CASIO FX-603P RS-232C Operations Guide (TeraTerm)
Quick Reference – Rev 1.2

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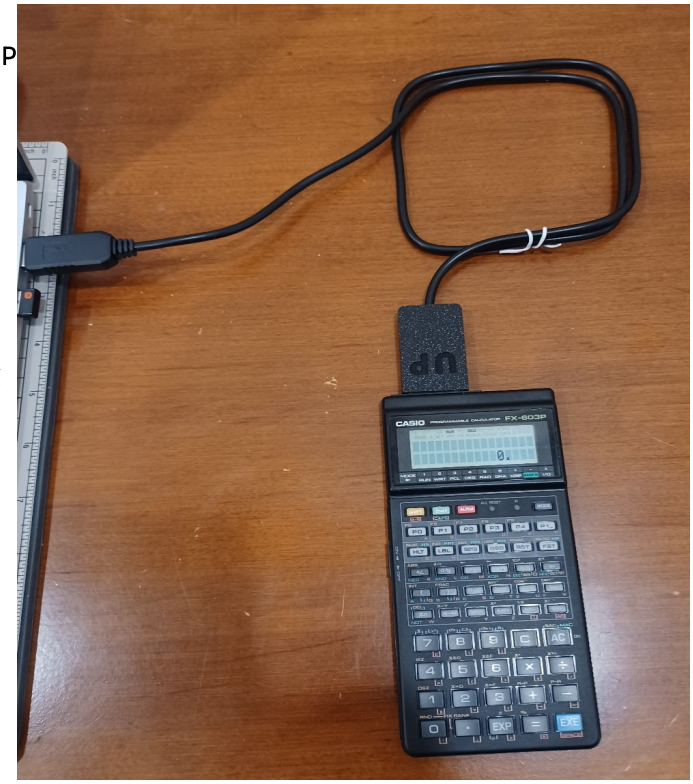
Environment

TeraTerm for Windows
FX-603P
CASIO USB Cable

This picture demonstrates a CASIO FX-603P connecting to a PC using the CASIO USB Connector[1].



The CASIO USB interface cable is functionally equivalent to using the CASIO FA-6's serial port connected to a computer via a USB-to-serial adapter, providing direct PC-to-calculator RS232C transfer for the FX-603P and other compatible models.

1 https://www.casio880.com/en/product/cable-interface-casio-usb-880850en/

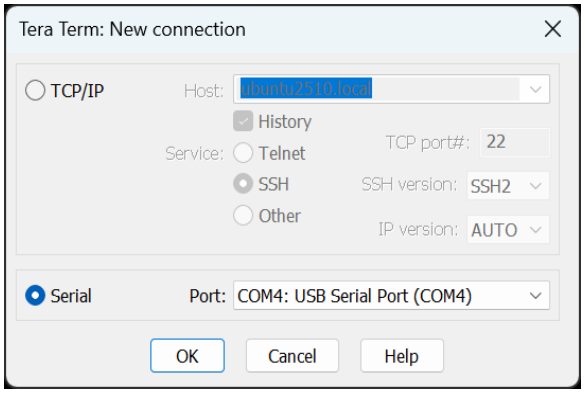
Windows serial port configuration

For the sake of simplicity we will setup TeraTerm with the default values defined in the FX-603P.

Parameter	Value
Speed	1200 bps
Bits	8
Parity	Even
Stop Bits	2
RTS/CTS	No
XON/OFF	No

We recommend using a 10 ms per character delay and 100 ms per line delay in transfers terminating on the FX-603P.

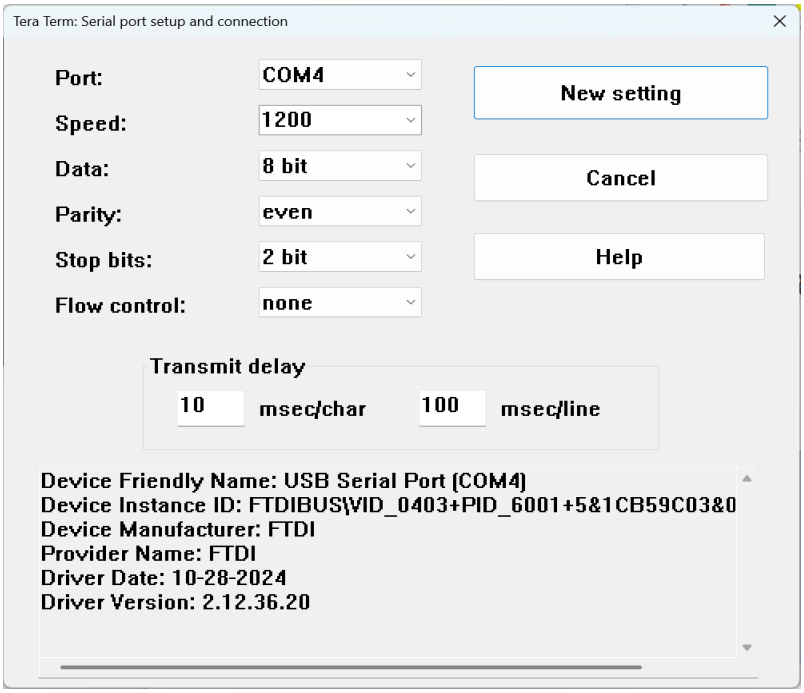
Open TeraTerm. Ensure the USB cable is connected to your PC and that the USB port is managed directly by Windows rather than a virtual machine (e.g., VMware).



The COM port number (e.g., COM4:) may vary, but seeing "USB Serial Port" listed in TeraTerm confirms that the interface cable is recognized.

Press New setting to accept this configuration.

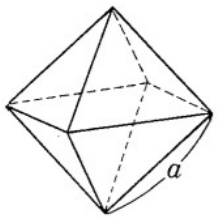
Then use the Setup menu save it to disk. The default name is TERATERM.INI .



Sample FX-603P program

Next, you will learn how to send an FX-603P ASCII program from TeraTerm to the calculator, using the program detailed on pages 41 and 42 of the manual as an example.

Example: Find the surface area and volume of a regular octahedron when the length of one side is given.



Length of one side (a)	Surface area (S)	Volume (V)
10cm	( )cm^2	( )cm^3
7	( )	( )
15	( )	( )

(1) Formulas

For surface area S, volume V, and one side a, the formulas for calculating S and V of a regular octahedron are:

$$S = 2\sqrt{3}\,a^2 \qquad V = \frac{\sqrt{2}}{3}a^3$$

To store the previous program in P0:

P0 ↑ Program number required

HLT, Min ↑ To input data F, 2, ×, 3, SHIFT √, ×, MR F, SHIFT x^2, =, HLT ↑ To see the result, 2, SHIFT √, ÷, 3, ×,

MR F, SHIFT x^y, 3, =, HLT, ↑ To see the result (21 steps)

The program was transcribed onto the FX-603P and exported as ASCII text. Note the close similarity between the calculator's key labels and their text representation. Be sure to retain the blank line following END, as it is required when loading the text back into the calculator.

```
Program List
P0
HLT
Min01 2 * 3 SQR * MR01 X^2 = HLT
2 SQR / 3 * MR01 X^Y 3 = HLT
END
```

Importing programs with RSLOAD

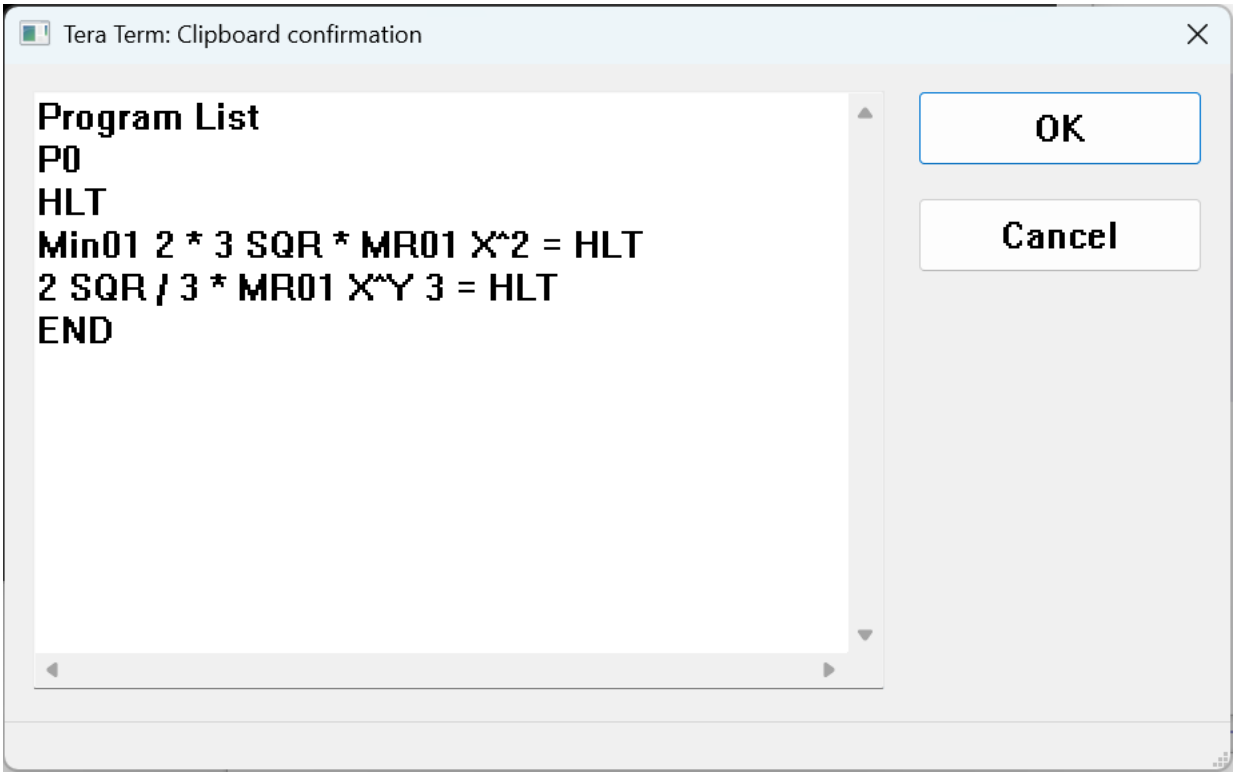
Initialize all program areas
[MODE][3][2ndF][MAC]

Prepare the FX-603P to LOAD a program in P0
[MODE][X][SHIFT][RSLOAD][P0][EXEC]

Select all the grayed area and copy it to your clipboard.

```
Program List
P0
HLT
Min01 2 * 3 SQR * MR01 X^2 = HLT
2 SQR / 3 * MR01 X^Y 3 = HLT
END
```

Move to the TeraTerm window and right-click to paste.



TeraTerm does not provide feedback of the transfer. If you suspect that your FX-603P is “hanging” press [Enter] a couple of times on TeraTerm.

After the transfer is completed run the program on the FX-603P using the following sequence of keystrokes. You will be providing 10 as the input value for the program.

[MODE][1][P0]
[1][0][EXE]
Result (Surface): 346.41...
[EXE]
Result (Volume): 471.40...

Exporting programs and data with RSSAVE

Transfer the P0 program and memory content to your TeraTerm session by entering the following key sequence.

[MODE][X][SHIFT][RSSAVE][P0][EXEC]

TeraTerm screen:

```
Program List

P0

HLT
Min01 2 * 3 SQR * MR01 X^2 = HLT
2 SQR / 3 * MR01 X^Y 3 = HLT

END
```

Note that the listing produced by the FX-603P has additional empty lines.

Transfer the memory content to your TeraTerm session by entering the following key sequence.

[MODE][1][SHIFT][RSSAVE][EXEC]

TeraTerm screen:

```
Memory List
M00= 0.
M01= 1.E 01
M02= 0.
M03= 0.
M04= 0.
M05= 0.
M06= 0.
M07= 0.
…
M96= 0.
M97= 0.
M98= 0.
M99= 0.
M9F= 0.
```

The listing includes all registers, though it has been shortened here for brevity. Note that M01 equals 1.E 01, which corresponds to the value 10 provided as input to the program and stored in register 01 using the Min01 instruction.

Importing data with RSLOAD

```
Memory List
M00= 1.
M01= 2.
M02= 3.
M03= 0.
M04= 0.
M05= 0.
M9F= 0.
```

[**MODE**][1][SHIFT][**RSLOAD**][**EXEC**]

Select all the grayed area and copy it to your clipboard.
On TeraTerm, right-click paste.

It appears that the M9F entry is required for the transfer to complete naturally on the FX-603P. Conveniently, this feature also lets you load only the specific registers of interest rather than the entire list. If the transfer appears to hang, simply press [ENTER] a few times in TeraTerm.

Another RSLOAD example

Clear program P1.
[MODE][3][P1][EXE]

Load the modified program into P1.
[MODE][X][SHIFT][RSLOAD][P1][EXEC]

```
Program List

P1

HLT
Min01 2 * 3 SQR * MR01 X^2 = Min02 HLT
2 SQR / 3 * MR01 X^Y 3 = Min03 HLT
END
```

Execute P1.
MODE][1][P1]
[1][0][EXE]
Result (Surface): 346.41...
[EXE]
Result (Volume): 471.40…

Transfer memory.
[MODE][1][SHIFT][RSSAVE][EXEC]

```
Memory List

M00= 0.
M01= 1.E 01
M02= 3.46410161512E 02
M03= 4.7140452079E 02
M04= 0.
M05= 0.
M06= 0.
M07= 0.
…
```

Note that M02 and M03 register the area and volume results.

Cubic solution using RSLOAD

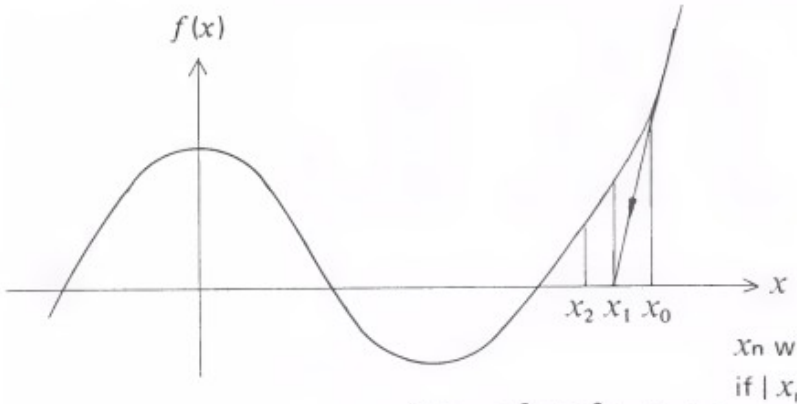
We will use a corrected version of the program Mathematics-8 “Solving a cubic equation by the Newton method” found on page 17 of the “Program Library CASIO FX-603P” handbook.

Program for
Solving a cubic equation by the Newton method

No.
Mathematics-8

Description

• Input the program written in the next page.



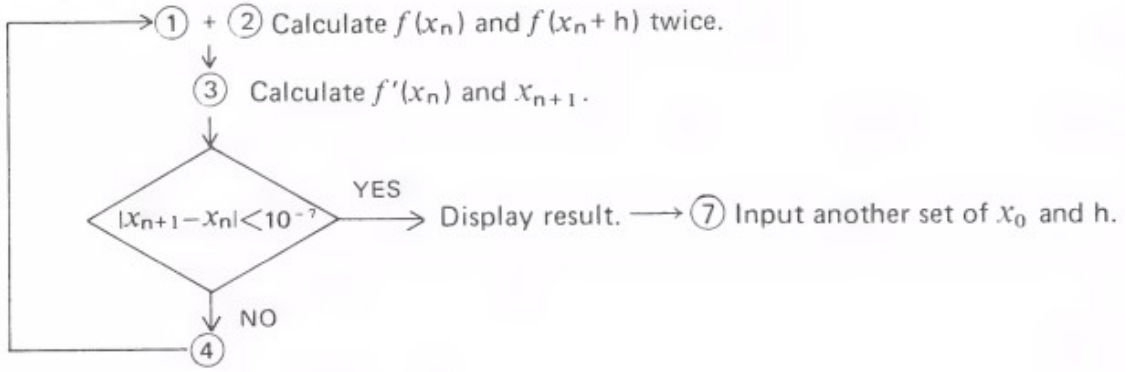
$$x_{n+1} = x_n - \frac{f(x_n)}{f'(x_n)}$$

$$f'(x) = \frac{f(x+h) - f(x)}{h}$$

x_n will be taken as an approximate solution if $|x_{n+1} - x_n| < \epsilon_0$.

$$f(x) = ax^3 + bx^2 + cx + d$$

< Flowchart >



Example

$f(x) = x^3 + x^2 - x - 1$

$x_0 = 0$, $\epsilon_0 = 1 \times 10^{-7}$, $h = 0.01$

```
Program List

P0

LBL1
  "A?" HLT Min01
  "B?" HLT Min02
  "C?" HLT Min03
  "D?" HLT Min04
  "E0?" HLT MinF
  "X0?" HLT Min05
  "H?" HLT Min06
LBL2
  MR05 Min07
  2 Min00
LBL3
  MR01 * MR05 X^2 * MR05 + MR02 * MR05 X^2 + MR03 * MR05 + MR04 = Min09
  MR06 M+05
  DSZ GOTO4
  GOTO5
LBL4
  MR09 Min08
  GOTO3
LBL5
  MR07 Min05
  ( MR09 - MR08 ) / MR06 = Min09
  MR07 - MR08 / MR09 = Min08
  MR08 - MR07 =
  ABS X>=F GOTO6 GOTO7
LBL6
  MR08 Min05
  GOTO2
LBL7
  "X=" MR08 HLT
  MR01 * MR08 X^2 * MR08 + MR02 * MR08 X^2 + MR03 * MR08 + MR04 =
  "Y=" HLT

END
EOF

[ENTER]
```

Clearing all program areas.
[MODE][3][2ndF][MAC]

Load this program into P0
[MODE][X][SHIFT][RSLOAD][P0][EXEC]

Copy and paste the program on your TeraTerm window.

The program is now ready for execution.

[MODE][1][P0]

Let’s use P0 to solve:

$$f(x) = x^3 - 2x - 5 = 0$$

- Inputs: $A = 1, B = 0, C = -2, D = -5$
- Initial Guess: $X_0 = 2$ (`Min05`), $H = 0.001$ (`Min06`), $E_0 = 0.0001$ (`MinF`)

Enter the input parameters.

The result is X=2.09455 and Y=1.2341E-07 (very close to zero).

Enhance the program and keep count of the number of iterations, if the count exceeds 50 your initial values are probably divergent and the program should end. Display the number of iterations to show how quickly Newton converges in most cases.

RSSAVE and RSLOAD in a nutshell

Send a program	[MODE][X][SHIFT][RSSAVE][Pn][EXEC]
Send all program and memory	[MODE][X][SHIFT][RSSAVE][SHIFT][EXEC]
Send memory contents	[MODE][1][SHIFT][RSSAVE][EXEC]
Receive a program	[MODE][X][SHIFT][RSLOAD][Pn][EXEC]
Receive all programs and memory	[MODE][X][SHIFT][RSSAVE][SHIFT][EXEC]
Receive memory contents	[MODE][1][SHIFT][RSLOAD][EXEC]

Clear all

Registers: [MODE][1][2ndF][MAC]

Programs: [MODE][3][2ndF][MAC]

Acknowledgments

This User Guide was produced by Xandrian Labs. 付喪神.

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