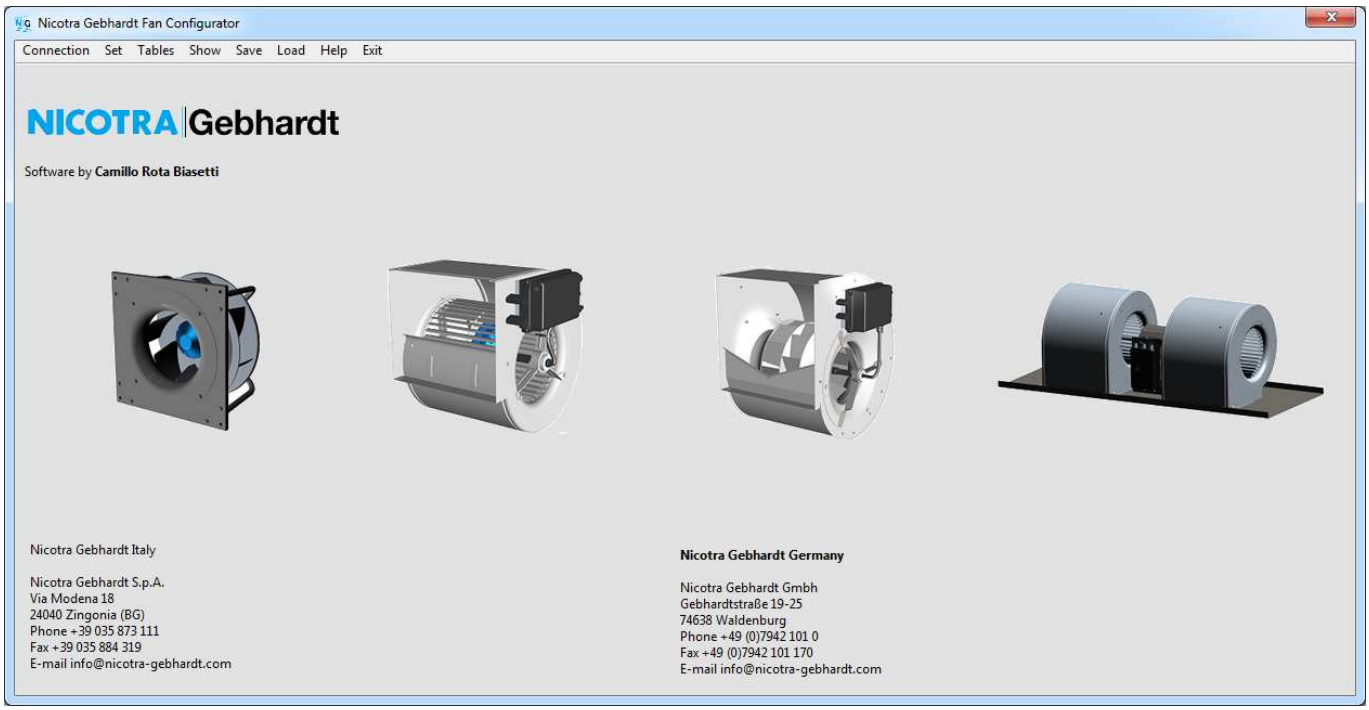
NICOTRA Gebhardt

NG FAN CONFIGURATOR

Operating Manual



Rev. 0.1 – 19th November 2018

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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 converter (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***

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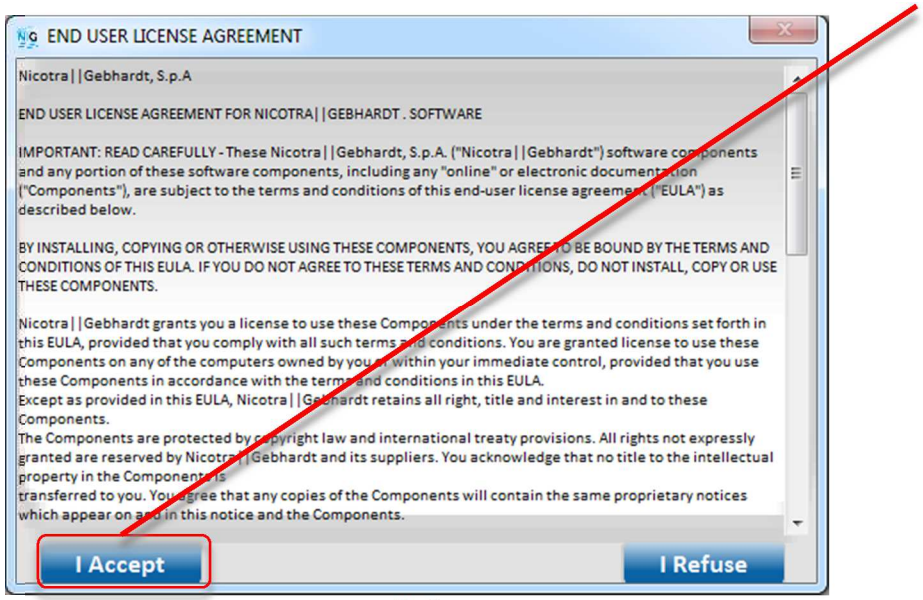

Fig. 1

EULA content

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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.

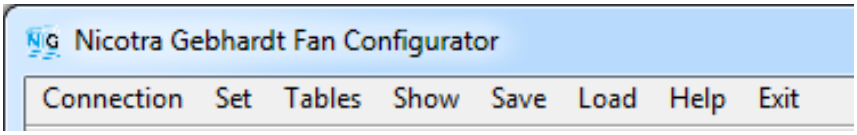


Fig. 2

The single items are shown in figure 3.

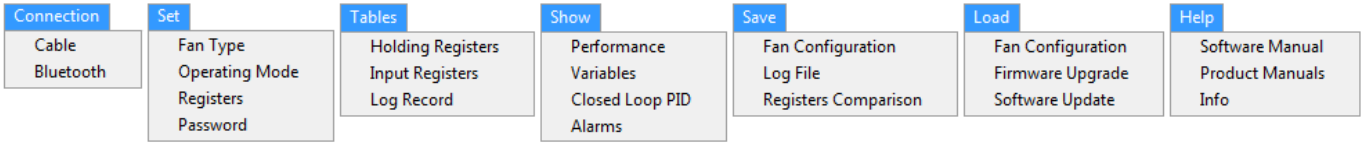


Fig. 3

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:

- The Fan Address
- The Parity
- The Baud Rate
- The COM port

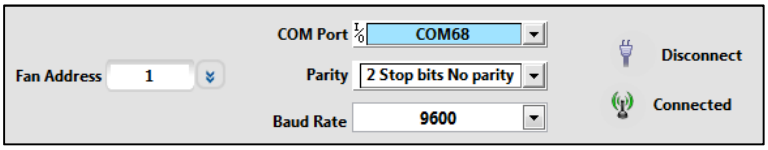


Fig. 4

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.

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.

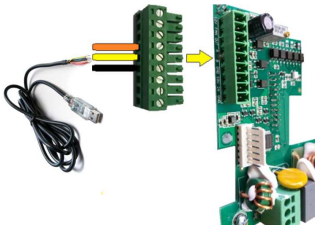


Fig. 5

Connection through RS232 OFFLINE cable

The fan must be POWERED OFF and the connection is made through the white connector of figure 6.
For example a FTDI cable can be used: TTL-232R-5V-WE.

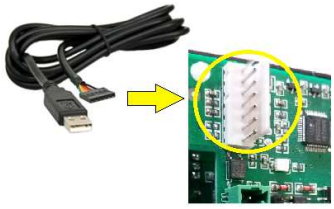


Fig. 6

Bluetooth Connection

It is also possible to communicate through a Bluetooth device using the module in figure 7.

Fig. 7

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.
It is possible to sort the selection by family, driver power output and power supply phases.

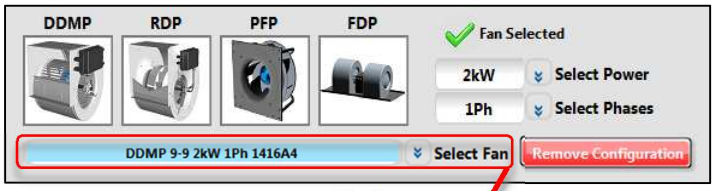


Fig. 8

Then the fan must be selected from the list in the combo box of figure 9

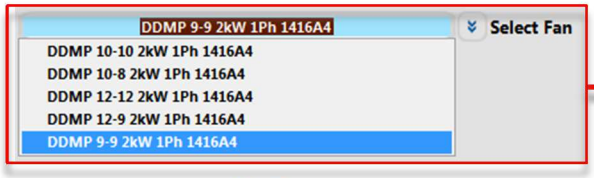


Fig. 9

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).

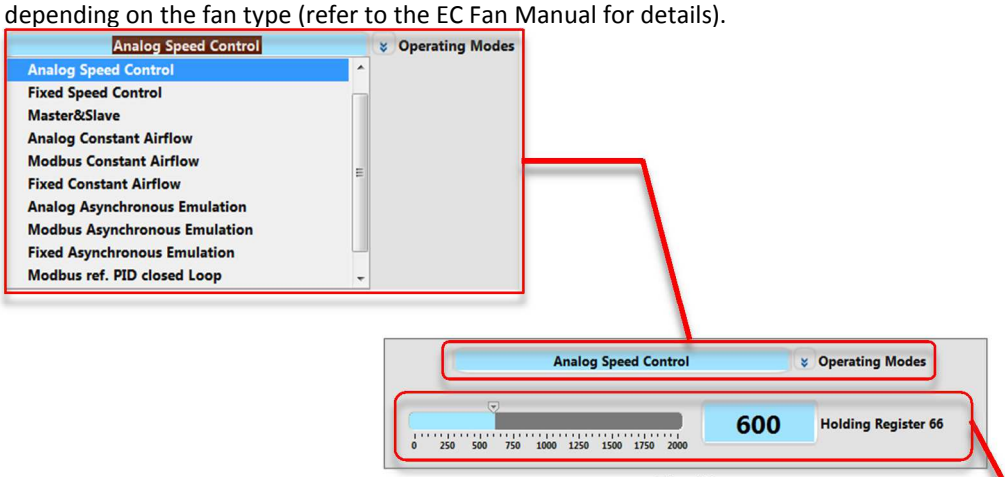
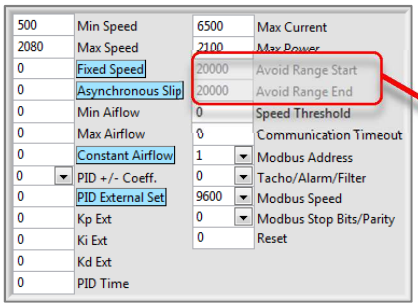


Fig. 10

The Temporary Modbus Control can be set through the progress bar or 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).



The register Avoid Range Start for this fan can't be accessed

Fig. 11

Password

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

Fig. 12

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. 13) it is blue in the other cases (fig. 14).

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. 13

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. 14

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.

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. 15

Log Record

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

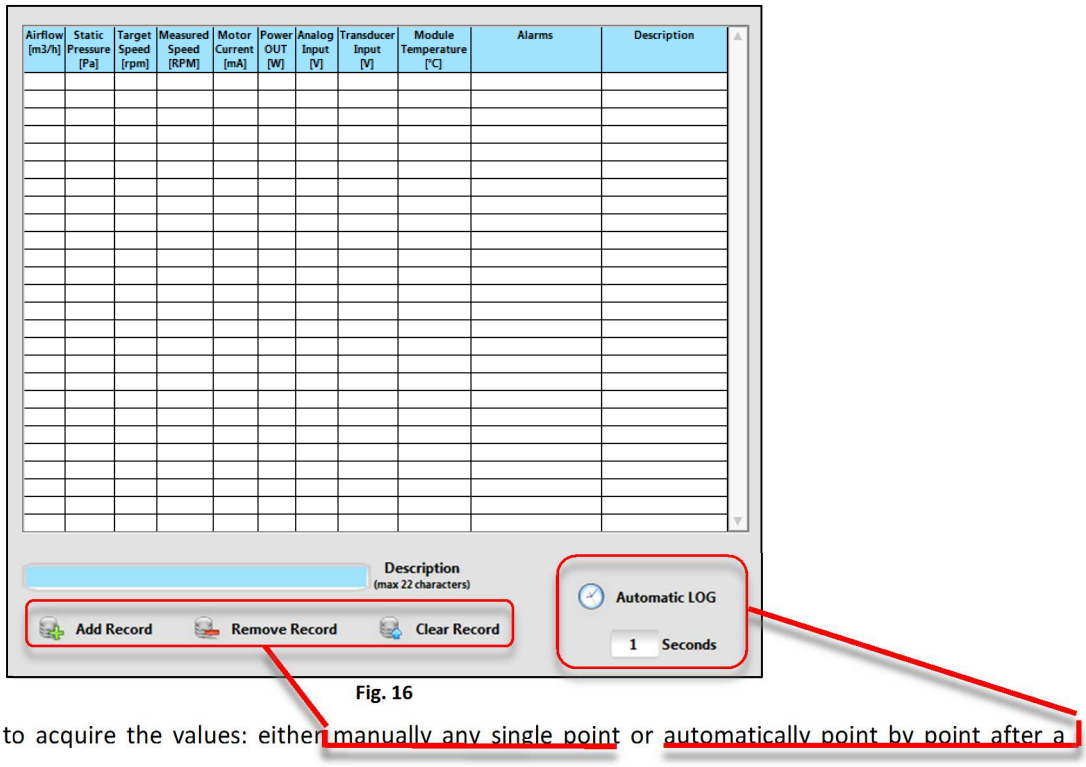


Fig. 16

There are two possibilites 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.

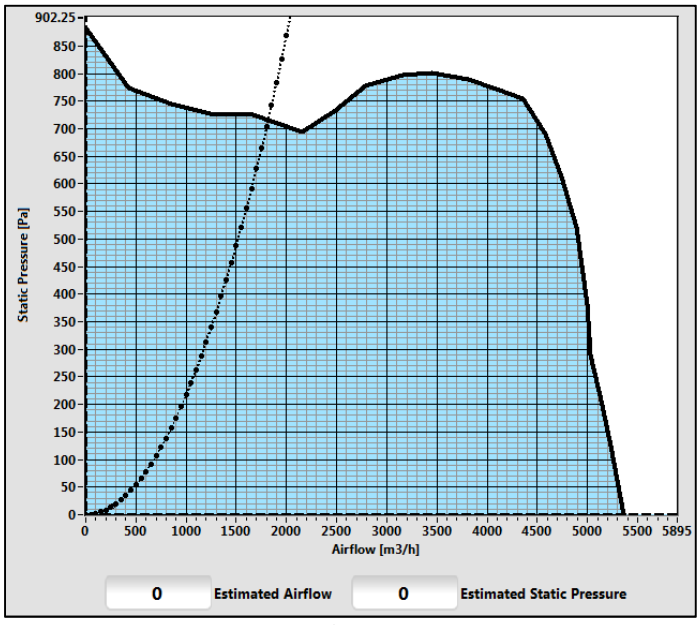


Fig. 17

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

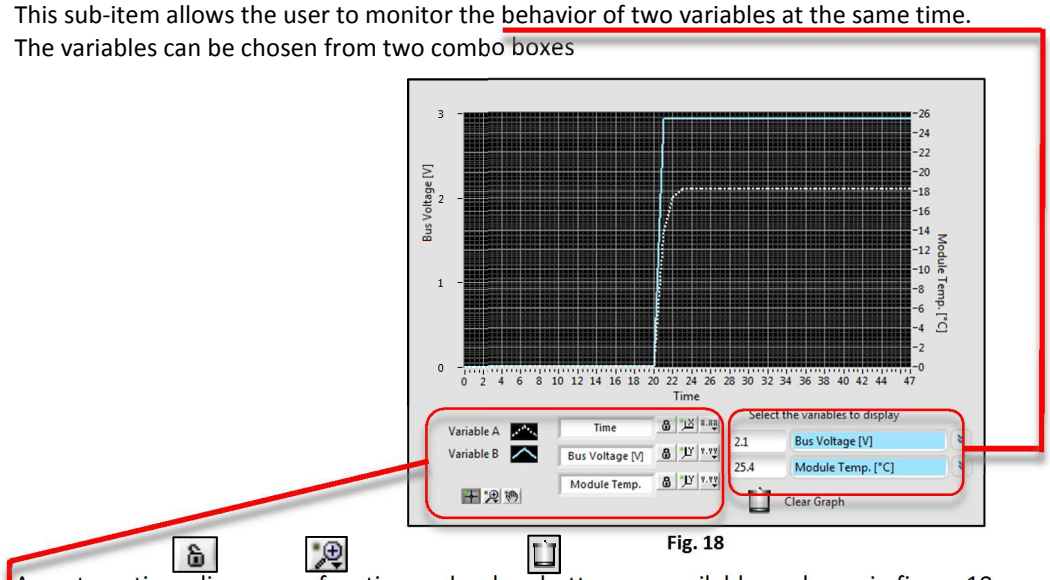


Fig. 18

An automatic scaling, zoom function and a clear button are available as shown in figure 18.

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)

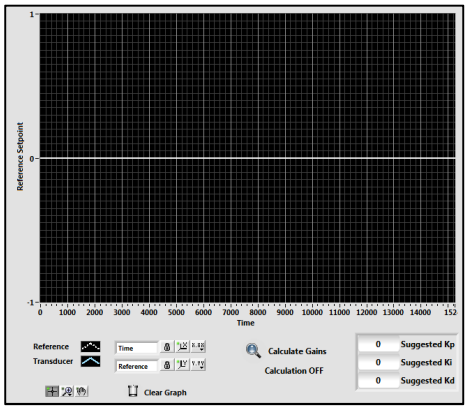


Fig. 19

Alarms

This sub item has several clusters representing possible errors, alarms or wrong selections.

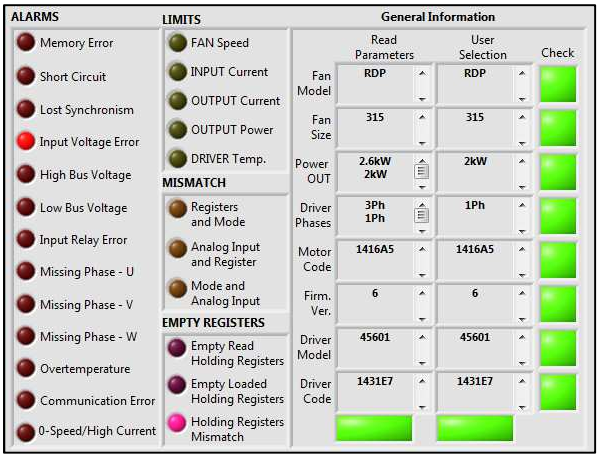
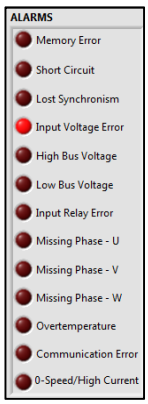


Fig. 20

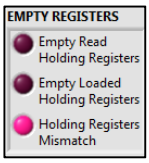
Driver alarms



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

Fig. 20

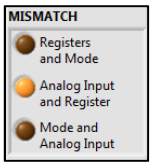
Registers Status



This cluster shows the Holding Register status

Fig. 21

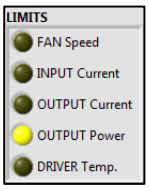
Checks



This cluster compares the Operating Mode and the related Holding Registers values. For example an alarm indication occurs when a Fixed Modbus Mode is selected and an analog signal is present at the input.

Fig. 22

Warnings



This cluster shows when the fan enters in a performance limitation by comparing the Input Registers read values and the Holding Register set limits.

Fig. 23

General Info

This cluster applies several cross verifications between generic data of the fan loaded with the data read from the driver.

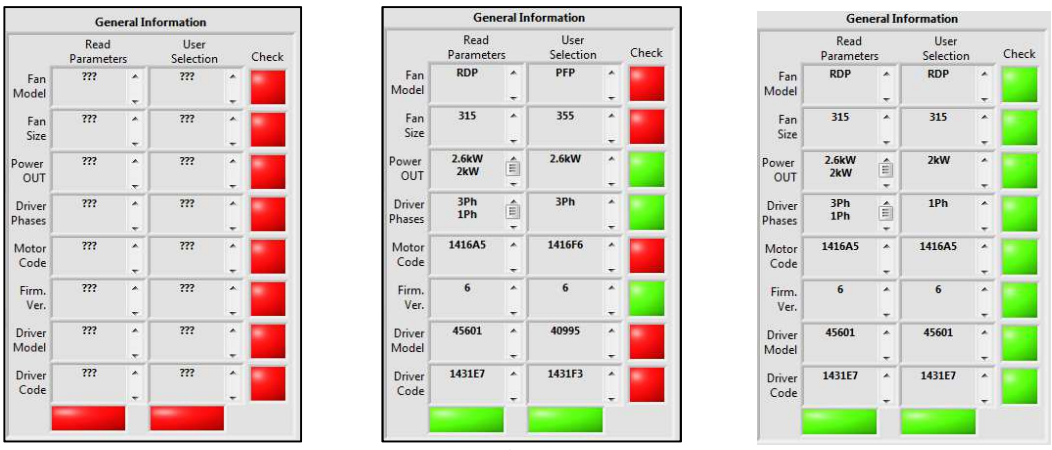


Fig. 24

The 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.

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.

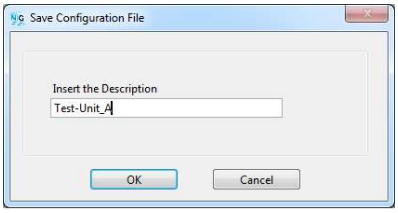


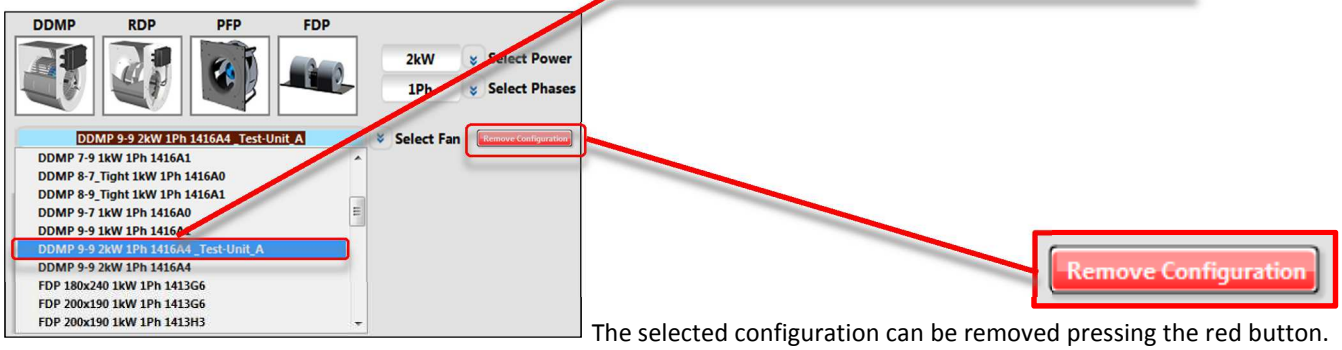
Fig. 24

For example a DDMP 9/9 2kW 1Ph has been set in Fixed Modbus Constant Airflow (see figure 25)

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. 25

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



The selected configuration can be removed pressing the red button.

Fig. 26

Log File

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

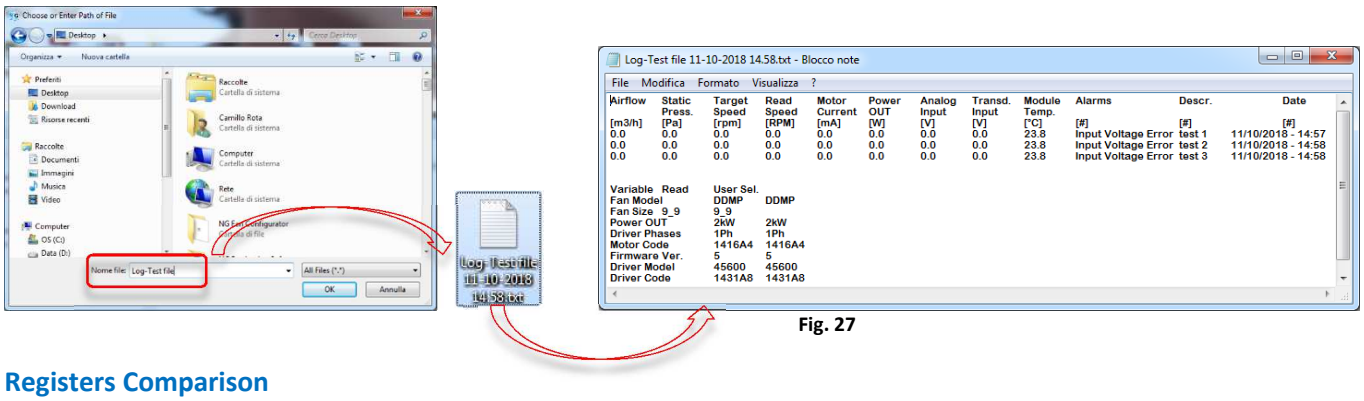


Fig. 27

Registers Comparison

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

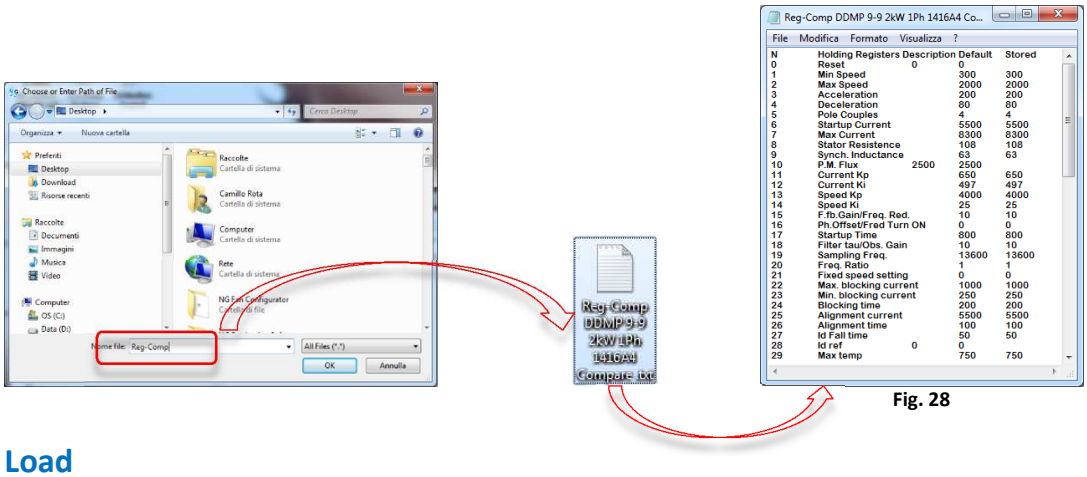


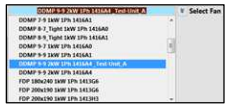
Fig. 28

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



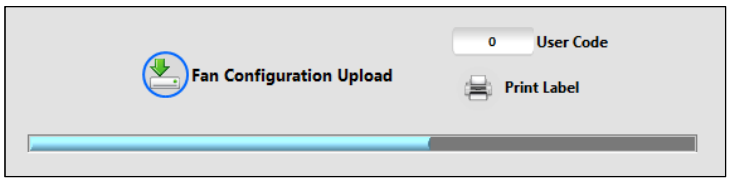


Fig. 29

Firmware upgrade

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

Fig. 30

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.
A blue LED indicates if the update process ended with success.

Fig. 31

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 EC Fan Manual and the Software Manual.

Changing the Menu items

When the user select a menu item, automatically other menu items change depending on the informations 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

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