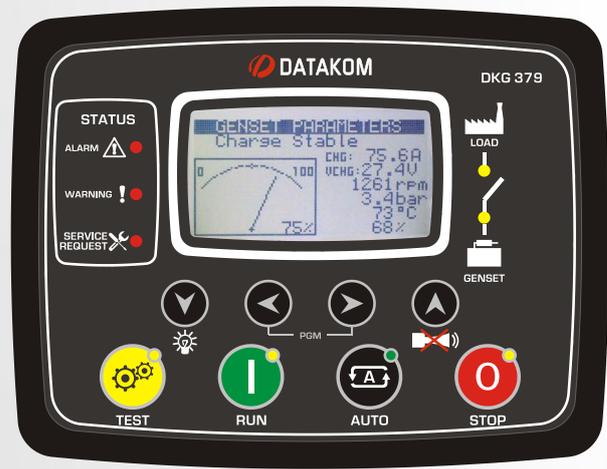


# DKG-379

## VARIABLE SPEED DC GENSET CONTROLLER

### CANBUS AND MPU VERSIONS



#### DESCRIPTION

The DKG-379 is an advanced DC genset controller for both variable and fixed speed systems. It is presented in 3 different versions, as ANALOG DRIVE, POWER DRIVE and CANBUS DRIVE.

The controller has a precision PID loop providing exact matching of the optimal charging characteristics, as well as overvoltage, overcurrent, overspeed, overheat protections.

The POWER DRIVE version provides a 7 Amp-DC output, interfacing directly to the engine actuator or alternator excitation winding without the need for a governor controller or AVR.

The CANBUS DRIVE version connects to ECU driven electronic engines providing engine control, protection and instrumentation without extra senders. ECU alarms are displayed in text.

All versions offer a 0-10V analog output for speed or voltage control.

The fixed speed operation stops the genset precisely when batteries are fully charged, providing fuel economy and maintenance cost reductions.

The unit has precision, fully isolated measuring inputs for the battery bank voltage and the charge current. It supports both "positive to ground" and "negative to ground" installations. The current is measured through a DC current shunt placed in positive or negative output of the genset.

The genset starting is based on the precisely measured DC battery bank voltage. Once started, the controller will perform an optimal battery charging cycle and will stop the genset when batteries are fully charged. The optimal charge algorithm allows maximum battery life and minimal engine run time and fuel consumption.

During the charge cycle, the unit controls the engine rpm (or excitation) in order to apply the exact required DC voltage and current to batteries. The rpm control over CANBUS-J1939 is available for electronic engines.

The unit offers a PT100 type, battery temperature sensor input. If used, the temperature protection will allow longer battery life in hot environment and faster charge in cold conditions.

The controller is able to read the engine speed from charge alternator or MPU pulses.

The unit supports both single genset standby and dual genset mutual standby operations.

The unit is able to initiate modem calls and send SMS messages in fault conditions through external modem.

The unit provides a comprehensive set of programmable parameters. All programs may be modified via front panel pushbuttons.

The unit provides Modbus protocol, which is available through both RS-232 and modem connections.

#### FEATURES

**Compatible with 12V, 24V and 48V DC systems**

**DC power drive output (7A-DC)**

**ECU connection through J1939 CAN option**

**0-10V analog control output**

**Isolated Volt - Amp measurements**

**Battery temperature input for PT100 sensor**

**Optimal charging, provides longer battery life**

**Temperature dependent battery charging**

**Thermal protection, short circuit protection**

**Dual genset mutual standby operation**

**100 event logs with time stamp and measurements**

**Battery backed-up real time clock**

**Built in daily / weekly / monthly exerciser**

**Field adjustable parameters**

**RS-232 serial port**

**Free MS-Windows Remote monitoring SW**

**GSM and PSTN modem support**

**GSM SMS message sending on fault**

**MODBUS communications**

**Multiple language support**

**Customer logo display capability**

#### MEASUREMENTS

Battery Volts

Battery temperature

Generator Volts

Generator Amps

Generator kW

Engine rpm

Battery Voltage

Engine Coolant Temperature

Engine Oil Pressure

Fuel Level

Engine Oil Temperature



## ADVANTAGES

**FLEXIBILITY OF USE:** All capacities of battery banks may be charged with the same genset. Thanks to the current limiting feature, the battery bank is protected from excessive charge currents. Large capacity banks will always be fully charged, whatever is the bank capacity.

All types of batteries, lead-acid or Ni-Cad can be charged with the same genset. The same genset can even charge 12V, 24V or 48V banks by simple parameter change.

The temperature dependent charging will allow optimal charging in various climatic conditions.

**PRECISE CHARGE CHARACTERISTICS:** The optimal charge algorithm allows fully charging of the battery bank without any risk of damage. The charge endpoints are detected with an optimal current monitoring feature. The battery voltage and charge current are measured with 0.5% precision.

**LESS MAINTENANCE COSTS:** The engine will start only when batteries are discharged and it will stop immediately when they are fully charged. No unnecessary engine runtime will occur. This will result in less engine hours, less maintenance costs and less engine wear&tear.

**LESS FUEL CONSUMPTION:** The engine will run only for charging, and when it runs, it will charge the batteries at the fastest possible safe rate. There will be no unnecessary engine operation, providing minimum fuel costs.

**EXTENDED BATTERY LIFE:** The precision voltage measurement will protect from deep discharge and overcharging. Temperature and charge current limiting features will protect batteries from early aging.

**MORE PROTECTION FOR BATTERIES:** Battery protections include fast charging protection, overcharging protection, deep discharge protection and overheating protection. This is the maximum possible level of protection.

**ZERO CURRENT LOAD SWITCHING:** Before loading the genset, the rpm is controlled to match precisely with the battery voltage. Before unloading the genset, the rpm control decreases the engine speed until zero current. Thus longer contactor life is insured.

**SELF PROTECTION:** The unit measures its heatsink temperature and reduces the actuator current in case of overheating. The actuator output is also short circuit protected, that makes the unit almost indestructible.

## PROTECTIONS

**OVERSPEED PROTECTION:** the engine rpm is limited at a safe speed by the "maximum rpm" parameter.

**OVERCURRENT PROTECTION:** the charge current is limited by the "maximum charge current" parameter, protecting batteries from overheating and providing a longer battery life.

**OVERVOLTAGE PROTECTION:** the genset voltage is limited by "float voltage" and "boost voltage" limits, protecting batteries from overcharging and gassing.

**OVERHEAT PROTECTION:** the PT100 temperature sensor input is used to protect batteries from overheating caused by the charge current. The charge current is reduced when the temperature approaches the "maximum battery temperature".

**TEMPERATURE DEPENDENT CHARGE:** the charge voltage is adjusted in function of the battery temperature. In cold conditions, batteries are charged faster than usual, providing less engine run hours and fuel consumption. In hot conditions, batteries are charged slower than usual, in order to protect them from boiling and gassing.

## TECHNICAL SPECIFICATIONS

**DC Supply Range:** 9.0 to 33.0 V-DC

**Maximum Operating Current:** 250 mA-DC (outputs open)

**Load Contactor Relay Output:** 16 A / 250V-AC / 28V-DC

**DC Outputs:** 1A @ 28V protected semiconductor outputs

**Charge excitation:** min 2 Watts

**Analog Output:** 0-10V-DC/1K-ohms (max load 10K-ohms)

**Analog Sender input range:** 0-5000 ohms.

**Battery Temp. Input:** standard PT100 sensor

**Magnetic pickup input::** 1.0 – 100 VAC-RMS

**Magnetic pickup frequency:** 10 KHz max.

**Genset voltage:** 0 to 70V-DC

**Battery bank voltage:** 0 to 70V-DC

**Current input:** from DC shunt, 60mV at rated current

**Actuator Output Voltage:** 0 to 12/24V

**Actuator Drive:** 7A-DC max, current limited, thermally protected.

**Serial port:** RS-232, 9600 bauds, no parity, 1 bit stop

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

**Storage temp.:** -40°C (-40°F) to 80 °C (176°F).

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

**Dimensions:** 172 x 134 x 76 mm (WxHxD)

**Panel Cut-out Dimensions:** 151x111 mm minimum.

**Weight:** 450 g (approx.)

**Case Material:** High Temperature ABS/PC (UL94-V0)

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

**CE Conformity reference standards:**

EN 61010 (safety requirements)

EN 61326 (EMC requirements)

