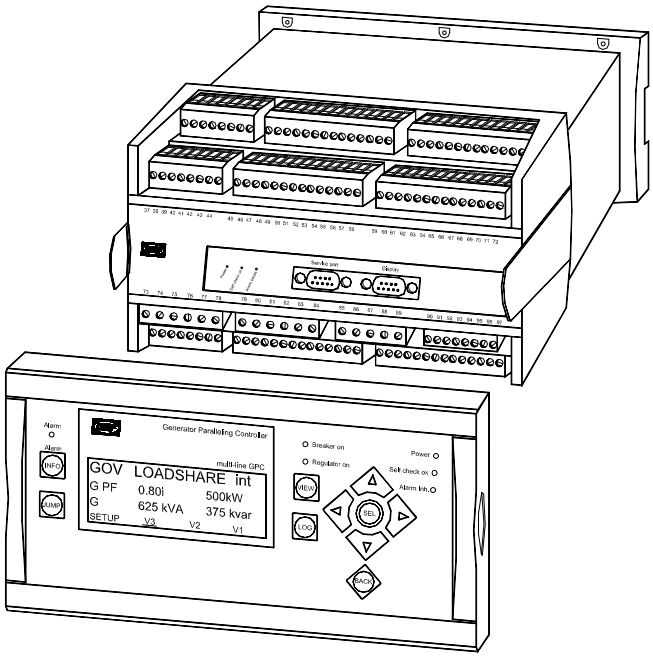
DEIF A/S

Description of options

Option C1
Generator add-on protection package
Multi-line 2 – version 2

4189340267E
SW version 2.42.X



- *Description of options*
- *Functional description*
- *Parameter list*

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This paper relates to multi-line 2 ver. 2 PPU/GPU/GPC units with application software version 2.42.1 or later.

1. Warnings and legal information

Legal information and responsibility

DEIF takes no responsibility for installation or operation of the generator set. If there is any doubt about how to install or operate the generator set controlled by the unit, the company responsible for the installation or the operation of the set must be contacted.

The units are not to be opened by unauthorised personnel. If opened anyway, the warranty will be lost.

Electrostatic discharge awareness

Sufficient care must be taken to protect the terminals against static discharges during the installation. Once the unit is installed and connected, these precautions are no longer necessary.

Safety issues

Installing the unit implies work with dangerous currents and voltages. Therefore, the installation should only be carried out by authorised personnel who understand the risks involved in working with live electrical equipment.

Be aware of the hazardous live currents and voltages. Do not touch any AC measurement inputs as this could lead to injury or death.

Definitions

Throughout this document a number of notes and warnings will be presented. To ensure that these are noticed, they will be highlighted in order to separate them from the general text.

Notes

The notes provide general information which will be helpful for the reader to bear in mind.

Warning

The warnings indicate a potentially dangerous situation which could result in death, personal injury or damaged equipment, if certain guidelines are not followed.

2. Description of option

C1 option

Option C1 is a software option and therefore not related to any hardware apart from the standard-installed hardware. Option C1 is a mix of frequency, voltage, overload, overcurrent, unbalance alarms and reactive power import/export protections as follows:

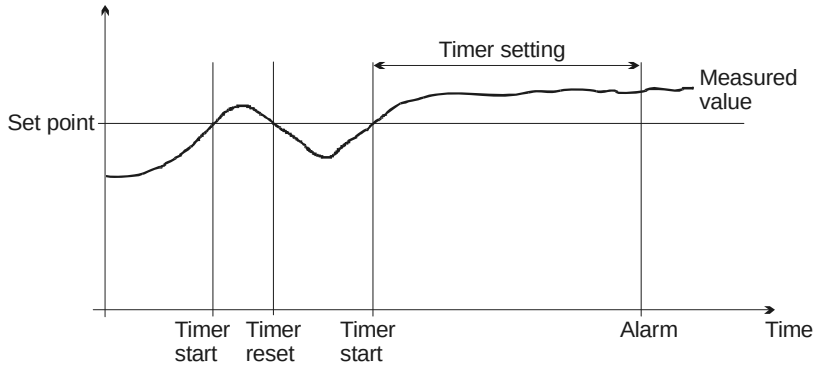
Protection	ANSI no.
Overvoltage	59
Undervoltage	27
Overfrequency	81
Underfrequency	81
Overload	32
Fast overcurrent	50/51
Current unbalance	60
Voltage asymmetry	60
Loss of excitation (reactive power import)	40
Overexcitation (reactive power export)	40

3. Functional descriptions

Voltage and frequency

Voltage and frequency is set in % of nominal generator value. The delay settings are all of the definite time type, meaning that a set point and time is selected.

If the function is e.g. overvoltage, then the timer will be activated, if the set point is exceeded. If the voltage value goes below the set point value before the timer runs out, then the timer will be stopped and reset.



When the timer runs out, the output is activated. The total delay will be the delay setting + the reaction time.

Alarm inhibit

Some of the alarms included in the option C1 can be inhibited in order to avoid nuisance alarms during controlled conditions such as start/stop of the gen-set and breaker operations.

For general information about the inhibit function, please refer to the Designer's Reference Handbook.

4. Parameter list

Parameter table description

The table consists of the following possible adjustments:

Set point: The alarm set point is adjusted in the set point menu. The setting is in Hz/sec.

Timer: The timer setting indicates the duration of the period between the alarm situation and the alarm occurrence.

Relay output A: A relay can be activated by the output A.

Relay output B: A relay can be activated by the output B.

Enable: The alarm can be activated or deactivated. ON means always activated, RUN means that the alarm has run status. This means it is activated when the running signal is present.

For further information about the structure of the parameter descriptions, please see the Designer's Reference Handbook.

Fast overcurrent protection

Alarm settings relate to the nominal current setting (menu 4013).

1070 Generator fast overcurrent 1 protection

No.	Setting		Min. setting	Max. setting	Factory setting
1071	Fast overcurr. 1	Set point	150.0%	350.0%	150.0%
1072	Fast overcurr. 1	Delay	0.0 s	100.0 s	0.0 s
1073	Fast overcurr. 1	Relay output A	R0 (none)	Option dependent	R1 (relay 1)
1074	Fast overcurr. 1	Relay output B	R0 (none)		R0 (none)
1075	Fast overcurr. 1	Enable	OFF	ON	ON

1080 Generator fast overcurrent 2 protection

No.	Setting		Min. setting	Max. setting	Factory setting
1081	Fast overcurr. 2	Set point	150.0%	350.0%	150.0%
1082	Fast overcurr. 2	Delay	0.0 s	100.0 s	1.0 s
1083	Fast overcurr. 2	Relay output A	R0 (none)	Option dependent	R1 (relay 1)
1084	Fast overcurr. 2	Relay output B	R0 (none)		R0 (none)
1085	Fast overcurr. 2	Enable	OFF	ON	ON

Voltage protections

Alarm settings relate to the nominal voltage setting (menu 4014), phase-phase measurements.

1100 Generator high voltage 1 protection

No.	Setting		Min. setting	Max. setting	Factory setting
1101	Gen. high volt. 1	Set point	90.0%	120.0%	103.0%
1102	Gen. high volt. 1	Delay	0.1 s	100.0 s	10.0 s
1103	Gen. high volt. 1	Relay output A	R0 (none)	Option dependent	R0 (none)
1104	Gen. high volt. 1	Relay output B	R0 (none)		R0 (none)
1105	Gen. high volt. 1	Enable	OFF	ON	OFF

1110 Generator high voltage 2 protection

No.	Setting		Min. setting	Max. setting	Factory setting
1111	Gen. high volt. 2	Set point	90.0%	120.0%	105.0%
1112	Gen. high volt. 2	Delay	0.1 s	100.0 s	5.0 s
1113	Gen. high volt. 2	Relay output A	R0 (none)	Option dependent	R0 (none)
1114	Gen. high volt. 2	Relay output B	R0 (none)		R0 (none)
1115	Gen. high volt. 2	Enable	OFF	ON	OFF

1120 Generator low voltage 1 protection

No.	Setting		Min. setting	Max. setting	Factory setting
1121	Gen. low volt. 1	Set point	80.0%	100.0%	97.0%
1122	Gen. low volt. 1	Delay	0.1 s	100.0 s	10.0 s
1123	Gen. low volt. 1	Relay output A	R0 (none)	Option dependent	R0 (none)
1124	Gen. low volt. 1	Relay output B	R0 (none)		R0 (none)
1125	Gen. low volt. 1	Enable	OFF	ON	OFF

1130 Generator high voltage 2 protection

No.	Setting		Min. setting	Max. setting	Factory setting
1131	Gen. low volt. 2	Set point	50.0%	100.0%	95.0%
1132	Gen. low volt. 2	Delay	0.1 s	100.0 s	5.0 s
1133	Gen. low volt. 2	Relay output A	R0 (none)	Option dependent	R0 (none)
1134	Gen. low volt. 2	Relay output B	R0 (none)		R0 (none)
1135	Gen. low volt. 2	Enable	OFF	ON	OFF

Frequency protections

Alarm settings relate to the nominal frequency setting (menu 4011).

1140 Generator high frequency 1 protection

No.	Setting		Min. setting	Max. setting	Factory setting
1141	Gen. high freq. 1	Set point	90.0%	120.0%	103.0%
1142	Gen. high freq. 1	Delay	0.2 s	100.0 s	10.0 s
1143	Gen. high freq. 1	Relay output A	R0 (none)	Option dependent	R0 (none)
1144	Gen. high freq. 1	Relay output B	R0 (none)		R0 (none)
1145	Gen. high freq. 1	Enable	OFF	ON	OFF

1150 Generator high frequency 2 protection

No.	Setting		Min. setting	Max. setting	Factory setting
1151	Gen. high freq. 2	Set point	90.0%	120.0%	105.0%
1152	Gen. high freq. 2	Delay	0.2 s	100.0 s	5.0 s
1153	Gen. high freq. 2	Relay output A	R0 (none)	Option dependent	R0 (none)
1154	Gen. high freq. 2	Relay output B	R0 (none)		R0 (none)
1155	Gen. high freq. 2	Enable	OFF	ON	OFF

1160 Generator low frequency 1 protection

No.	Setting		Min. setting	Max. setting	Factory setting
1161	Gen. low freq. 1	Set point	80.0%	100.0%	97.0%
1162	Gen. low freq. 1	Delay	0.2 s	100.0 s	10.0 s
1163	Gen. low freq. 1	Relay output A	R0 (none)	Option dependent	R0 (none)
1164	Gen. low freq. 1	Relay output B	R0 (none)		R0 (none)
1165	Gen. low freq. 1	Enable	OFF	ON	OFF

1170 Generator low frequency 2 protection

No.	Setting		Min. setting	Max. setting	Factory setting
1171	Gen. low freq. 2	Set point	80.0%	100.0%	95.0%
1172	Gen. low freq. 2	Delay	0.2 s	100.0 s	5.0 s
1173	Gen. low freq. 2	Relay output A	R0 (none)	Option dependent	R0 (none)
1174	Gen. low freq. 2	Relay output B	R0 (none)		R0 (none)
1175	Gen. low freq. 2	Enable	OFF	ON	OFF

Overload protection

Alarm settings relate to the nominal power setting (menu 4012).

1260 Generator overload 1 protection

No.	Setting		Min. setting	Max. setting	Factory setting
1261	Overload 1	Set point	10.0%	200.0%	100.0%
1262	Overload 1	Delay	0.1 s	100.0 s	10.0 s
1263	Overload 1	Relay output A	R0 (none)	Option dependent	R2 (relay 2)
1264	Overload 1	Relay output B	R0 (none)		R0 (none)
1265	Overload 1	Enable	OFF	ON	OFF

1270 Generator overload 2 protection

No.	Setting		Min. setting	Max. setting	Factory setting
1271	Overload 2	Set point	10.0%	200.0%	110.0%
1272	Overload 2	Delay	0.1 s	100.0 s	5.0 s
1273	Overload 2	Relay output A	R0 (none)	Option dependent	R2 (relay 2)
1274	Overload 2	Relay output B	R0 (none)		R0 (none)
1275	Overload 2	Enable	OFF	ON	OFF

1390 Generator overload 3 protection

No.	Setting		Min. setting	Max. setting	Factory setting
1391	Overload 3	Set point	10.0%	200.0%	120.0%
1392	Overload 3	Delay	0.1 s	100.0 s	5.0 s
1393	Overload 3	Relay output A	R0 (none)	Option dependent	R2 (relay 2)
1394	Overload 3	Relay output B	R0 (none)		R0 (none)
1395	Overload 3	Enable	OFF	ON	OFF

Overload 3 is not included in the parameter shift function. (Please refer to the Designers Reference Handbook.)

Current unbalance protection

Alarm settings relate to the nominal current setting (menu 4013).

1280 Generator current unbalance protection

No.	Setting		Min. setting	Max. setting	Factory setting
1281	Current unbalance	Set point	0.0%	100.0%	30.0%
1282	Current unbalance	Delay	0.1 s	100.0 s	10.0 s
1283	Current unbalance	Relay output A	R0 (none)	Option dependent	R2 (relay 2)
1284	Current unbalance	Relay output B	R0 (none)		R0 (none)
1285	Current unbalance	Enable	OFF	ON	OFF

Voltage asymmetry protection

Alarm settings relate to the nominal voltage setting (menu 4014).

1290 Generator voltage unbalance protection

No.	Setting		Min. setting	Max. setting	Factory setting
1291	Voltage unbalance	Set point	0.0%	50.0%	10.0%
1292	Voltage unbalance	Delay	0.1 s	100.0 s	10.0 s
1293	Voltage unbalance	Relay output A	R0 (none)	Option dependent	R2 (relay 2)
1294	Voltage unbalance	Relay output B	R0 (none)		R0 (none)
1295	Voltage unbalance	Enable	OFF	ON	OFF

VAr import (loss of excitation) protection

Alarm settings relate to the nominal power setting in kW (menu 4012).

1300 Generator VAr import protection

No.	Setting		Min. setting	Max. setting	Factory setting
1301	VAr import	Set point	0.0%	150.0%	10.0%
1302	VAr import	Delay	0.1 s	100.0 s	10.0 s
1303	VAr import	Relay output A	R0 (none)	Option dependent	R1 (relay 1)
1304	VAr import	Relay output B	R0 (none)		R0 (none)
1305	VAr import	Enable	OFF	ON	OFF

VAr export (overexcitation) protection

Alarm settings relate to the nominal power setting in kW (menu 4012).

1310 Generator VAr export protection

No.	Setting		Min. setting	Max. setting	Factory setting
1311	VAr export	Set point	0.0%	100.0%	75.0%
1312	VAr export	Delay	0.1 s	100.0 s	10.0 s
1313	VAr export	Relay output A	R0 (none)	Option dependent	R2 (relay 2)
1314	VAr export	Relay output B	R0 (none)		R0 (none)
1315	VAr export	Enable	OFF	ON	OFF