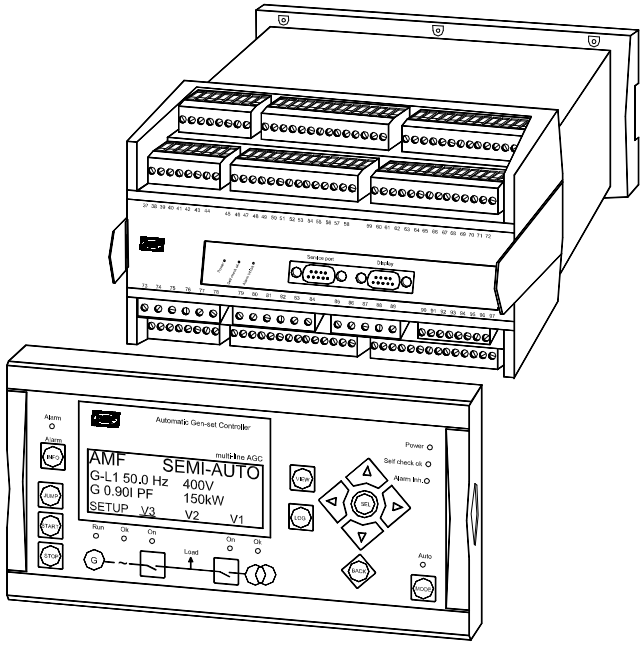
DEIF A/S

Description of options

Option H3,
Profibus DP communication
Automatic Gen-set Controller

4189340357E
SW version 2.3X.X



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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

H3 option

Function	ANSI no.
Profibus DP slave communication	-

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 unit uses the communication profile 'DP' (Decentralised Periphery).

Terminal description

Profibus (option H3)

Term.	Function	Description
29	DATA + (B)	Pin 3 on 9 pole sub-D connector Pin 5 on 9 pole sub-D connector Pin 8 on 9 pole sub-D connector
30	GND	
31	DATA - (A)	
32	DATA + (B)	
33	GND	
34	DATA - (A)	
35	Not used	
36	Not used	

The serial communication line should be terminated between DATA + and DATA - with a resistor equal to the cable impedance.

Terminals 29 and 32 are internally connected.
Terminals 30 and 33 are internally connected.
Terminals 31 and 34 are internally connected.

For wiring diagram, please refer to the installation instructions.

3. Functional description

Transmission speed

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	1200 m	1200 m	1200 m	1000 m	400 m	200 m

Up to 32 stations (master or slaves) can be connected in one segment. The Baud rate is automatically identified by the controller unit.

Configuration and the GSD file

The GSD files ‘deif0632.gsd’ and ‘deif0632.dib’ are on the included CD. They can also be downloaded from our website **www.deif.com**. 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 ID address is set in menu 7011.

Data in/out

61 words input and 13 words output are used. *Data in* is the input data from the unit to the profibus master. *Data out* is the output data from profibus master to the unit.

4. Parameter list

Profibus setup

7010 external communication ID

No.	Setting		Min. setting	Max. setting	Factory setting
7011	Ext. communication ID	ID	1	247	3

The Baud rate is automatically changed with profibus communication.

7080 External communication error

No.	Setting		Min. setting	Max. setting	Factory setting
7081	Ext. communication error	Timer	1.0 s	100.0 s	10.0 s
7082	Ext. communication error	Relay output A	R0 (none)	Option dependent	R0 (none)
7083	Ext. communication error	Relay output B	R0 (none)		R0 (none)
7084	Ext. communication error	Enable	OFF	ON	OFF

5. Data tables

Measurement table (input data)

Address	Content	Type	
		AGC Standard	**AGC Mains**
0		Application version	
1	U_{L1-L2}	Generator voltage. Measured in [V]	Mains voltage. Measured in [V]
2	U_{L2-L3}	Generator voltage. Measured in [V]	Mains voltage. Measured in [V]
3	U_{L3-L1}	Generator voltage. Measured in [V]	Mains voltage. Measured in [V]
4	U_{L1-N}	Generator voltage. Measured in [V]	Mains voltage. Measured in [V]
5	U_{L2-N}	Generator voltage. Measured in [V]	Mains voltage. Measured in [V]
6	U_{L3-N}	Generator voltage. Measured in [V]	Mains voltage. Measured in [V]
7	F_{GEN}	Generator freq. Measured in [Hz/100]	Mains freq. Measured in [Hz/100]
8	I_{L1}	Generator current. Measured in [A]	Mains current. Measured in [A]
9	I_{L2}	Generator current. Measured in [A]	Mains current. Measured in [A]
10	I_{L3}	Generator current. Measured in [A]	Mains current. Measured in [A]
11	Cos-phi	-99...0...100 generator cosinus-phi. Measured in cos-phi:100. Negative value means capacitive cos-phi	
12	P_{GEN}	Generator active power. Measured in [kW]. Negative value means reverse power	
13	Q_{GEN}	Generator reactive power. Measured in [kvar]. Positive value means generated inductive reactive power	
14	$U_{BBL1-L2}$	Busbar. Measured in [V]	
15	F_{BB}	Busbar frequency L1. Measured in [Hz/100]	
16 [HI] 17 [LO]	R_{GEN}	Reactive energy counter. Measured in [kvarh]. Max. 300000 Mvarh	
18 [HI] 19 [LO]	E_{GEN}	Energy counter. Measured in [kWh]. Max. 300000 MWh	
20	Alarms	Bit 0 1010. Reverse power	
		Bit 1 1020. Overcurrent 1	
		Bit 2 1030. Overcurrent 2	
		Bit 3 1060. Reserved	
		Bit 4 1070. Fast overcurrent 1	
		Bit 5 1080. Fast overcurrent 2	
		Bit 6 Reserved	
		Bit 7 1100. DG high volt 1	1100. Mains high volt 1
		Bit 8 1110. DG high volt 2	1110. Mains high volt 2
		Bit 9 1120. DG low volt 1	1120. Mains low volt 1

Address	Content	Type	
		AGC Standard	**AGC Mains**
		Bit 10 1130. DG low volt 2	1130. Mains low volt 2
		Bit 11 1140. DG high freq 1	1140. Mains high freq 1
		Bit 12 1150. DG high freq 2	1150. Mains high freq 2
		Bit 13 1160. DG low freq 1	1160. Mains low freq 1
		Bit 14 1170. DG low freq 2	1170. Mains low freq 2
		Bit 15 1180. BB high volt 1	
21	Alarms	Bit 0 1190. BB high volt 2	
		Bit 1 1200. BB low volt 1	
		Bit 2 1210. BB low volt 2	
		Bit 3 1220. BB high freq 1	
		Bit 4 1230. BB high freq 2	
		Bit 5 1240. BB low freq 1	
		Bit 6 1250. BB low freq 2	
		Bit 7 1260. Overload 1	
		Bit 8 1270. Overload 2	
		Bit 9 1280. Unbalance current	
		Bit 10 1290. Unbalance voltage	
		Bit 11 1300. Q import	
		Bit 12 1310. Q export	
		Bit 13 1320. Gen. neg. sequence current	
		Bit 14 1330. Gen. neg. sequence voltage	
		Bit 15 1390. Busbar positive sequence voltage	
22	Alarms	Bit 0 1350. df/dt (ROCOF)	
		Bit 1 1360. Vector jump	
		Bit 2 4010. 4-20mA input no. 98.1	
		Bit 3 4030. 4-20mA input no. 100.1	
		Bit 4 4050. 4-20mA input no. 102.1	
		Bit 5 4070. 4-20mA input no. 104.1	
		Bit 6 4090. 4-20mA input no. 91.1	
		Bit 7 4110. 4-20mA input no. 93.1	
		Bit 8 4130. 4-20mA input no. 95.1	
		Bit 9 4150. 4-20mA input no. 97.1	
		Bit 10 4240. Pt100 no. 106.1	
		Bit 11 4260. Pt100 no. 109.1	
		Bit 12 4310. Overspeed 1 (Tacho)	
		Reserved	
		Reserved	
		Reserved	
23	Alarms	Reserved	
		Reserved	
		Bit 2 3060. Dig. input term. 43	
		Bit 3 3070. Dig. input term. 44	
		Bit 4 3080. Dig. input term. 45	
		Bit 5 3090. Dig. input term. 46	

Address	Content	Type			
		AGC Standard		AGC Mains	
		Bit 6	3100. Dig. input term. 47		
		Bit 7	3110. Dig. input term. 48		
		Bit 8	3120. Dig. input term. 49		
		Bit 9	3130. Dig. input term. 50		
		Bit 10	3140. Dig. input term. 51		
		Bit 11	3150. Dig. input term. 52		
		Bit 12	3160. Dig. input term. 53		
		Bit 13	3190. Dig. input term. 91		
		Bit 14	3200. Dig. input term. 92		
		Bit 15	3210. Dig. input term. 93		
24	Alarms	Bit 0	3220. Dig. input term. 94		
		Bit 1	3230. Dig. input term. 95		
		Bit 2	3240. Dig. input term. 96		
		Bit 3	3250. Dig. input term. 97		
		Bit 4	3260. Dig. input term. 110		
		Bit 5	3270. Dig. input term. 111		
		Bit 6	3280. Dig. input term. 112		
		Bit 7	3290. Dig. input term. 113		
		Bit 8	3300. Dig. input term. 114		
		Bit 9	3310. Dig. input term. 115		
		Bit 10	3320. Dig. input term. 116		
		Bit 11	3330. Dig. input term. 117		
		Bit 12	3340. Dig. input term. 118		
		Bit 13	4170. Oil pressure 104.1 (VDO sensor 1)		
		Bit 14	4190. Water temperature 105.1 (VDO sensor 2)		
		Bit 15	4210. Fuel level 106.1 (VDO sensor 3)		
25	System alarms/ status	Bit 0	GB sync. fail. alarm		
		Bit 1	Generator breaker ON fail.	Bit 1	Tie breaker ON fail.
		Bit 2	Generator breaker OFF fail.	Bit 2	Tie breaker OFF fail.
		Bit 3	GB position fail. alarm	Bit 3	TB position fail. alarm
		Bit 4	Phase sequence error alarm		
		Bit 5	Governor regulator fail. alarm		
		Bit 6	AVR regulator fail. alarm		
		Bit 7	Battery voltage alarm		
		Bit 8	Sync. timer runout		
		Bit 9	MB sync. fail. alarm		
		Bit 10	Mains breaker ON fail.		
		Bit 11	Mains breaker OFF fail.		
		Bit 12	Mains breaker position fail. alarm		
		NOT USED			
		NOT USED			
		NOT USED			

Address	Content	Type	
		AGC Standard	**AGC Mains**
26	Alarm relay status	Bit 0 Relay 0	
		Bit 1 Relay 1	
		Bit 2 Relay 2	
		Bit 3 Relay 3	
		Bit 4 Relay 4	
		Bit 5 Relay 5	
		Bit 6 Relay 6	
		Bit 7 Relay 7	
		Bit 8 Relay 8	
		Bit 9 Relay 9	
		Bit 10 Relay 10	
		Bit 11 NOT USED	
		Bit 12 NOT USED	
		Bit 13 NOT USED	
		Bit 14 NOT USED	
		Bit 15 NOT USED	
27		Bit 0 Start failure	
		Bit 1 Ramp down failure	
		Bit 2 Stop failure	
		Bit 3 DG voltage/frequency failure	
		Bit 4 Mains failure	
		Bit 5 Mains breaker position ON	
		Bit 6 Deload	
		Bit 7 Start sync./reg.	
		Bit 8 Alarm inhibit	
		Bit 9 Generator breaker position ON	
		Bit 10 Synchronising	
		Bit 11 Running	
		Bit 12 6410. Battery test alarm	
		Bit 13 NOT USED	
		Bit 14 NOT USED	
		Bit 15 NOT USED	
28		Bit 0 4020. 4-20mA input no. 98.2	
		Bit 1 4040. 4-20mA input no. 100.2	
		Bit 2 4060. 4-20mA input no. 102.2	
		Bit 3 4080. 4-20mA input no. 104.2	
		Bit 4 4100. 4-20mA input no. 91.2	
		Bit 5 4120. 4-20mA input no. 93.2	
		Bit 6 4140. 4-20mA input no. 95.2	
		Bit 7 4160. 4-20mA input no. 97.2	
		Bit 8 4250. Pt100 no. 106.2	
		Bit 9 4270. Pt100 no. 109.2	
		Bit 10 4320. Overspeed 2 (Tacho)	
		Bit 11 4180. Oil pressure 104.2 (VDO sensor 1)	

Address	Content	Type	
		AGC Standard	**AGC Mains**
		Bit 12 4200. Water temperature 105.2 (VDO sensor 2)	
		Bit 13 4220. Fuel level 106.2 (VDO sensor 3)	
		Bit 14 1370. Gen. zero sequence current	
		Bit 15 1380. Gen. zero sequence voltage	
29		Bit 0 Block mode	
		Bit 1 Manual mode	
		Bit 2 Semi-auto mode	
		Bit 3 Auto mode	
		Bit 4 Test mode	
		Bit 5 Island mode	
		Bit 6 Automatic mains failure mode	
		Bit 7 Peak shaving mode	
		Bit 8 Fixed power mode	
		Bit 9 Mains power export	
		Bit 10 Load take over mode	
		Bit 11 Power management	
		Bit 12 NOT USED	
		Bit 13 NOT USED	
		Bit 14 NOT USED	
		Bit 15 NOT USED	
30	Alarms	Bit 0 4330. Wire break detection 91	
		Bit 1 4340. Wire break detection 93	
		Bit 2 4350. Wire break detection 95	
		Bit 3 4360. Wire break detection 97	
		Bit 4 4370. Wire break detection 98	
		Bit 5 4380. Wire break detection 100	
		Bit 6 4390. Wire break detection 102	
		Bit 7 4400. Wire break detection 104	
		Bit 8 4410. Wire break detection VDO 104	
		Bit 9 4420. Wire break detection VDO 105	
		Bit 10 4430. Wire break detection VDO 106	
		Bit 11 4410. Wire break detection Pt100 no. 106	
		Bit 12 4420. Wire break detection Pt100 no. 109	
		Bit 13 NOT USED	
		Bit 14 NOT USED	
		Bit 15 NOT USED	
31	$U_{BBL2-L3}$	Busbar voltage. Measured in [V]	
32	$U_{BBL3-L1}$	Busbar voltage. Measured in [V]	
33		Number of alarms	
34		Number of unack. alarms	
35	U_{BBL1-N}	Busbar voltage. Measured in [V]	
36	U_{BBL2-N}	Busbar voltage. Measured in [V]	
37	U_{BBL3-N}	Busbar voltage. Measured in [V]	
38	Running time	Hour	

Address	Content	Type	
		AGC Standard	**AGC Mains**
39	RPM	RPM	
40	S_{GEN}	Generator apparent power. Measured in [kVA]	
41	VDO 1	Oil pressure in [bar]/10	
42	VDO 2	Water temp. in [°C]	
43	VDO 3	Fuel level in [%]	
44	$PHI_{BBL1-L2}$	0...359 Busbar phase angle. Measured in [deg.]	
45	$PHI_{BBL1-DGL1}$	0...359 Busbar/generator phase angle. Measured in [deg.]	
46	CB_{oper}	Generator breaker operations counter	Mains breaker operations counter
47	U_{SUPPLY}	Supply voltage. Measured in [V/10]	
48	Pt100 (1)	-40 – 250 temperature in deg. (engine interface)	
49	Pt100 (2)	-40 – 250 temperature in deg. (engine interface)	
50		Control register table address 0	
51		Control register table address 1	
52		Control register table address 3	
53		Control register table address 4	
54		Control register table address 5	
55		Analog input no. 98 (scaled)	
56		Analog input no. 100 (scaled)	
57		Analog input no. 102 (scaled)	
58		Analog input no. 104 (scaled)	
59		Analog input no. 91 (scaled)	
60		Analog input no. 93 (scaled)	

Control register table (output data)

Address	Content	Description
0	Power regulator set point	0...100% of nominal power Activated in menu 7121
1	PF regulator set point	60...100 stated as PF value/100. The value 100 means PF = 1 Activated in menu 7124
2	Control command	Bit 0 This bit must be 1 when writing the command word (e.g. bit 1 = start). If the bit is 0, the control command is ignored 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 Reserved Bit 10 Alarm ack. This bit is automatically reset in the multi-line 2 Bit 11 Manual mode Bit 12 Auto mode Bit 13 Semi-auto mode Bit 14 Test mode Bit 15 Auto start/stop
3	Frequency regulator set point	-500...500%/10. Based on nominal frequency Activated in menu 7122
4	Voltage regulator set point	-100...100%/10 of nominal voltage Activated in menu 7123
5	Reactive power regulator set point	-250…250% of nominal power. A negative value means capacitive reactive power, and a positive value means inductive reactive power. Activated in menu 7125
6	Control command	Bit 0 Island Bit 1 Automatic mains failure (AMF) Bit 2 Peak shaving Bit 3 Fixed power Bit 4 Mains power export (MPE) Bit 5 Load take over (LTO) Bit 6 Bit 7 Bit 8 Bit 9 Bit 10 Bit 11 Bit 12 Bit 13 Bit 14 Bit 15