1. Infinity-Box PinFinder Adapter

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PCB hardware version	1.00, 2.00
PCB firmware version	2000
Last changes in document	✔ Specification updated (new supported CPU type) ✔ PCB power stability improvements description ✔ Manual pinout selection example ✔ Specification updated (new supported CPU type, PinFilter option) ✔ PinFilter description

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Preface

Infinity-Box PinFinder Adapter is a hardware module with special software that helps find Rx and Tx pins as well as select manually Rx and Tx pins for different models (different CPU and hardware platforms) in automatic and manual mode.

Infinity-Box PinFinder Adapter can detect pinout for good working phones and for phones with damaged software. **Phones with damaged hardware must be repaired before pinout detection procedure !**

Infinity-Box PinFinder Adapter package contain it's own cables and also Adapter **can work with all known RJ45 cables, PinFinder Adapter may be used as an universal interface for all well-known cables in your workshop collection**.

Infinity-Box **Smart-Card should be activated to use PinFinder Adapter**. Activation is a free automatic process and takes only several minutes.

Note ! Infinity-Box Smart-Card S/N (serial number) and Adapter S/N (serial number) will be paired during activation process. It's possible to activate Adapter only once, so only one Infinity-Box Smart-Card can be activated with one Adapter.

Note ! Connect Infinity-Box to PC USB port directly, never use USB-Hub !

Battery should be removed from phone, phone take power from Adapter.

If you will have any comments regarding this manual, please, send us e-mail with your comments and suggestions to support@infinity-box.biz with subject "PinFinder Manual".

Support site:	www.infinity-box.biz
Support site:	www.infinity-box.com
PinFinder Adapter description:	http://www.infinity-box.biz/index.php?id=pinfinder&lg=en
Support forum:	http://www.gsmhosting.net/vbb/forumdisplay.php?f=425

Specification

Input	RJ45: Unibox mirrored
Output #1	DR26, 26 pins Rx/Tx pins, switchable
Output #2	RJ45, 8 pins Rx/Tx pins: switchable Vpp, Gnd: fixed (not switchable), with On/Off option compatible with popular RJ45 cables: ✔ Unibox ✔ Infinity-Box ✔ ATM-Box ✔ UFS ✔ JAF ✔ Griffin ✔ Furious-Box ✔ Thunderstorm ✔ SPT-Box ✔ Vygis-Toolbox ✔ other RJ45 cables with compatible Gnd/Vpp pins, pinout description below
Maximum number of pins	24
Indication	✔ switchable power LED ✔ adapter power indication
Output circuits shortcut protection	Yes
Automatic pin detection	Yes
Manual pin selection	Yes
Additional options	✔ Fast Rx/Tx pins swap ✔ Fast pin order reverse (“keyboard up” <-> “keyboard down” numbering) ✔ Fixed predefined RJ45 output ✔ Switchable RJ45 output ✔ PinFilter: Rx/Tx detection by selected pins only, possible to include/exclude required pins from/to automatic detection process
Predefined (factory) pinout database	Yes
User-defined pinout database	Yes
Supported CPU types for automatic pinout detection	✔ MT62xx (MTK) ✔ Spreadtrum (SPD) ✔ AD65xx (ADI) ✔ AD67xx (ADI) ✔ Hercules (TI) ✔ Calypso (TI) ✔ Locosto (TI) ✔ OM63xx (NXP, Philips) ✔ Infineon (PMB) e-gold ✔ Infineon (PMB) s-gold

	✔ SkyWorks ✔ Qualcomm MSM (in test) ✔ other CPU types support is under development **Note**: supported CPU list is just for reference due to non-stop upgrade and improvements process is in progress
Supported CPU types for manual pinout selection	✔ All know CPU types with UART (Rx/Tx) pins
Rx/Tx detection time	✔ Depends on CPU type ✔ Depends on number of pins ✔ Depends on enabled/disabled PinFilter
Comments	✔ Phone "Power" button should be pressed all time during automatic pinout detection process for some models (depends on CPU type) ✔ Battery is not required for operations and should be removed, phone take power from Adapter via special RJ45 power cable

2. Activate Smart-Card and Adapter

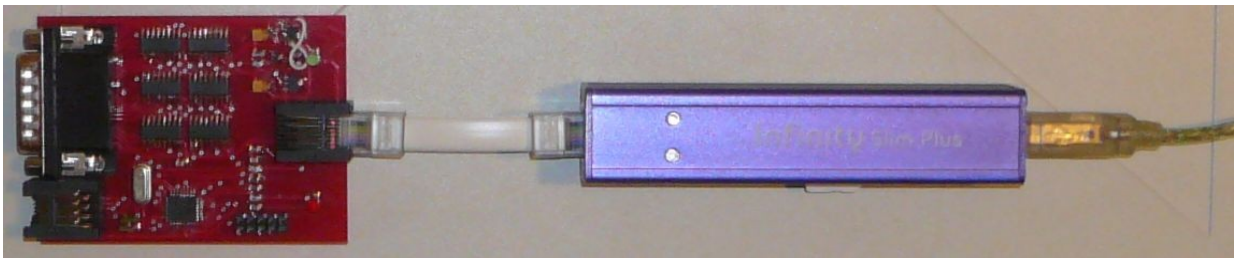
Check PinFinder activation status

1. Install Infinity-Box PinFinder software
2. Run Infinity-Box PinFinder software
3. If you will see activation request message (see picture below) this means that you need to use "Dongle Manager" (**version 1.20 or higher**) software from support area and upgrade your Infinity-Box Smart-Card.

"Dongle Manager" software available for download from the next links:
http://www.infinity-box.biz/index.php?id=support
http://www.infinity-box.com/download/index.php

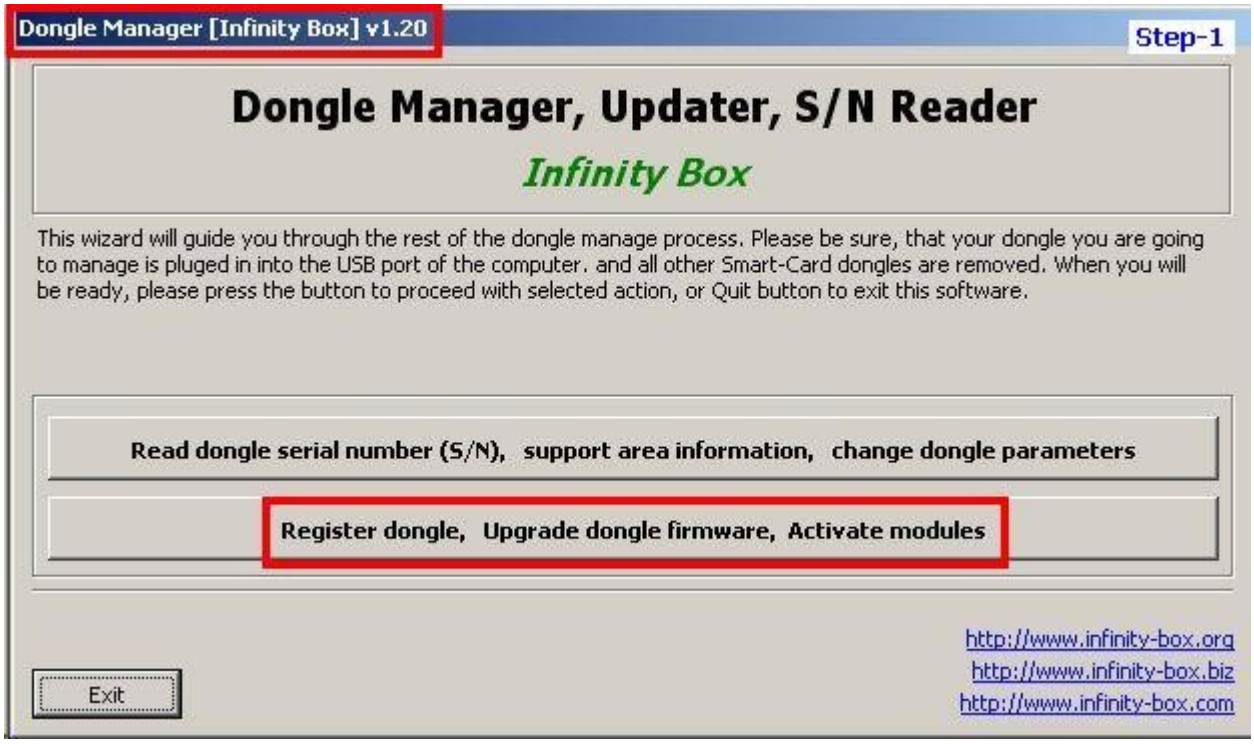
Activate PinFinder Adapter

1. Connect Infinity-Box to PC via USB cable
2. Connect PinFinder Adapter to Infinity-Box with RJ45-RJ45 cable

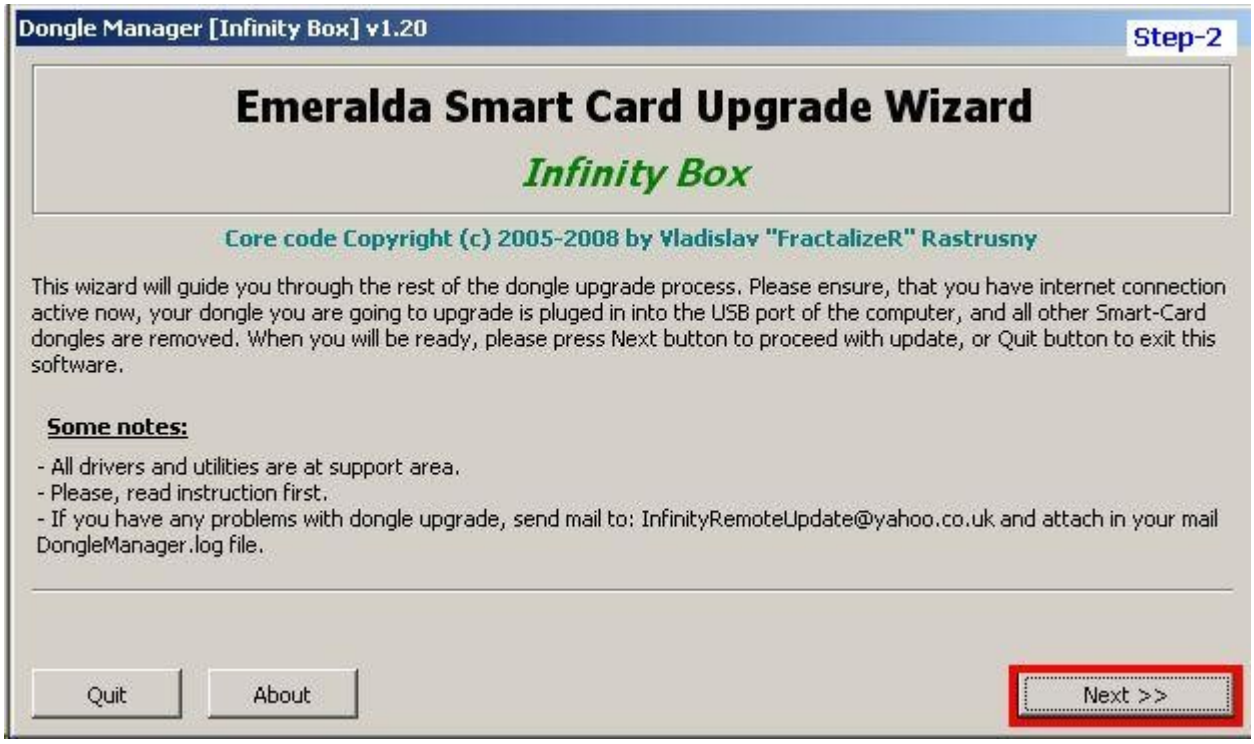


3. Run "Dongle Manager" and check that "Dongle Manager" version is 1.20 or higher

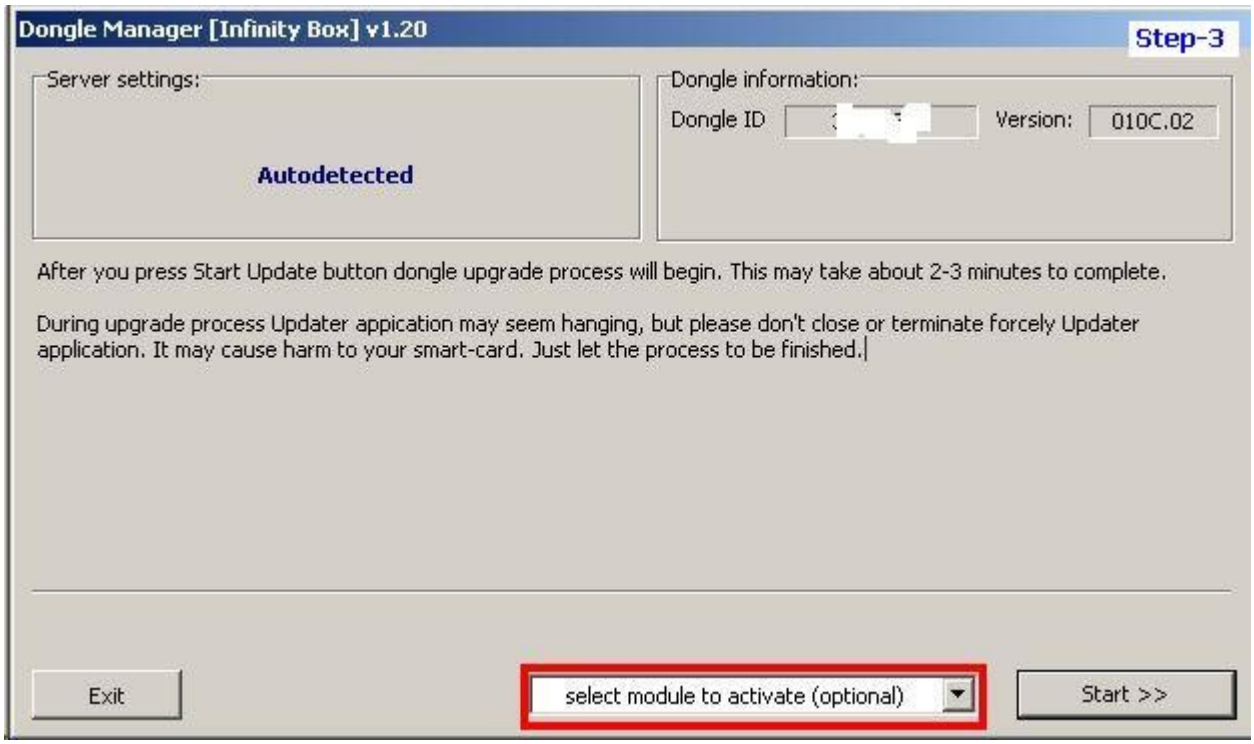
4. Press "**Register Dongle, Upgrade Dongle firmware, Activate modules**" button

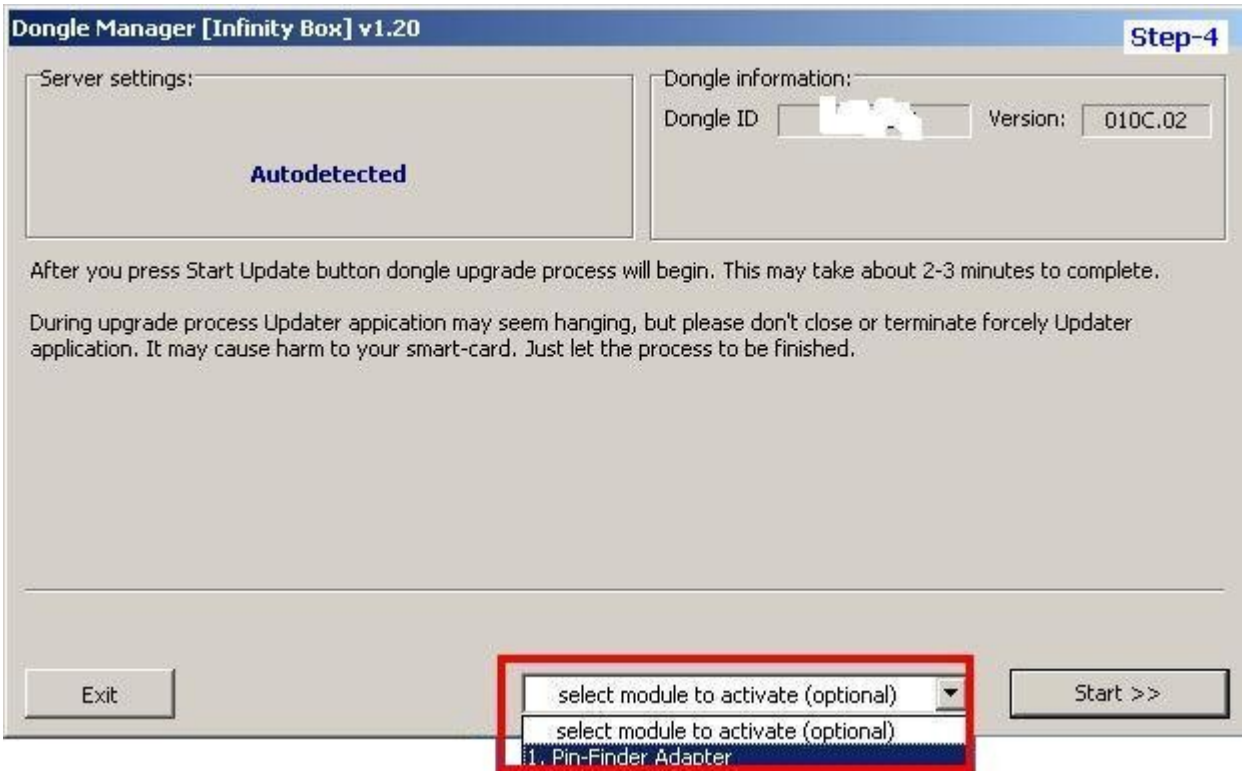


5. Press "**Next**" button

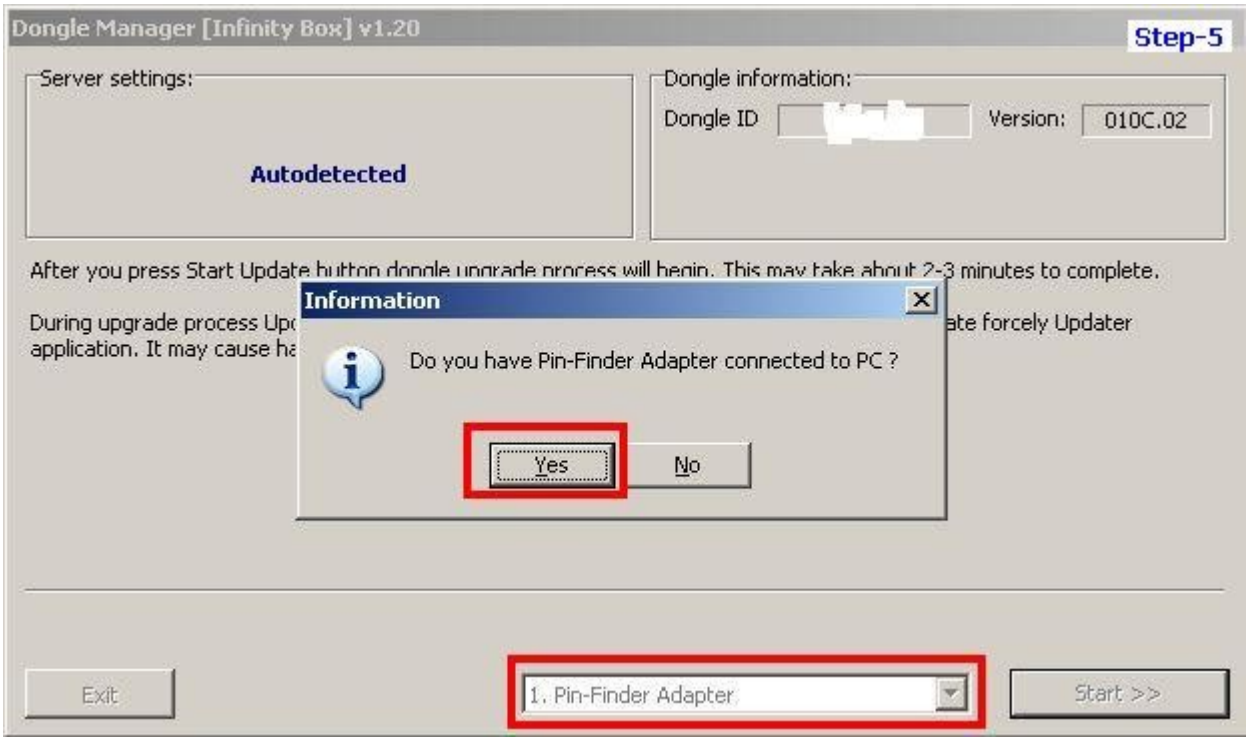


6. Select "**PinFinder**" module in drop-down menu



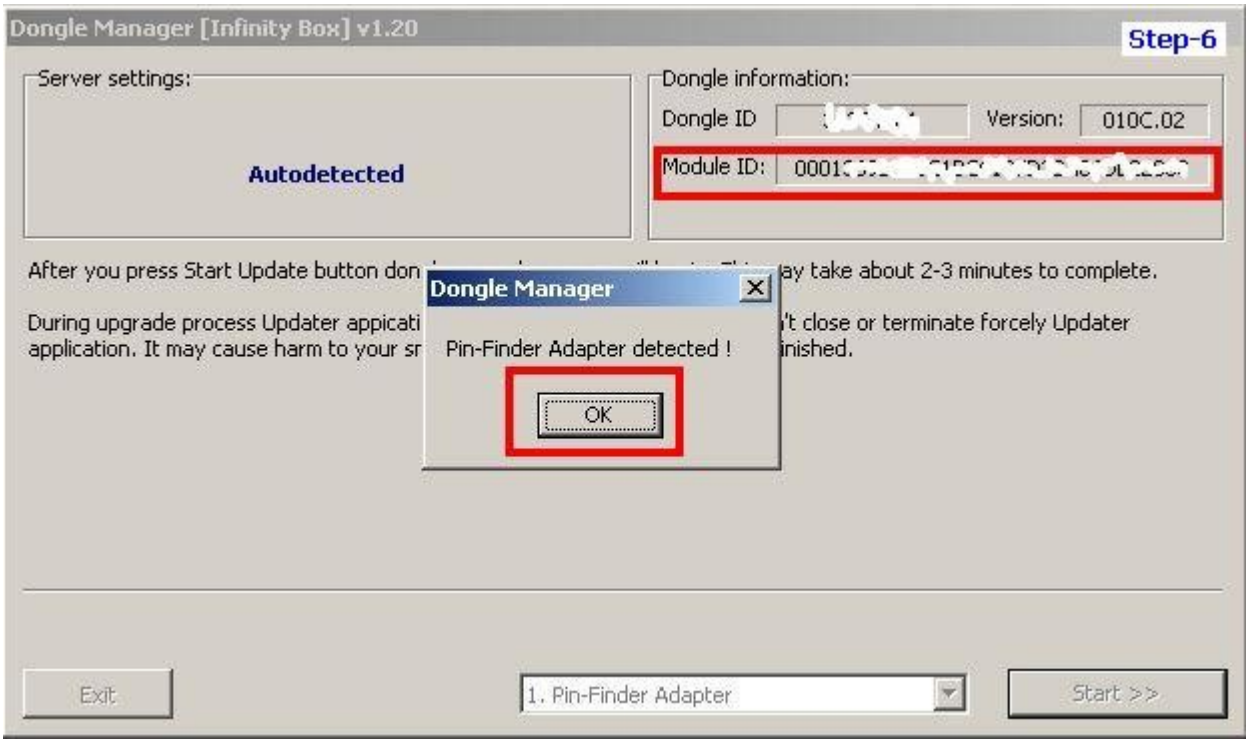


7. Double check that "PinFinder" adapter connected to Infinity-Box and press "**Yes**"

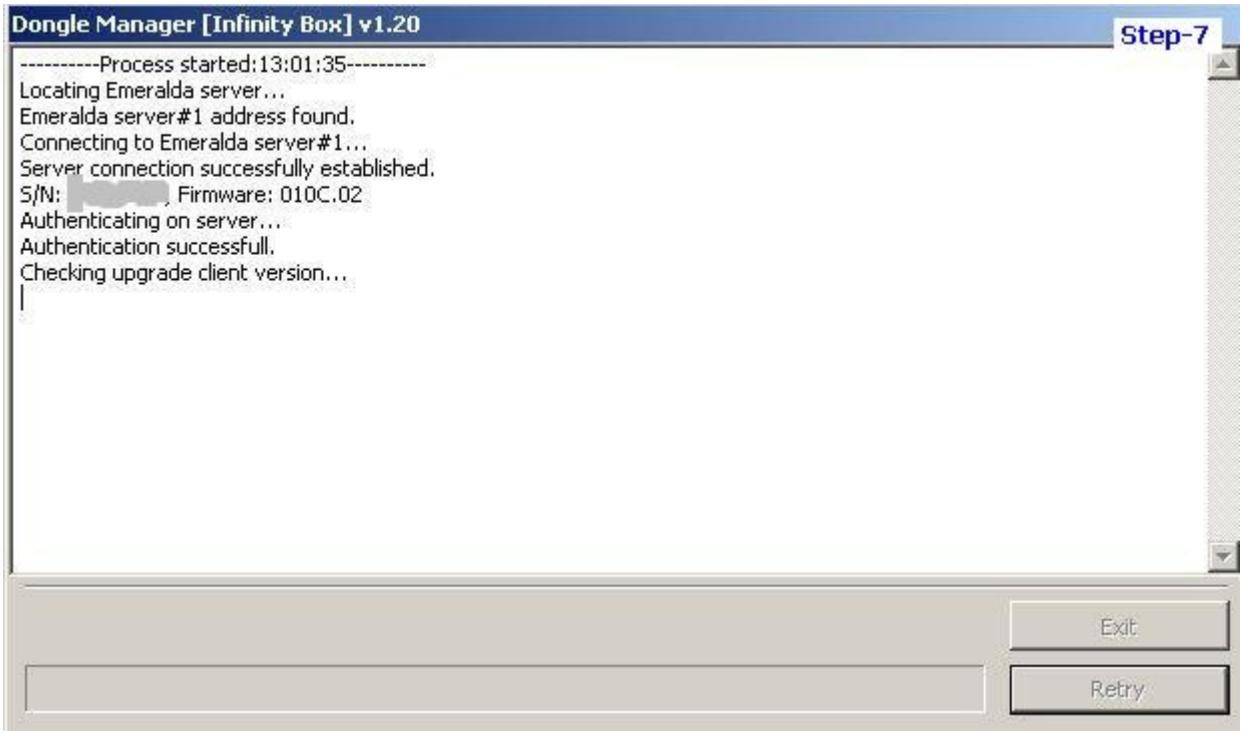


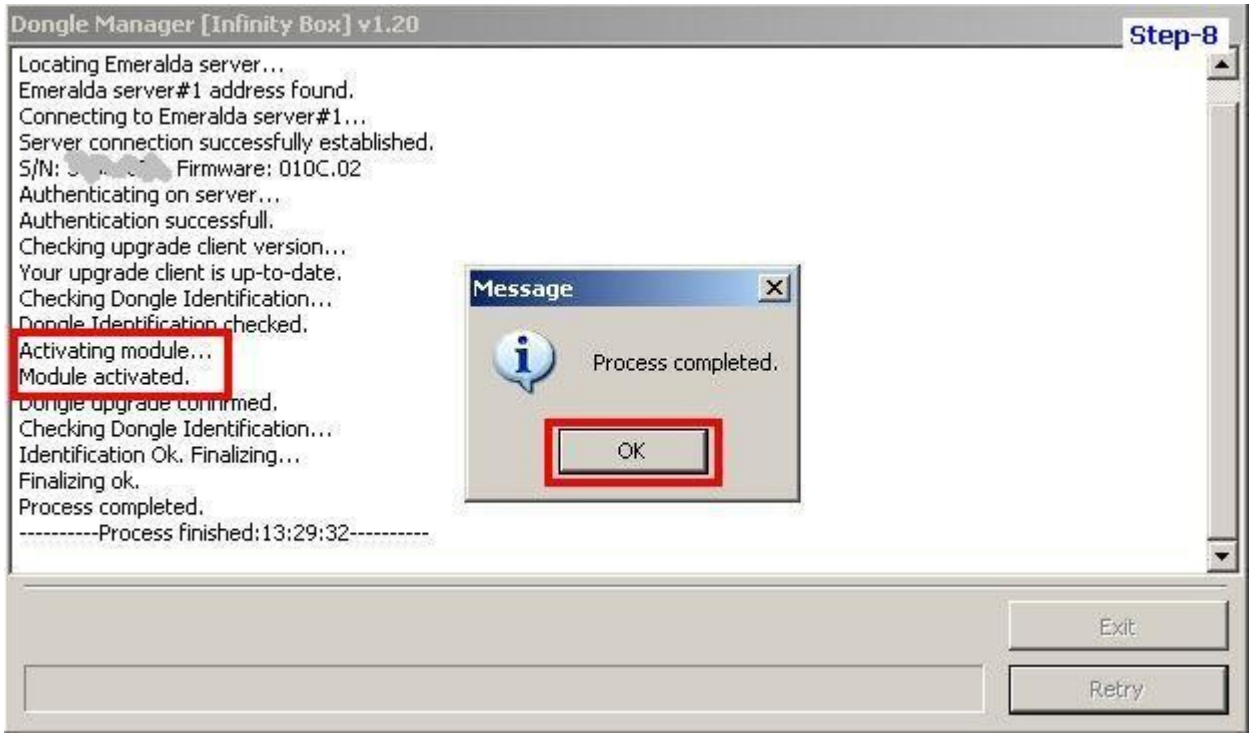
8. Wait several seconds until "PinFinder" adapter will be detected. You will see "PinFinder" Serial Number

(it's no need to remember or write down this S/N, it's just for your reference that PinFinder Adapter detected well).



9. Press "**Ok**" button and press "**Start**" button to start dongle upgrade process

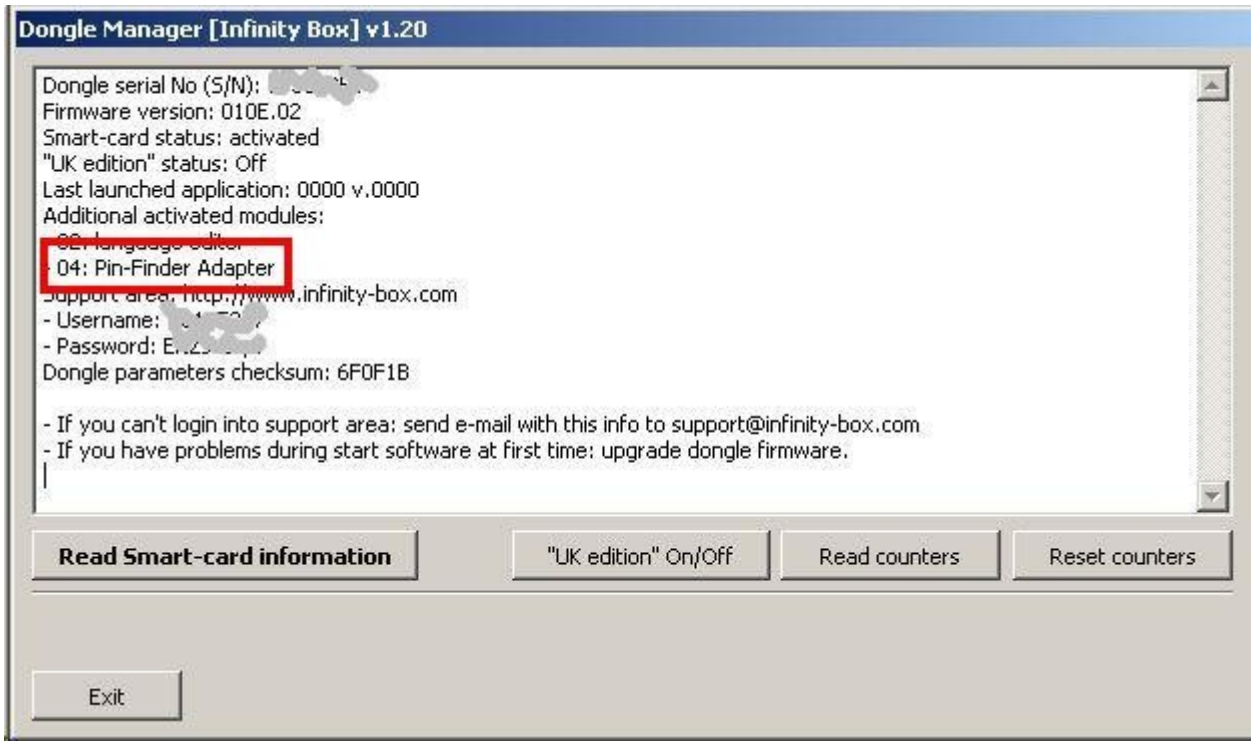




10. After dongle upgrade process will be finished check that your smart-card activated and ready to work

Check PinFinder Activation result

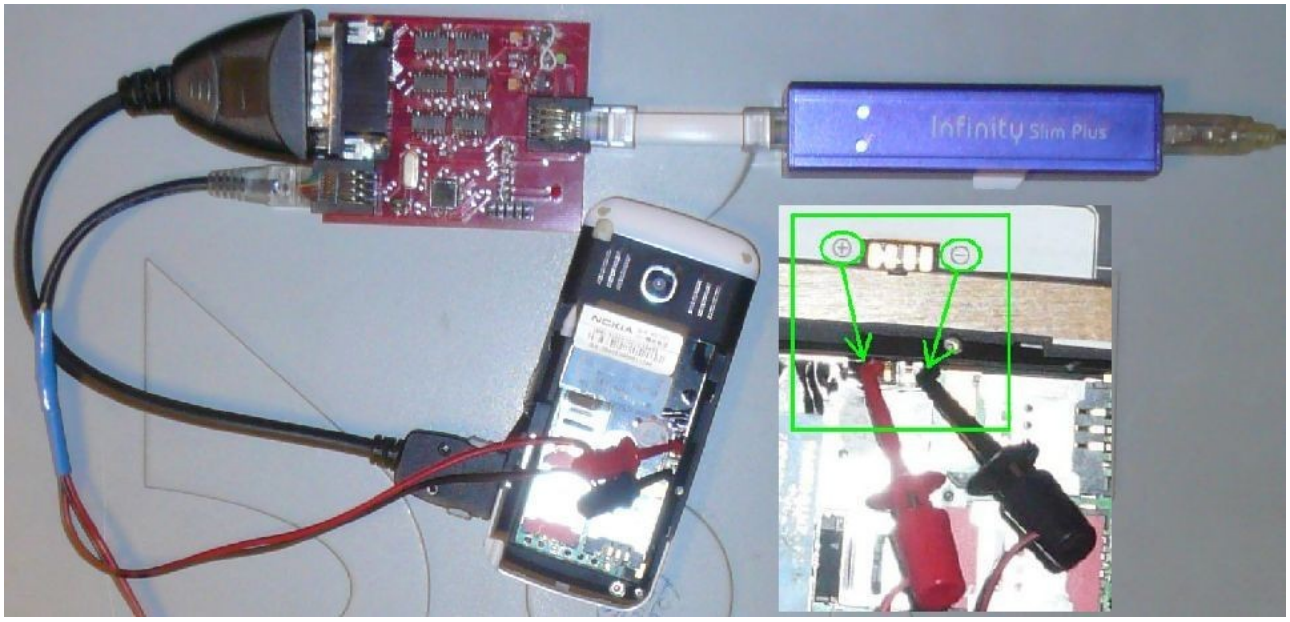
1. Run "Dongle Manager"
2. Press "Read Dongle S/N" button
3. Check that "PinFinder" module is active



3. Connect phone to Adapter

Connect phone to PinFinder Adapter

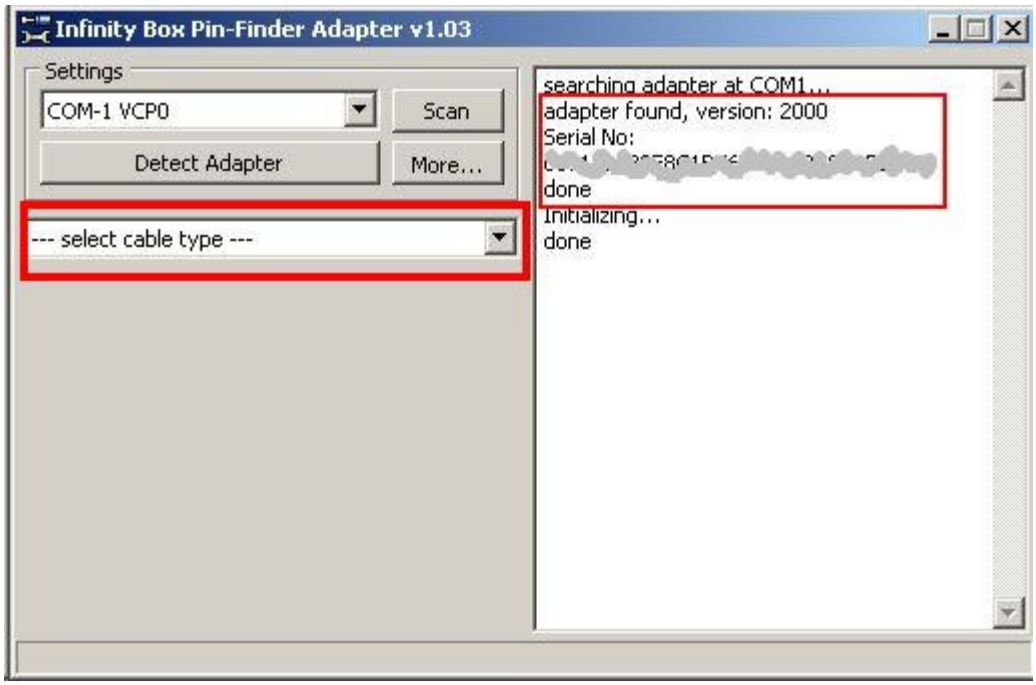
1. Connect Infinity-Box to PC via USB cable
2. Connect PinFinder Adapter to Infinity-Box with RJ45-RJ45 mirrored cable (see cable description at end of this manual)
3. **Remove phone battery !**
4. Connect power wires from RJ45 PinFinder connector to phone instead of battery
   "**+**" (**red**) power wire should be connected to phone "+" (positive) contact
   "**-**" (**black**) power wire should be connected to phone "-" (negative) contact
5. Connect DR26 PinFinder cable to phone bottom connector

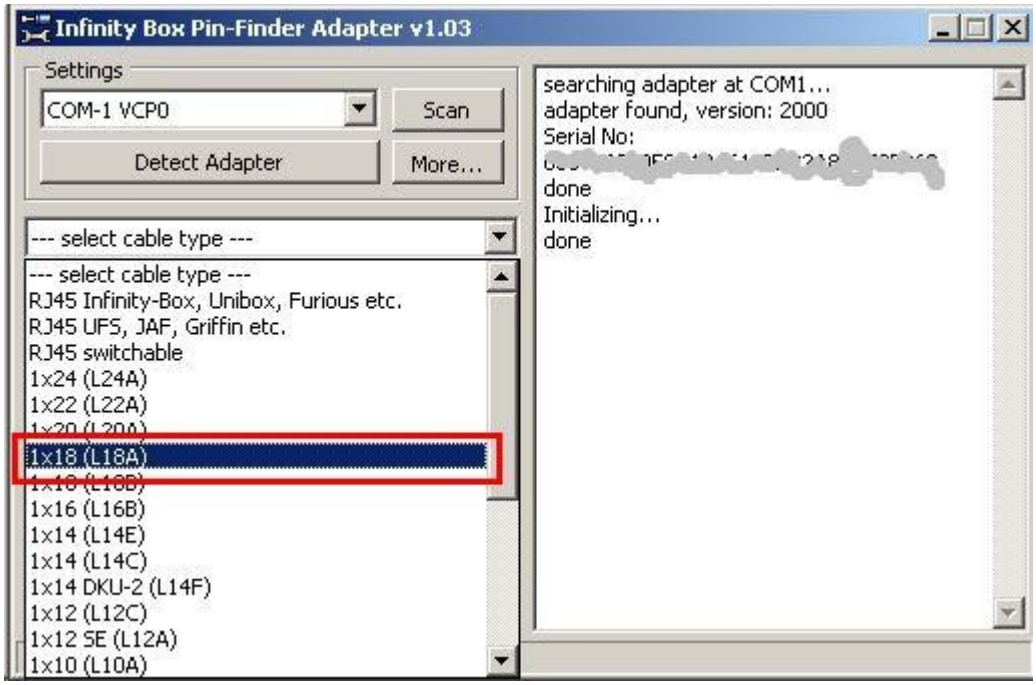


Check power wires connection (self-test)

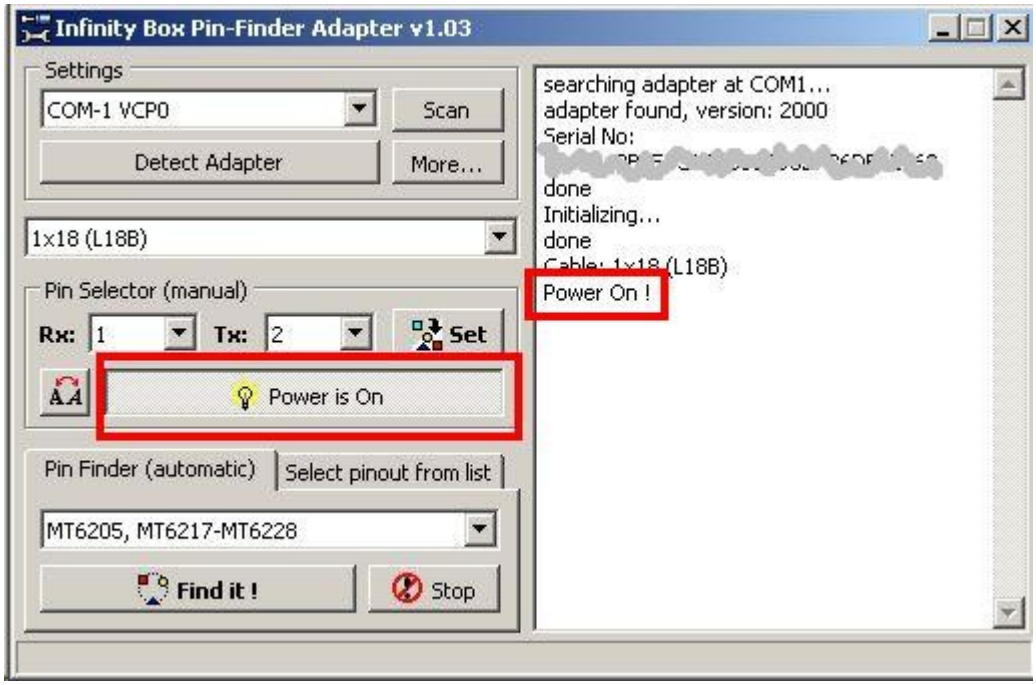
1. Run PinFinder software
2. Press "**Detect Adapter**" button, software will scan all available COM ports and search PinFinder Adapter. In case of any problems with PinFinder Adapter detection disconnect and connect PinFinder Adapter to Infinity-Box and try again.

3. Select "**cable type**"





4. Press PinFinder software "**Power**" button and be sure that software "Power" status is "On" and Adapter "Power" LED is "On"



5. Press and hold phone "Power" button and **be sure that phone can Power On**.
6. If phone can't Power-On completely (trying to Power-On and then Off during startup)
   - ✔ Power on phone normally with battery
   - ✔ Go to phone menu and find "User profiles" or "Profiles"
   - ✔ Modify or Customize -> Tone setup -> Power on -> make silent
   - ✔ Customize settings to make phone power on without sounds and music

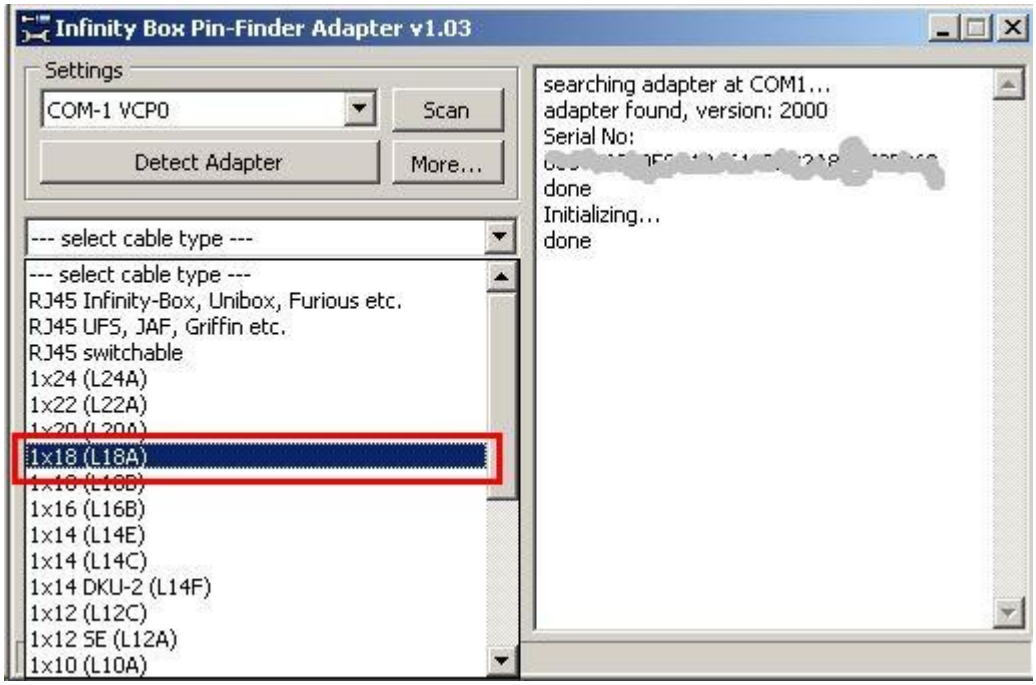
7. If phone can Power-On (or at least phone try to Power-On and you can see startup logo) this means that power wires is connected correctly and everything is ready for pinout detection process.
   If phone can't Power-On this means that something wrong:
   - ✔ Power wires connected incorrectly. It's need to double check power wires according to above picture and be sure that black wire connected to "**-**" (negative) and red wire connected to "**+**" (positive).
   - ✔ Voltage is not enough. It's need to check output voltage (with multimeter) and be sure that voltage is about +5v. See more information below in "**Automatic pinout detection: Troubleshooting**" chapter.

4. Find, detect, select pinout

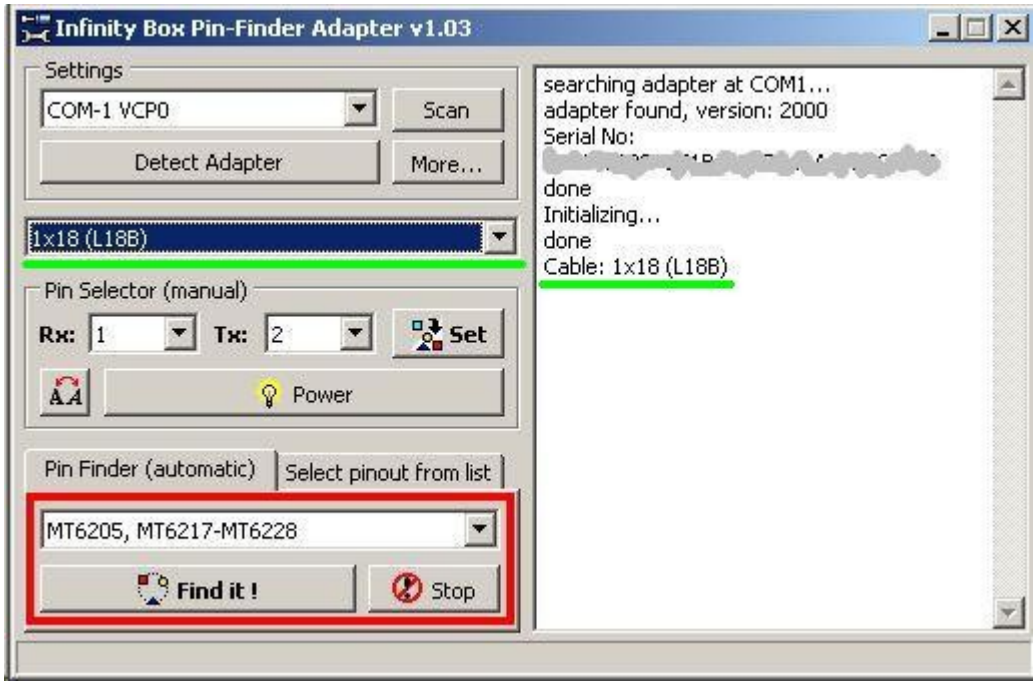
Automatic pinout detection

1. Run PinFinder software
2. Connect PinFinder Adapter to Infinity-Box
3. Connect phone to PinFinder Adapter
4. Press "**Detect Adapter**" button, software will scan all available COM ports and search PinFinder Adapter. In case of any problems with PinFinder Adapter detection disconnect and connect PinFinder Adapter to Infinity-Box and try again.

5. After you have PinFinder Adapter detected it's need to select "**cable type**"

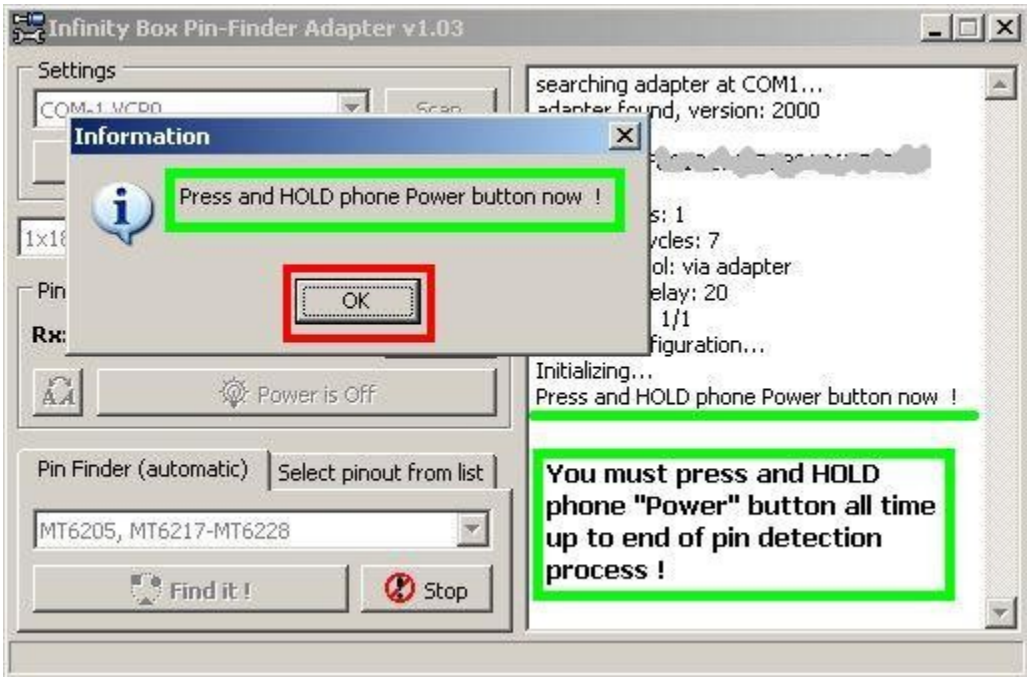


6. Select CPU type. In most cases for many "Chinese" models you need to use default selected value: "***MT6205,MT6217-MT6228***"

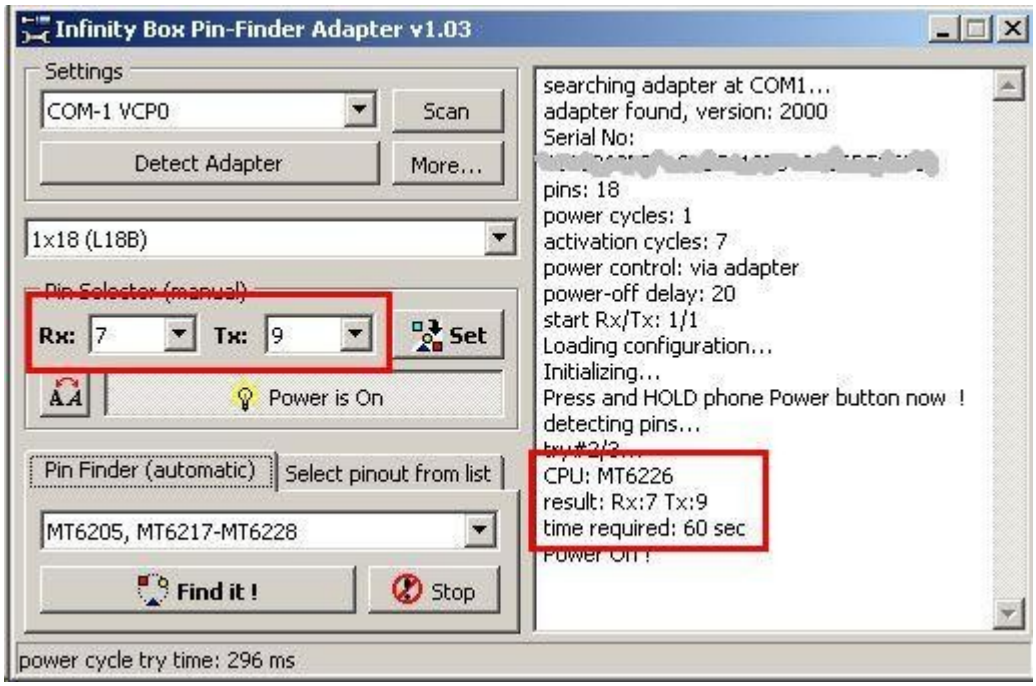


7. Press "**Find It**" button. You will see information message that now you need to **press and hold** phone "Power" button.
8. Press phone "Power" button and **keep it pressed during pinout detection process**.

9. Press "**Ok**" button and wait pinout detection results



10. In case of success you will see detected Rx and Tx pins, phone Power will be switched On.

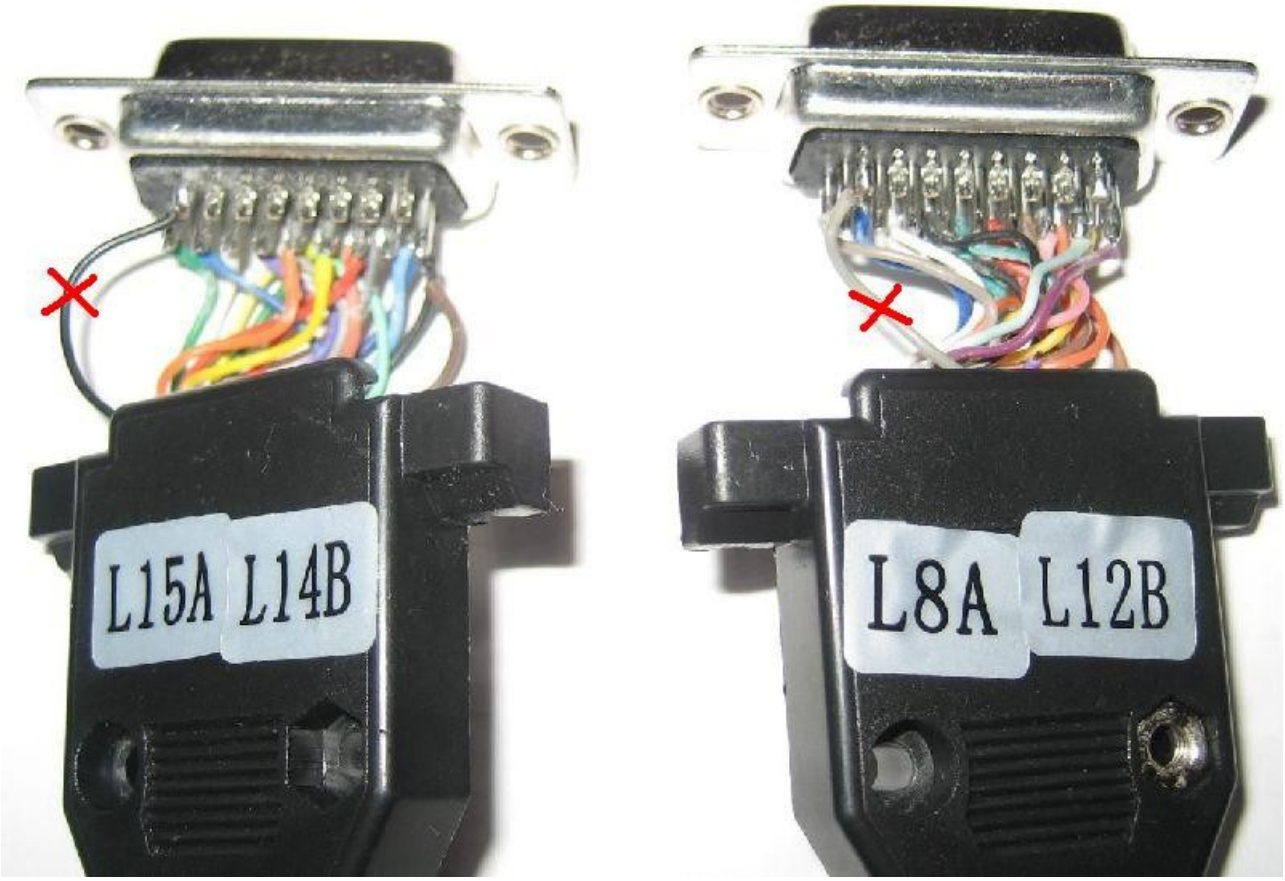


11. Now you can minimize (or close) PinFinder software and use found/selected pin configuration for work with any flashing/unlock software (f.e. "Infinity-Box Chinese Miracle").

Automatic pinout detection: Troubleshooting

If you have any problems with Rx/Tx pins detection, please, follow the next steps:

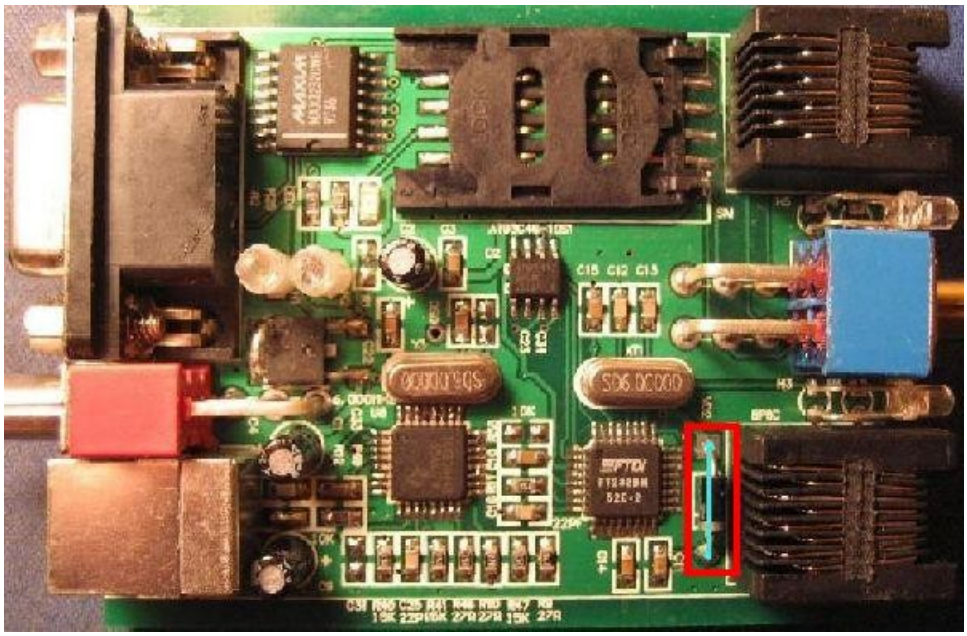
- Connect Unibox/Adapter directly to PC USB port, don't use any kind of USB-hubs
- Be sure that you have connected "Power" wires correctly (see previous chapters for detailed information about power cable connection)
- Be sure that cable connector inserted inside phone connector completely
- Be sure that phone bottom connector contacts is clean. Please, clear phone connector contacts if it's required.
- Be sure that phone bottom contacts is not damaged inside connector.
- Be sure that phone bottom connector well soldered to phone PCB (need to open phone and check it)
- Be sure that phone bottom connector contacts not cutted internally (need to open phone and check it)
- Be sure that phone has Rx and Tx pins on phone bottom connector. Some phones don't have Rx and Tx pins on bottom connector but has Rx/Tx test-points directly on phone PCB.
- Some cables from dufferent manufacturers may have additional unneeded wire that should be cutted for correct pinout detection/selection results. See picture below and cut wire according to marks on picture.

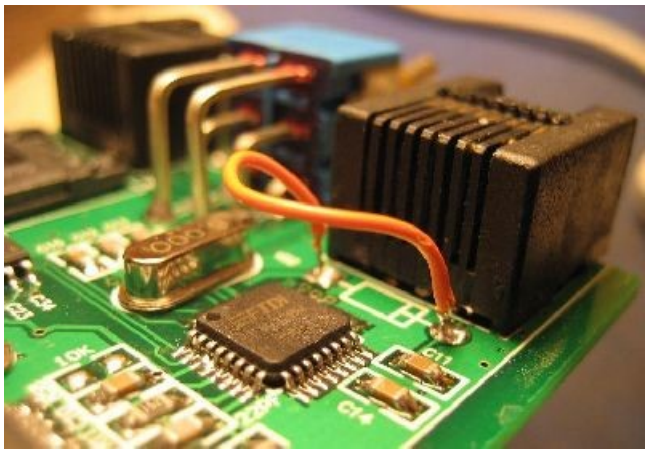


- In some cases it may be that voltage from PC USB port or from Unibox is not enough to make phone Powered-On. It's need to check **Unibox output RJ45 pin-1** (or **Adapter Input pin-8**) voltage with multimeter and be sure that voltage is about +5v. If voltage is less than 5v it's need to open **Unibox** and replace (or just short) output diode according to picture below (depends on Unibox type):

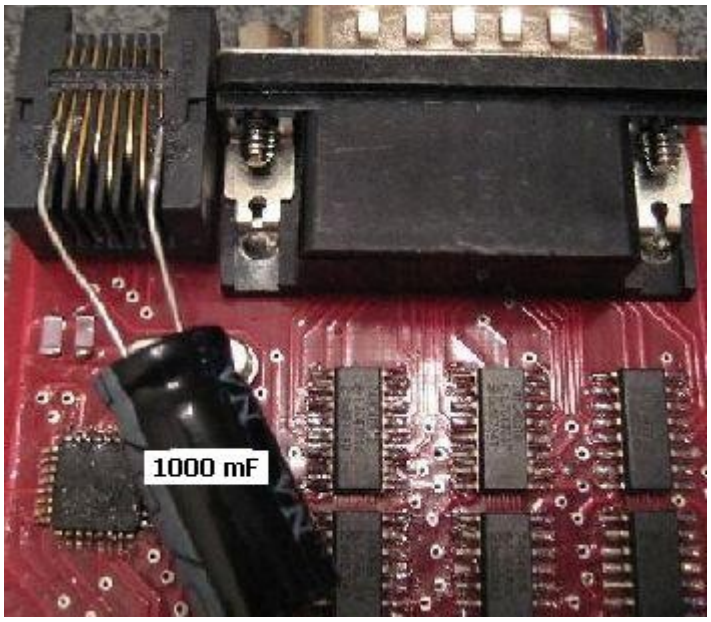
  "**Slim**" Unibox:

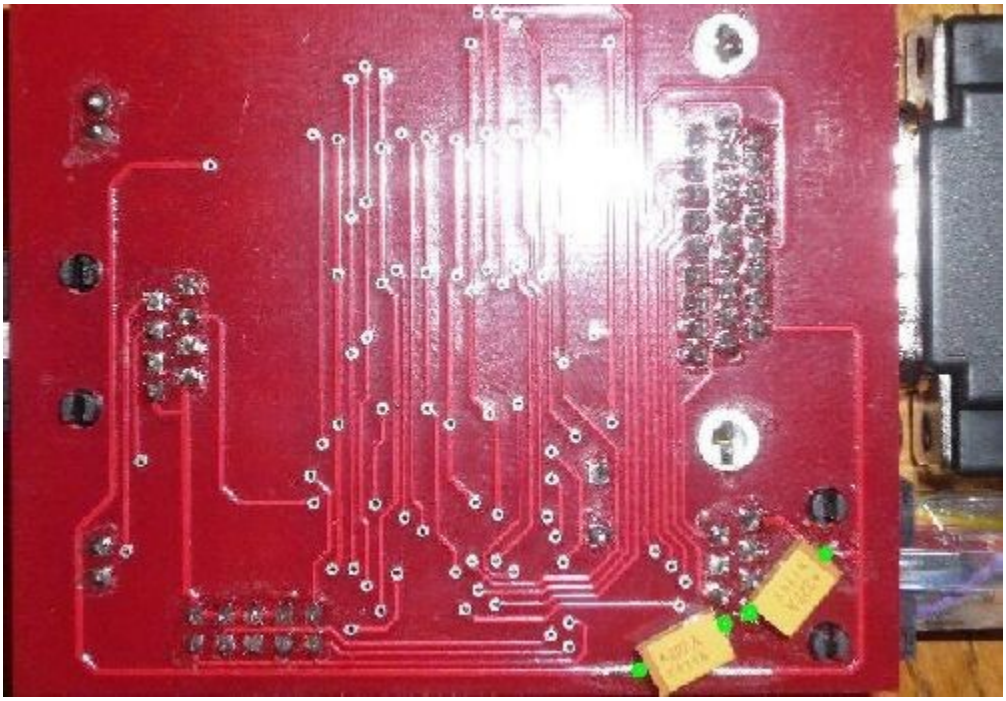
  "**Dual output**" Unibox:





- To improve power stability and avoid power problems for some phones it may be need to solder additional capacitor (f.e. 1000 - 2200 mF) to **Adapter** power line:

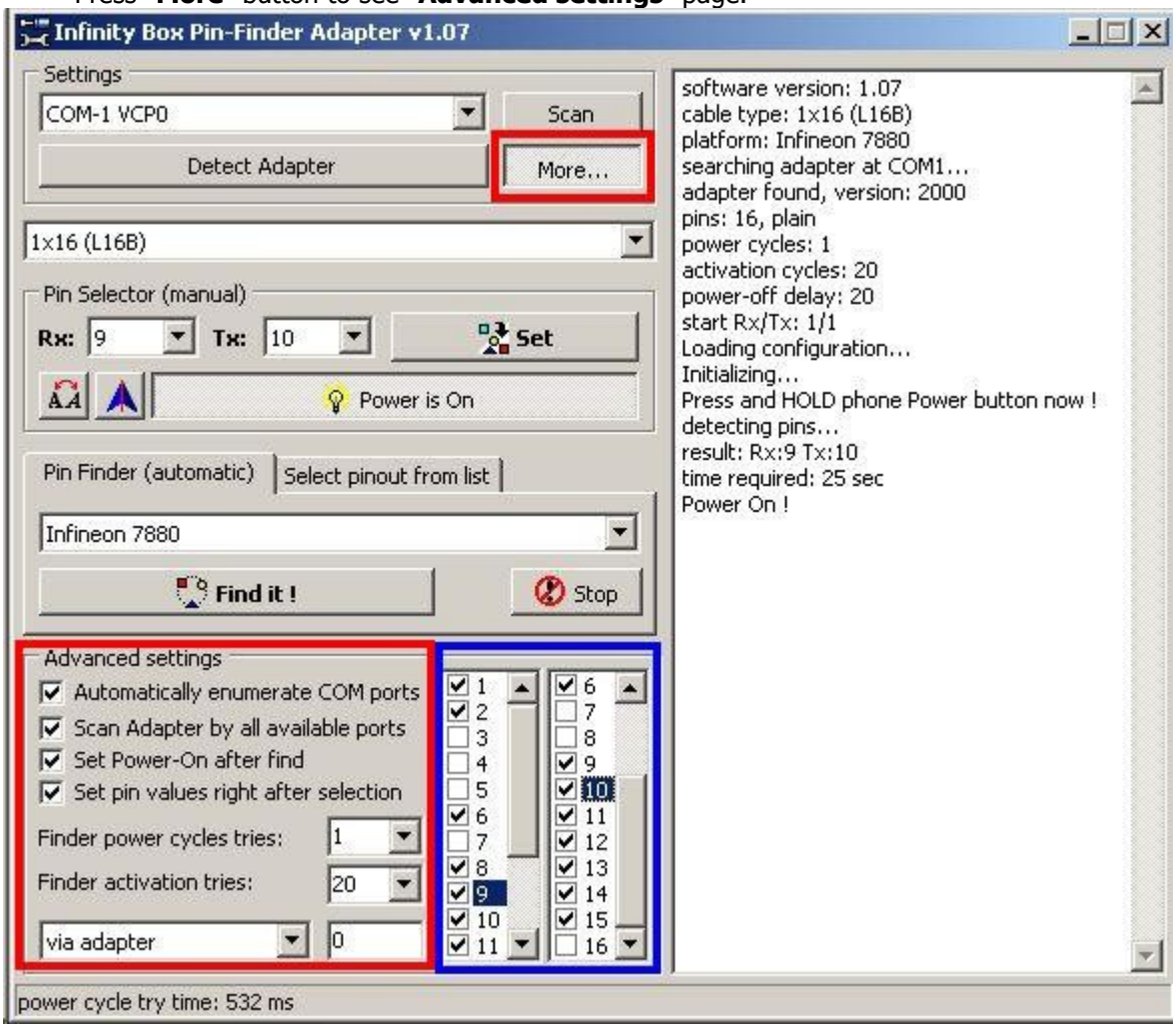




If you are sure that you have checked all above steps and you are sure that the problem is with PinFinder configuration, you can modify PinFinder configuration for best results. Default PinFinder configuration values was tested with many phones and found quite good (optimal values for good detection/performance results), but sometims you can try to change default values: it may be useful if pinout detection results was incorrect or it's impossible to detect Rx and Tx pins at all.

Advanced configuration

Press "**More**" button to see "**Advanced settings**" page.

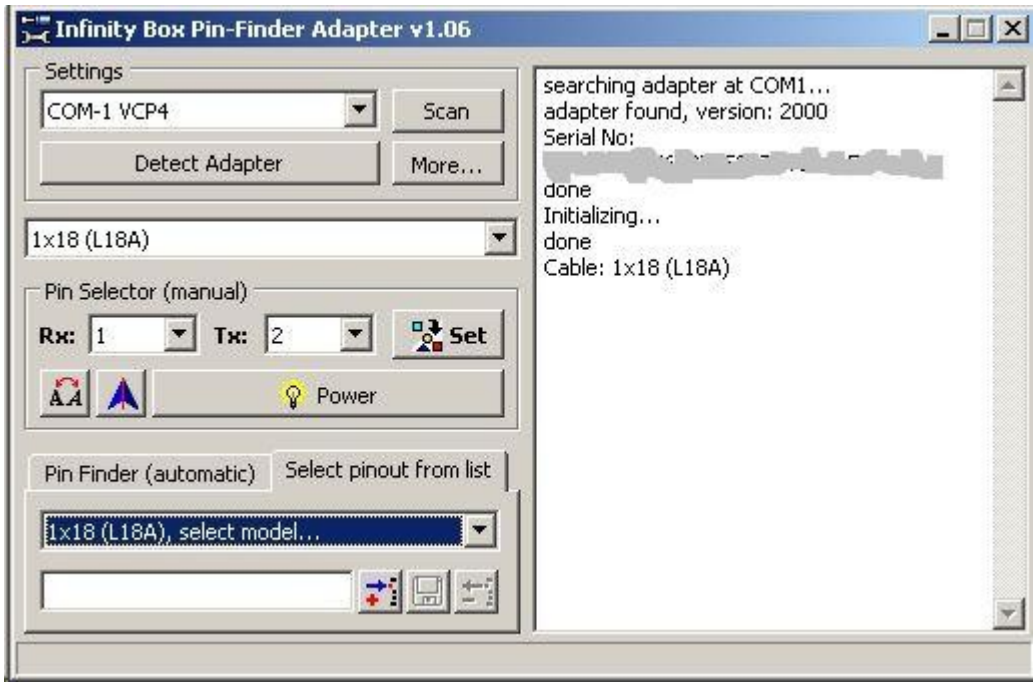


Parameter	Description	Affect to
Automatically enumerate COM ports	Detect all aviailable in system COM ports automatically.	Adapter detection time
Scan Adapter by all available ports	Try to find Adapter at selected COM port only or by all available in system COM ports.	Adapter detection time
Set Power On after find	To set or not to set "**Power**" state to On (enabled) after successful pinout detection.	Adapter configuration after pin detection finished
Set pin values right after selection	To set or not to set Rx (or Tx) pin value immediately after Rx (or Tx) pin was manually selected. If this option is disaled you need to press "**Set**" button each time to apply pin selction changes.	Manual pin selection
Finder Power cycles tries	Higher value make automatic pin detection process more slow, but make more detection passes and as a result can bring more stable results for some phones. Reasonable values: 1...3	Automatic pinout detection time/quality
Finder Activation tries	Higher value make automatic pin detection process more slow, but make more detection passes and as a result can bring more stable results for some phones. Reasonable values: 3...15	Automatic pinout detection time/quality
Pin Filter	Ordinary it's need to search Rx/Tx pins among all available pins, but in some cases	Automatic pinout detection

	(f.e. if some pins for sure is not Rx/Tx or it's need to find second Rx/Tx) it is possible to make automatic pinout detection by selected pins only. Right mouse click on Rx-filter or Tx-filter allow to select or clear all pins.	time/quality

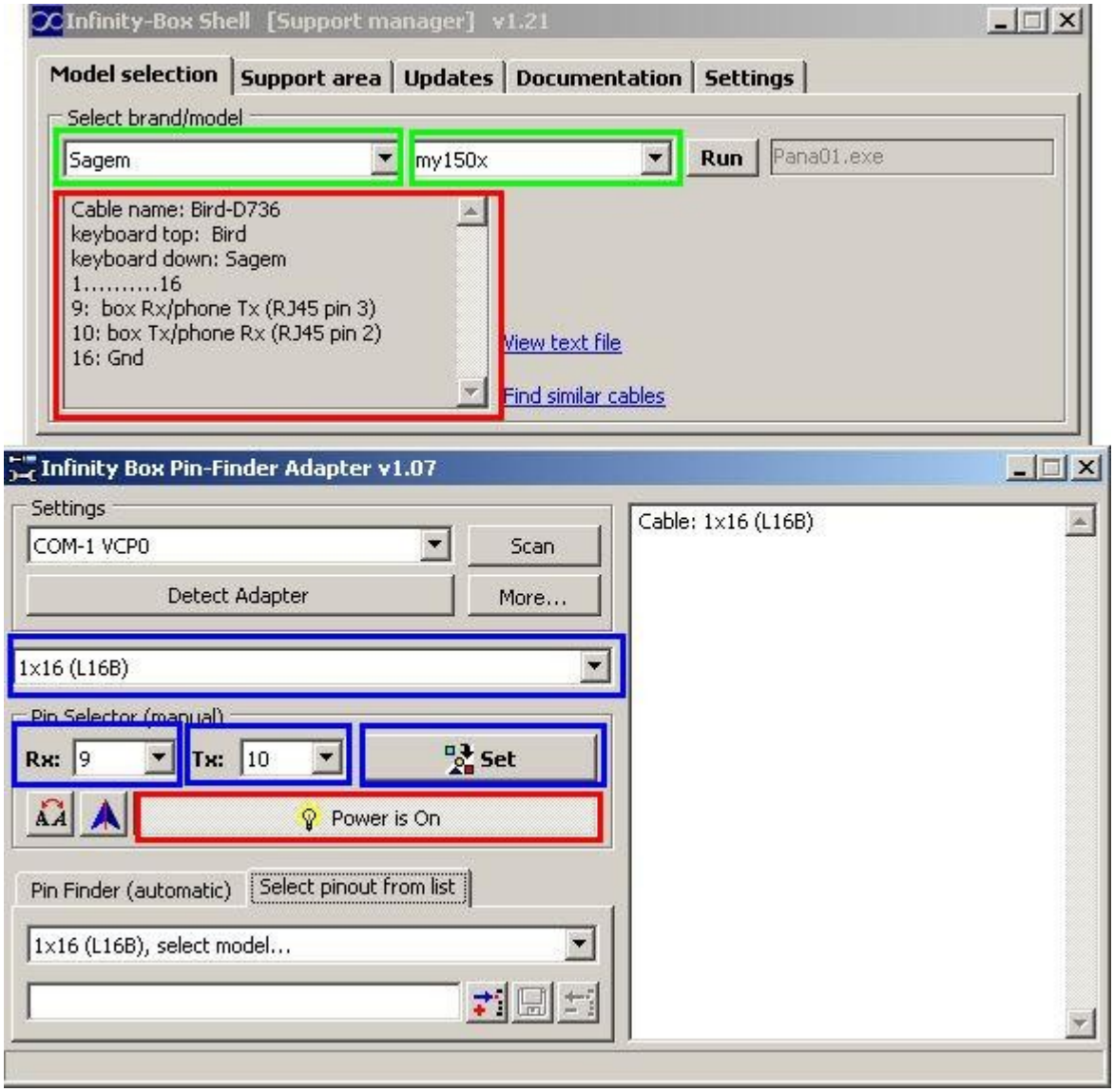
Manual pinout selection

In some cases it's need to set Rx/Tx pins and enable/disable Power in manual mode. After manual pin selection you can minimize (or close) PinFinder software and use found/selected pin configuration for work with any flashing/unlock software (f.e. "Infinity-Box Chinese Miracle").



Rx: 1	Select **Rx** pin manually Selected pin set as **Rx** after you press "**Set**" button or set immediately after selection if "***set pin values imediately***" is checked in "**Settings**" page.
Tx: 2	Select **Tx** pin manually Selected pin set as **Tx** after you press "**Set**" button or set immediately after selection if "***set pin values imediately***" is checked in "**Settings**" page.
Set	Set selected **Rx** and **Tx** pins
	Swap **Rx** and **Tx** pins
	Reverse/change pins order (f.e. for 18-pin connector change 1 <-> 18, 2 <-> 17, 3<-> 16 etc.) for fast change "**keyboard up**" and "**keyboard down**" numbering.
Power	enable/disable phone power (power cable)

Manual pinout selection: example



Use Infinity-Box Cable Selector (or documentation) and get Rx and Tx information:

```
1..........16
9:  box Rx/phone Tx (RJ45 pin-3)
10: box Tx/phone Rx (RJ45 pin-2)
16: Gnd
```

1. Connect Power cable to phone instead of battery
2. Connect **L16B** cable (due to total number of connector pins is **16**)
3. Select **L16B** cable in PinFinder Adapter software (according to connected cable)
4. Set Rx (box Rx/phone Tx) pin value to **9** (according to known pinout)
5. Set Tx (box Tx/phone Rx) pin value to **10** (according to known pinout)
6. Press "Power" button to enable phone power

In case of connection problems it may need to change pin numbering mode (reverse pin numbering) due to different phone connector soldering to PCB. To reverse pin numbering mode from **1.....16** to **16**.....1 (and vice versa) press "Reverse" button and then press "Set" button.

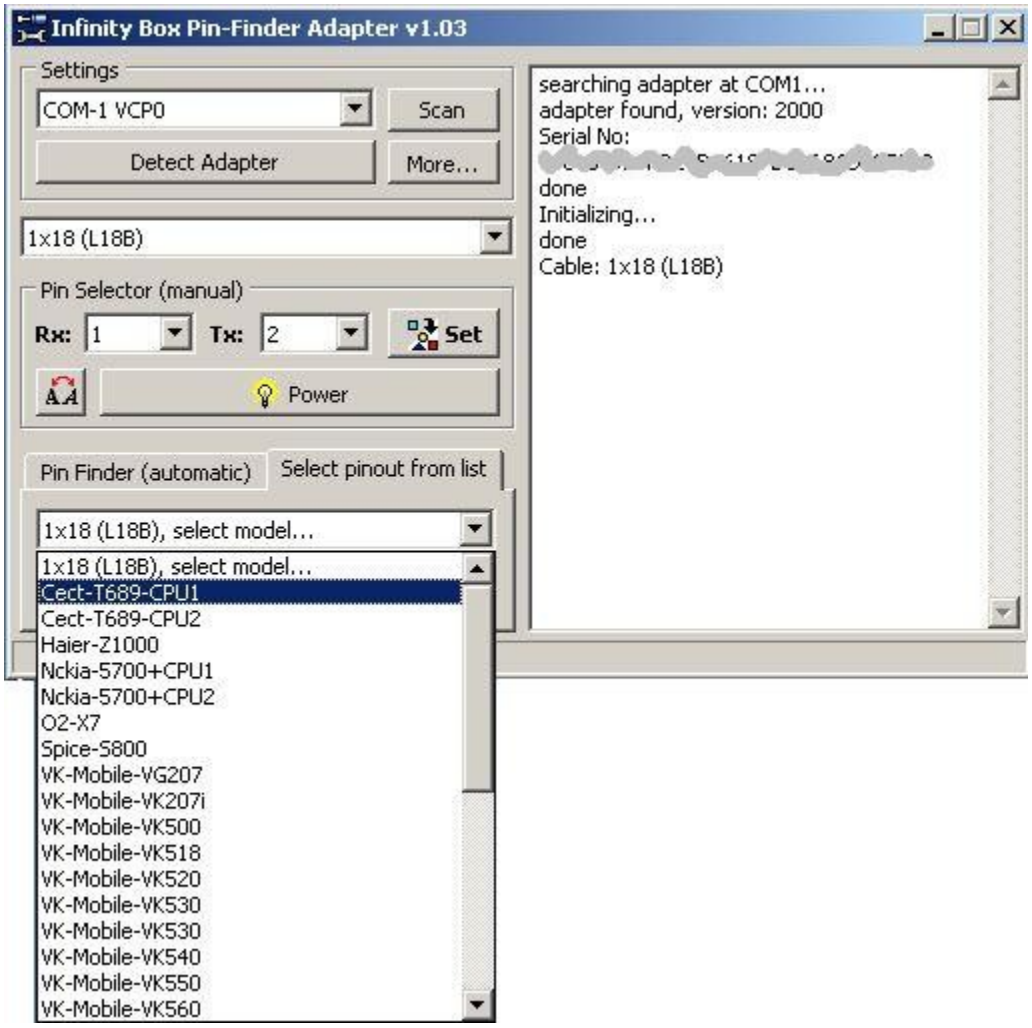
Pinout Database usage

General information

PinFinder softare has it's own database to store previously detected (or manually entered) pinouts. This option is very useful to save a lot of time and avoid automatic pinout detection for many well-known models.

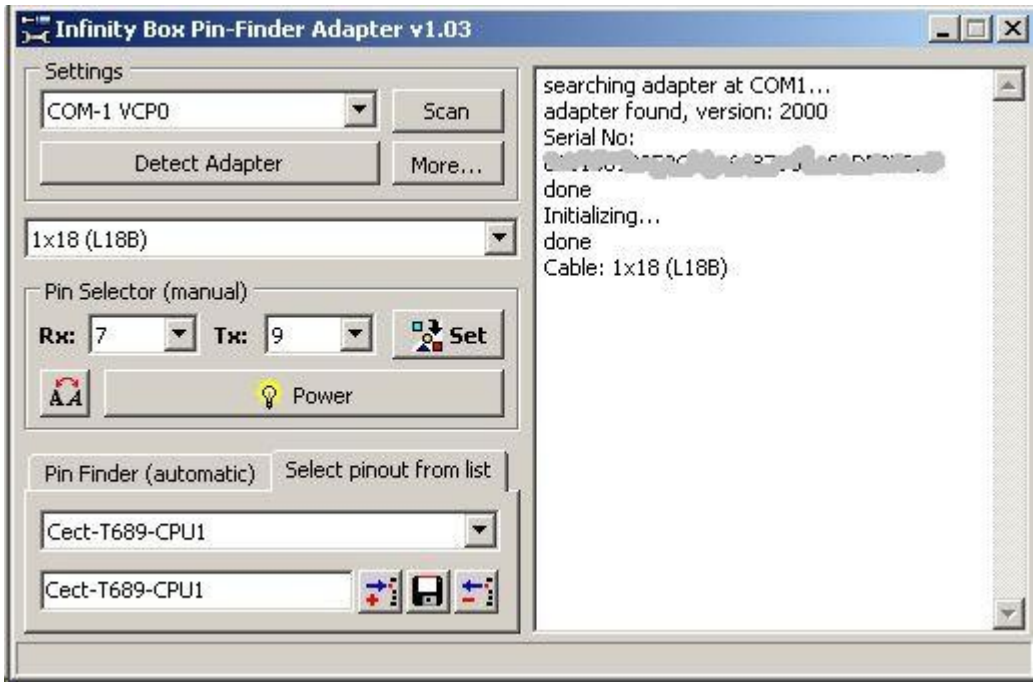
Initial database for some models supplied with PinFinder software and database can be used and modified by end user. Database is easy updatable.

Select model/pinout from database



1. Select required cable type
2. Go to “Select pinout from list” page
3. Select required model
4. Rx and Tx pin values for selected model will be set

Manage pinout database



	1. set Rx and Tx values 2. enter description text 3. press "**Add**" button to add new pinout/model description in database
	1. select model/pinout 2. modify pinout/model description 3. press "**Modify**" button to change new pinout/model description in database
	1. select model/pinout 2. press "**Delete**" button to delete new pinout/model description from database

Pinout database structure

Pinout database consist of two separate databases: factory and user database and stored in the folder with PinFinder software.

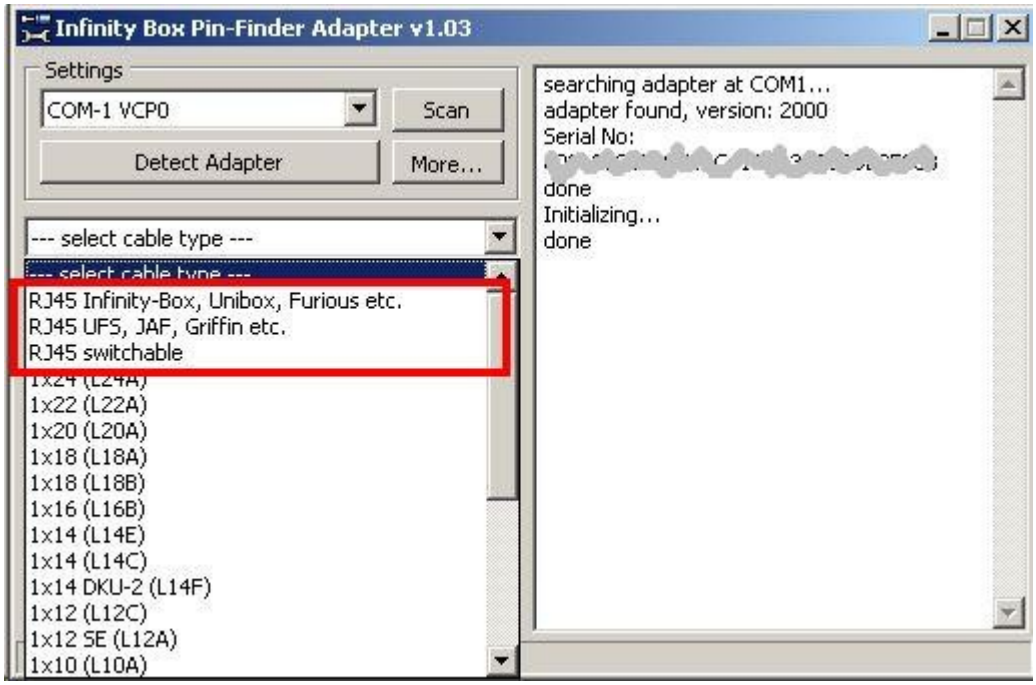
Factory database contain list of models and pinouts that was preinstalled and can't be modified by user.
Factory database stored in file: ***pinout_db_base.ini***

User database contain list of models and pinouts that was added/modified by user.
User database stored in file: ***pinout_db_user.ini***

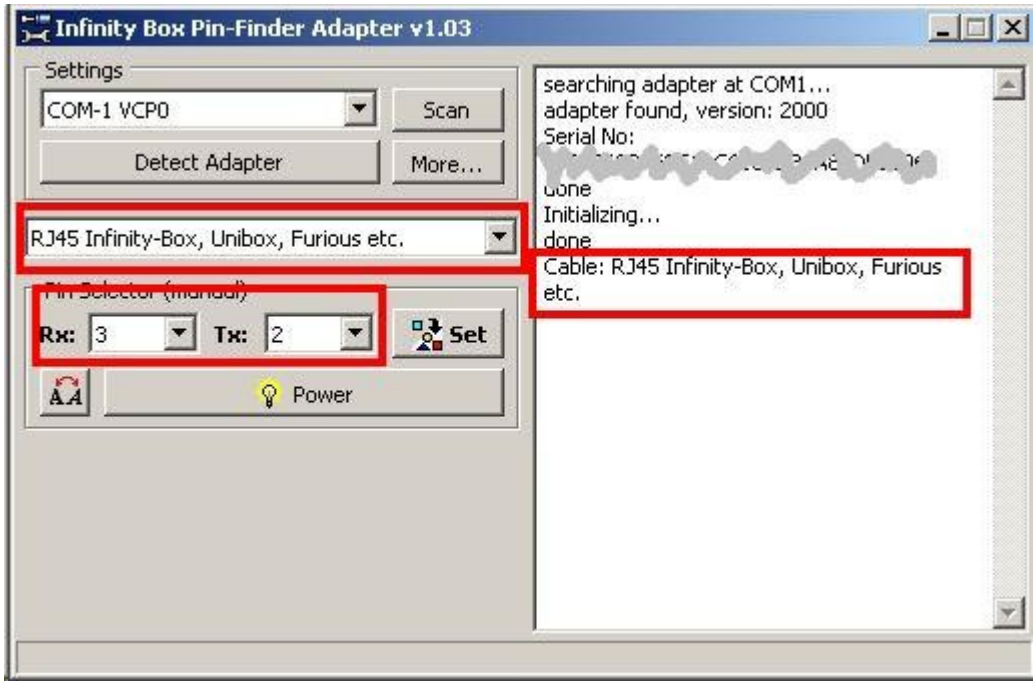
If you want to uninstall PinFinder software don't forget to save your own pinout database ***pinout_db_user.ini*** so you will be able to restore it manuall during future installation.

Different RJ45 cables usage: Infinity-Box, Unibox, ATM-Box, UFS, JAF etc.

RJ45 output #2 ordinary used as a power supply output, but there is a possibility to use it as a universal RJ45 output connector for different existing RJ45 cables. There are a pre-defined configurations to use existing well-known RJ45 cables (f.e. Infinity-Box, Unibox, UFS, JAF, Furious-Box etc.) with PinFinder Adapter:



RJ45 cables usage: Infinity-Box, Unibox, ATM-Box, Furious-Box etc.

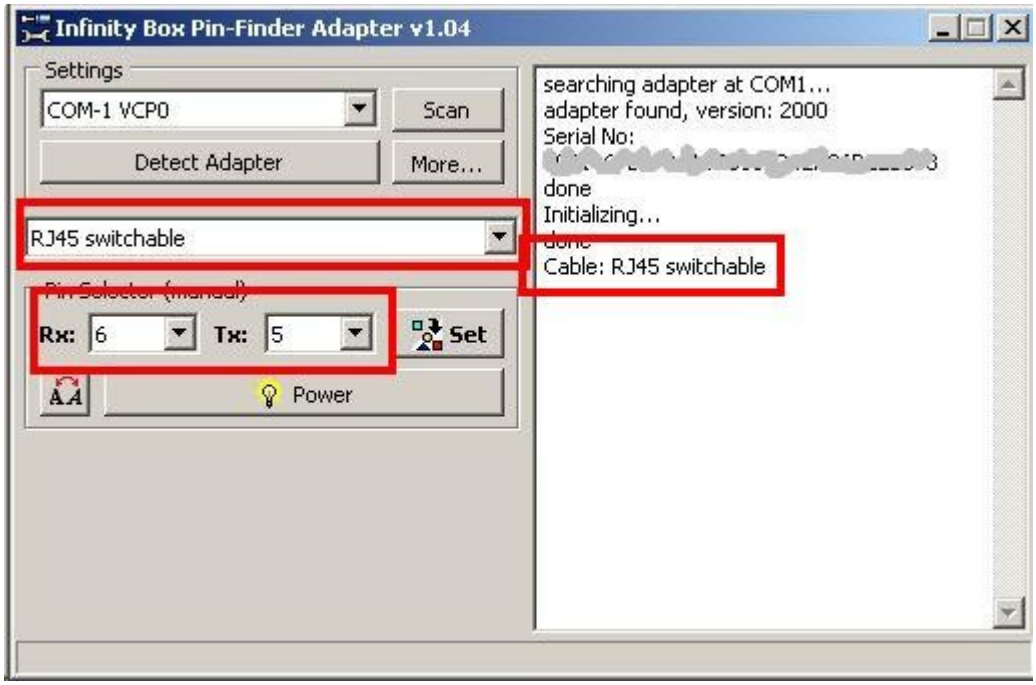


Select "RJ45 Infinity-Box, Unibox..." mode, connect RJ45 cable to **RJ45 output #2** and use it as ordinary.

RJ45 cables usage: UFS, JAF etc.

Select "RJ45 UFS..." mode, connect RJ45 cable to **RJ45 output #2** and use it as ordinary.

RJ45 cables usage: switchable configuration

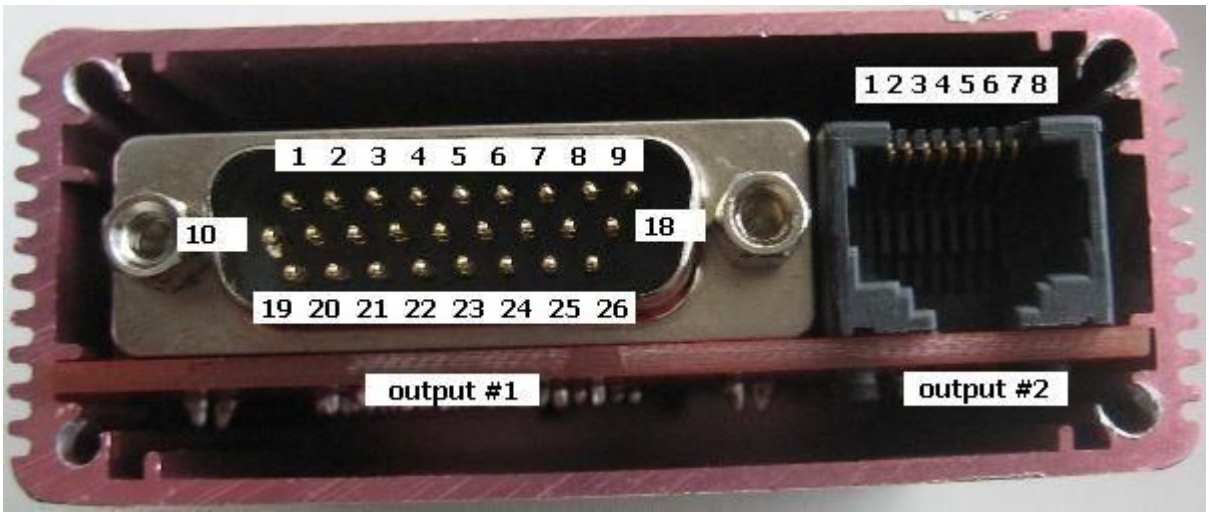


Select “RJ45 switchable” mode, connect RJ45 cable to **RJ45 output #2** and select any pins (some limitations exist, see **RJ45 output #2** pinout for more information).

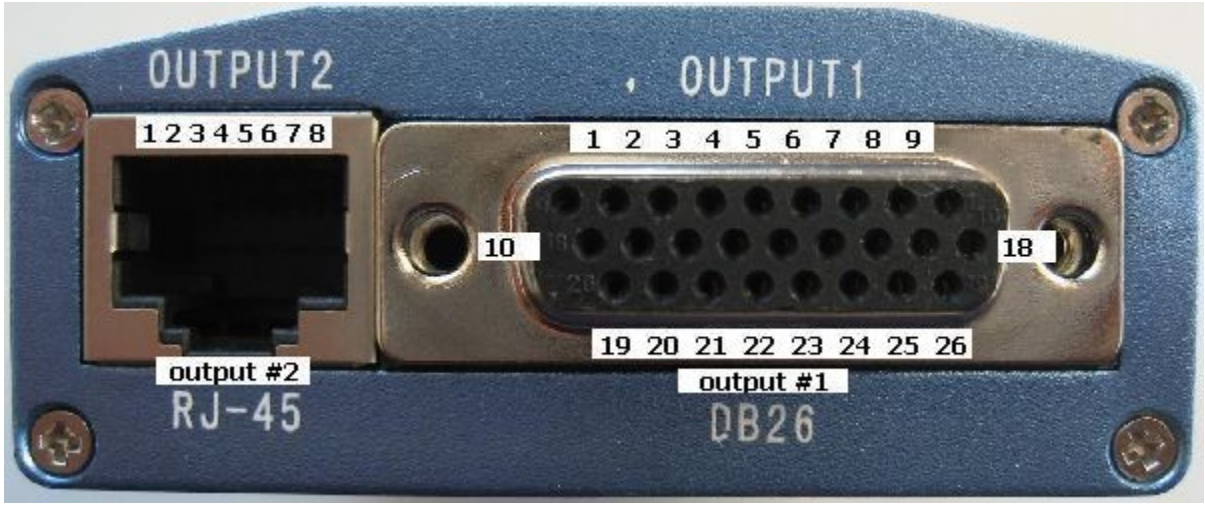
5. Appendix

PinFinder Adapter pinout

PCB hardware version 1.00



PCB hardware version 2.00



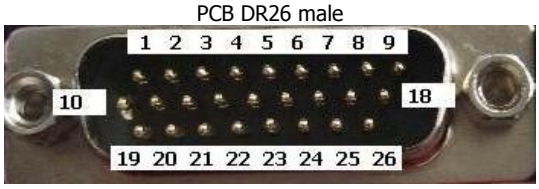
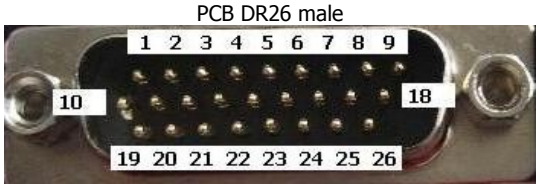
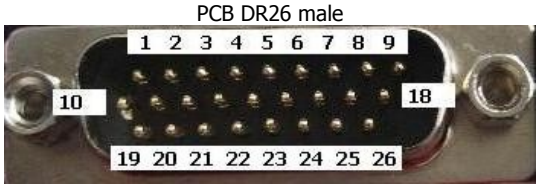
Input, RJ45, 8 pins	
1	Gnd
2	Gnd
3	N/C
4	N/C
5	RTS

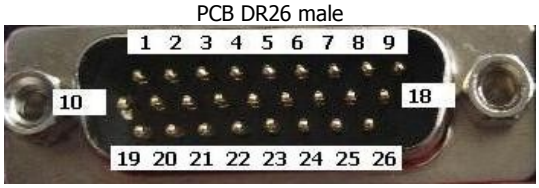
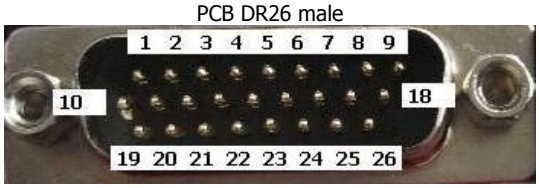
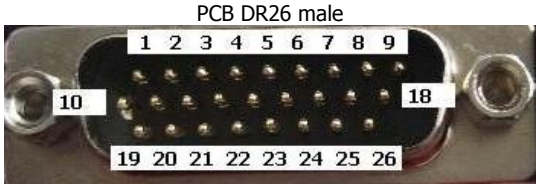
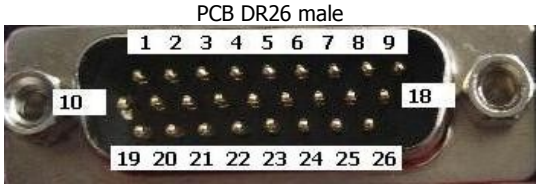
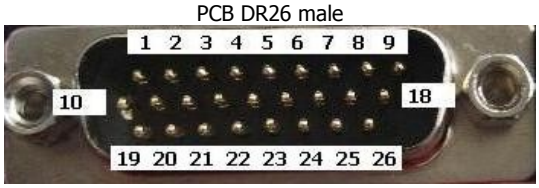
6	TXD
7	RXD
8	Vpp, power

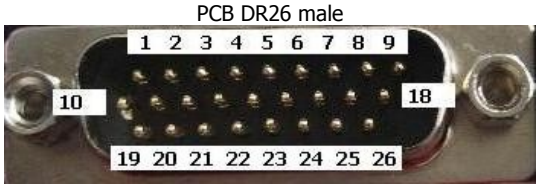
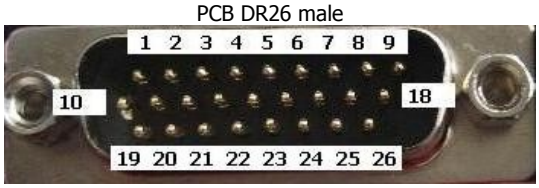
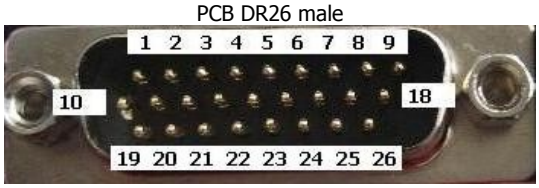
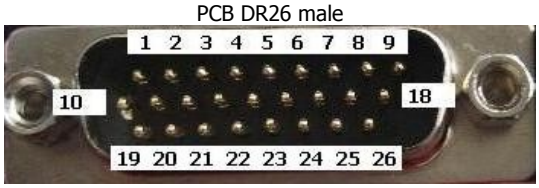
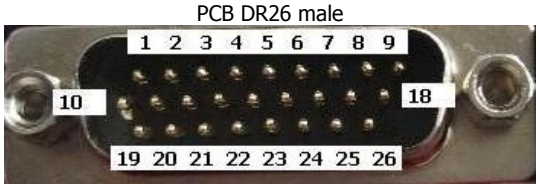
Output #1, DR26, 26 pins	
1…24	Rx/Tx switchable
25	Gnd
26	Vpp, power

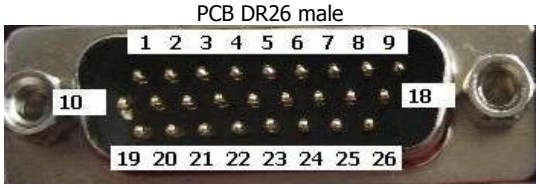
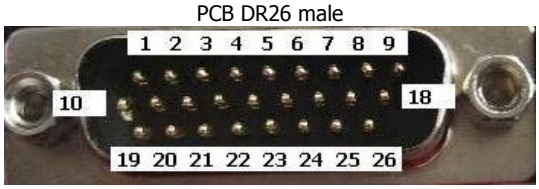
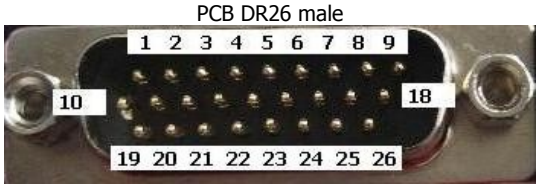
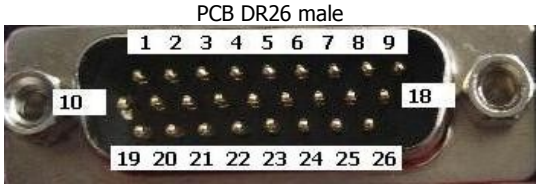
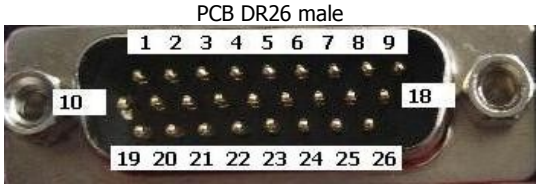
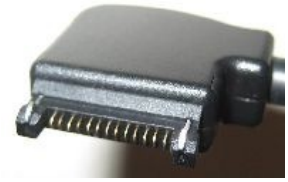
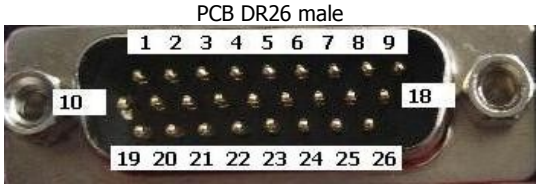
Output #2, RJ45, 8 pins	
1	Vpp, power
2…6	Rx/Tx switchable
7	Gnd
8	Gnd

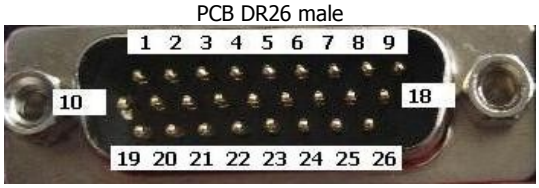
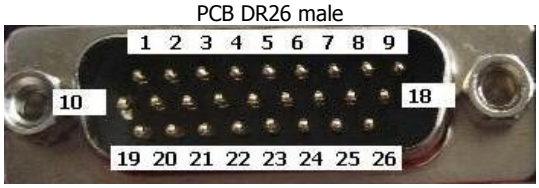
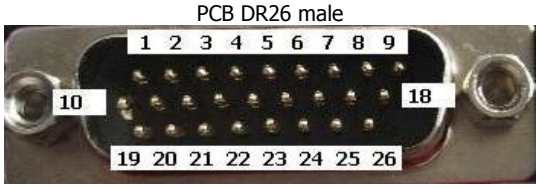
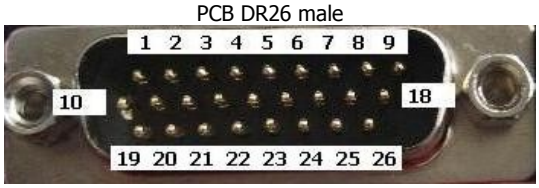
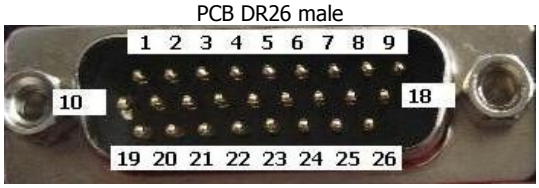
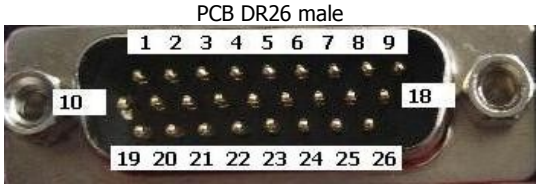
PinFinder Adapter DR26 to cable connection

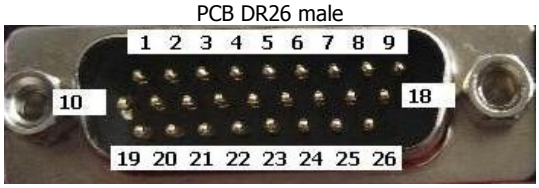
L3A	 1 2 3	PCB DR26 male 
L4A	 1 2 3 4	PCB DR26 male 
L4B	 1 2 3 4	PCB DR26 male 

L4C	 1 2 3 4	PCB DR26 male 
L5A	 1 2 3 4 5	PCB DR26 male 
L8A	 1 2 3 4 5 6 7 8	PCB DR26 male 
L10A	 1 2 3 4 5 6 7 8 9 10	PCB DR26 male 
L10B	 1 3 5 7 9 2 4 6 8 10	PCB DR26 male 

L10C	 1 3 5 7 9 2 4 6 8 10	PCB DR26 male 
L12A	 1 2 3 4 5 6 7 8 9 10 11 12	PCB DR26 male 
L12B	 1 3 5 7 9 11 2 4 6 8 10 12	PCB DR26 male 
L12C	 1 2 3 4 5 6 7 8 9 10 11 12	PCB DR26 male 
L12D	 1 2 3 4 5 6 7 8 9 10 11 12	PCB DR26 male 

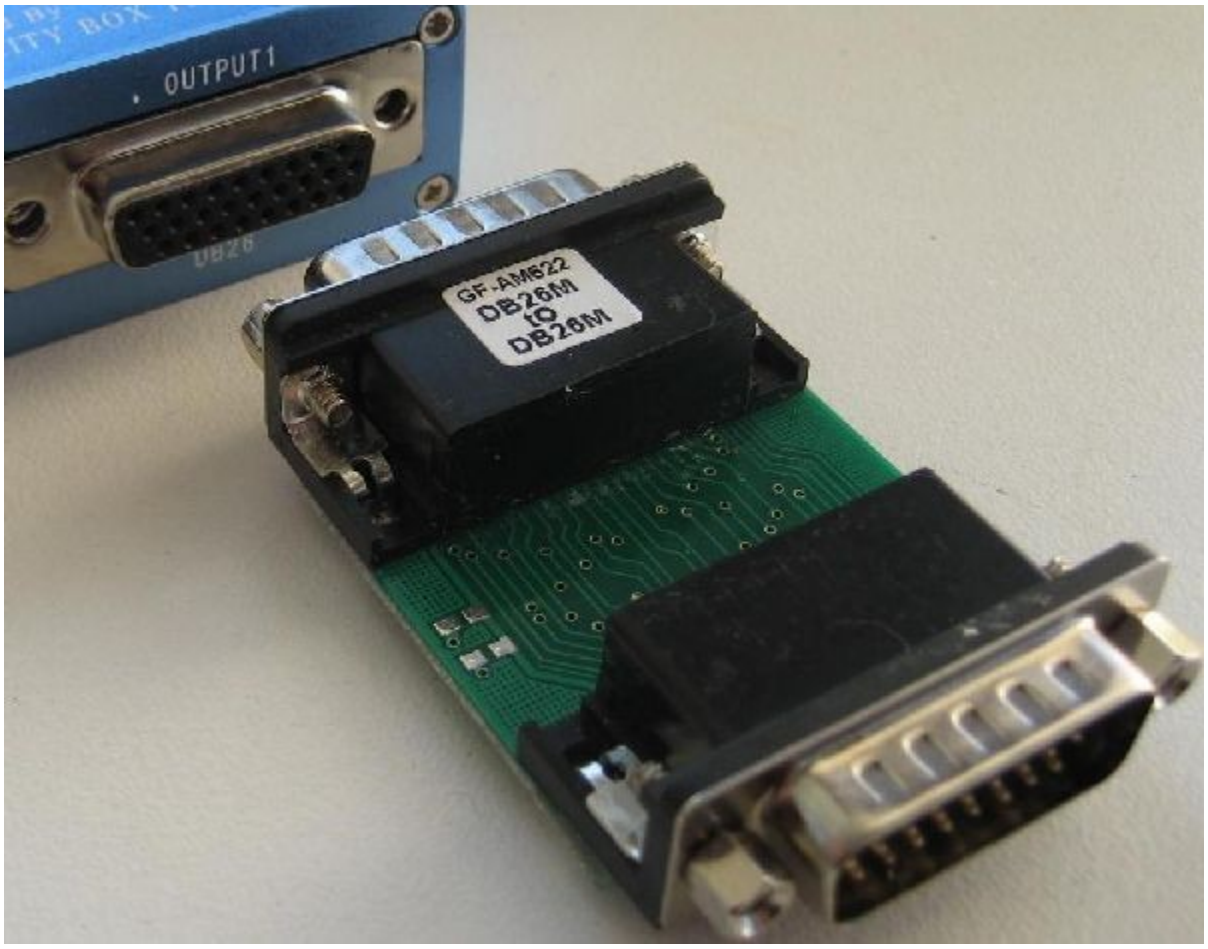
L14A	 1 3 5 7 9 11 13 2 4 6 8 10 12 14	PCB DR26 male 
L14B	 1 3 5 7 9 11 13 2 4 6 8 10 12 14	PCB DR26 male 
L14C	 1 2 3 4 5 6 7 8 9 10 11 12 13 14	PCB DR26 male 
L14D	 1 3 5 7 9 11 13 2 4 6 8 10 12 14	PCB DR26 male 
L14E	 1 2 3 4 5 6 7 8 9 10 11 12 13 14	PCB DR26 male 
L14F	 1 2 3 4 5 6 7 8 9 10 11 12 13 14	PCB DR26 male 

L16A	 1 3 5 7 9 11 13 15 2 4 6 8 10 12 14 16	PCB DR26 male 
L16B	 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16	PCB DR26 male 
L18A	 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18	PCB DR26 male 
L18B	 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18	PCB DR26 male 
L20A	 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20	PCB DR26 male 
L22A	 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22	PCB DR26 male 

L24A	 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24	PCB DR26 male 
		Free wires for direct soldering to PCB

PinFinder Adapter DB26-DB26 cable

Depends on PinFinder PCB type you may have DB26-DB26 cable in package for best compatibiliy with different DB26 cable types.



PinFinder Adapter to Unibox RJ45-RJ45 mirrored cable

There is no any special cross-connections, just a mirror cable, check wires colors on picture below for more details:

Note ! Do not use any kind of RJ45 network cables, use only RJ45-RJ45 mirrored cable !