

## DKG-327 AUTO TRANSFER SWITCH

### DESCRIPTION

The DKG-327 is a control and protection panel designed to monitor the 3-phase mains voltages, send remote start command to the generating set and make changeover of both generator and mains contactors. It shows the measured values on its displays. The genset is supposed to be controlled by a Remote Start type control unit.

In AUTOMATIC position, DKG-327 monitors mains phase voltages. In case of a mains failure it controls the remote starting and load transfer of the generating set, and once the generator is running, it monitors internal protections and external fault inputs. If a fault condition occurs, the unit disables the remote starting automatically and indicates the failure source with the corresponding red led lamp.

The unit is able to control both contactors and motorized circuit breakers. The front panel mimic diagram provides information about mains and generator power availability as well as contactor positions.

The operation of the unit is controlled with front panel pushbuttons. The LOAD TEST, TEST, AUTO and OFF pushbuttons select the operating mode. Other buttons select the display parameter scroll, alarm mute and lamp test functions.

The DKG-327 provides a comprehensive set of digitally adjustable timers, threshold levels, input and output configurations and operating sequences. The unauthorized access to program parameters is prevented by the program lock input. All programs may be modified via front panel pushbuttons, and do not require an external unit.

The fault conditions are considered in 2 categories as Warnings and Alarms. Measured values have separate programmable limits for warning and alarm conditions.

The service request indicator lamp turns on at the expiration of either engine hours or time limits.

It is possible to monitor the operation of the system locally or remotely with the WINDOWS based RAINBOW PC utility program.

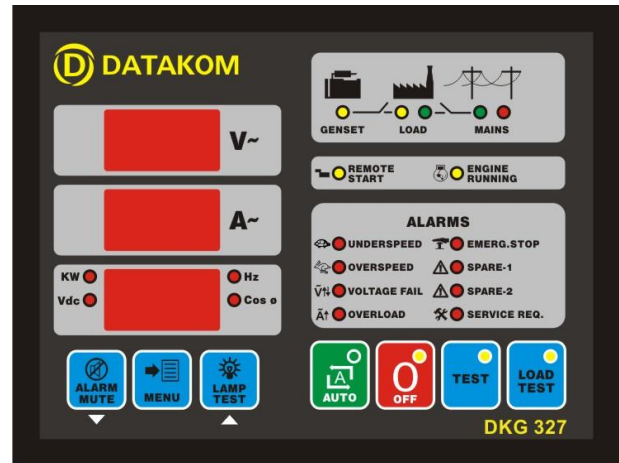
The unit is designed for front panel mounting. It is fitted into the cut-out with the mounting brackets. Connections are made with 2 part plug and socket connectors.

### MEASUREMENTS

Generator Volts: U-N, V-N, W-N  
 Generator Volts: U-V, V-W, W-U  
 Load Amps: U, V, W  
 Generator total KW  
 Generator pf  
 Generator Frequency,  
 Mains Volts: R-N, S-N, T-N  
 Mains Volts: R-S, S-T, T-R  
 Battery Voltage

### STATISTICS

Following incremental counters provide statistics about past performance of the generating set:  
 Engine Hours Run  
 Engine Hours to Service  
 Time to Service  
 Number of Genset Runs  
 Number of Genset on Load



### FEATURES

- Automatic contactor control**
- Automatic motorized circuit breaker control**
- Remote start relay output**
- Electrical protections for genset**
- Built in alarms and warnings,**
- 3 phase mains voltage inputs**
- 3 phase genset voltage inputs**
- 3 phase genset CT inputs**
- Load active power measurement**
- Load power factor measurement**
- Periodic maintenance request indicator**
- Daily / weekly / monthly exerciser**
- Engine hours counter**
- Event logging**
- Statistical counters**
- Battery backed-up real time clock**
- Weekly operation schedule programs**
- Field adjustable parameters**
- RS-232 serial port**
- Free MS-Windows Remote monitoring SW:**
  - local, LAN, IP and modem connection
  - monitoring, download of parameters
- LED displays**
- Configurable digital inputs: 4**
- Configurable relay outputs: 2**
- Total relay outputs: 4**
- Output expansion capability**
- Simulate Mains operation available**
- Survives cranking dropouts**
- Sealed front panel**
- Plug-in connection system for easy replacement**
- Small dimensions (165x125x48mm)**
- Low cost**

## TELEMETRY AND REMOTE PROGRAMMING

The DKG-327 module provides the user with large telemetry facilities via its standard RS-232 serial port. The unit can be either connected to a PC or a modem for remote communication. The PC software offers local, Local Area Network (LAN), internet and modem operation capabilities. Note that the modem mode is also compatible with LAN and internet modes, so that the modem data may be served by PC for reuse in the LAN or internet.

The PC program is used for below purposes:

- parameter upload/download
- remote monitoring
- diagnostics and analysis

The PC software detects automatically new versions over the internet. A menu system will guide the user if he desires to download the new version.

## EVENT LOGGING

The DKG-327 records last 12 events with date and time stamp. Recorded events are:

- alarms and warnings
- generator on-load/off-load information

Event records are only displayed on the PC screen.

## WEEKLY OPERATION SCHEDULE

In AUTO mode only, the unit offers the capability of defining a weekly operation schedule. Programmable parameters allow the genset to operate automatically only in defined time limits of each weekday.

The internal battery backed-up real time clock allows precise switching times.

## DIGITAL INPUTS

The unit has 4 configurable digital inputs. Each input has following programmable parameters:

- alarm type: shutdown / warning / no alarm
- alarm polling: on engine running / always / on mains OK
- latching / non-latching operation,
- contact type: NO / NC
- switching: BAT+ / BAT-

## RELAY OUTPUTS

The unit provides 4 relay outputs and 2 of them have programmable functions, selectable from a list. In addition to control signals, any specific alarm information may be output as a relay contact. Using two Relay Expansion Modules, the number of relays may be increased up to 20, 16 of them being volt-free contacts.

## TECHNICAL SPECIFICATIONS

**Alternator voltage:** 15-300 V-AC (Ph-N)

**Alternator frequency:** 0-100 Hz.

**Mains voltage:** 0 to 300 V-AC (Ph-N)

**Mains frequency:** 0-100 Hz.

**Current inputs:** from CTs, .../5A. Max load 0.7VA per phase.

**Digital inputs:** input voltage 0 - 30 V-DC.

**DC Supply range:** 9.0 V-DC to 30.0 V-DC

**Cranking dropouts:** survives 0 V for 100ms

**Maximum current consumption:** 300 mA-DC (Outputs open)

**Generator/mains contactor outputs:** 16 A / 250 V.

**DC relay outputs:** 10A / 28 V.

**Communication port:** RS-232. 2400 bauds, no parity, 1 stop bit.

**Operating temp. range:** -20°C to +70°C (-4 °F to +158 °F)

**Storage temperature range:** -40°C to +80°C (-40 °F to +176 °F)

**Maximum humidity:** 95%, non-condensing

**IP protection:** IP65 from front panel, IP30 from the rear

**Dimensions:** 165 x 125 x 48mm (WxHxD)

**Mounting opening dimensions:** 151 x 111mm minimum.

**Installation:** Flat surface mounting on a Type 1 enclosure.

Retaining plastic brackets at rear.

**Weight:** 300 g (approx.)

**Case material:** High temperature ABS (UL94-V0, 110 °C)

**Conformity (EU directives)**

-2006/95/EC (low voltage)

-2004/108/EC (electro-magnetic compatibility)

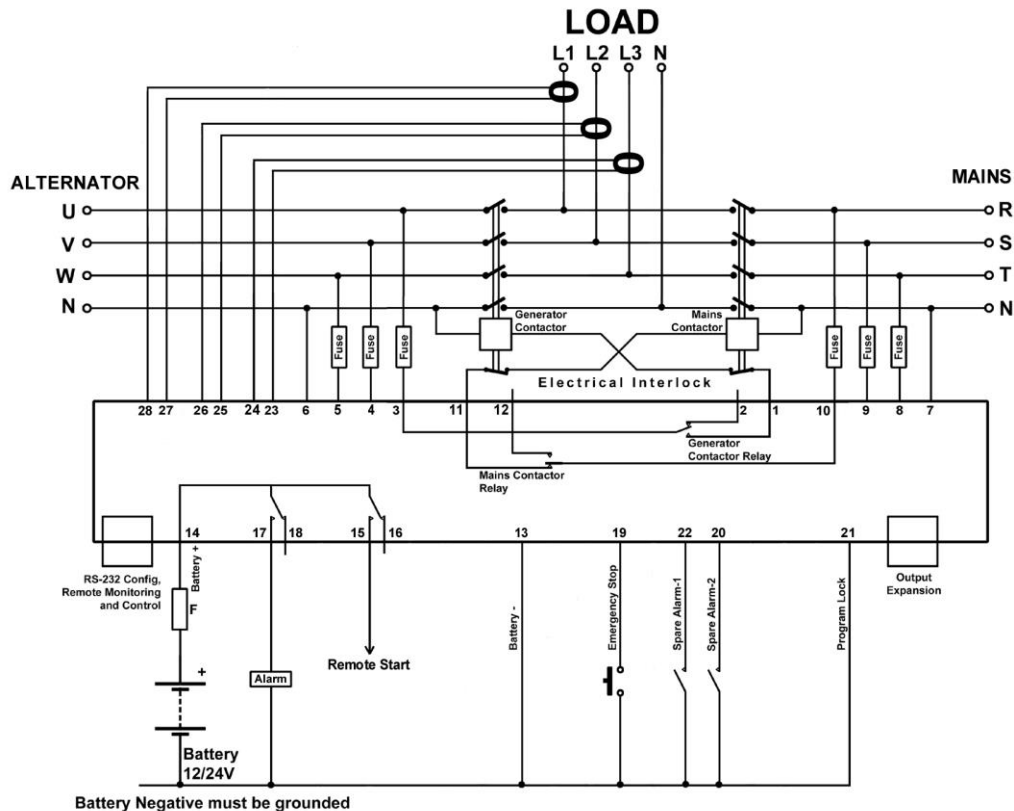
**Norms of reference:**

EN 61010 (safety requirements)

EN 61326 (EMC requirements)

**UL Compatibility:** UL 508 – Industrial Control Equipment

**CSA Compatibility:** CAN/CSA C22.2 No. 14-2005 - Industrial Control Equipment



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