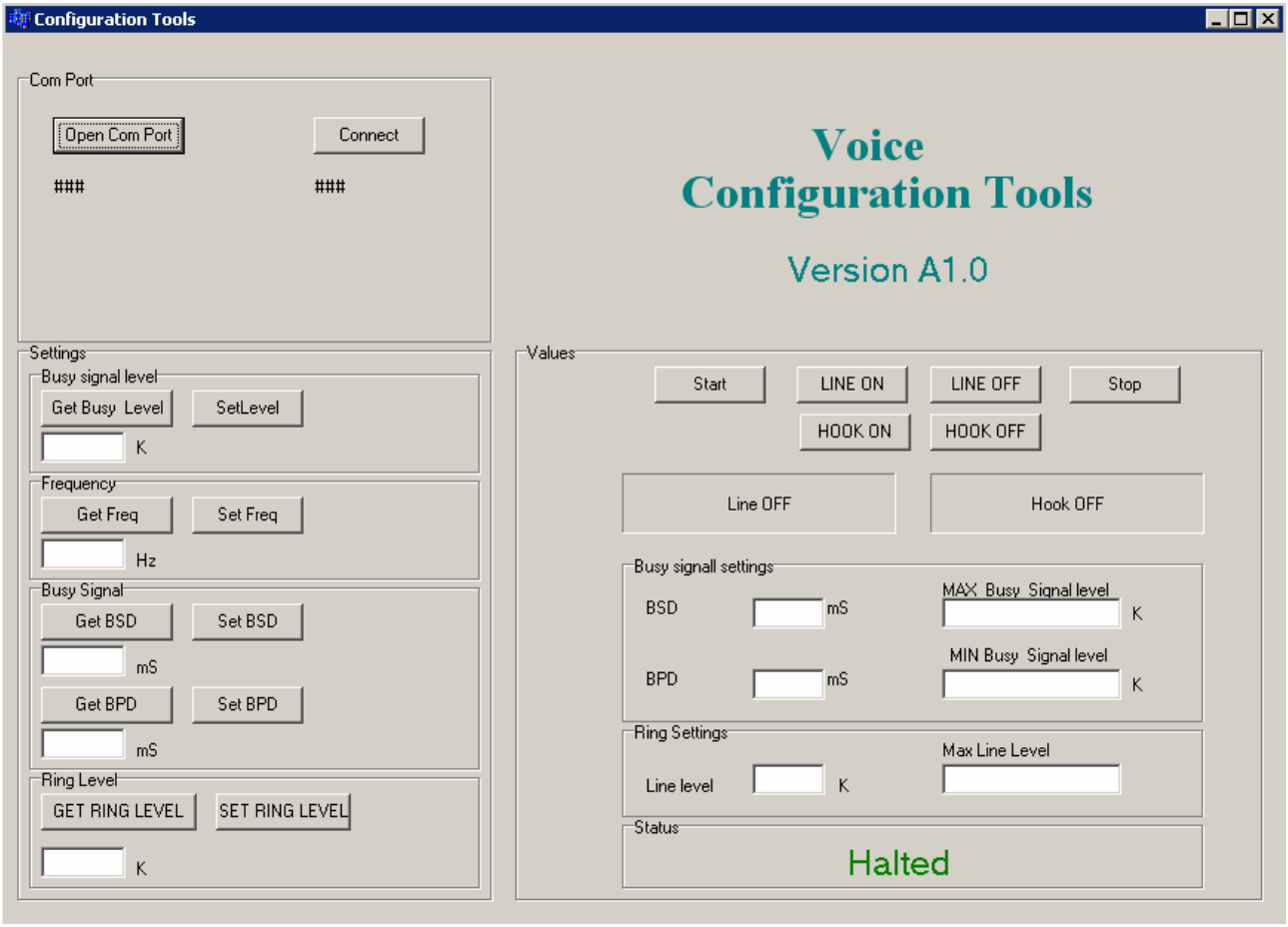
Calibration parameters of “Trunk” mode

With „Voice Configuration Tools“ program you can to set parameters of “Trunk” mode. Using this program, you can make device „Voice“ to be compatible with local phone station (PBX). The picture of program screenshot is shown (in fig. 1).



1 Fig. Basic screen of Voice Configuration Tool

1. **How to connect device? How to start the program?**

Important! You can’t connect device to PC (Personal Computer) if you want to set all correct parameters of device “Voice”. Tune-up and calibration of the device you must do only with notebook.

Calibration steps.

Actuation of the device:

Insert SIM card into device and connect the power supply adapter. Phone should be connected to “PHONE” adapter. Wait till device will connect to GSM network. (This process will indicate “STATUS”LED. LED should not blink). Using phone you have to enable “TRUNK” mode. More about “TRUNK” mode look at the User Manual. User Manual should be in device pack in CD.

Device connection to PBX:

Then the "TRUNK" mode is enable the phone should be disconnected from device. Device "Voice" should be connected to local phone station PBX through the "LINE" adapter in place of one phone connected to station or to spare inner line.

Device connection to the Notebook:

Device is connecting to Notebook via USB connector. Before connecting device to notebook assure, that all drivers are installed. If drivers are not installed in your computer, you must install them. More about driver's installation look at the User Manual of device.
You can connect device to computer then the drivers are installed successfully.

Starting the program:

To start program you should open Configuration Tools.exe file. You will see the program windows if it will start successfully. (Fig. 1)

Steps :

1 step : Open COM port . To open COM port press button 

. The settings screen will appear (Fig. 2). You should choose that COM port where you are connected your device "Voice".
NOTE. COM port does not mean physical port, it is virtual USB<->COM port. The number of COM port you can see in the settings (Control Panel-> System -> Hardware -> Device Manager->Ports) (Fig. 3). (For example "Voice" is connected to Com3 port.).

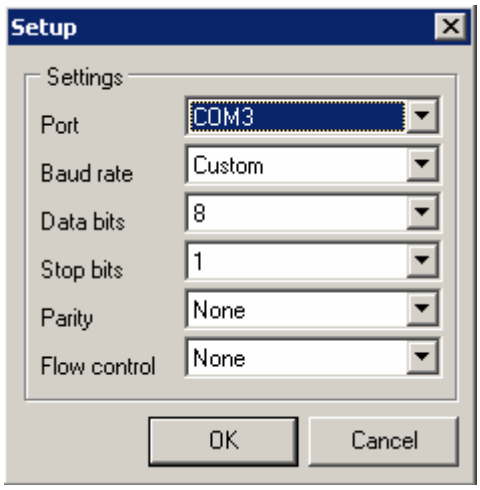


Fig 2. Port settings.

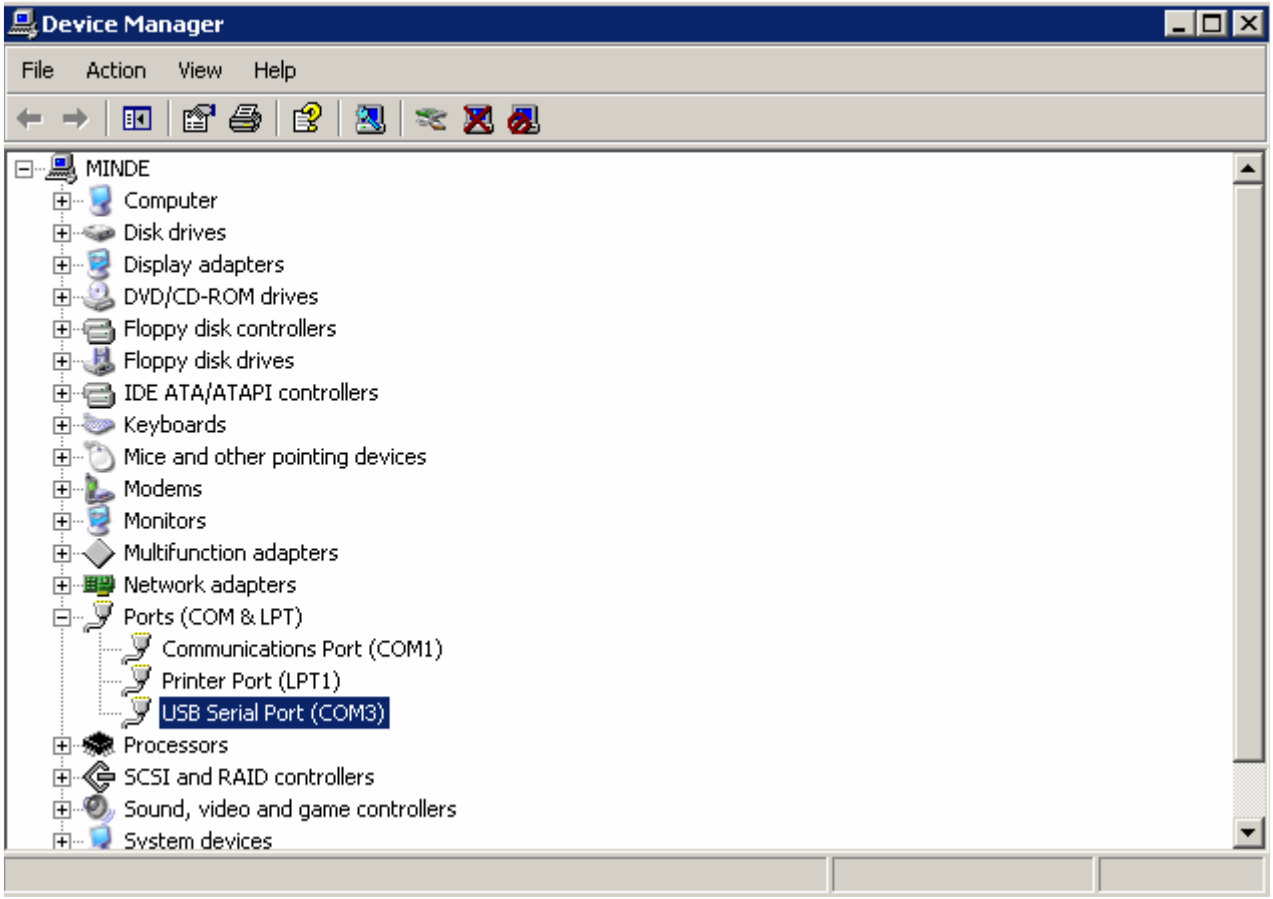


Fig. 3 Virtual USB<->COM port

This COM port number can be different like in example, it depends of particular configuration of computer.

2 Step: To connect to "Voice" device you should press Connect button. You will see "Connected" below the button and values in the settings field if the connection was successful.

If all steps mentioned above were completed the device and program is ready for tuning-up procedure.

Groups of parameters.

1. **Group of parameter "Settings**". Buttons in this group has name with words "GET" and "SET". It means that these buttons which are named "GET" are for reading parameters from device and which are named "SET" are for setting parameters to device.
    a. **"Busy signal level"** this is power level of busy signal (**"Frequency"**) the frequency that out measure come to realization, that signal spectrum of this frequency component are existing.
    b. **"Frequency"** Frequency in Hz of busy signal.
    c. **"Busy signal"**. "BSD" (Busy Signal Duration) Term of busy signal. BPS (Busy Pause Duration). (parameter) ms.

d. **“Ring Level”.** Detection level in calling line.

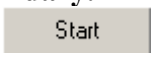
2. **Group of parameters “Value**”.
   a. **“Busy Signal settings”:**
      i. **“BSD”** Visible term of signal in working line. **“BSP**” Visible term of pause of signal in working line (No signal).
      ii. **“Max Busy Signal level” –** Maximum value of power of decoded components of frequency. If this value is lower than **“Busy Signal Level”** the signal for device will be invisible.
      iii. **“Min Busy Signal Level”-** Minimal value decoded frequency level of signal.
   b. **“Ring Setting”**
      i. **“Line Level”** Show real value of line level.
      ii. **“MAX Line Level”-** Maximal value of level in line.

Tuning-up and calibration.

Make attention. Tuning – up of device you should make only after 2 steps, which were described above.

Sequence of tuning-up process.

Tuning up of ring detection boundary.

Process enables after pressing 

button. After that you can set the constant of ring detection level (**“Ring Level”**). The value of (**“Ring Level”**) is determined in following expression:

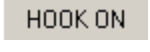
Ring Level= Max Line Level+ Max Line Level*0.02

The value presented in the field of “Ring Level” must be no lower the calculated value.

BSP and **BSD** fields must be indicating in red. It means, that “**Max Busy Signal Level”** is lower than **“Busy Signal Level”** in group of tuning Settings.

Tuning-up of busy signal.

When the ring detection boundary is set, the next step is tuning-up the detection of busy signal. In order to achieve that, must be dialed the “Voice” number of the line from another phone connected to PBX station. Incoming call is visible viewing in **“MAX Line Level”** value field - the value of **“MAX Line Level”** markedly exceeds the value presented in **“Ring Level”** field.

After noticing incoming call, to answer just push the 

button. After that, press 

and the inner “Voice” line opens. After the inner “Voice” line opens, hang up the phone from which was made the call. Then PBX will start generate busy signal in voice line.
At this moment the evaluation of signal level can be made viewing in **“Max Busy signal level”** field. In that situation we can evaluate the frequency of busy signal using tuning up-just simply changing frequency, for example to 480 Hz. After that, push 

button. In order to renew

"Value" fields, the LINE ON button must be pushed. Tune the frequency, till you get the biggest value in **"Max Busy Signal Level"** field. And the frequency related to the biggest value of **"Max Busy Signal Level"** will be the signal frequency.

If changing the frequency the value of **"Max Busy Level "** never exceeds the value of **"Busy Signal Level",** then the constant of **"Busy Signal Level"** must be reduced. That value must be 20% less then the value of **„MAX Busy Signal Level"**.

NOTE. Changing **„Busy Signal Level"** value, the tuning-up process must be stopped by pushing Stop button. Tuning-up process can be enabled by pushing the Start button, but just after when the value of **"Busy Signal Level** is set. When the frequency is known, "BSD" and "BSP" values must be checked in parameter group **Value->Busy signal settings**. "BSD" value must be equal to "BSP" value. Because the values are measured in discreet way with period of 20 ms, the values can vary from 20 ms to 40 ms. The biggest values must be used. If these values are not equal to values of parameters group "Settings" write these values to device.

After completing all these steps mentioned above, the device is prepared for work. All settings take affect after restarting the module. (To restart the module, just disconnect the supply voltage for a moment).