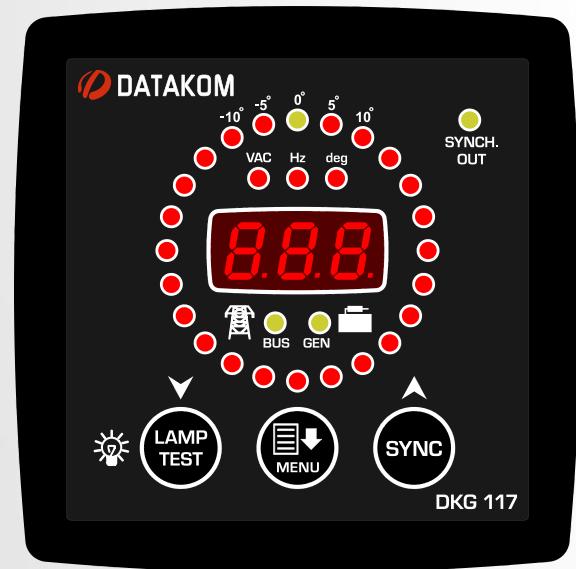


# DKG-117

## SYNCHROSCOPE AND CHECK SYNCH RELAY

### 96x96mm



## DESCRIPTION

The DKG-117 is a microprocessor controlled synchroscope with programmable synch check relay in a DIN96 front panel mounted package. It monitors the voltage and frequency of 2 independent power networks as well as the instantaneous phase angle between them.

The measured parameters are displayed on the 3 digit digital display. The 24 led circular synchroscope displays the phase angle between 2 networks. The synchroscope display is only activated if both network voltages are within the set limits.

The DKG-117 is mainly used in manual genset synchronization applications for synchronization checking between a genset and the genset busbar or between the genset busbar and the mains.

The synchronization checking is enabled either via the **SYNCH CHECK ENABLE** signal input or by depressing the front panel **SYNCH** pushbutton.

The synchronization checking consists of the verification of below conditions during 4 consecutive busbar cycles:

- the busbar voltage between set limits
- genset phase voltage between set limits
- busbar-genset frequency difference below the set limit
- busbar-genset voltage difference below the set limit
- busbar-genset phase angle below the set limit

If all above conditions are satisfied for 4 consecutive busbar cycles then the **CHECK SYNCH** relay will be immediately energized. If the busbar is not powered up, the synch checking may be overridden with the **DEAD BUS ENABLE** signal input.

The **SYNCH CHECK** relay is deactivated either by removing the **SYNCH CHECK ENABLE** signal or by depressing the front panel **SYNCH** pushbutton.

The DKG-117 provides a comprehensive set of digitally adjustable threshold levels and timers. All programs are modified via front panel pushbuttons, and do not require an external unit.

The MENU pushbutton allows the digital display to navigate between various measured parameters.

If both generator and busbar voltages are below limit, the display will turn off automatically at the end of 1 minute. The unit will wake-up automatically if the generator or busbar voltage is within preset limits or if any front panel pushbutton is depressed.

The unit is designed for front panel mounting. Connections are made with 2 part plug and socket connectors.

## FEATURES

- 24 led circular synchroscope**
- Programmable  $\Delta V$ ,  $\Delta f$ ,  $\Delta \theta$  for check synch relay**
- 1 phase genset voltage input**
- 1 phase busbar voltage input**
- Synch Check Enable input**
- Dead Bus Enable input**
- Auto power off**
- Adjustable parameters**
- Front panel configurable**
- Survives cranking dropouts**
- LED displays**
- Sealed front panel**
- Plug-in connection system**

## MEASUREMENTS

- Generator Volt: U-N
- Generator Frequency
- Busbar Volts: R-N
- Busbar Frequency
- Frequency difference busbar-generator
- Voltage difference busbar-generator
- Phase angle busbar-phase U

## RELAY OUTPUT

The unit provides a synch check relay output with free contacts.

The relay output is capable of driving 16A/250V-AC load.

## DIGITAL INPUTS

The unit has 2 digital inputs:

- synch check enable
- dead-bus enable

The inputs will be active when connected to battery negative. The input function will be disabled if the input is left open.

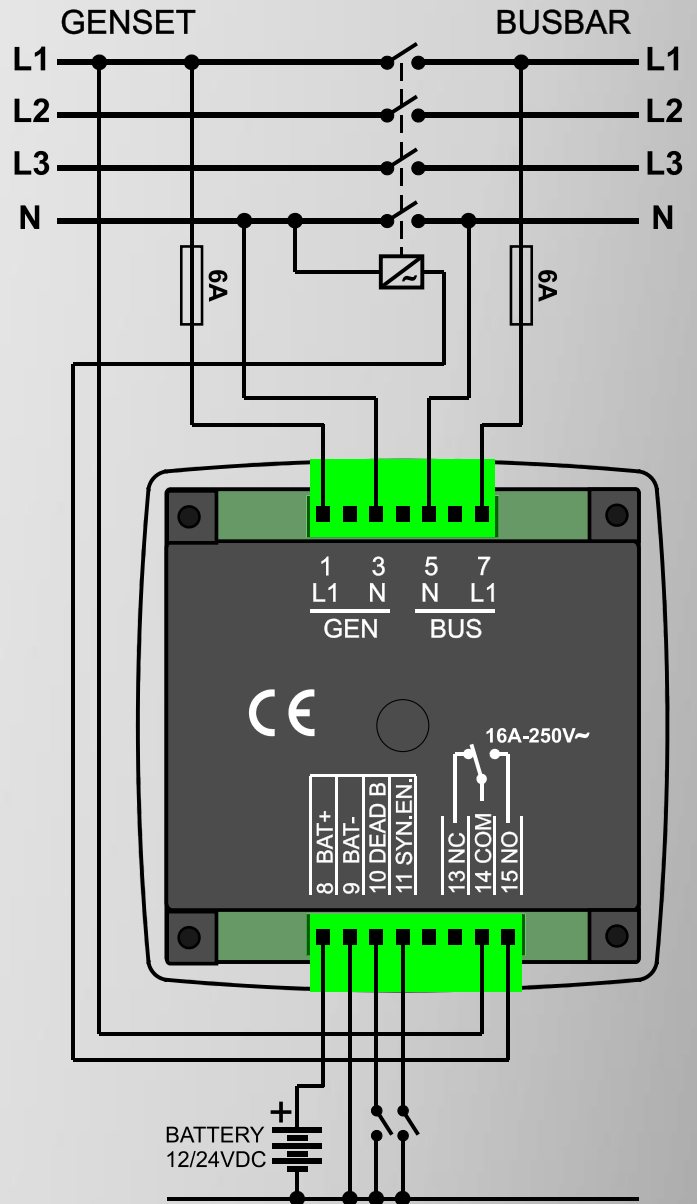
## TECHNICAL SPECIFICATIONS

**Generator voltage:** 300 V-AC max. (Ph-N)  
**Generator frequency:** 0-100 Hz.  
**Busbar voltage:** 300 V-AC max. (Ph-N)  
**Busbar frequency:** 50/60 Hz.  
**Digital inputs:** 0 - 30 V-DC  
**DC Supply Range:** 9.0 to 33.0 V-DC  
**Cranking dropouts:** survives 0 V for 100ms.  
**Typical Standby Current:** 100 mA-DC  
**Maximum Operating Current:** 150 mA-DC (Relay outputs open)  
**Check Synch Relay Output:** 16 A / 250V-AC/ 28V-DC  
**Operating temp.:** -20°C (-4°F) to 70 °C (158°F).  
**Storage temp.:** -30°C (-22°F) to 80 °C (176°F).  
**Maximum humidity:** 95% non-condensing.  
**IP Protection:** IP65 from front panel, IP30 from the rear.  
**Enclosure:** Non-flammable, ROHS compliant  
**Dimensions:** 102 x 102 x 53 mm (WxHxD)  
**Panel Cut-out:** 92x92 mm minimum.  
**Installation:** Flush mounted with retaining plastic brackets.  
**Weight:** 170 g (approx.)  
**Case Material:** High Temperature ABS (UL94-V0, 100°C)

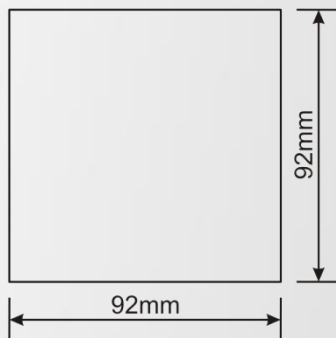
**EU Directives:**  
 2006/95/EC (LVD)  
 2004/108/EC (EMC)

**Norms of reference:**  
 EN 61010 (safety)  
 EN 61326 (EMC)

## CONNECTION DIAGRAM



## PANEL CUTOUT



## PACKAGING INFORMATION

**Pieces per Package:** 12 pieces  
**Package Size:** 280 x 170 x 215mm  
**Package Weight:** 2.2 kg

