

DAC200 / HA200 - Firmware update

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 and update the DAC/HA 200 over the T+A E2_Link.

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

Non-official DIY update

If neither a MP200 nor a T+A programming adapter is at hand, the firmware update can also be done with a DIY „home-brew“ programming adapter consisting of a USB → RS232 converter, a RS232 → TTL level converter and a short piece of Ethernet cable with RJ45 (T568B) plug.

Important note: This “DIY” update is not approved by T+A and it will be at your own risk !

For the update the T+A E2Link interface on the back panel of the DAC/HA devices is used. The E2_Link uses a T+A proprietary serial protocol – this protocol is not standard RS232.

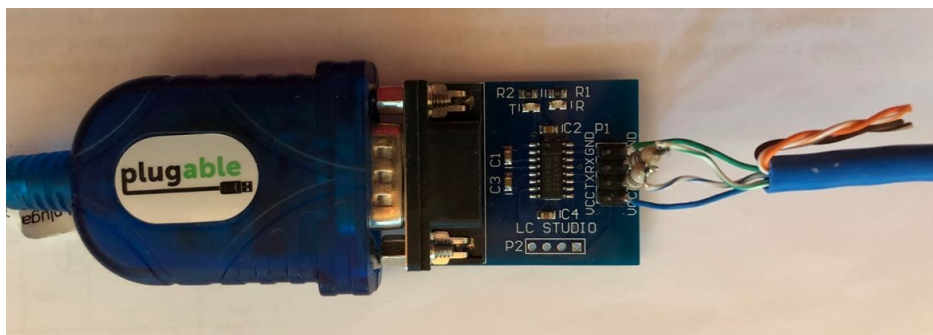
The method described in this document uses a standard USB → RS232 converter and a special programming software which mimics the T+A E-Link bus protocol. Because the timing of the serial communication is very critical, not all USB → RS232 converters on the market are suited.

Programming Adapter (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.



DIY
USB → E_Link
programming
adapter

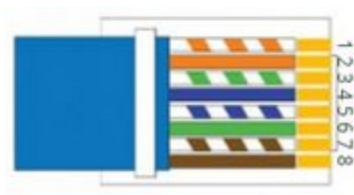


Wire connections to RJ45 cable



100 Ohm series resistors in TX and RX wires

RJ45 (T568B) E2-Link connections



1	orange/white	NC	
2	orange	NC	
3	green/white	RS232 – TX	(*)
4	blue	VCC (+5V)	
5	blue/white	RS232 – RX	(*)
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 pin4 of the E2_Link.

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 !

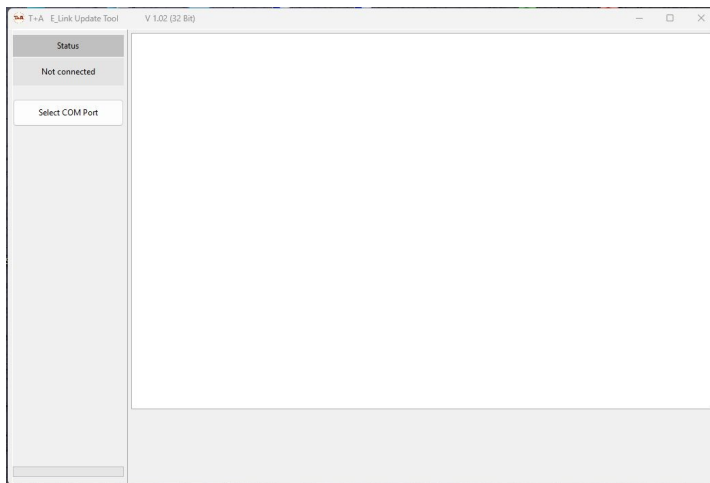
(4) FTDI FT232R based USB → RS232 converters will also work, but the latency for these chips must be set to 1ms.

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

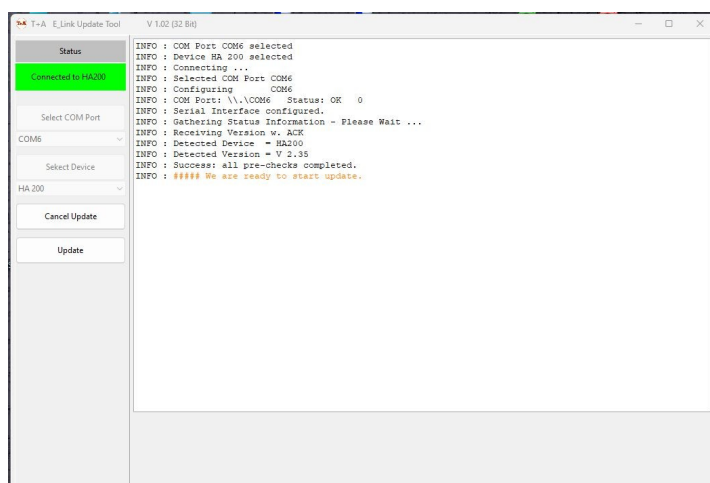
Device_Manager -> Ports(COM&LPT) -> USB_Serial_Port (COMx) -> Port Settings -> Advanced -> Latency_Timer

Programming Procedure

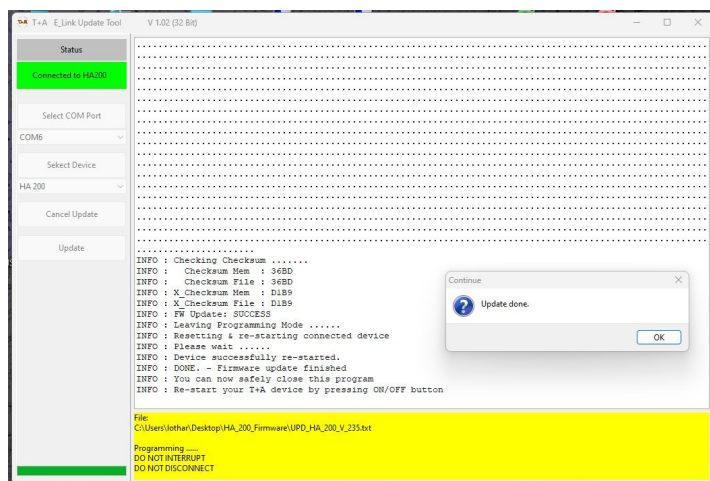
1. Start your Windows PC
2. Connect the programming Adapter to your PC and to the E2Link socket of the DAC/HA200
3. Switch ON your T+A device
4. For FTDI based USB → RS232 adapters: set the latency in Windows device manager to 1ms
5. Start the T+A E_Link Update Tool on your PC
6. Click on the „**Select COM Port**“ button (see picture below)
 - A drop-Down list will occur.
7. In the drop down list, select the COM port your programming adapter is connected to
8. Click on the button „**Select Device**“
9. From the drop-down list select the type of device you want to update (DAC200 or HA200)
10. Click on the connect button
 - The T+A update tool will now check the communication with the device and check if the connected device matches with the selected device type.
 - If you get any ERRORS at this stage, please check the cabling, the USB-ES232 adapter and the settings
 - If you get the response „*Success: all pre-checks completed. We are ready to start update*“, click on the „**Update**“ button.
11. A file-selection window will open that permits to select the file with the new firmware.
 - Please note: The name of firmware update file must begin with „UPD_DAC_200“ or „UPD_HA_200“
12. Select the firmware file by double-clicking on it
13. A „**Start flash**“ pop-up window will occur.
 - Press „**Yes**“ to start the update process or click on „**No**“ to cancel the update.
 - **Note: this is the last chance to stop the update procedure.** If you press „**Yes**“, the program memory in your T+A device will be erased and re-programmed.
14. Wait until the update process is finished.
 - The update process will last a couple of minutes.
 - Please be patient, do not disturb the programming, do not switch OFF the T+A device, do not remove any cables!
 - You will be informed about the upgrade progress by a couple of messages on the PC screen and by a progress-bar in the lower left corner of the program window.
15. After successful update, a pop-up window with the message „**Update done**“ will appear.
 - Click on „OK“ and restart your T+A device by pressing the Power button on the front panel of the DAC/HA_200.
16. If you get a „**Programming ERROR**“ pop-up message, something went wrong.
 - By clicking on the „**Yes**“ button in this pop-up window you can re-start the update process



After program start:
select COM port.



Pre-Checks done,
Ready to start update



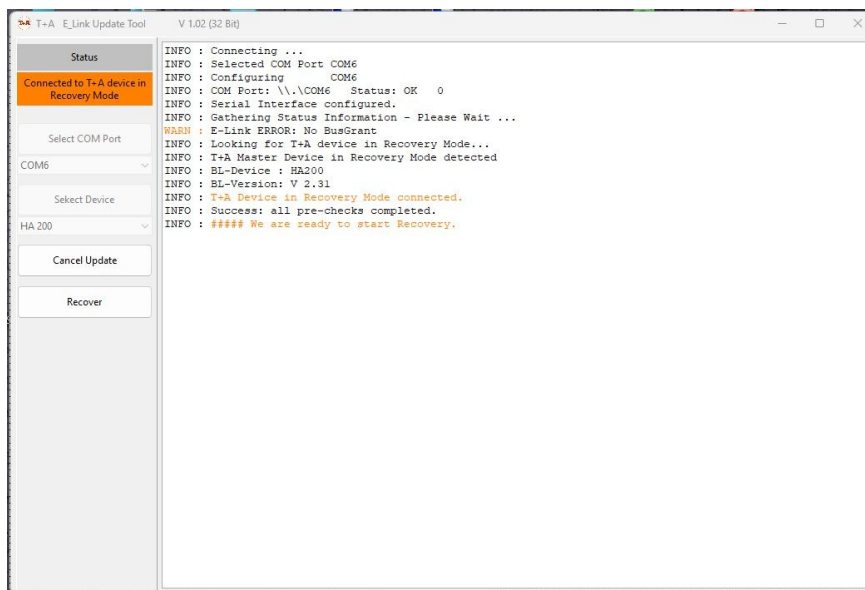
Update finished successfully

Device recovery

If during programming a severe fault occurred (like eg. a mains power interruption during programming or unplugging of the programming cable), the T+A device will be left with an erased or non functional program memory. In this case the T+A device will not work any more but it can be recovered with the help of the T+A Update Tool.

For recovery please proceed as follows:

1. Disconnect the T+A device from the mains
2. Leave it disconnected for about 2 minutes
3. Re-connect the mains
4. Start your Windows PC
5. Connect the programming Adapter to your PC and to the E2Link socket of the DAC/HA200
6. For FTDI based USB → RS232 adapters set the latency in Windows device manager to 1ms
7. Start the T+A E_Link Update tool
 - The update tool will show the information that it has discovered a T+A device in *Recovery Mode*
8. Select „**Recover**“
9. Select the file with the device firmware
10. In the „**Start Flash**“ pop-up window select „**Yes**“
11. Wait until the program flash process has terminated.
12. After successful device recovery, a pop-up window with the message „**Update done**“ will appear.
 - Click on „**OK**“ and restart your T+A device by pressing the POWER button on the front panel of the DAC/HA_200.



Update Tool after
discovery of a T+A
device in recovery
mode