

**Nidec**

**Power**



## EasyLog / EasyLogPS

Datalogger / Add-on Module

Dedicated to the D550 AVR

Installation and maintenance

**LEROY-SOMER**™

# EasyLog / EasyLogPS

## Datalogger / Add-on Module Dedicated to the D550 AVR

This manual concerns the EasyLog series which you have just purchased.  
We wish to draw your attention to the contents of this maintenance manual.

### SAFETY MEASURES

Before using your EasyLog series for the first time, it is important to read the whole of this installation and maintenance manual.

All necessary operations and interventions on this machine must be performed by a qualified technician.

For field applications relative to for instance nonlinear loads, transformers magnetizations or huge load impacts and load shedding, it is highly recommended to contact our technical support service in order to fine tune the factory settings of the voltage regulator.

Our technical support service will be pleased to provide any additional information you may require.

The various operations described in this manual are accompanied by recommendations or symbols to alert the user to potential risks of accidents. It is vital that you understand and take notice of the following warning symbols.

#### WARNING

**Warning symbol for an operation capable of damaging or destroying the machine or surrounding equipment.**



**Warning symbol for general danger to personnel.**



**Warning symbol for electrical danger to personnel.**



**All such operations performed on the EasyLog series should be undertaken by personnel trained in the commissioning, servicing and maintenance of electrical and mechanical components.**

### WARNING

**The EasyLog series can be incorporated in a EC-marked machine.**

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All brands and models have been registered and patents applied for.

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This manual complements the D550 CAN bus interface installation and maintenance manual, ref. 5806.

# EasyLog / EasyLogPS

## Datalogger / Add-on Module Dedicated to the D550 AVR

### 1 - PRESENTATION

#### 1.1 - EasyLog

The EasyLog is a datalogger dedicated to be connected to the D550.

An overview of this add-on module is given below including overall dimensions.



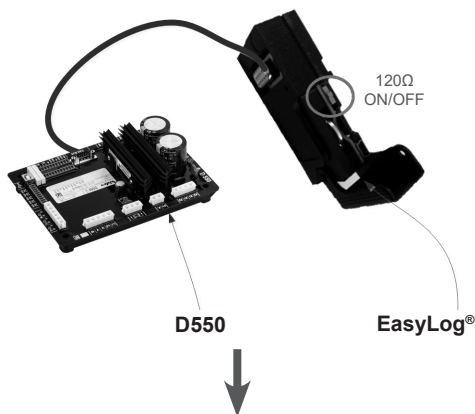
#### Dimensions in mm

Length: 74  
Width: 33  
Height: 23



The EasyLog is equipped with a Real Time Clock functionality, it is compatible with micro SD memory card up to 32GB.

The connection to the D550 is directly done via the SuBD-9 connector with CAN protocol as given in the figure hereafter.



The red colored switch allows to activate or not the CAN termination 120 Ohms resistor.

The connection to the PC is done with a type A/mini-B USB cable.

Once the EasyLog is fitted on the D550 and correctly configured, predefined data and grid code Fault Ride Through (FRT) curves are recorded and available for post processing.

This is detailed in the section dedicated to the configuration of EasyReg and EasyLogPS.

### 1.2 - EasyLogPS

The EasyLogPS (PS standing for Pole Slipping) is an add-on module also dedicated to be connected to the D550 and intends not only to record data (this module embeds the functionalities of the EasyLog module), but also acts as a gateway for CAN bus communication and encoder.

Indeed this module, fitted to the D550 allows to estimate the generator internal angle thanks to the information coming from an encoder.

Afterwards some protections can be deployed to avoid the generator to face Pole Slipping in case of grid FRT or high load operations. An overview of the product and its overall dimensions are given below.



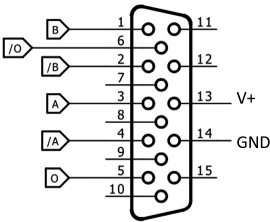
#### Dimensions in mm

Length: 96  
Width: 70  
Height: 63

The connector labelled D550 is dedicated to connect the EasyLogPS to the D550 CAN connector. Next to this connector is a switch allowing to activate or not the CAN termination 120 Ohms resistor depending of the CAN network topology.

This input labelled DC SUPPLY, ranging up to 35VDC, is used to supply the encoder through the SubD-HD15 connector.

On the bottom is the SubD-HD15 on which the encoder is fitted. The pinout of this connector is given in the table below.



Items	SubD-HD15 pins number
Encoder power supply	#13 (+V) #14 (GND)
Pulses A et $\bar{A}$	Respectively #3 and #4
Pulses B et $\bar{B}$	Respectively #1 and #2
Pulses O et $\bar{O}$	Respectively #5 and #6

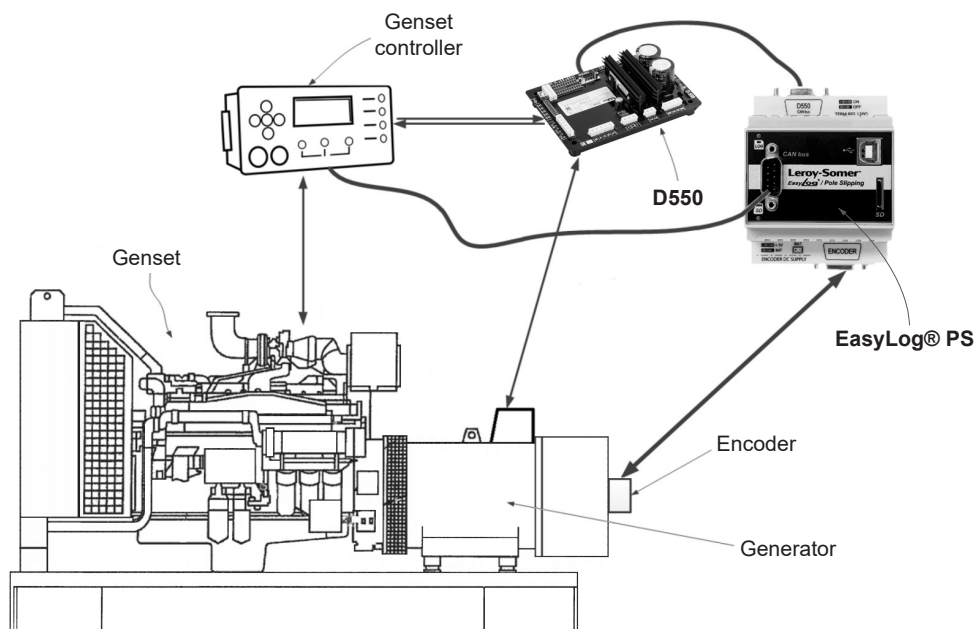
The EasyLogPS is compatible with TTL encoders (5V) and HTL encoders as well. The selection of the encoder type is done with "5V OFF/ON" switch on the left bottom of the EasyLogPS.

Please ensure the matching of the encoder model and voltage selection before powering on.

# EasyLog / EasyLogPS

## Datalogger / Add-on Module Dedicated to the D550 AVR

The global scheme is given below:



Encoder information is transmitted to the D550 by the EasyLogPS to be processed.

The D550, depending on the level of the measured internal angle, can communicate information to the genset controller to protect the generator and ensure a safe operation condition.

For more information about how to fit the encoder on the generator shaft, please contact Nidec Power technical assistance.

2 - CONFIGURATION OF EASYLOG AND EASYLOGPS

2.1 - Configuration

The configuration of EasyLog and EasyLogPS is done on the same way. Both are configured by using EasyReg Advanced software.

1. On CAN Configuration wizard, please click on datalogger configuration:

CAN configuration

Enable CAN

CAN Status  
2: Receive process is ongoing

CAN parameter list

Data transfer Rate

1000 Kb (L <= 30m)

D550 Address

144

CAN Enable proprietary broadcast

Enable J1939 broadcasts/requests

SUB-D9 Power supply enable

Datalogger configuration

Datalogger curves

Boot delay of CAN module (ms)

0

Parameters	Time periodicity (ms)	Convert float to integer	Number of digits after comma
Aucun	100	<input type="checkbox"/>	0
Aucun	100	<input type="checkbox"/>	0
Aucun	100	<input type="checkbox"/>	0
Aucun	100	<input type="checkbox"/>	0

2. Then the following window appears and the parameters to log can be selected.

Fast logSlow logCAN ConfigurationRTC Configuration

Open file...

Add+Delete-Delete all

Parameters to be recorded	Description
001.001:Voltage UN ( V )	Voltage UN ( V )
001.024:Power Factor ( PF )	Power Factor ( PF )
022.008:Group 1 fault status	Group 1 fault status
001.030:Field Voltage ( V )	Field Voltage ( V )

4 / 4

Sampling time 50 ms

Activate trigger

001.001: Voltage UN ( V )

>

20

-

=

0

Number of points before trigger

2,241

Log time before trigger

01 m 52 s 050 ms

Number of lines in the file

10,000

Estimated file size

683.59 KB

Validate

Cancel

## EasyLog / EasyLogPS

### Datalogger / Add-on Module Dedicated to the D550 AVR

The “Fast Log” tab allows to select up to 4 parameters for logging with short sampling time down to 50ms whilst “Slow log” tab allows up to 6 parameters with minimum sampling time of 1 minute.

A trigger can also be used to decide when the logging should start.

The triggering conditions can be enhanced with Boolean operators: e.g in the picture above, records will start only when generator phase voltage U becomes higher than 200V.

The button “Delete” and “Delete all” are dedicated to remove one or all the selected parameters from the log list.

1) To ensure the communication between the D550 and the EasyLog/EasyLogPS, it is necessary to correctly configure the CAN protocol as given below:

The screenshot shows the 'CAN Configuration' tab. It contains the following fields:

- Data transfer Rate:** A dropdown menu set to '1000 Kb (L <= 30m)'.
- D550 ADDRESS:** A text input field containing the value '144'.
- EASYLOG ADDRESS:** A text input field containing the value '254'.

On this figure, the data transfer rate, the D550 address and EasyLog/EasyLogPS are to be configured with the same values as those defined on the D550 otherwise the communication will fail.

The remaining parameters must be left with default values or only modified by expert user, failure to respect these rules could also result some communication errors.

The correspondence table of the parameters is given below.

Note: the reader can refer to the installation and maintenance manual ref 5806 for more information on CAN bus configuration.

2) As mentioned above, the EasyLog and EasyLogPS are equipped with RTC functionality.

The RTC can be synchronized/set with the clock of the computer.

To do this synchronization, the EasyLog/ EasyLogPS must be connected to a D550 and this last one to the computer via USB cable.

Then, the button “Setting the time” below can be clicked on to perform the synchronization.

The screenshot shows the 'RTC Configuration' tab. It contains the following elements:

- Date:** A date picker showing '13/01/2023'.
- Heure:** A time picker showing '15:52:44'.
- Setting the time:** A green button with a clock icon and the text 'Setting the time'.

3) Finally the configuration file must be saved in the SD card of the EasyLog or EasyLogPS to make it ready for use.

Make sure that this file, with default name “conf.ini”, is not modified by any other means, otherwise this might cause malfunction.



2.2 - Data display

To display data, connect your EasyLog/EasyLogPS wit USB connector and open EasyReg Advanced in CAN Configuration window.

CAN configuration

Enable CAN

CAN Status

2: Receive process is ongoing

Data transfer Rate

1000 Kb (L <= 30m)

D550 Address

144

CAN Enable proprietary broadcast

Enable J1939 broadcasts/requests

SUB-D9 Power supply enable

Boot delay of CAN module (ms)

0

CAN parameter list

Datalogger configuration

Datalogger curves

Parameters	Time periodicity (ms)	Convert float to integer	Number of digits aftes comma
Aucun	100	<input type="checkbox"/>	0
Aucun	100	<input type="checkbox"/>	0
Aucun	100	<input type="checkbox"/>	0
Aucun	100	<input type="checkbox"/>	0

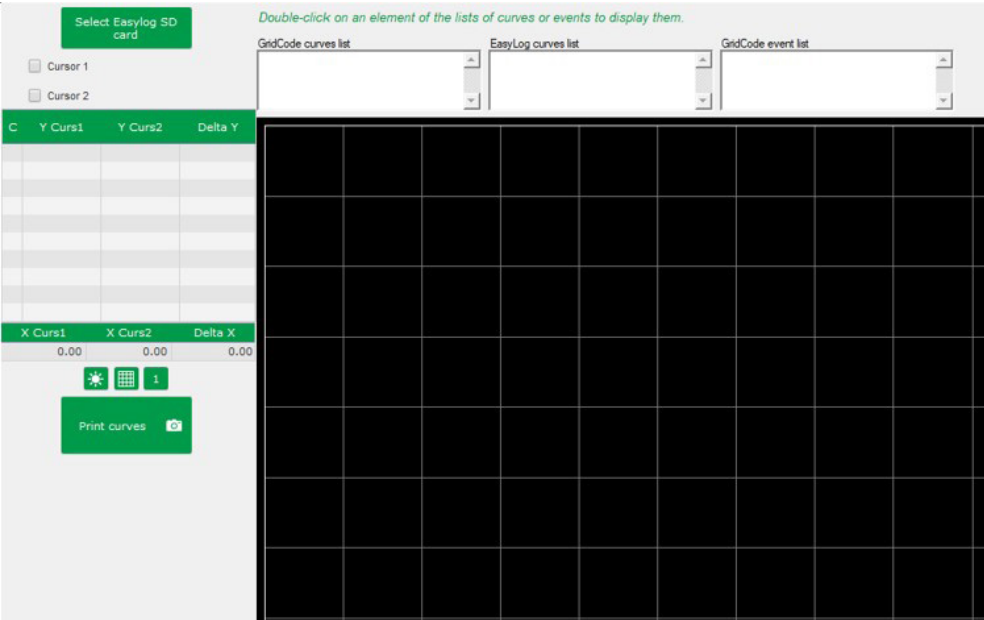
In this window, click on Datalogger curve button,

A green rectangular button with a small icon of a graph on the left and the text "Datalogger curves" in white on the right.

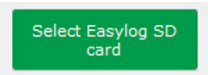
a new window is open.

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On this window, click on button,



and select SD card root. When this is done, all readable files appear in 3 lists at top of window:

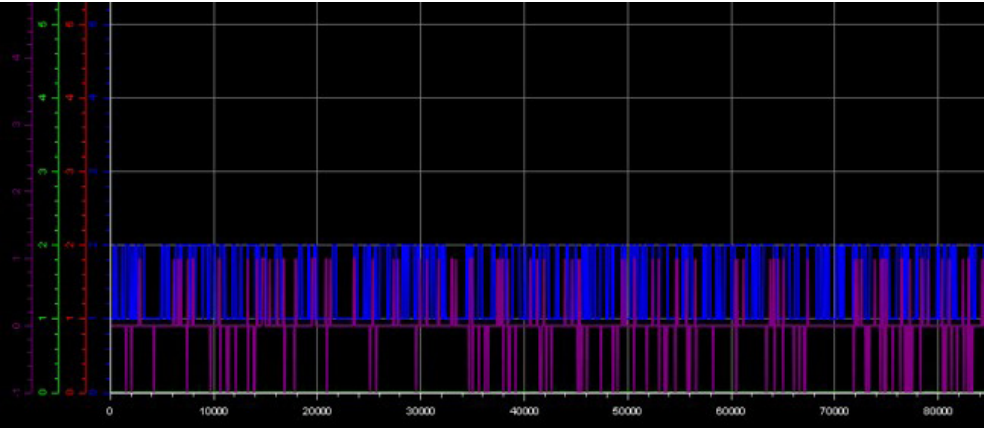


First column is for grid code curve, this curve type appears when a Grid code event is detected by product connected on EasyLog.

Second column is for logger mode, here appears list of all files (fast and slow log) with data chosen by your configuration.

Last column is a summary of grid code event, in each of these documents are described grid code function activated, maximum detected during fault, time where fault is outside grid code limitation.

To open curve, double-click on a curve file, and the curve opens in the scope part just below.



Datas are displayed on this scope.  
On the left side of windows information are displayed:

- 001.054: Average generator voltage
- 001.016: Reactive power
- 001.012: Active power
- 001.024: Power factor

And tools are just below:

- Cursor:

☐ Cursor 1

☐ Cursor 2

C	Y Curs1	Y Curs2	Delta Y
1	0.00	0.00	0.00
2	0.00	0.00	0.00
3	0.00	0.00	0.00
4	0.00	0.00	0.00
5	0.00	0.00	0.00
6	0.00	0.00	0.00

X Curs1 (ms)	X Curs2 (ms)	Delta X (ms)
0.00	0.00	0.00

- Background color (white or black):

- Grid:

- Tickness of curve line:

- Create a picture of curve:

3 - ENHANCED GRID CODE

The grid code function basically allows, in case of FRT, to switch from the Power Factor (or reactive power) regulation mode to voltage regulation mode to sustain the grid.

During this support (in voltage mode) data are recorded by AVR at 5ms sampling time.

These data are distributed like:

Before FRT	FRT	Long support FRT
10 samples	1000 samples	55 samples

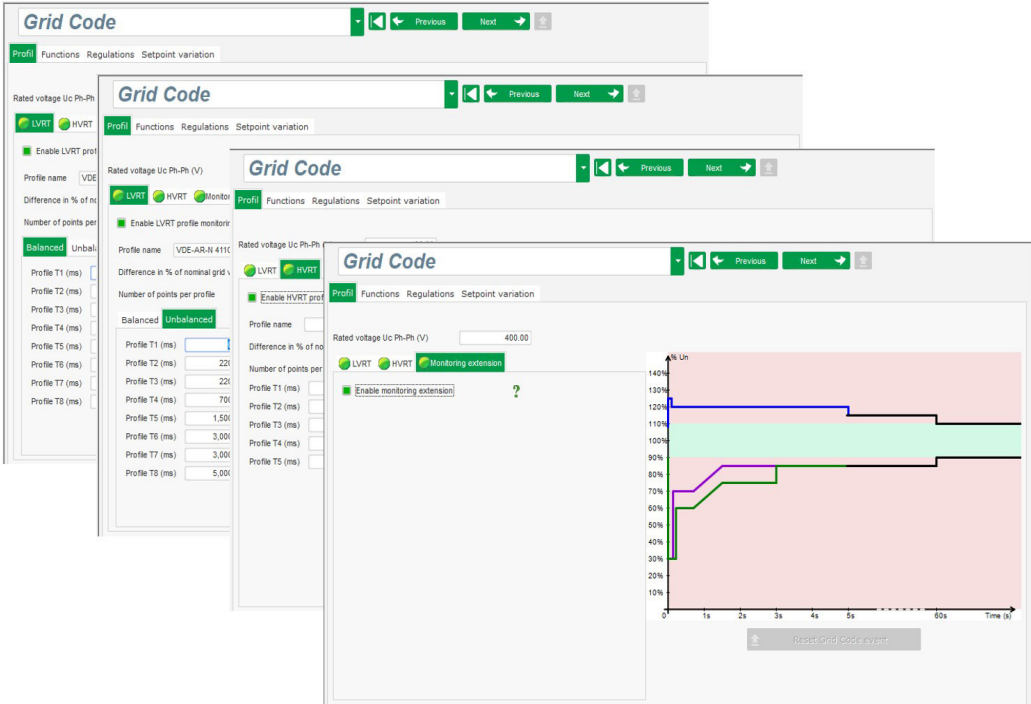
Recorded data are:

- Minimum voltage of 3 phases
- Maximum voltage of 3 phases
- Maximum current of 3 phases
- Angle (if EasyLogPS is connected to a encoder)
- Frequency
- Grid Code flag status (fault and limitation)

3.1 - Configuration of the FRT curve monitoring

Some predefined LVRT profiles have been implemented on the current release of EasyReg and the firmware: UK & Germany. Nevertheless, the user can define other profiles fitting the best his application.

The definition of voltage profile are done in profile onlet in GridCode Window.



# EasyLog / EasyLogPS

## Datalogger / Add-on Module Dedicated to the D550 AVR

Enabling Voltage monitoring will activate an alarm/digital output when the measured voltage will cross the profile and therefore is out of the FRT profile.

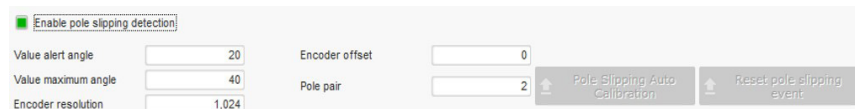
### 3.2 - Pole Slipping

In onlet function, two other functions are available:



The first one, Pole Slipping function allows to calculate the alternator internal angle, thanks to information coming from an encoder and the generator output voltage.

The setting of the encoder features is accessible in the EasyReg main menu under "Grid Code configuration" thru the following interface:



On this section, the number of generator pole pairs must be entered as well as the number of encoder pulses to ensure correct angle calculation.

Maximum internal angle allows the D550 to raise a flag when the internal angle becomes higher than a critical threshold.

This information can be used by the end user to avoid the Pole Slipping and then ensure safe operation conditions for the generator. The button "Pole Slipping calibration" allows to set the initial position of the encoder.

This button must be pushed only when the generator verifies each of the following conditions:

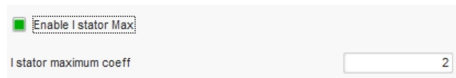
- At rated speed operation
- In no load operation
- Not in parallel operation

Once the calibration is done, the right internal angle measurement can be read either on the EasyReg monitor tab or broadcasted via CAN bus communication.

The reader can refer to the manual ref. 5806 for CAN bus protocols and parameters numbers.

### 3.3 - Current trip

Other function is a current detection, will activate an alarm/digital output when the measured current becomes higher than the predefined value (i.e referring to the picture above, when the current is higher than 10 times the alternator nominal current).



4 - TROUBLESHOOTING

EasyLog and EasyLogPS include 2 multicolor LEDs and the table below gives their status depending on the operation conditions.

	Descriptions	"SD" LED	"LOG" LED
SD card memory	SD Error	Fast flashing red (100ms)	NA
	SD Full	Slow flashing red (1 sec.)	
	Free space < 5%	Red	
	Free space < 20%	Yellow	
	Free space > 20%	Green	
Log	Configuration file not found or corrupted	NA	OFF
	Error		Red
	Logging		Flashing blue
	Wait (trigger mode)		Green

This table can be used to troubleshoot in case of issue.

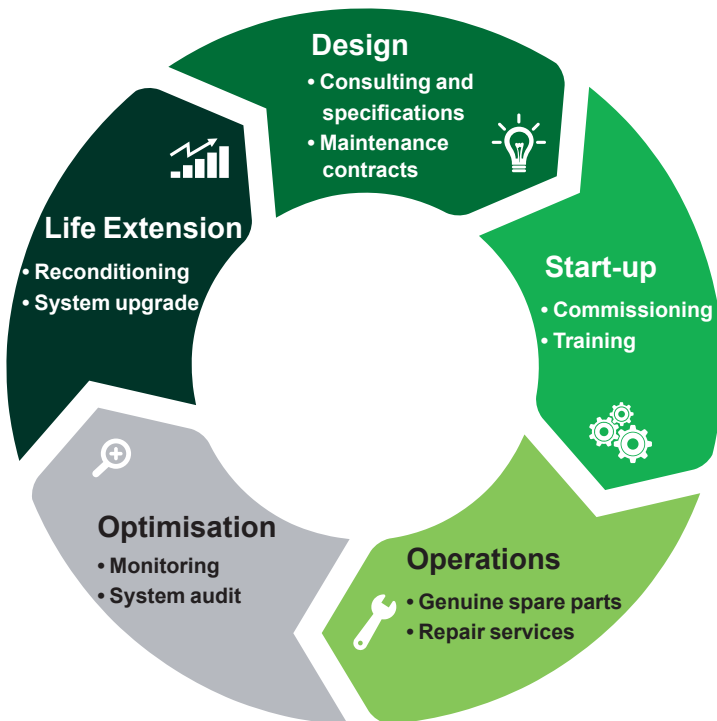
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Trust your alternator maintenance and support to electric power generation experts. Our field personnel are 100% qualified and fully trained to operate in all environments and on all machine types.

We have a deep understanding of alternators operations, providing the best value service to optimize your cost of ownership.

How can we help:



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