

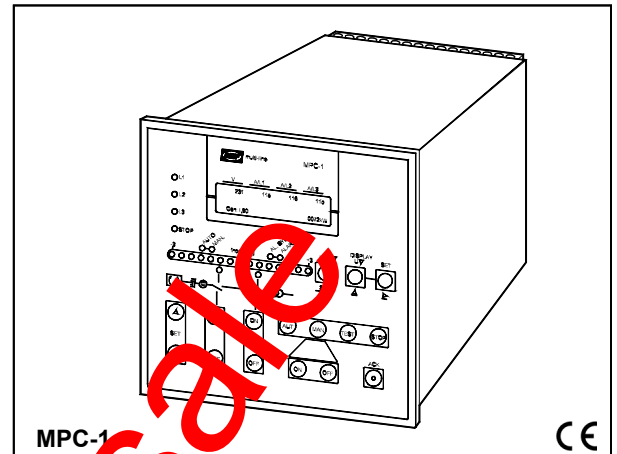
multi power controllers for generating sets

Type MPC-1

multi-line

4921240092G

- **Complete control system in one unit**
- **Start/supervision/stop of engine**
- **Synchronisation of circuit breakers**
- **Supervision/protection of generators**
- **Power management**
- **3-phase AC measurements**



Application

The MPC-1 generating set controller is a microprocessor-based control unit containing all necessary functions for the control of a synchronous or an asynchronous generating set running in island mode or in parallel with the mains. The MPC-1 can control engines fuelled by diesel, vegetable oil or gas.

The MPC-1 is designed for complete engine and generator control for generating sets:

- in island mode
- running in parallel with the mains
- running as an emergency generating set

The MPC-1 is a flexible and menu-programmed unit, enabling the user to adapt the unit to the engine, generator and application in question. Programming procedures are password protected.

The MPC-1 carries out a cyclical self-test, showing error messages, should any errors occur.

Standard functions

Measured and calculated values

Generator

- voltage (3-phase U)
- current (3-phase I)
- frequency
- energy production (kWh) counter (not billing purposes)
- active power (kW)
- reactive power (kvar)
- phase angle ($\cos \varphi$)

Engine

- running hours counter
- RPM measurement via magnetic pick-up
- number of starts
- temperatures/pressures/other status inputs
- service interval hours counter

The mains

- voltage (3-phase U)
- power consumption/production from/to the mains (kW) (Option F)
- frequency
- current (single phase I)
- reactive power (var)
- phase angle ($\cos \varphi$)

Control functions

- User defined values for a diesel, vegetable oil or gas engine start/stop sequence
- Speed governor and voltage control via relays or analog output (option B)

Synchronisation

- Dynamic synchronisation of generator circuit breaker (GB) to bus bar/the mains

Load control

- Load dependent start/stop in island mode
- Frequency and voltage control in island mode
- External set point for the active mains power (when running in parallel with the mains, option F)

Mains supervision

- 3-phase under/overvoltage (min. 30 ms)
- 3-phase under/overfrequency
- vector jump, selectable
- frequency change (df/dt), selectable, with programmed delay

Engine/generator protective functions

- Overvoltage
- Undervoltage
- Overspeed/frequency
- Underspeed/low frequency
- Overload
- Reverse power
- Overcurrent
- Battery voltage
- Generator winding temperature (PTC)
- 2 Pt100 temperatures, configurable
- 11 binary inputs (selectable: warning, stop, shutdown)

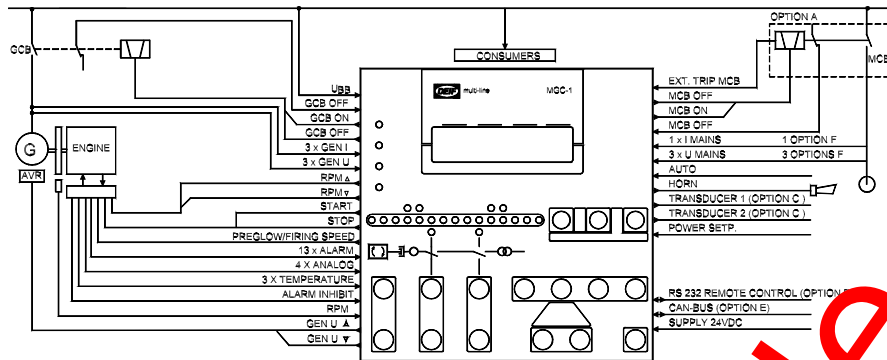
Status indications and control

- Generator circuit breaker position
- Mains circuit breaker position (Option A)
- LED indicators: "AUT", "MAN", "MON", "ALARM" frequency (bargraph) plus circuit breaker positions
- Alarm/condition indication in clear text on display and AC values

Control pushbuttons

- Generator circuit breaker ON/OFF
- Manual frequency and voltage control
- Mains circuit breaker /ON/OFF (Option A)
- Test
- Automatic control
- Acknowledgement of alarms
- Manual start/stop of engine

Type MPC-1



Options

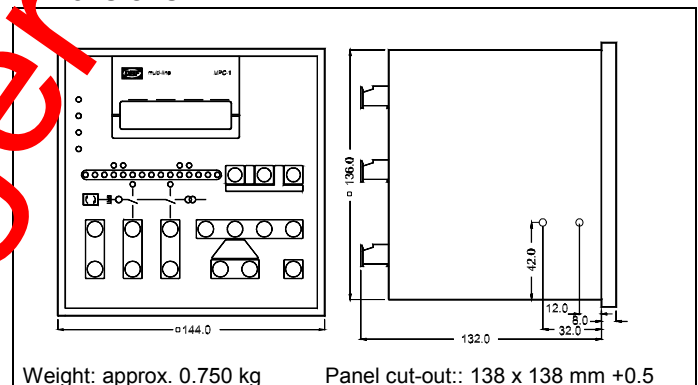
- Option A:** Mains circuit breaker
- dynamic synchronisation of mains breaker
- Option B:** Analog speed/AVR control
- Analog signal \pm replacing governor outputs
 - B1: Analog speed governor output
 - B2: Analog AVR
 - B3: Analog speed governor and AVR
- Option C:** Analog transducer outputs
- 2 x 0/4...20mA output representing selected electrical values (not applicable if option E is selected)
- Option D:** Remote control
- RS 232 remote control of the MPC-1 with Siemens 3964, RK512 with standard telegram.
- Option E:** Power management
- automatic start/stop/connection/disconnection of up to 8 generating sets running in parallel
 - equal load sharing between running generators
 - number of generating sets running, depending on the mains power transfer (Option F only)
 - number of generating sets running, depending on the power consumption, in island mode (not applicable if option C is selected).
- Option F:** Mains power transfer
- mains kW calculated on the basis of single phase current (3-phase symmetrical load), used as generator power set point control. Constant power supply to the main or power consumption from mains (peak shaving)

Technical specifications

- Accuracy:** Class 1.0, to IEC 688
- Operating temp.:** -20...70°C, -20...60°C (display)
- Meas. voltage:** 100/110V AC (1)
(min. measurable volt.: 5V AC)
450V AC $\pm 20\%$ (4)
(min. measurable volt.: 10V AC)
- Meas. current:** -/1 or -/5A, consumption:
max. 0.1VA per phase
- Max. overcurrent:** 2 x I_{nom} continuously
20 x I_{nom} for 1 s
- Meas. frequency:** 30...70Hz
- Aux. supply:** 24V DC -25/+30%,
consumption: max. 10W
- Binary inputs:** Input voltage: 18...250V AC/DC for "ON" condition.
Input impedance: 68k Ω
- Relay outputs:** Freq. and volt. controller relays:
Contact rating: 8A / 250V AC
Others:
Contact rating: 5A / 250V AC
Max. voltage: 380V AC.
Mech. life: min. 100,000 change-overs
- Analog inputs:** Freely scaleable, 12 bit
Pt100: IEC 751, PTC: 0...15k Ω
0/4...20mA: impedance: max. 250 Ω

- Analog outputs:** Freely scaleable, 12 bit
0... $\pm 5V$: impedance: 1k Ω
4...20mA: max. load 400 Ω / 24V DC
- Safety:** To EN 61010-1 Installation Cat. III, 300V.
Pollution degree 2.
- Galv. separation:** Between binary input groups, and between binary inputs and remaining circuits.
Between all relay outputs and between relay outputs and remaining circuit.
- EMC:** To EN 50081-1/2 and EN 50082-1/2
- Connections:** Max. 2.5 mm² (1.9 mm² for communication) and analog outputs
- Protection:** IP21, IP54 (front) to IEC 529 and EN 60529.

Dimensions



Order specifications

MPC-1			
Basic unit, aux. supply: 24V DC			
VT -/110V AC (-/100V AC)	1		
Voltage direct (max. 440V AC)	4		
CT -/5A	5		
CT -/1A	1		
Options			
	Type	Voltage	CT Options
Example: MPC-1-1-1-A-C-F	MPC-1	VT	-/1A A, C and F

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



DEIF A/S, Frisenborgvej 33
DK-7800 Skive, Denmark

Tel.: +45 9614 9614, Fax: +45 9614 9615
E-mail: deif@deif.com, URL: www.deif.com

