DKG-504 AUTOMATIC MAINS FAILURE UNIT WITH INTEGRATED MEASUREMENT PANEL

DESCRIPTION

The DATAKOM model DKG-504 Generator Control Unit is a microprocessor based digital unit integrating all functions and displays for automatic generator control panels. A typical generator control panel will simply include one DKG-504 and one emergency stop button. DKG-504 provides space and connection economy to control panels where it is used. Thanks to its low cost, it is more cost effective against panels with separate control unit and displays.

In automatic position, DKG-504 monitors mains phase voltages and controls the automatic starting, stopping and load transfer of a generating set in case of a mains failure and once the generator is running monitors the internal protections and external fault inputs.

DKG-504 provides a full set of digitally adjustable timers and threshold levels. Also the relay configuration is programmable, enabling the control of various types of engines. The programs may be modified by the customer via pushbuttons, and do not require an external unit.

It is also possible to monitor and control the unit remotely via the serial port. The remote control program is MS/Windows based.

The last 4 (or optional 16) alarms and mains failure information are captured and stored in a non-volatile memory with date and time stamp. These events may be loaded and visualized to the remote control PC.

DISPLAY PARAMETERS

Generator Amps: L1, L2, L3
Generator Volts: L1-N, L2-N, L3-N
L1-L2, L2-L3, L3-L1
Mains Volts: L1-N, L2-N, L3-N
L1-L2, L2-L3, L3-L1
Generator Frequency,
Battery Voltage,
Engine Oil Pressure,
Engine Temperature,
Engine Hours Run.

FEATURES

Automatic engine starting and stopping,
Automatic mains failure monitoring,
Automatic load transfer,
Automatic shutdown on fault condition,
Serial port for remote monitoring and control,
Survives cranking dropouts,
Provision for energize to stop, preheat & choke outputs,
Auto start unit mode available,
3 Phase mains and generator voltage monitoring and display,
3 Phase generator current monitoring and display,
Generator frequency monitoring and display,
Plant battery voltage monitoring and display,
Engine coolant temperature and oil pressure monitoring and display,
Hours run counter,
Digitally adjustable AC-voltage protection,
Digitally adjustable and delayed overcurrent protection,
Digitally adjustable and delayed underspeed-overspeed protection,
Digitally adjustable and delayed battery high-voltage protection,
Digitally adjustable high engine temperature and low oil pressure protections,
Digitally adjustable timers and crank attempts,
Program locking feature,
Low cost,
Plug and socket connectors for easy replacement,

MODES OF OPERATION

OFF: Mains contactor will be energized if AC mains are present.
MANUAL: Used to start the generator and transfer the load manually.
AUTOMATIC: The unit monitors the 3 phases of the mains and will start the generator and control the changeover of mains and generator contactors if a mains failure on any phase is detected.
TEST: The unit will start the generator without a mains failure; the load will not be transferred until a mains failure occurs. (Also called EMERGENCY BACKUP mode)
PROGRAM: Used to program timers and operational limits. Program modifications may be disabled by wiring the program lock input to the negative supply.

INPUTS AND OUTPUTS

MAINS AND GENERATOR INPUTS:
R, S, T, MN: mains phases and neutral,
L1, L2, L3, GN: generator phases and neutral,
CURRENT TRANSFORMER INPUTS:
A1-A2-A3: The secondary output rating of the transformers will be 5 Amps. Any input value from 50 to 8000 amps may be selected from the programming menu.
FAULT INPUTS:
High engine temperature,
Low oil pressure,
Charge failure,
Emergency stop,
Spare alarm.
ANALOG INPUTS:
Engine temperature,
Oil pressure,
RELAY OUTPUTS:
FUEL: Positive output relay used to control the fuel solenoid. May also be programmed for **activate to stop** (10 amps @28V-DC)
CRANK: Positive output relay used to control the engine starter solenoid. (10 amps @28V-DC)
AUXILIARY: Positive output relay activated by any alarm condition. (10 amps @28V-DC) This output can also be configured to control a stop solenoid, as a preheat or choke output.
GENERATOR CONTACTOR: Outputs the alternator phase voltage to energize the generator contactor. (16 amps @250V-AC)
MAINS CONTACTOR: Outputs the mains phase voltage to energize the mains contactor. (16 amps @250V-AC)
OTHER INPUTS AND OUTPUTS:
Program lock input
Serial data input and output.

TECHNICAL SPECIFICATIONS

Step control: 8 bit microcontroller.
Mains voltage: 277VAC (Ph-N)
Mains frequency: 50/60Hz.
Power System Type: TN or TT.
Alternator voltage: 277V-AC (Ph-N)
Alternator frequency: 0-100Hz.
Measurement Category: CAT II
DC Supply Range: 9 to 33 V-DC.
4 to 33 V-DC while cranking
Current consumption:
150 mA-DC typical (AUTO mode, mains OK)
300 mA-DC max. (Relay outputs open)
Total DC Current Output Rating: 10A-DC.
Total AC Current Output Rating: 10A-AC.
Max. Current for each Terminal: 10A-RMS.
Data Port: RS-232, 2400 bauds,
Computer Host Program: MS-Windows
Operating temp.: -10°C (14°F) to 60 °C (140°F).
Storage temp.: -20°C (-4°F) to 80 °C (176°F).
Maximum humidity: 95% non-condensing.
Dimensions: 192 x 144 x 57mm (WxHxD)
Panel cutout: 186 x 138mm minimum.
Weight: 1300 g (approx.)
Accuracy:

Phase voltages:	2% + 1v
Phase currents:	2% + 1 digit
Battery voltage:	2% + 0.2V
Generator frequency:	+/- 0.5 Hz

Case Material:
Steel chassis, polycarbonate front panel.
Conformity (EU directives)
-73/23/EEC and 93/68/EEC (low voltage)
-89/336/EEC, 92/31/EEC and 93/68/EEC (electro-magnetic compatibility)
Norms of reference:
EN 61010 (safety requirements)
EN 50081-2 (EMC requirements)
EN 50082-2 (EMC requirements)

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