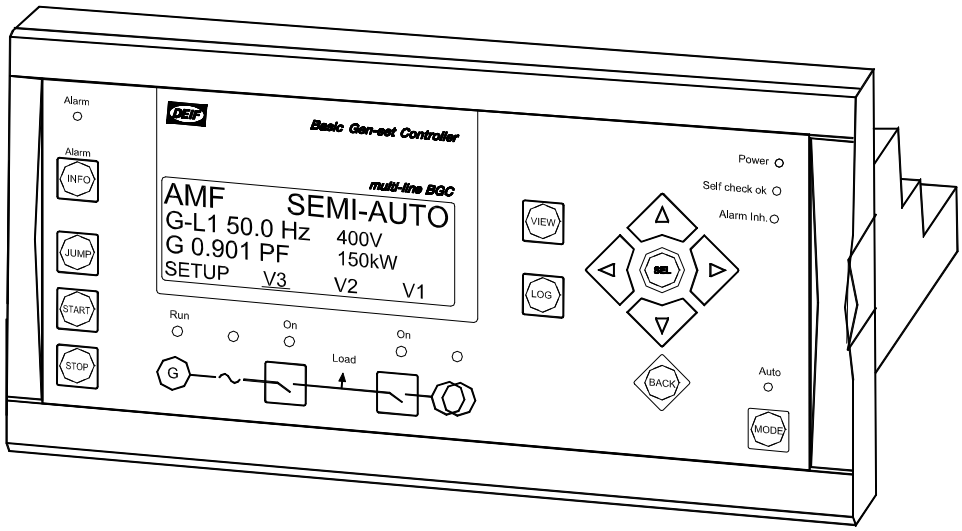
DEIF A/S

Description of options

Option H3,
Profibus DP
Basic Gen-set Controller

4189340311G
SW version 2.3x.x



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1. Warnings and legal information

This chapter includes important information about general legal issues relevant in the handling of DEIF products. Furthermore, some overall safety precautions will be introduced and recommended. Finally, the highlighted notes, which will be used throughout this document, are presented.

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 controlled by the BGC unit, the company responsible for the installation or the operation of the set must be contacted.

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

Notes

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

Xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx

2. Description of option

This option includes the Profibus communication.

Terminal description

Term.	Function	Description
55	DATA + (B)	Pin 3 on 9 pole sub-D connector
56	GND	Pin 5 on 9 pole sub-D connector
57	DATA - (A)	Pin 8 on 9 pole sub-D connector
58	DATA + (B)	
59	GND	
60	DATA - (A)	
61	Not used	
62	Not used	

General introduction to multi-line 2 Profibus DP

Profibus is a vendor-independent, open field bus standard for a wide range of applications in manufacturing and process automation. Vendor-independence and openness are insured by the international standards EN 50170 and EN 50254.

The multi-line 2 uses the communication profile 'DP' Decentralized Periphery.

Transmission speed and range

Transmission speeds between 9.6 kbit/sec and 1500 kbit/sec are available.

Baud rate (kbit/s)	9.6	19.2	93.75	187.5	500	1500
Range/segment	1200m	1200m	1200m	1000m	400m	200m

Up to 32 stations (master or slave) can be connected in one segment.

The BGC automatically identifies the Baud rate.

Configuration and the GSD file

The GSD files 'deif0632.gsd' and 'deif0632.dib' are on the included CD. They are to be copied in the sub paths *GSD* and *BITMAPS* of COM PROFIBUS. Then the Profibus network is ready to be configured.

The station address is set in menu 4060 of the BGC.

Data in/out

61 words input and 13 words output are used.

Data-in is the input data from the BGC to the master. Data-out is the output data from Profibus master to the BGC.

3. Parameter lists

Profibus setup

4070 Communication control

No.	Setting		Min. setting	Max. setting	Factory setting
4071	Comm. control	Power	OFF	ON	OFF
4072	Comm. control	Frequency	OFF	ON	OFF
4073	Comm. control	Voltage	OFF	ON	OFF
4074	Comm. control	PF	OFF	ON	OFF
4075	Comm. control	VAr	OFF	ON	OFF

Selecting communication control ON will overrule external and internal settings.

4080 Ext.Comm. ID

No.	Setting		Min. setting	Max. setting	Factory setting
4081	External comm. ID	ID	1	247	3

4090 External communication error

No.	Setting		Min. setting	Max. setting	Factory setting
4091	External comm. error	Delay	1.0 s	100.0 s	10.0 s
4092	External comm. error	Relay output A	R0 (none)	Option dependent	R0 (none)
4093	External comm. error	Relay output B	R0 (none)		R0 (none)
4094	External comm. error	Enable	OFF	ON	OFF

4. Data tables

Measurement table (input data)

Address	Content	Type
Res		
Res		
Res		
3		Application version
4	U_{L1-L2}	Generator voltage. Measured in [V]
5	U_{L2-L3}	Generator voltage. Measured in [V]
6	U_{L3-L1}	Generator voltage. Measured in [V]
7	U_{L1-N}	Generator voltage. Measured in [V]
8	U_{L2-N}	Generator voltage. Measured in [V]
9	U_{L3-N}	Generator voltage. Measured in [V]
10	F_{GEN}	Generator frequency. Measured in [Hz/100]
11	I_{L1}	Generator current. Measured in [A]
12	I_{L2}	Generator current. Measured in [A]
13	I_{L3}	Generator current. Measured in [A]
14	Cos-phi	-99...0...100 Generator cosinus-phi. Measured in cos-phi:100 Negative value means capacitive cos-phi
15	P_{GEN}	Generator active power. Measured in [W]. Negative value means reverse power
16	Q_{GEN}	Generator reactive power. Measured in [VAr]. Positive value means generated inductive reactive power
17	$U_{BBL1-L2}$	Busbar. Measured in [V]
18	F_{BB}	Busbar frequency L1. Measured in [Hz/100]
19		Reserved
20		Reserved
21 [HI] 22 [LO]	E_{GEN}	Energy counter. Measured in [kWh]. Max. 300000MWh
23	Alarms	Bit 0 1010 U-BB High step 1 Bit 1 1020 U-BB High step 2 Bit 2 1030 U-BB Low step 1 Bit 3 1040 U-BB Low step 2 Bit 4 1050 f-BB High step 1 Bit 5 1060 f-BB High step 2 Bit 6 1070 f-BB Low step 1 Bit 7 1080 f-BB Low step 2 Bit 8 1090 Reverse power Bit 9 1100 High current step 1 Bit 10 1110 High current step 2 Bit 11 1120 High power step 1 Bit 12 1130 High power step 2

Address	Content	Type	
		Bit 13	1140. Unbalance current
		Bit 14	1150. Unbalance voltage
24	Alarms	Bit 0	1160 Q import
		Bit 1	1170 Q export
		Bit 2	1180 df/dt
		Bit 3	1190 Vector jump
		Bit 4	2060 GB Sync. fail.
		Bit 5	4220. Supply alarm
		Bit 6	GB Breaker close fail.
		Bit 7	GB Breaker open fail.
		Bit 8	GB Breaker position feedback fail.
		Bit 9	Phase sequence error
		Bit 10	2070 MB Sync. fail.
		Bit 11	MB Breaker close fail.
		Bit 12	MB Breaker open fail.
		Bit 13	MB Breaker position feedback fail.
		Bit 14	4390 DG volt / frequency fail
		Bit 15	Tacho fail
25	Alarms	Bit 0	1210. U-DG High step 1
		Bit 1	1220. U-DG High step 2
		Bit 2	1230. U-DG Low step 1
		Bit 3	1240. U-DG Low step 2
		Bit 4	1250. f-DG High step 1
		Bit 5	1260. f-DG High step 2
		Bit 6	1270. f-DG Low step 1
		Bit 7	1280. f-DG Low step 2
		Bit 8	1290. Peak Current 1
		Bit 9	1300. Peak Current 2
		Bit 10	Gov regulation error
		Bit 11	AVR regulation error
		Bit 13	DG Start fail
		Bit 14	Ramp down fail
		Bit 15	DG Stop fail
26		Reserved	
27	Alarms	Bit 0	1800 4-20mA in No3.1
		Bit 1	1820 4-20mA in No4.1
		Bit 2	1840 4-20mA in No5
		Bit 3	1850 4-20mA in No6
		Bit 4	1600 Binary input 11 Option PCB
		Bit 5	1610 Binary input 12 Option PCB
		Bit 6	1620 Binary input 13 Option PCB
		Bit 7	1630 Binary input 14 Option PCB
		Bit 8	1640 Binary input 15 Option PCB
		Bit 9	1650 Binary input 16 Option PCB
		Bit 10	1660 Binary input 17 Option PCB
28	Alarms	Bit 0	
		Bit 1	
		Bit 2	
		Bit 3	1700 Binary input 1 conf. term.
		Bit 4	1710 Binary input 2 conf. term.
		Bit 5	1720 Binary input 3 conf. term.
		Bit 6	1730 Binary input 4 conf. term.
		Bit 7	1740 Binary input 5 conf. term.
		Bit 8	1750 Binary input 6 conf. term.
		Bit 9	1760 Binary input 7 conf. term.
		Bit 10	

Address	Content	Type
		Bit 11 Bit 12
29		Bit 0 GB On Bit 1 MB On Bit 2 Alarm inhibit Bit 3 DG Running Bit 4 Timer, DG volt/frequency OK Bit 5 Mains fail Bit 6 Auto mode Bit 7 Semi mode Bit 8 Test mode Bit 9 Man mode Bit 10 Island Bit 11 AMF Bit 12 RES Bit 13 Fixed power
30		Number of alarms
31		Number of unacknowledged alarms
32	U_{DG-max}	Generator max. voltage. Measured in [V]
33	U_{DG-min}	Generator min. voltage. Measured in [V]
34	$U_{BBL2-L3}$	Busbar voltage. Measured in [V]
35	$U_{BBL3-L1}$	Busbar voltage. Measured in [V]
36	U_{BB-max}	Busbar max. voltage. Measured in [V]
37	U_{BB-min}	Busbar min. voltage. Measured in [V]
38	U_{BBL1-N}	Busbar voltage. Measured in [V]
39	U_{BBL2-N}	Busbar voltage. Measured in [V]
40	U_{BBL3-N}	Busbar voltage. Measured in [V]
41	Reserved	
42	RPM	Tacho
43	S_{GEN}	Generator seeming power. Measured in [kVA]
44	PHI_{L1-L2}	0...359 Generator phase angle. Measured in [deg]
45	PHI_{L2-L3}	0...359 Generator phase angle. Measured in [deg]
46	PHI_{L3-L1}	0...359 Generator phase angle. Measured in [deg]
47	$PHI_{BBL3-L1}$	0...359 Busbar phase angle. Measured in [deg]
48	$PHI_{BBL1-DGL1}$	0...359 Busbar/generator phase angle. Measured in [deg]
49	Res	
50	U_{SUPPLY}	Supply voltage. Measured in [V/10]
51	Res	
52	Res	
53	Control reg.	Control register table address 0
54	Control reg.	Control register table address 1
55	Control reg.	Control register table address 3
56	Control reg.	Control register table address 4
57	Control reg.	Control register table address 5

Address	Content	Type
58	Res.	
59	Res.	
60	Res.	

Control register table (write only)

Address	Content	Description
0		Reserved
1		Reserved
2		Reserved
3	Power regulator set point	0…100% of nominal power Activated in menu 4071.
4	PF regulator set point	60…100 stated as PF value/100. The value 100 means PF = . Activated in menu 4074.
5	Control commands for	Bit 0 Write access (This bit must be 1 when writing the command word) Bit 1 Start Bit 2 GB on Bit 3 GB off Bit 4 Stop Bit 5 MB on Bit 6 MB off Bit 7 Bit 8 Bit 9 Bit 10 Alarm ack. Bit 11 Auto Bit 12 Semi Bit 13 Test Bit 14 Man All bits are automatically reset in the BGC
6	Frequency regulator set point	-50…50Hz/10. Based on nominal frequency. Activated in menu 4072
7	Voltage regulator set point	-100…100%/10 of nominal voltage. Activated in menu 4073.
8	Reactive power regulator set point	-100…100% of nominal power. A negative value means capacitive reactive power, and a positive value means inductive reactive power. Activated in menu 4075.

Please note that a digital input must be selected as "external communication" (I/O settings menu of the utility software) and activated for allowing orders or commands to be given through the above control registers. Concerning the Cos phi data, as long as a value from 60 to 100 is not written there, all the Profibus commands sent to this control register will be discarded.