# 20. Appendix 1 “Term 2K Short Guide”

Overview

With reference to what described at Section 15. “USB / RS 232 PORTS usage”, this appendix contains the following sections:

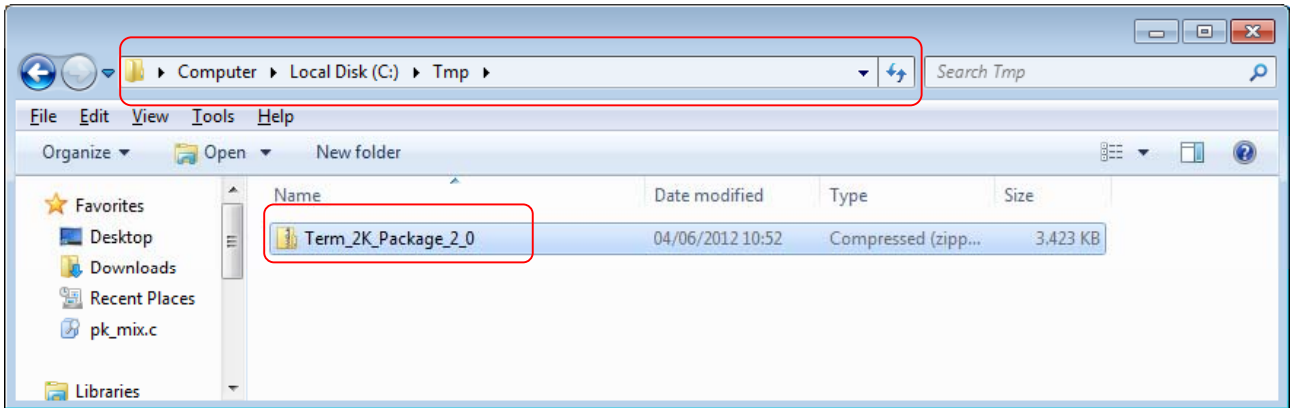
**SW installation**
**Term_2K_USB.exe usage**
**Term_2K_232.exe usage**
**Firmware update**

The host PC must have a correctly installed Windows XP or a further release of Microsoft’s operating system (Windows Vista, Windows 7); just a minimum RAM amount and hard disk space is required.

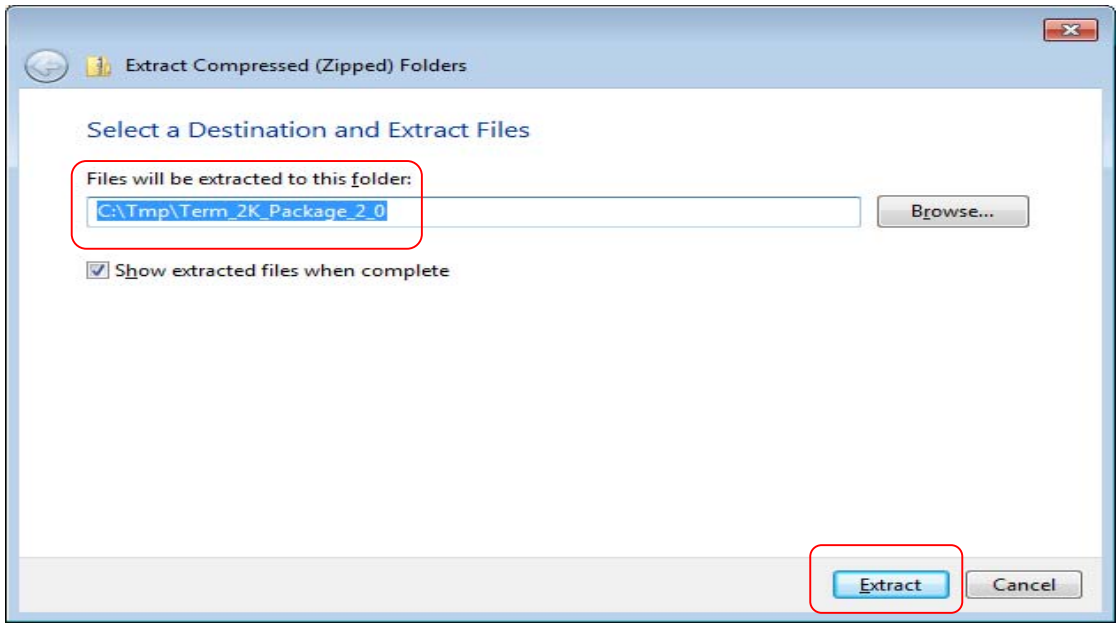
## 20.1 SW installation.

The installation package is contained into a compressed **.ZIP** archive named “**Term_2K_Package_2_0.zip”** which requires to be expanded in a working folder and then processed as hereafter described. This package in recorded into the equipped CD or can be downloaded from our website www.linear-amplifier.com .

Once the compressed archive **Term_2K_Package_2_0.zip** has been previously stored into a working folder. It must necessarily be expanded, that is all the files therein contained must be extracted and properly placed to the host system.
In this example the compressed archive **Term_2K_Package_2_0.zip** has been placed into a folder named **Tmp** which is contained into the local disk unit **C:** as shown in the picture below:

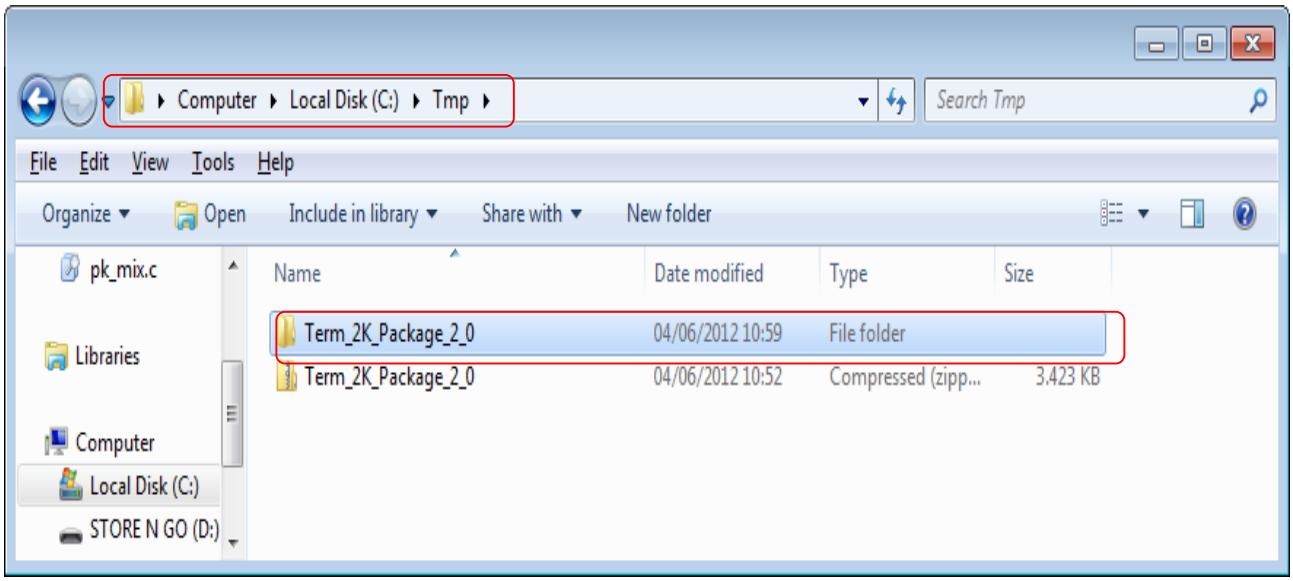



The next step is the archive expansion, and this can be obtained by selecting the filename and then right-clicking over it; a local menu will appear, and its **Extract All…** item will pop-up the following pre-compiled form:

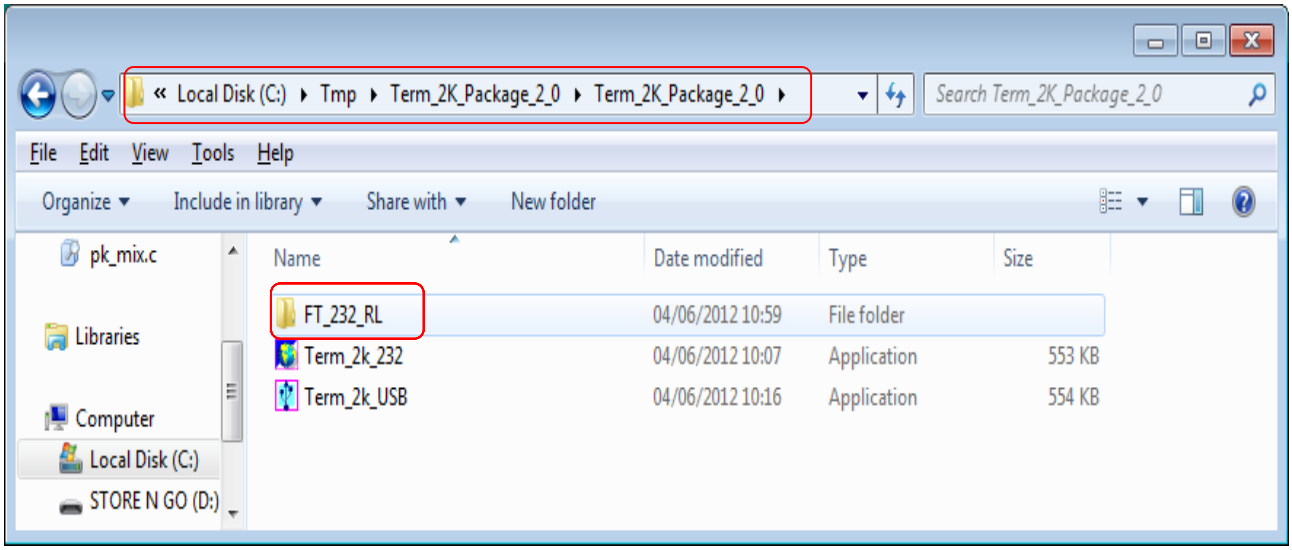



The proposed destination folder is good for our purpose, so let's close this operation by using the **Extract** key marked in the picture above.

This final result will be a new uncompressed folder having the same name of the compressed one belonging to the original installation package.
Everything is contained into our working directory as shown in the picture below:



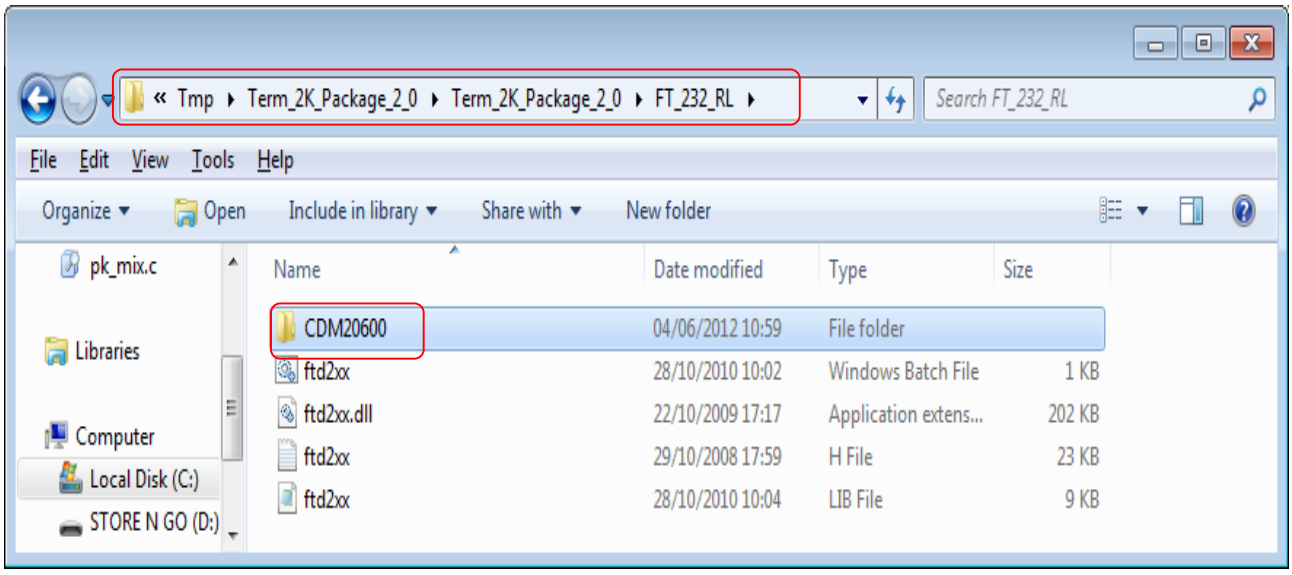
Once opened, the **Term_2K_Package_2_0\Term_2K_Package_2_0** will show the following folder contents:



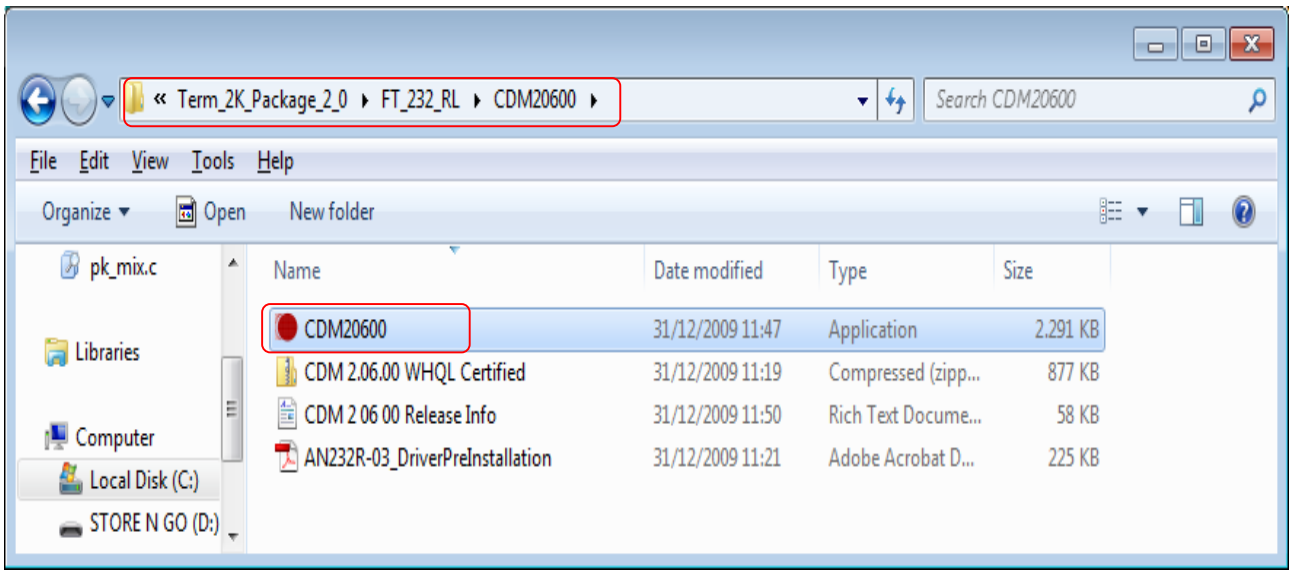

Where:

**FT_232_RL** is a folder containing the USB drivers and an automatic installation program, which must be run once to prepare the operating environment and that provides to sort out everything is needed (USB drivers and their support files…) on the Windows host system.
**Term_2K_USB.exe** is the remote control application that can be launched only after having properly installed the USB drivers.
**Term_2K_232.exe** is the remote control application especially designed to establish a connection using the special RS-232 serial port available on the **EXPERT 2K-FA Second Series** rear panel (that hardware is not available on **First Series** units).

After a left-button mouse click the following folder report will appear:

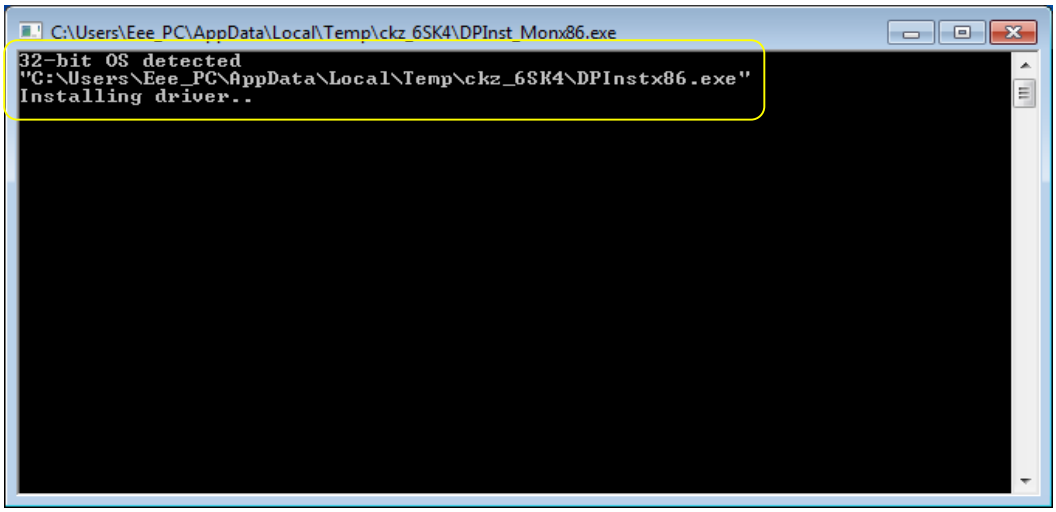


The most interesting thing for us is the **CDM20600** folder which contains, among the other things, the **CDM20600.exe** Windows application marked in the picture below:

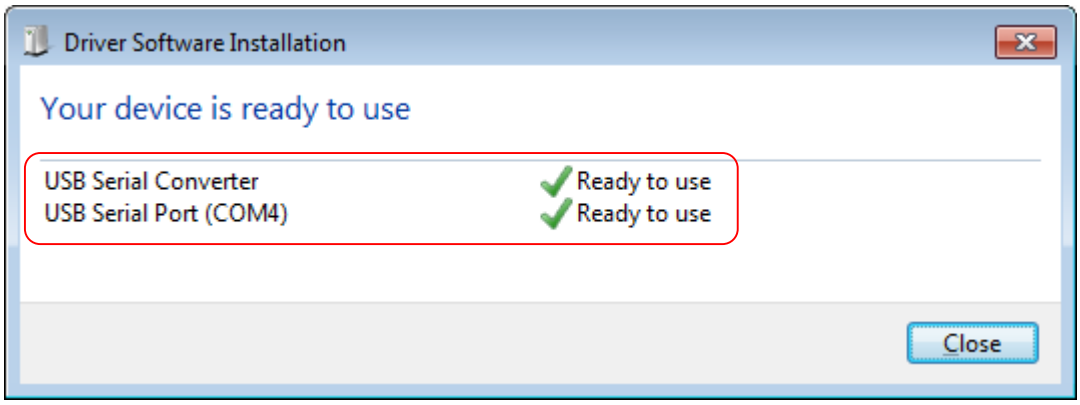



This application has the purpose of properly installing the USB drivers.
So, without making any physical link between the EXPERT 2K-FA and the PC, let's double-click, using the mouse left-button, over the "red ball" icon of **CDM20600.exe** application and wait for its preparatory job completed.

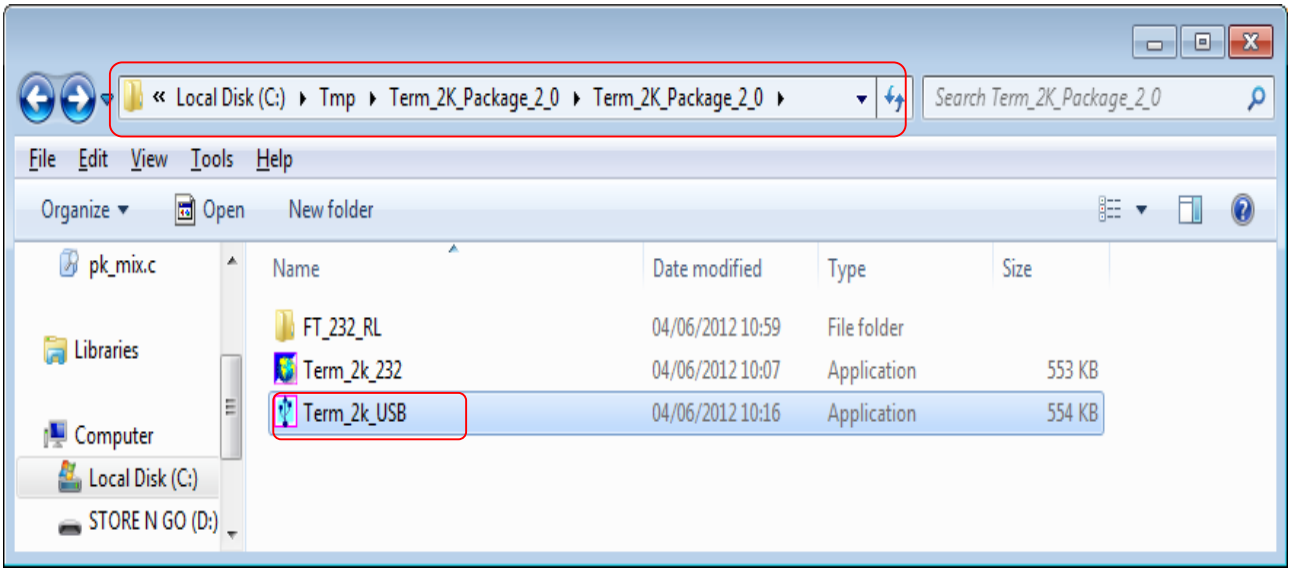
As soon as **CDM20600.exe** starts running, a DOS windows similar to one of the following picture will pop-up for several seconds and it will disappear after its automatic preparatory job's completion.



The next step is to connect the PC and the EXPERT 2K-FA using the equipped USB cable and wait the recognition of the new USB connection.
After then a notification windows will pop-up, as shown in the picture below.



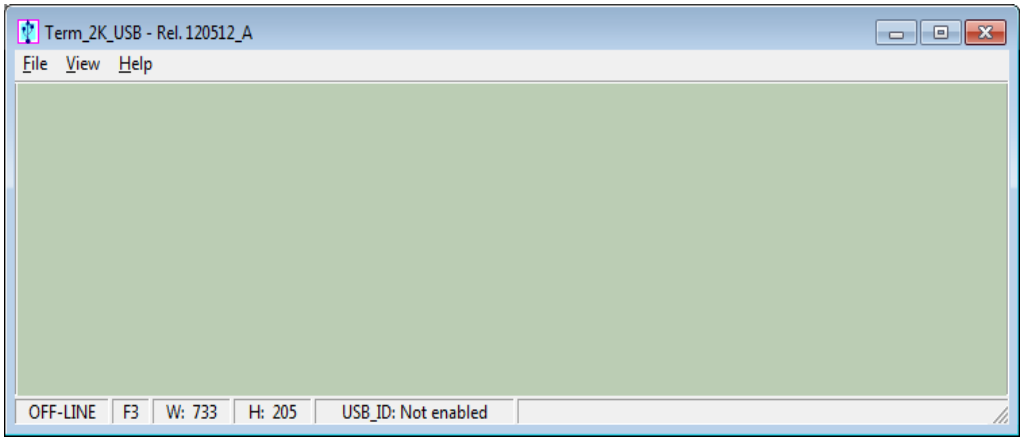

The USB port installation and setting is now complete.
Now that this fundamental step has been successfully completed, the **Term_2K_USB.exe** remote control application can be launched.
For this purpose a back-step to the starting uncompressed folder **Term_2K_Package_2_0** must be made and a double-click with the mouse left-button on the application filename must follow it, as shown in the picture below



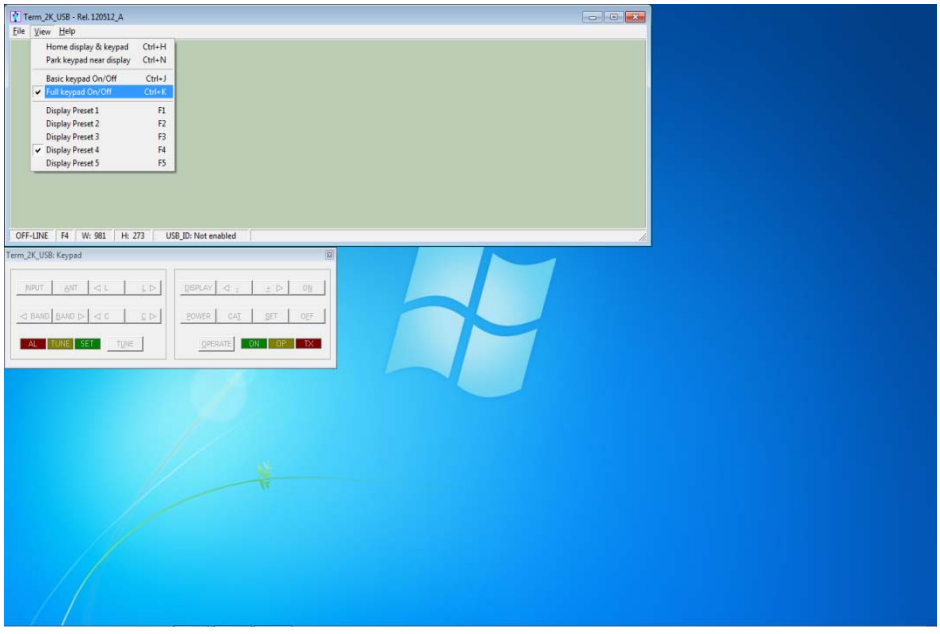
## 20.2 Term_2K_USB.exe usage

It is warmly suggested to create a link to the application on the desktop.

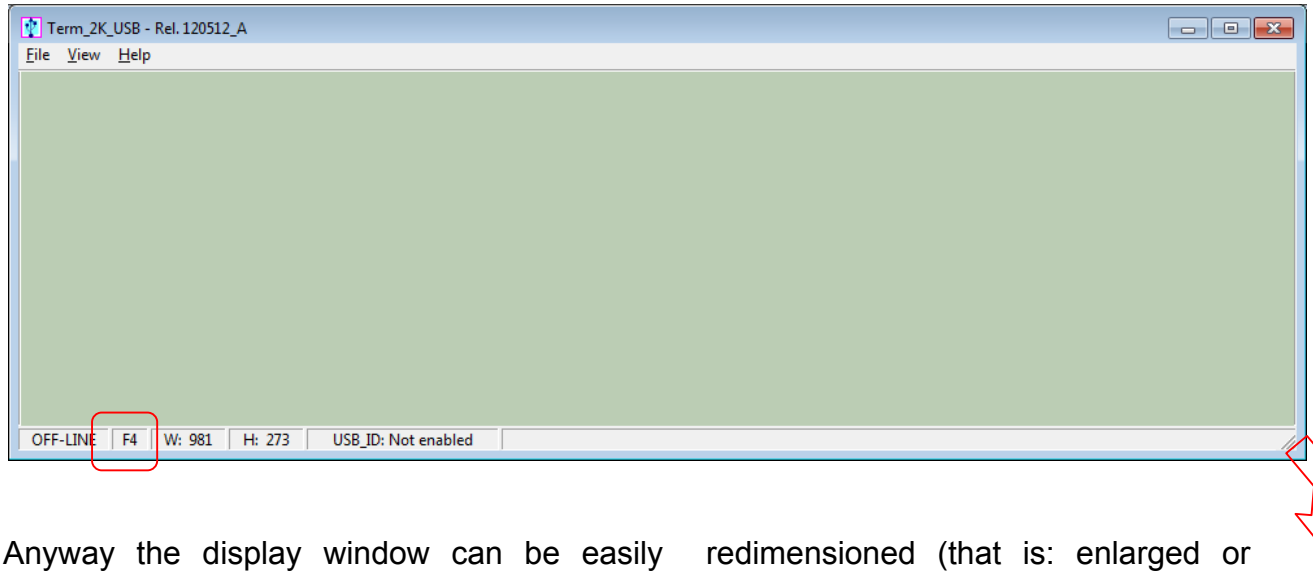
As a first try, let's double-click on the application's icon (the USB symbol), using the mouse left-button, just to see if everything works fine.
It is warmly suggested to create a link to the application on the desktop.
As a result the application window will show off, as in the following picture:



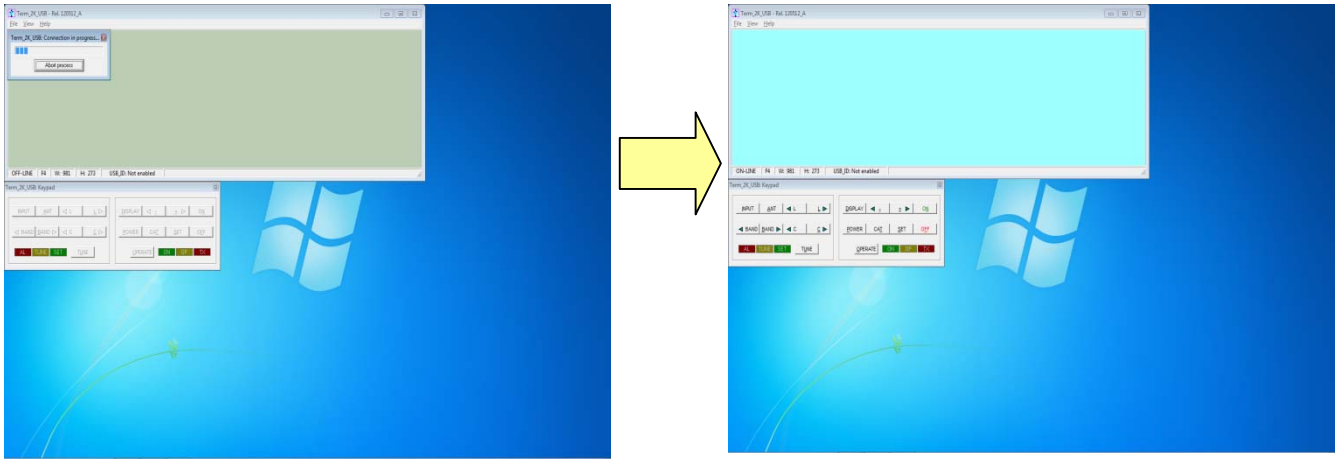

This is the main window of **Term_2K_USB.exe** application.
It is a realistic hardcopy of the **EXPERT 2K-FA** LCD display, and it is also equipped with a pop-up virtual keypad having almost the same look and feel as the rear one placed on the **EXPERT 2K-FA** front panel.
To activate/deactivate this keypad the user must check/uncheck the **View/KeyPad On/Off** menu item as shown in the following screen snapshot:



**View** menu also contains five items related to the application window size presets which can be either selected by the menu itself or by their equivalent [**F1** … **F5**] shortcut keys. Feel free to test all the **View** menu options in order to find an optimal ad comfortable vision of the display main window.




Anyway the display window can be easily redimensioned (that is: enlarged or reduced…) by acting on the right-bottom corner of the window using the mouse as depicted in the picture above.
In case the user wants to restore the original size-preset behind any [**F1**…**F5**] key, he must select the **Fx** preset and, then, press the **Ctrl+Fx** key combination on his PC keyboard.

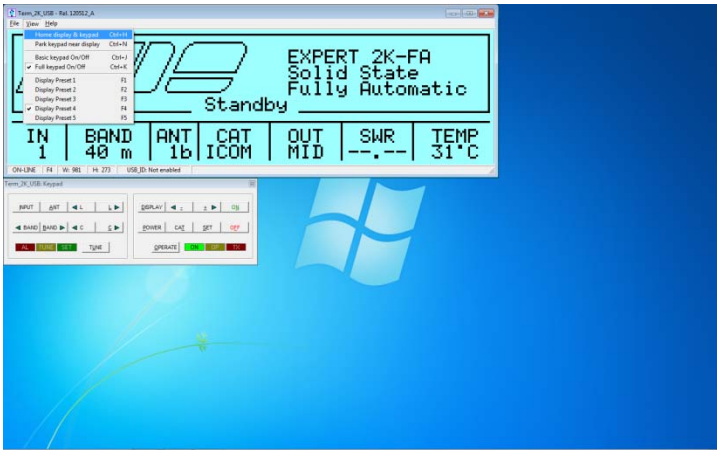


When **Term_2K_USB.exe** gets launched an automatic **Connect** command also starts and, if a USB link to the linear amplifier was already active, it should have shown a result similar to the picture sequence above.
In case it won't happen, the user can also try connecting using the **File/Connect** menu item (or using its equivalent **Ctrl+Q** shortcut key…).

The final visual result will be a "bright backlight" display and a function-keys enabling on the virtual keypad.

In case the **EXPERT 2K-FA** were already switched on after the connection established by **Term_2K_USB.exe**, an immediate update on the current display contents would result.
In case the **EXPERT 2K-FA** were switched off, it would be turned on by using [**ON**] virtual key on the application keypad.

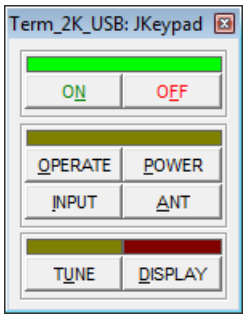
The same way, all the other virtual keypad keys perform the same actions as their equivalent mechanical keys forming the real front panel keyboard of the **EXPERT 2K-FA**.




**View** menu is also equipped with the useful **Home…** and **Park…** items which have been especially designed to allow an automatic repositioning of the application along the PC desktop area.
In more details:

- **Home...** (**Ctrl+H**) item positions the display window to the upper-left corner of the desktop area and aligns the keypad to its bottom edge.
- **Park...** (**Ctrl+N**) item leaves the display window where it currently stays and just aligns the keypad to its bottom edge.

The above described operations could be helpful whenever a quick and safe repositioning of the application windows is required.



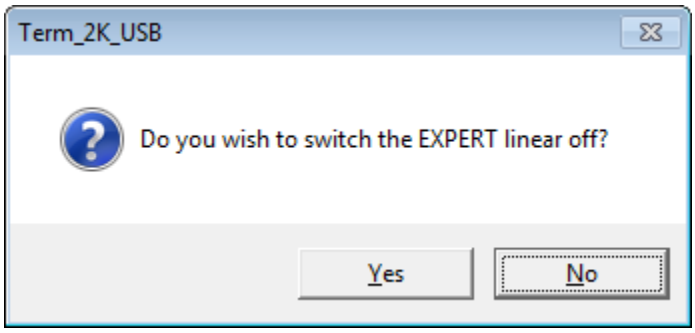

The **Basic keypad...** item in **View** menu allows to set a reduced-size keypad, having fewer keys than the complete keypad, which could be useful when no setting actions are required on the linear amplifier.

***Note**: despite the keypad types (Full and Basic) are certainly useful since they both can be directly accessed using the mouse pointer, it is helpful to know that all the operations allowed using the virtual keys can be also performed using short commands directly typed on the PC keyboard.*

The following one is the "shortcut-keys" table:

| 2K-FA Function key | Equivalent shortcut-key from the PC keyboard |
|---|---|
| [INPUT] | I |
| [ANT] | A |
| [<L] | Ctrl+L |
| [L>] | L |
| [<BAND] | Ctrl+B |
| [BAND>] | B |
| [<C] | Ctrl+C |
| [C>] | C |
| [TUNE] | U |
| [DISPLAY] | D |
| [< -] | - |
| [> +] | + |
| [ON] | N |
| [POWER] | P |
| [CAT] | T |
| [SET] | S |
| [OFF] (*) | F |
| [OPERATE] | O |

(*) Please bear in mind that [OFF] command (either from virtual keypad or by shortcut key…) always asks for a confirmation to its amplifier shutdown operation by using the dialog form below:



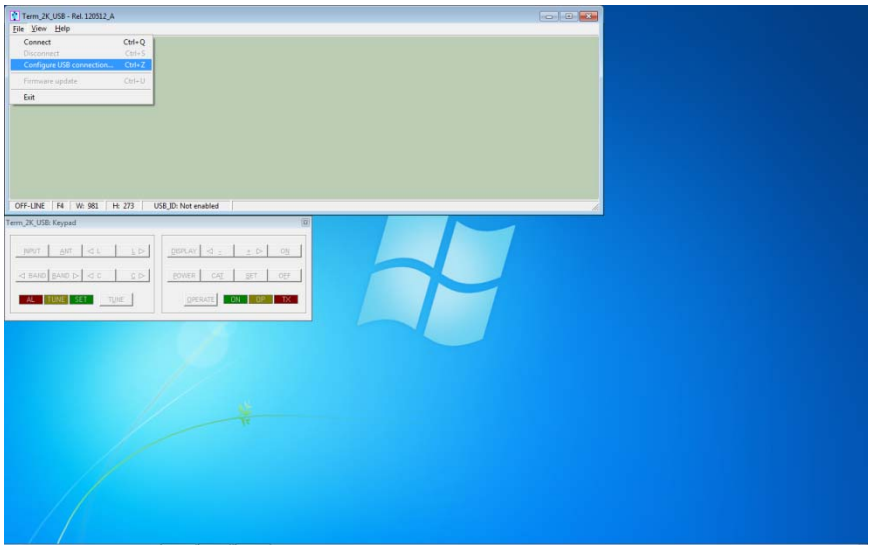
***Note**: it could happen that, trying to connect the linear amplifier to the PC, some problems could arise because other peripherals sharing the same USB internal hub conflicts to it.*
*To avoid this kind of conflict it is necessary to go to selective addressing.*

## Selective addressing thru USB port.

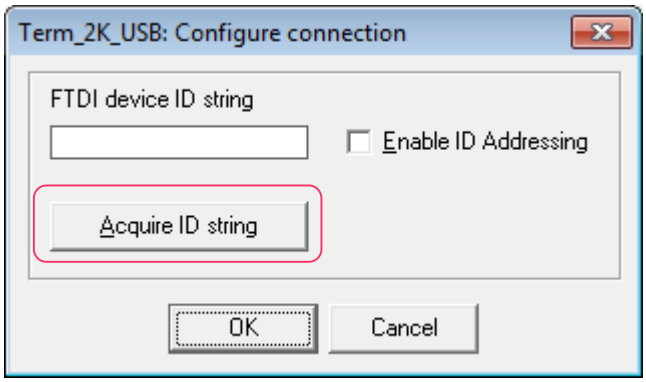
This options has been designed to allow a selective addressing of an EXPERT linear amplifier connected to any given PC USB port.
Differently from other similar devices using the popular FT232RL USB microcontroller, where the most used way for providing selective addressing of a specific device is based upon its serial port ID parameter (e.g. COM1, COM2, etc.), or method is based upon a unique feature of the popular FTDI chip which is known as "ID String Property".
This is a sequence of 8-alphanumeric characters, programmed by the FT232RL's manufacturer during the production process, which something similar to the MAC address peculiar to any PC LAN card.
From here the consideration that this unique coding parameter doesn't allow addressing ambiguity when correctly applied to FDTI chips connected to the same USB bus.

## Preliminary programming for "ID string property" within Term_2K_USB.exe .

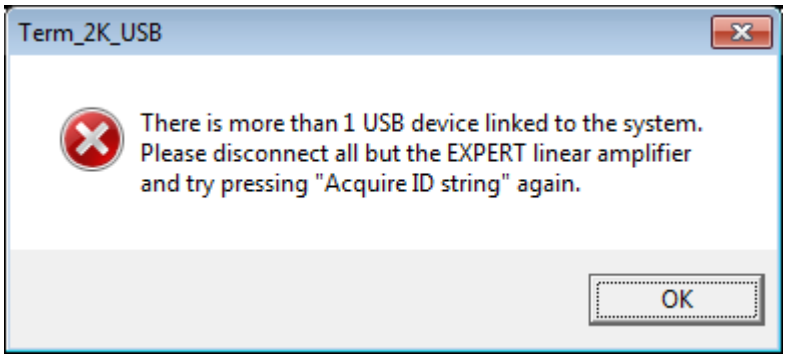
This special setting, based upon an easy "self-learning" procedure, must be performed once and with the **EXPERT 2K-FA** having previously put **OFF-LINE**.
Select **File/Configure USB connection...** from the main menu as shown in the picture below:



A dialog window, as shown in the picture below, will pop up:

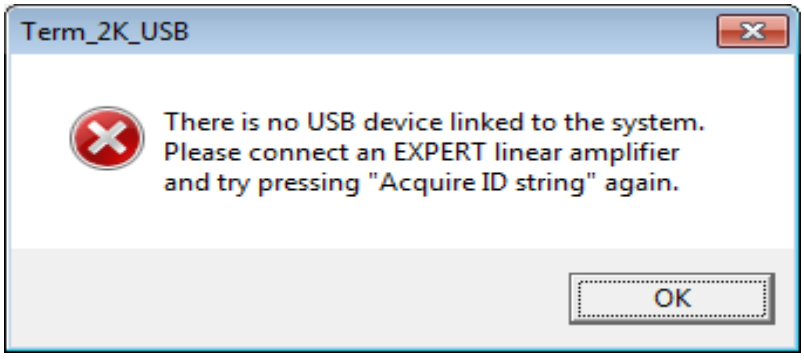



The user is simply required to press the **Acquire ID string** key, marked in the picture above, in order to start the **ID string** characters acquisition process across the USB data-link (guided self-learning procedure…).
In case more than one USB chip are linked to the system (directly or indirectly thru an external USB hub…) the following notification pop-up window will be shown:

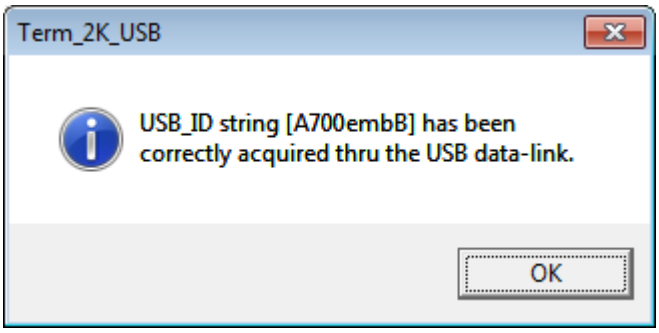



In such a case the user is invited to disconnect all the devices but his EXPERT 2K-FA and retry again using the acquisition procedure above described.

In case the user detaches all the connected devices (the linear amplifier as well…) the **Term_2K_USB.exe** acquisition system would notify that by rising the following self-explaining pop-up message to the user:

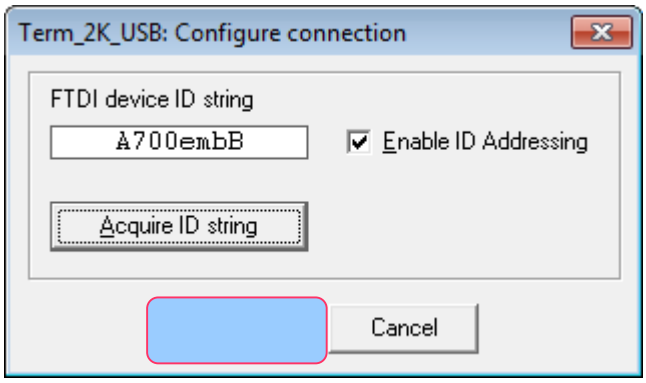


In case of a successful acquisition process, the following pop-up notification message would be raised instead:

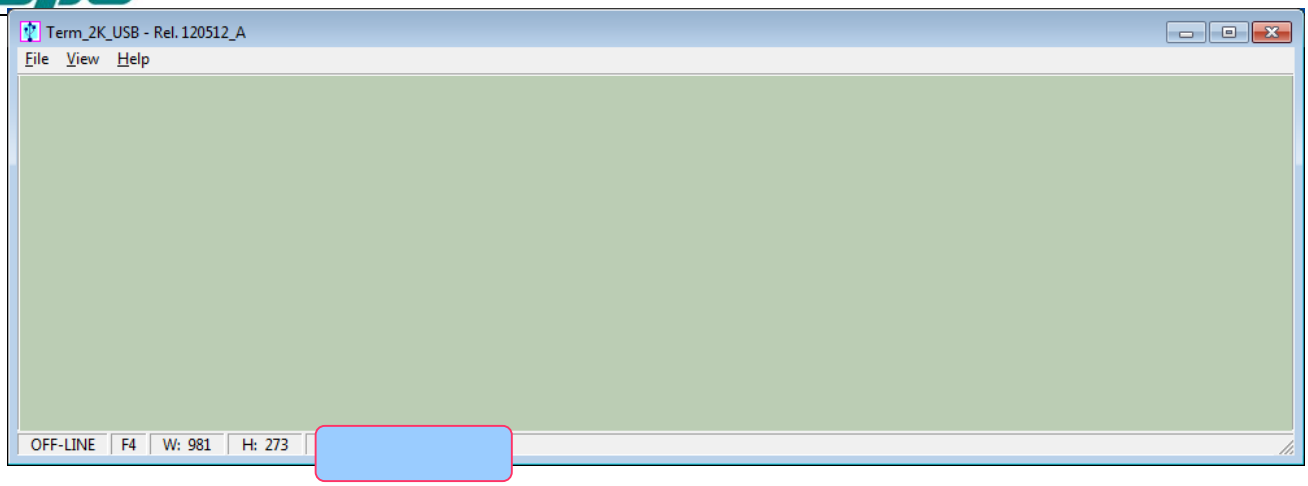



The picture above shows the acquisition report of a device whose **ID String Property** is **A700embB**.
As explained earlier, this parameter is unique to any specific chip, so it doesn't allow duplicates.
As soon as the notifiation message gets validated, using its OK key, the dialog form previoulsy popped will appear properly filled-in as the following picture shows:

Once the user validates the data acquisition by pressing the OK key marked in the picture above, the **Term_2K_USB.exe** internal database will be properly updated and,




as a confirmation of that, the application status bar will be properly updated as the following picture shows:




Once the above described steps get completed **Term_2K_USB,exe**, will only be able to recognize and address the **EXPERT 2K-FA** whose (unique) **ID String** matches to the one written after the **USB_ID:** label of the picture above.
As explained earlier, this setting is permanent so, there is absolutely no need to repeat the acquisition procedure described so far any time the user wants to connect to that specific EXPERT 2K-FA unit.
Of course the acquisition procedure must be restarted again in case another EXPERT 2K-FA linear amplifier would require to be addressed; that is because another device has got, by force of circumstances, another **ID String** parameter to properly reconsider.

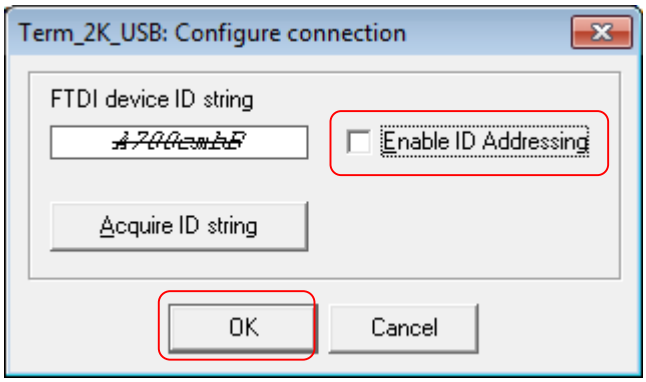
After having carried out all the setting and configurations steps listed in the earlier pages, everything's ready for using the FT232RL selective addressing features described so far.

All the operations tied to the **Connect** / **Disconnect** menu items are still the same as in the case of non-selective addressing procedure.

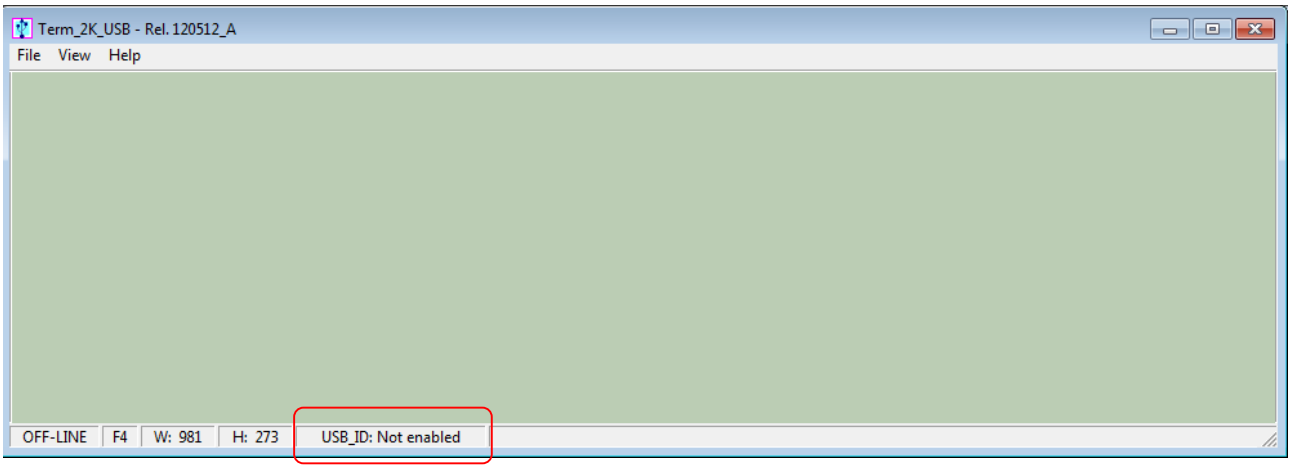
**A last note.**

If, for whatever reason, all the selective addressing capabilities are no longer needed to open a connection to an EXPERT 2K-FA thru its USB link, they can be temporarily disabled.

This operation is quite easy to perform.
After having recalled the **Configure USB connection** dialog form using its specific item contained into the **File** menu, uncheck with a mouse click the Enable **ID Addressing** option, as shown in the following picture, and validate this entry using the **OK** button.

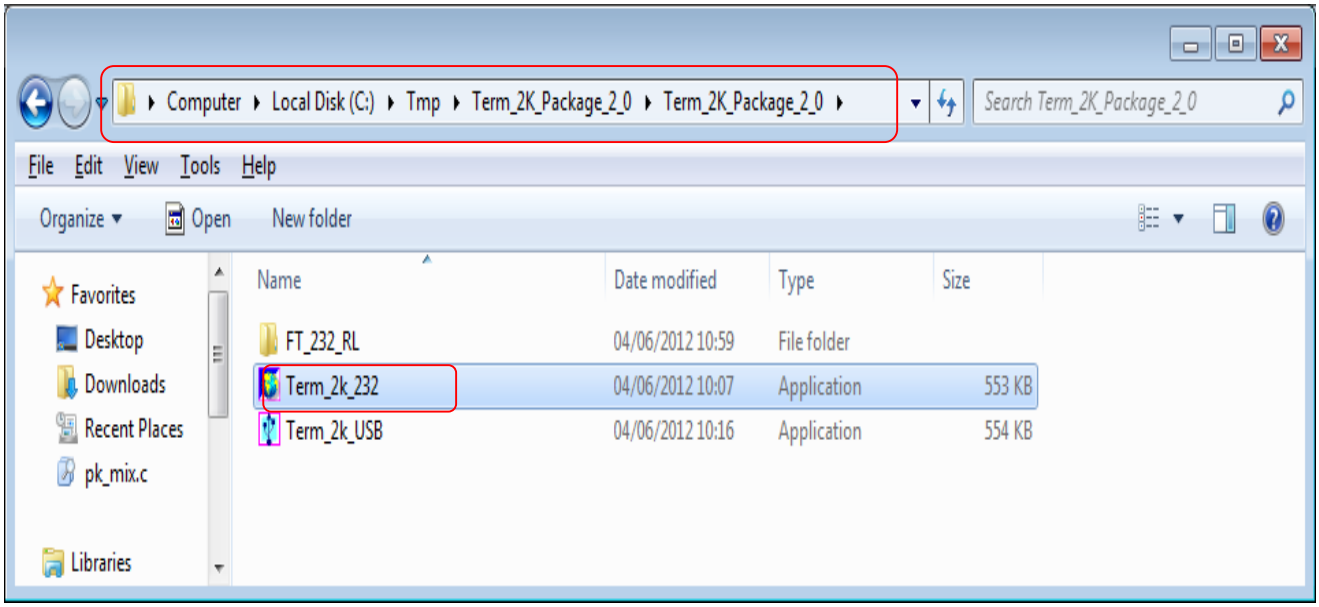



This new setting will be notified in the application status bar with the "**Not enabled**" attribute following the **USB_ID:** label, as shown below

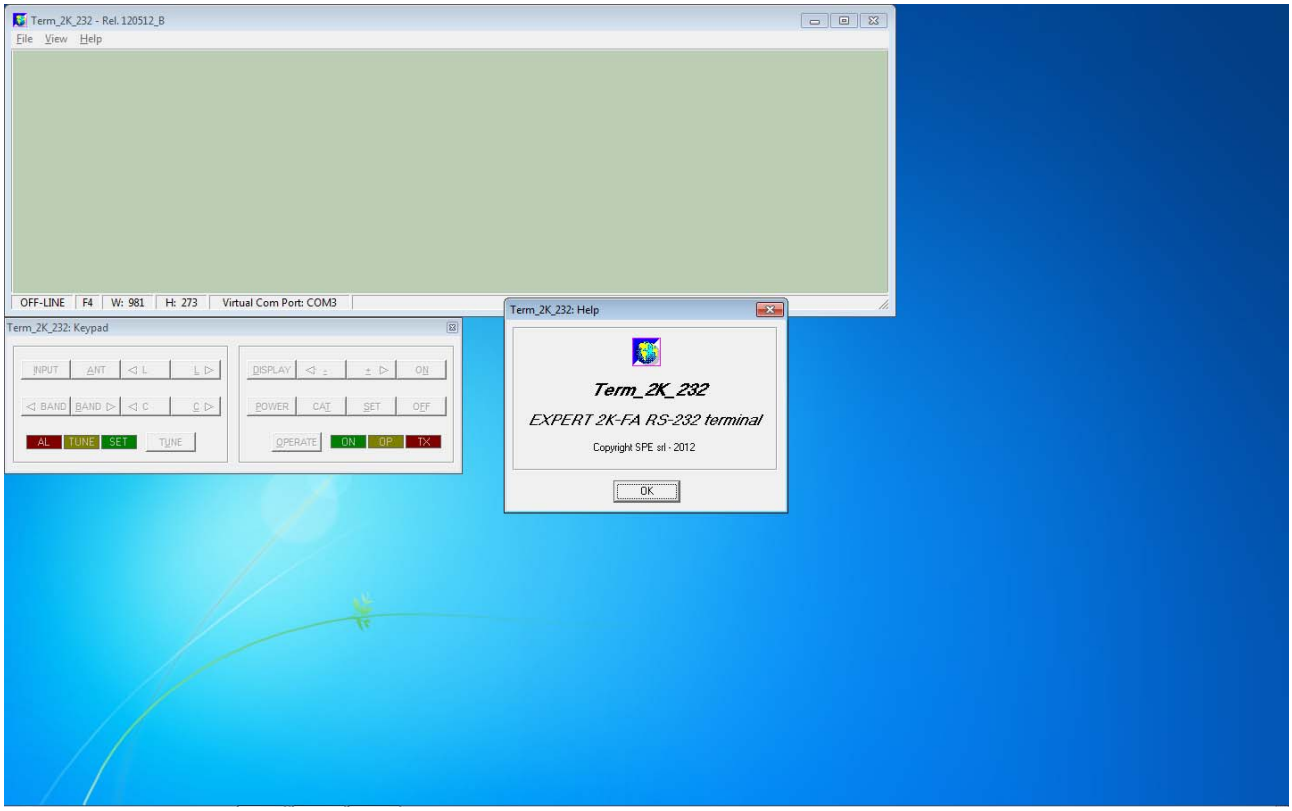


## 20.3 Term_2K_232.exe usage

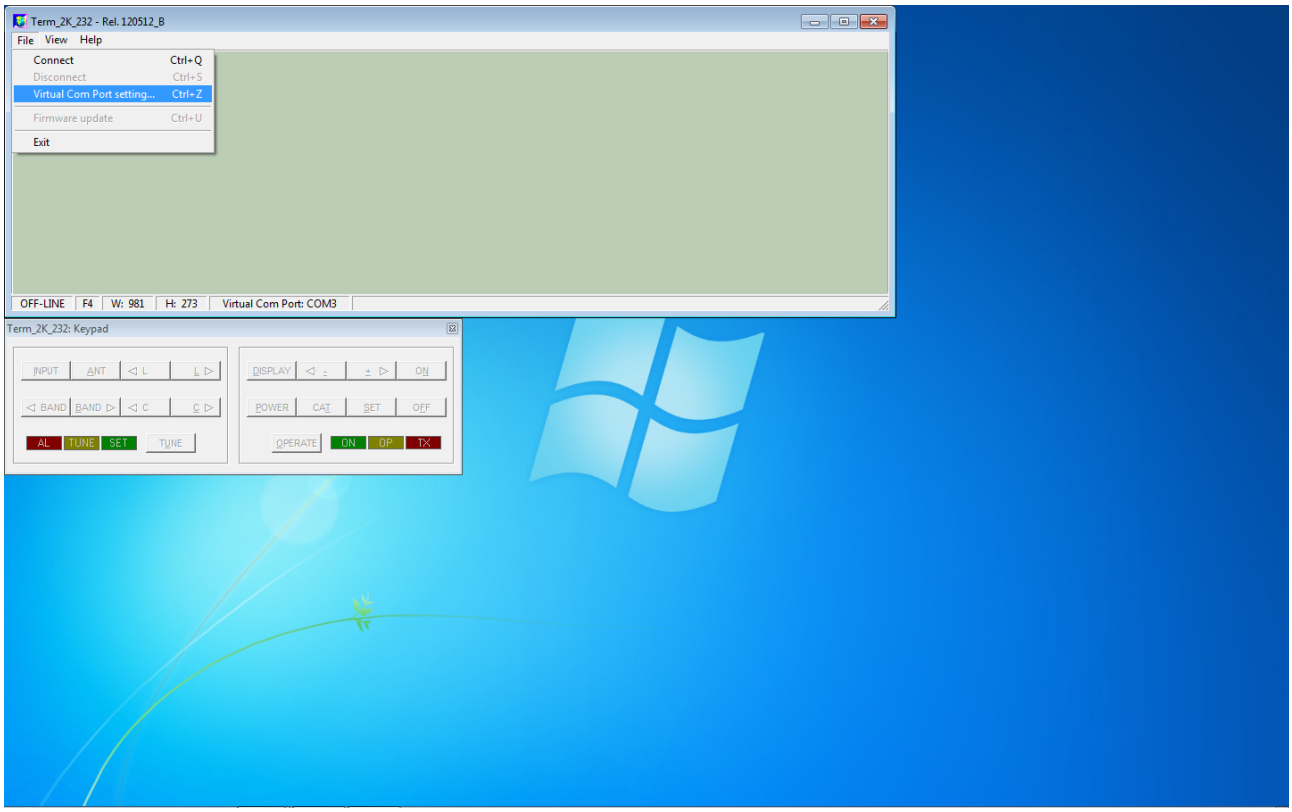
To start running **Term_2K_232.exe** application it is necessary to step back into the **Term_2K_Package_2_0** uncompressed folder and select the related filename as shown in the picture below:



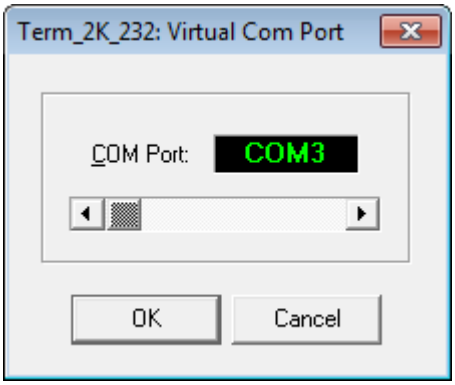

A suggestion is to create a link to the application and to place it over the Windows desktop.
A double-click using the left-button of the mouse on the application icon should give out a result as the one shown in the following picture:



After then select File/Virtual Com Port setting.




The above mentioned menu item makes it possible to access the following dialog box, which allows a direct setting of the desired COMx serial port for connecting the EXPERT 2K-FA.



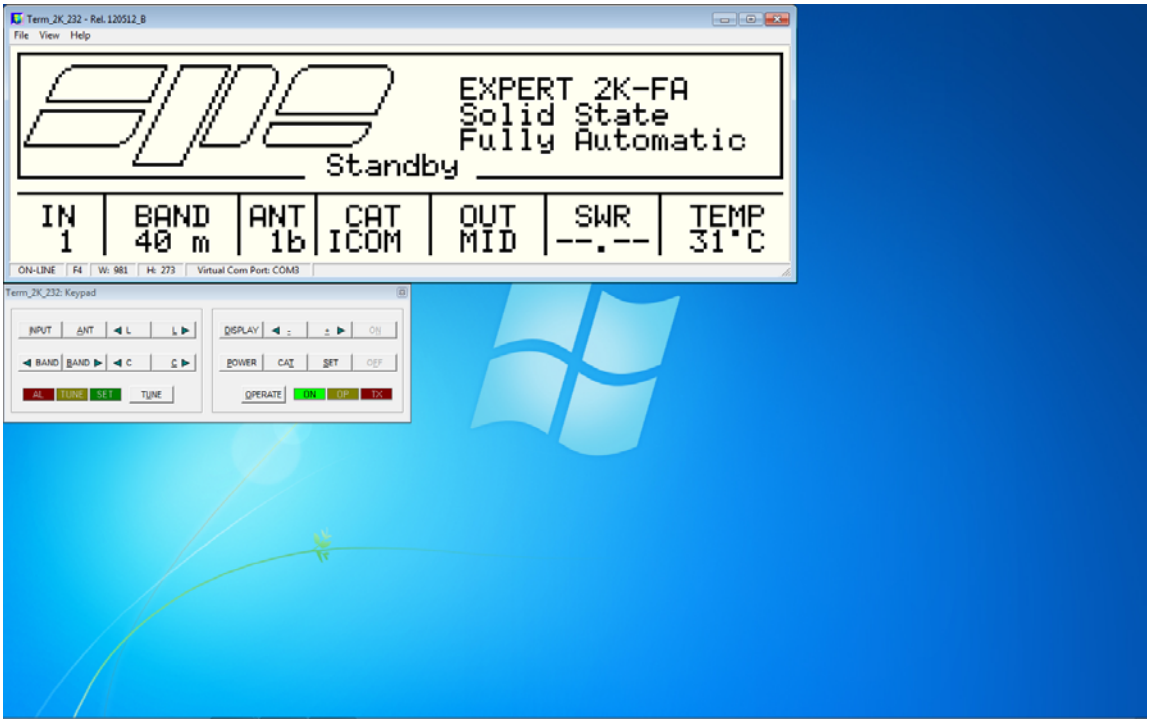

With all the serial resources connected go to Control Panel >>> Hardware and Sound >>> Device Manager and choose a serial COM listed in the HW configuration but not used by other applications.
In case USB-to-RS232 serial converters are being used, proceed as explained and check all the COM ports polled by the system.

To check a COM port identifier related to any given adapter, disconnect it and detect which COM item disappears from the proposed list after that configuration change.
In case use that COM identifier to properly set the **Virtual Com Port** dialog box shown in the picture above..

The available selection range spans thru the [**COM1…COM256**] set, and it can be accessed using the framed slider placed above the OK and CANCEL keys.

All the other communication parameters are set as follows:
**Baud-rate: 115200**
**Bit per character: 8**
**Parity check: No**
and cannot be changed since they got programmed during the “SW installation” procedure.

As mentioned above, the application usage is still the same as in ths USB interface version described earlier, while the display window backlight changes to ivory-white as shown in the picture below:

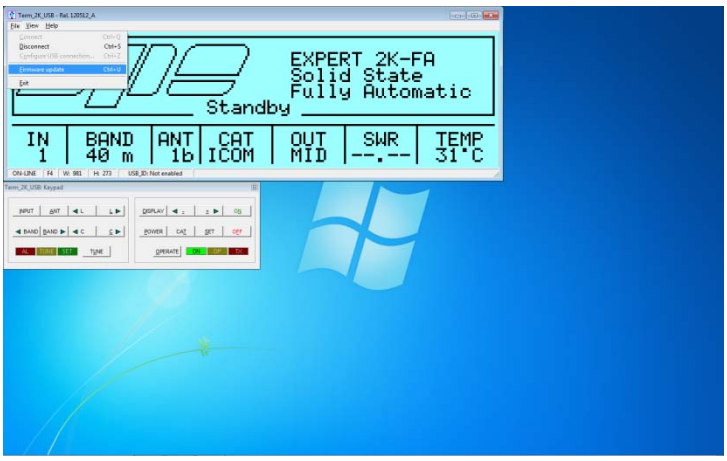



Using the RS 232 port becomes a necessity when the device needs to be remotized via the Internet, since most of the committed devices currently on the market don’t implement a USB port feature.
To be noted that in this peculiar version [ON] and [OFF] keys got intentionally disabled.
Tha is because switch-on and switch-off operations on the linear amplifier are directly driven by the remotized transceiver (see Section **13.2 “REMOTE ON Connection”** on the **User’s Manual**), while for the serial interface cable wiring consult **Section 13.5 “Port Connector”**.

## 20.4 Firmware update

A very useful function of **Term_2K_USB.exe** is the one which enables us to update the built-in firmware of the linear amplifier.

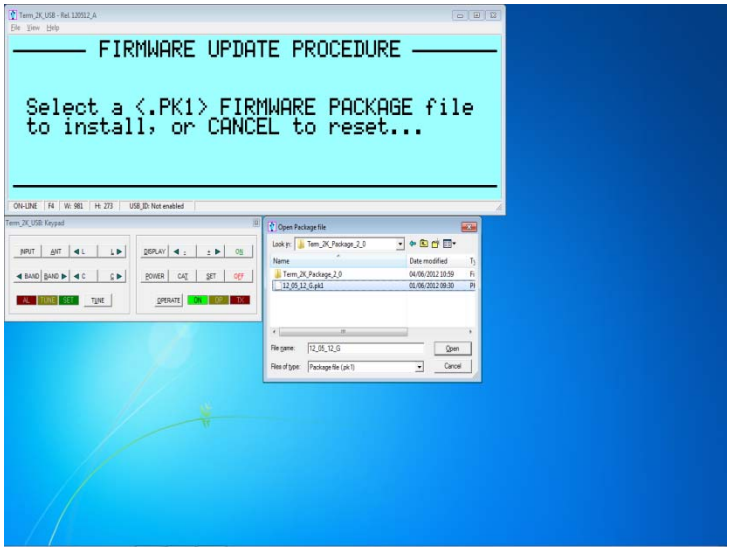
To update the linear amplifier it is needed a suitable **.PK1** firmware file, which must be downloaded from our website www.linear-amplifier.com and then stored into a proper working folder.
Switch the linear on, and keep it set to STANDBY mode during the firmware update job.




Under these conditions the **File\Firmware update** menu item is active and, upon its selection it sets the **EXPERT 2K-FA** to its firmware update mode (**FIRMWARE UPDATE PROCEDURE**).

After then a dialog box will pop-up, and the user is allowed to select a proper firmware package whose data must be sent to the linear amplifier to update all its embedded functions

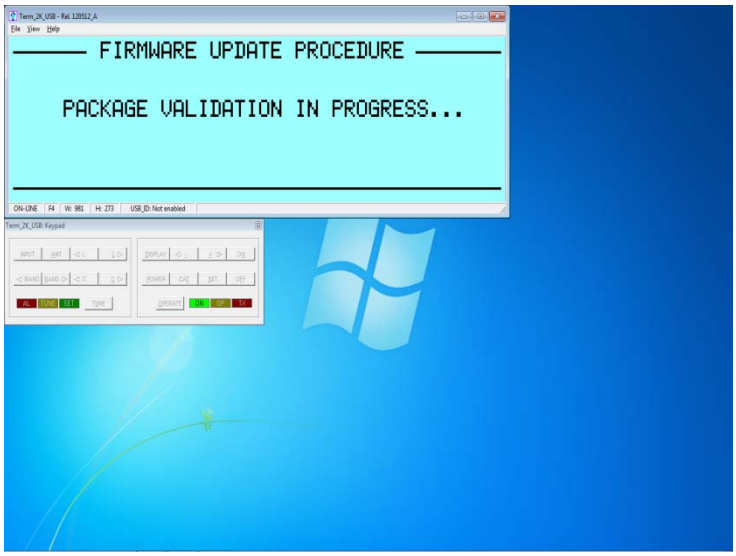
In the example of the picture below a firmware package file named **12_05_12_G.pk1** has been selected:



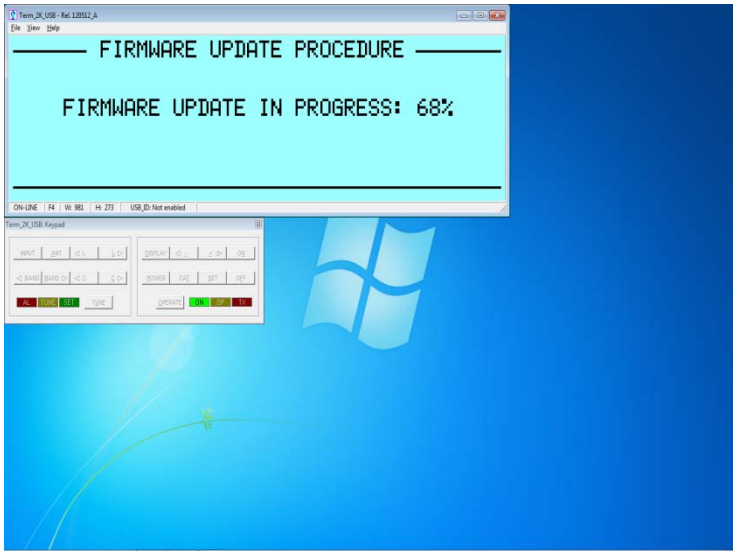
After a necessary confirmation by the user for validating the procedure, the **EXPERT 2K-FA** switches its display off and the overall control for updating actions gets transferred to **Term_2K_USB.exe** application

The main steps of firmware update procedure are the following ones:

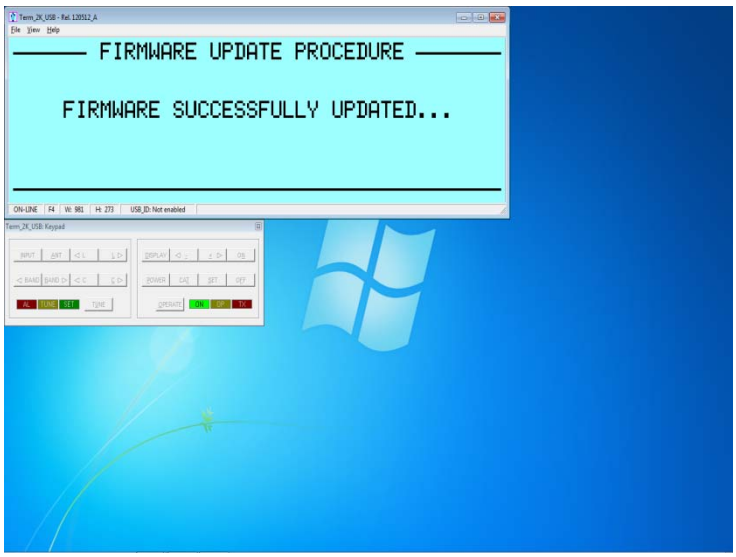
1. Checking and validation of updating firmware package




2. A physical data sending of the new firmware from the PC to the linear amplifier



3. A final validation for the completed firmware update




As a very last action after a successful firmware update, the linear amplifier performs a general auto-restart operation and, after then, a full control of the updated device is given back for both local and remote operations.
The user is then enabled to check the result of his firmware update operation directly on the LCD display (both real and virtual…) by pressing the [**CAT**] key twice.
This action will show
This operation will update the display report as shown below.