$  and hold them for  $\geq 1$  s.

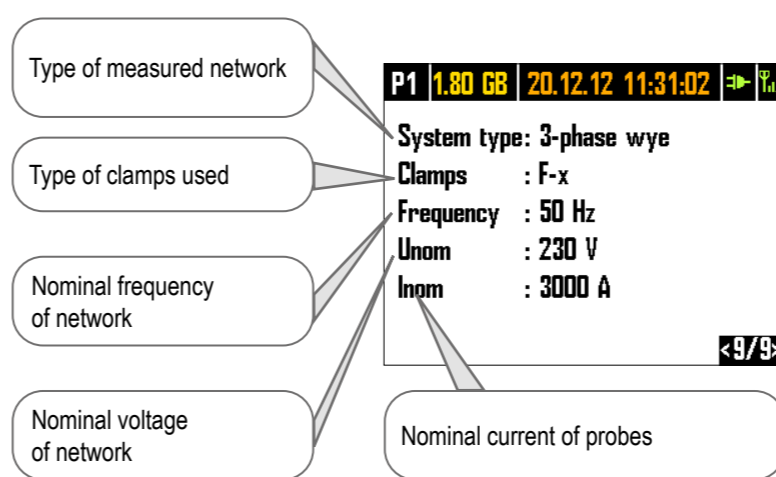


Choose the desired configuration (P1, P2, P3, P4) by pressing the assigned button.

Alternatively, use the Sone! Analysis software (Control menu) to activate the configuration.

## 3 Check the configuration

Using buttons  $\leftarrow$   $\rightarrow$  go to screen no. 9 in order to get information about the selected measurement configuration.



Type of measured network

Type of clamps used

Nominal frequency of network

Nominal voltage of network

Nominal current of probes

## 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  $\pm 15\%$   $U_N$  range
- ✗  $U_{RMS}$  outside of  $\pm 15\%$   $U_N$  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

**Voltage angles - phase succession** (clockwise)

- ✓ angles of the range of  $\pm 30\%$  of the theoretical values  $0^\circ, 120^\circ, 240^\circ$
- ✓ too low voltages:  $< 1\% U_N$
- ✗ incorrect angles

**Frequency**

- ✓ is within  $\pm 10\%$   $f_N$  range
- ✗ is outside the  $\pm 10\%$   $f_N$  range
- ✗ too low voltage:  $< 10$  V

**Current angles - relative to voltage**

- ✓ current vectors are within  $\pm 55^\circ$  range in relation to corresponding voltage vector
- ✗ at least one current vector is outside the acceptable range  $\pm 55^\circ$
- ✗ too low currents:  $< 0.3\% I_N$

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

## 6 Check the readings

Using buttons  $\leftarrow$   $\rightarrow$  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  $\leftarrow$   $\rightarrow$  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

**Start** : 25.02.2014 10:44:44  
**Stop** : - - -  
**Time** : 00d 00h 01m 13s  
**Events** : 7  
**GSM** : Ready, HSUPA  
**GPS** : YES (2D + )

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

Press **START/STOP** or use Sone! Analysis software.

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

## 9 Finish recording

Press **START/STOP** for 3 s or use Sone! 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 Sone! 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.