InfplusWin

OPERATING MANUAL

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1   INFPLUS-WIN SOFTWARE

INFPLUSWIN is a software developed to run on a PC with Windows operative system installed. With InfplusWin it is possible to control the instrument and create reports.

This software are develop continuously and often some other features are added, therefore may be some dissimilarity with the descriptions of this manual.

1.1 INSTALLATION

To install the Infplus-Win software, run **"infpluswin.exe"** from the disk and follow the instruction showed.

The software will be copied on the hard disk into the default directory **"InfplusWin"** or in another directory that can be selected during the installation.
Once the installation has been completed run **"InfplusWin.exe"** in the **"InfplusWin"** directory or click on **"InfplusWin"** icon on the desktop.

2 INFPLUS-WIN FUNCTIONS

Before run InfplusWin check that the connection between the serial port COMx of the personal computer and the instrument, make sure the serial port COMx works properly.
When InfplusWin start a Main Menu will appear with 4 control keys, the menu selection and the ASSEMBLAD logo.
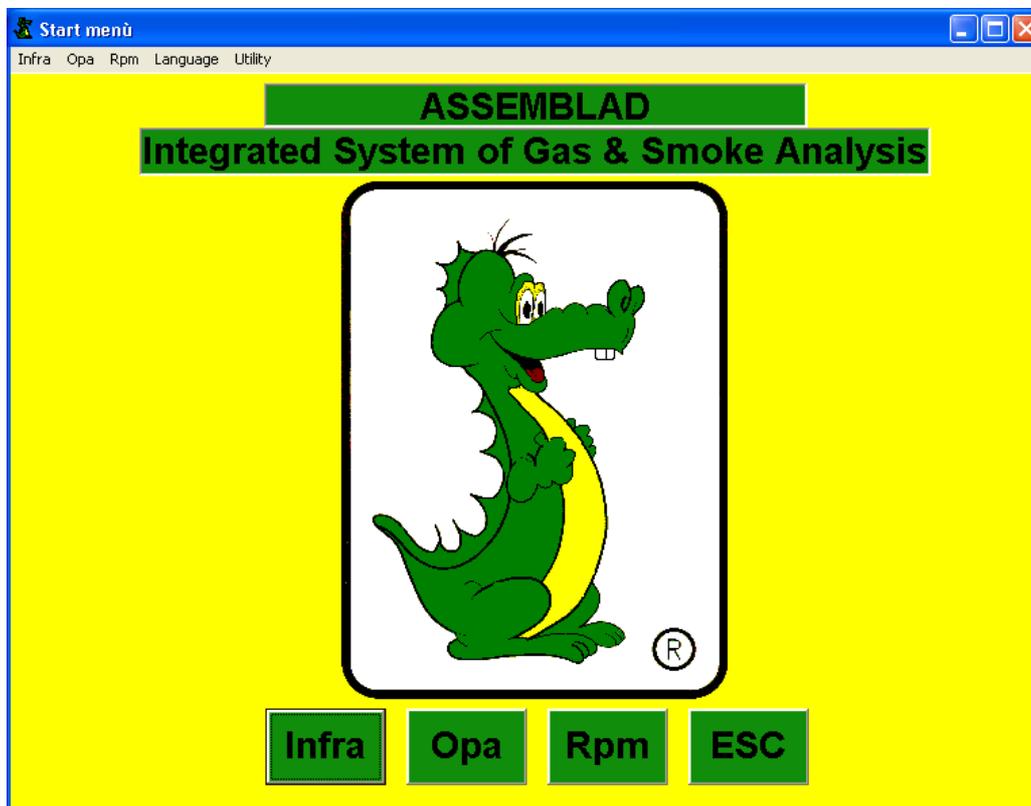
InfplusWin has the following default communication parameters set:

Port   : COM1
Baud Rate : 9600
Word   : 8 bits
Stop   : 1 bit
Parity : None

The serial port of each instrument is set in the set-up window.

2.1 UTILITY MENU

Selecting "**User**" or/and "**Environmental data**" you will enter into the related sub forms to set values and information's used during the test (and also printed in the final report).
Selecting "**COM reading"** start a procedure to search all Assemblad instrument connected to the serial port from COM1 toCOM16. This system don't manage the upper serial ports. This one is useful also to diagnostic the communication between PC and instrument.
"**System set-up"** is a reserved procedure.

2.2 LANGUAGE MENU

In this menu is selected the language, the standard selection is Italian, English and Spanish.

2.3 MENU INFRA SET-UP

In this window there are the gas analyzer data.
The baud rate is 9600, select the communication port connected to the gas analyzer.
Select the type of instrument, INFRA QUEEN is the board bench used in the families of gas analyzers INFRAGAS-109 AND INFRAGAS-205.
Push FIND, verify the received data with the instrument data, push SAVE, if the communication don't work begin the communication error searching procedure.

2.4 MENU OPA SET-UP

This window is the same of the analyzer one.
Select the type of smoke meter, OPA KING is the measure bench used in the family of smoke meter OPA-105.

2.5 MENU RPM SET-UP

In this window there are the RPM data.

These data can be received from the instrument with the command FIND or manually edited.

With the model RPM-405 it is possible to set the number of cylinders and strokes.

There are also 2 keys with the following functions:

RPM – this button enable/disable the external RPM, if this is enabled and the RPM counter is not working or connected, in the measure state there will be the communication error, if this is disabled the system use the RPM counter inside the instrument.

OIL TEMP – this button enable/disable the detection of the oil temperature by mean of RPM-405, if it is disabled the system use the oil temperature sensor of the instrument.

3 GAS ANALYZER SECTION
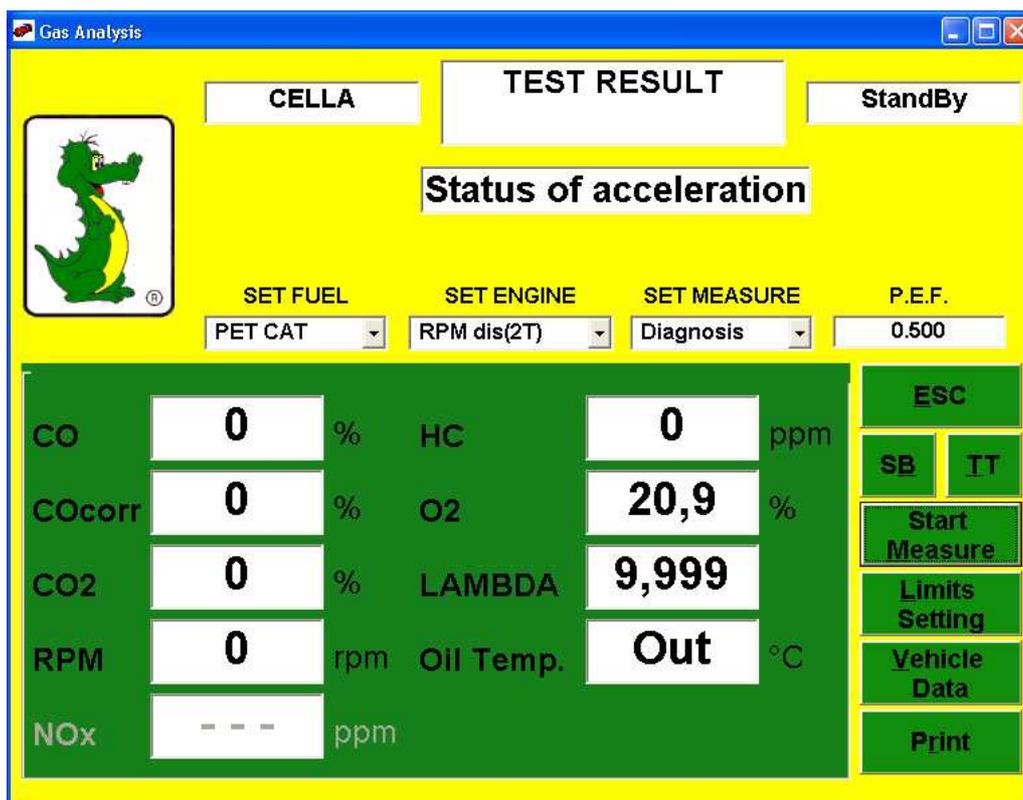
This section shows
- the model type and the serial number
- the test status
- the analyzer status
- the window for messages
- the selection for the fuel
- the selection for the motor type
- the selection for the measure type
- the PEF of the instrument
- all the measurements performed by the analyzer;
- the button to switch the analyzer in the StandBy or in the Measure status **"SB"**
- the button to start the leak test **"TT"**
- the button to start and stop the measure **"Start Measure"**
- two buttons to set the test limits **"Limits Setting"** and the vehicle manufacture data **"Vehicle Data"**
- the button to print the test report **"Print"**

3.1 FUNCTION KEY

All functions are available clicking with the **mouse** on the buttons, or through the keyboard pressing **ALT + "the underline letter"** simultaneously. To exit from a section click **"x"** on the right upper corner using the mouse or press **ESC.** To select a different fuel type, RPM number or measurement type select the corresponding field with the **mouse** or press **TAB** until the field is selected, select a value using **ARROWS KEYS** and press **SPACE** to confirm.

3.2 ANALYZER STATUS

The gas analyzer can be in one of the following functional state:

Warming : analyzer is warming up
StandBy: analyzer is waiting for a new command
Autozero : analyzer is in auto zeroing
Measure : analyzer is measuring
Calibration : analyzer is in calibration
Leak Test : Leak test is running
Test HC : HC Test is running
ERROR : analyzer is in a irreversible error status
ERROR COM : no communication with the analyzer

3.3 ANALYZER MESSAGE AND RESULTS

In this windows are showed the operative and the error messages to able the interface between operator and instrument.
If it is selected a certified test, at the end it is reported the final result of the test, this will be reported in the printout.

3.4 ANALYZER SETTINGS

In the SET FUEL field it is possible to select the fuel and the motor type. The type of fuel change the calculation of the lambda factor and the COcorrect. The catalytic/nocatalytic selection change the type of measure
In the SET ENGINE field it is possible to select the engine type, in order to have the right RPM value.

3.5 ANALYZER MEASURE MODE SELECTION

In this field it's possible to select the measure mode. There are two type of measurements:
Diagnosis : this is used for standard exhaust diagnosis of vehicles and a report can be printed in every moment during the test.
Certification : this is used for exhaust diagnosis of vehicles in accordance with the Italian regulation and a report can be printed only at the end of the test.

3.6 ANALYZER MEASUREMENTS

In this screen section the measurements are showed.
The message '**Out**' means that an out of range has been detected, while '**---**' means that the value is not available.
When the analyzer is in **'Measure'** status and the '**Certification**' mode has been selected, measurements are compared with the limit values entered in the **"Limits Setting"** sub form. If a measure is not within limits above said the window will become red.

3.7 INPUT LIMITS AND VEHICLE DATA

The **"Limits Setting"** form comprises the following values:

- RPMmin : is the limit for the engine speed minimum test, engine speed must be below this value to proceed with the test;

- LambdaLI : is the lower limit for the Lambda value;
- LambdaLS is the upper limit for the Lambda value;
- LCOcorMin : is the lower limit for the CO corrected at minimum rate test.
- LCOcorMinacc : is the lower limit for the CO corrected at the accelerated rate test.
These data must be selected for the vehicle type under test and your rules requirement.

- Test Length : it is possible to select the test duration in <u>seconds</u>;

- RPMmaccLI : is the lower limit of RPM for the accelerated minimum engine speed;
- RPMmaccLS : is the upper limit of RPM for the accelerated minimum engine speed;
- RPM Qualification: with this selection it is possible to choose if the RPM value must be considered or not as a condition to be verified to perform the test, if RPM is enable all RPM limits must be met.

The "**Vehicle Data**" form is used to enter tested vehicle information. These data will be printed on the test report.

3.8 ANALYZER MEASUREMENTS

Pressing the button "**Start Measure**" the instrument begin a series of operations.
At the beginning it verify if a positive leak check is been performed in the last 24 hours, if it is not a windows request a new leak check to go on.
The autozero will start, after that the analyzer will perform the HC residual test, the instrument don't exit if the HC reading is more than 20 ppm, in this case set the instrument in stand by, clean carefully the gas probe and the filters (see operating manual), restart the measure.
If the instrument in use is an car/motorbike model and it is connected to the compressed air line, try to restart the measure some times to perform the auto cleaning, if the HC test continue fail make the manual cleaning.

If the "**Diagnosis**" mode has been selected the instrument will measure values without comparing them with the limits entered.
If in "**Certification**" mode, after the calibration execution, the test will start according to the regulation. It's possible to perform two different type of test according to the regulation: one for catalytic vehicle and one for non catalytic as follow:
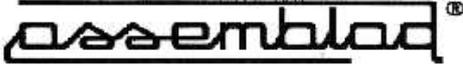
- Non catalytic vehicle : only test at minimum engine speed, test duration is 30 sec by default, in this condition a progress bar will appear to indicate the test progress status and the message field will show messages to help performing the test. At the end in the test result field a message will appear to indicate if the test has been passed or not.

- Catalytic vehicle: one test at minimum engine speed and one test at accelerated minimum engine speed will be performed, both will have a duration of 30 sec by default, a progress bar will appear to indicate the test progress status and the message field will show messages to help performing the test. At the end of the first in the test result field a message will appear to indicate if the first test has been passed. After 7 sec the second test will start and at the end in the test result field a message will appear to indicate if the complete test has been passed or not.

3.9 ANALYZER REPORT PRINTOUT

It's possible to print a report of the test with the command "**Print**". The printout will come out from the default Windows printer.

When in "**Diagnosis**" mode it's possible to print in every moment and the command is always enable, while in "**Certification**" mode it's only possible at the end of the test procedure and the command will be enable only in that moment. Below it's showed a print report for the "**Diagnosis**" mode (in "**Certification**" mode an additional section for catalytic vehicle is also available) .

4 SMOKEMETER SECTION

In this section the following fields are displayed:
- the model type and the serial number
- the test status
- the smokemeter status
- the "Smoke-stop" device type
- the opacity measure
- the selection of the measure type
- the window with the intermediate results
- the window for messages
- the final opacity result field;
- the other measurements performed by the smokemeter;
- the button to switch OPA in the StandBy or in the Measure mode **"StandBy"**
- the button to proceed with a manual test **"Progress"**
- the button to start and stop the measure **"Start Measure"**
- two buttons to set the test limits **"Limits Setting"** and the vehicle manufacture data **"Vehicle Data"**
- the button to print the test report **"Print"**

4.1 FUNCTION KEY

All functions are available clicking with the **mouse** on the buttons, or through the keyboard pressing **ALT + "the underline letter"** simultaneously. To exit from a section click **"x"** on the right upper corner using the mouse or press **ESC.** To change the measurement type select the corresponding box with the **mouse** or press **TAB** until the box is highlight, select a value using **ARROWS KEYS** and press **SPACE** to confirm.

4.2 SMOKEMETER STATUS

The smokemeter can be in one of the following operating status:

Heating : Smokemeter in warming
StandBy : Smokemeter in stand-by
Autozero : Smokemeter in autocalibration
Measure : Smokemeter in measure mode
Error : fatal error in the Smokemeter
ERROR X : error in the Smokemeter (X is a number that identify the error type)
ERROR COM : Communication with the Gas Analyzer not available

4.3 "SMOKE-STOP" DEVICE TYPE

In this field there is an indication of which kind of "Smoke-stop" device is currently used. The indication is **"Elect. Valve."** if an electric valve is used, **"Sled Opened"** or **"Sled Close"** if a sledge is present, **"Not Present"** if there's no device.
If there are not device, the system show the message to insert or take off the probe.

4.4 MEASURE SELECTION

With this selection it's possible to select the type of measure:
- **Continuous**: this selection is for vehicle diagnostic, it is performed a continuous measurement of the opacity without detection of the peak.
- **RPM**: in this test the acceleration start when the RPM lower limit (RPMmin) is exceeded, the peak acquisition start when the RPM upper limit (RPMmax) is exceeded, the duration is 4 sec., the acceleration stops when the RPM come back below RPMmin. Before run a new acceleration RPM must remain at least 3 sec. below RPMmin.
- **Smoke Limits**: in this test the acceleration and peak acquisition start when the Opacity Limit is exceeded, acquisition duration is 4 sec., the acceleration stop when go back below the Opacity Limit. Before to run a new acceleration, the opacity must remain at least 3 sec. below RPMmin.
- **Time**: in this test the acceleration is defined by time, the vehicle must remain at minimum rate for 3 sec., after that it must go to maximum RPM in 1 sec. and remain there for 4 sec., in this period there is the peak acquisition. Then go back to minimum rate in 1 sec. and maintain it for almost 3 sec. before to run a new acceleration.
- **Manual**: in this test the increment of the acceleration is made with the button **"Progress".**
- **Direct acquire**: this selection is for vehicle diagnostic, with the button **"Progress"** it is possible to store from 1 to 8 opacity values, there are not peak detection and average calculation.
- **Single**: with this selection it's possible to run a single acceleration in the same way as in the **RPM** mode and print the result graphic (see picture below).
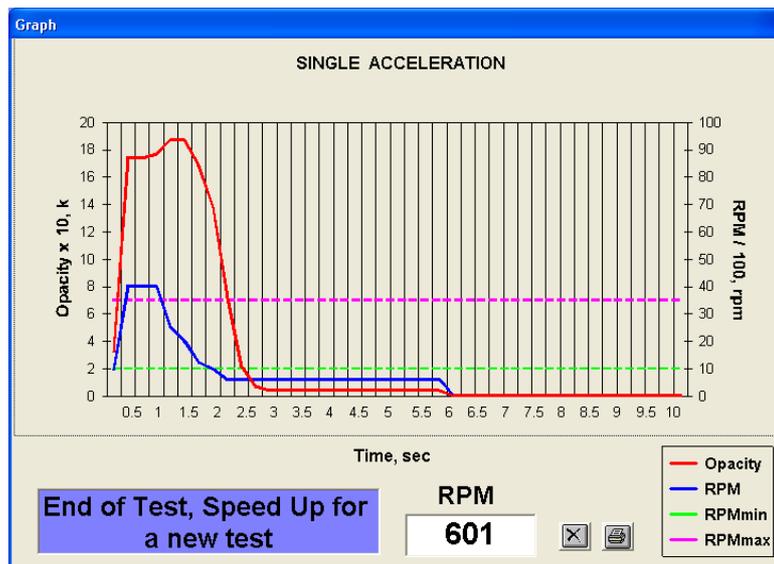
Each measure type has a duration that depends on the test result as described in this manual. At the end of each test the result will be displayed in the related field and a final report can be printed.

4.5 SMOKEMETER MESSAGE AND RESULT

In this windows are showed the operative and the error messages to able the interface between operator and instrument.
If it is selected a certified test, at the end it is reported the final result of the test and the opacity average, this will be reported in the printout.

4.6 SMOKEMETER MEASUREMENTS

In these screen the smokemeter shows the measures performed. The **'Out'** string means that an over-range value has been detected, while **'---'** means that the data is not available.
If the temperature goes below 70°C the field "Cell Temp" becomes red.

4.7 SMOKEMETER INTERMEDIATE RESULTS

This window show the opacity peak and the RPM value detected in each acceleration.

4.8 INPUT LIMITS AND VEHICLE DATA

In the form **"Limit setting"** the following values are showed:
- **RPMmin** : is the lower limit of the engine speed in the **RPM** mode, the motor status is at minimum when the RPM is below this value.
- - **RPMmax**: is the upper limit of the engine speed in the **RPM** mode, the motor status is at maximum when the RPM is upper this value.

- **Opacity Threshold** : is the opacity limit, in the **Smoke Limits** mode, to start the peak acquisition;
- **Limit Value of K** : is the maximum K value of the opacity, the average must be lower than this value in order to pass the test;

In the form "**Veihicle data**" the vehicle data can be entered, they will be printed in the final report.
All values and strings can be entered manually selecting the relevant fields with the mouse or with the **TAB** key and using the keyboard.

4.9 PRINT A TEST REPORT

At the end of a test, with the button "**Print**" it is showed the preview of the printout, after it is possible to come-back or to send it to the Windows default printer, selecting how many copy to print.

5 RPM SECTION

In this section the following fields are displayed:

- a window with the RPM or oil temperature value
- a button to select the type of measure to show
- a box to select the cylinder number
- a box to select the stroke number

To change type of measure, with the mouse push the button with the icon of RPM counter or thermometer, otherwise push **TAB** until the icon is highlighted, push **ENTER** to change the selection.
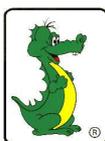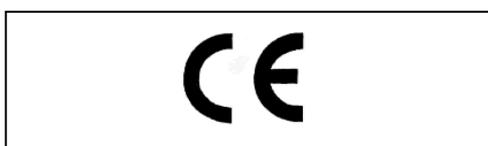
To change the cylinder number, with the mouse push the button with **+** or **-** , otherwise push **TAB** until the button is highlighted, push **ENTER** to change the selection.

To select the stroke number, with the mouse make the selection, otherwise push together the key **ALT + "the underlined number"**

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