usbCAT

OPTOISOLATED USB<->CAT INTERFACE
OPTOISOLATED PTT, CW, FSK CONTROL
GALVANIC ISOLATED AUDIO IN, AUDIO OUT

Instruction manual

Designer: Mateusz Płociński SQ3PLX
Producer: Microsat
info@microsat.com.pl

Before connecting, strictly refer to the following instructions. Wrong connection of the radio side, or use of wrong JP4 and JP5 jumper settings can lead to malfunction or damage to the device or a radio transmitter connected.

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1. Technical parameters

Dimensions	67x92x28mm
Weight	130g
Supply voltage	5VDC from USB port
Power consumption	30mA from USB port
Operating temperature	-30°C / +70°C
Audio isolation	Galvanic (transformer)
CAT interface isolation	Optical (optocoupler)
PTT, CW, FSK control isolation	Optical (optocoupler)

2. Device description

UsbCAT device is fully isolated interface which allows you to connect the radio to your PC. Both input/output paths are isolated as well as a serial CAT port and PTT, CW, FSK outputs. Grounds between USB and radio side are also isolated and independent from each other.

2.1. Connecting to PC

From PC side, usbCAT interface is connected with two 3,5mm mini-jack (for audio input and output) and USB-AB cable (serial CAT communication and PTT, CW, FSK audio outputs). PC Speaker jack connector should be connected to the sound card line-out, while the PC Line in jack to the sound card microphone input.

After connecting USB cable to your PC, usbCAT appears to the operating system as two virtual COM ports. Thanks to the popular FTDI FT2232D chip, the device is supported by Windows, MacOS, and Linux operating systems.

2.2. Windows driver installation

Device drivers should be installed before connecting usbCAT interface to your PC. If the device is already connected, disconnect it to avoid problems during driver installation. Drivers are available on our website, on usbCAT device sub-page. You can also download most up-to-date device drivers version from FTDI website (www.ftdi.com). The figure below shows two virtual COM ports in Windows XP.
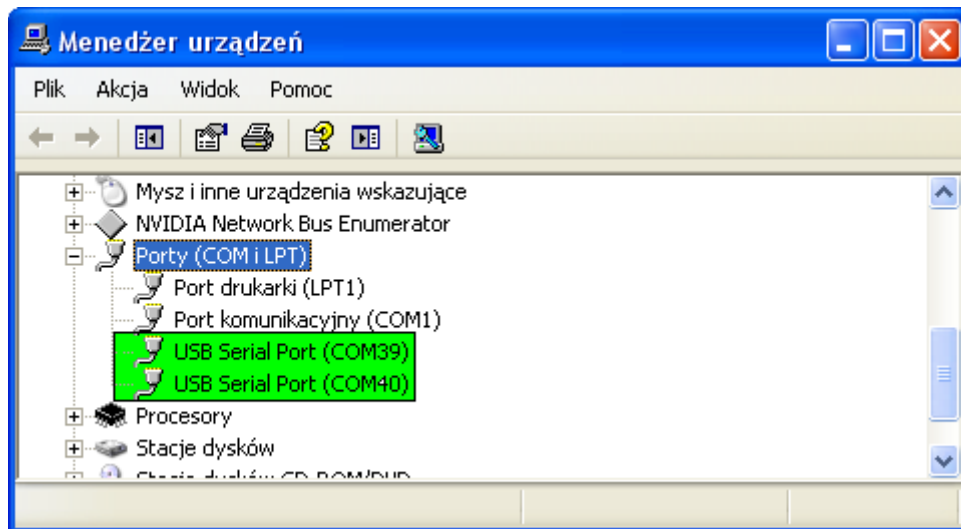
2.3. Changing virtual COM ports numbers

Virtual COM ports under Windows operating systems can sometime show on higher COM port numbers, in this case the numbers are 39 and 40. For many applications it is advisable to move ports to a lower number, you can do so by clicking on the port in Windows Device Manager, then go to the Settings tab and click on Advanced Settings button. Port number change window is visible below.
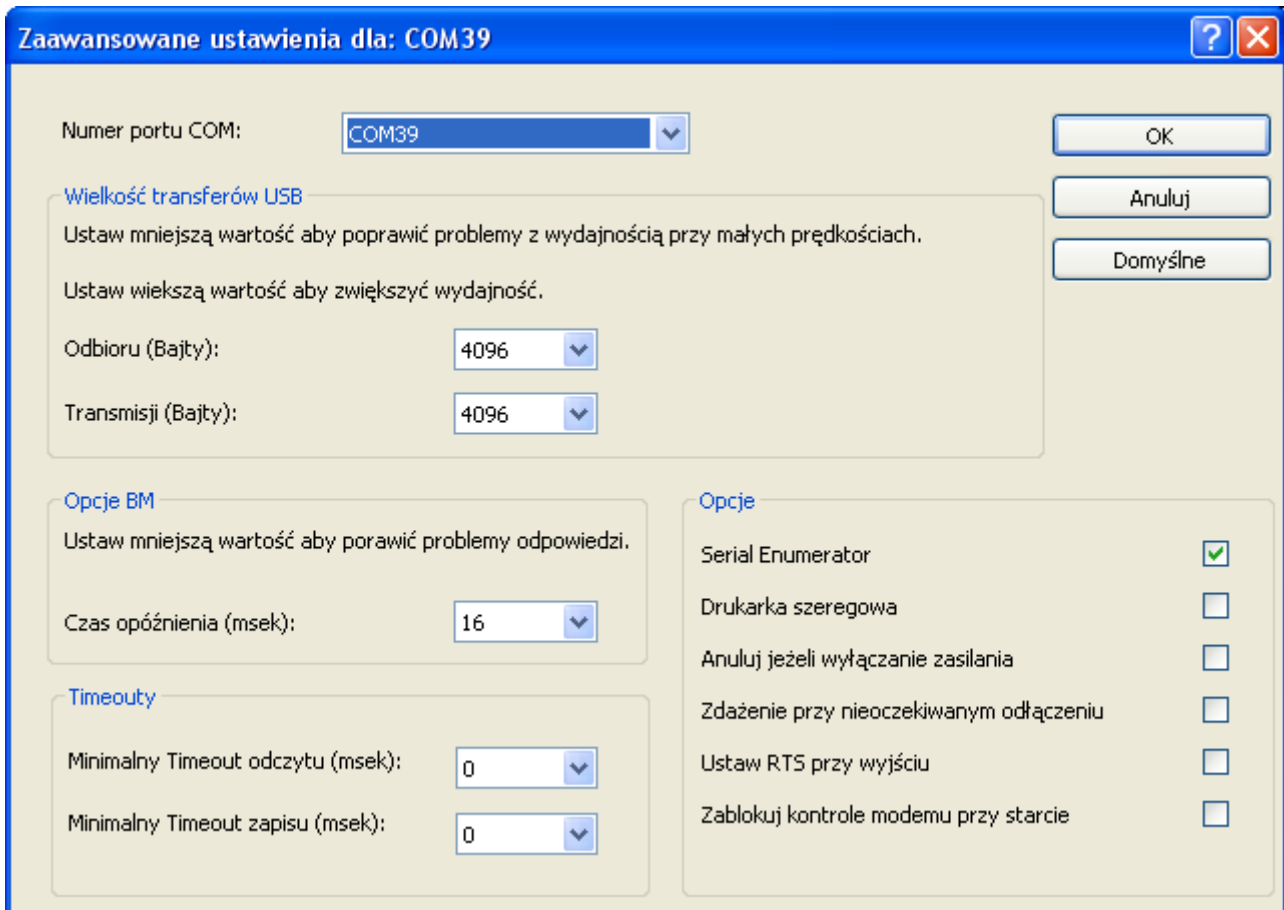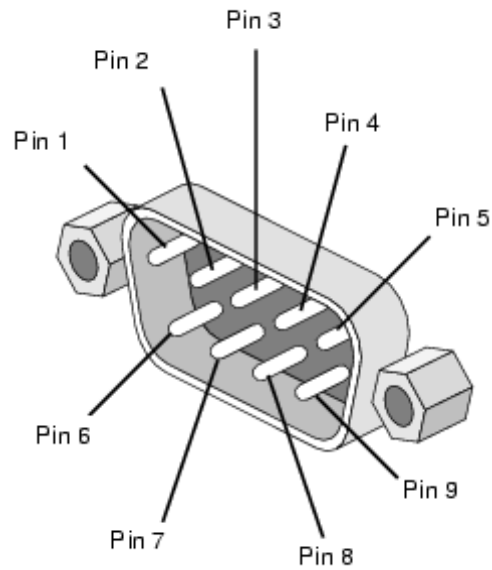

2.4. Device COM port functions

For default jumper configuration (discussed in next chapters), COM mort functions are following:
- port 1:
  - RXD – serial CAT interface input,
  - TXD – serial CAT interface output,
- port 2:
  - TXD – FSK output,
  - RTS – PTT output,
  - DTR – CW output.

2.5. Radio side connector description

All isolated-side (radio side) signals are brought out on male DB9 connector.


DB9 connector pins description:
- Pin 1 – FSK output, open collector
- Pin 2 – CW output, open collector
- Pin 3 – RXD, serial CAT interface input,
- Pin 4 – audio RADIO->PC,
- Pin 5 – GND, isolated-side ground,
- Pin 6 – PTT output, open collector,
- Pin 7 – TXD, serial CAT interface output,
- Pin 8 – isolated-side power input, should be connected to 12VDC,
- Pin 9 – audio PC->RADIO.

2.6. Device setting jumpers description

In order to ensure compliance with various standards and methods of connection for different radio transmitters, it was necessary to use some user-accessible jumpers. In order to reach them, you need to open the device housing by removing the four screws on the bottom side.
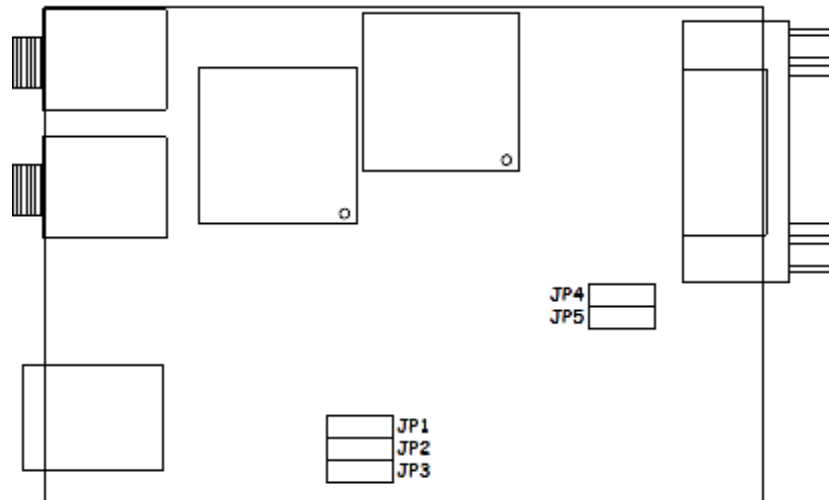
Jumper description:
- JP1 in right position (default) – RTS and CTS of COM port 1 not shorted,
- JP1 in left position – RTS and CTS of COM port 1 shorted – it is used for some devices as an emulation of hardware communication control,
- JP2 in right position (default) – PTT output connected to RTS signal of COM port 2,
- JP2 in left position – PTT output connected to RTS signal of COM port 2,
- JP3 in right position (default) – CW output connected to DTR signal of COM port 2,
- JP3 in left position – CW output connected to DTR signal of COM port 1,
- JP4 in right position – serial CAT input RXD in RS232 standard (-12V to 12V),
- JP4 in left position – serial CAT input RXD in TTL standard (0V to 5V),
- JP5 in right position - serial CAT output TXD in RS232 standard (-12V to 12V),
- JP5 in left position – serial CAT output TXD in TTL standard (0V to 5V),

Before connecting the device please ensure that JP4 and JP5 jumpers are set to be compatible with your radio transmitter serial CAT interface standard.