DataApex
Clarity™
CHROMATOGRAPHY SOFTWARE

MULTICOM

Clarity Hardware ENG

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DataApex Ltd.
Petrzilkova 2583/13
158 00 Prague 5
Czech Republic

Phone: +420 251 013 400
clarity@dataapex.com
www.dataapex.com

Author: zte

Contents

To facilitate the orientation in the MultiCOM manual and Clarity chromatography station, different fonts are used throughout the manual. Meanings of these fonts are:

Open File (italics) describes the commands and names of fields in Clarity, parameters that can be entered into them or a window or dialog name.
WORK1 (capitals) indicates the name of the file and/or directory.
ACTIVE (capital italics) marks the state of the station or its part.
Chromatogram (blue underlined) marks clickable links referring to related chapters.

The bold text is sometimes also used for important parts of the text and the name of the Clarity station. Moreover, some sections are written in format other than normal text. These sections are formatted as follows:

Note: Notifies the reader of relevant information.

Caution: Warns the user of possibly dangerous or very important information.

Marks the problem statement or trouble question.

Description: Presents more detailed information on the problem, describes its causes, etc.

Solution: Marks the response to the question, presents a procedure how to remove it.

1 MultiCOM converter

This manual describes the use of the **MultiCOM** USB to RS232 converter.

MultiCOM is a device which connects to the PC via the USB port and provides 6 serial 9-pin ports to the computer. It is also equiped with a free USB port for the connection of the HW key.

MultiCOM converter has been developed for the handling of devices in the LC and GC systems controlled via the RS232 serial interface. When connected to a standard PC, the **MultiCOM** needs no power supply (it is powered from the **USB**), but can also be powered (if needed) from the external power supply adapter.

Fig. 1: MultiCOM - face

The side panel contains two **USB** connectors (one for the connection to the PC, the other for the **HW** key) and the power supply connector. The front panel contains six standard serial 9-pin (plug) ports, each with its own LED communication state indicator.

1.1 Side panel

Fig. 2: Side panel

Green LED status:

- **No light** – not connected to **USB**, the driver is not installed or is in suspend mode.
- **Continual light** – idle state, no communication.
- **Blinking 10100000** (two short consecutive blinks) – only sending data (from the **USB** to the COM port).
- **Blinking 01011111** (two short consecutive drop-outs in the continual shine) – only receiving data (from the COM port to the **USB**).
- **Blinking 1:1** (2 Hz frequency) – both sides are in communication, receiving and sending data.

1.2 Brief technical overview

- 6 RS-232 (non-isolated fully configurable serial ports DB9M).
- 1 **USB** port for the **HW** key (or another device with low power consumption).
- 1 **USB** port for connection to the PC.
- Powered from **USB** or external power supply.
- **USB** ports has USB-A connectors and are fully compliant with USB Spec Rev 1.1.

2 Requirements

- The **MultiCOM** converter can be used on any PC with the following operating systems: **MS Windows 11/10/8.1/7/Vista/XP/2000** (incl. the **64-bit** Windows **11, 10, 8.1, 7**).
- The PC must have a free **USB** port (either USB 1 or USB 2 port).

Caution: It is highly recommended to connect the **MultiCOM** converter directly to the PC (not via **USB** hubs etc.)

3 Installation

Ensure that you have **Administrator** access rights in your Windows OS before you proceed with the installation.

Caution: It is necessary to run the pre-installer before the installation (at the time of the first connection of the **MultiCOM** device) to the computer.

There are two possibilities how to install the **MultiCOM** pre-installer into the PC:

- as a part of the **Clarity** installation or
- separately as a standalone product

Note: Created COM ports are numbered from the first unused COM number (usually COM3).

3.1 The MultiCOM Converter with Clarity

- Install **Clarity** from the **Clarity** installation media.

Clarity ver. 8.2 and newer:

- MultiCOM driver is part of the *Typical* and *Full* installation. In case you are installing *Custom* installation in the *Choose Component* dialog, unfold the *Utils* section and check the **Multicom** driver.
- Continue with the installation process.

Clarity from ver. 2.7 to 8.1:

- Either choose the **FULL** installation which installs appropriate drivers by default or on the *Choose Components* screen unfold the *Utils* section and check the **Multicom** driver.
- Continue with the installation process.

Clarity ver. 2.6 and older:

- When selecting the type of installation, choose *Custom*.
- On the next screen, the **Utils** section (on the bottom of the list) is checked and grayed. Select it and click the *Details...* button.
- In the available selection, check the checkbox next to the **MultiCOM drivers** item and press the *OK* button. Follow the installation process to its end.
- Connect the **MultiCOM** device to the PC via the supplied **USB** cable. “Found New Hardware” message will appear on the Windows taskbar and the LED diodes on the **MultiCOM** will slowly start to light up. Wait until all shine and

the taskbar displays the message “New hardware is installed and ready to use”.

3.2 The MultiCOM Converter without installing Clarity

- Install the pre-installer found on the **MultiCOM** installation media (run the DPINST.EXE file).

Caution: Install the pre-installer before plugging in the **MultiCOM** device.

Note: The **MultiCOM** pre-installer on the **Clarity installation media** can only be used during the installation of the **Clarity** software. If new installation/re-installation is needed, the **MultiCOM installation media** should be used instead or the driver should be downloaded from the **DataApex** web pages *www.dataapex.com*.

- Connect the **MultiCOM** device to the PC via the supplied USB cable. "**Found New Hardware**" message will appear on the Windows taskbar and the LED diodes on the **MultiCOM** will slowly start to light up. Wait until all shine and the taskbar displays the message "New hardware is installed and ready to use".

4 Troubleshooting

Unplugging the MultiCOM device from the PC while the PC runs may cause the computer to crash in Windows 2000 operating system with the Service Pack installed.

Solution: Unplug the **MultiCOM** from the **USB** only after the PC has been turned off.

4.1 Reinstalling - MultiCOM

Normally the drivers are installed with the **FULL** installation option of **Clarity**. In case they have not been installed, **MultiCOM** will not function properly.

"Windows found driver for your device but encountered an error while attempting to install it. The system cannot find the path specified."

Description: This error message occurs when drivers for **MultiCOM** device have not been installed and will not function properly.

Solution: Unplug the **MultiCOM** and plug in again. If this does not solve the problem follow the steps below to reinstall/update the **MultiCOM** drivers:

- Locate the item in *Device Manager*. Notice that drivers which are not correctly installed have a warning sign next to them as seen in **Fig. 3** on pg. **7**.

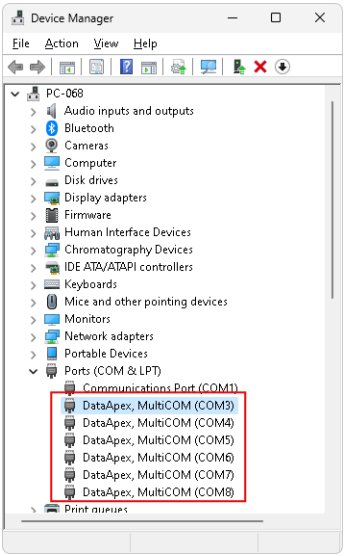

Fig. 3: Device Manager Window

- Right mouse click the item (e.g. *DataApex, MultiCOM (COM11)*) and select *Properties*. Dialog showing details about the driver will be opened. On the *Driver* tab, select *Update Driver...*

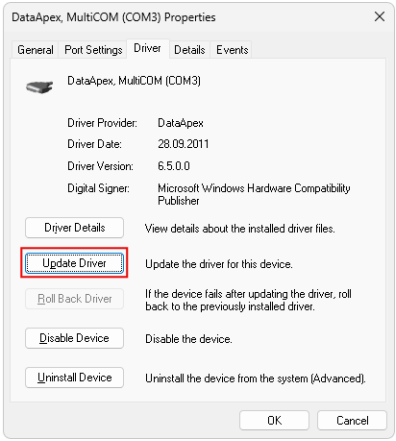

Fig. 4: Dialog for driver properties

- Select *"Browse my computer for driver software"* option.

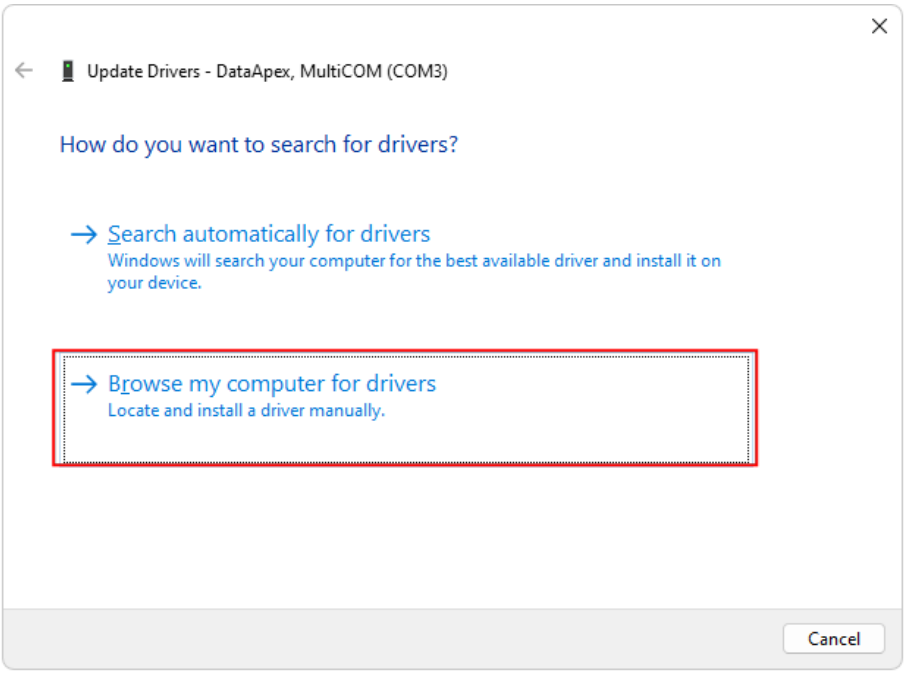

*Fig. 5: **Dialog for browsing drivers***

- Select *"Let me pick from a list of device drivers on my computer"* option.

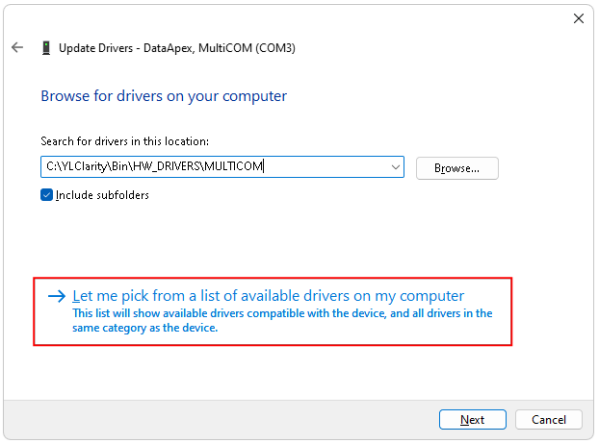

*Fig. 6: **Dialog for driver properties***

- Select *"Have Disk"* option.

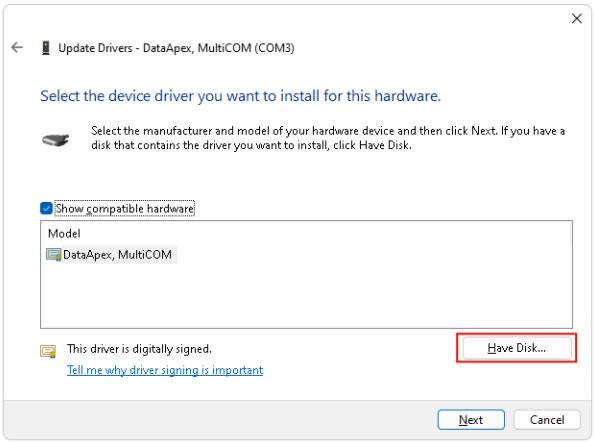

*Fig. 7: **Dialog for selecting device driver***

- Locate the driver in the installation directory, HW_DRIVERS\MULTICOM subfolder and press 2x *Open*.

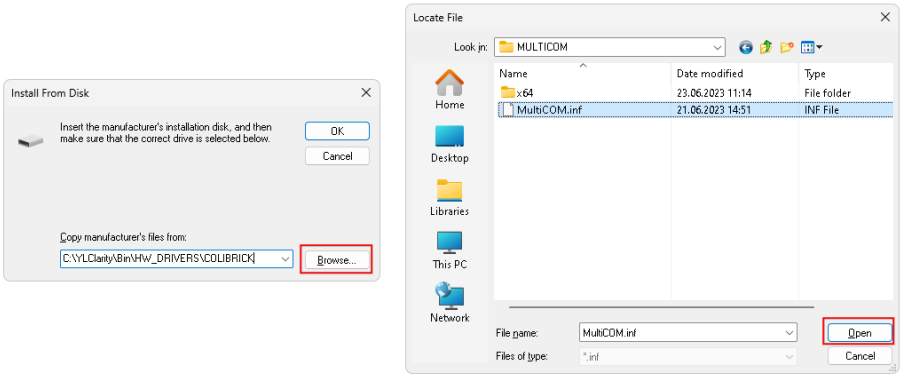

*Fig. 8: **Dialog for locating the driver Setup Information filetype***

- Finish the reinstallation by pressing the *Next* button

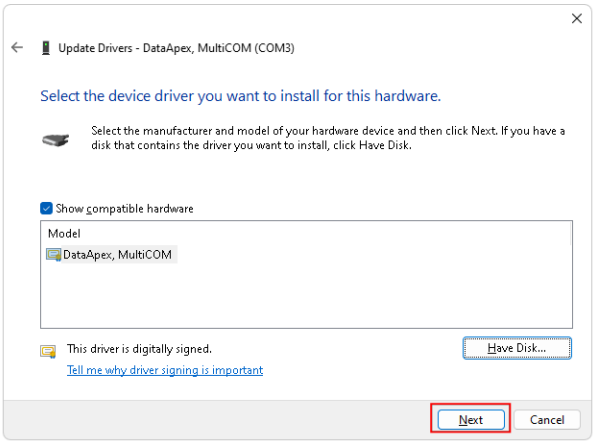

Fig. 9: Dialog for finishing driver reinstallation.

- Upon successful reinstallation of drivers for **MultiCOM** you will be presented with dialog as seen in **Fig. 10** on pg. **11**.

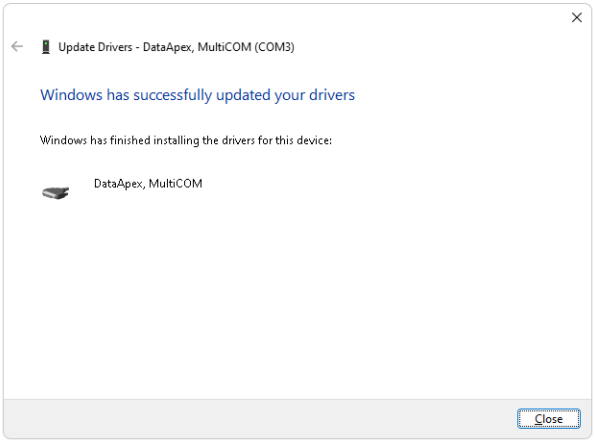

Fig. 10: Successful reinstallation of a MultiCOM driver.

- **Repeat the aforementioned steps for any other non-functional drivers**.

Caution Reinstall/update of drivers may result in assigning a different COM number, for correct communication with **Clarity** check the appropriate setup.

- If you encounter any difficulties, please contact **DataApex** Support (www.dataapex.com).

4.2 Changing COM port assignment

In case there is a need to change the **COM** port assignment of the **MultiCOM** device, it can be done via the *Device Manager*.

Changing the assigned COM port number.

Description: In some cases when a new **USB** device is plugged into the **USB** port a new **COM** port is assigned to it. Some drivers do not support **COM** port numbers higher than 100.

Solution: To change the assigned **COM** port follow the steps bellow:

- Go to *Device Manager* and locate the item where you want to change the assigned COM port. Right mouse click the item (e.g. *DataApex, MultiCOM (COM8)*) and select *Properties*. Dialog with details about the driver will be opened. On the *Port Settings* tab click on *Advanced* button.

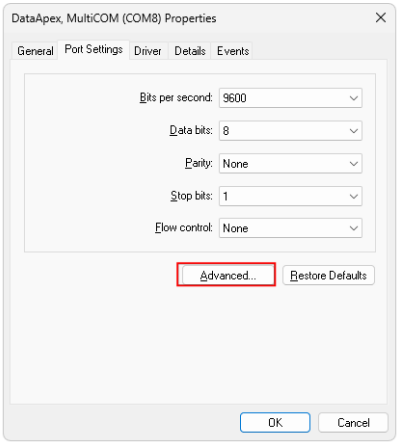

Fig. 11: Device Manager - Port Settings tab

- **Fig. 12** on pg. **13**. displays the *Advanced Settings* for specific **COM** port.① To change **COM** port from the default, choose a **COM** port at ② using the drop-down list.

Note Already assigned **COM** ports have next to the **COM** port number inscribed "(in use)". Assigning **COM** port that is already "(in use)" may result in malfunction and will trigger a message as seen in **Fig. 13** on pg. **13**.. Clicking **Yes** will change the **COM** port to the selected one from the drop-down list. It is advised to assign only free **COM** ports i.e. **COM** ports not followed by "(in use)".

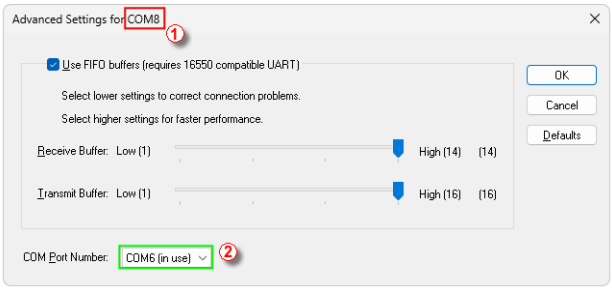

Fig. 12: Advanced Settings

- Clicking *OK* will change the assignment of the selected **COM** port to the selected one from the drop-down list.

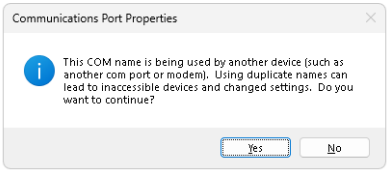

Fig. 13: Message of assigning already used COM port

- Once the **COM** port has been successfully changed you can locate the new assigned **COM** port in the *Device Manager*.
- To change the assignment of other **COM** ports, repeat previous steps.

4.3 How to clean up COM ports that are "(in use)"

Over time it may happen that excessively large number of **COM** ports is "in use".

Cleaning up the COM ports that are in "(in use)".

Description: When **COM** port number is above 100, e.g. **COM120**, it may happen that the communication between **MultiCOM** device and **Clarity** will not work. This is caused by the fact that most control modules do not support **COM** port higher than 100.

Solution: Before manually assigning the **COM** ports as described in the chapter **"Changing COM port assignment"** on pg. **12**. You will first need to clean up the **COM** ports " (in use)". Follow the steps below:

- In the *Start* menu, type **regedit** and hit enter. You will be prompted with a message: "Do you want to allow the following program to make changes to this computer?" After clicking *Yes*, window as seen in **Fig. 14** on pg. **14**. will be opened.

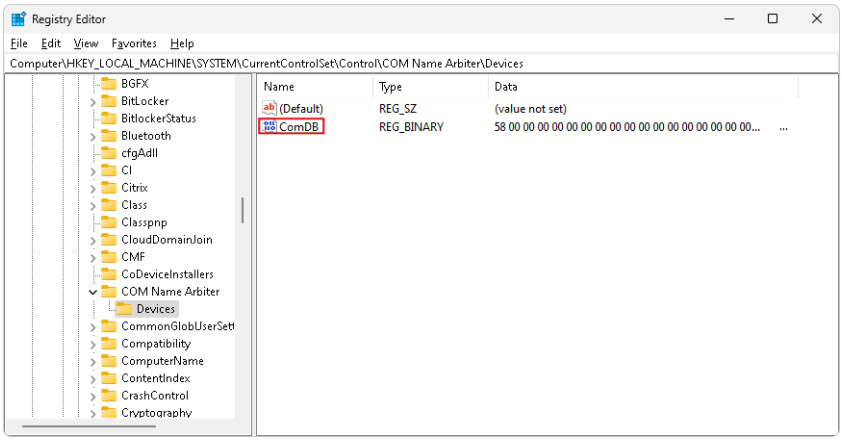

Fig. 14: Registry Editor

- Navigate to *Computer\HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Control\COM Name Arbiter*
- Right mouse click on the **ComDB** name and select *Modify*.... You will be presented with similar data as in **Fig. 15** on pg. **14**.

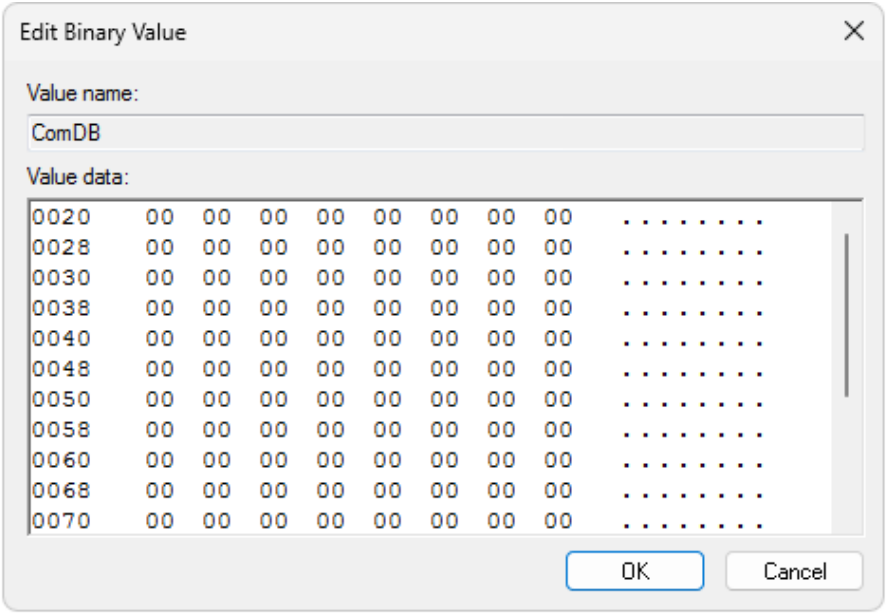

Fig. 15: Registry Editor - modifying ComDB

- *Select* all the data in the field *Value data* and **delete** them manually. Click *OK*. When you try to *Modify...* the **ComDB** again you should be presented with cleaned up window as seen in **Fig. 16** on pg. **15**..

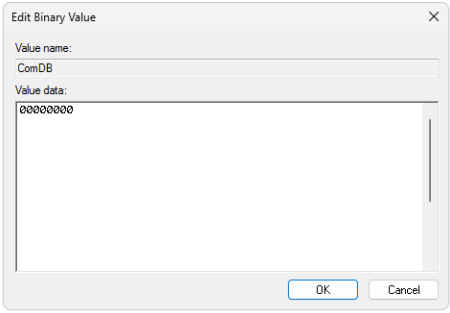

Fig. 16: Registry Editor - cleaned up ComDB

- After cleaning up the **COM** ports you need to restart your **PC**.
- After the restart all the **COM** ports should be free.
- To assign a different **COM** port, see the chapter **"Changing COM port assignment"** on pg. **12**.

5 Tables and specifications

Description of the DB9M connector

The particular pins of the **MultiCOM** DB9M connectors are used as follows:

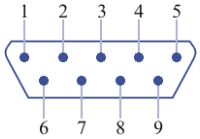

Fig. 17: DB9M connector scheme

Tab. 1: Description of the connector pins:

Pin	Name	Direction	Description
1	CD	←	Carrier Detect
2	RXD	←	Receive Data
3	TXD	→	Transmit Data
4	DTR	→	Data Terminal Ready
5	GND		System Ground
6	DSR	→	Data Set Ready
7	RTS	←	Request to Send
8	CTS	←	Clear to Send
9	RI	←	Ring Indicator

Tab. 2: Complete possibilities of channel configuration:

Parameter	Value
Data Bits	5, 6, 7 or 8
Stop Bits	1, 1.5[a] or 2
Parity Type	None, Even, Odd, Mark, Space
Baud Rates	300, 600, 1200, 1800, 2400, 4000, 4800, 7200, 9600, 14400, 16000, 19200, 28800, 38400, 51200, 56000, 57600, 64000, 76800, 115200, 128000, 153600, 230400, 250000, 256000, 460800, 500000, 576000, 921600[b]

Notes:

a – 5-bit only

b – 7 or 8 data bits only

Tab. 3: Technical data:

Parameter	Value
Converter type:	USB to RS232
Number of COM ports:	6, unisolated

Parameter	Value
USB ports:	1 port to the PC, 1 free port for the HW key or other low consumption device
USB port connectors:	USB-A
Dimensions:	120 x 105 x 22 mm
Weight:	280 g
Power supply:	from the PC via the USB cable or external: stabilized 6V/0.5A
External power supply connector:	plug 1.3mm (outer diameter 3.4 or 3.5 mm)