

Power Calibration System

# PCS ME 1.0



## Features

PCS ME 1.0 and EnergoEtalon™ software form a state-of-the-art reference setup that provides:

- **Extremely high accuracy of measurements;**
- **Versatility required for testing/calibration of high-end measuring instruments for AC and DC determinations;**
- **Extended frequency range for power quality measurements (16...3000Hz frequency bandwidth).**

## Can be applied as

- **Standard of Active and Reactive Electrical Power for both sine and distorted signals;**  
Active and reactive power measurements:

Power factor	Expanded uncertainty of measurements
PF = 1	0.004%
PF = 0.5	0.006%

- **AC Voltage and AC current Standards for sine and distorted signals with the following characteristics;**  
Voltage and current measurements:

Parameter	Range	Expanded uncertainty of measurements
Voltage	0.01...530V	0.004%
Current	0.01...40A	0.004...0.006%
Phase angle U^I	0...360°	0.0015° at 50Hz

- **Analyzer of harmonic and interharmonic parameters;**
- **System for ratio measurements (scalar and vectorized quantities).**

## Who needs PCS ME 1.0?

- National Measurement Institutes and standard laboratories may use it as a multifunctional calibration system for electrical energy and power quality applications;
- Metrological service departments of power industry enterprises;
- Research and design departments and laboratories that conduct products testing.

## Extra functionality

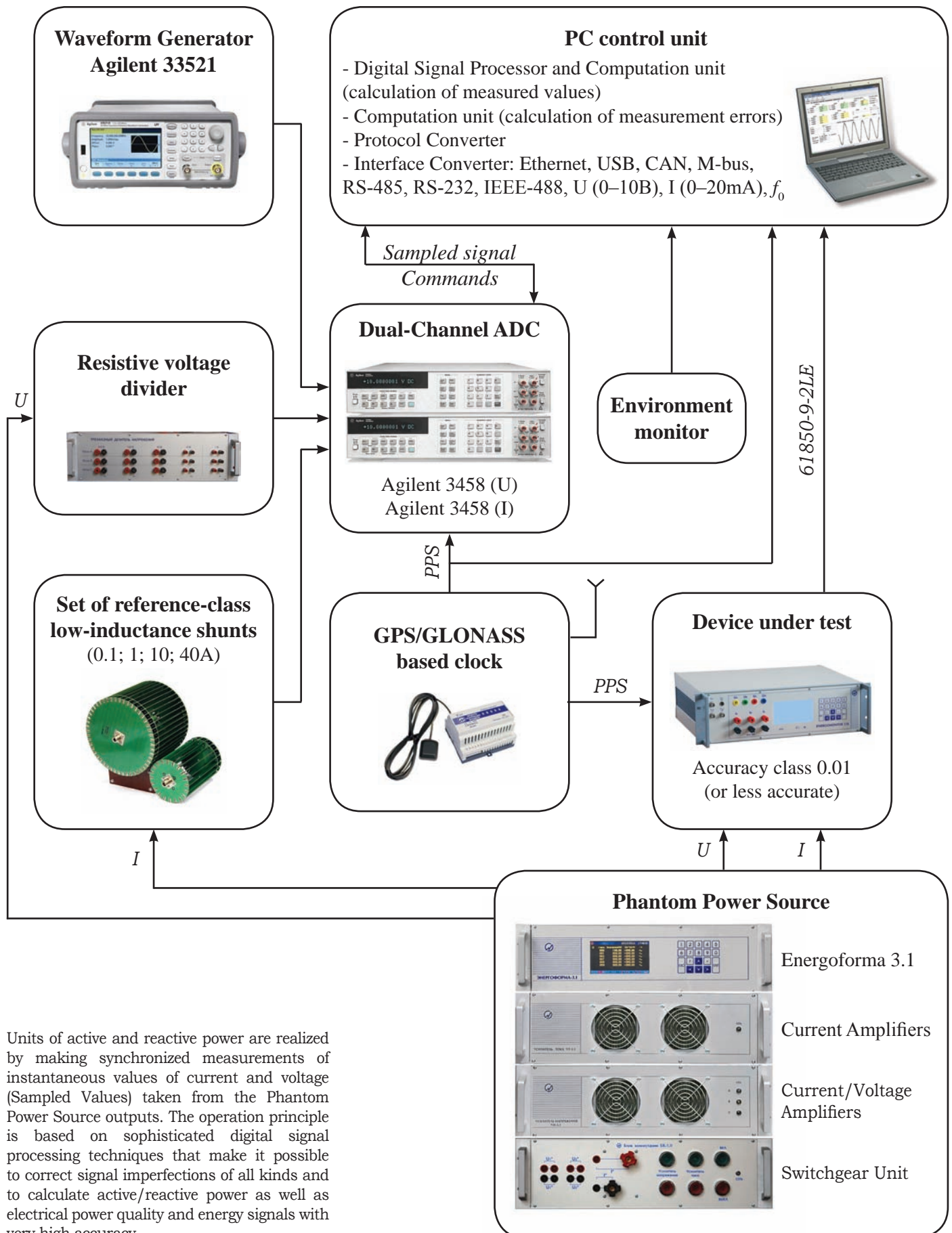
- Traceable calibration of instruments making up Digital Substation infrastructure: non-conventional digital (electronic) current and voltage transformers, merging units with analogue input/output (IEC 61850-9-2LE).
- *With EnergoEtalon™-61850 software*  
Operates with devices supporting digital communication interface (IEC 61850-9-2 LE), e.g. non-conventional instrument current/voltage transformers or power quality analyzers.
- *With EnergoEtalon™-PMU software*  
Provides for calibration of the most precision Phasor Measurement Units.

## Great opportunity

We offer an outstanding opportunity to get either the entire calibration setup or any part of it (that can be easily integrated in the equipment already installed in your lab). Considering that most of its blocks are typical “on-the-shelf” equipment you may purchase just EnergoEtalon software as a key component of the system.

		minimum (I)	maximum (I+II)
<b>EnergoEtalon™ software</b>		✓	✓
Three-phase AC Voltage/Current Phantom power source	Energoforma		✓
Dual-Channel ADC	Agilent 3458A multimeters		✓
Resistive voltage divider	480; 240; 120; 60 B		✓
Arbitrary waveform generator	Agilent 33521		✓
Set of reference-class low-inductive shunts	0.1; 1; 10 (5); 40 A		✓
Workstation			✓
GPS/GLONASS based clock			✓
Environment monitor (pressure, humidity, temperature)			✓

## Block diagram and operation principle



Units of active and reactive power are realized by making synchronized measurements of instantaneous values of current and voltage (Sampled Values) taken from the Phantom Power Source outputs. The operation principle is based on sophisticated digital signal processing techniques that make it possible to correct signal imperfections of all kinds and to calculate active/reactive power as well as electrical power quality and energy signals with very high accuracy.

# EnergoEtalon™ software

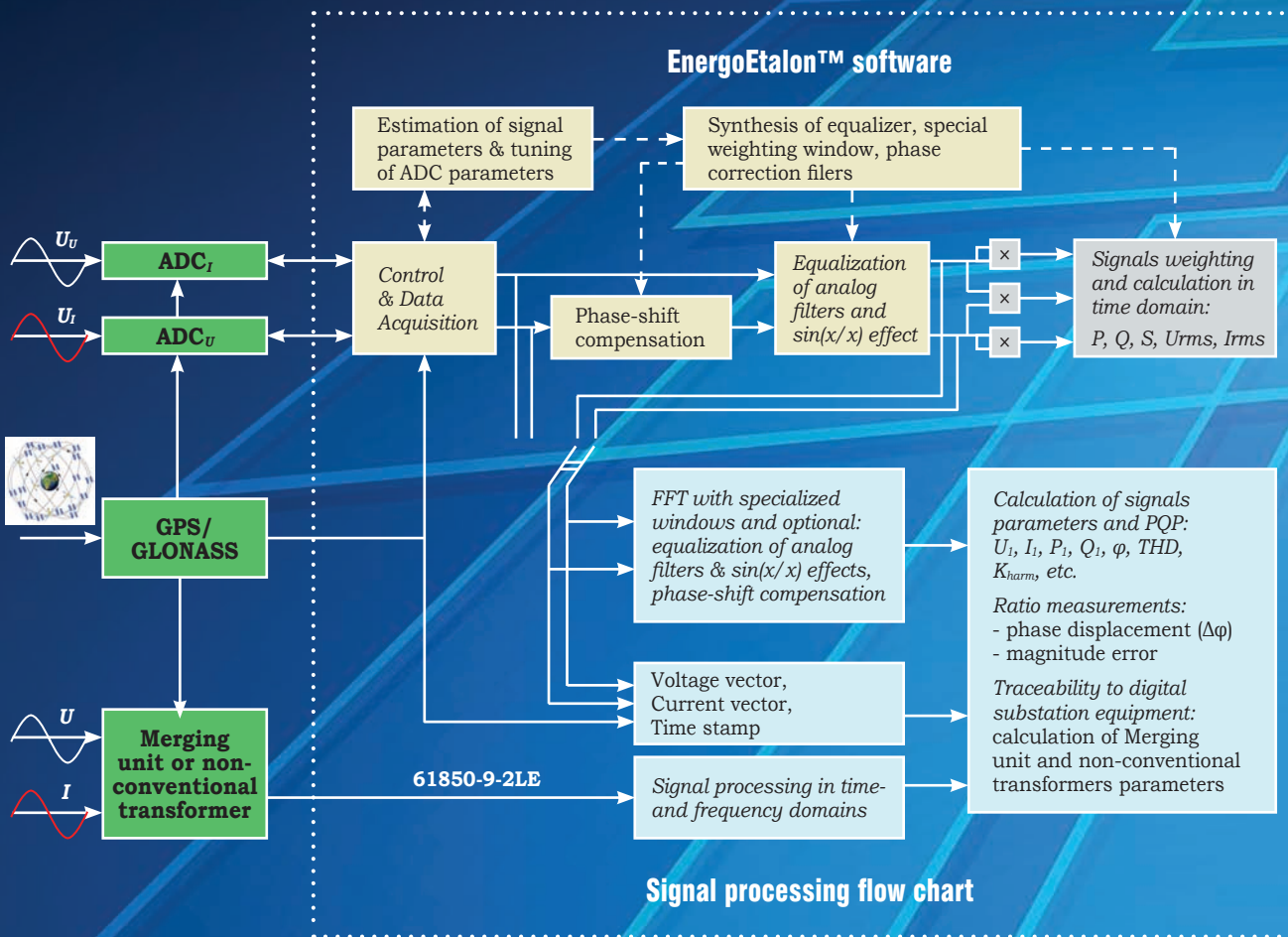
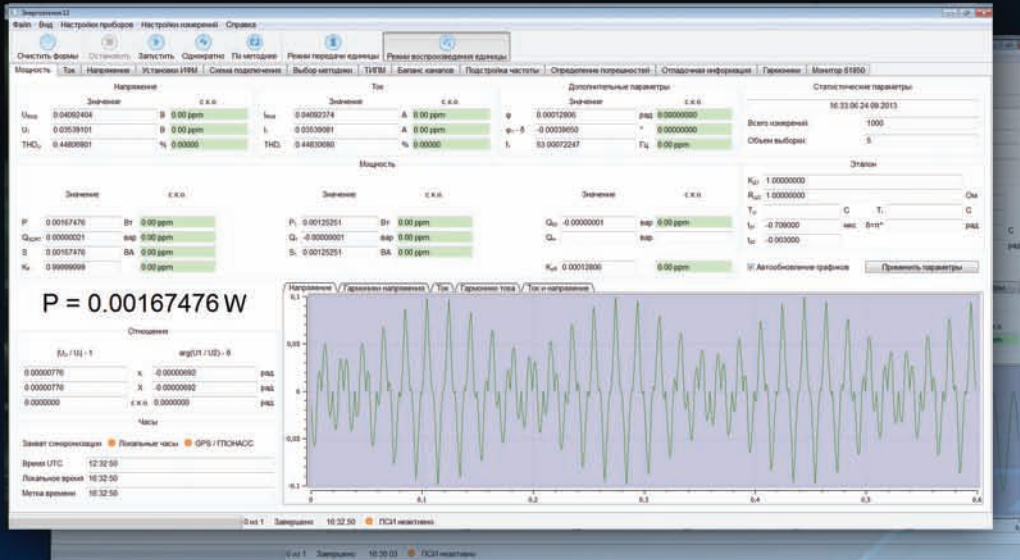
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Signal processing flow chart