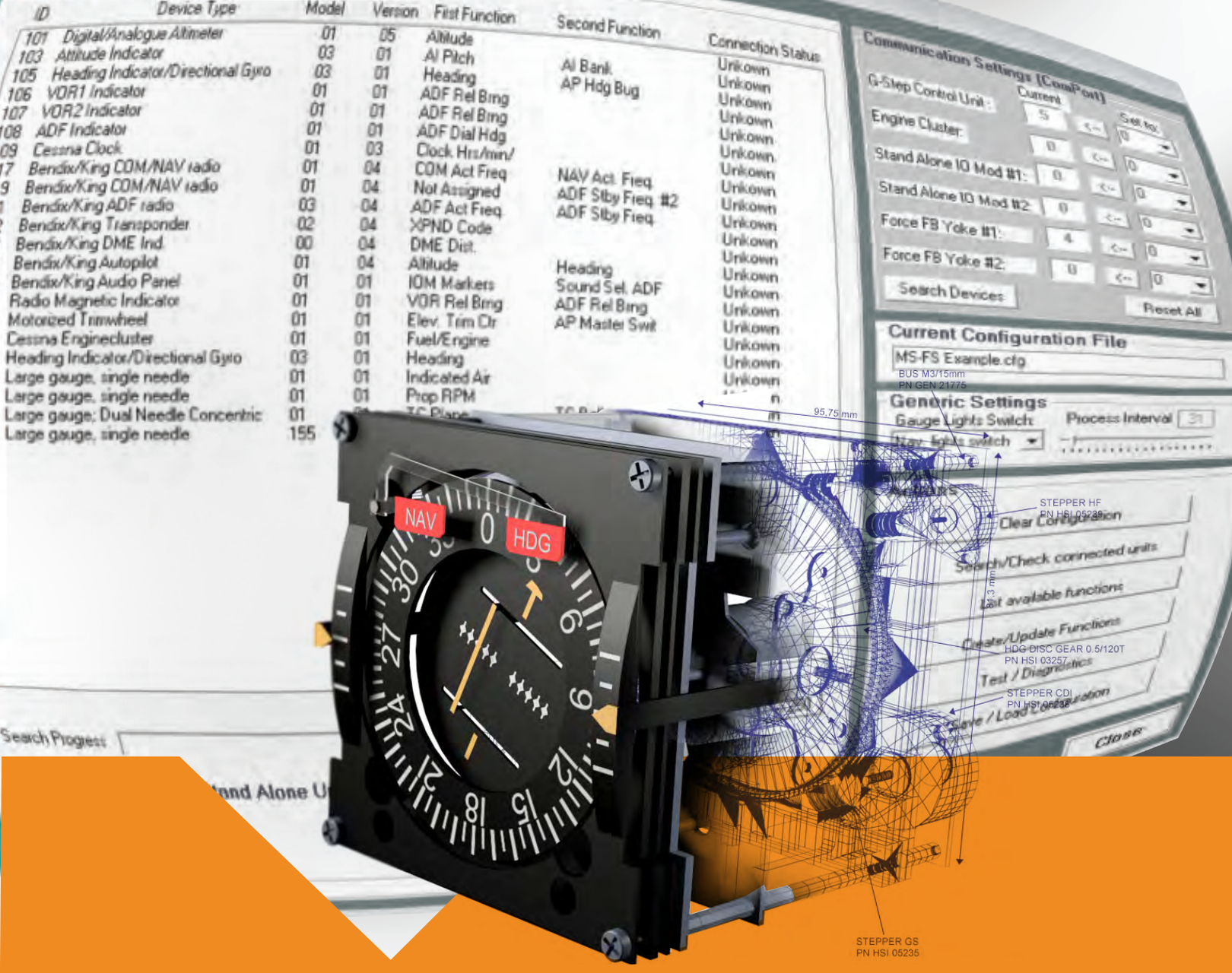

User manual

FLIGHT ILLUSION

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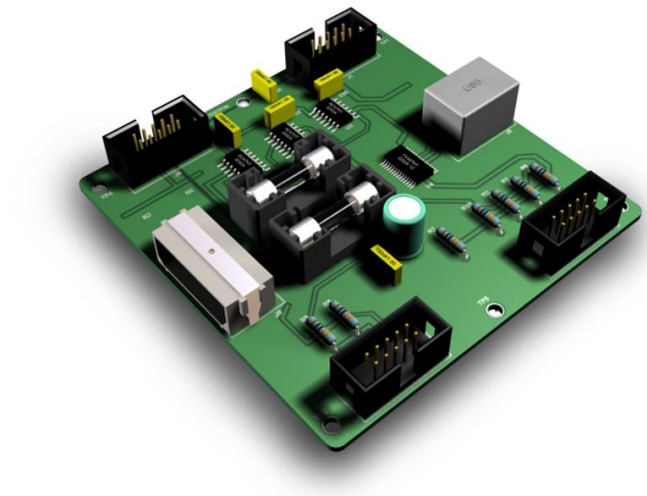
1. General

The Flight Illusion gauge/module concept is based on a so called “Bus” system, by which all gauges and logic components can be daisy chained. Advantage of this concept is a very serious reduction of wiring and cabling.



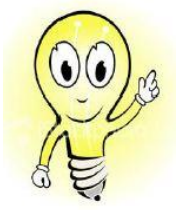
Basic component of the system is the **C**entral **I**nterface **M**odule (GSA-55 or GSA-55PS). One side of this module is connected to the USB port for communication between the control program and a standard Hard Disk style power connector to power all the connected gauges.

On the other side are four ten pin connectors combining both the power to the gauges and the data interchange between the PC and the gauges. Because of power consumption and signal degradation the number of units that can be connected per connector on the CIM is limited to a maximum of 16.

Due to the daisy chain concept the gauges are in fact all connected in parallel, so a sort of protocol is needed to communicate with one single gauge or logic unit. For that reason each gauge has a unique address –called GaugeID- that enables the control program to exchange data with one particular unit. The address range is in total 255 different addresses varying from 1 to 255.

By default, new gauges get either an address that is specific for a certain gauge type or 255 when the gauge is a universal type. Example: the altitude indicator (a specific fixed function gauge) will at production be set to address 101, but a small generic single needle gauge (that can be used as e.g. flap indicator) will be set to 255.

As addresses must be unique on a daisy chain, you can add only one new generic instrument (with address 255) at a time. The software enables the user to detect the new gauge and the user can then change the address of the gauge to an address that isn’t in use yet.
The configuration part of the control program allows the user to change addresses but also gauge specific things like the needle speed (for smooth movements), the altimeter mode (Inches HG or mBar), etc. These settings have to be done only once as the address and other settings are saved in the gauge.



To build- up your configuration it is the best to start with only one gauge connected. Do a “search” with the software and configure the gauge. Also give the gauge a unique ID, other than 255. When done click apply and save your configuration. After this step you can apply your next gauge and repeat these steps.

2. Hardware installation.

The CIM and Gauges must be connected as shown in the picture below.

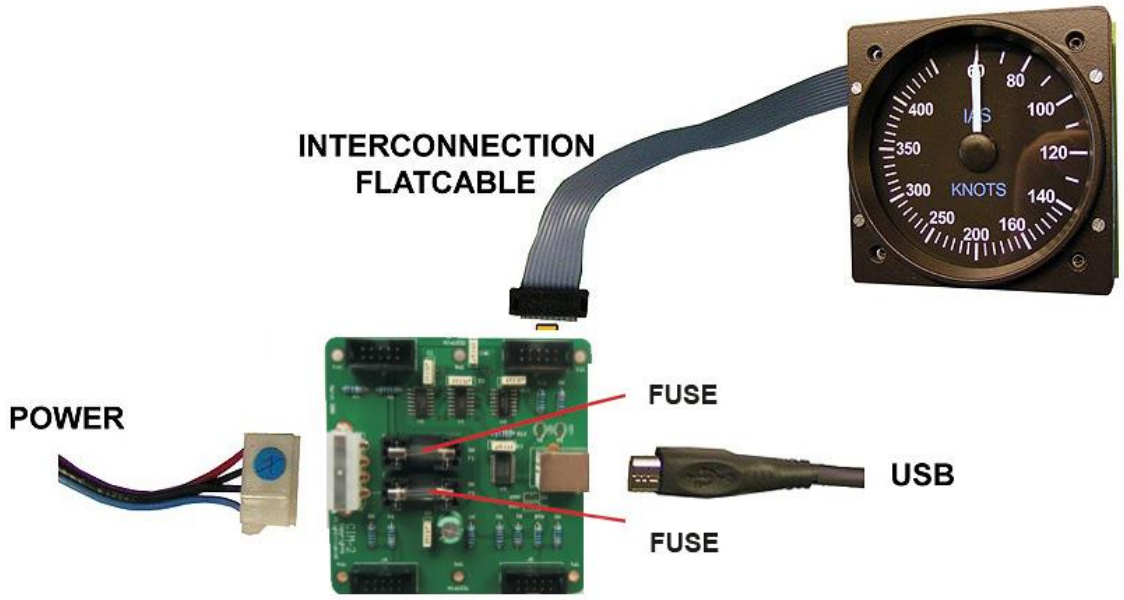


FIG 1.

For the power you can either use a separate power supply (EP-CPS) or -via an extension cable and free power connector - the power supply from the PC. The power consumption will vary with the number of units connected. Roughly each connected G-Step components will draw maximum 50mA from the 5 volts and 20mA from the 12 volts.

Never connect or disconnect gauges while the power is switched on (this may damage the processor on the gauge)

On the CIM both voltages are protected via a fuse located closely to the power connector.

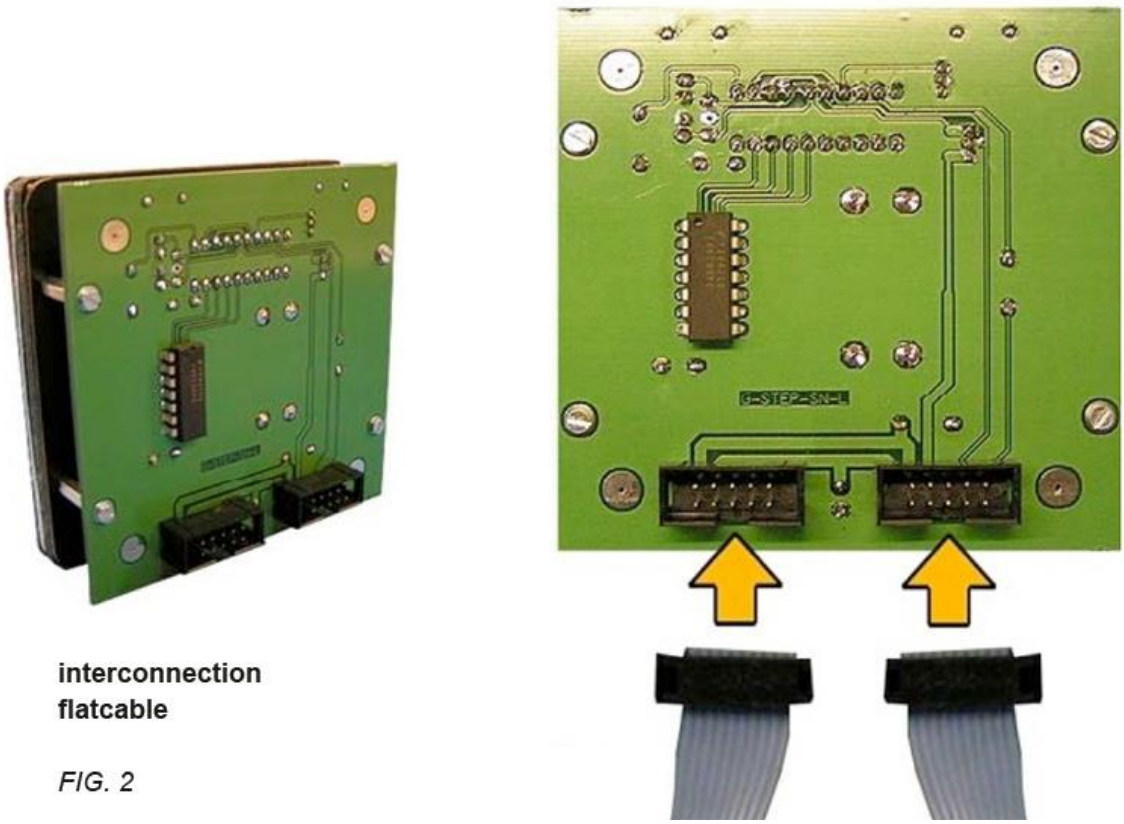
The CIM has six mounting holes that can be used to mount the CIM.
The mounting holes are connected to ground and can be used to mount the PCB to metal surfaces providing these are either grounded or “floating”.

To prevent short circuits take care to keep the PCB free from metal or other conductive surfaces.

USB is a standard cable from either the PC directly or a USB hub. The little sub-PCB is a converter that translates the USB interface into serial communication levels as used by the gauges.

The four flat cable connectors on the PCB are for connecting the daisy chained gauges. These connectors are identical and can be used as wanted. You can connect up to 16 gauges on each connector. Hence, a maximum of 64 gauges/modules can be hooked up to 1 interface.

All gauges and G-Step components have two interface connectors (except for the compass, that has only one connector). Also these are identical and don't care which one you use. We added two connectors per gauge to simplify the daisy chain system. One can be used as the input from the CIM or another gauge and the other one to connect it with a flat cable to the next one. It is also possible to use cables with more than two connectors, by which one connector on the gauge will remain free. Using a short cable this connecter can be used to e g a gauge located aside.



interconnection flatcable

FIG. 2

3. Software installation.

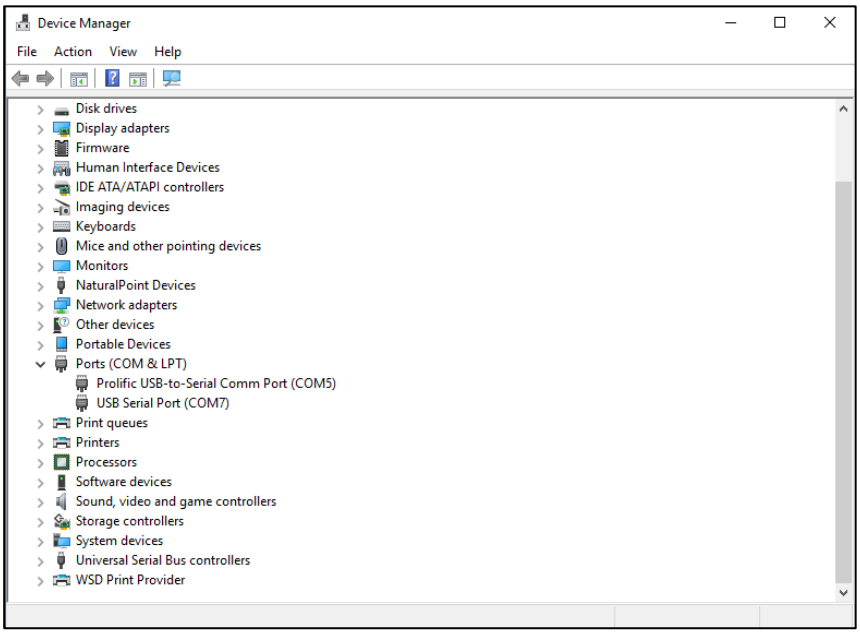
Flight illusion gauges can be used with different simulator software. This version of Simulator Control Program software is compatible with the F4 based Flight Simulator (abbreviated FS in this document). In order to make the gauge work with your simulator platform you need to download the following:

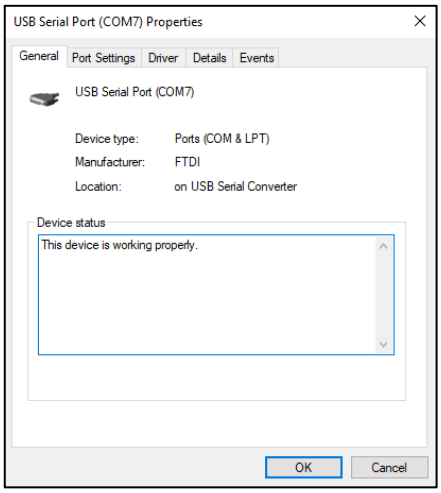
1) the USB to COM driver. (ftdichip.com)
2) the Flight Illusion software file

3.1. Driver installation.

When the CIM is connected properly to USB and Power, the PC can be switched on. Windows will now detect new Hardware. The interface of the CIM uses a translator circuit, to map the USB interface onto a Serial Communication Port. In general PCs have one of these ports so the CIM will be installed as communication port 7for example. But, depending on your configuration, a higher port number is possible. This mapped communication port requires drivers and Windows installation manager will ask for them. If windows didn't have a driver for this board you can download it from the internet page: http://www.ftdichip.com/FTDrivers.htm
Depending of your used windows version you can find the right driver here. Our software is tested on the following English windows versions: Windows 7, Windows 8 and 10. Other systems could be worked also but are not supported yet.

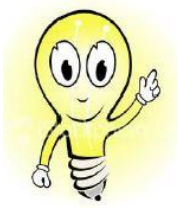
When driver installation is done this can be checked in the Control panel via "System - Device manager". An additional serial port should appear there.



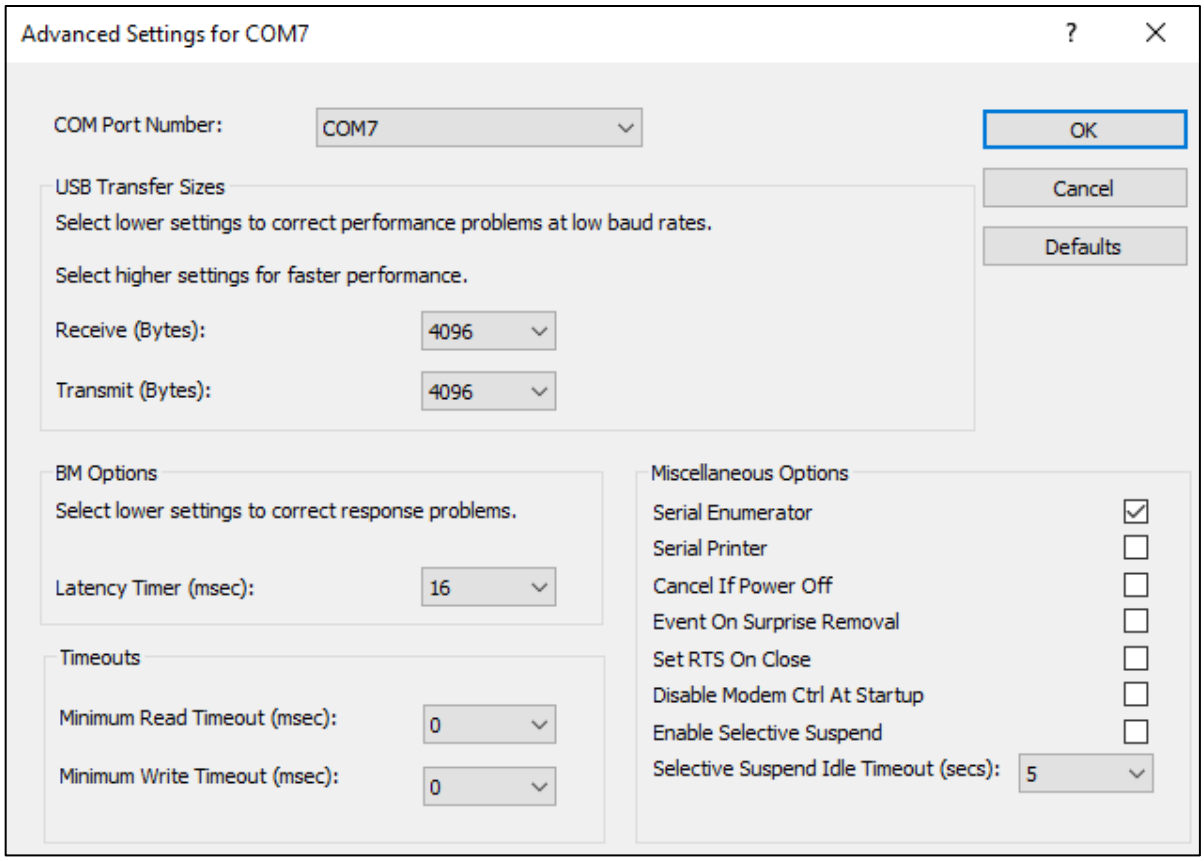


Clicking the –in this case COM7- port brings up the properties of this port:

If wanted, the port number can be changed via the Advanced Port Settings:



Be sure that you know the right COM port number, because you need this information to set the correct COM port number in the Simulator Control Program software.



The selected comport should of course match the com port selection in the Simulator Control Program, which you will install later.

The supplier of the USB to Serial port converter updates the drivers regularly. These drivers can – when needed- be downloaded from http://www.ftdichip.com. Use in that case the virtual com port drivers for the FT232B and the operating system you are using. Latest drivers are in the installation package.

No other drivers need to be installed, as the application program communicates with the instrument cluster via this communication port solely.

3.2. The Application Program

The application program is licensed as an “evaluation version” and can be installed from the install package via the Setup program (‘Simulator Control Program Setup.exe’). This package can be downloaded from our website. It will install some extra extensions for driving the serial port and will put the Instrument Control program in your program list. The serial port drivers will remain unchanged and will need no update.

The unregistered evaluation version is fully functional, works 30 calendar days and can be launched 10 times.

1) Software requirements:

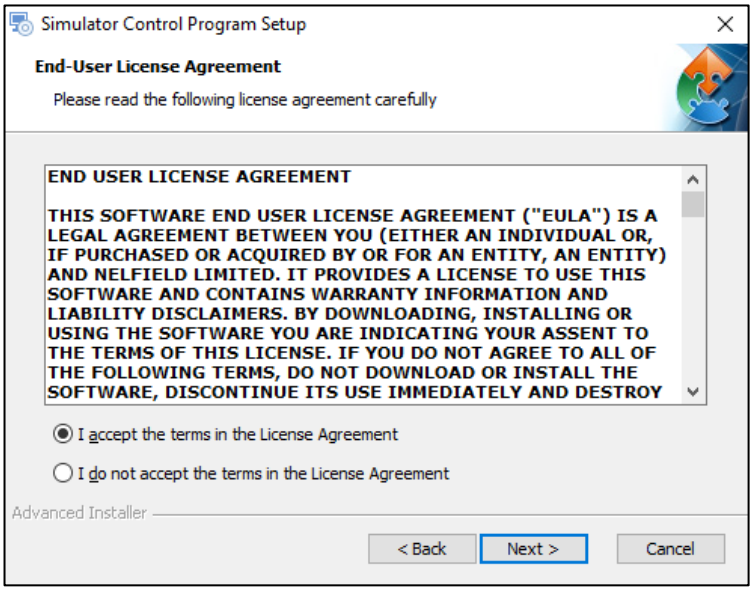
- Windows 7 and up
- .Net Framework version 4.6.2

Note:

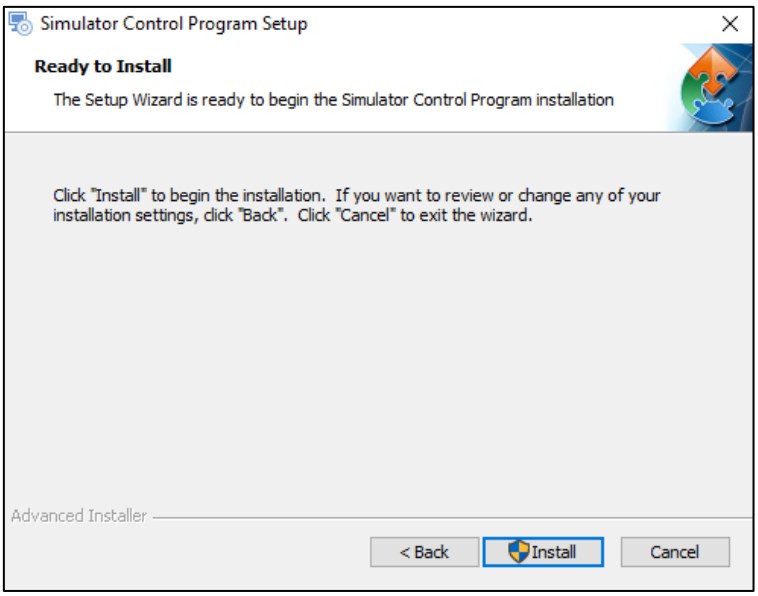
- The application was tested on English Windows versions only

2) Software setup

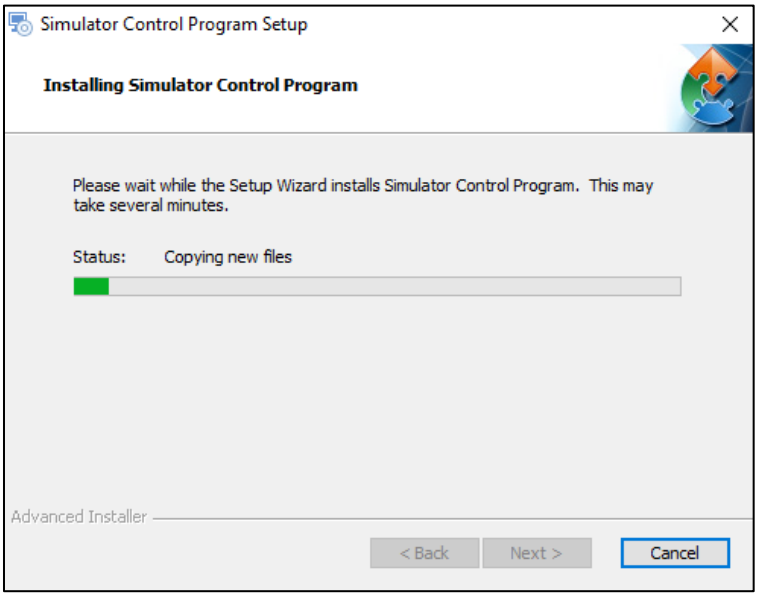
Launch Simulator Control Program Setup (downloaded from our website www.flightillusion.com/support).

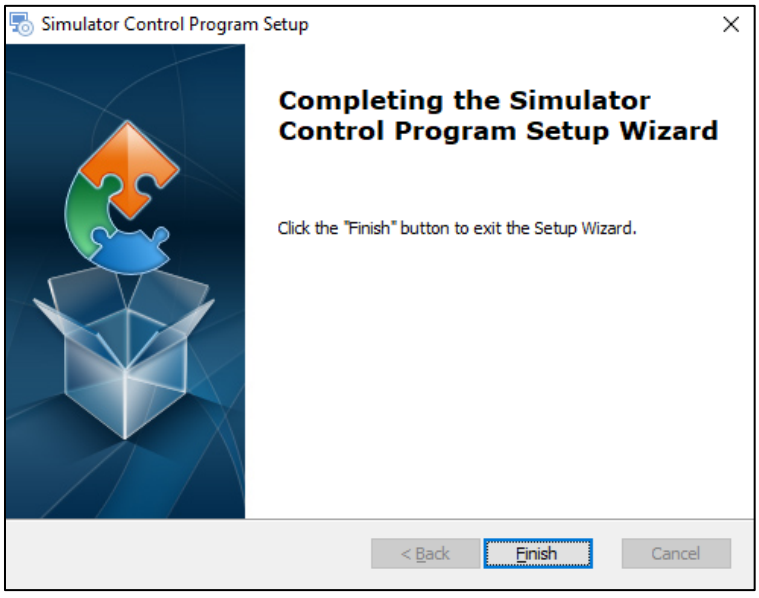


Please read and accept the terms in the End-User License Agreement to continue the installation.



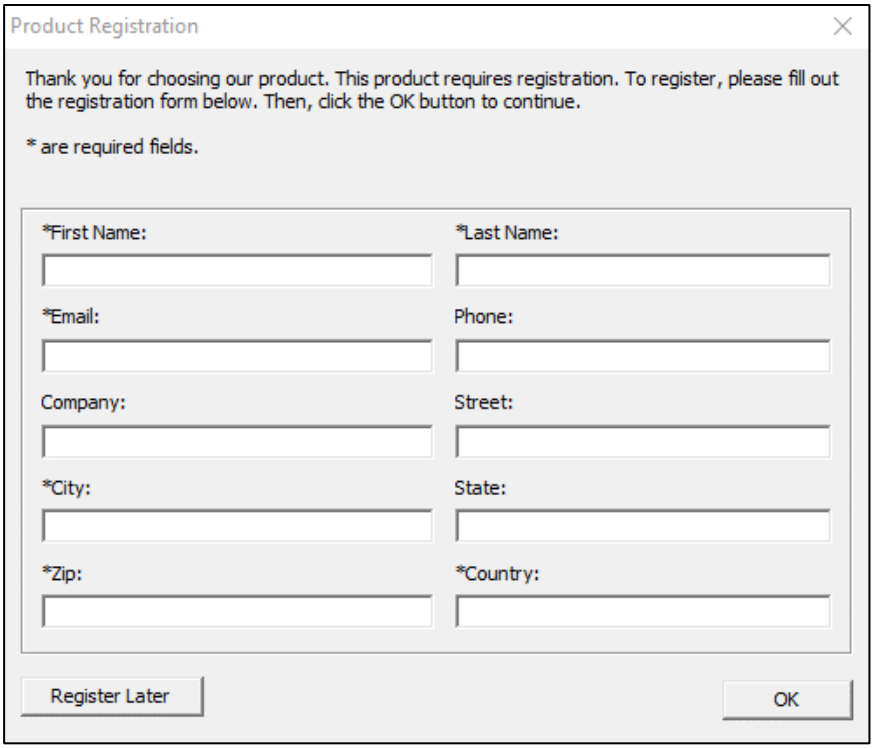
Click the “Install” button to start the installation. Local administrator privileges are required.





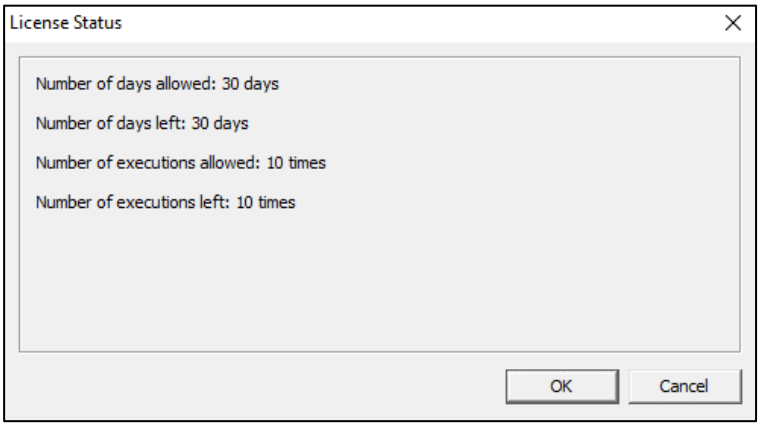
Finish the installation.

3) Registering the software



When launching the Simulator Control Program, the Product Registration screen will be displayed. You must fill-in the mandatory required field marked with "*".

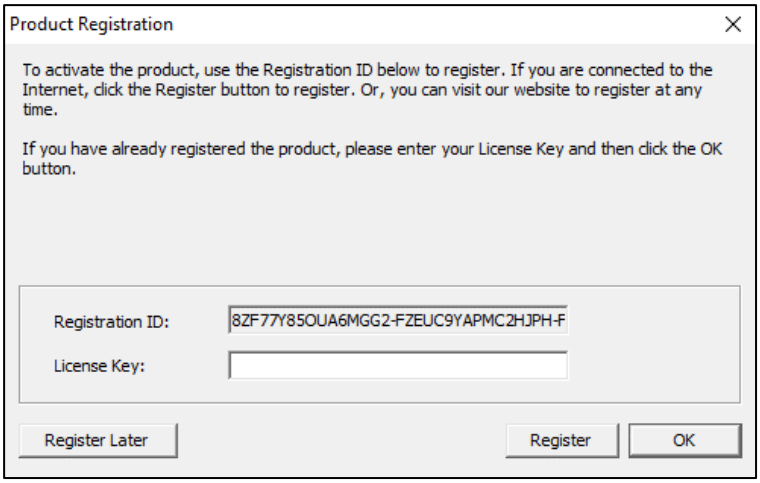
Pressing "Register Later" will show the following screen:



This shows the License Status in evaluation mode. Pressing "OK" will launch the program, decrementing the "Number of executions left:" by 1.
The evaluation mode is limited to 30 days.

Pressing "Cancel" will cause the program to exit with no decremented executions left counter.

Pressing "OK" on the above "Product Registration' screen will show next:



This screen gives 3 possibilities:

a) "Register Later"

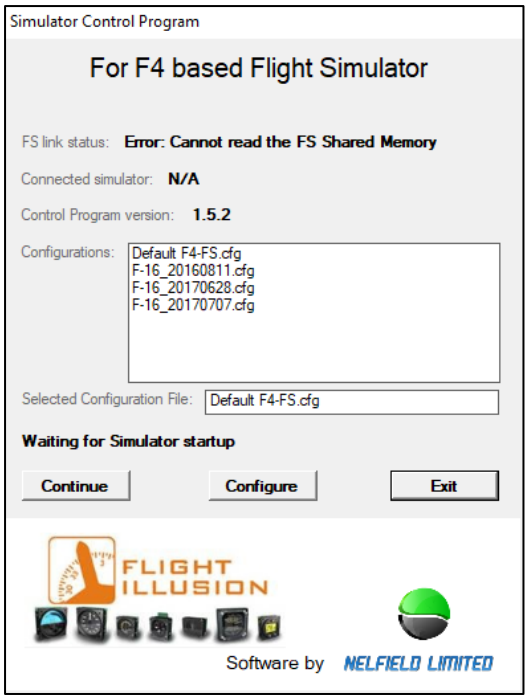
Shows the License Status screen and enables to continue in evaluation mode.

b) "Register"

Generates e-mail to Flight Illusion with the Registration ID and the mandatory info entered in the Registration screen.

c) "OK"

Activate the software. Enter the by e-mail received License Key in the field.



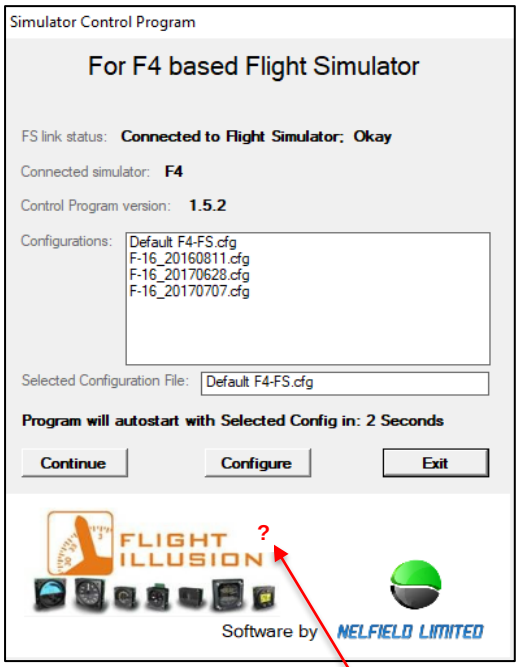
The Simulator Control Program application ("GSControl F4-FS.exe") is the intermediate between the G-Step components on one side and the F4 based Flight Simulator on the other side. Using FS Shared Memory it reads gauge values and other parameters from FS and the software calculates the values for the gauges.

After the driver installation is completed this program can be started. If you start the .exe file you should see this screen:

"FS Link status" shows whether the F4 based Flight Simulator is running and shared memory is ready. When F4 based Flight Simulator loaded and running this should read "Connected to Flight Simulator: Okay".

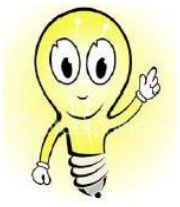
The other fields give data on version and type of programs. The two buttons "Continue and Configure" below the will be enabled as soon as you have selected a configuration file.

If the Control Program is started before FS, it will show the message "Waiting for FS startup". At one second intervals, the program will check whether FS comes up.



As soon as the connection with FS is made the Wait message will be replaced by an autostart message. If no action is taken, the program will then load the default configuration and start automatically. The autostart function is aborted if one of the buttons is clicked or a configuration file is selected manually.

At first run or when you add or remove G-Step components you should click on the "configure" button. This will open the configuration window and gives you the tools to set the gauges and connect them to the various F4 based Flight Simulator functions. The configuration files delivered with the installation package are just examples and contain the standard variables, like available functions, types of devices, etc. Together with these you need to create your own configuration file. This is specific for your setup and can't be done by default.



Hovering the mouse over the Flight Illusion or Nelfield Limited logo shows a "?" mark. Clicking will open the "About Simulator Control Program" screen.

This screen provides following functions:

a) "Manual"

Shows this manual in the PDF viewer.

b) "Support"

Auto generates an e-mail addressed to F4software@flightillusion.com that has to be completed to e.g. ask functional, technical etc. questions or to report possible problems.

c) "License"

Show the software license agreement.

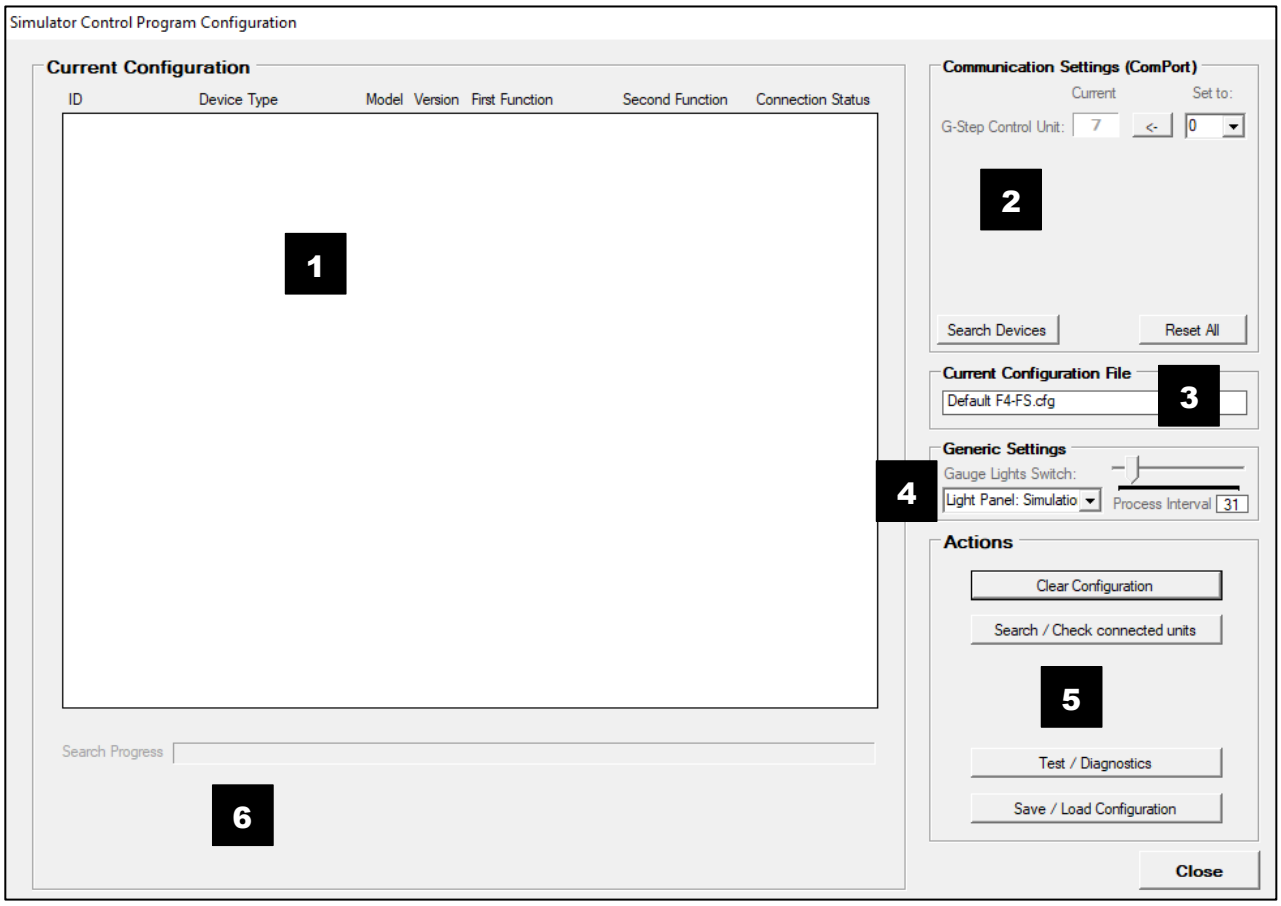
d) http://www.flightillusion.com

Link to the Flight Illusion web site.

e) F4software@flightillusion.com

Generates email to support, see b) above.

3.3. The configuration setting



The configuration screen consists of 7 zones. Each of them has one or more specific functions.

1 **Current configuration:** In this zone you will see all the connected gauges after performing a “search”

2 **Communication settings:** In this zone you must assign the com ports that are active. Perform a search devices and assign the ports manually or automatically.

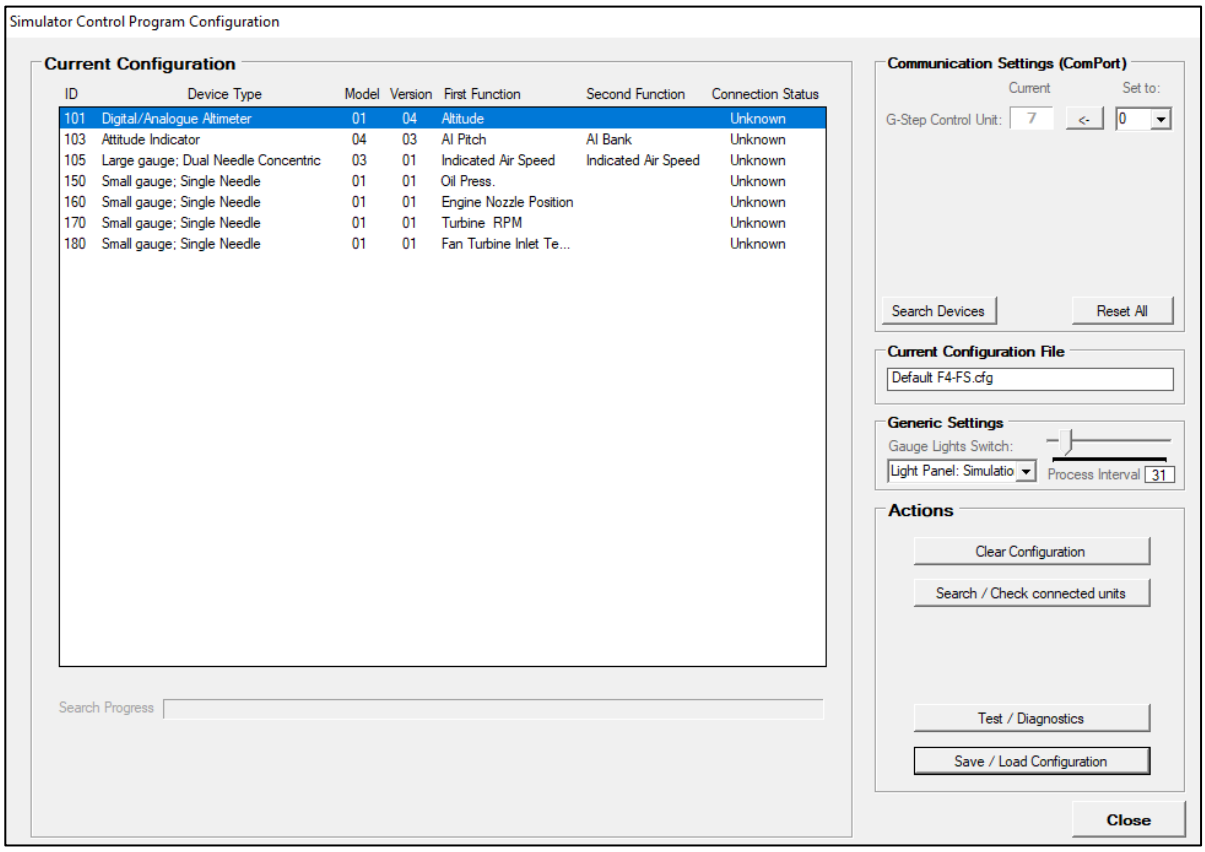
3 **Current configuration file:** reflects the configuration file that is actually in use

4 **Generic settings:** You can assign the gauge light switch and the process interval (number of times /second that the data is refreshed)

5 **Actions:** The Actions section contains a number of buttons to maintain, create and test your configuration.

6 **Search progress:** is a control bar that colors blue as the “search” command moves through the 255 possible gauge ID’s to see if they are populated.

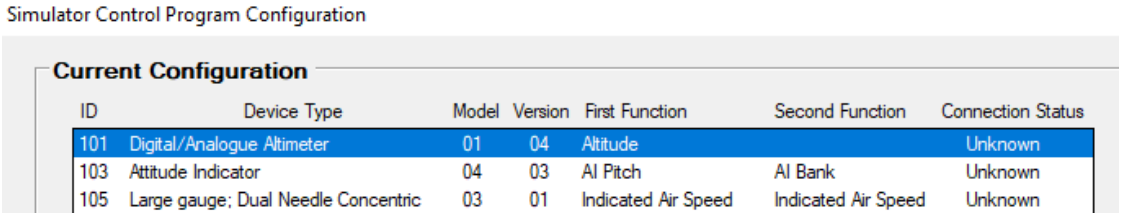
After clicking “configure” you get the screen that enables you to create a configuration file that matches your setup. Any of the supplied configuration files can be used as basis.



In this example you can see lots of gauges that seem to be connected. We have used the configuration file Default F4-FS.cfg (as found in the general setting).You will have to clear this configuration to get started with your own gauge assignment.

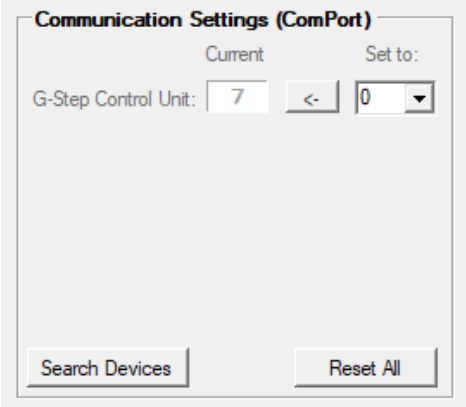
1) Current configuration

you will see all the gauges that are connected to this configuration. It actually shows the contents of the selected configuration.



- **ID** is the GaugeID of the device
- **Device type** gives the universal device type, like large, small and number of needles or type specific gauge.
- **Model** is an indication for future G-Step Control programs. It will be used for e.g. the faceplate as used on that gauge.
- **Version** is the level of hardware and micro program.
- **First function** the function(s) the first needle is assigned to .
- **Second function** the function the second needle is assigned to (to be used when some gauges have a double function (like the dual needle gauge).
- **Connection status** shows“unknown” when no communication was done yet. After the search/check, it will show either “connected” or “not connected”.

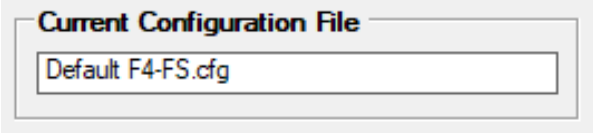
2) Communication setting



Most important part is setting the virtual Com Port to which the Central Interface Module is connected. The pull down list will only list the ports that are available on your computer. Mostly comport 1 and 2 are standard ports. The virtual communication port you added for the CIM will in general be 3 or 4, but any port number can be selected when you change that via the Windows Configuration Setup as described in the Hardware configuration.

To change the Comport select one from the pull-down list and click the set "⌂" button. The control program will now communicate via this com port. When you save the configuration also this comport number will be written in the configuration file and will be selected at next run.

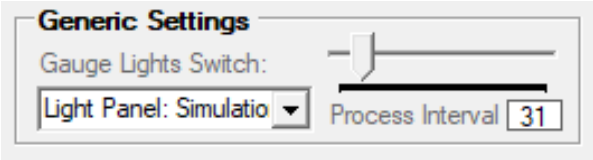
3) Current configuration



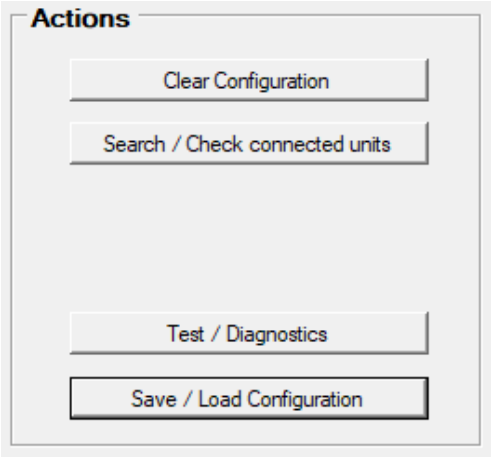
The box Current configuration file shows the active configuration.

At distribution some example files are inserted, but these are for demo purposes only and will not automatically contain the configuration you have installed.

4) Generic Setting



You can change the settings for the gauge light switch. This will define what light switch will turn on the backlight of the gauges. You can also modify the process interval. This is only needed when you are not happy with the refresh rate. The interval determines how often the data is send to the gauges. E.g. a process interval of 31 means that the data string is sent 31 times per second. Don't set this process too fast. This results in inoperable gauges, because a new string is initialized before the previous one is ended.



5) Action settings

The Actions section contains a number of buttons to maintain, create and test your configuration.
Most buttons will be self explaining,

6) Search Progress

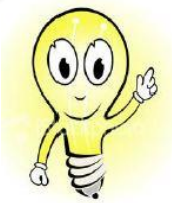
When you click on “search/check connected units” in the “actions” pane, you will see a progress bar moving as the software polls each of the 255 ID’s that can be assigned. All those gauges that are connected and that have a unique ID number will show up in the “current configuration” pane.

Note on the Configuration file:

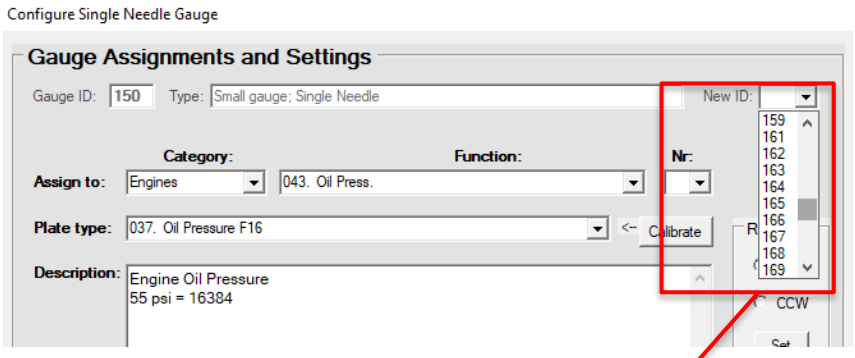
The Configuration file contains both settings for the program itself, like the specification of functions, supported Gauge types, etc. and the user specific configuration data like gauge IDs, assigned functions, etc. For that reason it is possible that the settings part of configuration file will change when a new release of the Simulator Control program is distributed. A new package will always contain the latest configuration file matching the released version.

Get started

To personalize your configuration file at first start-up you can best click the Clear Configuration and then search for connected units. By starting that function the program will try all possible addresses from 1 to 255 and when a unit “answers” it will “tell” which gauge-type it is and which address (GaugeID) it has.
When the search is ready, you should have a list with the connected units and overview of your configuration. When an instrument is already assigned to a FS function, this will also be listed. Otherwise it will show “not assigned”.

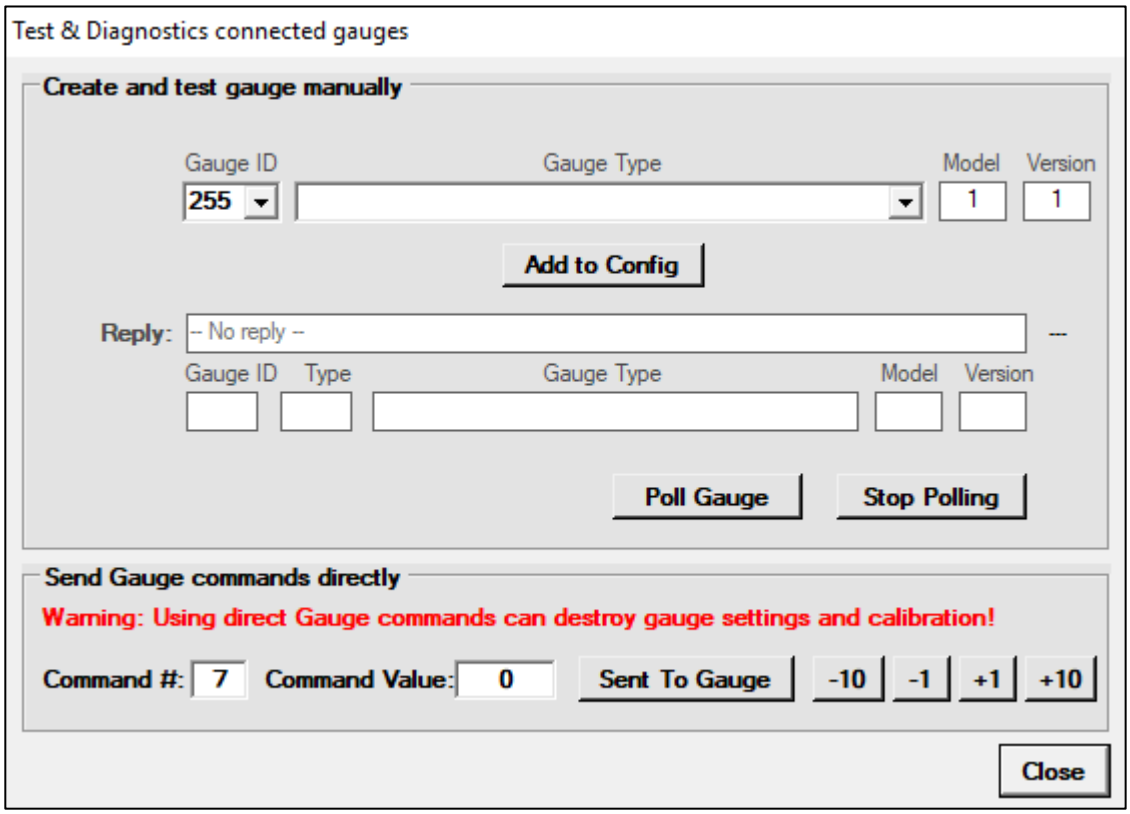


Most generic gauges are delivered with the standard address 255. These are gauges that can have more functions, depending on faceplate, number of needles, display, etc. This means that you can add only one new gauge at a time. Before connecting a next instrument you must change the address to a free number.
Dedicated instruments, like e.g. the Altimeter (101) and Attitude Indicator(103), will have a standard ID at delivery, but you can change that afterwards if wanted. Should a configuration contain one or more gauges with the same address (ID) these gauges will probably not be found at search, simply because two replies at the same time will result in a garbled and not recognized data package.



4. Testing your configuration.

Gauge configuration can be tested by clicking the Test / Diagnostics button in the Actions section. It will bring up the form below:



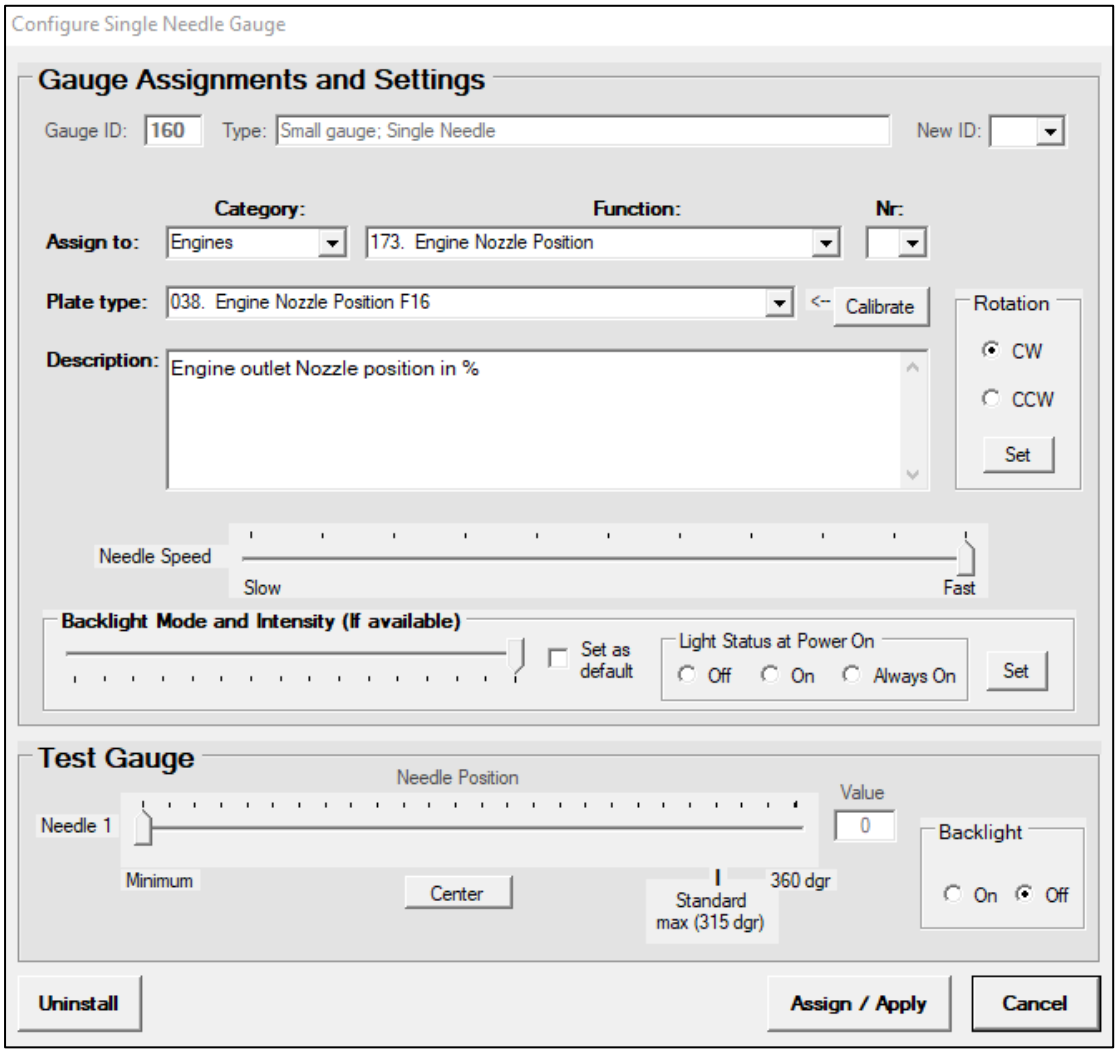
For all gauge types a sequence of commands is predefined, which can be executed either manually step-by-step or automatically. The speed of execution can be adjusted using the command interval slider. Range of this slider is from 40 milliseconds up to 5000 milliseconds (5 seconds).

The lower part (Create and test gauge manually) is for diagnostics only and should be used with care. It enables user to “force” a gauge into the configuration and to constantly poll a particular gauge. The Poll Gauge button will generate a command to the GaugeID selected in this section and the reply is written into the reply box. This is hexadecimal format and interpretation is more difficult. However in general replies will be 25 characters long and end with “FF”. Receiver progress is monitored by the rotating “cross” on the right site of the reply.

You can add any gauge to the configuration using the Add to Config button, but be careful doing that. As you can force any gauge and any gauge type into the configuration, there is a risk that the control program will generate commands that do not match the gauge. So: just use this function for diagnostics and fault finding only.

5. Configuring a gauge

When you are in configuration mode and the search results are showing in the current configuration window pane, you can click on a gauge line to open a set-up screen for that device. The screen you get will depend on the gauge type and contains the settings specific for that gauge. Below the screen for a generic Single Needle gauge is given:



On top of this window the current GaugeID and the Gauge Type is shown. Using the drop down “new ID:” you can select another ID. The list will only show the free GaugeIDs.

5.1 Assigning functions to a gauge

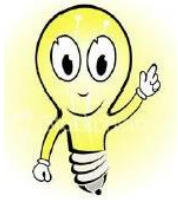
Depending on the gauge type a sub-set of assignable functions is given. The functions are grouped into a number of categories like Engines, Surfaces, etc.
If you select a category, the functions that belong to that category will be given in the function dropdown list.

Next to that a number can be given. Mostly that can be “1”, but in particular motor instruments can have a number varying from 1-4. So having, for example, two small single needle gauges, you can assign one gauge to “Oil temperature, left motor (1)” and the other one to “Oil temperature, right motor (2)”. Note: as the F16 has only 1 engine, this setting is irrelevant.
If not appropriate (as the function is single), you can leave it unfilled or zero. In that case the program will assume number one.

The description box is an extended description or remark of the function. It does not affect the operation and can be edited by the user via the button “list available functions” on the configuration screen.

5.2 The Plate

Assignment of a function to a gauge is universal. All aircraft types will have parameters like indicated airspeed, vertical speed, etc. But depending on the aircraft and its construction the gauge indicating that measurement will differ as to range and plate layout. Most gauge plates (when identical to the real aircraft) are not linear, which requires calibration of the needle against the measured value.
Using the Plate Type dropdown list, the plate can be selected that matches a particular aircraft. Most standard plates will be included in the default configuration file and can be assigned to a gauge.



For “special” plates however, the user can create its own plate (or modify an existing one) using the Calibrate button to the right of the Plate Type dropdown. This button will open a screen to create, update and test the correctness of a plate. The possibility to create/modify a plate is for advanced users and will in general not be needed by users using the standard G-step gauge range. For those who want to create their own specific plate: the Advanced section describes how to do that.

5.3 Needle speed.

The needle speed slider sets the needle speed. Some “nervous” flight simulator readings can be compensated by that function. Most usual setting is around 80% to 90% , but setting will depend on personal preference and the function assigned.

Oil temperature for instance can be set very low, but vertical speed will require a faster needle. Setting too fast can result in a hampering stepper motor and wrong needle positions.

5.4 Testing the gauge

To test your settings you can use the Test Gauge slider. A complete 360 degrees rotation of a needle is 1080 steps, but due to the “stop” we lose 45 degrees thereof, so the needle will have 945 positions (0-944).

Backlight can be tested by clicking the on/off selections. Light will remain on or off when you close this window, but when you start the actual simulation, the backlight on/off will be synchronized with the light switches of FS and whether the aircraft has a power source on its main voltage bus. (Battery on or a generator of a running engine). Note: in more complex configurations it is sometimes difficult to locate a gauge just by its ID. Lights on/off then helps you to locate that particular gauge.
Some gauges from the latest generation (purchased after January 2015) can even be dimmed.

By clicking the “Apply” button the settings are saved in the configuration file. From that moment on the instrument is assigned to the selected function and will (if changed) get its new GaugeID.

Clicking “Uninstall” will remove the instrument from the configuration. However, the instrument will remain active via the current GaugeID and will -at a next search- show up again but then with the “not assigned” label.

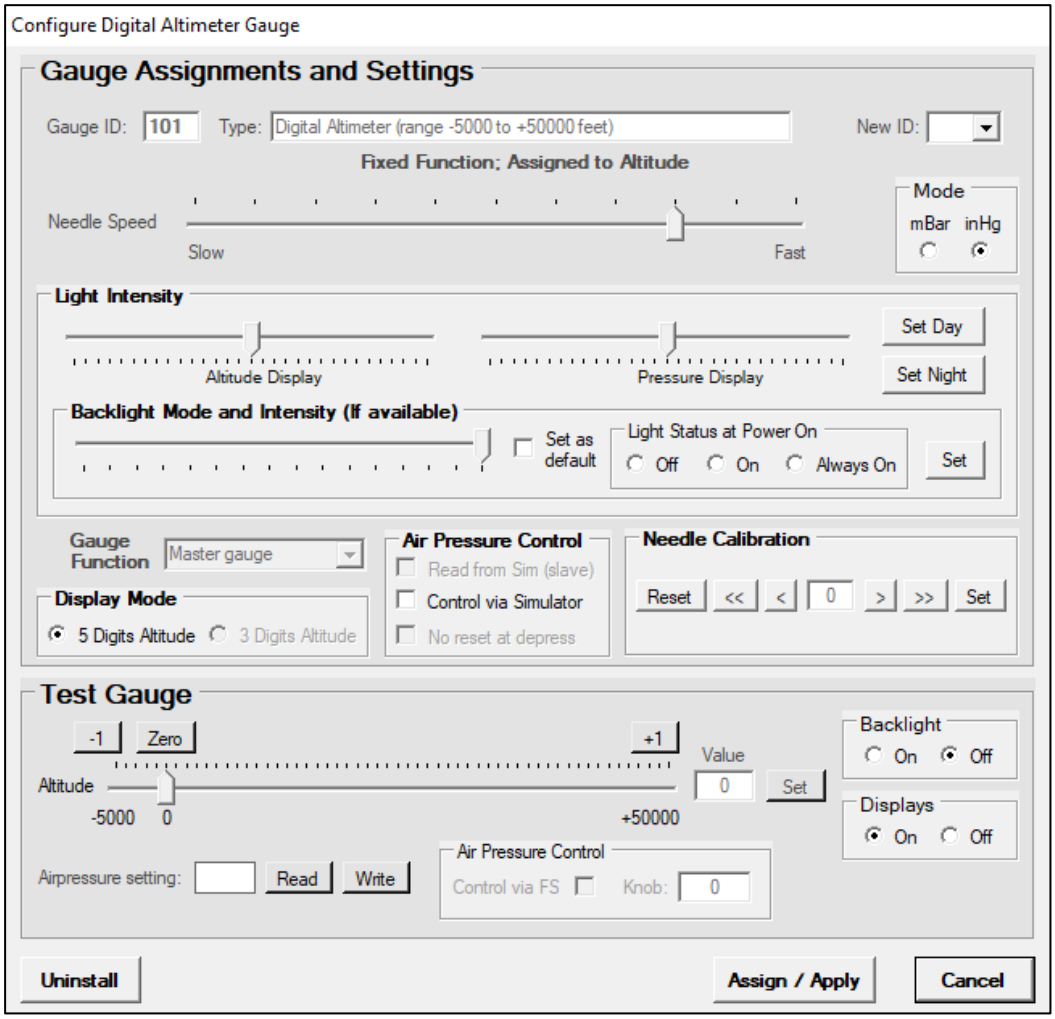
By clicking “cancel” no changes to either the configuration or instrument will be made. However, as the

needle speed is saved in the instrument itself, this will keep its last speed setting.

The G-step gauge range has some gauges with more functions combined in one gauge. As an example a dual needle gauge can be configured similar to a single needle, but the assignment is doubled. One for each needle.

5.5 The Altimeter

Another instrument type is the Digital Altimeter. Clicking this gauge type will pop up the following window:



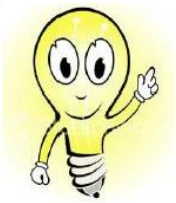
As this is a dedicated Gauge it is not possible to assign it to another function. The settings here only effect the Gauge itself.

As mentioned at the previous Single Needle window, the Gauge ID can be changed from its standard “101” to another ID. Mode of the air pressure can be changed from Inch Hg to Millibar, but should of course match the text on the faceplate of the Gauge. Needle speed function is identical to the Single needle gauge.

The altimeter has a needle that can make full rotations in both directions. A photo interrupter inside the instrument is used to calibrate the zero position of the needle. But as needle can (depending on assembly) have another position than the sensor, this difference can be adjusted using the needle calibration box. At Reset, the gauge will search for the photo interrupter and stop there. Using the left and right arrows, the needle can be moved to its corresponding zero position. Then click Set and the displacement is saved in the instrument.
At delivery this is already done so normally it should not be necessary to do this, but we left it in for situations where you disassemble the instrument and would take off the needle.

To check whether the air pressure setting can be read from the instrument, you can click the “Read” button. It should show the same reading as on the display of the gauge. To get the reading you have to click twice.

In the Test Gauge box you can also check the gauge for correct functioning and whether light and displays can be switched on/off. After closing this window, the settings for Display and Backlight will remain, but when you start the simulation the displays and backlight will be synchronized with the FS aircraft. So: there must be a power source for the display (otherwise it will be switched off) and for backlight both power must be there and light switch must be on.

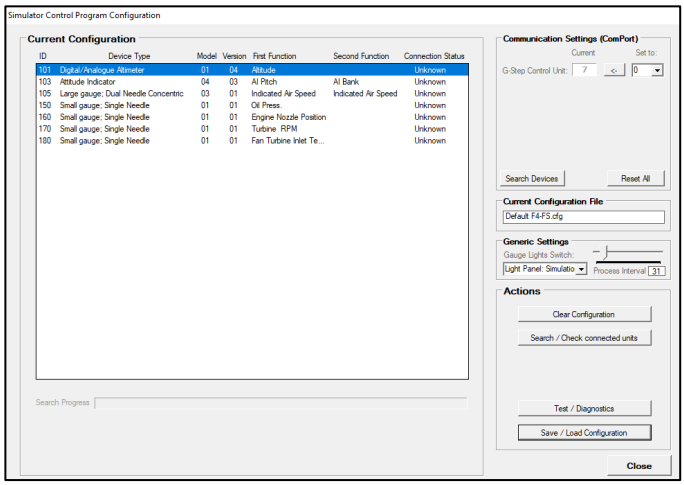


Important note

The air pressure setting is read from the instrument about 10 times per second and send to the FS. There it will “rotate” the knob on the altimeter on the screen and as such synchronize the on screen altimeter with the external gauge.
You can check whether this reading works on the status screen in run mode. The value there should follow the reading on the instrument display. From there it is fed into FS.

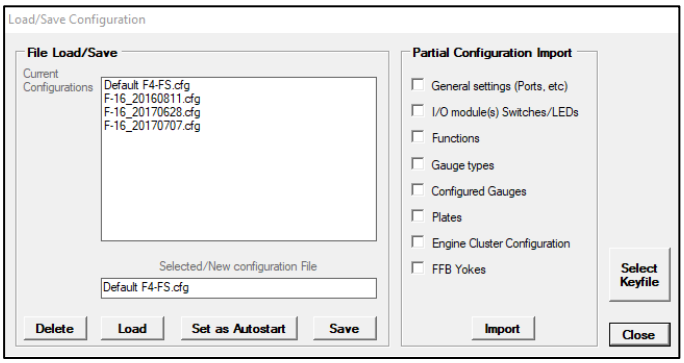
Although possible (as it is an electronic display) it does not work the other way around. So, changing the air pressure by mouse or keyboard will NOT change the display reading of the Gauge. In other words: the G-Step Altimeter Gauge is master.
This is compatible with other analogue simulator gauges, as –should this be realized- a change in air pressure setting by mouse or keyboard would require an extra motor to make the knob and pressure plate rotate.

6. Configuration



Back to the main configuration screen.

Last button is the save / load button.



It will bring up a small window with the available files and buttons to either save, load or delete a file.

Clicking a filename will copy that file to the new filename box. But you can also type a new filename. Please note the file should have the .cfg extension.

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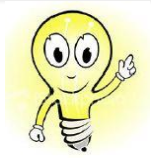
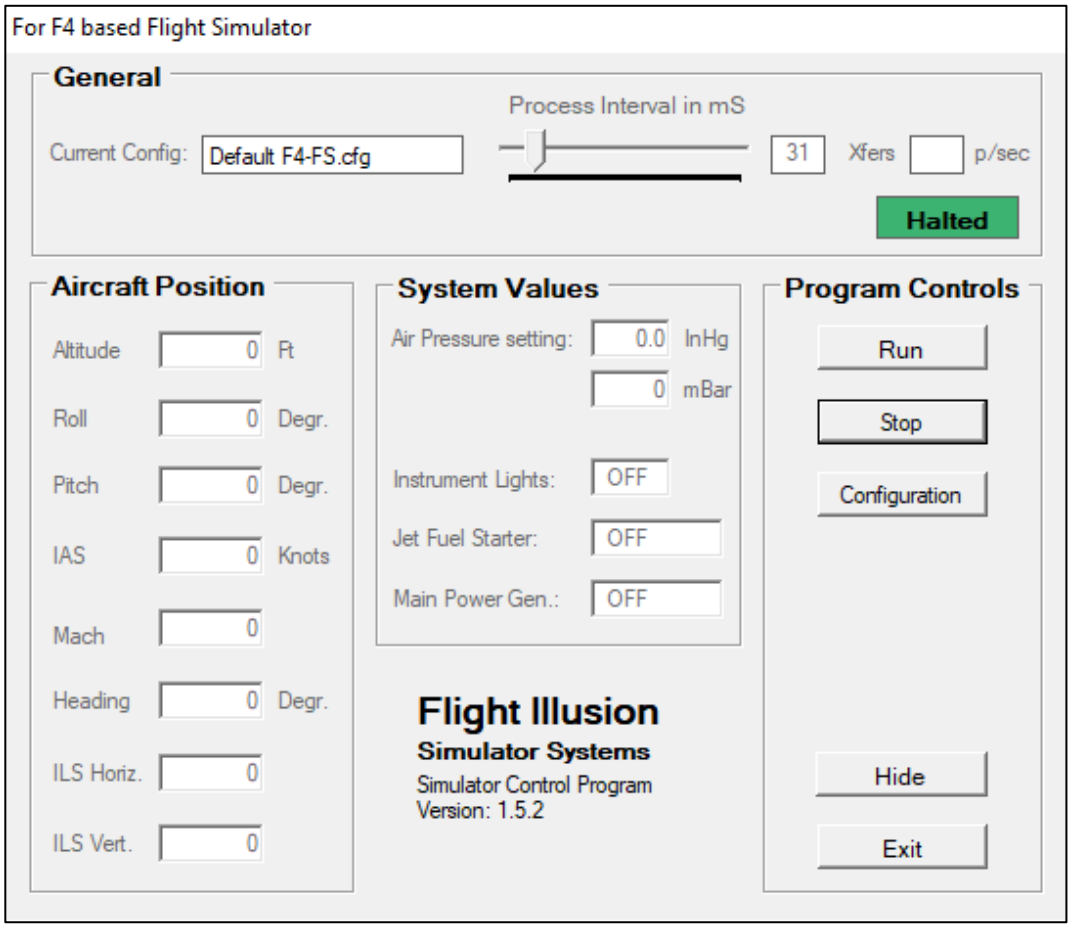


By clicking delete, save or load, the file corresponding with the “filename new configuration” will be saved, deleted or loaded *the Simulator Control software.*

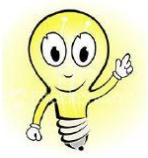
7. Running the simulation

When you click Continue on the main start up window you should see the screen below.



On top of the screen the current name of the configuration file is given.
The Xfers box shows how many times per second the information for setting the gauges is refreshed. The value will depend on the speed of the computer and how much process time for the Simulator Control Program is "allowed" by the FS and other active applications. Remember here that "faster is not always better". About 30 x per second is normally good enough.

Some key values are shown on this screen, but not all. Run and Stop control the simulation mode and when running the various boxes will show the actual FS readings. They are just there for test/reference and to see if there is communication between the software and the Flight Simulator. By clicking "hide" this screen will be minimized and when in Run mode the program will remain active and update the connected gauges.



When al values are still 0, (as shown in the picture) there is no communication with the Flight Simulator. In this case, the gauges can't be driven.

8. Trouble shooting

The basics for good troubleshooting is a step-by-step approach and isolating the problem.

First step is a check whether power is connected to the Central Interface Module and whether fuses are OK. One fuse is for the +12 Volts and the other one for the + 5 Volts driving all electronics.

When no communication at all check in Windows whether the virtual comport is available and working correctly. And make sure the Communication port number matches the settings of the Simulator Control Program. If the port number does not exist the GSC will give a runtime error as soon as you activate a function.

Next you can start the control program without starting the Flight Simulator. And go to the configuration screen. Click clear configuration and search for the connected instruments. All connected instruments should pop up now. If not or one or more are missing, check the flat cables or exchange them. Before doing so better switch off power from the Central interface Module.

As mentioned before, the G-Step concept is a bus system where all “participants” are connected in parallel and in order to communicate with a single one, it needs to have a unique address. There are bus protocols to handle that, but in general these protocols create a serious protocol overhead, which will always be there, also at run time. So we decided to use a straight forward concept and keep the auto-addressing out of the run time.

But, as all benefits, it has a disadvantage. Addressing must be done by human intelligence and only one instrument at a time. However, if you administer your gauge IDs correctly, you can just disconnect all other gauges and connect only the new one for configuration. This has to be done once. Nevertheless, double addressing can occur and result in “not found” gauges.

Individual gauges can be tested by clicking them. Move needle and test whether you can switch the backlight. In larger configurations it is sometimes difficult to locate a gauge by its Gauge ID. Simple way of locating an instrument is clicking it and switch on/off light to identify it via the Gauge window.

When all gauges can be reached and react on needle and light commands, you can be sure the Hardware and interconnection is OK.

Next problem could be a configuration file that does not match your current configuration. To check that print the list (by e.g. copy screen) of the gauges found during “Search” with a cleared configuration and check if the configuration file you use matches gauge ID’s and functions.

If that is all OK, the only problem that can remain is the connection between the Simulator Control Program and the Flight Simulator. In order to check that load the Flight Simulator and AFTER that load the Simulator Control Program with the appropriate configuration file. Status of the connection between the Simulator Control Program and the FS displayed on both the main start up screen and the status screen that is shown when clicking “continue”. It should show “connection OK”.

By depressing the “RUN” button the interface between the Simulator Control Program and the FS will be activated. Now all boxes should contain the actual FS values, like altitude, IAS, etc. If not the problem is outside the Simulator Control Program and probably something wrong with the FS.

9. Advanced section

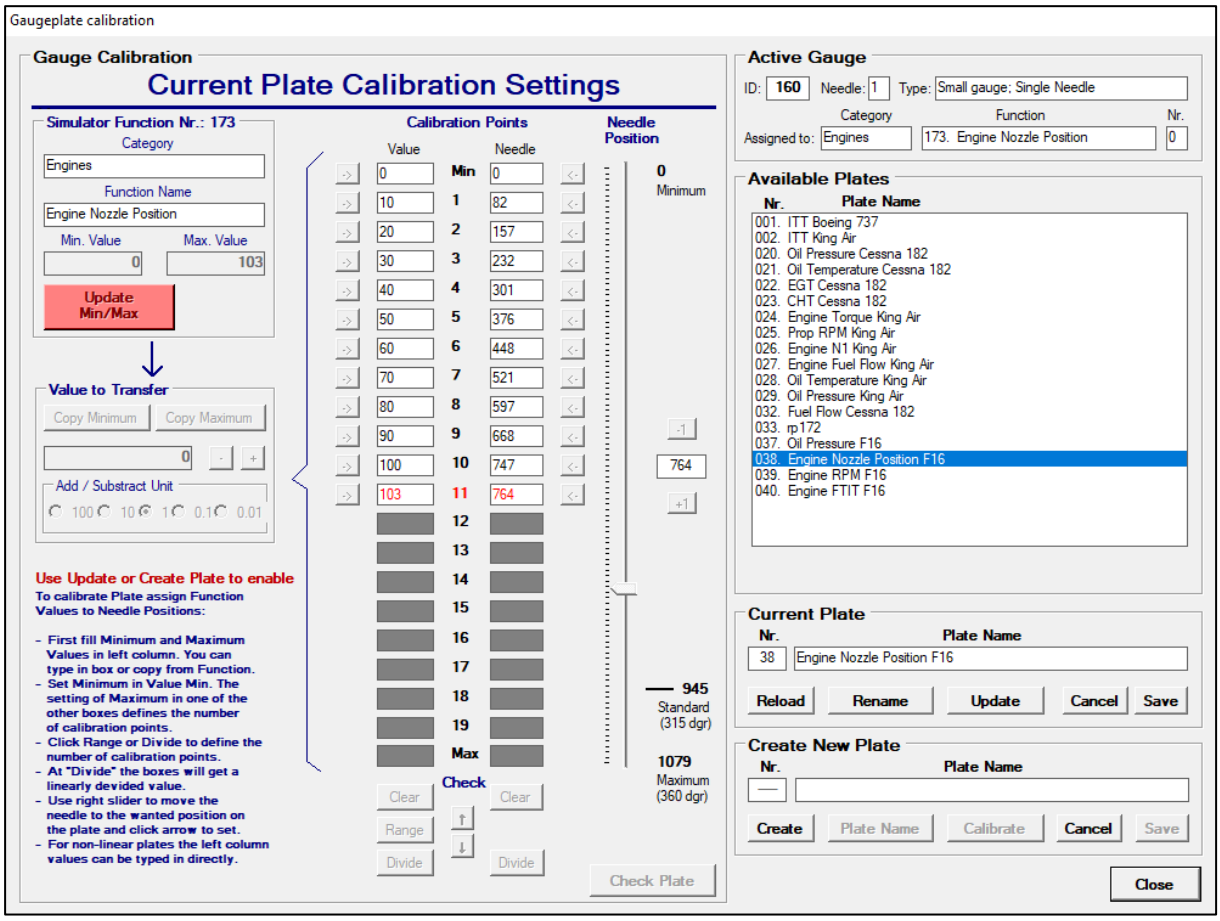
9.1 Gauge Calibration and Plates.

Realistic plates are identical to the ones in the real aircraft. These real instruments are as to construction completely different and often driven by analogue sensors and actuators like air pressure, non-linear temperature sensors, etc.

On the other hand the G-step needles are driven by high resolution stepper motors and due to that absolutely linear. The “lazy” approach would be to create plates that fit the linear stepper motors, but that would result in plates that would strongly differ from the original.

For that reason the Simulator Control Program has a built in utility to convert a Flight Simulator reading into a plate that is identical to the original aircraft plate.

Clicking the “calibrate” button from a gauge configuration window will popup the screen below. The principle is that a plate is divided into a number of calibration points that must match a certain needle position. Between the calibration points the needle position is interpolated linearly.



On the left Gauge Calibration frame, the left Slider represents the value read from the FS and the right part represents the needle position. For the creation of a new plate, you can Clear the row containing the “value boxes”.

On top the Minimum value of the offset should be typed in and one of the 20 boxes below the calibration points. For your convenience you can just type the maximum value into one of the boxes and the depress “divide”. The in-between boxes will then linearly be divided. Trick here is to “play” with the number of calibration point in order to get nice integer values. But you can also fill the calibration points one by one> To do so use the slider and +/- buttons to set a particular value and then copy this value to the corresponding Calibration Point box using the corresponding little arrow button.

The “Read” button will pop-up the small window as used in during the “Creation and Maintenance of Functions” and can be used to view real FS values for reference.

When left “Value” row is completed, the needle can be can be calibrated.
For a quick check the needle positions can spread over the calibration points, which would give a full scale linear plate.

Calibration of the needle is done using the slider and +/- buttons on the right side. First select the value to be calibrated on the left side (it will turn red), move the needle to the correct position and click on the small arrow right of the corresponding box. The Value on the right side is now corresponding with that particular Needle position.

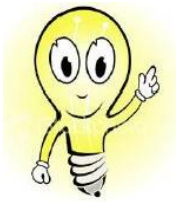
When all done, you can check the calibration using the two Up/Down buttons on the bottom of this frame.

The right part of this screen is for the plate ”administration” . Top part shows the current gauge and its assignments. Below that is a list of available plates, where the current selected plate is highlighted.

Underneath the plate list are buttons to assign the plate to the current active gauge, to save the plate and to add a new plate. Latter button will save the plate (e.g. when modified) as a new plate. The reload button will restore the original values into the calibration points rows.

When adding a new plate a new plate name and category must be given. The added plate will get a number and will be added to the list of available plates. To remain consistent with previously assigned plates it is not possible to delete a plate.

Last frame on this screen gives the possibility to test the gauge and the (new) plate.
When activated both sliders on the left part of the screen will be “connected” to the real value read from the FS. Of course the FS should be Up and Running to do.



Important note

Creation of new plates can be rather complicated. However, it has to be done only once and increases the functionality seriously.
To get examples you can select the standard available functions and plates.
But–as said before- before updating plates: back-up the working one before, by saving it with another name.

Note: we’re always working to improve our software and this is an ongoing process. If you have any suggestions or tips that might improve our software we like to hear from you! You can send your e-mail to F4software@flightillusion.com.