

Firmware update for **DAC-4x(A)**



DIGITAL AMPLIFIER AND CONTROLLER CARD FOR ALL KIND OF PROPORTIONAL VALVES

**Applicable for all SW Versions
with USB or RS232 interface**



HCS Hydraulic Control Systems GmbH
Neuffener Str. 29
D-72636 Frickenhausen
Germany
Telefon: (+49) 7025 - 911 007
Telefax: (+49) 7025 - 911 008
Email: info@h-c-s-gmbh.de
Web: www.h-c-s-gmbh.de

Revision History

Revision	Date	Description
R 1.0	04.09.2018	DAC-4x(A) (New DAC-4) firmware update first edition
R 2.0	11.12.2019	Renamed to DAC4a, small modification
R 3.0	23.10.2020	New procedure with USB interface (Also for UART)
R 3.1	16.10.2023	New format of document
R 4.0	30.07.2025	A troubleshooting section has been added.

Table of Content

1	GENERAL INFORMATION.....	3
1.1	ABOUT THIS MANUAL	3
1.1.1	Reservation of changes and validity	3
1.1.2	Completeness.....	3
1.1.3	Place of storage	3
1.1.4	Warranty and liability.....	3
1.1.5	Typographical conventions	3
2	TERMINAL PROGRAM “TERATERM”	4
2.1	USB CONNECTION TYPE	4
2.2	INSTALL THE USB DRIVER FOR THE DEVICE.....	4
2.3	CONNECTION OF DAC4(A) TO PC	4
2.4	SETUP “TERATERM” FOR COMMUNICATION.....	5
2.5	CONNECTED TO DAC-4x(A)	5
2.6	PROCEDURE 1, WHILE DAC-4x(A) IS RUNNING, STEP BY STEP:	6
2.7	PROCEDURE 1, PICTURE 1 TO 11:.....	8
2.8	PROCEDURE 2, WHILE DAC-4x(A) IS BOOTING, STEP BY STEP:	13
2.9	PROCEDURE 2, PICTURE 12 TO 15:.....	14
3	TROUBLESHOOTING	16
4	NOTES:	17
5	HCS DISTRIBUTORS AND PARTNERS	17

1 General information

1.1 About this manual

This document describes how to update the firmware of the digital amplifier DMA-4x(A). For a firmware update an separate terminal program on PC like TeraTerm is needed. In this document the handling with TeraTerm is described.

1.1.1 Reservation of changes and validity

The information contained in this manual is valid at the time of this version's release. See footer for version number and release date of this manual.

We reserve the right to make changes to this manual at any time without specified reasons.

1.1.2 Completeness

This manual is complete only when used in conjunction with the product related hardware and software documentation required for the relevant application.

1.1.3 Place of storage

This manual and all other associated documentation for hardware and software must always be kept in a location where they will be readily accessible and close to the amplifier or the equipment in which it is installed.

1.1.4 Warranty and liability

This manual only describes the functionality and influence of the parameters. The described software functionality can be used in various amplifier models which can be implemented in a vast range of applications. Hence it is not possible to assume liability for the influence of the parameters. Please refer to the safety instructions and remarks in the related operating instructions.

1.1.5 Typographical conventions



DANGER

Identifies safety instructions that are intended to warn of an immediate and impending danger to life and limb.

Failure to observe these safety instructions will inevitably lead to death, serious personal injury (disablement)!



WARNING

Identifies safety instructions that are intended to warn of potential danger to life and limb.

Failure to observe these safety instructions might lead to death, serious personal injury (disablement)!



CAUTION

Identifies safety instructions that are intended to warn of slight personal injury.

Failure to observe these safety instructions might lead to slight personal injury.

NOTICE

Failure to observe this safety notice can result in property damage!

2 Terminal program “TeraTerm”

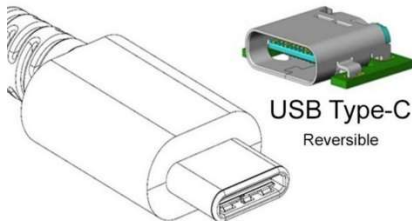
You can find the terminal program “TeraTerm” *1 at our webpage by using the following link:

http://www.h-c-s-gmbh.de/images/download/software/archiv/Tools/Setup_Teraterm_4.106.0.0.exe

Please download and install: “**Setup_Teraterm_4.106.0.0.exe**”
“TeraTerm” is an product of © TeraTerm project

2.1 USB connection type

The connector to communicate with the PC is an USB type “C” connector.



2.2 Install the USB driver for the device

NOTICE

During the installation process of the HCSTool, all necessary USB drivers are pre-installed.

If using Windows-7 or an older Windows version, you may have to install an USB driver to communicate with the device.

The USB driver can be found on our web-page.

https://www.h-c-s-gmbh.de/images/download/software/archiv/USB_driver/VCP_V1.5.0_Setup_W7_x64_64bits.exe

When using Windows10 or higher, the USB driver is already included in the windows setup, no extra driver is needed.

2.3 Connection of DAC4(A) to PC

Connect the DAC4(A) with a USB cable to your computer. An USB connector type USB-C is needed
An external supply is not needed. The USB connection is able to supply the DAC4(A)

NOTICE

If the DAC-4x(A) is connected via USB-C, no extra Supply is needed

When connecting via RS232, an external 12 ... 24 V power supply is required.

The Power LED shows if the power is connected to the DAC4(A) and USB or RS232 communication is possible.

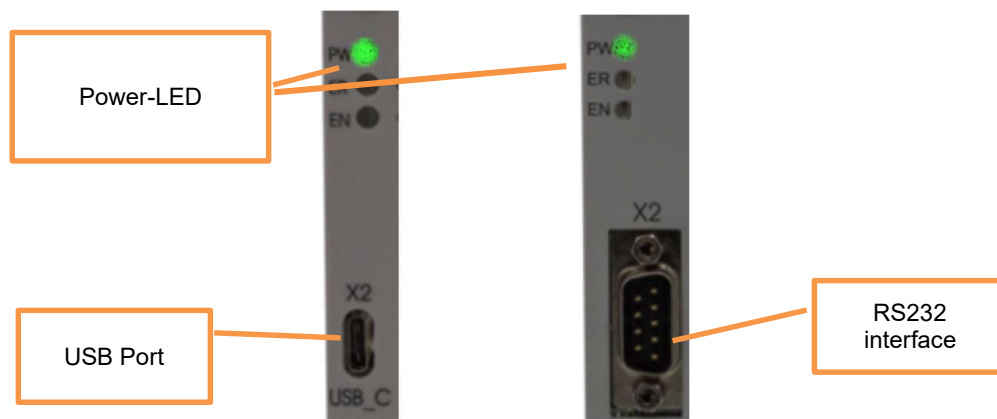


Figure 1: Top view, status LEDs and USB port

2.4 Setup “TeraTerm” for communication

TeraTerm is set automatically during installation to the following values:

Feature	Data
Speed	19200
Data	8
Parity	none
Stop bits	1
Flow control	none

To open the setup feature of “TeraTerm” please open Setup→ serial port..

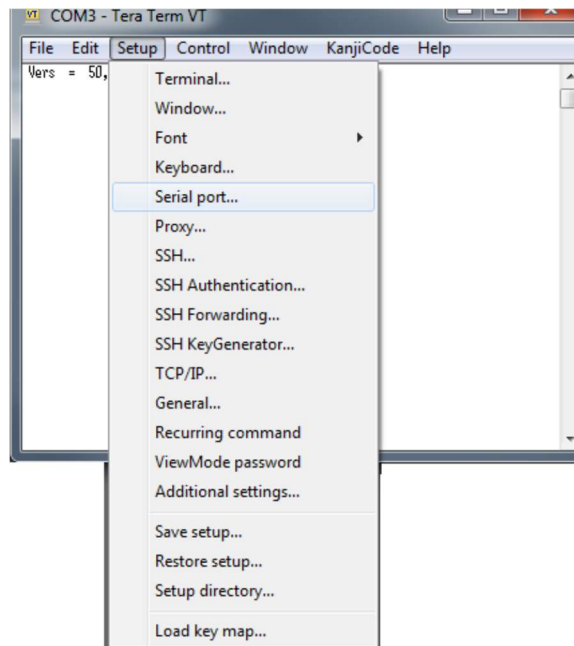


Figure 2: TeraTerm setup selection

2.5 Connected to DAC-4x(A)

Select the proper “COM Port” (In this example “COM3” as USB communication port is used)
Here the STM driver for windows is used. This driver is included in the installation package of the HCSTool.

NOTICE

If you not sure witch COM Port is needed,
You can look into the windows device manager.



STMicroelectroni
cs Virtual COM
Port (COM3)

here COM3 is used.

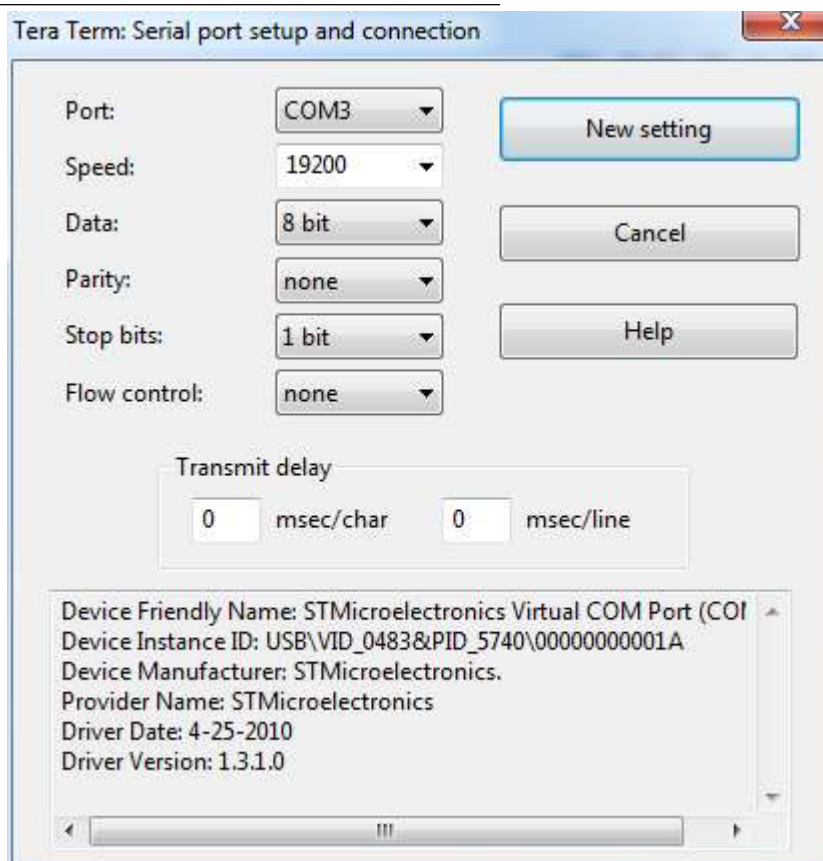


Figure 3: TeraTerm setup with DAC4(A) connected

2.6 Procedure 1, while DAC-4x(A) is running, Step by Step:

Example: update software to version *V01.11a from 23.10.2020*

NOTICE

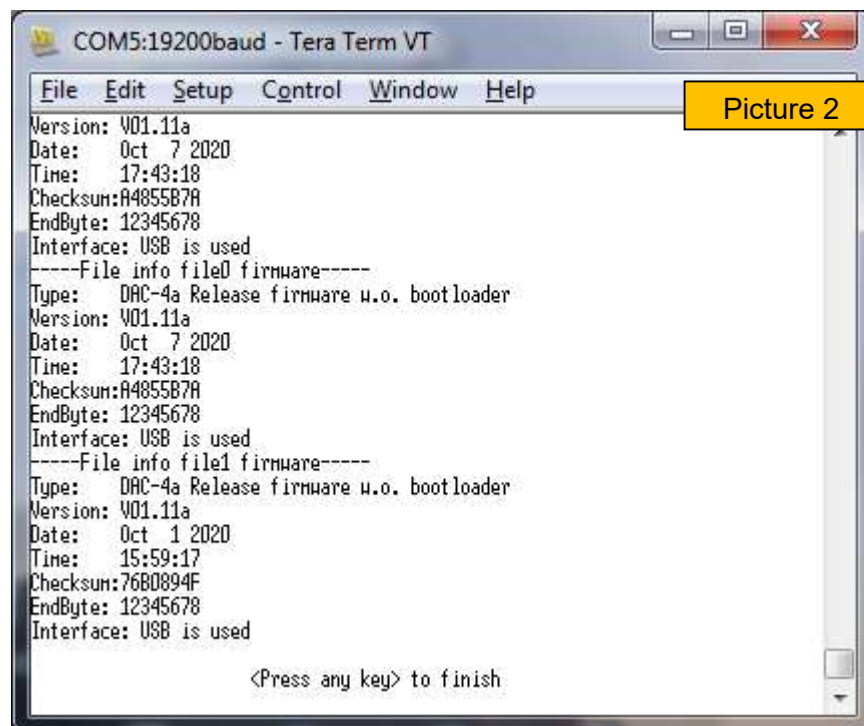
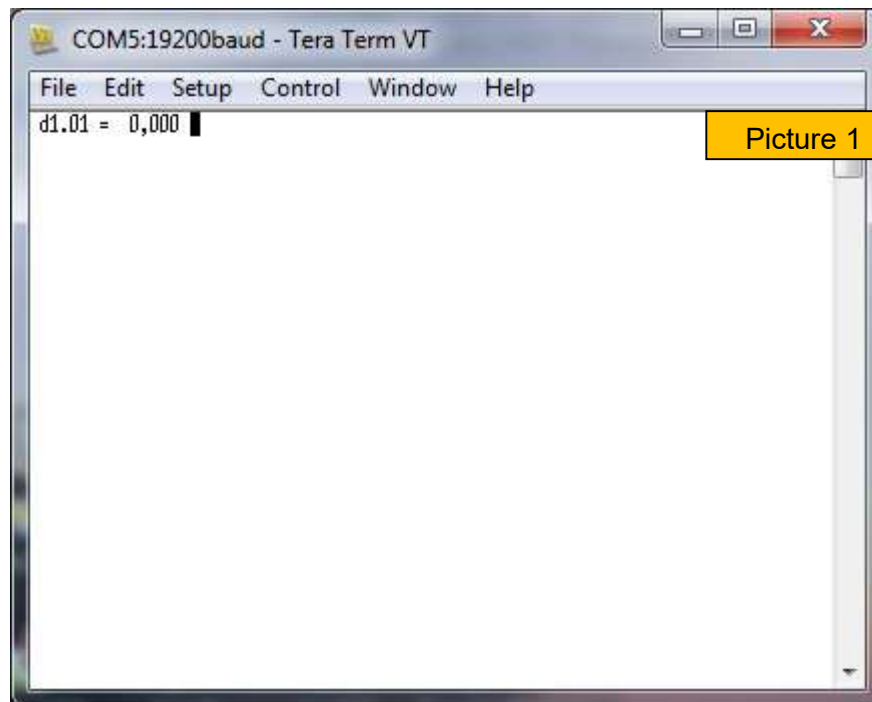
Do not cut the connection between PC and DAC-4x(A) board to the power supply during download!

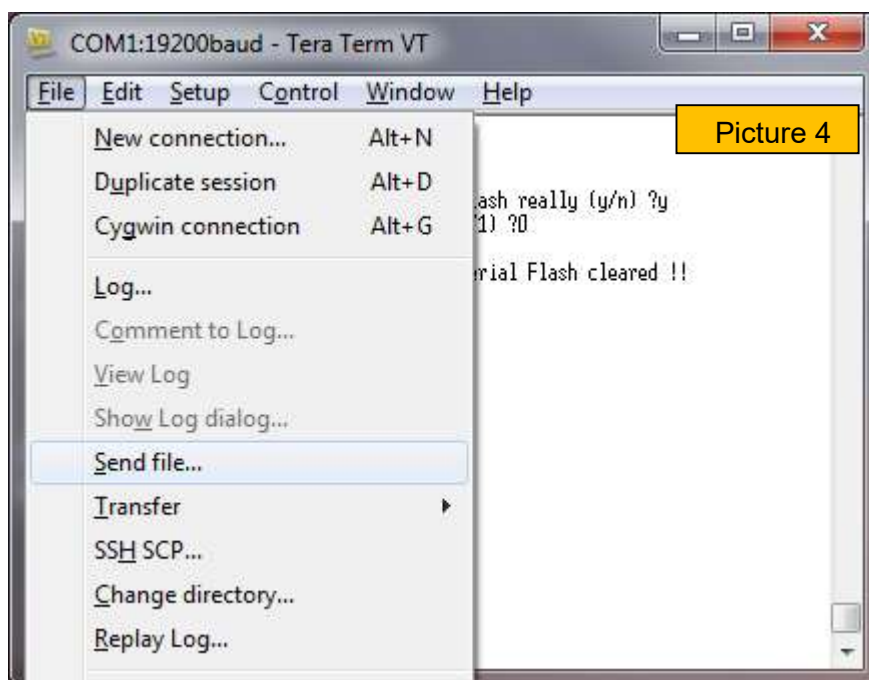
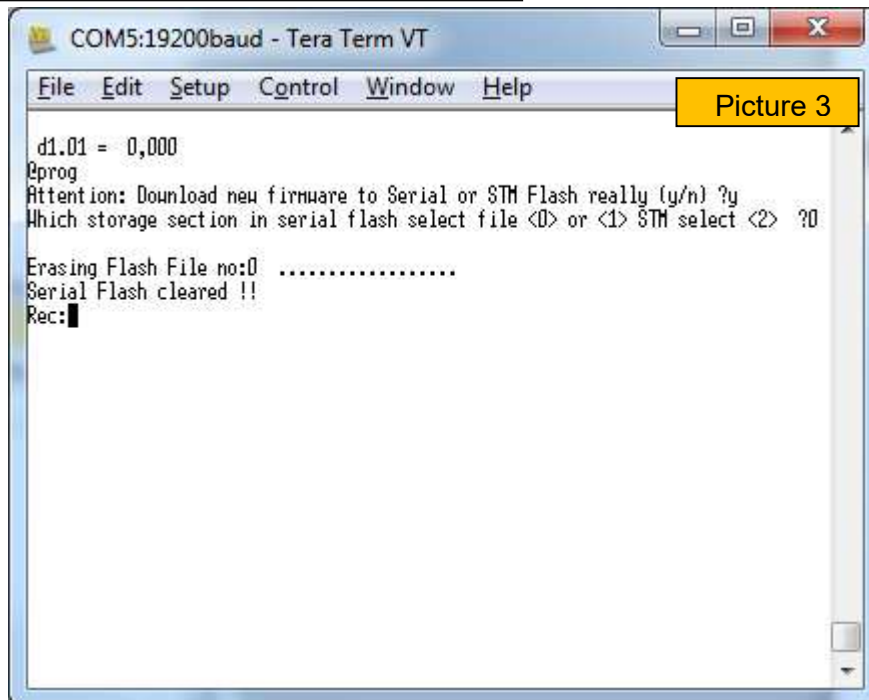
After a failed download the procedure can be repeated.

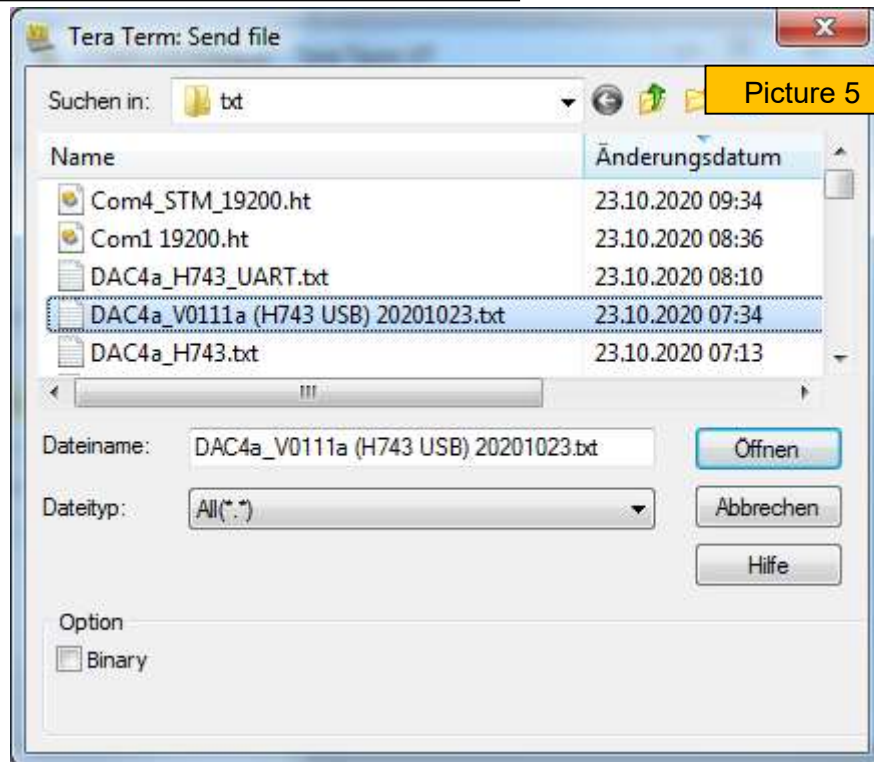
tep	Picture	Action	Input at TeraTerm / keyboard / response screen
		- Power on the DAC4a device - Plug in the USB cable of the PC to start communication - The USB driver will be installed and activated by windows. (Please be sure, when using windows7 or older, to install an USB driver first)	
1	1	When the DAC-4x(A) is powered up, and will show the value of parameter d1.01. To check witch SW	d1.01 = 0,002 a
2	2	When the DAC-4x(A) is powered up, and will show the value of parameter d1.01. To check which SW is used by the DAC4, you can use the comman "@info"	@info

3	3	Type the keyword "@prog" and "Enter"	Attention: Download new firmware to Serial Flash really (y/n) ?
4	3	Now enter "y" (for yes) →	y
Note: Do not use the "Return" key!			
5	3	Following the response will be shown →	Which storage section in serial flash select file <0> or <1> STM select <2>?
6	3	Select storage location file0 and type "0"	0
6	3	Internal flash will be erased and the controller waits for the new file	Erasing Flash File no: 0 Serial Flash cleared !! Rec:
5	4	Select "File" →	Drop down menu opens
6	4	Select "Send file ..." →	Next window opens → Pic. 5
7	5	Now browse for the file to be downloaded ...	---
8	5	Select file to be downloaded ... Here the same Version V1.11a, but with newer date (23.10.2020)	---
9	5	Accept with "Open" (Öffnen) →	Next window opens → Pic. 6
10	6	Screen will show download information indicating progress	---
11	7	Also screen will show in the background several rows of signs also indicating progress →	*****+++++***** +++++++.....
Note: If this takes extremely long, than most likely the TeraTerm setup is not correct or download was interrupted. Stop downloading and verify the adjustment! Then repeat ...			
12	7	After approx. 2 minutes the download in the flash memory file0 is finished → The last firmware in the main memory is still active (in this case V1.11a from 7.10.2020)	***** Programm download finished d1.01 = 0.000
13	8	<u>Optional:</u> With the "@info" command all firmware versions in the different memory location is shown. Press any key to stop the display.	
13	9	Activate the firmware in flash memory file0 with command "@activate0", answer with "y" (for yes)	y
14	10	The program memory will be erased, and the new firmware will be copied from storage file0 to the main memory.	+++++++ Done
15	11	The DAC4a restarts with the new firmware V01.11a. To activate the USB communication, please close the TeraTerm program and plug out/in the USB cable.	Vers = 1.11a

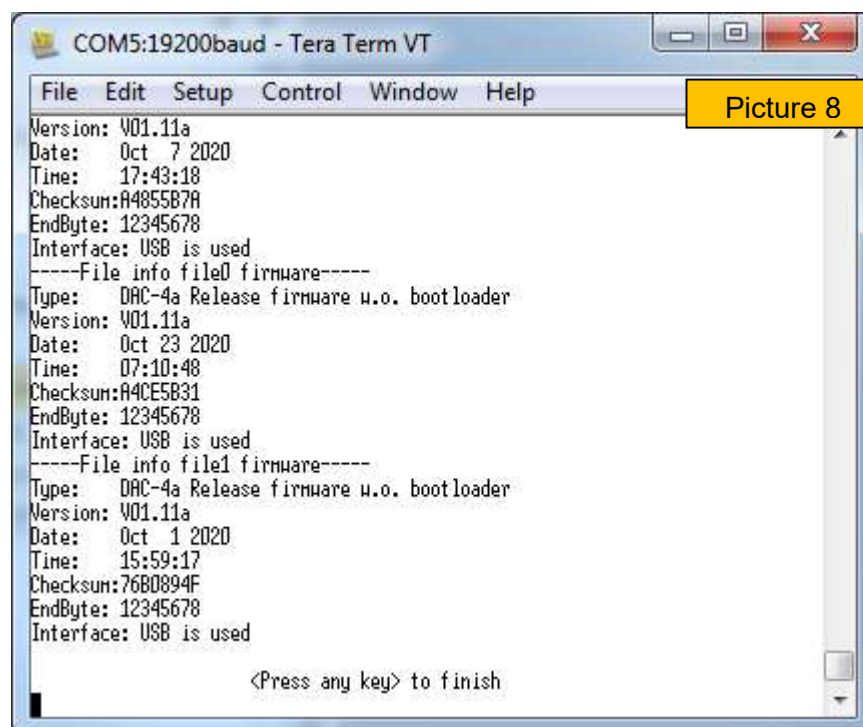
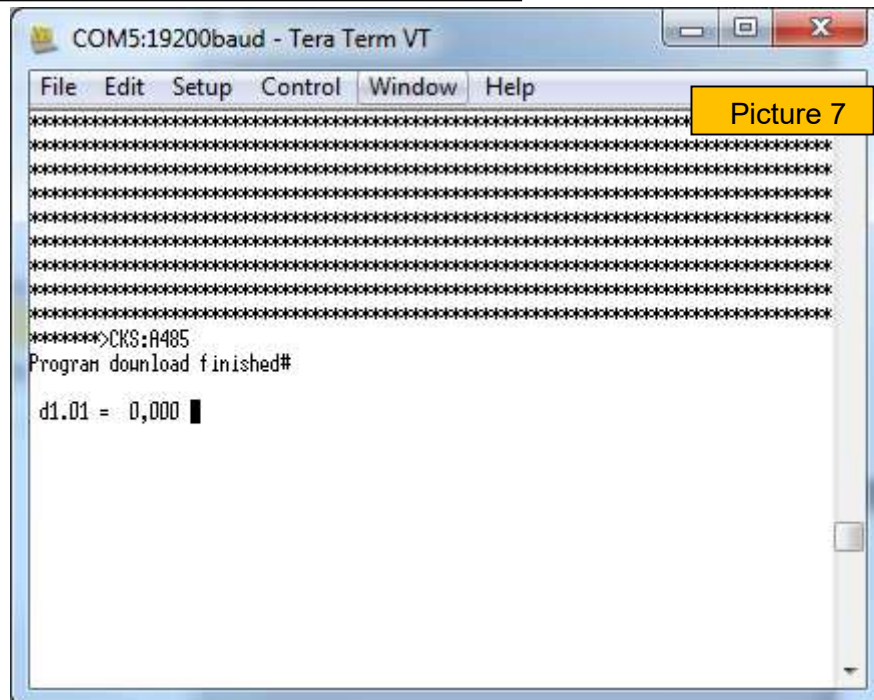
2.7 Procedure 1, picture 1 to 11:

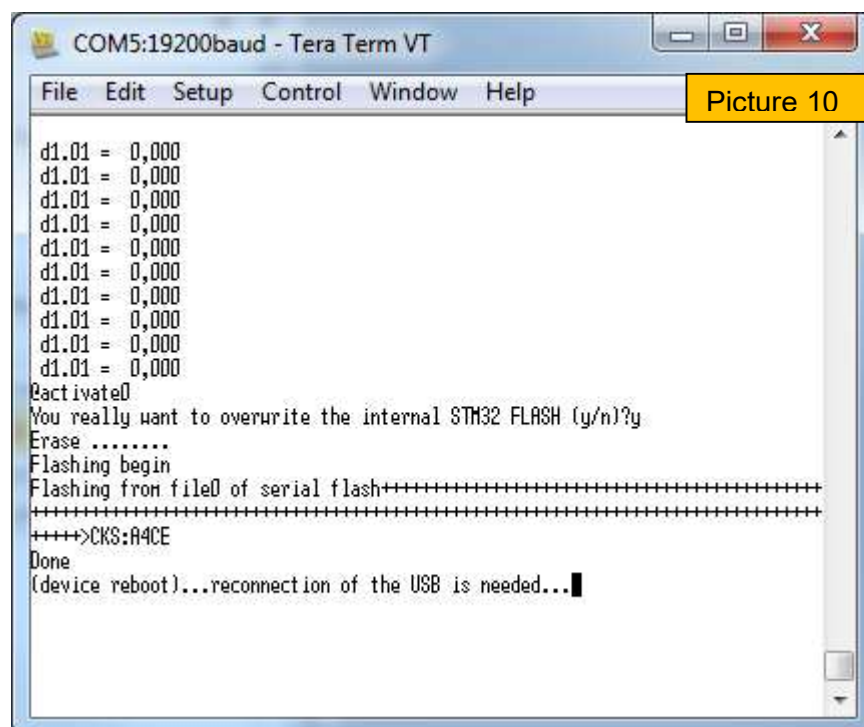
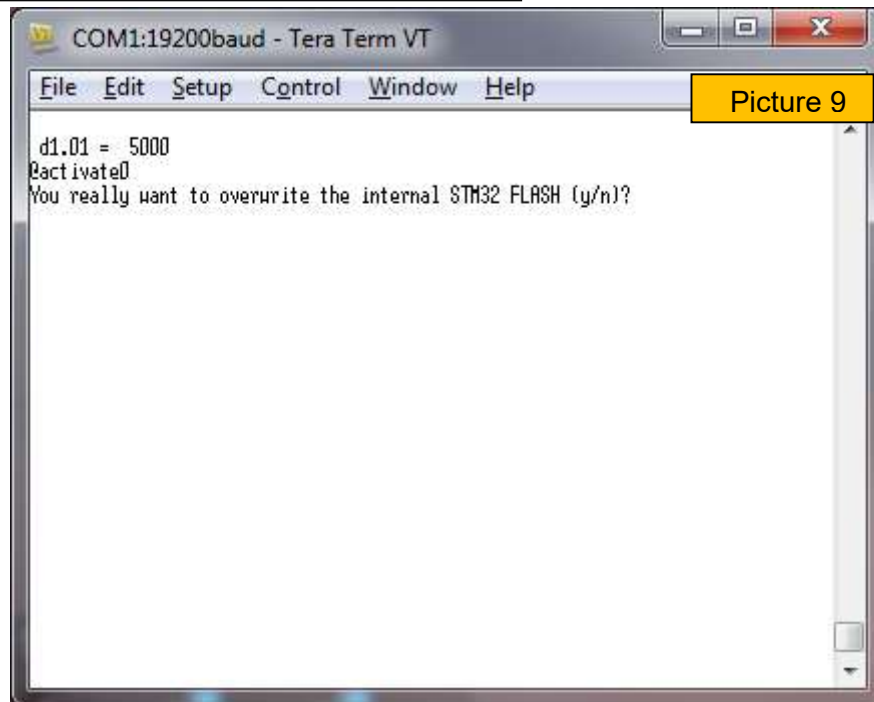






Download time: approx. 2 min.





Picture 11

2.8 Procedure 2, while DAC-4x(A) is booting, Step by Step:

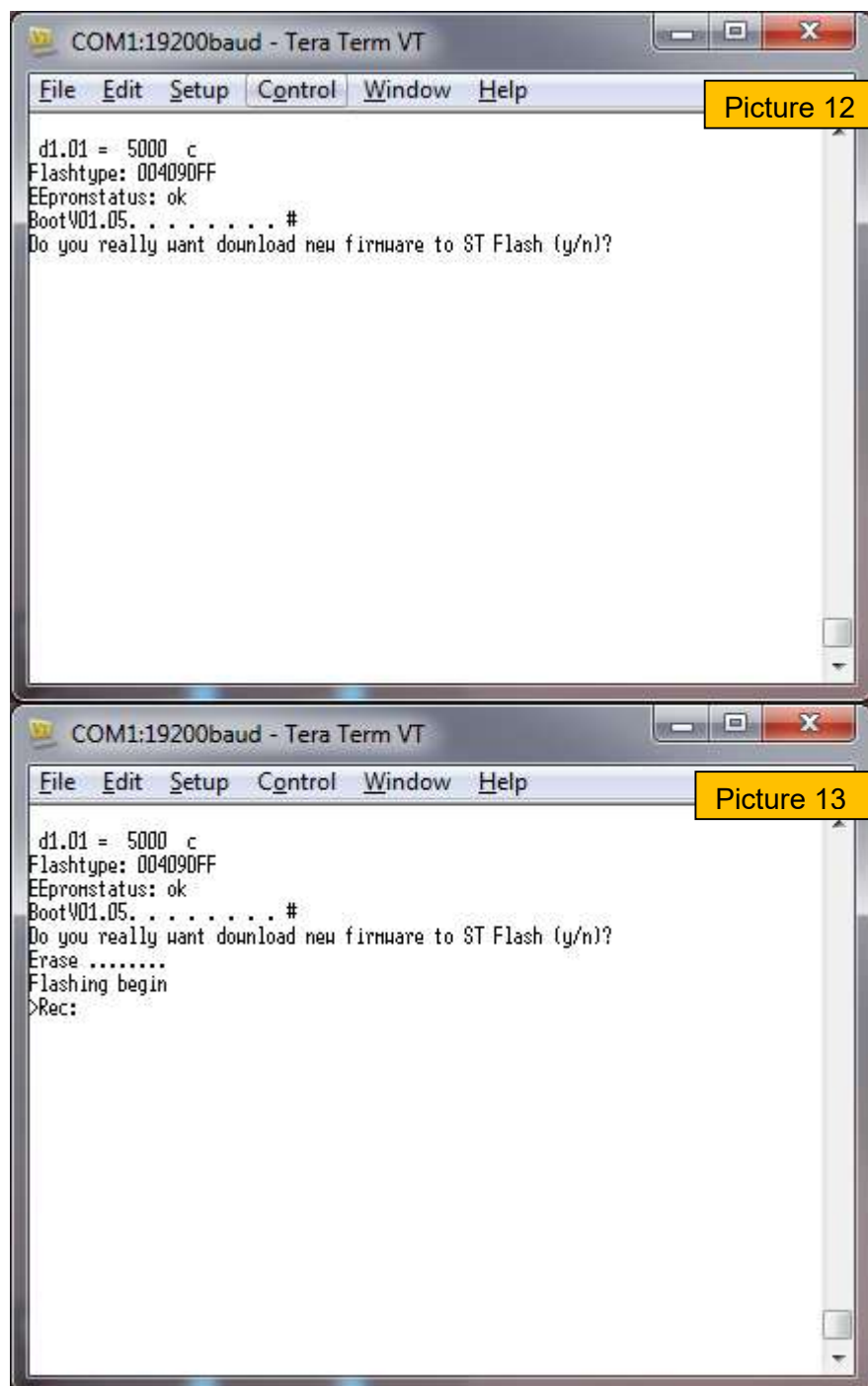
Example: update software to version V01.16c

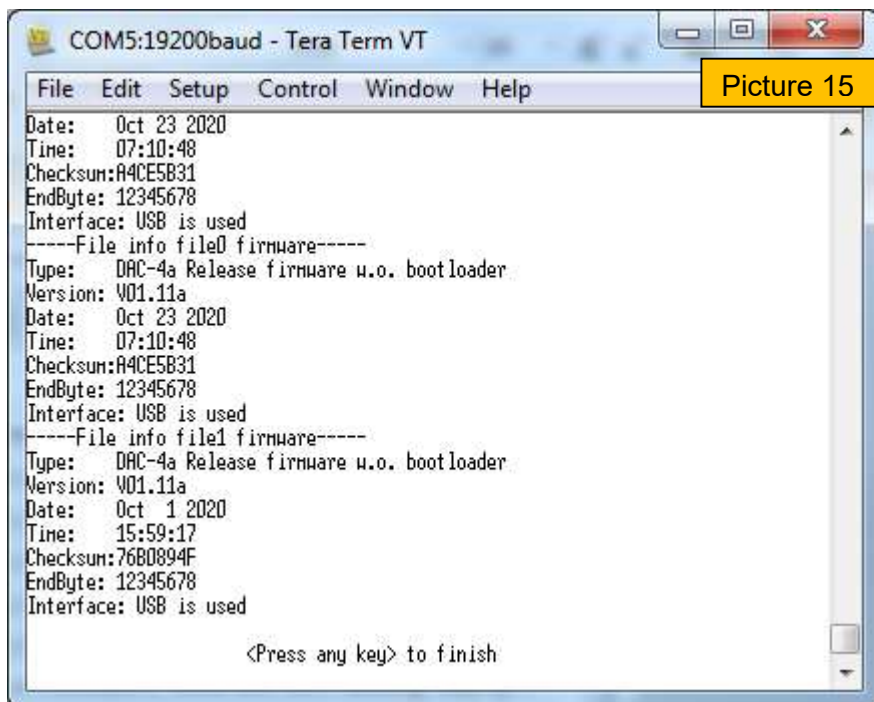
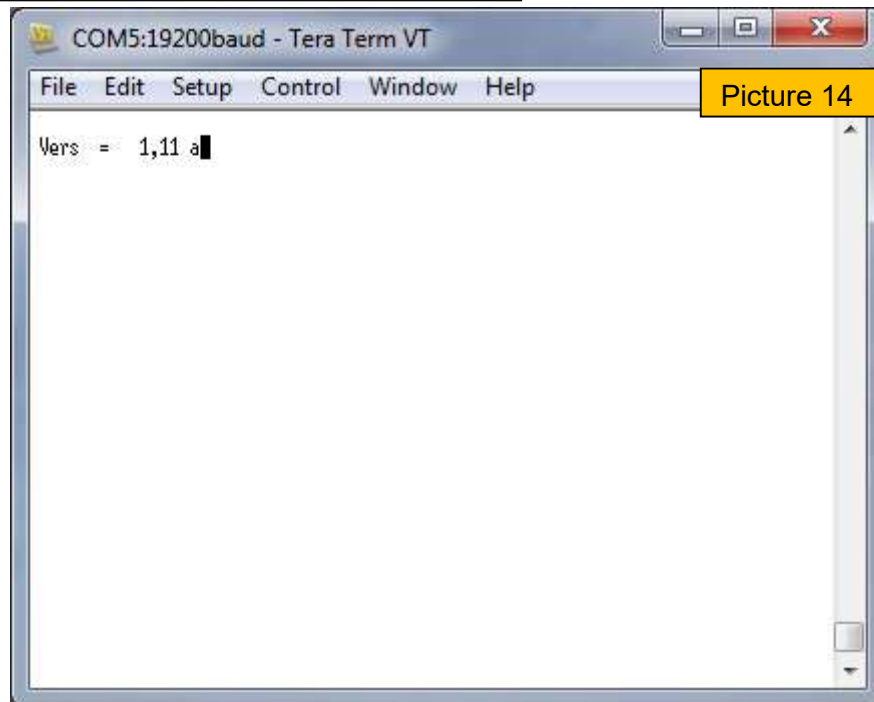
NOTICE	
Do not cut the connection between PC and DAC-4x(A) board to the power supply during download!	
After a failed download the procedure can be repeated.	

Step	Picture	Action	Input at TeraTerm / keyboard / response screen
1	12	When the DAC-4x(A) is powered up then the „boot-sequence“ will start. Before the actual firmware of the controller is shown, type '#' to interrupt the boot sequence.	BootV01.05 .. #
2	12	The bootsequence is interrupted by typing '#'	BootV01.05 .. # Do you really want download new firmware to ST Flash (Y/N)?
3	13	Now enter "y" (for yes) → The main flash	y
Note: Do <u>not</u> use the "Return" key!			
4	13	The main program will be erased	Erase Flashing begin >Rec:
5	4	Select "File" →	Drop down menue opens
6	4	Select "Send file ..." →	Next window opens → Pic. 5
7	5	Now browse for the file to be downloaded ...	---
8	5	Select file to be downloaded ...	---
9	5	Accept with "Open" (Öffnen) →	Next window opens → Pic. 6
10	6	Screen will show download information indicating progress	---
11	7	Also screen will show in the background several rows of signs also indicating progress →	*****+++++***** +++++++.....
Note: If this takes extremely long, than most likely the TeraTerm setup is not correct or download was interrupted. Stop downloading and verify the adjustment! Then repeat ...			
12	14	After approx. 3 to 5 minutes the download in the flash memory file0 is finished →	***** Programm download finished Vers = 02,01b

13	15	<u>Optional:</u> With the “@info” command all firmware versions in the different memory location is shown. The updated new SW Version V 1.11a is stored in the STM32 memory space as well in the file0 space. Press any key to stop the display.	
----	----	--	--

2.9 Procedure 2, picture 12 to 15:



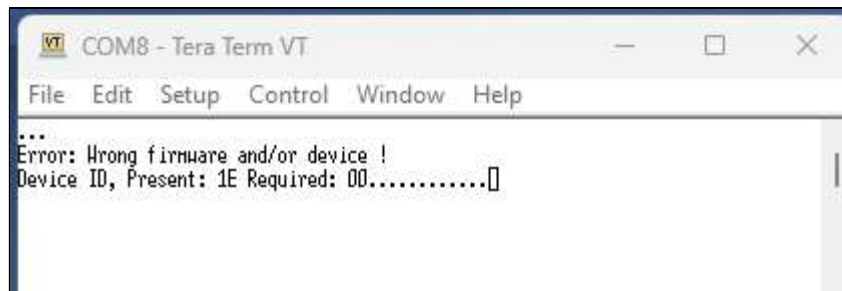


¹ Teraterm: © TeraTerm project

3 Troubleshooting

If the firmware download was interrupted or another error occurred, the card cannot complete the boot process successfully. In this case, the front panel display will show the error code "--19".

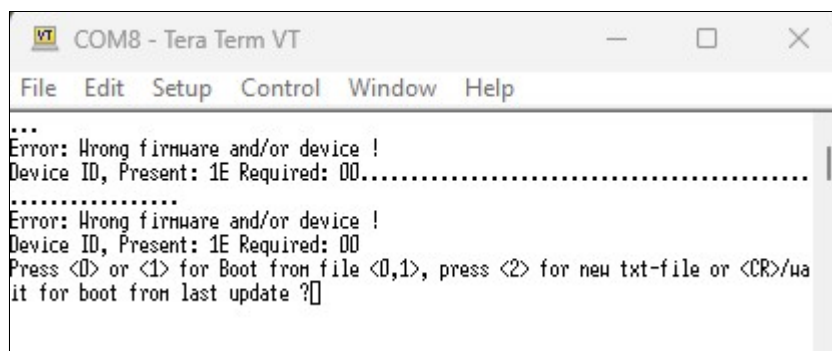
In the terminal program, the following message will be displayed when **any key** is pressed:



```

VT COM8 - Tera Term VT
File Edit Setup Control Window Help
...
Error: Wrong firmware and/or device !
Device ID, Present: 1E Required: 00.....
    
```

Pressing the **Return key** displays the following selection menu:



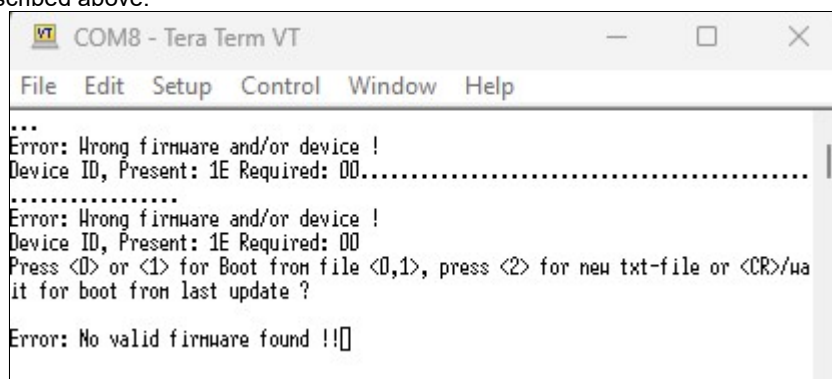
```

VT COM8 - Tera Term VT
File Edit Setup Control Window Help
...
Error: Wrong firmware and/or device !
Device ID, Present: 1E Required: 00.....
.....
Error: Wrong firmware and/or device !
Device ID, Present: 1E Required: 00
Press <0> or <1> for Boot from file <0,1>, press <2> for new txt-file or <CR>/wa
it for boot from last update ?
    
```

➔ Please now start the firmware download as described in “**Procedure 1**”, **Step 1**.

If the error message “**Error: No valid firmware found !!**” appears, the internal timeout has expired. In this case, restart the card and begin the process again using option <0>, <1>, or <2>

from the menu described above.



```

VT COM8 - Tera Term VT
File Edit Setup Control Window Help
...
Error: Wrong firmware and/or device !
Device ID, Present: 1E Required: 00.....
.....
Error: Wrong firmware and/or device !
Device ID, Present: 1E Required: 00
Press <0> or <1> for Boot from file <0,1>, press <2> for new txt-file or <CR>/wa
it for boot from last update ?

Error: No valid firmware found !!
    
```

[illegible]

Page: 17 of 17