T+A
DAC200 / HA200 DIY E_Link Programming Adaptor

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Introduction

The recommended and safest way to update the firmware of a T+A DAC200 or HA200 is to use the T+A MP200 streamer. The MP200 will download the latest firmware from the T+A server and update the DAC/HA 200 over the T+A E2_Link.

T+A also provides an official and approved USB→E2_Link programming adaptor and a programming application for Windows PCs to allow a firmware update from a Windows PC without the use of a MP200.

If neither a MP200 nor a T+A programming adaptor is at hand, the firmware update can also be done with a DIY „home-brew“ programming adaptor which is described in this document.

Disclaimer

- The DIY E_Link programming adaptor described in this document is a private project of the author. It is not authorized by T+A. T+A does not take any responsibility and will not give any support for this adaptor.
- The adaptor is provided “as is" and use of the adaptor is at your own risk.
- No warranties are made as to performance, fitness for a particular purpose, or any other warranties whether expressed or implied.
- No oral or written communication from or information provided by the author shall create a warranty.
- Under no circumstances shall the author be liable for direct, indirect, special, incidental, or consequential damages resulting from the use, misuse, or inability to use this hardware even if the author has been advised of the possibility of such damages
- If you encounter any problems, please contact the author directly (e.g. by a personal message to user *OE333* on the Audiophile Style forum).

DIY programming adaptor

This DIY E_Link programming adaptor consists of a USB→RS232 converter, a RS232→TTL level converter, a short length of Ethernet cable with RJ45 (T568B) plug and two 100 Ohm resistors.

Note:

The E2_Link uses a T+A proprietary serial protocol – this protocol is not standard RS232.
The method described in this document uses a standard USB→RS232 converter and a special programming software which mimics the T+A E-Link bus protocol.

Because the timing of the serial E_Link communication is very critical, not all USB→RS232 converters on the market are suited (see notes at the end of this document).

Programming Adapter Hardware (DIY version)

My programming adapter consists of a ***plugable*** USB→RS232 adapter with *prolific pl2303* chip set and a ***LC STUDIO*** RS232→TTL level converter – see pictures below.

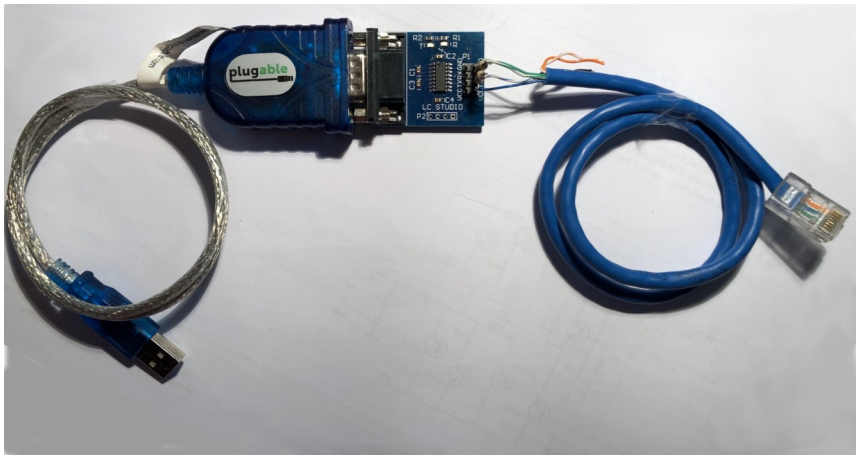
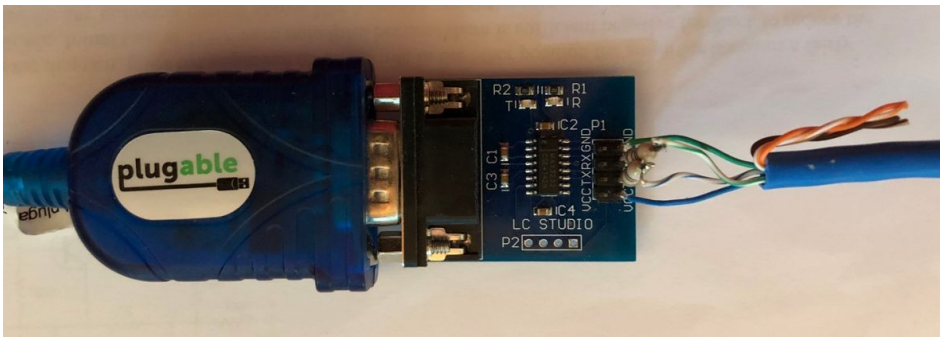


Photo of my own DIY USB→E_Link programming adapter with "*Plugable*" USB→RS232 converter and "LC Studio" 5V level shifter



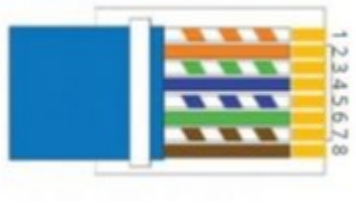
Wire connections to RJ45 cable

100 Ohm series resistors in TX and RX wires

The output side of the level shifter needs to be connected to a ethernet cable with a RJ45 plug. I used a standard ethernet cable cut in half.

The length of this cable should not be too long – recommended length is 0.75...1 meter.

The RJ45 plug will be connected to the “E2 Link” socket of the DAC/HA200 for programming.



RJ45 plug
(seen from the contact side)

RJ45 (T568B) E2-Link connections

1	orange/white	NC	
2	orange	NC	
3	green/white	RS232 – RX	(*)
4	blue	VCC (+5V)	
5	blue/white	RS232 – TX	(*)
6	green	GND	
7	brown/white	NC	
8	brown	NC	

(*) It is recommended to use protective 100 Ohm series resistors in the RX and TX lines (see picture above).

The +5V VCC voltage for the RS232→ TTL level converter is delivered from the T+A device via pin 4 of the E2_Link.

Note:
The designations “*RS232-RX”* and “*RS232-TX”* refer to the T+A device side of the RS232 connection.

i.e. the T+A device sends data on TX (blue/white) and receives data on RX (green/white).

→ connect the “TX” wire (blue/white) to the RX pin of the computer COM-port
→ connect the “RX” wire (green/white) to the TX pin of the computer COM-port

Hint:
The LC STUDIO RS232-TTL level shifter has 2 LEDs for RX and TX which permit an easy chek if TX and RX lines are connected correctly:

- connect the LC STUDIO level shifter to the E2Link socket T+A device (don’t connect it to the PC COM port)
- switch the T+A device ON
- press one of the input buttons on the front panel of the DAC200
- the TX LED (close to resistor R2) should blink each time one of the input buttons of DAC200 is pressed

Notes:

(1) In stead of a USB→RS232 plus RS232→TTL adapter a direct USB→5V RS232 adapter might be used.

(2) The firmware update was tested with a Prolific PL2303 USB→RS232 adapter.

(3) Please make sure to use only adapters with an **original Prolific** chip set – there are quite a few (very cheap) adapters with non-original Chinese fake Prolific chips on the market: These non original Prolific chip sets will probably not work properly in this application !

(4) FTDI FT232R based USB→RS232 converters will also work, but the latency for these chips must be set to 1ms.

Hint: The latency for FTDI chips can be set in the Windows device manager:

(5) Device_Manager -> Ports(COM&LPT) -> USB_Serial_Port (COMx) -> Port Settings -> Advanced -> Latency_Timer

Document history

V 1.00	22.04.2023	initial version
V 1.01	26.04.2023	clarification to “TX” & “RX” added Hint to RX/TX test with LC_Studio level shifter added
V 1.03	21.10.2023	Changed document layout Some minor additions