

## DKG-251 GOVERNOR CONTROLLER

### DESCRIPTION

The DKG-251 is a low cost electronic governor control unit designed to control the engine speed with fast and accurate response to load changes.

The unit is housed in a metallic chassis and consists of a single enamel coated printed circuit board for reliable operation in harsh automotive environment.

The DKG-251 connects to a **forward acting** proportional electric actuator and a magnetic speed sensor. It is able to control a wide variety of engines in constant speed (isochronous) or droop modes.

The unit offers various adjustment potentiometers. All potentiometers are accessible from the front facia.

The DKG-251 has potentiometer-adjusted **IDLE** and **RATED** speed settings. The IDLE or RATED speed modes are selected with an external switch.

The **GAIN** and **STABILITY** adjustments control the dynamic performance of the unit and allow stable operation with most engine types. In clockwise direction, the GAIN control potentiometer increases the sensitivity of the unit. In clockwise direction, the STABILITY control increases the reaction delay of the unit in order to match various engines.

In standard operation, the governor controller is in constant speed mode. If needed, a droop may be injected by connecting together terminals K and L. The droop range is then adjusted with the **DROOP** potentiometer.

An external speed trim potentiometer may be connected to the unit to adjust the engine speed from a remote location.

The auxiliary speed adjustment input allows voltage controlled speed trimming for synchronising and load sharing purposes.

If an adequate speed signal is not supplied to the unit, the speed signal monitoring circuit will detect this and shut-off the actuator output in order to prevent any damage.

The output circuit provides a switched output current in order to reduce the internal power dissipation. As the switching frequency is very high, there is no visible motion of the actuator shaft.

During engine cranking and acceleration, the actuator output is fully energized and the shaft moves to the maximum fuel position. When the requested engine speed is reached, the unit will supply the actuator with the necessary amount of current to maintain the rated speed.

The unit is capable to deliver actuator currents as high as 10 Amps. However the output current limiting circuit will protect the unit against output short circuits.

Protection against reverse battery connection and transient voltages are provided.



### FEATURES

**12 and 24V operation**

**Capable of governing various engines**

**Forward acting actuator output**

**Fast and accurate response**

**Idle and rated speed modes**

**Adjustable rated and idle speeds**

**Isochronous and droop operation**

**Gain and stability adjustments**

**External speed adjustment capability**

**Synchronizing and load sharing input**

**Switchmode output circuit**

**10 Amps continuous current output**

**Speed sensor failure detection**

**Battery reverse voltage protection**

**Output short circuit protection**

**Rugged design**

**Enamel protected electronic circuit**

**Small dimensions (130x110x27mm)**

**Low cost**

## TECHNICAL SPECIFICATIONS

**DC Supply Range:** 10.0 to 33.0 V-DC

**Current consumption:** 60mA (actuator not connected)

**Speed input range:** 500 Hz to 8000 Hz.

**Speed signal amplitude:** 1 to 35VAC-RMS

**Speed signal input impedance:** 10 K- ohms

**External speed trim:**

5 K-ohms trimpot between terminals G and J

**External speed trim range:**  $\pm 6\%$  min @3000Hz

**Auxiliary input (terminal N):**

Input voltage range: 0 to 10VDC

Input impedance: 1M ohms.

Adjustment range:  $\pm 25\%$  min @3000 Hz

**Steady state speed accuracy:**  $\pm 0.25\%$

**Droop adjustment range:** 1 to 5% minimum

**Actuator output:** 10 Amps continuous max

**DC supply output:** 10 volts DC, 20mA max

**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:** 130 x 110 x 27 mm (WxHxD)

**Weight:** 350 g (approx.)

**Mounting:** any position, vertical preferred

**Conformity (EU directives)**

-73/23/EEC and 93/68/EEC

-89/336/EEC, 92/31/EEC and 93/68/EEC

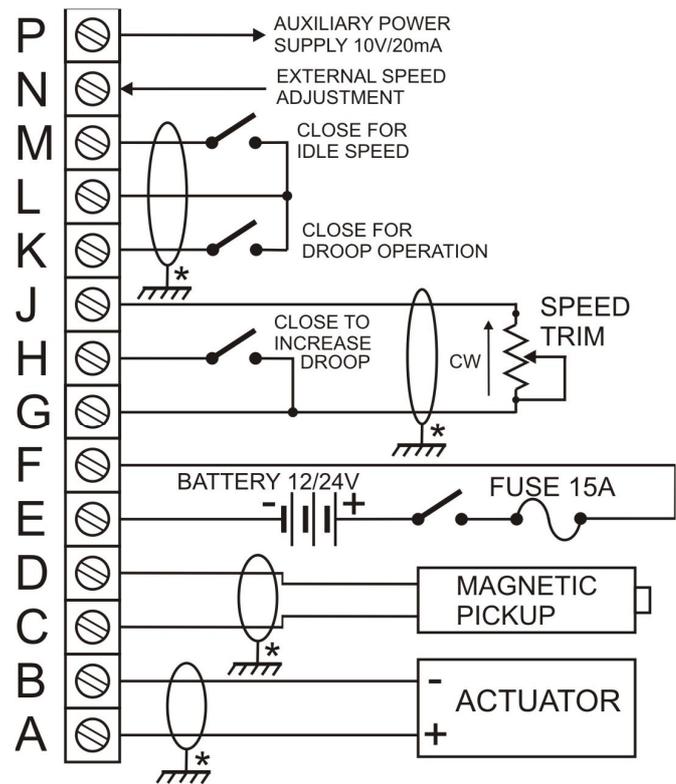
**Norms of reference:**

-EN 61010 (safety requirements)

-EN 50081-2 (EMC requirements)

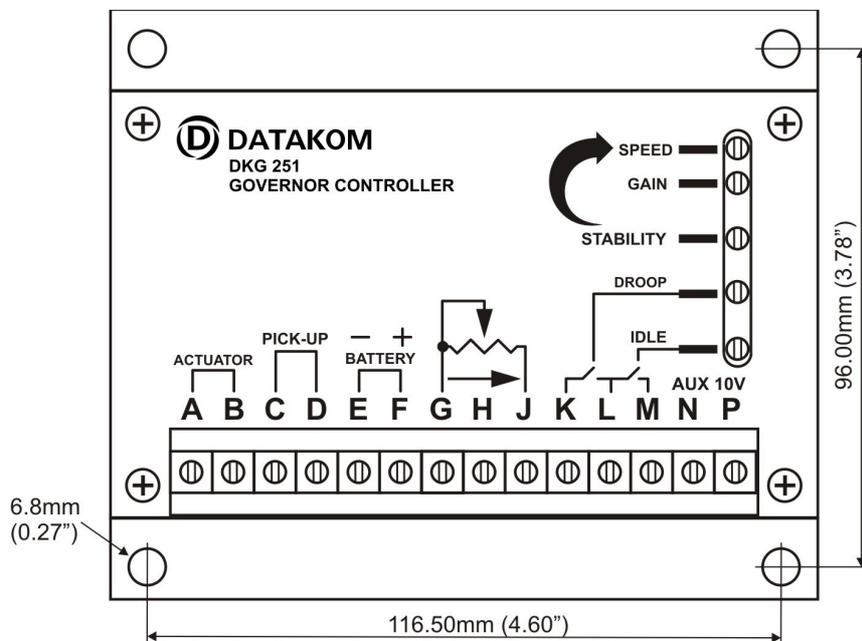
-EN 50082-2 (EMC requirements)

## WIRING DIAGRAM



\* GROUND AT ONE END ONLY

## INSTALLATION



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