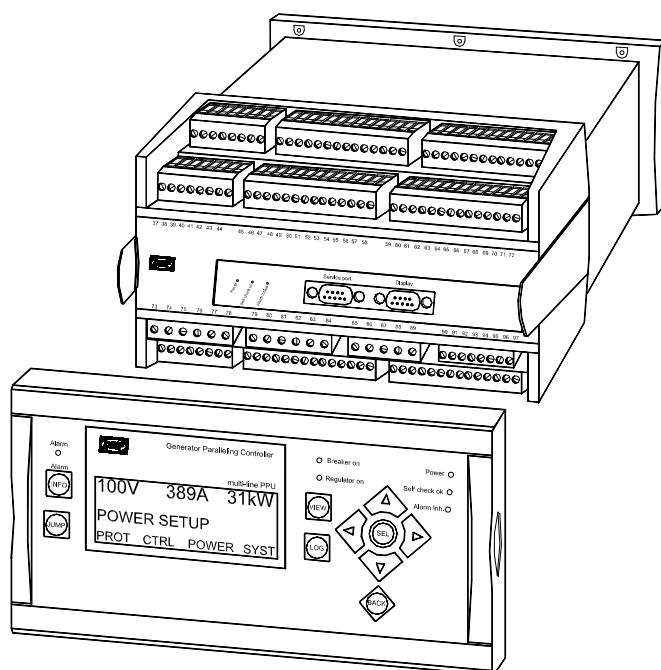


## Description of options

### Option H3 Serial communication – Profibus DP Multi-line 2 – version 2

4189340279I  
SW 2.42.X



- *Description of option*
- *Functional description*
- *Parameter table*
- *Data tables*

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**This manual is valid for standard multi-line 2 GPU/GPC/PPU units with firmware version 2.42.1 or later.**

## 1. Warnings and legal information

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### 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

This document describes the functionality of Profibus DP communication for multi-line PPU/GPC/GPU.

### 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 ensured by the international standards EN 50170 and EN 50254.

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

### Terminal description

#### Profibus (option H3)

Term.	Description	Remark
29	DATA+ (B)	9-pin sub-D pin 3
30	GND	9-pin sub-D pin 5
31	DATA – (A)	9-pin sub-D pin 8
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 diagrams, please refer to the installation instructions.**

### 3. Functional description

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#### 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](http://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 4061.

#### 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

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The setup of the parameters is done from the display or the PC utility software (USW).



For further information about menu structure, see the Designer's Reference Handbook.

### Profibus setup

The setup of parameters is done via the display or the PC utility software (USW).

#### 4050 Communication control enable/disable control

No.	Setting		Min. setting	Max. setting	Factory setting
4051	Comm. control	Power	OFF	ON	OFF
4052	Comm. control	Frequency	OFF	ON	OFF
4053	Comm. control	Voltage	OFF	ON	OFF
4054	Comm. control	VAr	OFF	ON	OFF
4055	Comm. control	PF	OFF	ON	OFF

#### 4060 Communication ID address

No.	Setting		Min. setting	Max. setting	Factory setting
4061	External comm.	ID	1	247	3



The Baud rate is automatically changed with Profibus communication.

#### 4090 External communication error

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

## 5. Data tables

### Measurement table (input data)

Address	Content	Type
0		Application version
1	$U_{L1-L2}$	Generator voltage. Measured in [V]
2	$U_{L2-L3}$	Generator voltage. Measured in [V]
3	$U_{L3-L1}$	Generator voltage. Measured in [V]
4	$U_{L1-N}$	Generator voltage. Measured in [V]
5	$U_{L2-N}$	Generator voltage. Measured in [V]
6	$U_{L3-N}$	Generator voltage. Measured in [V]
7	$F_{GEN}$	Generator frequency. Measured in [Hz/100]
8	$I_{L1}$	Generator current. Measured in [A]
9	$I_{L2}$	Generator current. Measured in [A]
10	$I_{L3}$	Generator 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]	$R_{GEN}$ Export	Reactive energy counter, exported reactive power. Measured in [kvarh]. Max. 300000 Mvarh
18 [HI] 19 [LO]	$E_{GEN}$ Export	Energy counter, exported power. Measured in [kWh]. Max. 300000MWh
20	Alarms	Bit 0      1010. Reverse power Bit 1      1020. Overcurrent step 1 Bit 2      1030. Overcurrent step 2 Bit 3      1060. Overcurrent inverse Bit 4      1070. Fast overcurrent Bit 5      1080. High overcurrent Bit 6      Reserved Bit 7      1100. U-DG High step 1 Bit 8      1110. U-DG High step 2 Bit 9      1120. U-DG Low step 1 Bit 10     1130. U-DG Low step 2 Bit 11     1140. f-DG High step 1 Bit 12     1150. f-DG High step 2 Bit 13     1160. f-DG Low step 1 Bit 14     1170. f-DG Low step 2 Bit 15     1180. U-BB High step 1

Address	Content	Type
21	Alarms	Bit 0 1190. U-BB High step 2 Bit 1 1200. U-BB Low step 1 Bit 2 1210. U-BB Low step 2 Bit 3 1220. f-BB High step 1 Bit 4 1230. f-BB High step 2 Bit 5 1240. f-BB Low step 1 Bit 6 1250. f-BB Low step 2 Bit 7 1260. Overload step 1 Bit 8 1270. Overload step 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. Overload step 3
22	Alarms	Bit 0 1350. df/dt (ROCOF) Bit 1 1360. Vector jump Bit 2 3440. 4-20 mA input no. 1.1 Bit 3 3460. 4-20 mA input no. 2.1 Bit 4 3480. 4-20 mA input no. 3.1 Bit 5 3500. 4-20 mA input no. 4.1 Bit 6 3520. 4-20 mA input no. 5.1 Bit 7 3540. 4-20 mA input no. 6.1 Bit 8 3560. 4-20 mA input no. 7.1 Bit 9 3580. 4-20 mA input no. 8.1 Bit 10 3600. Pt 100 no. 1.1 Bit 11 3620. Pt 100 no. 2.1 Bit 12 3640. Overspeed (Tacho) 1 Bit 13 3120. Dig. input term. 23 Bit 14 3130. Dig. input term. 24 Bit 15 3140. Dig. input term. 25
23	Alarms	Bit 0 3150. Dig. input term. 26 Bit 1 3160. Dig. input term. 27 Bit 2 3170. Dig. input term. 43 Bit 3 3180. Dig. input term. 44 Bit 4 3190. Dig. input term. 45 Bit 5 3200. Dig. input term. 46 Bit 6 3210. Dig. input term. 47 Bit 7 3220. Dig. input term. 48 Bit 8 3230. Dig. input term. 49 Bit 9 3240. Dig. input term. 50 Bit 10 3250. Dig. input term. 51 Bit 11 3260. Dig. input term. 52 Bit 12 3270. Dig. input term. 53 Bit 13 3280. Dig. input term. 110 Bit 14 3290. Dig. input term. 111 Bit 15 3300. Dig. input term. 112

Address	Content	Type
24	Alarms	Bit 0 3310. Dig. input term. 113 Bit 1 3320. Dig. input term. 114 Bit 2 3330. Dig. input term. 115 Bit 3 3340. Dig. input term. 116 Bit 4 3350. Dig. input term. 117 Bit 5 3360. Dig. input term. 118 Bit 6 3370. Dig. input term. 127 Bit 7 3380. Dig. input term. 128 Bit 8 3390. Dig. input term. 129 Bit 9 3400. Dig. input term. 130 Bit 10 3410. Dig. input term. 131 Bit 11 3420. Dig. input term. 132 Bit 12 3430. Dig. input term. 133 Bit 13 3660. Oil pressure (VDO sensor 1) 1 Bit 14 3680. Water temperature (VDO sensor 2) 1 Bit 15 3700. Fuel level (VDO sensor 3) 1
25	System alarms/ status	Bit 0 Sync. fail. alarm Bit 1 Generator breaker ON failure Bit 2 Generator breaker OFF failure Bit 3 Generator breaker 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 Reserved Bit 10 Reserved Bit 11 Start attempts alarm
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 (Stop engine) Bit 10 Relay 10 Bit 11 Relay 11 Bit 12 Relay 12 Bit 13 Relay 13 Bit 14 Relay 14 Bit 15 Relay 15

Address	Content	Type
27	Status	Bit 0 Mode 1 Bit 1 Mode 2 Bit 2 Mode 3 Bit 3 Mode 4 Bit 4 Mode 5 Bit 5 Mode 6 Bit 6 De-load Bit 7 Start sync./reg. Bit 8 Alarm inhibit Bit 9 Breaker position ON Bit 10 Synchronising Bit 11 Relay 16
28		Bit 0 3450. 4-20 mA input no. 1.2 Bit 1 3470. 4-20 mA input no. 2.2 Bit 2 3490. 4-20 mA input no. 3.2 Bit 3 3510. 4-20 mA input no. 4.2 Bit 4 3530. 4-20 mA input no. 5.2 Bit 5 3550. 4-20 mA input no. 6.2 Bit 6 3570. 4-20 mA input no. 7.2 Bit 7 3590. 4-20 mA input no. 8.2 Bit 8 3610. Pt 100 no. 1.2 Bit 9 3630. Pt 100 no. 2.2 Bit 10 3650. Overspeed (Tacho) 2 Bit 11 3670. Oil pressure (VDO sensor 1) 2 Bit 12 3690. Water temperature (VDO sensor 2) 2 Bit 13 3710. Fuel level (VDO sensor 3) 2 Bit 14 1370. Zero sequence current Bit 15 1380. Zero sequence voltage
29	$U_{DG-max}$	Generator max. voltage. Measured in [V]
30	$U_{DG-min}$	Generator min. voltage. Measured in [V]
31	$U_{BBL2-L3}$	Busbar voltage. Measured in [V]
32	$U_{BBL3-L1}$	Busbar voltage. Measured in [V]
33	$U_{BB-max}$	Busbar max. voltage. Measured in [V]
34	$U_{BB-min}$	Busbar min. voltage. Measured in [V]
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
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	$CB_{oper}$	Circuit 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

Address	Content	Type
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. 1 (scaled)
56		Analog input no. 2 (scaled)
57		Analog input no. 3 (scaled)
58		Analog input no. 4 (scaled)
59		Analog input no. 5 (scaled)
60		Analog input no. 6 (scaled)

### Control register table (Output data)

Address	Content	Description
0	Power regulator set point	0...100% of nominal power Activated in menu 4051
1	PF regulator set point	60...100 stated as PF value/100. The value 100 means PF = 1 Activated in menu 4055
2	Control command	Bit 0 This bit must be 1 when writing the command word. If the bit is 0, the control command is ignored Bit 1 Mode 1 Bit 2 Mode 2 Bit 3 Mode 3 Bit 4 Mode 4 Bit 5 Mode 5 Bit 6 Mode 6 Bit 7 De-load Bit 8 Start sync./reg. Bit 9 Alarm inhibit Bit 10 Alarm ack. This bit is automatically reset in multi-line 2 Bit 11 Second set point (protection functions)
3	Frequency regulator set point	-500...500%/10. Based on nominal frequency Activated in menu 4042
4	Voltage regulator set point	-100...100%/10 of nominal voltage Activated in menu 4043
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 4044



If terminal 26 "Control via external communication" is activated, the regulators are controlled via the Modbus. The digital inputs "Alarm ack" and "Alarm inhibit" are always handled even if terminal 26 = ON.



**In menu 4050 it is selected, if a set point is to be controlled by analogue input or by the control registers. (Mode 3 and/or mode 4 must be on). It is possible to write to the control registers also when terminal 26 = OFF. The contents of the control registers are not lost in case of supply failure, so frequent updates are not necessary.**

DEIF A/S reserves the right to change any of the above