



ARB-0612
Converter
USB – RS 232/422/485/485-4W/TTL
Manual

ARB-0612_v1_01

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Symbols & Marks



Advice

It suggests activities that help solve the problem and / or diagnose it. Their implementation is not obligatory and does not affect the correct functioning of the device.



Attention!

Important information or action relevant to the correct operation of the device. The implementation is not obligatory. It will not cause any hazards for people and device. The only effect of non-use may be incorrect operation of the device.



Warning!

Indicates important actions that incorrectly performed could result in danger to the operator and / or damage to the device.

General installation and safety rules

The device should be installed in accordance with this manual. The fulfillment of this condition is the basis for ensuring safety and correct operation of the device. The fulfillment of this condition is the basis for ensuring safety and correct operation of the device. The manufacturer is not liable for damages resulting from using the device in the wrong way or not according to the purpose. Modifications to the device are not allowed and can be a source of danger.

1. Destination of device

The ARB-0612 converter converts the USB signal into a serial communication standard RS232/RS422/RS485,RS485-4W/TTL-3.3,TTL-5V. The device is powered directly from the USB port. The converter supports two RS485 standards (2-wire and 4-wire), can act as HUB USB to 2xRS485 2-wire.

Works with 32 and 64 bit operating systems. Remember to use the appropriate drivers. The device is intended for the USB 2.0 standard. When connected to the 3.0 standard, the converter works as if it was connected to the standard 2.0. It is possible to choose one of four serial transmission standards, i.e. RS232, RS422, RS485 or TTL. The converter provides 1500V, 2500V, 3000V or 5000V isolation between the USB port and the other serial ports. In addition, the RS422 and RS485 port has overvoltage protection. The operating system creates a virtual COM serial port that can be used by applications as an ordinary COM port. The user has the option of assigning a different COM port number than the one that automatically assigned the system. All parameters of the COM port (for example: baudrate, parity check), are determined by the application using the converter ARB-0612.

Application:

- Protecting your PC or laptop from overvoltages and from damage that may occur when using serial communications.
- Creating or adding an additional serial port from 1 to 256.
- The RS232 port is equipped with all transmission and reception lines, which allows for safe programming of controllers and other devices requiring serial communication and using additional RS232 port signals.
- The ARB-0612 converter has an internal reset signal, thus it can be used for permanent operation in applications that have the option of automatically rebuilding the serial port.

2. Device parameters

2.1. Technical parameters

Technical parameters of the converter are presented in Table 2.1.1.

Table 2.1.1. Technical parameters of the converter ARB-0612

| Parameter | Description |
|--|--|
| USB standard | USB 2,0. type B socket USB 3.0 supported like USB 2.0 |
| Operating Systems | Windows (32/64), Linux, Mac OS, Android |
| Power supply voltage | 5VDC(powerd from USB) |
| Max. power consumption | 500mW |
| Storage humidity | 20% ... 95% RH, non-condensing |
| Operating humidity | 20% ... 95% RH, non-condensing |
| Storage temperature | -30°C ... 60°C |
| Operating temperature | -30°C ... 60°C |
| Memory type | Flash |
| Number of serial ports | From 1 to 256 |
| Serial transmission standards | RS232,RS422,RS485,RS485-4W, TTL-3,3V,TTL-5V |
| Supported lines of RS232 | Txd, Rxd,CTS,RST,DTR,DSR,DCD,RI |
| Maks. baudrate of RS232 | 1Mb |
| Maks. baudrate of RS422,485 | 1Mb |
| Isolation voltage | 1,5 kVDC / 2,5 kVDC/3,0 kVDC / 5,0kVDC |
| Short circuit protection of the USB port | 200mA |
| Surge protection of RS422, 485 ports | 600W |
| Short circuit protection of RS422, 485 ports | 100mA |
| RS422,485 Specification | EEIA/TIA-485 |
| RS232 Specification | EEIA/TIA-232 |
| Max. length of the RS422/RS485 line | 1200 m |
| Max number of gates RS485 | to 32 |
| Port line terminator RS422,485 | YES |
| EMC | According with EN-61000-6-1/2/3/4 |
| Type of connection RS422,RS485 | Separable connectors. wire 0,2...2,5mm ² |
| Type of connection RS232 | DB9 |

| | |
|----------------------------|---------------------------------------|
| IP protection of terminals | IP-20 according with DIN 40050/EC 529 |
| IP protection of housing | IP-43 according with DIN 40050/EC 529 |
| Installation | Portable housing |
| Weight | 70 g |
| Dimension with terminals | 57 x 96 x 23 mm |

2.2. Description of connectors

The view of the ARB-0612 converter is shown in Figure 2.2.1. A description of its connectors is presented in Table 2.2.1. A description of the function of connectors, DB9 sockets, dip-switch and LED indicators is presented in Table 2.2.2.

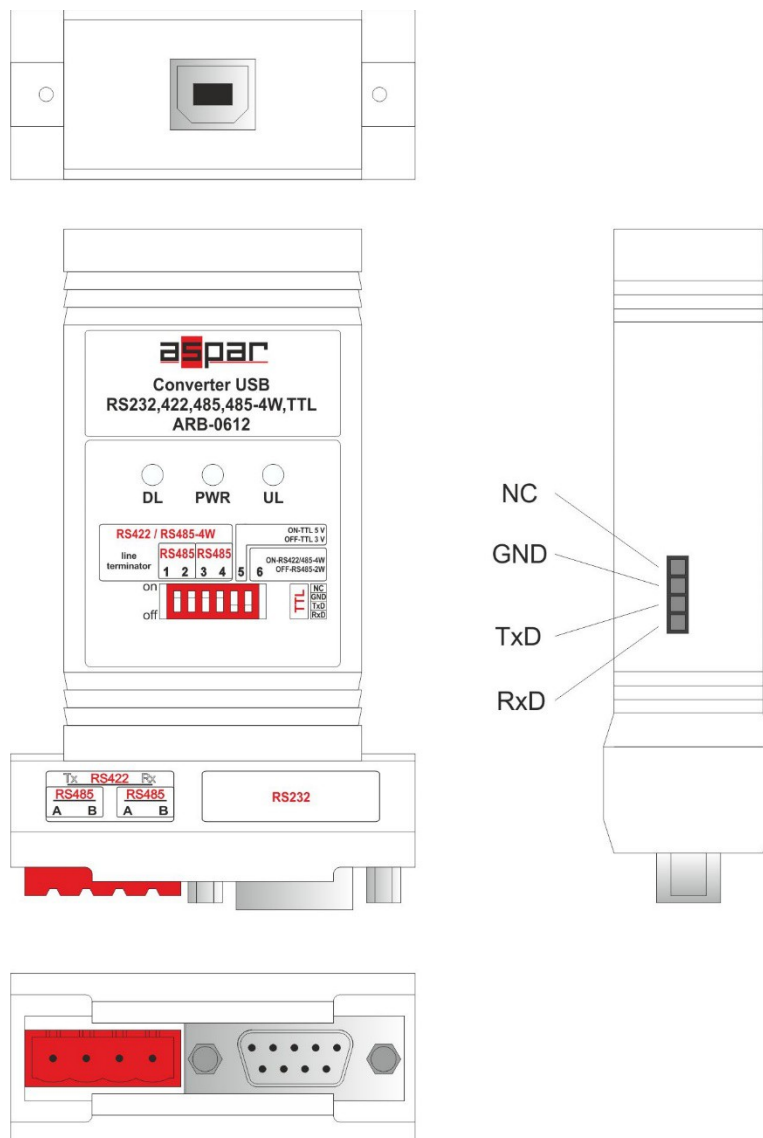
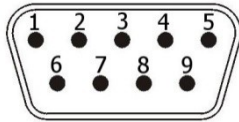


Fig. 2.2.1. View of the converter ARB-0612

Tab. 2.2.1. Description of ARB-0612 converter connector type

| Name of the connector | Description |
|-----------------------|--|
| RS232 | Socket DB9 RS232 |
| RS422 | Separable terminal block 2,5 mm ² |
| RS485 | Separable terminal block 2,5 mm ² |
| USB | USB type B connector |

Tab. 2.2.2. Description of the function of connectors, dip-switch and LED indicators

|  <p>Male socket</p> | Pin number | Description |
|--|---|-------------|
| | 1 | DCD |
| | 2 | RXD |
| | 3 | TXD |
| | 4 | DTR |
| | 5 | GND |
| | 6 | DSR |
| | 7 | RTS |
| | 8 | CTS |
| | 9 | RI |
| Terminal number | Description | |
| 10 | B* (D-) Rx- RS422/RS485-4W lub B(D-) RS485-1 | |
| 11 | A* (D+) Rx+ RS422/RS485-4W lub A(D+) RS485-1 | |
| 12 | B* (D-) Tx- RS422/RS485-4W lub B(D-) RS485-2 | |
| 13 | A* (D+) Tx+ RS422/RS485-4W lub A(D+) RS485-2 | |
| The pin number of the dip-switch | Description | |
| 1÷4 | Line terminating resistors RS422/RS485-4W/RS485** | |
| 5 | Level selection of TTL 3,3V/5V | |
| 6 | RS422/RS485-4W or RS485*** | |
| LED indicators | Description | |
| DL(green) | The LED indicates receiving data via RS ports | |
| PWR(red) | The LED indicates the power supply from USB | |
| UL(yellow) | The LED indicates data sending via RS ports | |

* - A denotes the D + line, B denotes the D - line.

** - switch operations must be carried out in pairs.

*** - OFF position - active RS485; ON position - active RS422 / RS485-4W.

2.3. Block diagram

The block diagram of the ARB-0612 converter is shown in Figure 2.3.1.

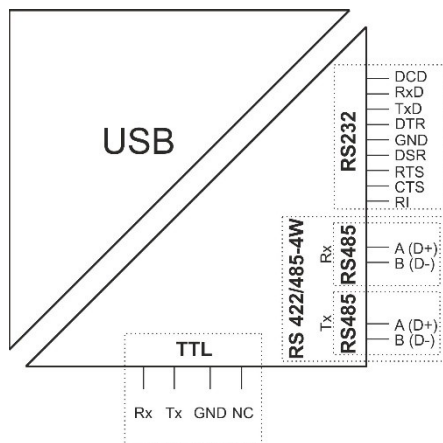


Fig. 2.3.1. Block diagram of ARB-0612

2.4. Dimensions

Dimensions of the ARB-0612 converter are shown in Figure 2.4.1.

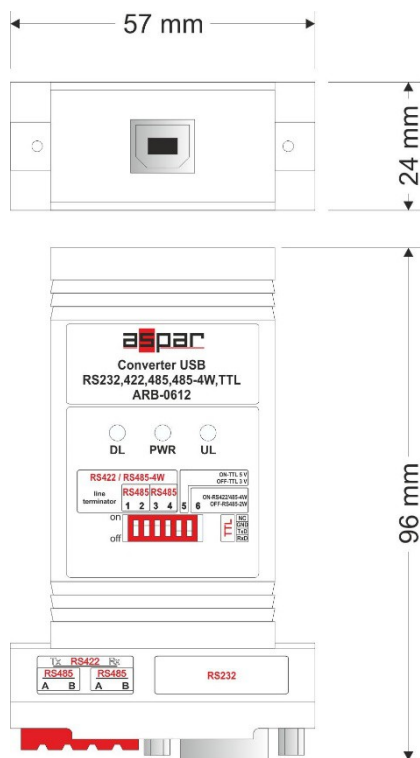


Fig. 2.4.1. Dimensions of the ARB-0612

2.5. Versions

Table 2.5.1 presents the available versions with catalog numbers.

Tab. 2.5.1. Versions of the ARB-0612

| Symbol | Opis | Nr katalogowy |
|--------------|--|-------------------|
| ARB-0612-1,5 | USB – RS232/422/485/RS485-4W/TTL separation 1,5 kV, black | 03-01-03-07-01-20 |
| ARB-0612-2,5 | USB – RS232/422/485/RS485-4W /TTL separation 2,5 kV, black | 03-01-03-07-02-20 |
| ARB-0612-3,0 | USB – RS232/422/485/RS485-4W /TTL separation 3,0 kV, black | 03-01-03-07-03-20 |
| ARB-0612-5,0 | USB – RS232/422/485/RS485-4W /TTL separation 5,0 kV, black | 03-01-03-07-04-20 |

3. Wiring

The device should be connected to a computer using a USB cable. One of the selected RS232, RS422, RS485, RS485-4W or TTL ports should be selected. The method of connecting the RS port is shown in Figure 3.1.

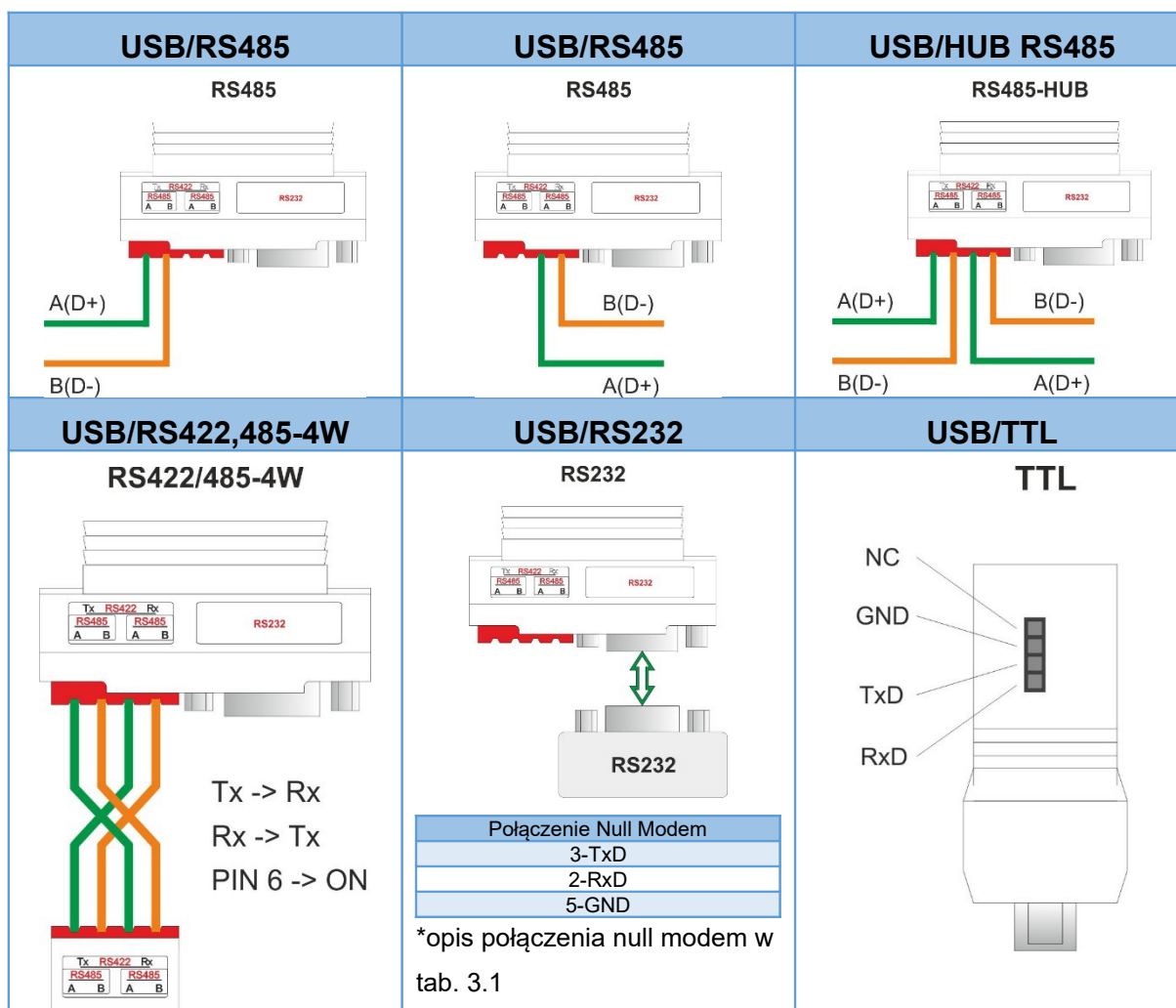


Fig. 3.1. The method of connecting the RS ports.

Tab. 3.1. Description of the communication cable with full confirmation

| Connector 1 | Connector 2 | Function |
|-------------|-------------|-----------|
| 2 | 3 | Rx ← Tx |
| 3 | 2 | Tx → Rx |
| 4 | 6 | DTR → DSR |
| 5 | 5 | GND |
| 6 | 4 | DSR ← DTR |
| 7 | 8 | RTS → CTS |
| 8 | 7 | CTS ← RTS |

4. Instalation

4.1. Installation of USB drivers

Before you start the proper operation, you must install the appropriate USB drivers on the computer with which the converter should work. The type of drivers depends on the operating system installed on your computer. The drivers and instructions for installing them are available at: <http://www.ftdichip.com/FTDrivers.htm>.



Attention!

When installing drivers, please pay attention to their appropriate selection. There are various drivers for 32-bit and 64-bit systems.



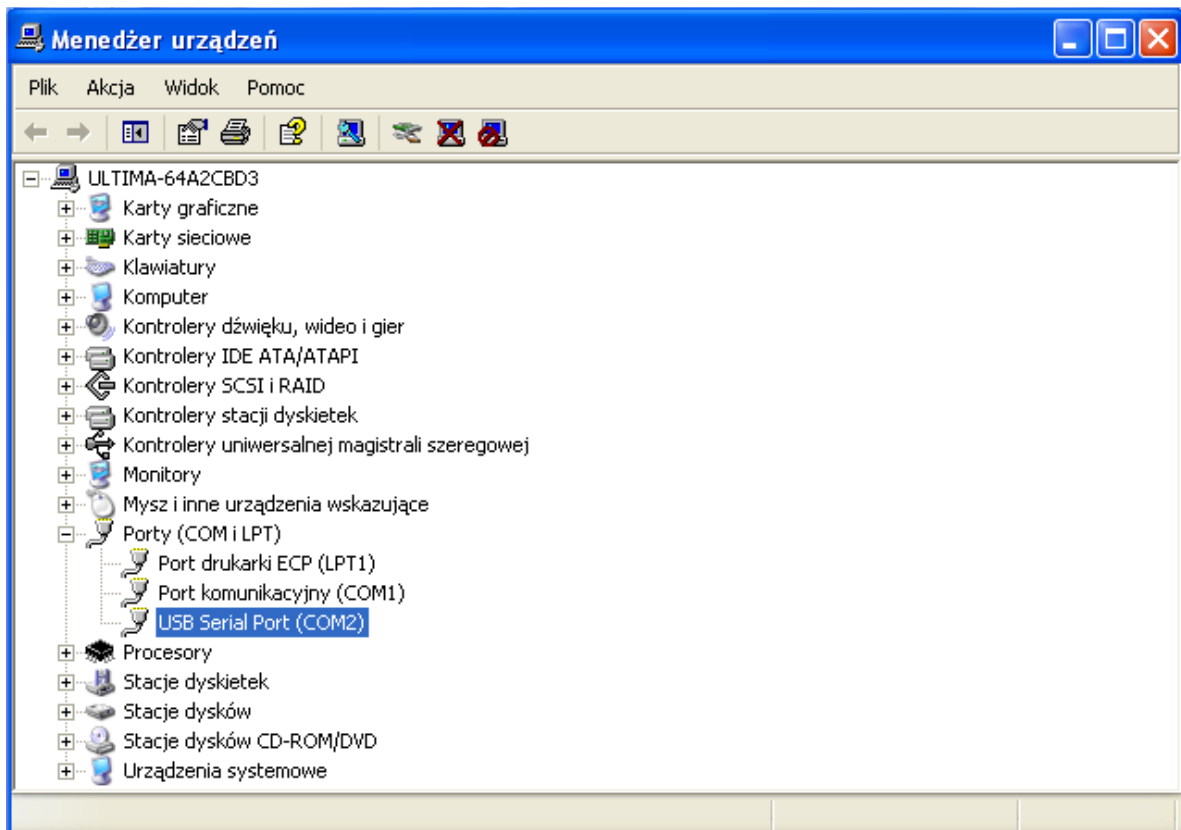
Advice.

Some of the latest operating systems do not require installation of drivers. Before installing the drivers, make sure that it is necessary.

4.2. Changing the COM port assignment in Windows

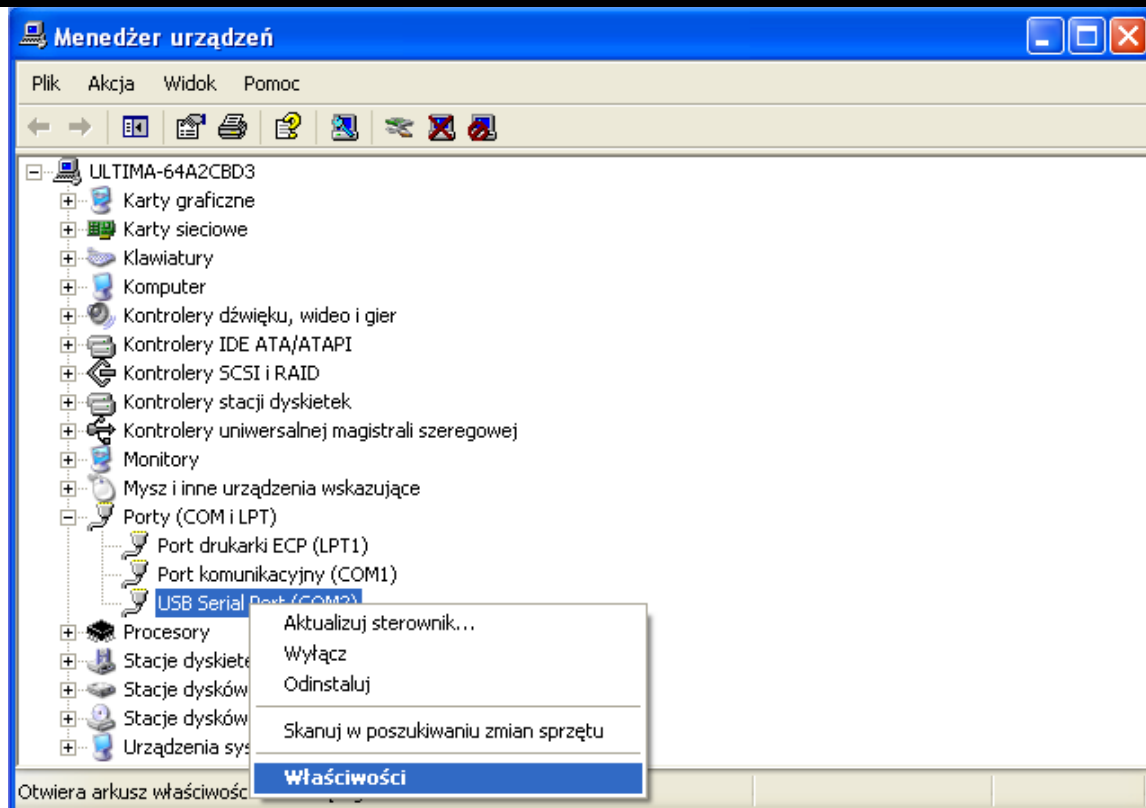
To change the assignment of the COM port, it is necessary to start the Device Manager while the converter ARB-0612 is connected from the USB side to the computer.

Menu: **Start->Control Panel->System->Hardware->Device Manager**

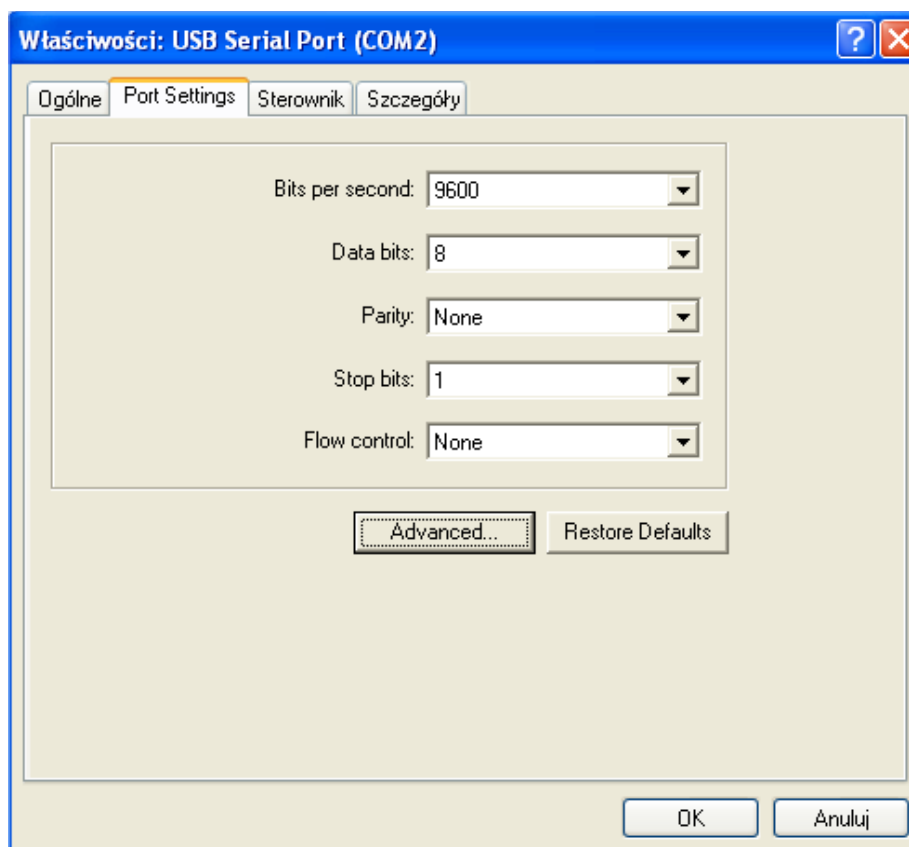


Select USB Serial Port whose settings you want to change.

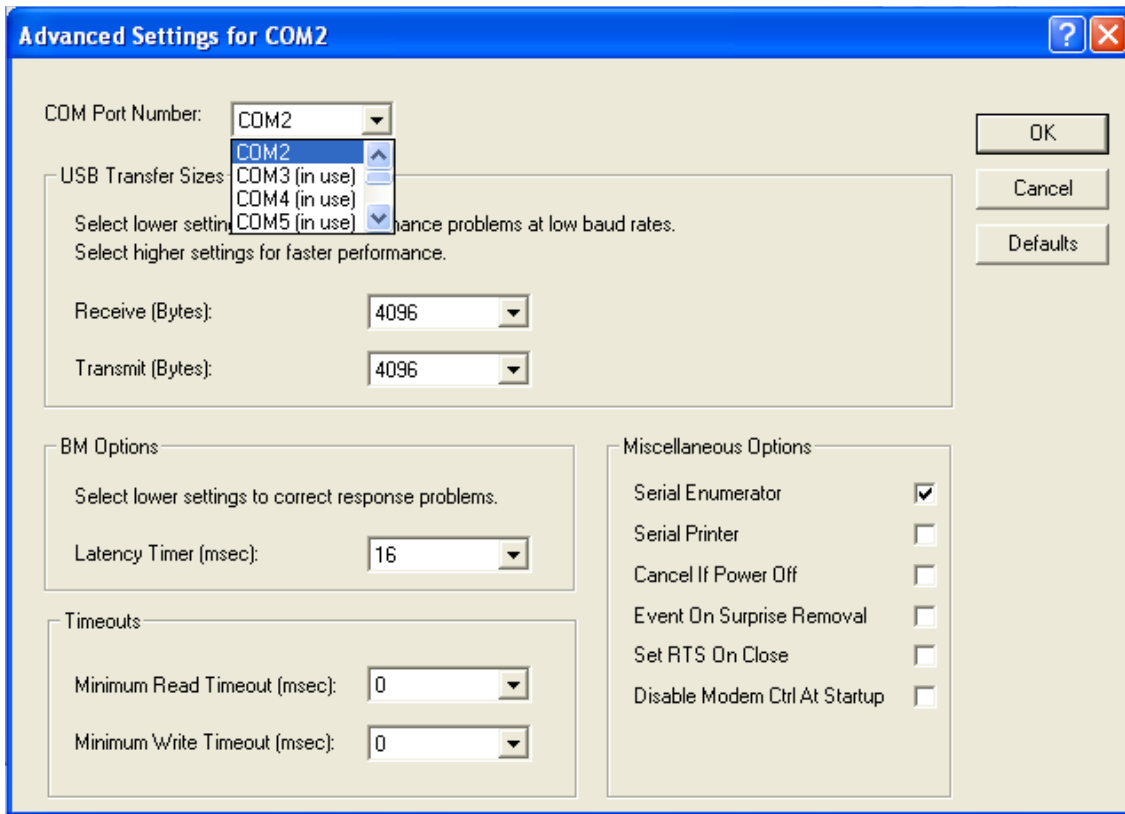
Press the right mouse button and select Properties from the expanded menu.



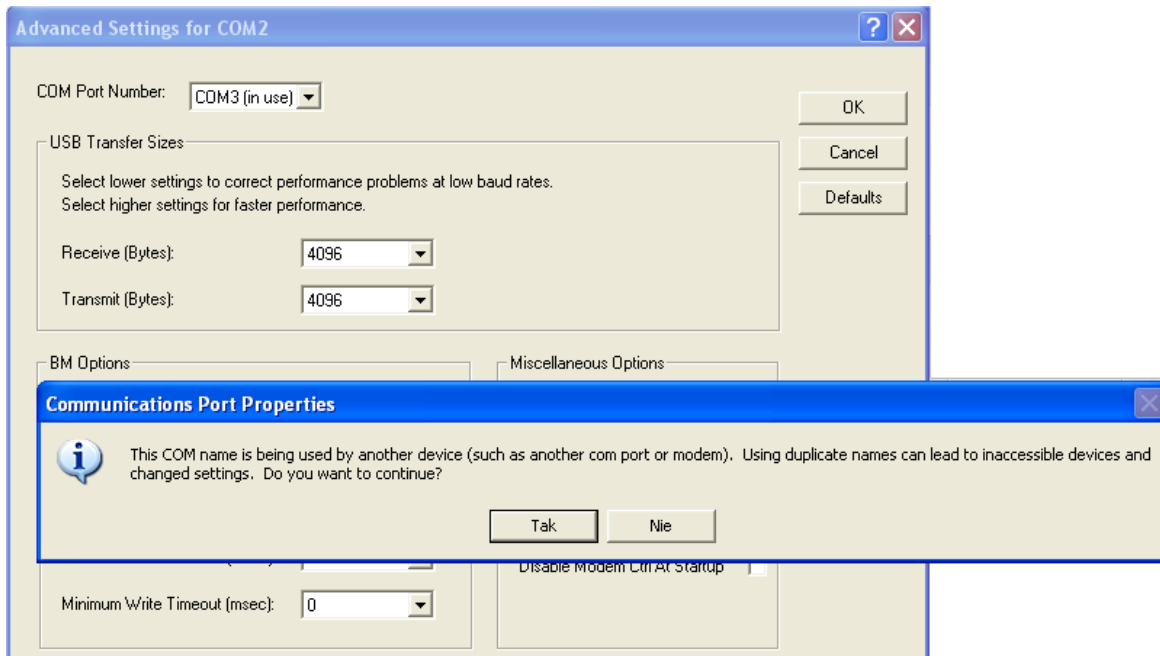
In the Port Settings tab, please select Advanced options ...



Then select the appropriate COM port from COM Port Number.



In case the selected port is already occupied by another device, the following message will appear:



If you have to use this port, press YES


Advice.

The operation system often should be restarted after changing the assignment of COM port.

4.3. Exploitation

After correct installation of the drivers and connecting the converter to the USB port in the device manager should be visible COM port assigned to the converter. The device is signaled by sound and blinking of DL and UL diodes. The PWR diode should be permanently illuminated.


Advice.

During operation, please pay attention to the condition and quality of the USB cable. As a rule, its length should not exceed 2m.


Advice.

In the event of damage during operation of one of the RS485 ports, it is possible to use a second RS485 port.

5. Contact details

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