

DKG-103 AUTOMATIC MAINS FAILURE UNIT



1. INPUTS

DC SUPPLY: The positive (+) and negative (-) terminals of the DC Supply shall be connected to these terminals. Be careful for the polarization, in case of polarization error the unit will not operate.

Minimum operating voltage is 9 volts. Since the unit has different models for 12 volt and 24 volt gensets, be careful not to connect 12 volt unit to a 24 volt DC supply.

The operating voltage of the unit is written on the rear cover.

R-S-T: Connect the mains voltages to these inputs. Threshold level is 170 volts for phase R, 100 volts for other phases.

G: Connect one of the generator phases to this input. Threshold level is 30 volts.

NEUTRAL: Connect the mains and generator neutral terminals to this input. Neutral and dc supply (-) terminal are independent and there is no need to connect them.

HIGH TEMPERATURE SWITCH: Connect the high temperature switch to this input. This switch shall be negative closing switch type.

LOW OIL PRESSURE: Connect the low oil pressure switch to this input. The switch should be negative closing in case of loss of oil pressure. This input must be kept connected for the proper operation of the unit. If it is required, oil level switch operated units are also available. When the unit attempts to start, if there is oil pressure, the OIL PRESSURE ALARM led will flash. When the oil pressure disappears, the unit resumes normal operation.

EMERGENCY STOP INPUT: Emergency stop button is connected to this input. The connection shall be made in order to transfer DC Supply (-) terminal to the input when the button is pushed.

SPARE ALARM INPUT: It is possible to connect additional generator failure contacts to this input. The contacts must be open when there is no failure and closed when there is a failure. Contact terminals must transfer DC Supply (-) terminal to the input. It is also possible to parallel more than one contact and connect them to this input.

A failure signal received from this input will immediately result to an engine stop.

2.OUTPUTS

MAINS CONTACTOR: This output provides energy to the mains contactor. If the voltage of one of the mains voltages is below than 100 volt (170 volt for R phase) limit, the mains contactor will be de-energized. In order to provide extra security, normally closed contact of the generator contactor should be serially connected to this output.

Relay contact rating is 5A/250V-AC.

GENERATOR CONTACTOR: This output provides energy to generator contactor. If the generator phase voltage is removed, the generator contactor will be de-energized. In order to provide extra security, normally closed contact of the mains contactor should be serially connected to this output.

Relay contact rating is 5A/250V-AC.

FUEL OUTPUT: This output is used on diesels equipped with a fuel solenoid. Relay contact rating is 30A/28V-DC.

START OUTPUT: Generator start output. Relay turns off automatically when the generator voltage reaches 30 volt or the generator frequency reaches 10Hz.

Relay contact rating is 30A/28V-DC.

ALARM/STOP/PREHEAT OUTPUT: This output can be used as alarm, stop or preheat relay output. Specific output selection is made during the manufacturing process and this information is marked on the rear cover.

If it is an alarm option unit, the relay turns on under an alarm condition.

If it is a stop option unit, this relay turns on for a period of 30 seconds in order to stop the diesel.

Preheat output turns on when the fuel output turns on, and turns off when the diesel is on.

Relay contact rating is 5A/28V-DC.

3.DISPLAYS

FREQUENCY: it displays the generator phase frequency as two digits. It is operational when the generator is on.

LOAD GENERATOR: (YELLOW) it is continuously on when the generator contactor is on. It flashes when the generator voltage is on and the generator contactor is off.

LOAD MAINS: (GREEN) it is continuously on when the mains contactor is on. It flashes when the mains voltage is on and the mains contactor is off.

4.ALARMS

If an alarm occurs while the diesel is in operation, the generator will stop immediately and the related alarm LED will turn on, the alarm output will be energized. The alarm LED will stay on and disable the operation of the generator even if the alarm source disappears. In order to remove alarm condition, first choose OFF mode than resume previous operational mode.

The EMERGENCY STOP signal will cause the engine to stop and the related alarm led turn on, but it will not activate the ALARM relay output. Unlike other alarms, when the alarm signal disappears the alarm condition will be removed and the unit will resume normal operation.

HIGH TEMPERATURE ALARM: (red) it is on when a signal comes from the high coolant temperature input.

LOW OIL PRESSURE ALARM: (red) it is on when a signal arrives from the oil pressure input. This input will be controlled 6 seconds after the operation of the generator. If there is oil pressure when the unit attempts to start, the oil pressure alarm led will flash. When oil pressure disappears, the unit resumes normal operation.

FREQUENCY ALARM: (red) it is on when the generator frequency is above 57 Hertz (overspeed) or below 30 Hertz (underspeed). Generator frequency will be controlled 6 seconds after the generator contactor is energized.

FAIL TO START: (red) It is on if the generator cannot start to run after 3 start attempts. This alarm will be erased when the mains is on, so that the generator will be ready to be started for the next mains failure.

EMERGENCY STOP: (red) it is on when a signal comes from the emergency stop input. This alarm is not latched. The alarm condition disappears when the signal is removed. This input is also used externally to prevent the operation of the generator (for ex. by a timer).

SPARE ALARM: (red) it is on when a signal comes from the spare alarm input.

5. MODES OF OPERATION

OFF: Mains contactor will be energized if phase voltages are above limits.

AUTOMATIC: It is used for generator and mains automatic transfer. If one or more of the mains phase voltages are under the limits, mains contactor will be de-energized. The diesel will be started for 6 seconds after a rest period of 3 seconds. If it cannot start to run, it will be restarted after a rest period of 10 seconds. FAIL TO START alarm will turn on if the diesel cannot start the operation after 3 start attempts.

When the generator runs, the start output will be disabled. For diesel speed stabilization, the generator contactor will be energized after 6 seconds. It will wait for 60 seconds after all the mains phase voltages are above the limits. At the end of this period the generator contactor will be de-energized and the mains contactor will be energized 1 second after this. The diesel will run for 1 more minute for cooling. At the end of the cooling period, the fuel solenoid will turn off. If the STOP relay option is valid, stop relay will be on for 30 seconds. The genset will be ready for the next mains failure.

TEST / EMERGENCY BACKUP: It is used to test the generator when the mains is on. It also provides the EMERGENCY BACKUP feature, where the diesel is kept running. All functions are similar to the AUTOMATIC mode but the generator contactor will not be energized if the mains is not off. When the mains is on, the mains contactor will be reenergized but the diesel will not stop. In order to stop the diesel turn the mode selection switch to OFF position.

6. TECHNICAL SPECIFICATIONS

Overspeed: 57Hz

Underspeed: 30Hz

Multi attempts to start: 3 attempts

Start delay: 3 secs

Crank time: 6 secs

Rest time: 10 secs

Crank disconnect: 10Hz

Return time: 30 secs

Run on: 90 secs

Operating temperature: -10 to +70 degrees C.

Relative humidity: %10 to %90.

DC Supply:

DKG-103/12V: 9 to 18 volts.

4.0-18 V while cranking

DKG-103/24V: 18 to 33 volts

8.0-33 V while cranking

Power consumption: 1W average, 5W max.

Dimensions: 153 x 120 x 40mm (WxHxD)

Mounting hole dimensions:

142x96 mm minimum.

Weight: 700g (approx.)

DATAKOM Electronics Limited

Tel : +90-216-466 84 60

Fax : +90-216-364 65 65

e-mail : datakom@datakom.com.tr

<http://www.datakom.com.tr>