



-power in control



MULTI-LINE 2 DESCRIPTION OF OPTIONS



Option P1 Event and alarm printer

- Description of option
- Functional description
- Parameter list



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1. Delimitation

1.1 Scope of option P1

1.1.1 Scope of option

This description of options covers the following product:

AGC	SW version 3.4x.x or later
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2. General information

2.1 Warnings, legal information and safety

2.1.1 Warnings and notes

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

Warnings



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

Notes



Notes provide general information, which will be helpful for the reader to bear in mind.

2.1.2 Legal information and disclaimer

DEIF takes no responsibility for installation or operation of the generator set. If there is any doubt about how to install or operate the engine/generator controlled by the Multi-line 2 unit, the company responsible for the installation or the operation of the set must be contacted.



The Multi-line 2 unit is not to be opened by unauthorised personnel. If opened anyway, the warranty will be lost.

Disclaimer

DEIF A/S reserves the right to change any of the contents of this document without prior notice.

2.1.3 Safety issues

Installing and operating the Multi-line 2 unit may imply 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.

2.1.4 Electrostatic discharge awareness

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

2.1.5 Factory settings

The Multi-line 2 unit is delivered from factory with certain factory settings. These are based on average values and are not necessarily the correct settings for matching the engine/generator set in question. Precautions must be taken to check the settings before running the engine/generator set.

3. Description of option

3.1 ANSI numbers

3.1.1 ANSI numbers

Function	ANSI no.
Alarm and event printer	-

3.2 Option P1

3.2.1 Option P1

Option P1 is a software option. In addition, a printer must be installed close to the controller unit. The maximum distance is 10m.

The event printer option can be used for two purposes:

- The alarm log holds up to 150 events. If the daily operator needs all log information including older log information than the events present in the event log, then it is necessary to make a print-out. (The last 150 events can always be shown in the USW).
- For documentation purposes.



The option P1 requires option H11.



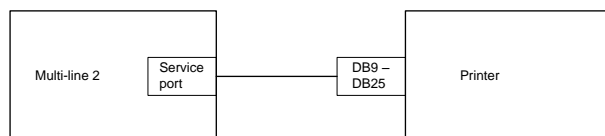
The printer used for this option is the EPSON LX 300+. The printer is NOT supplied with the option.



The events will not be printed for 10 sec. after disconnection of the USW and 10 sec. after unit power-up.

3.3 Wiring

3.3.1 Principle diagram



The cable used between the controller unit and the printer is a 9-pole null-modem cable. This cable is also used for the connection between the PC and the unit, if the PC utility software is used for configuration.

4. Functional description

4.1 Printer setup

4.1.1 Setup

The printer needs to use the following communication:

- Matrix printer
- Serial
- 8 data bit
- No parity bit
- One stop bit
- 64 characters/line
- The Baud rate has to be set to 9600 Baud

Only one of the Epson LX-300+ default settings has to be changed. This is the Baud rate that must be adjusted to 9600. Change the Baud rate by following the printer manual, or use these steps to make the necessary changes:

1. Make sure that the printer has paper and that the ribbon cartridge is in place.
2. While holding down "Tear Off", turn on the printer.
3. When the printer has finished the printing, push 'Tear Off' to enter the English menu.
4. Print one page with the current settings list and check the Baud rate. If it is different from 9600BPS, then continue these steps.
5. Push "Tear Off" to enter the change menu.
6. Follow the instructions printed on the paper.
7. Turn off the printer to finish setting.

4.2 Printer functions

4.2.1 Printer functions

The printer function will start working when the unit locates the printer on the service port and the function is enabled in the menu 7991. This means that the events will be printed, when they occur.

One line will be printed and it looks like this:

1420 df/dt (ROCOF) , UN-ACK 11,10 Hz/s 01-01-2003 04:17.40.8

The following events will be printed:

Printed event	Description
UN-ACK	The alarm occurs
ACK	The alarm is acknowledged
CLEAR	The alarm situation disappears
EVENT	An event but not an alarm
BATTERY TEST	Battery test is activated/accepted/failed

4.2.2 Event log example

GB OFF	, Event	0,00	01-01-2003	04:02.09.0
MB ON	, Event	0,00	01-01-2003	04:02.09.0
GB ON	, Event	0,00	01-01-2003	04:12.59.0
Customer lvi access	, Event	0,00	01-01-2003	04:13.58.5
Customer lvi access	, Event	0,00	01-01-2003	04:17.29.8
MB OFF	, Event	0,00	01-01-2003	04:17.40.9
MB ON	, Event	0,00	01-01-2003	04:19.27.1

4.2.3 Alarm log example

1040	G I>	2 , UN-ACK	187,00	%	01-01-2003	04:14.17.8
1040	G I>	2 , ACK	0,00	%	01-01-2003	04:14.34.9
1040	G I>	2 , CLEAR	0,00	%	01-01-2003	04:14.34.9
1420	df/dt (ROCOF)	, UN-ACK	11,10	Hz/s	01-01-2003	04:17.40.8
1420	df/dt (ROCOF)	, ACK	0,00	Hz/s	01-01-2003	04:18.01.7
1420	df/dt (ROCOF)	, CLEAR	0,00	Hz/s	01-01-2003	04:18.01.7
1250	G f<	2 , UN-ACK	0,00	%	01-01-2003	04:22.44.0
1250	G f<	2 , ACK	0,00	%	01-01-2003	04:22.50.2
1250	G f<	2 , CLEAR	0,00	%	01-01-2003	04:24.49.1

4.2.4 Battery log example

Start Battery test	, BATTERY TEST	0,00	01-01-2003	04:02.09.0
Battery Test OK	, BATTERY TEST	0,00	01-01-2003	04:02.09.0

4.2.5 Additional data

The "additional data" function can be switched on in the menu 7992. Then the following data will be printed together with the specific event:

Generator data	Busbar data	Input data
Frequency	Frequency	Tacho
Power	U-L1L2	Multi-input 102
Reactive power	U-L2L3	Multi-input 105
Power factor	U-L3L1	Multi-input 108
U-L1L2	df/dt	
U-L2L3	Vector jump	
U-L3L1		
I-L1		
I-L2		
I-L3		

The additional data will then be added to each event and it looks like this (one event):

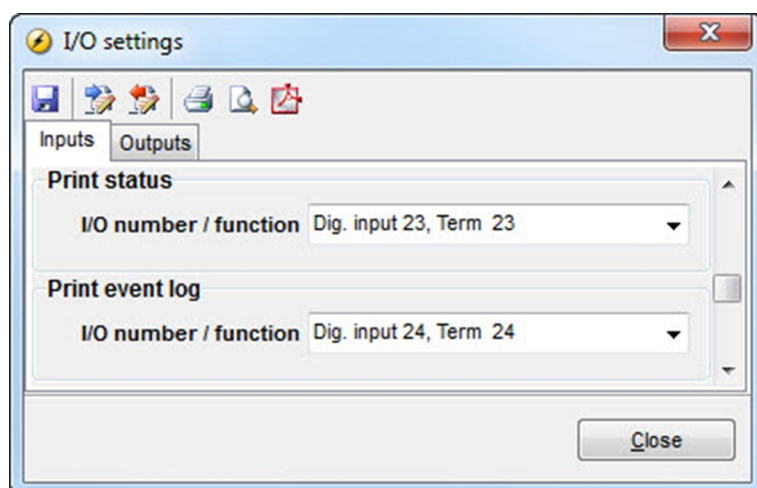
Print Status , Event 1,00 13-02-2004 10:56.48.7

Generator data:				Frequency	=	50,58Hz
Power	= 9	kW,	Q-power	= 6	kVAr, PF	= 0,60
U-L1L2	= 447	V,	U-L2L3	= 453	V, U-L3L1	= 451V
I-L1	= 25	A,	I-L2	= 23	A, I-L3	= 24A
Bus data:				Frequency	=	50,56Hz
U-L1L2	= 449	V,	U-L2L3	= 454	V, U-L3L1	= 450V
df/dt	= 0,0	Hz/s,			Vector jump	= 0,0deg
Input:				Tacho	=	0RPM
Ana.102	= 11,8	bar,	VDO 105	= 47	deg, PT 108	= 0%

4.3 Additional printer functions

4.3.1 Additional printer functions

Through digital inputs, it is possible to make a print of the present running situation and to print the event log. Select the inputs in the utility software. In this example, inputs 110 and 111 are used.



4.3.2 Print event log

When this digital input is activated, the logged events will be printed (150 events).

It is possible to include the additional data in the event log or not. The number of events that will be printed together with additional data can be adjusted in the menu 7993. The event log holds 150 events, so the adjustment goes from 1-150.

Example (no additional events printed):

GB OFF	, Event	0,00	01-01-2003	04:02.09.0
MB ON	, Event	0,00	01-01-2003	04:02.09.0
GB ON	, Event	0,00	01-01-2003	04:12.59.0

Customer lvi access	, Event	0,00	01-01-2003	04:13.58.5
Customer lvi access	, Event	0,00	01-01-2003	04:17.29.8
MB OFF	, Event	0,00	01-01-2003	04:17.40.9
MB ON	, Event	0,00	01-01-2003	04:19.27.1

Example (2 events printed with additional data):

GB OFF, Event 0,00 01-01-2003 04:02.09.0

Generator data:				Frequency	= 50,58	Hz
Power	= 9	kW,	Q-power	= 6	kVAr,	PF
U-L1L2	= 447	V,	U-L2L3	= 453	V,	U-L3L1
I-L1	= 25	A,	I-L2	= 23	A,	I-L3
Bus data:				Frequency	= 50,56	Hz
U-L1L2	= 449	V,	U-L2L3	= 454	V,	U-L3L1
df/dt	= 0,0	Hz/s,			Vector	jump
Input:				Tacho	= 0	RPM
Ana.102	= 11,8	bar,	VDO 105	= 47	deg,	PT 108
						= 0
						%

MB ON, Event 0,00 01-01-2003 04:02.09.0

Generator data:				Frequency	= 50,58	Hz
Power	= 9	kW,	Q-power	= 6	kVAr,	PF
U-L1L2	= 447	V,	U-L2L3	= 453	V,	U-L3L1
I-L1	= 25	A,	I-L2	= 23	A,	I-L3
Bus data:				Frequency	= 50,56	Hz
U-L1L2	= 449	V,	U-L2L3	= 454	V,	U-L3L1
df/dt	= 0,0	Hz/s,			Vector	jump
Input:				Tacho	= 0	RPM
Ana.102	= 11,8	bar,	VDO 105	= 47	deg,	PT 108
						= 0
						%

And so on...

When additional data is printed, the multi-inputs could be translated to another text. E.g. PT 108 could be translated to "C/W temp.". Only the first 10 characters of the translation will be printed in the additional data.

4.3.3 Status print

When this digital input is activated, the current status of the system will be printed. A status print will look like this:

Print Status, Event 1,00 13-02-2004 10:56.48.7

Generator data:				Frequency	= 50,58	Hz
Power	= 9	kW,	Q-power	= 6	kVAr,	PF
U-L1L2	= 447	V,	U-L2L3	= 453	V,	U-L3L1
I-L1	= 25	A,	I-L2	= 23	A,	I-L3
Bus data:				Frequency	= 50,56	Hz
U-L1L2	= 449	V,	U-L2L3	= 454	V,	U-L3L1
df/dt	= 0,0	Hz/s,			Vector	jump
Input:				Tacho	= 0	RPM

Ana.102 = 11,8 bar, VDO 105 = 47 deg, PT 108 = 0 %

4.3.4 Auto status print

When this function is enabled, a status print similar to the above will be printed in an adjustable time interval.



Both the mains breaker and the generator breaker have to be closed before an auto status is printed.

4.4 Test of printer option P1

4.4.1 Test of printer option P1

Since the printer is not supplied by DEIF A/S, it can be useful to follow this procedure to verify that the AGC is able to print as requested.

The test is easily carried out using the HyperTerminal in your Windows system. Find HyperTerminal in Start > All Programs > Accessories > Communications.

4.4.2 Procedure

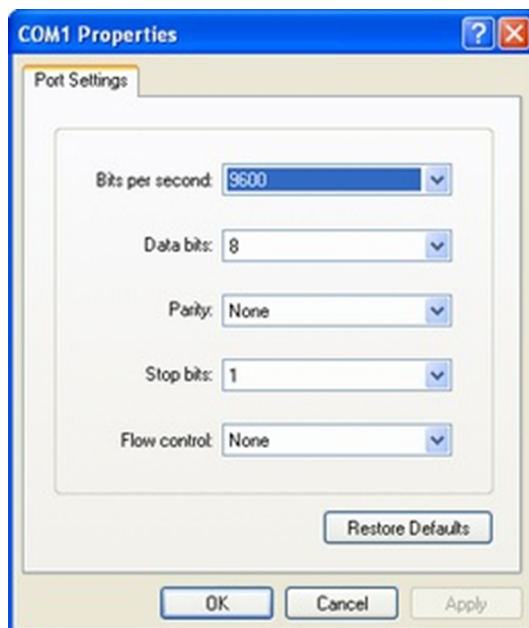
1. Connect the PC to the computer using the null-modem cable (option J3).
2. Connect the DEIF utility software (menu Connection > Connect).
3. Upload the parameters (menu Parameter > Upload).
(Go to the parameters page if this does not happen automatically).
4. Enable the printer function in the menu 7991 from the display or the utility software.
5. Disconnect from the utility software (menu Connection > Disconnect).
6. 6 Connect the HyperTerminal. You must connect using the following settings on the specific com port that you use. In the example below COM1 is used, but this depends on your specific PC.
- 6.1 The HyperTerminal prompts you for a new connection.



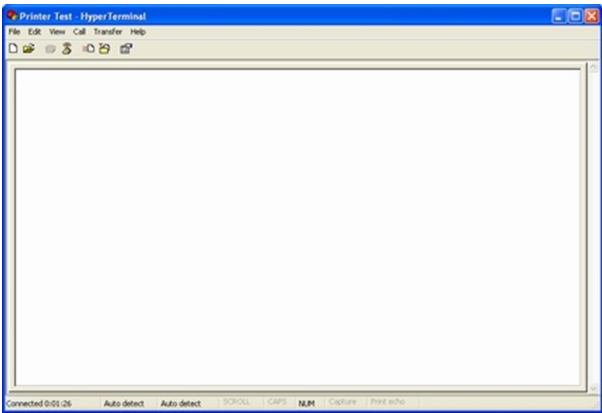
6.2 Select the com port that you want to use.



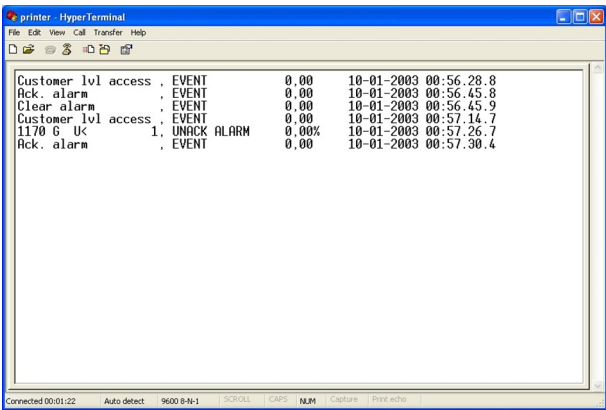
6.3 Select the following settings and click Apply and OK.



6.4 The screen now looks like this:



7. Make an event/alarm and verify that it is shown in the display.



In the example above, a password entry is made and a generator low voltage alarm is activated (enable set to ON).

8. Now you have verified that the printer option is working.

5. Parameter list

5.1 Further information

5.1.1 Parameters

The option P1 relates to the parameter 7990. For further information, please see the separate Parameter List, AGC document number 4189340705.



When the function is enabled, the service port can only be used by the printer. If the PC utility software is connected to the service port, menu 7991 has to be disabled to enable the USW.