

# CDAX 605

## High-precision capacitance and dissipation factor measurement instrument



- **High accuracy and wide measurement range**
- **Automatic measurement process**
- **Measures capacitive, resistive or inductive test objects**
- **High accuracy ratio measurements**
- **Works with any standard capacitor or resistor value without any recalculations**
- **All standard UST and GST configurations**

### Description

CDAX 605 is a capacitance and dissipation factor test set to be used with an external power source/generator. It is a precision instrument using a combination of bridge and direct (vector) measurements and is capable of measuring capacitive, resistive and inductive loads.

CDAX 605 is designed for laboratory, production line or field testing of electrical equipment insulation and insulating materials as well as e.g. calibration of CCVTs and other ratio devices. A test set with unique high accuracy for the most demanding applications.



CDAX605 together with a high voltage AC source and a standard capacitor forms a complete setup for insulation testing.

## Application

In determining the quality of high-voltage equipment insulation, power frequency capacitance and dissipation factor are among the most frequently measured insulating characteristics. These two quantities can be measured as a receiving material quality control, during assembly and verification of electrical apparatus, at the time of installation or as a part of a maintenance program after the equipment is placed in service. The test is non-destructive and is used for verification, trending and comparison.

CDAX605 is a measurement instrument that is used with an AC power source and a standard capacitor to form a complete measurement setup. Testing can be performed at almost any voltage level pending on the rating of the equipment, the power source and the capacitor. The unit will accept a test current up to 5 A from the insulation under test which can be increased by using an external current transformer.

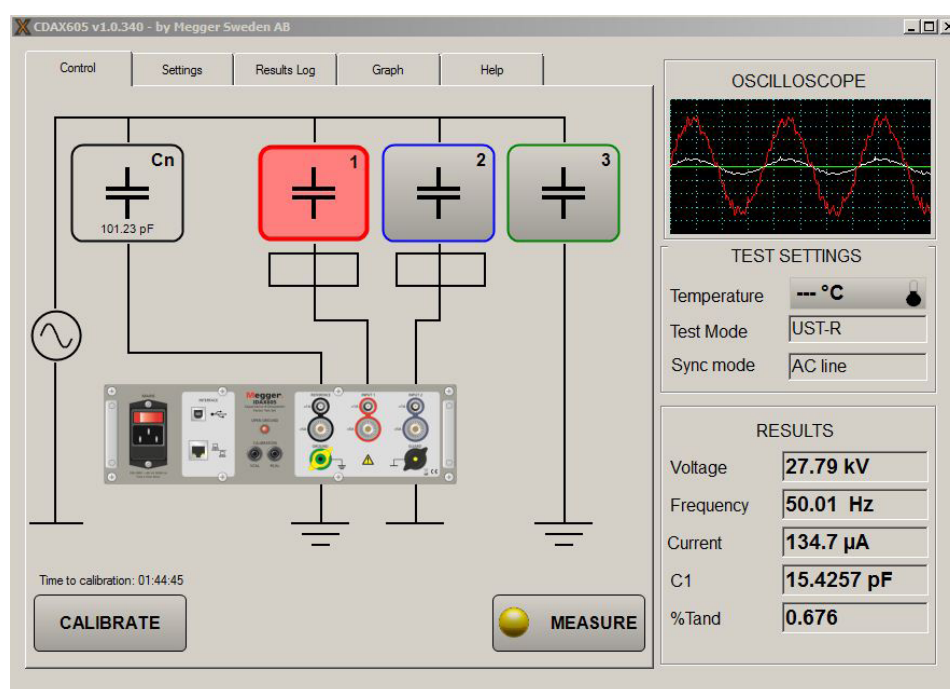
Traditional bridge methods can only measure and compare capacitive currents and since calibrated standard capacitors are typically available in the 100 to 1000 pF range, precision measurements on e.g. CCVTs and other devices with a high ratio are difficult to perform. With the new technology in CDAX605, the input voltage to the device can be measured with a traditional reference capacitor while the secondary low voltage can be measured with a calibrated resistive divider that can be designed to give appropriate measurement current.

## Application areas

- Power Transformers
- Instrument Transformers
- Power Cables & Accessories
- Shunt Reactors
- Capacitors
- Liquid or Solid Insulations
- Bushings

## Features and benefits

- Direct readings of capacitance, dissipation factor, inductance and ratio. No balancing or calculation required
- Inaccuracy capacitance 0.02%, dissipation factor 0.001%
- Wide measurement range. Capacitance 0-100  $\mu\text{F}$  and dissipation factor 0-100
- 0-360° phase measurements
- Reference objects can be a capacitor and/or a resistor
- Works with any reference value without any recalculations
- Test object currents can be capacitive, resistive or inductive in any combination
- UST-R, UST-B, UST-RB, GST-GND, GSTg-R, GSTg-B, GSTg-RB configurations using 3 measurement inputs
- Low weight, only 4.4 kg
- Easy to use graphical user interface designed for both standard PC and touch screen operation
- LabView and C# computer interfaces



CDAX Control

## Specifications CDAX 605

### Environmental

**Application field** The instrument is intended for use in high-voltage test rooms and laboratories as well as in substations and industrial environments.

### Ambient temperature

**Operating** -20°C to +55°C (-4°F to +131°F)

**Storage** -40°C to 70°C (-40°F to +158°F)

**Humidity** < 90%RH, non-condensing

### CE-marking

**LVD** 2004/108/EC

**EMC** 2006/95/EC

### General

**Mains voltage** 100 – 240 V AC, 50/60 Hz

**Power consumption** 60 VA (max)

### Dimensions

**Instrument** 335 x 300 x 99 mm (17.7" x 16.1" x 6.3")

**Transport case** 520 x 430 x 220 mm (20.5" x 17.0" x 8.7")

**Weight** 4.4 kg (9.7 lbs) (instrument only)

### Software

- CDAX605 Control**
- Reference capacitance and/or reference resistor data entry
  - Voltage measurements
  - Current measurements
  - Capacitance measurements
  - Resistance measurements
  - Inductance measurements
  - Dissipation factor measurements
  - Power factor measurements
  - Phase measurements
  - Ratio measurements
  - Data log/storage in general format
- PC requirements**
- Pentium 500 MHz/512 Mb or better
  - Ethernet or USB communication
  - Windows XP, Vista, Win 7

### Measurement

**Channels** 2

**Inputs** 4 connectors, Cn, Cx1, Cx2 and Ground BNC and UHF connectors

### Measurement range

**Test frequency** 5 – 400 Hz

**Test voltage** Unlimited (pending reference capacitor or resistor value only)

**Capacitance** 0-100 pF

**Dissipation factor** 0-100

**Current** 0-5 A (Can be increased by using input transformer)

**Phase** 0-360°

### Inaccuracy\*

**Capacitance** ±0.02% at 30 µA to 300 mA measurement current  
±0.1% at 300 mA to 5 A measurement current

**Voltage/current** ±0.5% of reading

**Dissipation factor** ±(0.5% of reading + 0.001%) at 30 µA to 300 mA measurement current

±(0.5% of reading + 0.005%) at 300 mA to 5 A measurement current

**Phase** ±0.01 mRad/0.04 minutes at 30 µA to 300 mA measurement current

±0.05 mRad/0.02 minutes at 300 mA to 5 A measurement current

**Calibration** Automatic self-calibration using an internal ratio-arm bridge.

Note: Recommended full calibration interval < 2 years.

### Max resolution

**Capacitance** 0.001 pF

**Dissipation factor** 1x10<sup>-6</sup>

**Phase** 1x10<sup>-6</sup>

**Measurement time** Selectable, default 2 s/measurement

**Warm-up time** 15 minutes for full accuracy

\* The values for inaccuracy values are valid at test frequency 50/60 Hz, over full operating temperature range after warm up and self-calibration. THD of power source <10%. Reference input current <300 mA and reference to measurement current ratio <100:1.

## Ordering information

Item	Art. No.
<b>CDAX 605</b>	AI-19090

### Included accessories

Mains cable  
Ground cable  
Ethernet cable  
CDAX Control (PC SW)  
Transport case  
User's Manual

### Optional accessories

#### 5 A measuring cables

6 m (20 ft) with one UHF connector and one open end GC-30410

#### 5 A measuring cables

18 m (60 ft) with one UHF connector and one open end GC-30420

Other cables/connector configurations on request

#### CDB605

Demo box for CDAX AI-90010

#### CRD605

High voltage resistor, 2 kV/20 MΩ AI-90020

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