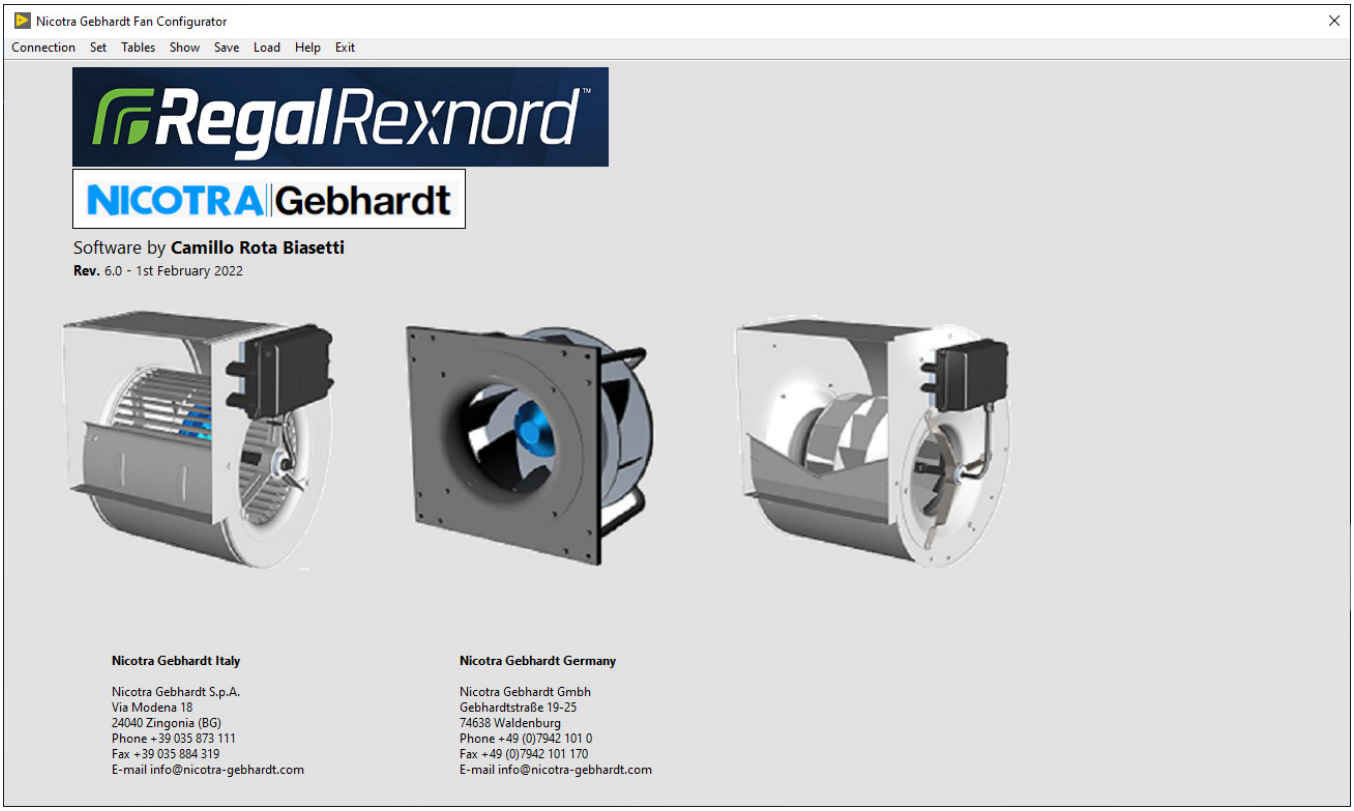
NG FAN

CONFIGURATOR

Operating Manual



Rev. 2.3 – 9th May 2022

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Description and Requirements

The NG Fan Configurator is a freeware tool that can be used to check and configure the Nicotra||Gebhardt EC fans (DDMP, RDP, FDP and PFP) available on the website http://www.nicotra-gebhardt.com.
It runs only on a Windows operating system from 10 version onwards with a hard disk available space of 300MB.
For the connection between the computer and the driver of the fan it is necessary to use an USB to 485 or an USB to 232 converters (OFFLINE cable, refer to the fan manual for more detail).

After downloading and decompressing the zip file, double click on the ***setup.exe*** file and the program will be installed in the main root of the system ***C:\NG Fan Configurator***

!!!NOTE!!!

Due to the shortage of electronic components in 2022 it was necessary to have the coexistence of different driver codes on the same fan model. For this reason, the NG Fan Configurator has been updated to the version 6.0 and lost the full compatibility with the previous version.

Therefore, before installing the new version is necessary to UNINSTALL the previous versions and DELETE the folder in C:\NG Fan Configurator.

All the old configuration created by the customer (not present in the standard database) MUST BE RECREATED WITH NEW by SELECTING THE CORRECT FAN MODEL AND DRIVER.

End User License Agreement

To proceed with any further operation, the user must accept the END USER LICENSE AGREEMENT by clicking here.

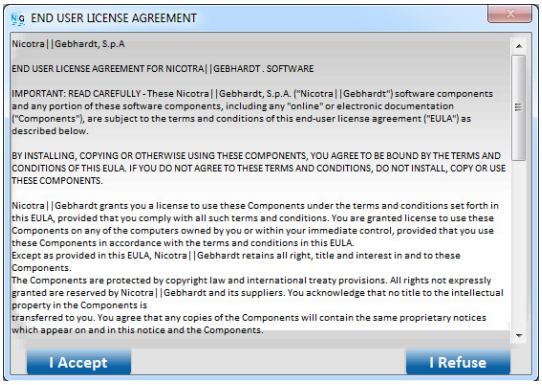

Fig. 1

EULA content

Nicotra||Gebhardt, S.p.A

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Software Menu

Accepting the EULA, the fan starts in the info page and the available menu is shown in figure 2.

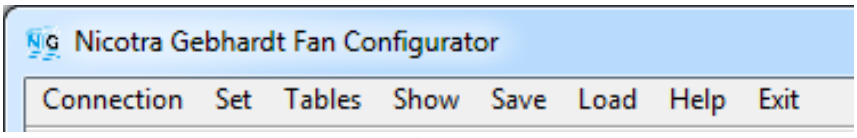


Fig. 2

The single items are shown in figure 3.

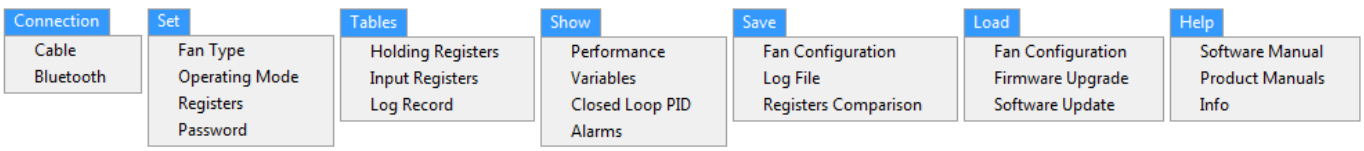


Fig. 3

Menu items

Connection

This item contains two sub-items for the connection of the fan to a PC through a Modbus protocol.

Cable Connection

(Refer to the EC Fan Manual for details).
Before connecting the user must select:

1) The Fan Address
2) The COM port (no preselection)
3) The Cable Type
4) The Baud Rate
5) The Parity

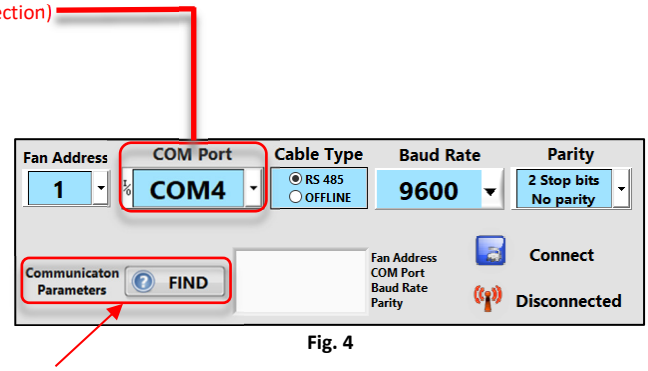


Fig. 4

An automatic procedure for finding the correct parameters is available.

Once the "FIND" button is pressed the first step is to disconnect the cable on the computer side and then reconnect it in order to find the associated COM port associated.

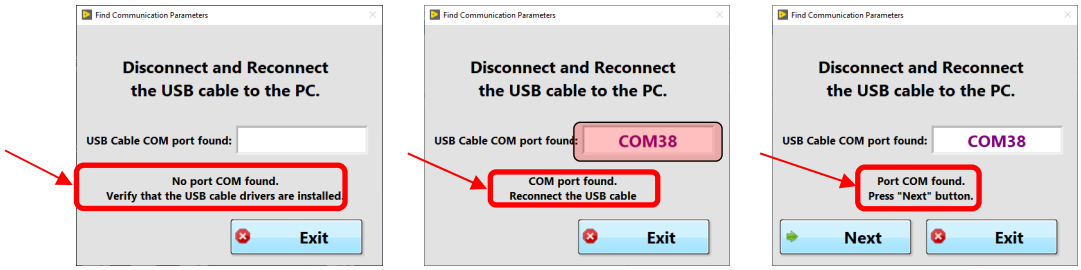


Fig. 5

It is possible to deselect the known items in order to reduce the search time.

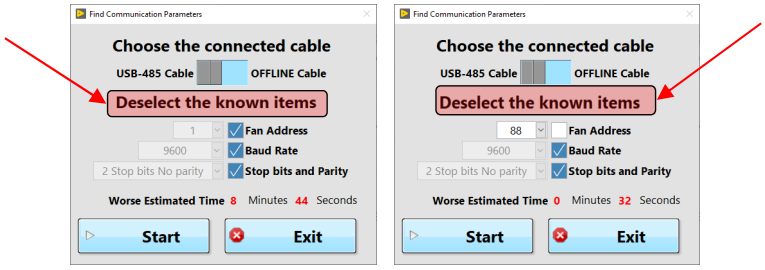


Fig. 6

During the search it is not possible to exit and if the fan is found the parameters are directly saved on the main screen

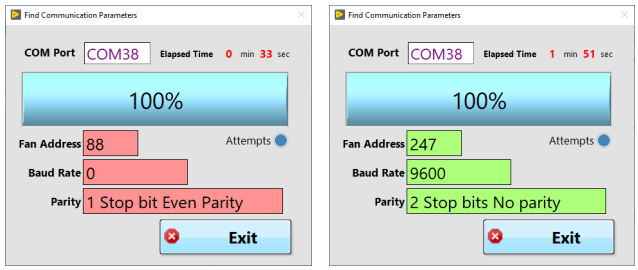


Fig. 7

Connection through RS485 cable

The fan must be powered on and the connection is made through the opto-insulated contacts.
For example, a FTDI cable can be used: USB-RS485-WE-1800-BT.

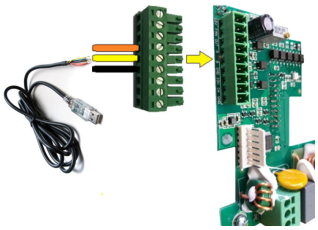


Fig.8

Connection through RS232 OFFLINE cable

The fan must be POWERED OFF and the connection is made through the white connector of figure 9.
For example, a FTDI cable can be used: TTL-232R-5V-WE.

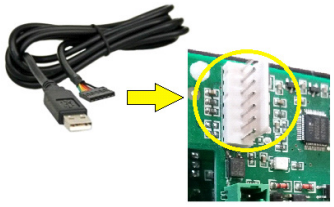


Fig. 9

Bluetooth Connection

It is also possible to communicate through a Bluetooth device using the module in figure 10.

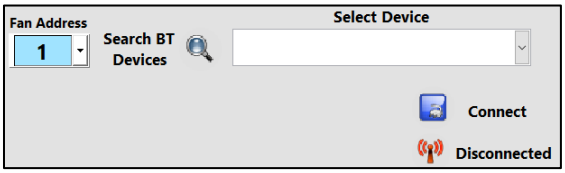


Fig. 10

NOTE:

Each cable requires its own drivers being installed on the PC.
Once the drivers are installed and the cable connected a virtual COM port is assigned.

Set

This item contains sub-items to select the fan model, to change the Operating Mode, to set the fan Holding Registers and the password to access to higher privileges.

Fan Type

After the connection the most important operation is to select the fan type.

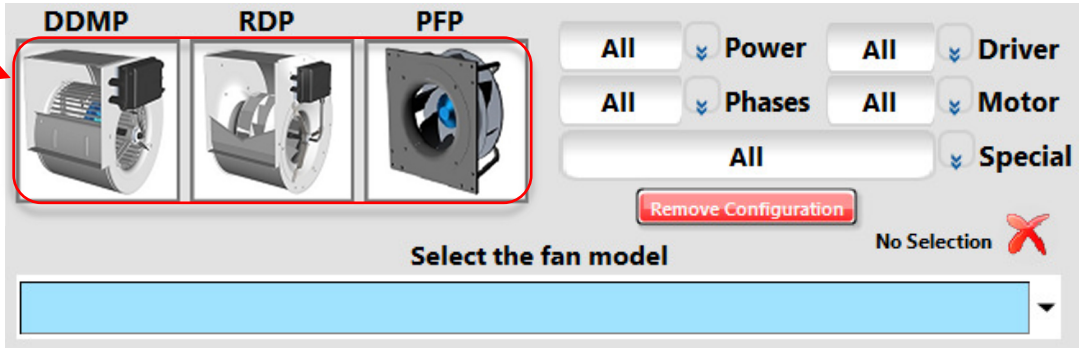


Fig. 11

It is possible to sort the selection by family, Power OUT, Phases, Special Configuration, Driver Model and Motor Models.

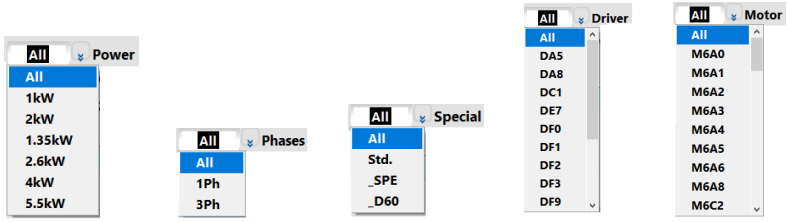


Fig. 12

NOTE:

The driver and motor codes are indicated on the fan label.

Both the motor and driver code are abbreviated and M = 141 while D = 1431.

Fig. 13

NOTE:

The special list can have SPECIAL customized configuration, configurations for higher temperature and so on.

Then the fan must be selected from the list in the combo box of figure 14.

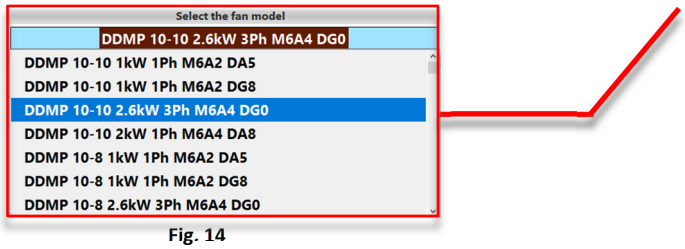


Fig. 14

Operating Mode

The Operating Mode can be changed only after the fan has been selected and connected and the available choices are depending on the fan type (refer to the EC Fan Manual for details).

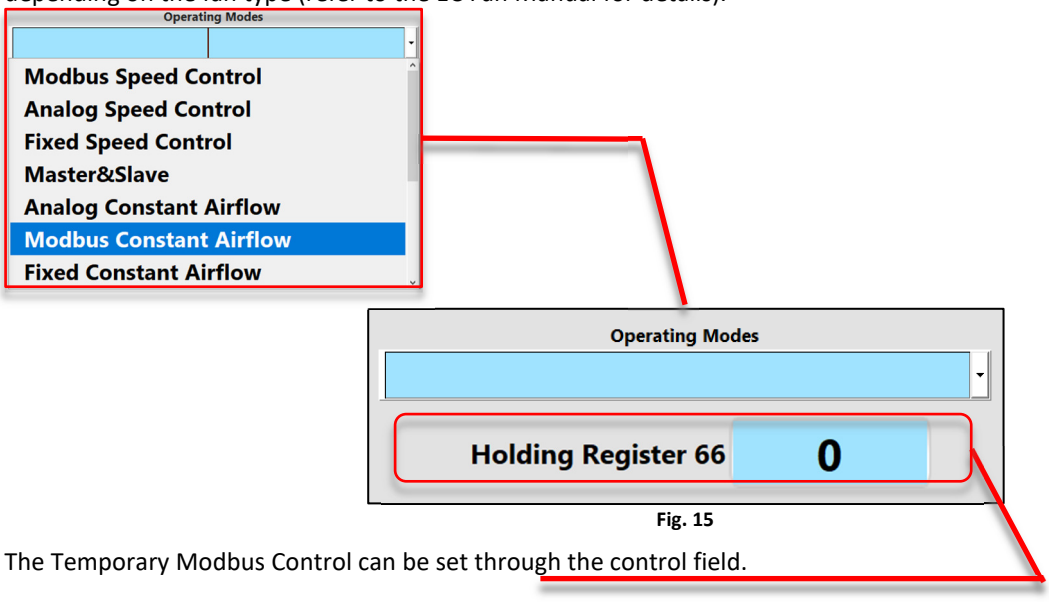


Fig. 15

The Temporary Modbus Control can be set through the control field.

Registers

The fan Holding Registers can be accessed and set depending on the fan selected (refer to the EC Fan manual for details).

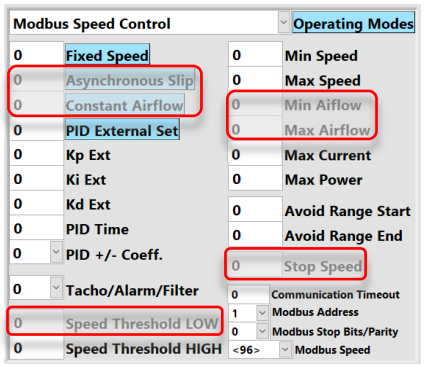


Fig. 16

In figure 16 is shown the modifiable Holding Registers for the RDP 315 2.6kW 3Ph M6A5 DF0.
The registers that can't be modified are disabled and greyed out.

Password

This sub-item is reserved to the Nicotra||Gebhardt technical dept.

Tables

This item contains three sub-items to monitor the Input and Holding Registers and to LOG the fan functioning variables.

Holding Registers

This sub-item shows the status of the Holding Registers read from the connected driver compared with the Holding Registers loaded when the Fan Type is selected. Where the registers are at the same value the cell background color is white while (fig. 17) it is blue in the other cases (fig. 18).

Reg.	Description	Default	Stored	Reg.	Description	Default	Stored
0	Reset	0	0	32	Avoid range start	20000	20000
1	Min Speed	500	500	33	Avoid range end	20000	20000
2	Max Speed	2080	2080	34	Input type	1	1
3	Acceleration	120	120	35	Stop speed	20000	20000
4	Deceleration	80	80	36	Maximum Power	2100	2100
5	Pole Couples	4	4	37	Power Kp	1000	1000
6	Startup Current	5200	5200	38	Power Ki	14000	14000
7	Max Current	6500	6500	39	Constant Airflow	0	0
8	Stator Resistence	153	153	40	Kp Flow/Kp IN Curr	0	0
9	Synch. Inductance	94	94	41	Ki Flow/Ki IN Curr	0	0
10	P.M. Flux	2562	2562	42	Min Airflow	0	0
11	Current Kp	573	573	43	Max Airflow	0	0
12	Current Ki	405	405	44	Fan Model	3	3
13	Speed Kp	4000	4000	45	Modbus Addr	1	1
14	Speed Ki	25	25	46	Tach OUT	0	0
15	F.fb.Gain/Freq. Red.	10	10	47	Modbus Speed	96	96
16	Ph.Offset/Fred Turn ON	0	0	48	Modbus Stop Bits	0	0
17	Startup Time	800	800	49	Max Input Current	0	0
18	Filter tau/Obs. Gain	10	10	50	External Set	0	0
19	Sampling Freq.	13600	13600	51	Kp ext	0	0
20	Freq. Ratio	1	1	52	Ki ext	0	0
21	Fixed speed setting	0	0	53	Kd ext	0	0
22	Max. blocking current	1000	1000	54	PID Time	0	0
23	Min. blocking current	250	250	55	Speed Thredshold	0	0
24	Blocking time	200	200	56	Communication Timeout	0	0
25	Alignment current	5200	5200	57	Limit RPM min	500	500
26	Alignment time	800	800	58	Limit RPM max	2080	2080
27	Id Fall time	50	50	59	Limit I OUT	6500	6500
28	Id ref	0	0	60	Limit P MAX	2100	2100
29	Max temp	750	750	61	Limit I INPUT	0	0
30	Asynchronous Slip	0	0	62	Date	0	4507
31	PID Pos/Neg	0	0	63	Serial	0	147

Fig. 17

Reg.	Description	Default	Stored	Reg.	Description	Default	Stored
0	Reset	0	0	32	Avoid range start	20000	20000
1	Min Speed	300	500	33	Avoid range end	20000	20000
2	Max Speed	2000	2080	34	Input type	1	1
3	Acceleration	200	120	35	Stop speed	20000	20000
4	Deceleration	80	80	36	Maximum Power	2100	2100
5	Pole Couples	4	4	37	Power Kp	1000	1000
6	Startup Current	5500	5200	38	Power Ki	14000	14000
7	Max Current	8300	6500	39	Constant Airflow	0	0
8	Stator Resistence	108	153	40	Kp Flow/Kp IN Curr	200	0
9	Synch. Inductance	63	94	41	Ki Flow/Ki IN Curr	4000	0
10	P.M. Flux	2500	2562	42	Min Airflow	1000	0
11	Current Kp	650	573	43	Max Airflow	5000	0
12	Current Ki	497	405	44	Fan Model	1	3
13	Speed Kp	4000	4000	45	Modbus Addr	1	1
14	Speed Ki	25	25	46	Tach OUT	0	0
15	F.fb.Gain/Freq. Red.	10	10	47	Modbus Speed	96	96
16	Ph.Offset/Fred Turn ON	0	0	48	Modbus Stop Bits	0	0
17	Startup Time	800	800	49	Max Input Current	0	0
18	Filter tau/Obs. Gain	10	10	50	External Set	0	0
19	Sampling Freq.	13600	13600	51	Kp ext	0	0
20	Freq. Ratio	1	1	52	Ki ext	0	0
21	Fixed speed setting	0	0	53	Kd ext	0	0
22	Max. blocking current	1000	1000	54	PID Time	0	0
23	Min. blocking current	250	250	55	Speed Thredshold	0	0
24	Blocking time	200	200	56	Communication Timeout	0	0
25	Alignment current	5500	5200	57	Limit RPM min	300	500
26	Alignment time	100	800	58	Limit RPM max	2000	2080
27	Id Fall time	50	50	59	Limit I OUT	8300	6500
28	Id ref	0	0	60	Limit P MAX	2100	2100
29	Max temp	750	750	61	Limit I INPUT	0	0
30	Asynchronous Slip	0	0	62	Date	0	4507
31	PID Pos/Neg	0	0	63	Serial	0	147

Fig. 18

NOTE:

When the Holding Register default values are different from the stored values:

1- The user changed the value of the accessible Holding Registers
2- Verify that the fan you own corresponds to the selected one.
3- Update the software. Some fan values could have been reviewed by Nicotra||Gebhardt technical dept.
4- The values of the default and stored registers Date and Serial are always different.

The Holding Registers table is empty until a fan is selected and/or connected.

Reg.	Description	Sel.	Read	Reg.	Description	Sel.	Stored
0				32			
1	MIN SPEED			33			
2	MAX SPEED			34	INPUT TYPE		
3				35			
4				36	MAX POWER		
5				37			
6				38			
7	MAX CURRENT			39	CONSTANT AIRFLOW		
8				40			
9				41			
10				42	MIN AIRFLOW		
11				43	MAX AIRFLOW		
12				44	FAN MODEL		
13				45	MODBUS ADDRESS		
14				46	TACHO OUT		
15				47	MODBUS SPEED		
16	LOW THRESHOLD SPEED			48	MODBUS STOP BITS		
17				49			
18				50	EXTERNAL PID SET		
19				51	KP EXT PID		
20				52	KI EXT PID		
21	FIXED SPEED SETTING			53	KD EXT PID		
22				54	PID TIME		
23				55	HIGH THRESHOLD SPEED		
24				56	COMM TIMEOUT		
25				57			
26				58			
27				59			
28				60			
29	MAX TEMPERATURE			61			
30	ASYNCHRONOUS SLIP			62	Date		
31	PID POS/NEG			63	Serial		

Fig. 19

The parameter description changes depending on the firmware version and its relative algorithm.

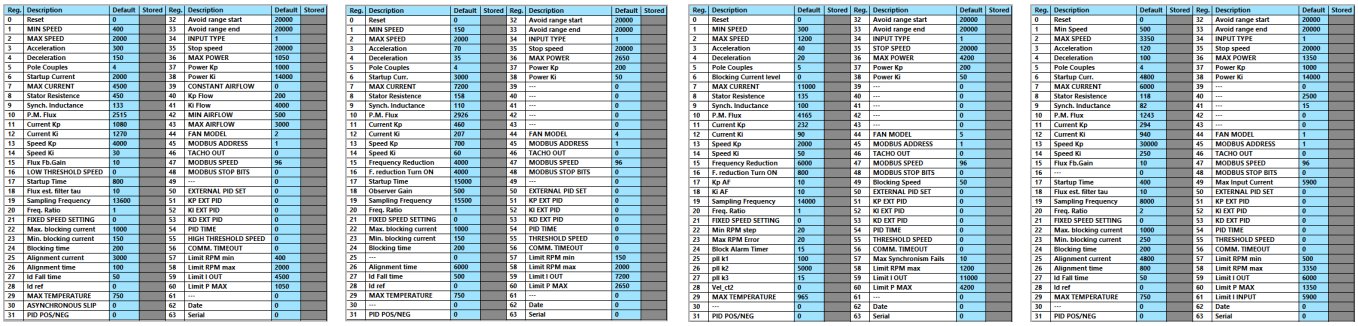


Fig. 20

Input Registers

This sub-item shows the status of the Input Registers (refer to the EC Fan Manual for further details).

Input Registers	Value
Firmware Version	5
Driver Model	45600
Speed Reference [rpm]	0
Measured Speed [rpm]	0
Bus Voltage [V]	2.1
Alarm 1	4
Motor Current [mA]	0
Motor Voltage [V]	0.0
Analog Input [V]	0.0
Module Temp. [°C]	21.3
Alarm 2	1
Enable [V]	0.0
Reference Value [V]	0.0
Transducer Value [V]	0.0
Measured Power [W]	0
Input Current [mA]	0

Fig. 21

NOTE:

The Input Register may be not properly displayed when the numbers have the comma as decimal separator.

Here below the procedure to change the settings is shown:

1) Open the “Control Panel”

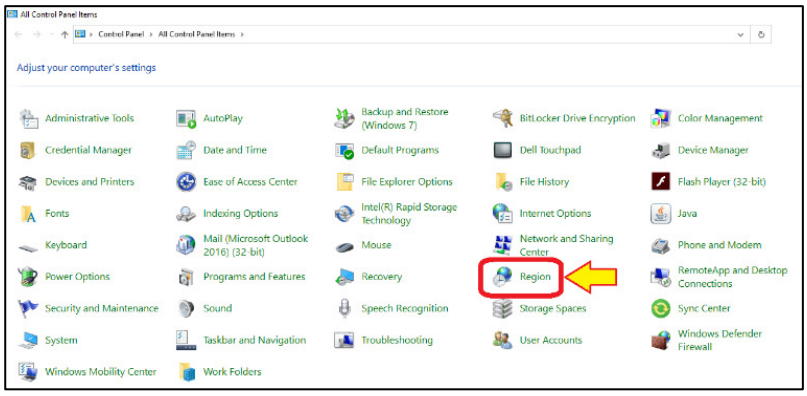


Fig. 22

2) Select the “Region”

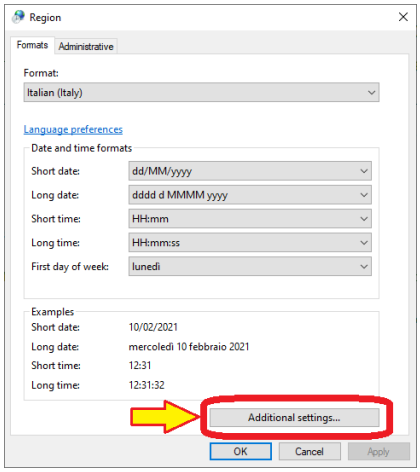


Fig. 23

3) Select “Additional settings…”

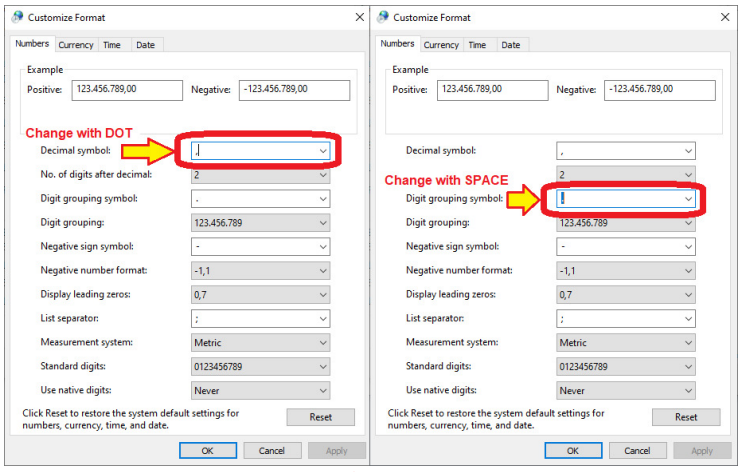


Fig. 24

4) Substitute the COMMA with DOT and as digit grouping symbol substitute the DOT with SPACE

Log Record

This sub item allows the record of the Input Registers values followed by a description.

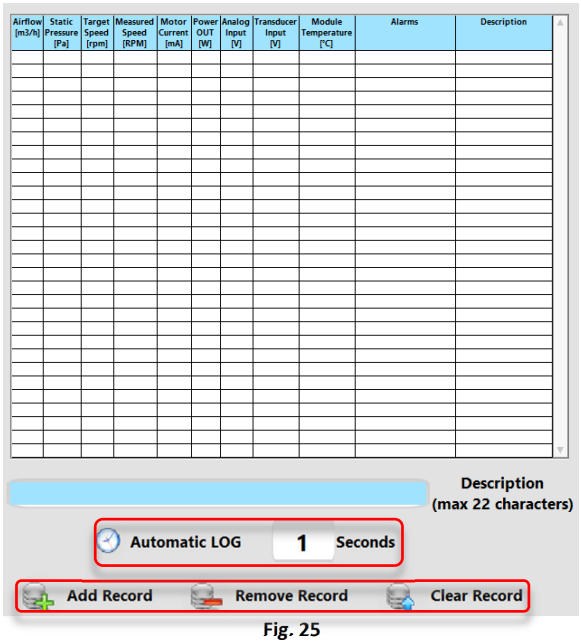


Fig. 25

There are two possibilities to acquire the values: either manually any single point or automatically point by point after a defined time.

Show

This item contains four sub-items to monitor the fan performance, the variables behavior and the alarms.
In addition, there is the possibility to tune the PID coefficients when a transducer is connected to the fan.

Performance

This sub-item works on some types of fans (refer to the EC Fan Manual) and the fan working point is shown in real time.

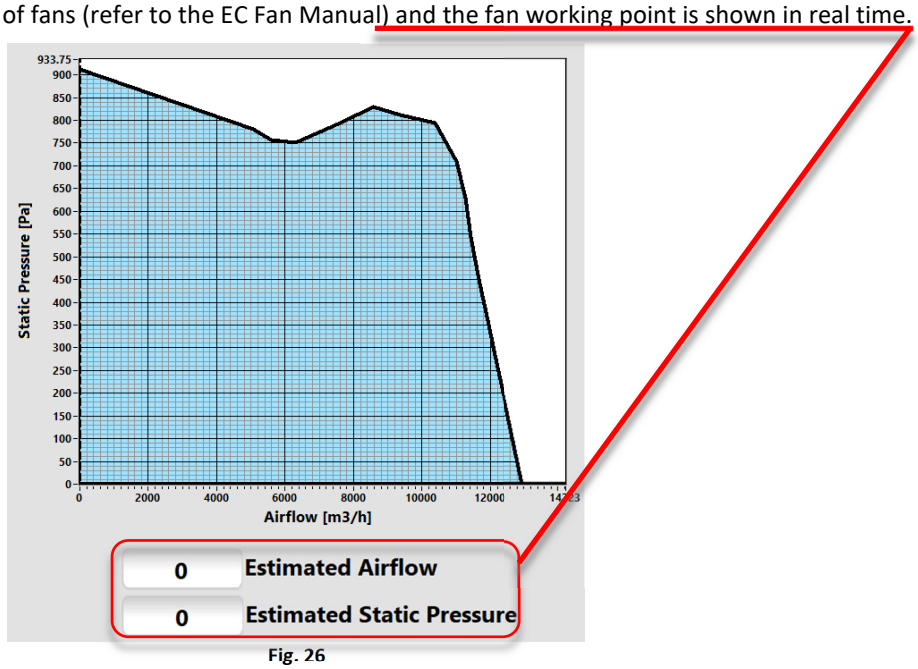


Fig. 26

Variables

This sub-item allows the user to monitor the behavior of two variables at the same time.
The variables can be chosen from two combo boxes

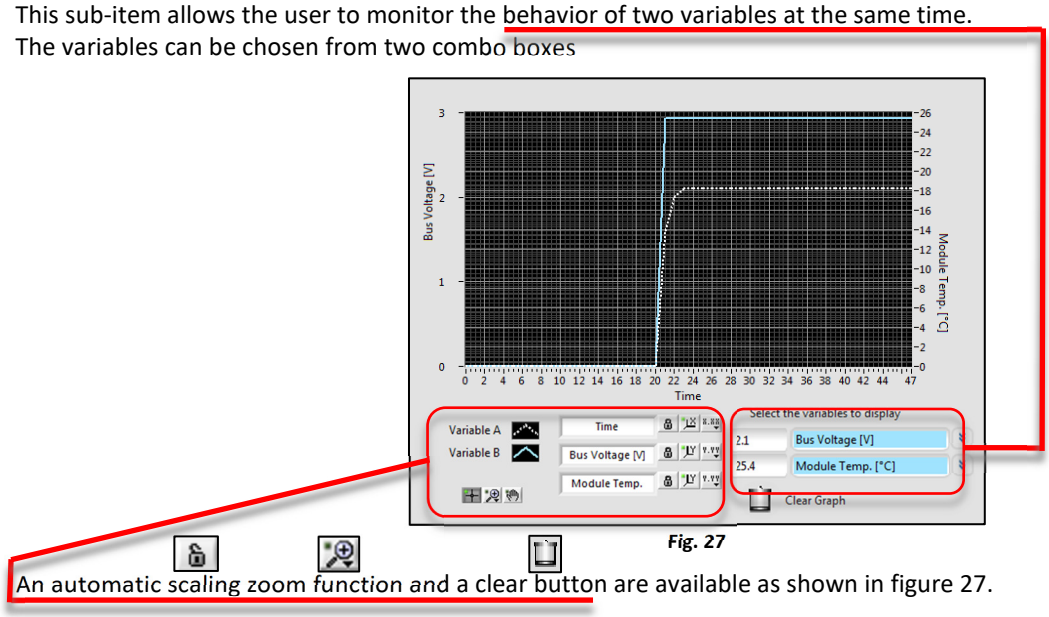


Fig. 27

An automatic scaling zoom function and a clear button are available as shown in figure 27.

Closed Loop PID

This sub-item allows the user to test and set the PID parameters by monitoring the reference and the transducer variables. (Refer to the EC fan manual for further details)

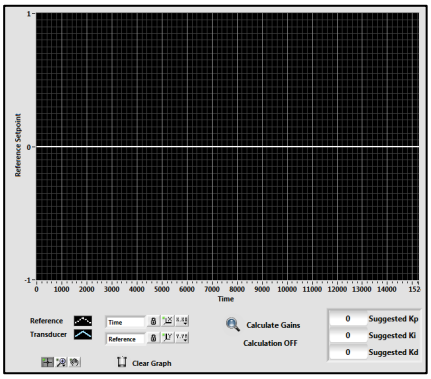


Fig. 28

Alarms

This sub item has two clusters representing the driver errors and wrong selections.

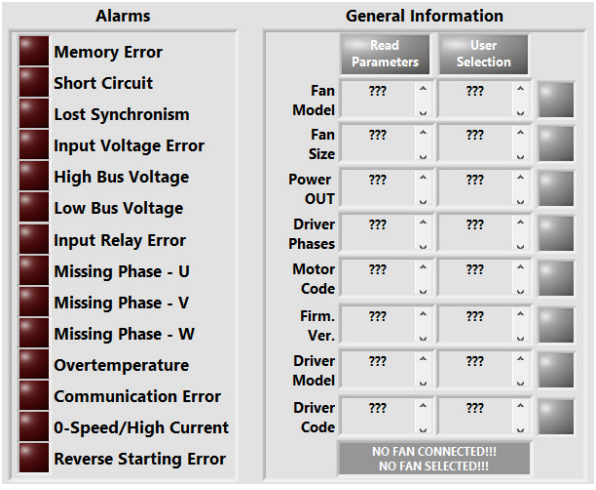


Fig. 29

Driver alarms

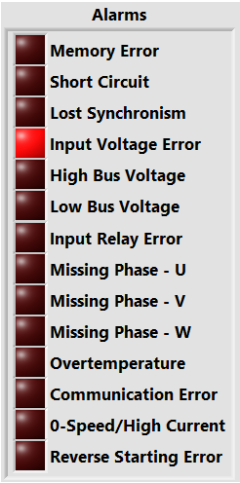


Fig. 30

This cluster shows the possible alarms occurring during the driver functioning.
(Refer to the EC Fan Manual for details)

General Info

This cluster applies several cross verifications between generic data of the fan loaded with the data read from the driver.
The figure 31 shows the starting appearance of the General Information Cluster when

1) The fan is NOT connected and NOT selected
2) The fan is connected but NOT selected
3) The fan is NOT connected, but it is connected.

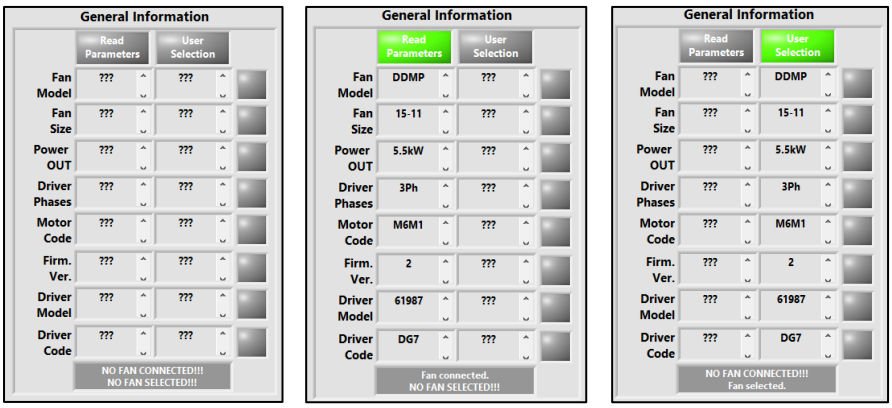


Fig. 31

Once the fan is connected and connected all the led should be green and red color below the column indicates incoherence between the data read or selected, while the red color on the right of the rows represents the incoherence between the data read and selected.

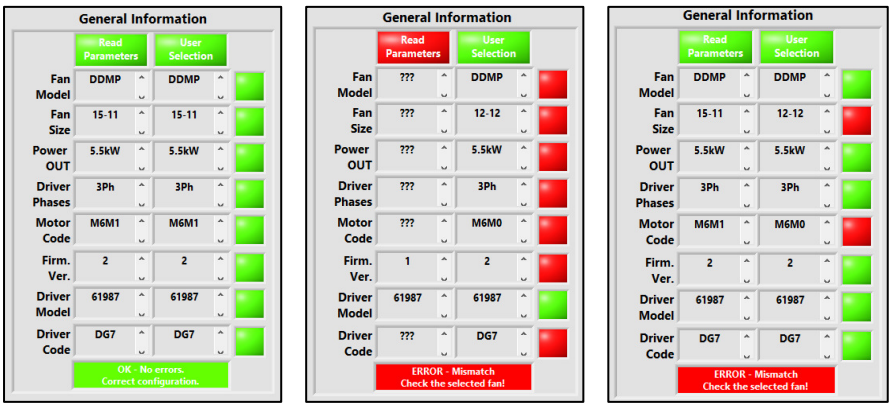


Fig. 32

There are two other possible condition (fig.33):

A) The firmware version of a product is updated
B) The software database is NOT updated

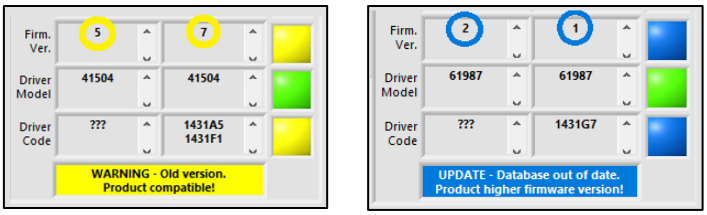


Fig. 33

Save

This item allows the user to save a personalized fan configuration, the LOG file of the data previously recorded and the Holding Registers comparison file.

Fan Configuration

A pop-up window opens and the user must insert the name of the personalized configuration.

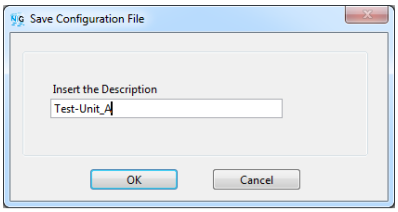


Fig. 34

For example, a DDMP 9/9 2kW 1Ph has been set in Fixed Modbus Constant Airflow (see figure 35)

Reg.	Description	Default	Stored	Reg.	Description	Default	Stored
0	Reset	0	0	32	Avoid range start	20000	20000
1	Min Speed	300	300	33	Avoid range end	20000	20000
2	Max Speed	2000	2000	34	Input type	1	6
3	Acceleration	200	200	35	Stop speed	20000	20000
4	Deceleration	80	80	36	Maximum Power	2100	2100
5	Pole Couples	4	4	37	Power Kp	1000	1000
6	Startup Current	5500	5500	38	Power Ki	14000	14000
7	Max Current	8300	8300	39	Constant Airflow	0	0
8	Stator Resistence	108	108	40	Kp Flow/Kp IN Curr	200	200
9	Synch. Inductance	63	63	41	Ki Flow/Ki IN Curr	4000	4000
10	P.M. Flux	2500	2500	42	Min Airflow	1000	1000
11	Current Kp	650	650	43	Max Airflow	5000	5000
12	Current Ki	497	497	44	Fan Model	1	1
13	Speed Kp	4000	4000	45	Modbus Addr	1	1
14	Speed Ki	25	25	46	Tach OUT	0	0
15	F.fb.Gain/Freq. Red.	10	10	47	Modbus Speed	96	96
16	Ph.Offset/Fred Turn ON	0	0	48	Modbus Stop Bits	0	0
17	Startup Time	800	800	49	Max Input Current	0	0
18	Filter tau/Obs. Gain	10	10	50	External Set	0	0
19	Sampling Freq.	13600	13600	51	Kp ext	0	0
20	Freq. Ratio	1	1	52	Ki ext	0	0
21	Fixed speed setting	0	0	53	Kd ext	0	0
22	Max. blocking current	1000	1000	54	PID Time	0	0
23	Min. blocking current	250	250	55	Speed Thredshold	0	0
24	Blocking time	200	200	56	Communication Timeout	0	0
25	Alignment current	5500	5500	57	Limit RPM min	300	300
26	Alignment time	100	100	58	Limit RPM max	2000	2000
27	Id Fall time	50	50	59	Limit I OUT	8300	8300
28	Id ref	0	0	60	Limit P MAX	2100	2100
29	Max temp	750	750	61	Limit I INPUT	0	0
30	Asynchronous Slip	0	0	62	Date	0	4507
31	PID Pos/Neg	0	0	63	Serial	0	147

Fig. 35

Once the configuration is saved, the Fan Type combo box is automatically updated with the new configuration

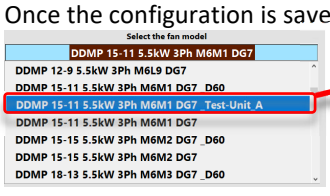


Fig. 36

The selected configuration can be removed pressing the red button 

Log File

This sub-item saves in a file the data recorded in the Log Table.

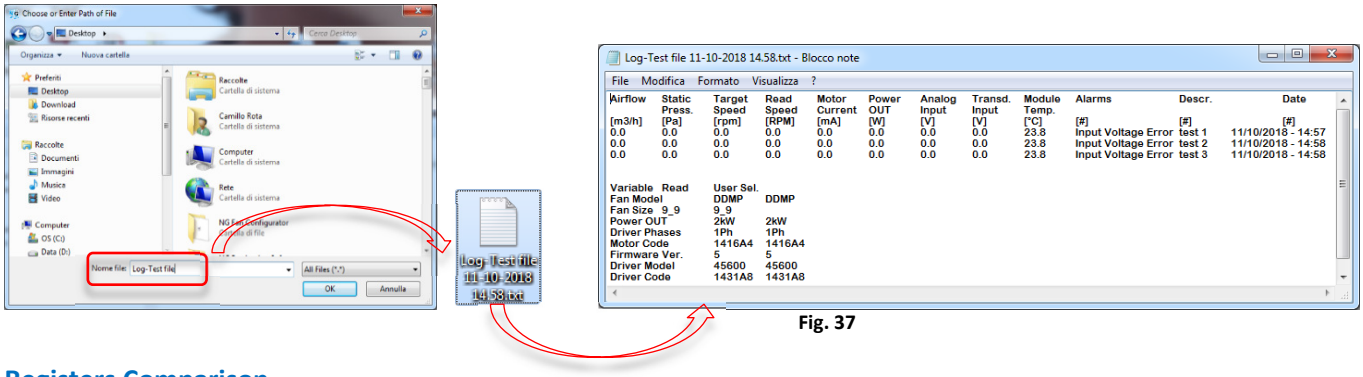


Fig. 37

Registers Comparison

This sub-item saves in a file the comparison between the Holding registers loaded and read.

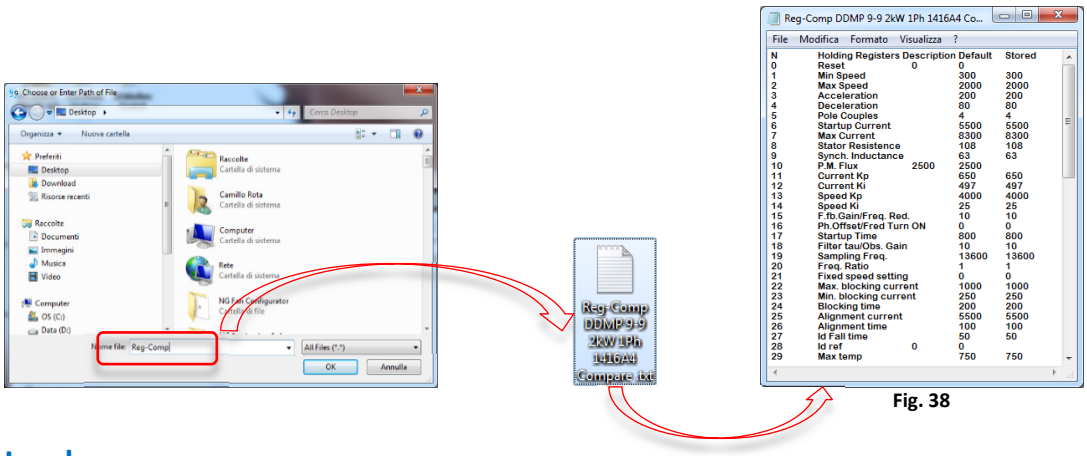


Fig. 38

Load

This item allows the user to upload his own configurations and upgrade the NG Fan configurator software.
Moreover, it allows a firmware upgrade of the driver if necessary through a remote assistance of the Nicotra||Gebhardt technical dept. staff.

Fan Configuration

This sub-item allows the user to upload his own configuration selected from the Fan Type combo box.
A progress bar indicates the uploading status

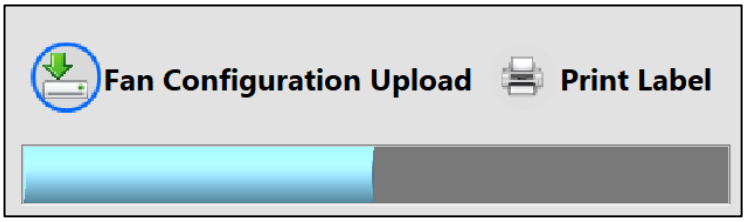


Fig. 39

Printing Customized Labels

The “Print Label” button is disabled and greyed out when the Holding Registers read from the driver are different values from those selected.

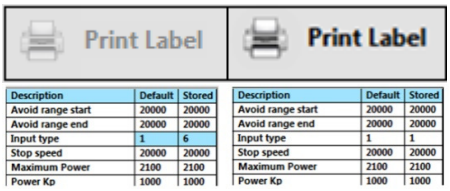


Fig. 40

When the “Print Label” button is pressed the standard fields to print are showed in figure 41.

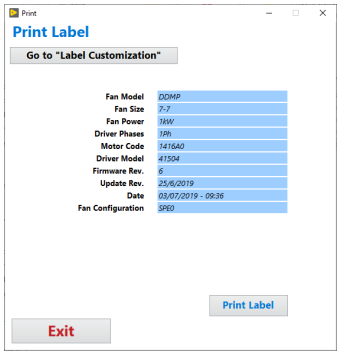
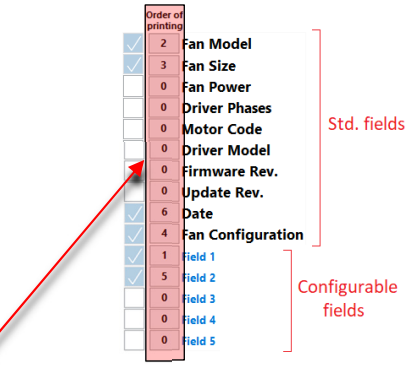


Fig. 41

It is possible to customize the label by pressing the button Go to "Label Customization"
In this form it is possible to select which data must be printed and in which order



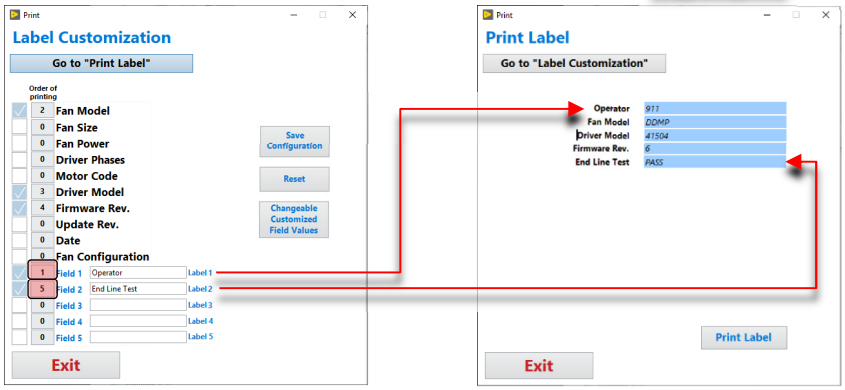


Fig. 42

And it is also possible to create customized fields with fixed (once saved there is no more possibilities to change by the operator) or changeable values (the operator must fill the fields at each print process).

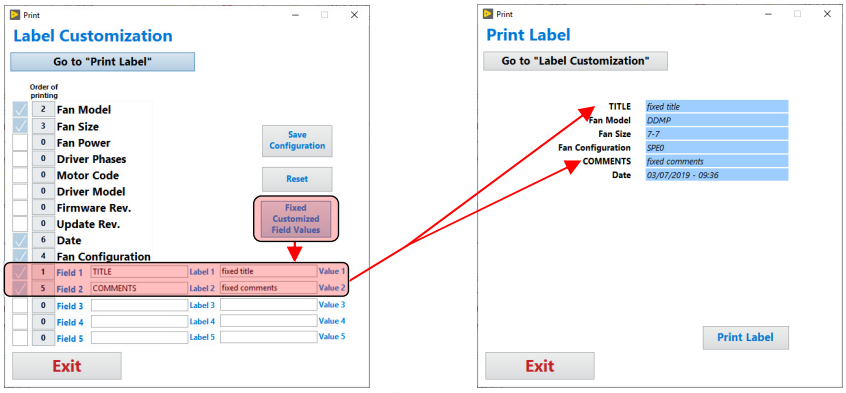


Fig. 43

Firmware upgrade

This sub-item can be activated only by a Nicotra||Gebhardt technician through a remote assistance.

Fig. 44

Software Update

The NG Fan Configurator software must be updated when a new fan is released or some fan configurations or a new driver's firmware versions are created.
The file ZIP can be downloaded from the web site and it must be copied in the corresponding software folder:
C:\NG Fan Configurator\Updates.
Then the "Update the Software Configuration" button must be pressed.
A blue LED indicates when the update process ended with success.

Fig. 45

The "create the Update ZIP file" button can be used only by the Nicotra||Gebhardt technicians.

Help

In this item the user can find the Software Manual and Product Manuals link.

Technical Info

It is possible to have a fast view about the products, motor and driver.

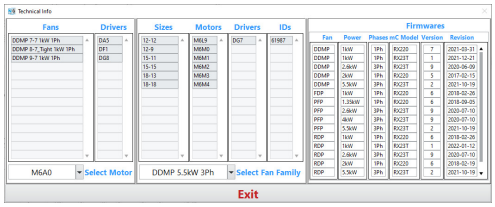


Fig. 46

Changing the Menu items

When the user selects a menu item, automatically other menu items change depending on the information correlated to the selected item.

In Table 1 all the combinations:

Selected item		Item combinations		
Connection	Cable Connection	Cable connection	Holding Registers	Alarms
	Bluetooth Connection	Bluetooth Connection	Holding Registers	Alarms
Set	Fan Type	Fan Type	Holding Registers	Alarms
	Operating Mode	Operating Mode	Holding Registers	Alarms
	Registers	Operating Mode	----	Registers
	Password	Password	----	----
Tables	Holding Registers	----	Holding Registers	----
	Input Registers	----	Input Registers	----
	LOG Record	----	LOG Record	----
Show	Performance	----	Performance	----
	Variables	Variables	----	----
	Closed Loop PID	Operating Mode	Closed Loop PID	Registers
	Alarms	----	----	Alarms
Save	Fan Configuration	----	----	----
	LOG File	----	----	----
	Register Comparison	----	----	----
Load	Fan Configuration	Fan Configuration	Holding Registers	Alarms
	Firmware Upgrade	Firmware Upgrade	----	----
	Software Update	Software Update	----	----
Info	Software Manual	----	----	----
	Product Manual	----	----	----
	Info	Info	Info	Info

Table 1

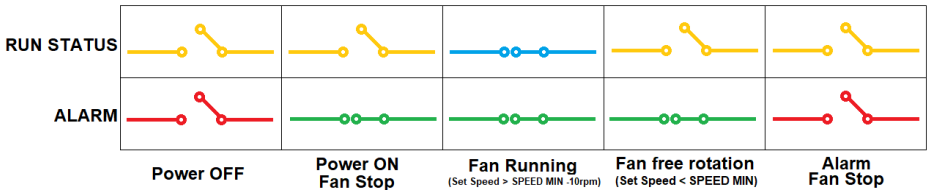
Revisions:

Revision 2.0

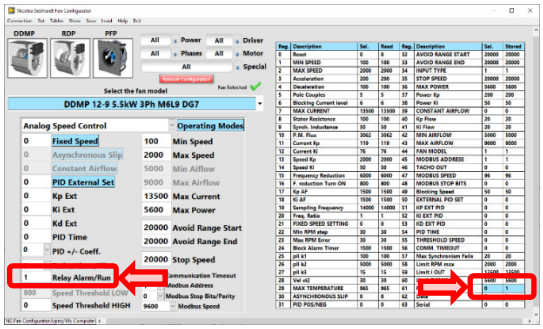
Integration of all the old revision and added a new file organization due to the introduction of variants on the microcontroller model of the drivers.

Revision 2.1

Added the new relay feature. The Holding Register 61 can be set to 0 (default) or to 1.

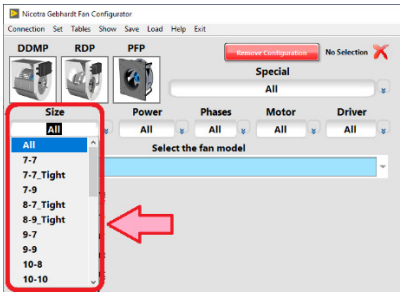


In the standard configuration the relay indicates an alarm, while in the new configuration it indicates a RUN status.



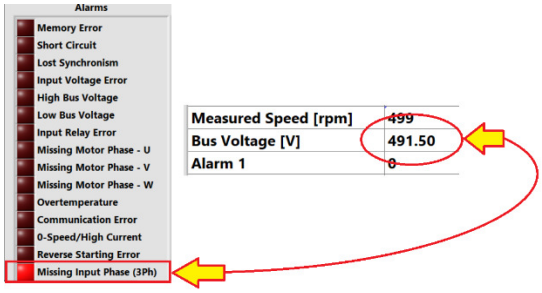
Revision 2.2

Added a new combo box for sorting by fan size.



Revision 2.3

Added a new alarm: Missing Input Phase for the three phases model only. This could occur when one of the three power supplies wires is not properly connected to the terminals.



NOTE:

Nicotra Gebhardt worldwide

SPAIN
Ctra. Alcalá-Villar del Olmo, Km. 2,830
28810 Villalbilla-Madrid
Phone +34 918-846110
Fax +34 918-859450
E-mail info@nicotra.es

c/.Coso, 67-75, esc. 1.a,1.oB
50001 Zaragoza
Phone +34 976-290550
Fax +34 976-298127
E-mail gebhardt@teleline.es

BELGIUM
Haeghensgoed, 13 - 00/01
9270 Laarne
Phone +32 (0)9-336-00-01
Fax +32 (0)9-336-00-05
E-mail info.nicotra@nicotra.be

FRANCE
Leader's Park Bat A1
3 chemin des Cytises
69340 Francheville
Phone +33 (0)4 72 79 01 20
Fax +33 (0)4 72 79 01 21
E-mail g.cauche@nicotra-gebhardt.com

SWEDEN
Box 237
Kraketorpsgatan 30
43123 Mölndal
Phone 0046 31-874540
Fax 0046 31-878590
E-mail info.se@nicotra-gebhardt.com

GREAT BRITAIN
Unit D, Rail Mill Way
Parkgate Business Park
Rotherham
South Yorkshire
S62 6JQ
Phone +044 01709-780760
Fax +044 01709-780762
E-mail sales@nicotra.co.uk

UNITED STATES
PO BOX 900921
Sandy, Utah 84090
Phone 001(801) 733-0248
Fax 001(801) 315-9400
Mobile 001(801) 682 0898
E-mail mike.sehgal@gebhardtfans.com
http://www.gebhardtfans.com/

MALAYSIA
Lot 1799, Jalan Balakong
Taman Perindustrian Bukit Belimbing
43300 Seri Kembangan
Selangor
Phone +603 8961-2588
Fax +603 8961-8337
E-mail info_malaysia@nicotra-gebhardt.com

THAILAND
6/29 Soi Suksawadi 2, Moo 4, Suksawadi Road,
Kwang Jomthong, Khet Jomthong,
Bangkok 10150
Phone +662 476-1823-6
Fax +662 476-1827
E-mail sales@nicotra.co.th

SINGAPORE
No. 15 West Coast Highway
04-08 Pasir Panjang Building
Singapore 117861
Phone (065) 6265-1522
Fax (065) 6265-2400
E-mail info@gebhardt-singapore.com

AUSTRALIA
65 Yale Drive,
Epping, VIC 3076
Phone +61 3 9017 5333
Fax +61 3 8401 3969
E-mail info@nicotra.com.au

INDIA
Plot no 28F & 29, Sector-31,Kasna,
Greater Noida-201 308 U.P (India)
Phone +91 120 4783400
Phone +91 22 65702056 (Mumbai)
Phone +91 80 25727830 (Bangalore)
E-mail info@nicotraindia.com

CHINA
88 Tai'An Road, XinQiao, ShiJi, Panyu
Guangzhou 511450
PR CHINA
Phone +86 (0)20-39960570
Fax +86 (0)20-39960569
E-mail sales@nicotra-china.com

Nicotra Gebhardt Germany

Nicotra Gebhardt GmbH
Gebhardtstraße 19-25
74638 Waldenburg
Phone +49 (0)7942 101 0
Fax +49 (0)7942 101 170
E-mail info@nicotra-gebhardt.com

Nicotra Gebhardt Italy

Nicotra Gebhardt S.p.A
Via Modena, 18
24040 Zingonia (BG)
Phone +39 035 873 111
Fax +39 035 884 319
E-mail info@nicotra-gebhardt.com

nicotra-gebhardt.com