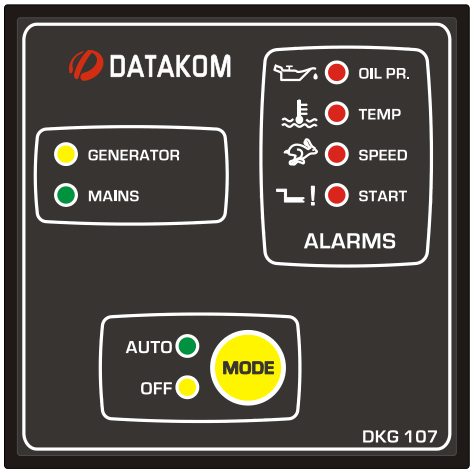
DKG-107 AUTOMATIC MAINS FAILURE UNIT



DESCRIPTION

The DATAKOM model DKG-107 automatic mains failure unit is a low cost microprocessor based digital unit offering all basic functions needed for the automatic control of a genset including changeover contactors.

The unit fits into a standard 72x72mm panel meter opening and offers a very cost effective and space saving solution for the basic genset control.

DKG-107 provides factory adjusted timers. However it has Oil Switch Type and 60Hz options selected by jumper switches:

If the jumper is placed between:

A & B : 50 Hz nominal, Oil Level switch

B & C : 50 Hz nominal, Oil Pressure Switch

C & D : 60 Hz nominal, Oil Pressure Switch

D & A : 60 Hz nominal, Oil Level Switch

The unit has also a potentiometer in order to adjust the mains and genset low voltage limit. This potentiometer is situated at the bottom of the unit. The low voltage limit is adjustable between 70 and 270V-AC.

OPERATION

The mode selection is made via a pushbutton which toggles between OFF and AUTO modes. The unit saves the last operation mode in a non-volatile memory and resumes to this mode when powered up.

In **OFF** mode the unit monitors 3 phases of the mains. If all mains phase voltages are above the limit set with the potentiometer, the mains contactor is energized.

In **AUTO** mode, the unit monitors 3 phases of the mains. If at least one of the mains phase voltages is below the set limit, it starts the engine and transfers the load to the generator. When the engine is running, it monitors fault conditions and shuts-down the engine automatically in the occurrence of an alarm. The alarms are identified by a group of LEDs displaying only the first occurring one.

When all mains phase voltages are above the limit, the unit waits for the mains stabilization timer then transfers the load to the mains. If Cooldown operation mode is selected, the engine runs during the Cooldown period, otherwise it stops immediately.

The occurrence of below fault conditions will cause the engine to be stopped immediately:

-Overspeed,

-Underspeed,

-Low generator voltage, (speed led flashes)

-High engine temperature,

-Low oil pressure/level.

To reset the alarms press the mode selection button.

If the mode selection button is hold pressed for 2 seconds, the unit will select the lamp test mode and all leds will turn on.

INPUTS

LOW OIL PRESSURE SWITCH: negative closing switch input for low oil pressure protection.

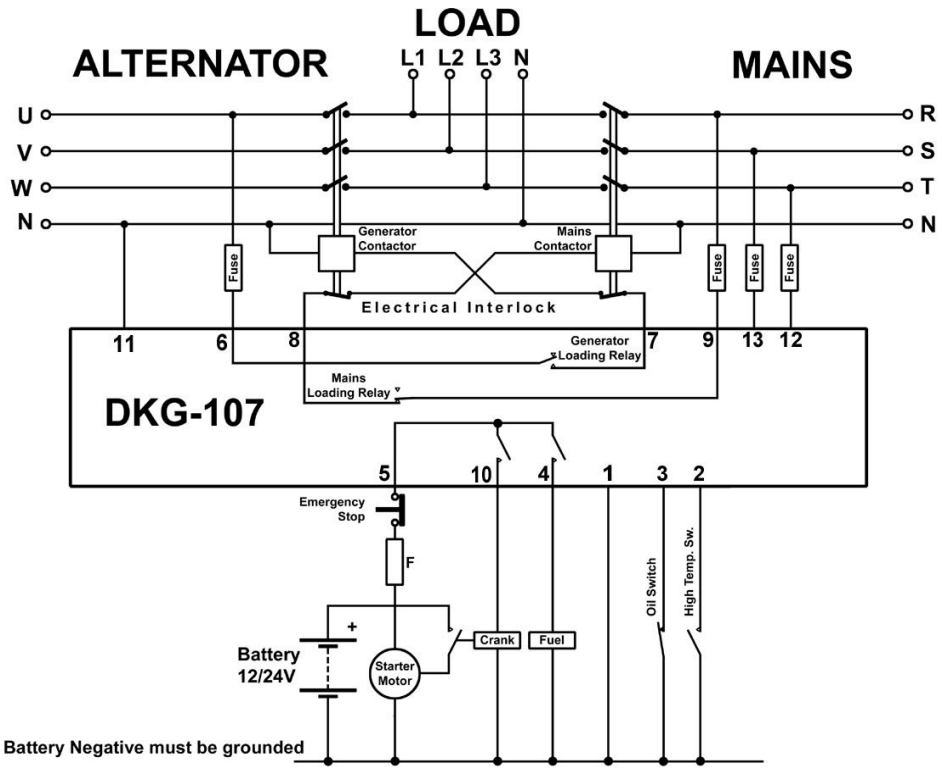
HIGH TEMP SWITCH: negative closing switch input for engine high temperature protection.

DC SUPPLY: 12 or 24 volts DC, (+) and (-) terminals.

R-S-T: 3 phase mains voltages.

G: Generator phase voltage.

NEUTRAL: Mains and generator neutral terminal.



OUTPUTS

FUEL: Relay output. (10 amps @28V-DC)

START: Relay. (10 amps @28V-DC)

GENERATOR CONTACTOR: 10 amps @250V-AC

MAINS CONTACTOR: 10 amps @250V-AC

FACTORY SETTINGS

Low speed: 30Hz

High speed (delayed): 57 Hz (69Hz for 60 Hz selection)

High speed (undelayed): 63 Hz (74 Hz for 60 Hz selection)

Speed fault delay: 2 seconds.

Number of start cycles: 3

Wait before start: 1 second.

Wait between starts: 10 seconds.

Start period: 6 seconds.

Mains stabilization timer: 30 seconds.

Cooldown timer: 120 seconds.

Mains contactor delay: 1 second.

Generator contactor delay: 4 seconds

Protection holdoff timer: 10 seconds.

Oil sensor: pressure switch.

OPTIONS

Below options are provided upon special request:
-Different timer values.
-Activate to stop output.
-Oil pressure and coolant temperature sender inputs.
-Oil level switch input

TECHNICAL SPECIFICATIONS

Step control: 8 bit microcontroller.

Mains voltage: 300 V-AC max (Ph-N)

Alternator voltage: 300V-AC max (Ph-N)

Alternator frequency: 0-100Hz.

DC Supply range: 9 to 30 V-DC.

Current consumption: 150 mA-DC max. (Relay outputs open)

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.

Dimensions: 72 x 72 x 52mm (WxHxD)

Panel cutout dimensions: 68 x 68mm minimum.

Weight: 150 g (approx.)

Installation: Front panel mounted. Retaining steel spring provided.

Case Material: Flame Retardant High Temperature ABS (UL94-V0, 110°C)