Appendix

Appendix A  Resetting the Calculator
Appendix B  Power Supply
Appendix C  Error Message Table
Appendix D  Input Ranges
Appendix E  2-byte Code Table
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Appendix A  Resetting the Calculator

Warning!
The procedure described here clears all memory contents. Never perform this operation unless you want to totally clear the memory of the calculator. If you need the data currently stored in memory, be sure to write it down somewhere before performing the RESET operation.

To reset the calculator
1. Press [MEM] to display the main menu.

2. Highlight the MEM icon and press [EXE], or press [8].

3. Use [ ] to move the highlighting down to “Reset” and then press [EXE].

4. Press [F1] (YES) to reset the calculator or [F4] (NO) to abort the operation without resetting anything.

• If the display appears to dark or dim after you reset the calculator, adjust contrast.
Resetting the calculator initializes it to the following settings.

<table>
<thead>
<tr>
<th>Item</th>
<th>Initial Setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>Icon</td>
<td>RUN</td>
</tr>
<tr>
<td>Angle Unit</td>
<td>Rad</td>
</tr>
<tr>
<td>Exponent Display Range</td>
<td>Norm 1</td>
</tr>
<tr>
<td>Fraction Reduction</td>
<td>Automatic</td>
</tr>
<tr>
<td>Mixed Fraction</td>
<td>Display</td>
</tr>
<tr>
<td>Graph Type</td>
<td>Rectangular coordinate (Y=)</td>
</tr>
<tr>
<td>Statistical Graph</td>
<td>Automatic</td>
</tr>
<tr>
<td>Variable Memory</td>
<td>Clear</td>
</tr>
<tr>
<td>Answer Memory (Ans)</td>
<td>Clear</td>
</tr>
<tr>
<td>Graphic Display/Text Display</td>
<td>Clear</td>
</tr>
<tr>
<td>View Window</td>
<td>Clear (initialized)</td>
</tr>
<tr>
<td>View Window Memory</td>
<td>Clear</td>
</tr>
<tr>
<td>Graph Function</td>
<td>Clear</td>
</tr>
<tr>
<td>Enlargement/Reduction Factor</td>
<td>Clear (initialized)</td>
</tr>
<tr>
<td>Table &amp; Graph Data</td>
<td>Clear</td>
</tr>
<tr>
<td>List Data</td>
<td>Clear</td>
</tr>
<tr>
<td>Statistical Calculation/Graph Memory</td>
<td>Clear</td>
</tr>
<tr>
<td>Program</td>
<td>Clear</td>
</tr>
<tr>
<td>Input Buffer/AC Replay</td>
<td>Clear</td>
</tr>
</tbody>
</table>

- Performing the RESET operation while an internal calculation is being performed will cause all data in memory to be deleted. Make sure that no calculation be being performed before starting a RESET operation.

- If the calculator stops operating correctly for some reason, use a thin, pointed object to press the RESET button on the back of the calculator. This should make the RESET confirmation screen appear on the display. Perform the procedure to complete the RESET operation.
Appendix B  Power Supply

This unit is powered by two AAA-size (LR03 (AM4) or R03 (UM-4)) batteries. In addition, it uses a single CR2032 lithium battery as a back up power supply for the memory.

If the following message appears on the display, immediately stop using the calculator and replace batteries.

```
***************
Low battery!
***************
```

If you try to continue using the calculator, it will automatically switch power off, in order to protect memory contents. You will not be able to switch power back on until you replace batteries.

Be sure to replace the main batteries at least once every two years, no matter how much you use the calculator during that time.

**Warning!**

If you remove both the main power supply and the memory back up batteries at the same time, all memory contents will be erased. If you do remove both batteries, correctly reload them and then perform the reset operation.

The batteries that come installed in this unit when you purchase it are for factory test purposes, so they will probably not provide normal service life.

### Replacing Batteries

**Precautions:**

Incorrectly using batteries can cause them to burst or leak, possibly damaging the interior of the unit. Note the following precautions:

- Be sure that the positive (+) and negative (−) poles of each battery are facing in the proper directions.
- Never mix batteries of different types.
- Never mix old batteries and new ones.
- Never leave dead batteries in the battery compartment.
- Remove the batteries if you do not plan to use the unit for long periods.
- Never try to recharge the batteries supplied with the unit.
- Do not expose batteries to direct heat, let them become shorted, or try to take them apart.
(Should a battery leak, clean out the battery compartment of the unit immediately, taking care to avoid letting the battery fluid come into direct contact with your skin.)

Keep batteries out of the reach of small children. If swallowed, consult with a physician immediately.

**To replace the main power supply batteries**

* Never remove the main power supply and the memory back up batteries from the unit at the same time.
* Be sure to switch the unit off before replacing batteries. Replacing batteries with power on will cause data in memory to be deleted.
* Never replace the main power supply battery compartment cover or switch the calculator on while the main power supply batteries are removed from the calculator or not loaded correctly. Doing so can cause memory data to be deleted and malfunction of the calculator. If mishandling of batteries causes such problems, correctly load batteries and then perform the RESET operation to resume normal operation.
* Be sure to replace all two batteries with new ones.

1. Press \( \text{SHIFT} \ \text{OFF} \) to turn the calculator off.

2. Push the battery compartment cover on the back of the calculator in the direction noted in the illustration and remove it.

3. Remove the two old batteries.

4. Load a new set of two batteries, making sure that their positive (+) and negative (−) ends are facing in the proper directions.

5. Replace the battery compartment cover and press \( \text{AC} \) to turn power on. The memory back-up battery provides power to the memory while the main batteries are removed, so memory data is not lost.

• Power will not switch on if you press \( \text{AC} \) while the main power supply battery compartment cover is open.
• Do not leave the unit without main power supply batteries loaded for long periods. Doing so can cause deletion of data stored in memory.
• If the figures on the display appear too light and hard to see after you turn on power, adjust the contrast.
To replace the memory back up battery

- Before replacing the memory back up battery, switch on the unit and check to see if the “Low battery!” message appears on the display. If it does, replace the main power supply batteries before replacing the back up power supply battery.
- Never remove the main power supply and the memory back up batteries from the unit at the same time.
- Be sure to switch the unit off before replacing batteries. Replacing batteries with power on will cause data in memory to be deleted.
- Be sure to replace the back up power supply battery at least once 2 years, regardless of how much you use the unit during that time. Failure to do so can cause data in memory to be deleted.

1. Press \texttt{SHIFT} \texttt{OFF} to turn the calculator off.

2. Push the battery compartment cover on the back of the calculator in the direction noted in the illustration and remove it.

3. Remove screw \texttt{A} on the back of the calculator, and remove the back up battery holder.

4. Remove the old battery.

5. Wipe off the surfaces of a new battery with a soft, dry cloth. Load it into the calculator so that its positive (+) side is facing up.

6. Pressing down on the battery with the battery holder, replace the screw that secures the holder in place.

7. Replace the battery compartment cover and press \texttt{AC/ON} to turn power on. The main battery provides power to the memory while the back-up batteries are removed, so memory data is not lost.

About the Auto Power Off Function

The calculator switches power off automatically if you do not perform any key operation for about 6 minutes. To restore power, press \texttt{AC/ON}.

The calculator automatically turns off if it is left for about 60 minutes with a calculation stopped by an output command (\texttt{\textasciitilde Disp\textasciitilde}), which is indicated by the “–Disp–” message on the display.
## Appendix C  Error Message Table

<table>
<thead>
<tr>
<th>Message</th>
<th>Meaning</th>
<th>Countermeasure</th>
</tr>
</thead>
</table>
| Syn ERROR | ① Calculation formula contains an error.  
② Formula in a program contains an error. | ① Use  或  to display the point where the error was generated and correct it.  
② Use  或  to display the point where the error was generated and then correct the program. |
| Ma ERROR | ① Calculation result exceeds calculation range.  
② Calculation is outside the input range of a function.  
③ Illogical operation (division by zero, etc.)  
④ Poor precision in differential calculation results. | ①②③  
Check the input numeric value and correct it.  
When using memories, check that the numeric values stored in memories are correct.  
④ Try using a smaller value for  
(increment/decrement). |
| Go ERROR | ① No corresponding Lbl  for Goto .  
② No program stored in program area Prog “file name”.  
③ No corresponding “Next” for “For”, no corresponding “LpWhile” for “Do”, or no corresponding “WhileEnd” for “While”. | ① Correctly input a Lbl  to correspond to the Goto , or delete the Goto  if not required.  
② Store a program in program area Prog “file name”, or delete the Prog “file name” if not required.  
③ Correctly match “Next” with “For”, “LpWhile” with “Do”, or “WhileEnd” with “While”. |
| Ne ERROR | ④ Nesting of subroutines exceeds 10 levels. | ④ Ensure that Prog “file name” is not used to return from subroutines to main routine. If used, delete any unnecessary Prog “file name”.  
⑤ Trace the subroutine jump destinations and ensure that no jumps are made back to the original program area. Ensure that returns are made correctly. |
<table>
<thead>
<tr>
<th>Message</th>
<th>Meaning</th>
<th>Countermeasure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stk ERROR</td>
<td>• Execution of calculations that exceed the capacity of the stack for numeric values or stack for commands.</td>
<td>• Simplify the formulas to keep stacks within 10 levels for the numeric values and 26 levels for the commands. &lt;br&gt; • Divide the formula into two or more parts.</td>
</tr>
<tr>
<td>Mem ERROR</td>
<td>① Not enough memory to hold function input in the Graph Mode for graph drawing.  &lt;br&gt; ② Not enough memory to hold function input in the TABLE Mode.  &lt;br&gt; ③ Not enough memory to store data in list function.</td>
<td>①②③  &lt;br&gt; • Keep the number of variables you use for the operation within the number of variables currently available.  &lt;br&gt; • Simplify the data you are trying to store to keep it within the available memory capacity.  &lt;br&gt; • Delete no longer needed data to make room for the new data.</td>
</tr>
<tr>
<td>Arg ERROR</td>
<td>• Incorrect argument specification for a command that requires an argument.</td>
<td>Correct the argument.  &lt;br&gt; • Fix ( n ), Sci ( n ) : ( n ) = integer from 0 through 9.  &lt;br&gt; • Lbl ( n ) , Goto ( n ) : ( n ) = integer from 0 through 9.</td>
</tr>
<tr>
<td>Dim ERROR</td>
<td>• Illegal dimension used during list calculations.</td>
<td>• Check list dimension.</td>
</tr>
</tbody>
</table>
### Appendix D  Input Ranges

<table>
<thead>
<tr>
<th>Function</th>
<th>Input ranges</th>
<th>Internal digits</th>
<th>Accuracy</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>sin (x)</td>
<td>(DEG) (</td>
<td>x</td>
<td>&lt; 9 \times 10^{90}) (RAD) (</td>
<td>x</td>
</tr>
<tr>
<td>cos (x)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>tan (x)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>sin^{-1}x</td>
<td>(</td>
<td>x</td>
<td>\leq 1)</td>
<td></td>
</tr>
<tr>
<td>cos^{-1}x</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>tan^{-1}x</td>
<td>(</td>
<td>x</td>
<td>&lt; 1 \times 10^{100})</td>
<td></td>
</tr>
<tr>
<td>log (x)</td>
<td>(</td>
<td>1 \times 10^{-99} \leq x &lt; 1 \times 10^{100})</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ln (x)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10^x</td>
<td>(-1 \times 10^{100} &lt; x &lt; 100)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>e^x</td>
<td>(-1 \times 10^{100}) &lt; (x) (\leq 230.2585092)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(\sqrt{x})</td>
<td>(0 \leq x &lt; 1 \times 10^{100})</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(x^2)</td>
<td>(</td>
<td>x</td>
<td>&lt; 1 \times 10^{50})</td>
<td></td>
</tr>
<tr>
<td>1/(x)</td>
<td>(</td>
<td>x</td>
<td>&lt; 1 \times 10^{100}), (x \neq 0)</td>
<td></td>
</tr>
<tr>
<td>3(\sqrt{x})</td>
<td>(</td>
<td>x</td>
<td>&lt; 1 \times 10^{100})</td>
<td></td>
</tr>
<tr>
<td>(x!)</td>
<td>(0 \leq x \leq 69) ((x\ is\ an\ integer))</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(nPr)</td>
<td>Result &lt; (1 \times 10^{100}) (n, \ r\ (n\ and\ r\ are\ integers))</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(nCr)</td>
<td>(0 \leq r \leq n,\ n &lt; 1 \times 10^{10})</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pol ((x, y))</td>
<td>(\sqrt{x^2 + y^2} &lt; 1 \times 10^{100})</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rec ((r, \theta))</td>
<td>(</td>
<td>r</td>
<td>&lt; 1 \times 10^{100}) ()DEG (</td>
<td>\theta</td>
</tr>
<tr>
<td>Function</td>
<td>Input ranges</td>
<td>Internal digits</td>
<td>Accuracy</td>
<td>Notes</td>
</tr>
<tr>
<td>----------</td>
<td>--------------</td>
<td>-----------------</td>
<td>----------</td>
<td>-------</td>
</tr>
<tr>
<td>o &quot; o &quot;</td>
<td>$</td>
<td>a</td>
<td>, b, c &lt; 1 \times 10^{100}$ $0 \leq b, c$</td>
<td>15 digits</td>
</tr>
<tr>
<td>$\rightarrow$ o &quot; o &quot;</td>
<td>$</td>
<td>x</td>
<td>&lt; 1 \times 10^{100}$ Sexagesimal display: $</td>
<td>x</td>
</tr>
<tr>
<td>$^\wedge (x')$</td>
<td>$x &gt; 0$: $-1 \times 10^{100} &lt; y \log x &lt; 100$ $x = 0: y &gt; 0$ $x &lt; 0$: $y = n, \frac{1}{2n+1}$ ($n$ is an integer) However; $-1 \times 10^{100} &lt; \frac{1}{y} \log</td>
<td>x</td>
<td>&lt; 100$</td>
<td>&quot;</td>
</tr>
<tr>
<td>$^3 \sqrt{y}$</td>
<td>$y &gt; 0: x \neq 0$ $-1 \times 10^{100} &lt; \frac{1}{x} \log y &lt; 100$ $y = 0: x &gt; 0$ $y &lt; 0: x = 2n^2 + 1, \frac{1}{n}$ ($n \neq 0, n$ is an integer) However; $-1 \times 10^{100} &lt; \frac{1}{x} \log</td>
<td>y</td>
<td>&lt; 100$</td>
<td>&quot;</td>
</tr>
<tr>
<td>$a^{b/c}$</td>
<td>Total of integer, numerator and denominator must be within 10 digits (includes division marks).</td>
<td>&quot;</td>
<td>&quot;</td>
<td></td>
</tr>
<tr>
<td>STAT</td>
<td>$</td>
<td>x</td>
<td>&lt; 1 \times 10^{50}$ $</td>
<td>y</td>
</tr>
</tbody>
</table>

*Errors may be cumulative with internal continuous calculations such as $^\wedge (x'), ^3 \sqrt{y}, x^l$, $^3 \sqrt{x}$, sometimes affecting accuracy.*
## Appendix E  2-byte Command Table

Spaces in the following commands are indicated by “\[\]”.

### OPTN menu commands

- \( \frac{d}{dx}(, \text{Max}(, \text{Min}(, \text{Mean}(, \text{Median}(, \text{Seq}(, \text{Dim}, \text{Fill}(, \text{Sum}, \text{List}

### VARS menu commands

- \( Y, X_t, Y_t, X_{\text{min}}, X_{\text{max}}, X_{\text{scl}}, Y_{\text{min}}, Y_{\text{max}}, Y_{\text{scl}}, T_{\text{min}}, T_{\text{max}}, T_{\text{ptch}}, X_{\text{fct}}, Y_{\text{fct}}, Q_1, Q_3, x_1, y_1, x_2, y_2, x_3, y_3, F_\text{Start}, F_\text{End}, F_\text{pitch}, c

### Commands available with the \( \text{PRGM} \) key

- \( \text{If, Then, Else, IfEnd, For, To, Step, Next, While, WhileEnd, Do, LpWhile, Return, Break, Stop, ClrText, ClrGraph, ClrList, DrawGraph, DrawStat, DrawTG-Con, DrawTG-Plt, DispTable}

### Commands available with the \( \text{F3} \) (MENU) key in the PRGM Mode

- \( \text{1-Variable, 2-Variable, LinearReg, Med-MedLine, QuadReg, LogReg, ExpReg, PowerReg, S-Gph1, S-Gph2, S-Gph3, Square, Cross, Dot, Scatter, xyLine, Hist, MedBox, N-Dist, Linear, Med-Med, Quad, Log, Exp, Power, Y=\text{Type, ParamType, Y>_Type, Y<\text{Type, Y=}\text{Type, SortA(, SortD(, G_{\text{SelOn, G_{\text{SelOff, T_{\text{SelOn, T_{\text{SelOff, DrawOn, DrawOff, List1, List2, List3, List4, List5, List6}

### Commands available with the \( \text{SETUP} \) key in the PRGM Mode

- \( \text{S-WindAuto, S-WindMan, G-Connect, G-Plot, VarRange, VarList1, VarList2, VarList3, VarList4, VarList5, VarList6}

### Commands available with the \( \text{SHIFT} \) key

- \( \text{StoV-Win, RclV-Win, Vertical, Horizontal} \)
Appendix F  Specifications

Model: fx-7400G

**Calculations / Graph Function**

**Basic calculation functions:**
Negative numbers; exponents; parenthetical addition, subtraction, multiplication, division (with priority sequence judgement function - true algebraic logic)

**Built-in scientific functions:**
Trigonometric/inverse trigonometric functions (angle units: degrees, radians, grads); logarithmic/exponential functions; reciprocals, factorials; square roots; cube roots; powers; roots; squares; negative signing; exponential notation input; \( \pi \), parenthetical calculations; internal rounding; random numbers; angle unit specification; fractions; decimal-sexagesimal conversion; coordinate transformation; permutation; combination; number of decimal place and significant digit specification

**Built-in functions:**
Exponential notation range; delete, insert, answer functions; replay; memory status display (bytes used/unused); multistatements; output command input

**Fraction Reduction:** Automatic, Step-by-Step

**Differentials:**
Extraction of derivative using differential from center point

**List calculations:**
Data sorting (ascending, descending); maximum value; minimum value; average, median; sum; numeric sequence generation

**Variables:** 26

**Calculation range:**
\( \pm 1 \times 10^{-99} \) to \( \pm 9.999999999 \times 10^{99} \) and 0. Internal operations use 15-digit mantissa.

**Exponential display range:**
- Norm 1: \( 10^{-2} > |x|, |x| \geq 10^{10} \)
- Norm 2: \( 10^{-9} > |x|, |x| \geq 10^{10} \)

**Rounding:**
Performed according to the number of specified significant digits and decimal places.

**Built-in function graphs** (rectangular coordinate):
- \( \sin, \cos, \tan, \sin^{-1}, \cos^{-1}, \tan^{-1}, \log, \ln, 10^x, e^x, x^2, \sqrt{-}, 3\sqrt{-}, x^{-1} \)
Graph Types:
Rectangular coordinate: $y = f(x)$
Parametric: $(x, y) = (f(T), g(T))$
Inequality: $(y > f(x), y < f(x), y \geq f(x), y \leq f(x))$

Graph Function Memory:
Graph function storage, editing, selection, drawing

Graph Functions:
View Window parameter setting; trace; scroll; overwrite; list graph; zoom [box, factor (zoom in, zoom out, original size)]; sketch [plot; line; horizontal/vertical lining]; manual graphing; clear screen; View Window memory; graph function display; simultaneous drawing of multiple graphs

Table & Graph:
Input/editing of function (up to 10 can be input); numeric table generation; graph drawing; numeric table delete, insert, add

Statistics:
Standard deviation: number of data; mean; standard deviation (two types); sum; sum of squares; statistical calculations (mode, median, maximum, minimum, first quartile point, third quartile point); normal probability distribution; single-variable statistical graphs (histogram bar graph; box graph for median; normal distribution curve)
Regression: number of data; mean of $x$; mean of $y$; standard deviation of $x$ (two types); standard deviation of $y$ (two types); sum of $x$; sum of $y$; sum of squares of $x$; sum of squares of $y$; sum of squares of $x$ and $y$; constant term; regression coefficient; correlation coefficient; Med-Med calculations; regression graphs (linear regression graph; Med-Med graph; quadratic regression graph; logarithmic regression graph; exponential regression graph; power regression graph)
Data Plot: Scatter/Plot; $xy$ line graphing

Programming
Input, storage, recall, execution of programs in program area; editing and deletion of file names and program contents; recall by file name

Program commands:
Loop (If, For, Do, While); Control (Prog [subroutine], Stop, Return, Break); Unconditional jump (Goto, Lbl); Conditional jump (⇒); Count jump (Isz, Dsz); Relational operators (=, ≠, >, <, ≥, ≤); Clear (ClrText, ClrGraph, ClrList); Display (function graph, statistical graph, Table & Graph, numerical table); Input (?); Output (¶); Delimiter (;)

General Commands:
Function graph (8); function table (2); list (2); statistical (33), set-up commands (17)

Check Function: program check, debugging, etc.
Appendix

Program capacity:
7 kbytes (max.)

General

Display system:
13-character × 6-line display; 10-digit mantissa and 9-digit mantissa and 2-digit exponent when using exponential format for calculations: displays sexagesimal, fraction values

Text display:
Function commands, program commands, alpha characters within remaining memory capacity

Error check function:
Check for illegal calculations (using values greater than $10^{100}$), illegal jumps, etc. Indicates by error message display.

Power supply:
Main: Two AAA-size batteries (LR03 (AM4) or R03 (UM-4))
Back-up: One CR2032 lithium battery

Power consumption: 0.05W

Battery life
Main:
LR03 (AM4): Approximately 2,000 hours (continuous display of main menu)
Approximately 2 years (power off)
R03 (UM-4): Approximately 1,000 hours (continuous display of main menu)
Approximately 2 years (power off)
Back-up: Approximately 2 years

Auto power off:
Power is automatically turned off approximately six minutes after last operation. The calculator automatically turns off if it is left for about 60 minutes with a calculation stopped by an output command (▲), which is indicated by the “—Disp—” message on the display.

Ambient temperature range: 0°C to 40°C

Dimensions: 18.9 mm (H) × 77 mm (W) × 158 mm (D)
$\frac{3}{4}''$ (H) × 3'' (W) × 6 1/4'' (D)

Weight: 130g (including batteries)
GUIDELINES LAID DOWN BY FCC RULES FOR USE OF THE UNIT IN THE U.S.A. (not applicable to other areas).

NOTICE

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

• Reorient or relocate the receiving antenna.
• Increase the separation between the equipment and receiver.
• Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
• Consult the dealer or an experienced radio/TV technician for help.

Caution: Changes or modifications to the product not expressly approved by CASIO could void the user's authority to operate the product.

Program Mode Command List