multi generator controllers
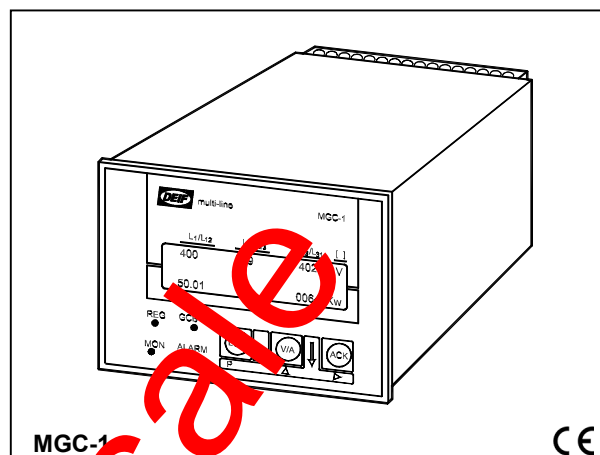
multi-line

Type MGC-1

- *Compact system in one unit*

- *Generator protection, synchronisation*

- *Load sharing, frequency control*

- *3-phase AC measurements*

- *Reliable self-monitoring system*

- *App. by major classification societies*

MGC-1

CE

Application

The MGC-1 generator controller is a microprocessor-based control unit containing all necessary functions for the control of a synchronous generator, running in island operation or in parallel with the mains. The MGC-1 can synchronise the generator to the mains and after synchronisation carry out all generator protective functions and control the generator.

The MGC-1 contains all necessary measuring circuits and presents all values and alarms on a LCD display. Messages are presented in clear text, all measuring values in engineering units. It is a flexible and menuprogrammed unit, enabling the user easily to adapt the unit to the generator and to the application in question. Programming procedures are password protected.

The unit is a compact control unit, designed for generators:
- in island operation
- in marine installations
- running in parallel with the mains
- running as emergency generating sets

The MGC-1 is especially well-suited for power management in connection with PLC's or other programmable controllers, in which case the MGC-1 will carry out all basic generator control and protection functions, whereas the PLC may be applied to carry out the plant and engine control functions. The MGC-1 can make a cyclical self-test, displaying error messages in clear text, should any errors occur.

Standard functions

Synchronisation
- freq. control with programmable slip frequency
- voltage matching possible
- breaker "ON" pulse at the exact point of sync. with programmable breaker time delay
- The unit can be programmed to carry out a "black busbar operation" of the circuit breaker

Power or frequency control
The MGC-1 can control the power or the frequency in 4 different modes. By combining these 4 modes, all operation schemes of a generator plant can be implemented. The 4 control modes can be selected either via control inputs or via the serial channel.

The MGC-1 is able to perform a programmed ramp-up and ramp-down of the power in connection with breaker operations.

Measured and calculated values
Generator:
- voltage (3-phase U and average)
- current (3-phase I and average)
- active power (kW)
- reactive power (kvar)
- phase angle (cos φ)
- frequency (f)
- energy production (kWh) (not for billing purposes)

Busbar:
- voltage (single phase U)
- frequency (f)

Generator protection
All gen. protection functions have a definite time char. The time delay can be reduced to 30 ms.
- overvoltage/undervoltage (U>/U<) (2 levels)
- overfrequency/underfrequency (f>/f<) (2 levels)
- overcurrent (I>) (2 levels)
- overload (P>)
- reverse power (-P>)
- loss of excitation (|Q|>)
- asymmetrical voltages
- unbalanced load

Each of the 3 relay outputs can be programmed to represent one or more of the above protection functions.

Mains or busbar supervision
All mains supervision functions have a definite time characteristic. The time delay can be reduced to 30 ms.
- single phase overvoltage (U>)
- single phase undervoltage (U<)
- overfrequency (f>)
- underfrequency (f<)

DEIF A/S

Type MGC-1

Options

Option A: Voltage control/cosφ control/var control.

The voltage, cosφ or var is controlled to a preset nominal value. This can be set via the display or via the serial channel. The controlling parameters can be set via the display.

Option B: Analog speed/AVR control

Analog signal ±5 V replacing governor relay outputs

B1 : Analog speed governor output

B2 : Analog AVR

B3 : Analog speed governor and AVR

Option C: Analog transducer outputs

- 3 x (0)4...20mA or -20...0...20mA output representing selected electrical values. Each output can be programmed to represent any of the required measuring values, and the output signal can be programmed to the required output range and type.

Option D1: RS 232 remote value reading of all values measured by MGC-1. Siemens 3964, RK512 with standard telegram.

Option D2: RS 485 remote value reading of all values measured by MGC-1. Modbus RTU interface.

Option D4: RS 485 remote control and value reading of all values measured by MGC-1. Modbus RTU interface.

Option E: dφ/df protection (vector jump)

Option F: df/dt protection (frequency deviation)

Option H: Power maximum relay output. Relay output to start and stop the next generating set on power demand.

Option K0:	**Option K1:**
12V DC power supply	48V DC power supply
Option K2:	**Option K3:**
110V DC power supply	220V DC power supply

Option L: Front: IP54 protection.

Principle diagram

Technical specifications

Accuracy:	Class 1.0, to IEC 688
Operating temp.:	-20...70°C
Climate:	Class HSE, to DIN 40040
Meas. voltage:	100/110 (1) to 450VAC (4) ±20%. Consumption: max. 0.15VA per phase
Meas. current:	-/1 or -/5 A, Consumption: max. 0.1VA per phase. Overcurrent: max. 3 x I$_{Nom.}$ for 1 s (measured) -/1 A: max. 100 x I$_n$ for 1 s (not measured) -/5 A: max. 20 x I$_n$ for 1 s (not measured)
Meas. frequency:	30...70Hz
Auxiliary supply:	Standard: 24V DC -25/+30%, optional: 12-48-110-220V DC -25/+30% (max. 6W)

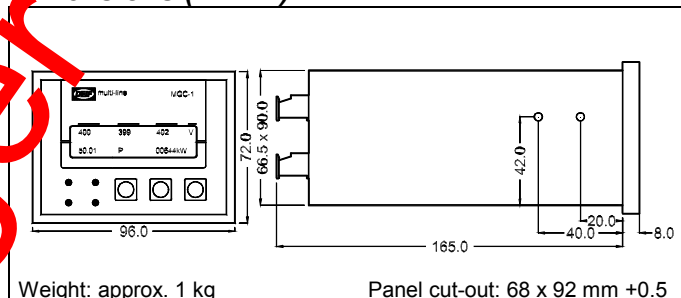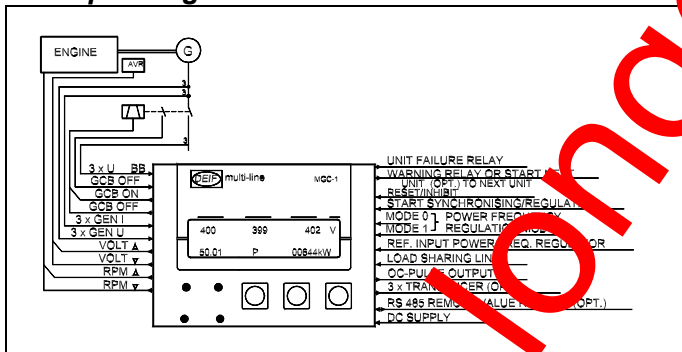|	
Binary inputs:	Input voltage: 18…250V DC or 18…250V AC. Input impedance: 68Ω
Relay outputs:	contact rating: 8A / 250V AC. Max. voltage: 380V AC. Mech. life: min. 100,000 change-overs
Analog input:	0…20mA. Input impedance: 250Ω
Load sharing line:	0…5V DC. Impedance: 5kΩ
Analog outputs: -5...0...5V DC	Outputs for electronic speed governor or electronic voltage regulator
Analog outputs or (Option C)	Analog transducer output. (0)4...20mA -20...0...20mA, load. max. 400Ω
Safety:	To EN 61010-1. Installation Cat. III, 300V. Pollution degree 2.
EMC:	To EN 50081-1/2 and EN 50082-1/2
Protection:	IP21. Front: IP52 or optionally IP 54. To IEC 529 and EN 60529
Housing:	To DIN 43700
Type approval	The multi-line components are approved by the major classification societies. For current approvals see www.deif.com or contact DEIF A/S.

Dimensions (in mm)

Weight: approx. 1 kg   Panel cut-out: 68 x 92 mm +0.5

Order specifications

	Type	**Voltage**	**CT**	**Options**
Example: MGC-1-1-1-A-C-F	MGC-1	VT	-/1A	A, C and F

Due to our continous development we reserve the right to supply equipment which may vary from the described.