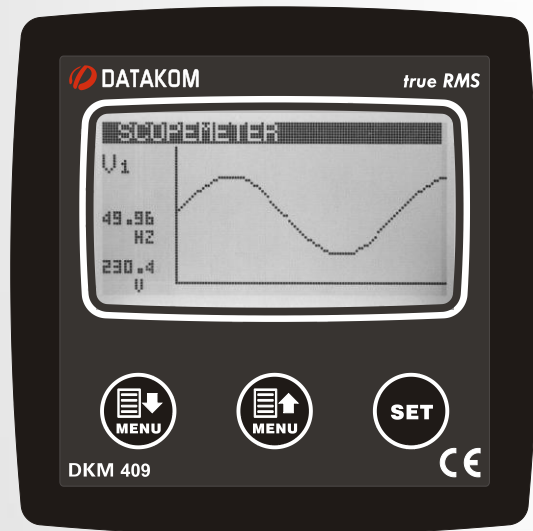


# DKM-409

## NETWORK ANALYSER WITH HARMONIC MEASUREMENT AND SCOPEMETER



### INTRODUCTION

The DKM-409 is a precision instrument designed for displaying various AC parameters in 3-phase distribution panels.

Thanks to its isolated RS-485 Modbus RTU communication port, the device is free from ground potential difference issues and measured parameters are safely transferred to factory and building automation systems.

The power supply of the unit is isolated. The standard unit operates between 85 and 305VAC. Another version operates between 19-150VDC.

The graphic screen allows display of waveforms and harmonic analysis graphs.

Various display screens can be scrolled automatically. The user configurable screen where any measured parameter set can be displayed, transforms the unit to a custom designed measurement panel.

The unit fits into a standard 92x92mm panel opening.

### MEASUREMENTS

Phase to phase voltages: U12-U23-U31

Phase to neutral voltages: V1-V2-V3

Phase currents: I1-I2-I3

Phase active power: P1-P2-P3

Phase reactive power: Q1-Q2-Q3

Phase apparent power: S1-S2-S3

Phase power factor:  $\cos 1 - \cos 2 - \cos 3$

Total active power:  $\sum P$

Total reactive power:  $\sum Q$

Total apparent power:  $\sum S$

Total power factor:  $\sum \cos$

Active power counters: Pc1-Pc2

Reactive power counters: Qc1-Qc2

User counters: USR1-USR2-USR3-USR4

2...31 Harmonics of any voltage or current

### FEATURES

**True RMS measurements**

**Standard AC supply (85-305VAC)**

**Optional DC supply (19-150VDC)**

**Harmonic distortion display (31 harmonics)**

**Oscilloscope, waveform display**

**Max demand display**

**User configurable display screen**

**Fully isolated RS-485 serial port**

**MODBUS-RTU communication**

**2 configurable relay outputs**

**Energy pulse output capability**

**Optically isolated, configurable digital inputs**

**Switched dual active-reactive power counters**

**Independent mains/generator energy metering**

**Configurable user counters**

**Voltage transformer ratio for MV applications**

**Password protected front panel programming**

**High visibility, 128x64 pixels graphic LCD**

**Reduced panel depth**

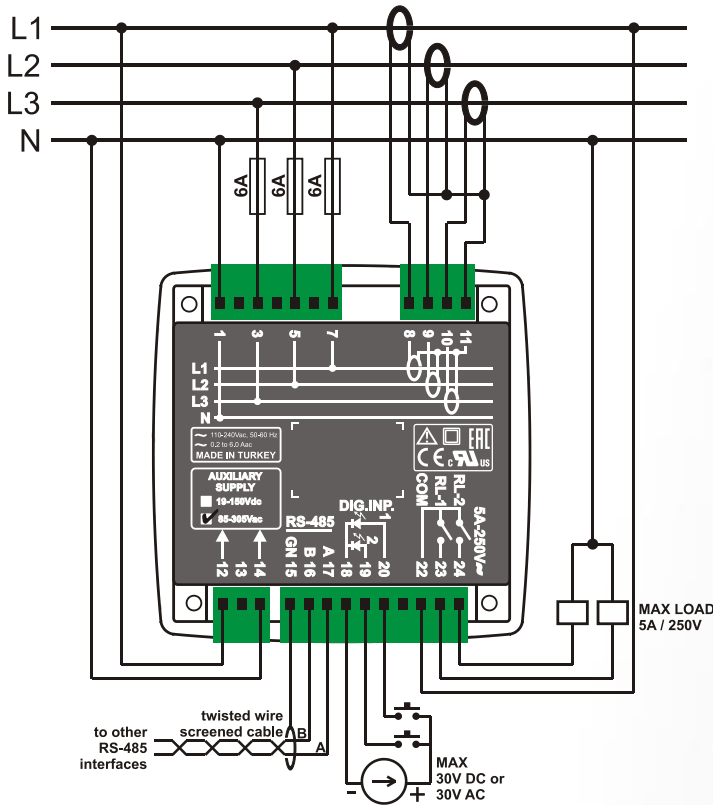
**Wide operating temperature range**

**Sealed front panel (IP54)**

**Plug-in connection system**



## CONNECTION DIAGRAM



## TECHNICAL SPECIFICATIONS

### Power Supply Input:

85-305VAC, 50 - 60Hz nominal ( $\pm 10\%$ )  
Optional: 19-150VDC

### Measurement Input Range:

**Voltage:** 10 - 300 V AC (L-N)  
20 - 520 V AC (L-L)

**Current:** 0.2 - 5.5 A AC

**Frequency:** 30 - 100 Hz

### Accuracy:

**Voltage:** 0.5%+1 digit

**Current:** 0.5%+1 digit

**Frequency:** 0.5%+1 digit

**Power(kW,kVAr):** 1.0%+2digit

**Power factor:** 2.0%+2digit

### Measurement Range:

**CT range:** 5/5A to 5000/5A

**VT range:** 1.0/1 to 5000.0/1

**kW range:** 1.0 kW to 50.0 MW

### Power Consumption:

< 4 VA

### Voltage burden:

< 0.1VA per phase

### Current burden:

< 1VA per phase

### Relay Outputs:

5A @ 250V AC

### Digital Inputs:

**Active level:** 5 to 30V-DC or AC

**Min pulse:** 250ms.

**Isolation:** 1000V AC, 1 minute

### Serial Port:

**Signal level:** RS-485

**Protocol:** Modbus RTU

**Data Rate:** 9600 bauds

**Isolation:** 500V AC, 1 minute

### Operating Temperature:

-20°C to +70°C (-4 to +158 °F).

### Maximum humidity:

95% non-condensing.

### Degree of Protection:

IP 54 (Front Panel)

IP 30 (Back panel)

### Enclosure:

Non-flammable, ROHS compliant

### Installation:

Flush mounting with rear brackets

### Dimensions:

102x102x53mm (WxHxD)

### Panel Cutout:

92x92mm

### Weight:

350 gr

### EU Directives:

2014/35/EC (LVD)

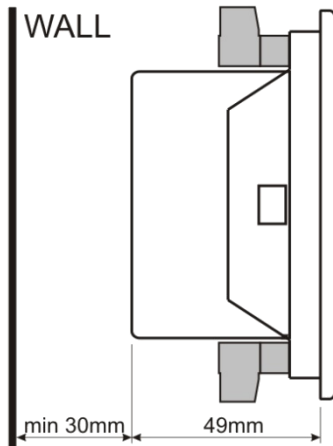
2014/30/EC (EMC)

### Norms of reference:

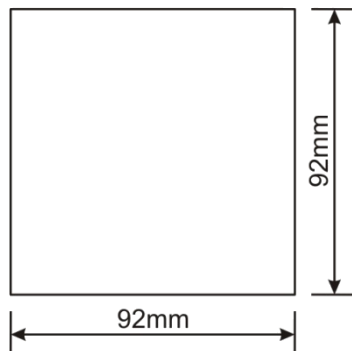
EN 61010 (safety)

EN 61326 (EMC)

## MOUNTING TOLERANCES



## PANEL CUTOUT DIMENSIONS



## PACKAGING INFORMATION

**Pieces per Package:** 12 pieces

**Package Size:** 280 x 170 x 215mm

**Package Weight:** 4.4 kg