



TECHNICAL DOCUMENTATION

PAC-AUX



Documentation: PAC-AUX-MAN-v3

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1 INTRODUCTION

PAC-AUX is a desktop reader and programmer for ATPLA-S and ATPLA-N active transponders. Reader has a USB interface in CDC class (serial port emulation).

2 BASIC INFORMATION

- Supports tags from the ATPLA family,
- USB interface in CDC class (serial port emulation).
- Power from the USB port,
- Built-in buzzer, two general purpose LED and a power indicator LED,
- Bootloader,
- Available in colors: black PAC-AUB or beige PAC-AUG.

3 PROPER LOCATION OF THE TAG ON A READER

In order for the programmer to communicate with the tag correctly, the tag should be placed on the programmer as in the picture below:



4 SERIAL TRANSMISSION FORMAT

After drivers installation (www.netronix.pl), PAC-DUX reader is seen by PC port as a virtual serial port.

In this data sheet USB protocol has been confined to descriptions of commands, responses and their parameters. Header and CRC control sum exist always and are compliant with full "Netronix Protocol" document.

Command frame:

Header	C_CommandName	Command_parameters1...n	CRC
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Response frame:

Header	C_CommandName +1	Response_parameters1...m	OperationCode	CRC
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Serial protocol operation can be tested by means of development tools including free of charge "FRAMER" software".

4.1 COMMANDS FOR COMMUNICATION WITH TRANSPONDERS

4.1.1 READ FIRMWARE VERSION OF THE TAG

Command frame:

Header	C_GetTagFV		CRC
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Where:

Nazwa parametru	Opis parametru	Zakres wartości
C_GetTagFV	Command	0x20

Response frame:

Header	C_GetTagFV +1	Data1.....n	OperationCode	CRC
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Where:

Data1...n – firmware version

4.1.2 READ ID

Command frame:

Header	C_ReadID		CRC
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Where:

Nazwa parametru	Opis parametru	Zakres wartości
C_ReadID	Command	0x12

Response frame:

Header	C_ReadID +1	ID_1, ID_2, ID_3, ID_4	OperationCode	CRC
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Where:

Parameter name	Parameter description	Value range
C_ReadID+1	Commands+1	0x13
ID_1, ID_2, ID_3, ID_4	ID	0x00000000 –0xFFFFFFFF

4.1.3 WRITE ID

Command frame:

Header	C_WriteID	ID_1, ID_2, ID_3, ID_4	CRC
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Where:

Parameter name	Parameter description	Value range
C_WriteID	Command	0x14
ID_1, ID_2, ID_3, ID_4	New ID	0x00000000 –0xFFFFFFFF

Response frame:

Header	C_WriteID +1	ID_1, ID_2, ID_3, ID_4	OperationCode	CRC
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Where:

Parameter name	Parameter description	Value range
C_WriteID +1	Commands+1	0x15
ID_1, ID_2, ID_3, ID_4	ID	0x00000000 –0xFFFFFFFF

4.1.4 READ OF RF PARAMETERS

Command frame:

Header	C_ReadRfParam		CRC
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Where:

Parameter name	Parameter description	Value range
C_ReadRfParam	Command	0x16

Ramka odpowiedzi:

Header	C_ReadRfParam +1	P1, P2, P3, P4	KodOperacji	CRC
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Where:

BAJT BIT	P1								P2								P3								P4							
	7	6	5	4	3	2	1	0	7	6	5	4	3	2	1	0	7	6	5	4	3	2	1	0	7	6	5	4	3	2	1	0
TX Power	Baudrate								Period								Rand Range								Frequency							

Parameter name	Parameter description	Value range
C_ReadRfParam+1	Command+1	0x17
P1.bit7	TX power	0 – 0dBm 1 - +10dBm
P1.bit<0-6>	Baudrate	0 – 20kbps 1 – 40kbps 2 – 100kbps
P2	Period	0=1ms 5=32ms 10=1s 15=32s 1=2ms 6=64ms 11=2s 16 = 64s 2=4ms 7=128ms 12=4s 17=128s
P3	Random	3=8ms 8=256ms 13=8s 18=256s 4=16ms 9=0,5s 14=16s
P4	Frequency	0=Ch24, 2=Ch26, 4=Ch28, 6=Ch30, 1=Ch25, 3=Ch27, 5=Ch29, 7=Ch31

4.1.5 WRITE OF RF PARAMETERS

Command frame:

Header	C_WriteRfParam	P1, P2, P3, P4	CRC
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Where:

Parameter name	Parameter description	Value range
C_WriteRfParam	Command+1	0x18
P1.bit7	TX power	0 – 0dBm 1 - +10dBm
P1.bit<0-6>	Baudrate	0 – 20kbps 1 – 40kbps 2 – 100kbps
P2	Period	0=1ms 5=32ms 10=1s 15=32s 1=2ms 6=64ms 11=2s 16 = 64s 2=4ms 7=128ms 12=4s 17=128s
P3	Random	3=8ms 8=256ms 13=8s 18=256s 4=16ms 9=0,5s 14=16s
P4	Frequency	0=Ch24, 2=Ch26, 4=Ch28, 6=Ch30, 1=Ch25, 3=Ch27, 5=Ch29, 7=Ch31

Response frame:

Header	C_WriteRfParam +1	P1, P2, P3, P4	KodOperacji	CRC
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4.1.6 READ THE TAG CONFIGURATION

Command frame:

Header	C_ReadTagParam	CRC
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Where:

Parameter name	Parameter description	Value range
C_ReadTagParam	Komenda odczytu parametrów	0x22

Response frame:

Header	C_ReadTagParam +1	P1, P2, P3, P4	KodOperacji	CRC
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Where:

Parameter name	Parameter description	Value range
C_ReadTagParam+1	Command+1	0x23
P1	Cyclic sending of ID	0 – Off 1 – On
P2.bit4	Battery status	0 – clear flag 1 – set flag
P2.bit0	Sending battery information	0 – Off 1 – On
P3	Battery voltage: $U_{BAT} = \frac{1048,576}{256 * P3 + P4} [V]$	
P4		

4.1.7 WRITE THE TAG CONFIGURATION

Command frame:

Header	C_WriteTagParam	P1, P2	CRC
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Where:

Parameter name	Parameter description	Value range
C_WriteTagParam	Command	0x24
P1	Cyclic sending of ID	0 – Off 1 – On
P2.bit4	Battery status	0 – battery is OK 1 – battery is low
P2.bit1	Sending battery information	0 – Off 1 – On

Response frame:

Header	C_WriteTagParam +1	P1, P2, P3, P4	KodOperacji	CRC
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The description of parameters P1 ... P4 is the same as for the C_ReadTagParam command

4.1.8 SET PIN

Command frame:

Header	C_SetPIN	P1, P2, P3, P4	CRC
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Where:

Parameter name	Parameter description	Value range
C_SetPIN	Command	0x2A
P1, P2, P2, P3	PIN	

Response frame:

Header	C_SetPIN +1	-	KodOperacji	CRC
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4.2 OTHER COMMANDS

4.2.1 READ THE FIRMWARE VERSION

Command frame:

Header	C_FirmwareVersion		CRC
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Where:

Parameter name	Parameter description	Value range
C_FirmwareVersion	Command	0xfe

Response frame:

Header	C_FirmwareVersion+1	Data1.....n	OperationCode	CRC
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Where:

Data1...n – firmware version

4.2.2 REMOTE RESET OF READER

Command frame:

Header	C_Reset	Volume	OperationCode	CRC
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Where:

Parameter name	Parameter description	Value range
C_Reset	Command	0xD0

Response frame:

Header	C_Reset +1	OperationCode	CRC
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4.2.3 CHANGE BUZZER VOLUME

Use this command to set buzzer volume and store setting in EEPROM memory.

Command frame:

Header	C_BuzzerConfig	Volume	OperationCode	CRC
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Where:

Parameter name	Parameter description	Value range
C_BuzzerConfig	Command	0xD8
Volume	Buzzer volume value	0x00-0x0a

Response frame:

Header	C_BuzzerConfig +1	OperationCode	CRC
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4.3 CODE MEANINGS IN RESPONSE FRAMES

Operation code name	Description	Value
OC_Error	Error	0x00
OC_ParityError	Parity error	0x01
OC_RangeError	Parameter range error	0x02
OC_LengthError	Data length error	0x03
OC_ParameterError	Parameter error	0x04
OC_Busy	Internal modules are busy at the moment	0x05
OC_NoACKFromSlave	No internal communication	0x22
OC_CommandUnknown	Unknown command	0x07
OC_WrongPassword	Wrong password or last password terminated i.e. automatic LogOut occurred.	0x09
OC_NoCard	No transponder	0x0a
OC_BadFormat	Wrong data format	0x18
OC_FrameError	Transmission error.	0x19
OC_NoAnswer	No response from transponder	0x1E

OC_TimeOut	Operation time out.	0x16
OC_Successful	Operation completed successfully.	0xFF

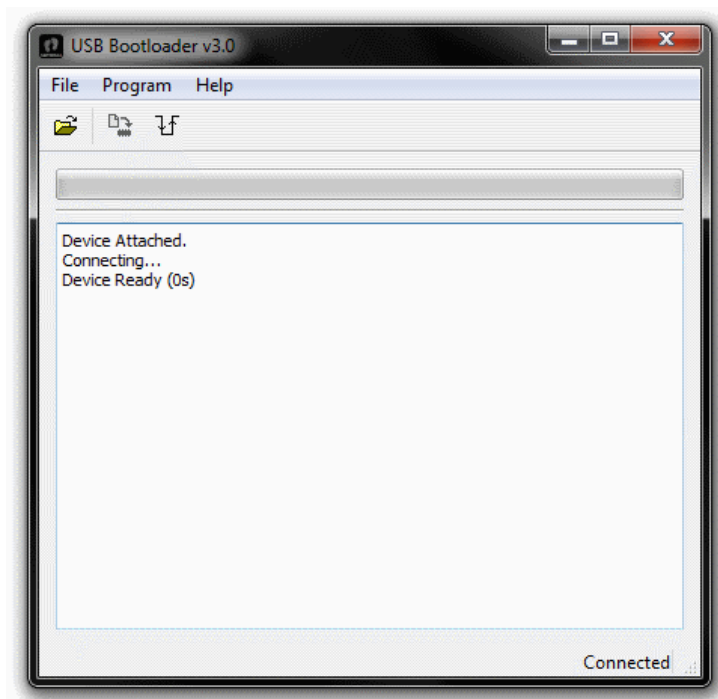
5 RESET TO DEFAULT SETTINGS

To return to the factory settings, press the button in the small hole on the underside of the housing for 5 seconds.

6 BOOTLOADER - UPDATE DEVICE FIRMWARE

In order to upload new firmware to the device, follow the following procedure:

1. Disconnect the device from the USB port
2. While holding down the reset button connect the device to the USB port. The device should be detected as a HID device, and the LEDs on the unit should blink alternately.
3. Open the NX_HID_Bootloader.exe
4. Press Import Firmware Image (Ctrl + O) and then select a file with the firmware
5. Press Erase / Program / Verifi Device
6. Press the Reset DeviceX



Rysunek 6.1 Program window