

graphiCAL file transfer program

The program in the graphiCAL calculator gives the possibility to transfer the program memory (PROG_RAM) to an external computer or to download a program from there, or to upload the program in PROG_RAM in a text file (txt).



The part marked **in green is graphiCAL**. The part marked **with burgundy** represents a USB-A 2.0 to USB-C 3.0 cable. The block marked **in blue** represents the PC loaded with the terminal program. A terminal program can be, for example, TeraTerm.

The TeraTerm program is a free downloadable application. (I use version 4.74.) The necessary settings can be made in the Setup menu.

Terminal Setup: Terminal Size: 120 * 80
Receive: CR + LF
Transmitted by CR
Terminal ID: VT100

Window.... In the window setting, you can set the colors, the shape of the "cursor", etc. can be determined. Everyone can set this according to their own taste.

Font Setup: Font: Fixedsys
Font Style: Regular
Font Size: 9
Script: Central European

Serial Port.... Port: the number of the previously selected Port.
Baud-rate: The value set in the PIC must be entered : 115200
Data: 8 bits
Parity: none
Stop: 1 bit
Flow Control: none (we use no control signals)

The file transfer can be started from the Menu:

After pressing the **MNU** key, use the navigation dial to select the **File transfer** line and validate it by pressing the dial.

```
Set date----->
Set time----->
Set contrast---->
Run Monitor----->
Get ID.----->
File transfer----> <
Bootloader----->
Exit----->
```

```
TXT send: RUN
File send: STO
File rec.: RCL
Exit: CLx
```

If it is not connected to the PC, this inscription is displayed and:

```
No PC connection
```

The PC screen reads **File transfer from/to PC .**

From software version 2.2, it is possible to upload the program list in text format. The first few lines of the test program (99) look like this:

```
000 R/S
001 FIX 4
002 RCL 0
003 EX
004 4
005 ÷
```

Text-file sending can be initiated with the **key**, program code with the **key** (STO: STOrage, storage), and reception with the **RCL** key (RCL: ReCaLL, recall).

Sending a file: After pressing the **RUN** or **STO** key, the following text appears:

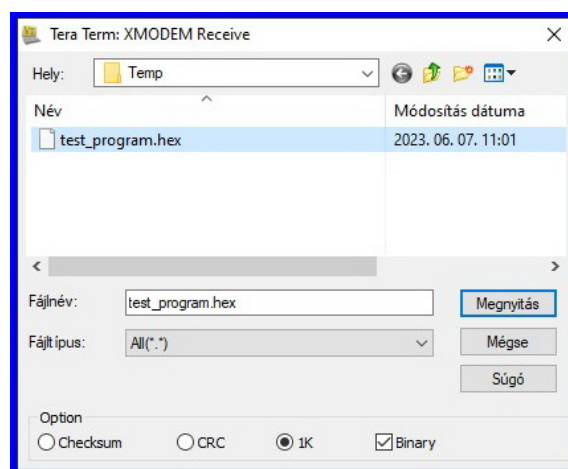
**Send the program
to PC. Follow
the instructions
on the screen!**

At the same time, we can read this on the screen:

- Step 1: Tera-Term -> File -> Transfer -> XMODEM -> Receive...
- Step 2: Select an old or enter a new file name.
- Step 3: Click on the 1K option
- Step 4: Change the extension into txt or TXT
- Step 5: Click on the OPEN

Note: The txt or TXT extension is recommended for the text file. When uploading the program code, line 4 is:

- Step 4: Change the extension into hex or HEX



When starting the file transfer (File Transfer), in the **Location:** window, **teraterm** subdirectory is displayed. I usually use the Temp subdirectory created in **C: **. It is easier to find the necessary file here. **It is important** that the **1K** option is turned on! Then just click the Open button. Uploading the text file takes 4 seconds. Uploading the hex file takes 1 second. After successful upload, the screen reads:
All data have been sent.

(The length of the text file is always 4096 bytes, and that of the program code is 1024 bytes.)

The reception of the file can be started by pressing the **RCL** key.

Receive a prgm.
from PC. Follow
the instructions
on the screen!

Instructions on the PC monitor screen:

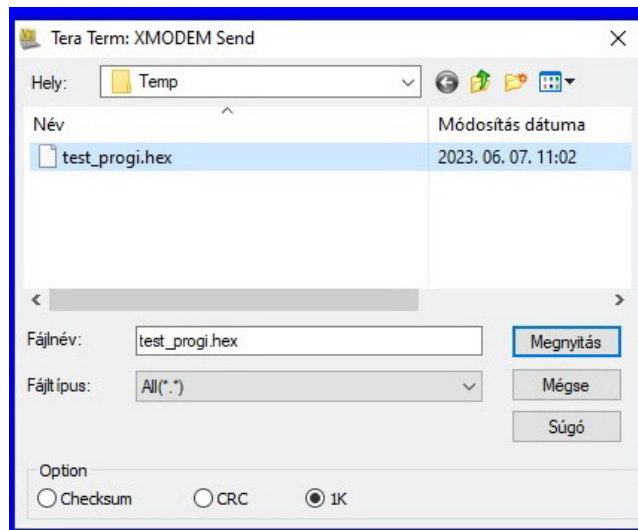
Step 1: Tera-Term -> File -> Transfer -> XMODEM -> Send...

Step 2: Select the file to be transferred.

Step 3: Click on the 1K option!

Step 4: Click on the OPEN

Step 5: Push the ENTER button on the graphic, to start the transmission.



It is important that the **1K** option is turned on!

The upload of the program does not start automatically. Here you have to press the **ENTER** key on **graphiCAL**.

Downloading the file also takes 1 second.

After a successful download, the text displayed on the screen:

Program has been received

Very rarely, a transmission error may occur. In this case, the error message: **Time is over!** (timeout). If other errors occur and **graphiCAL** does not respond to any keys, you must wait until the **Watchdog** circuit stops the calculator. This time is 524 seconds (almost 9 minutes). The reason why the time is so long is because while editing the program, do not switch it off at too short intervals. When **graphiCAL** is in non-editing mode, it switches off after 2 minutes. (In this case, the **Watchdog** circuit does not stop the machine.)

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