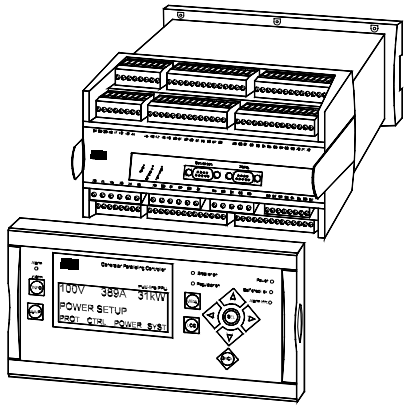
PPU, GPU, GPC

Specification of options

multi-line 2

4921240270B

- ***Perfect matching solutions***
- ***Pay only for what you need***
- ***Same basic unit no matter the application***
- ***Upgradeable functionality***
- ***Simplified engineering***
- ***Self-detectable plug and play modularity***



PPU

For software version 2.00.0 and later

(PPU/GPU/GPC – version 2)

Application

Standard protection functions for all units:

- 2 x overcurrent protection
- Reverse power protection

Specification of options:
Below the available options for the multi-line 2 PPU, GPU and GPC gen-set control and protection units are specified.

Please note that not all functions can be chosen for all three products. Please refer to the 'Note' column to see which functions are available for each type.

For the placement of hardware (slot #), please refer to the “Placed in” column and specific drawing of the PPU/GPU/GPC (page 4).

Op-tion	Description	Placed in	Note
A	**Loss of mains protection**		
A1	- Over- and undervoltage (generator and busbar/mains) - Over- and underfrequency (generator and busbar/mains) - Vector jump - Df/dt (ROCOF)	Software option	
A2	- Over- and undervoltage (generator and busbar/mains) - Over- and underfrequency (generator and busbar/mains) - Df/dt (ROCOF)	Software option	
A3	- Over- and undervoltage (generator and busbar/mains) - Over- and underfrequency (generator and busbar/mains) - Vector jump	Software option	
B	**Generator/busbar/mains protection**		
B1	- Over- and undervoltage (generator and busbar/mains) - Over- and underfrequency (generator and busbar/mains)	Software option	
C	**Generator add-on protection package**		
C1	- Over- and undervoltage (generator) - Over- and underfrequency (generator) - Overload - Fast overcurrent (<42 ms) - High overcurrent (<200%) - Current unbalance - Voltage asymmetry - Reactive power (import (excitation loss)/export (overexcitation))	Software option	
C2	- Negative sequence voltage high - Negative sequence current high	Software option	

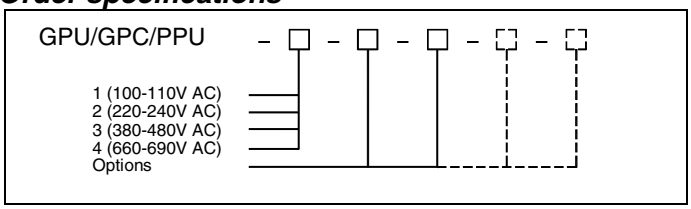
DEIF A/S

Op-tion	Description	Placed in	Note
D	**Voltage/var/cos φ control**		
D1	Selection between: - Constant voltage control (stand-alone) - Constant reactive power control (parallel with mains) - Constant power factor control (parallel with mains) - Reactive load sharing (island paralleling with other generators)	Software option	PPU/GPC: Not with EF2 GPU: Not available
D2	- Constant voltage (stand-alone/synchronisation)	Slot #4	GPU: Only when option G2 is also chosen (same board used)
E	**Analogue controller outputs**		
E1	- +/-20 mA for speed governor - +/-20 mA for AVR	Slot #4	PPU/GPC: AVR: Only when option D is chosen Not with EF GPU: Requires G2 Not with F2
F	**Analogue transducer outputs**		
F1	- 2 x 0(4)...20 mA transducer outputs	Slot #6	PPU/GPC: Not when option EF3 is chosen
F2	- 4 x 0(4)...20 mA transducer outputs	Slot #4 + #6	PPU/GPC: Not available GPU: Not with G2
EF	**Combination outputs**		
EF2	- +/-20 mA for speed governor - 1 x 0(4)...20 mA transducer output	Slot #4	PPU/GPC: Not with E1, F2, EF3, EF4 GPU: Not available
EF3	- 1 x PWM (Pulse Width Modulated) output f. CAT speed governor - 1 x PWM (Pulse Width Modulated) output for droop - +/-20 mA for speed governor or AVR - 2 x relay outputs for speed governor or AVR	Slot #4 + #6	PPU/GPC: Not with E1, F1, F2, EF2, EF4 AVR: Requires D GPU: Not available
EF4	- +/-20 mA for speed governor or AVR - 2 x relay outputs for speed governor or AVR	Slot #4	PPU/GPC: Not with E1, F2, EF2, EF3 AVR: Requires D GPU: Not available
G	**Start/stop/synchronising control relay outputs**		
G1	- 2 x relay outputs for start and stop of other generators (programmable)	GPU: Slot #8	PPU/GPC: Standard function GPU: Not with H4, M13, M15
G2	- Synchronisation with relay speed governor outputs (GPU only)	GPU: Slot #4	PPU/GPC: Standard function GPU: Not with F2
H	**Serial communication**		
H1	- Can-open	Slot #2	Not with H2, H3, N1
H2	- Mod-bus RTU (RS485)	Slot #2	Not with H1, H3
H3	- Profi-bus DP (RS485)	Slot #2	Not with H1, H2, N1
H4	- CAT CCM (RS232)	Slot #8	Only limited engine data can be displayed. All data can be read via H2
J	**Cables**		
J1	- Display cable with plugs, 3 m. UL94 (V1) approved		
J2	- Display cable with plugs, 6 m. UL94 (V1) approved		
J3	- PC cable for utility software (RS232). UL94 (V1) approved		
K	**Designers reference handbook**		
K1	- Hard copy (as standard enclosed as a CD-ROM)		
L	**Display gasket for IP54**		
M	**Configurable engine control cards**		
M1 See note	Engine control card with Pt100 sensor inputs - 4 x 4…20 mA inputs - 2 x Pt100 inputs - 1 x tacho input (magnetic pick-up) - 5 x binary inputs - 3 x relay outputs	Slot #7	GPU: Not with G2
M2 See note	Engine control card with VDO sensor inputs - 3 x 4…20 mA inputs - 3 x VDO (resistor) inputs - 1 x tacho input (magnetic pick-up) - 9 x binary inputs - 3 x relay outputs	Slot #7	GPU: Not with G2

Op-tion	Description	Placed in	Note	
M	**Configurable I/O extension cards**			
M13	- 7 x binary inputs	Slot #8		Not with H4, M14, M15
M14	- 4 x relay outputs	Slot #8		Not with H4, M13, M15
M15	- 4 x 0(4)…20 mA analogue inputs	Slot #8		Not with H4, M13, M14
N	**Ethernet TCP/IP communication**			
N1	- Integrated WebServer with web pages for plant presentation Example: See http://ml2.deif.com			Requires H2
O	**Water turbine control**			
O1	- Water turbine control, parallel with mains generator	Software option	PPU/GPC: GPU:	Requires M15 Not available

NOTE:
If option M1/M2, engine start/stop control, is used in marine applications, separate approved engine protection (overspeed, water temperature and oil pressure) is needed.
Only the PPU and GPU are marine approved.

Order specifications



Ethernet

Option N1:	WebServer

Slot #4, term. 65-72
Governor/AVR outputs

PPU/GPC: **GPU:**	4 x relay as standard Option G2/D2
Option E1:	2 x +/- 20 mA out, governor + AVR
Option F2:	2 x 0(4)…20 mA out, transducer
Option EF2:	1 x +/- 20 mA out, governor 1 x 0(4)…20 mA out, transducer
Option EF3:	1 x PWM governor out 1 x +/- 20 mA out, AVR 2 x relay out
Option EF4:	1 x +/- 20 mA out, AVR 2 x relay out

Slot #6, term. 90-97
In-/outputs

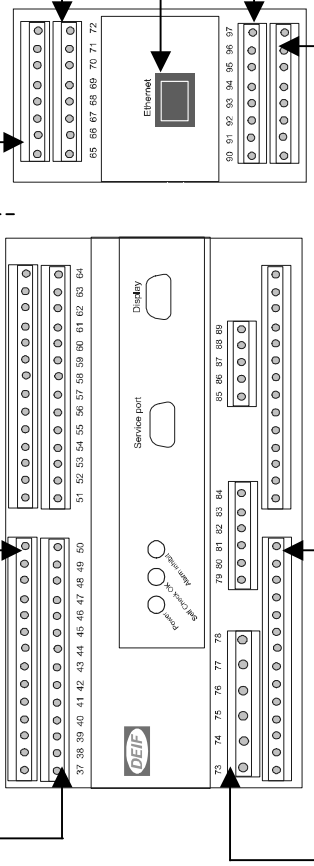
Option F1/F2:	2 x 0(4)…20 mA out, transducer
Option EF3:	PWM droop signal

Slot #8, term. 126-133
Communication/outputs

Option H4:	CAT CCM communication (RS232)
Option M13:	7 x binary inputs
Option M14:	4 x relay outputs
Option M15:	4 x 4...20 mA

Slot #2, term. 29-36
Communication

Option H1:	Can-open
Option H2:	Mod-bus RTU (RS485)
Option H3:	Profi-bus DP (RS485)



Slot #1, term. 1-28
Power supply (std. board)

24 VDC supply, 8W
1 x status output relay
5 x relay outputs
2 x pulse outputs (kWh, kvarh)
5 x binary inputs

Slot #7, term. 98-125
Engine I/F

Option M1:	4 x 4…20 mA in 2 x Pt100 in 1 x magn. pick-up in 5 x binary in 3 x relay out
Option M2:	3 x 4…20 mA in 3 x VDO in 1 x magn. pick-up in 9 x binary in 3 x relay out

Slot #3, term. 37-64
Load sharing (std. in PPU/GPC)

Option D2:	Constant voltage, synchronisation/stand-alone (GPU only and only with option G2)
Option G2:	Synchronisation with relay outputs (GPU only)

Slot #5, term. 73-89
AC measuring (std. board)

3 x generator voltage
3 x generator current
3 x busbar/mains voltage

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

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