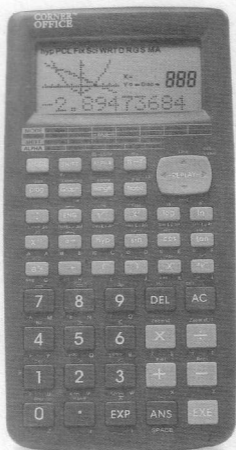




3/26

Graphing Scientific Calculator

Operating Instructions



-FOR PERSONAL USE ONLY-



TM

**CORNER
OFFICE**

MODEL:ATC-139 (A17C0139)
Graphing Scientific Calculator
Power Source:DC 3V-0.00135W
Uses 1 x CR2032 Battery Cell
Made in China S/No.04/07

RESET

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(A) INTRODUCTION

This unit is a advanced programmable calculator. Besides versatile scientific functions, a wide variety of useful graphs can be produced. Manual calculations can be easily performed following written formulas. A replay function is provided that allows confirmation or correction when key operation errors occur.

Programs can also be inputted by following true algebraic logic, so repeat and/or complex calculations are simplified. Be sure to carefully read this manual and keep it handy for future reference.

Important – Reset your calculator before using it the first time!

Always backup data!

HANDLING THE BATTERY POWER SUPPLY

Battery Safety:

Incorrect battery handling may cause it to burst or leak, and possibly damage equipment.

Make sure the new battery is the correct type.

Make sure the "+" faces up.

Keep battery out of the reach of children.

Do not dispose battery in fire.

Replacing battery :

- Make sure power is off before replacing the battery
- Make sure to store programs or data before performing this operation
- After replacing the battery, be sure to switch the calculator on and then perform the reset operation.

1. Remove the battery compartment door.
2. Remove the used battery.
3. Install the new battery and ensure the "+" side facing up.
4. Replace battery compartment door.
5. Turn the power on.

Auto power off function

The unit switches off approximately 6 minutes after the last key operation. Once this occurs, power can be restored by pressing the AC key. Numeric values in the memories, programs, or calculations made are unaffected when power is switched off.

Reset operation:

Strong external electrostatic charges can cause the calculator to malfunction. Should this happen, perform the following procedures to reset the calculator:

Warning: The following procedures clear all data from the memory of the calculator. To avoid the loss of important data, be sure to always keep a written backup copy.

Switch the power on

Press the RESET button on the back of the calculator with a thin, pointed object to reset the calculator and clear memory contents.

Remarks: Never press the RESET button while internal operations are being performed. Doing so may cause irreversible damage to the memory of your calculator.

PRECAUTIONS:

The calculator is made of precision components. Never attempt to disassemble the unit.

The display will go blank and keys will not operate during calculations. When you are operating the keypad, be sure to watch the display to ensure all your key operations are being performed correctly.

Avoid strong vibrations or impacts during program execution which can cause execution to stop or damage the calculator's memory.

Avoid dropping your calculator

Avoid using volatile liquids such as thinner or benzene to clean the unit. Wipe it with a soft, dry cloth or with a cloth that has been dipped in a solution of water and mild detergent.

Do not store the calculator or leave it in areas exposed to high temperature or humidity, or large amounts of dust.

Never leave a dead battery in the battery compartment. It can leak and damage the unit.

The manufacturer and its suppliers will not be liable to you or any other person for any damages, expenses, lost profits, lost savings or any other damages arising out of loss of data and / or formulas arising out of malfunctions, repairs or battery replacement. The user should prepare physical records of data to protect against such data loss.

● GENERAL GUIDE

IMPORTANT — the keys of the scientific calculator perform more than one function. The following explains all of the operations of each key. Read this section carefully before using your calculator for the first time.

● KEY MARKINGS

The keys of this unit perform a number of different functions. The key illustrated below, for example, is used to perform 4 different functions: X^{-1} , $X!$, A , $/A$.



Note the followings, concerning the key illustrated above.

Mode	Function
Direct Input	x^{-1}
SHIFT	$x!$
ALPHA	A
BASE-N, HEX	$/A$

The keypad is color-coded to help you quickly determine the key sequence you have to perform for each function. The following table shows how to interpret the various key markings.

Keypad Marking	Meaning
Orange	Press SHIFT and then key
Pink	Press ALPHA and then key
Green	Press key in MODE

In addition to the above, there are a number of key sequences indicated on the panel beneath the display (such as **[ALPHA]** **[2Σx]**). These key sequences can be used in the SD or LR mode only.

● TO READ THE DISPLAY

● Display indicators

The following indicators appear on the display to show you the current status of the calculator at a glance

S: **SHIFT** key pressed.

M: **MODE** key pressed.

A: **ALPHA** key pressed

Sci: Number of significant digits specified

Fix: Number of decimal places specified

hyp: **hyp** key pressed

D: Degrees specified as the unit of angular measurement

R: Radians specified as the unit of angular measurement

G: Grads specified as the unit of angular measurement

WRT: Program write mode (**MODE** **[2]**) specified

PCL: Program clear mode (**MODE** **[3]**) specified

X=, Y=: Indicates current x- and y- coordinate location of trace function pointer

— — : Indicates display consists of more than 12 characters. ← indicates extra characters run off left side of display, → indicates characters run off right side.

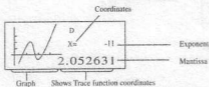
Disp: Indicates displayed value is intermediate result

● **About the display layout**

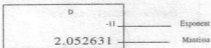
The display consists of a graphing area, as well as an area for indicators and characters. You can monitor the status of the calculator and programs by viewing the display.

Example:

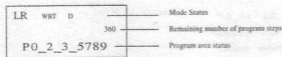
Graph Display



Calculation Display



Mode Status Display



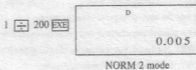
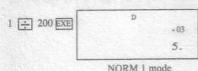
● **Exponential display**

During normal calculation, this unit is capable of displaying up to 10 digits. Values that exceed this limit, however, are displayed in exponential format. You can choose between 2 different types of exponential display formats.

NORM 1 mode: $10^{-2}(0.01) > |x|$, $|x| \geq 10^{10}$

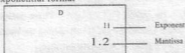
NORM 2 mode: $10^{-9}(0.000000001) > |x|$, $|x| \geq 10^{10}$

Selection of these modes can be carried out by pressing **MODE** **9** **EXE**, when no specification has been made for the number of decimal places or significant digits. The present status is not displayed, so it is necessary to perform the following procedure to specify either display format:

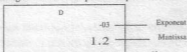


NOTE: All of the examples in this manual show calculation results using the NORM 1 mode.

How to interpret exponential format



1.2^{11} indicates that the result is equivalent to 1.2×10^{11} . This means that you should move the decimal point in 1.2 eleven places to the right. Since the exponent is positive, this results in the value 120,000,000,000.

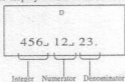


1.2^{-03} indicates that the result is equivalent to 1.2×10^{-03} . This means that you should move the decimal point in 1.2 three places to the left, since the exponent is negative. This results in the value 0.0012.

● **Special display formats**

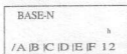
Special display formats are used for the representation of fraction, hexadecimal and sexagesimal values.

Fraction value display



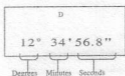
Display of $456 \frac{12}{23}$

Hexadecimal value display



Display of ABCDEF12 (-1412567278)

Sexagesimal value display



Display of 12° 34' 56.8"

● **KEY OPERATIONS**

● **Special operation keys**

SHIFT Shift key

Press when using the function commands and functions marked in orange on the keypad. An "s" will appear on the display to indicate that **SHIFT** has been pressed. Pressing **SHIFT** again will cause the "s" to disappear from the display.

MODE Mode key

Use the **MODE** key in combination with **.**, **1** through **9**, **+**, **-**, **X** and **+** to specify the calculation mode and the unit of angular measurement.

MODE **1** — For manual calculations and program execution (RUN mode).

MODE **2** — WRT displayed. For writing or checking programs.

MODE **3** — PCL displayed. For clearing programs.

MODE **4** — D displayed. if **EXE** is pressed, unit of angular measurement is specified as degrees.

MODE **5** — R displayed. if **EXE** is pressed, unit of angular measurement is specified as radians.

MODE **6** — G displayed. if **EXE** is pressed, unit of angular measurement is specified as grads.

MODE **7** — Fix displayed. Entering a value from 0 to 9 followed by **EXE** will specify the number of decimal places according to the value entered. Ex. **MODE** **7** **3** **EXE** → Three decimal places.

MODE **8** — Sci displayed. Entering a value from 0 to 9 followed by **EXE** will specify the number of significant digits from 1 to 10. Ex. **MODE** **8** **5** **EXE** → 5 significant digits

MODE **8** **0** **EXE** → 10 significant digits

MODE **9** — Pressing **1** **EXE** will cancel the specified number of decimal places or pressing **2** **EXE** will cancel the specified number of significant digits

*** If you have not specified the number of decimal places or the number of significant digits, you can press **MODE** **9** **1** OR **2** **EXE** and the change the range of the exponential display (NORM 1 / NORM 2)

*** With the exception of the BASE-N mode, modes **7** ~ **9** can be used in combination with the manual calculation modes.

*** The mode last selected is retained in memory when the unit's power is switched off.

MODE **.** — Defm displayed. Entering a value followed by **EXE** will specify the number of memories available.

Ex. **MODE** **.** **10** **EXE** → Number of memories available increased by 10.

MODE **+** — Specifies COMP mode for arithmetic calculation or function calculation (program execution possible)

MODE **-** — For binary, octal or hexadecimal calculations / conversions (BASE-N mode)

MODE **X** — For standard deviation calculations (SD mode).

MODE **+** — For regression calculations (LR mode).

The x^2 and $\sqrt{\quad}$ functions are not available in the LR mode. To use these functions, first perform the statistical operations and then press **MODE** **+** to enter the COMP mode.

SHIFT **MODE** **4** — Pressed after a numeric value representing degrees (°) is input.

SHIFT **MODE** **5** — Pressed after a numeric value representing radians (r) is input.

SHIFT **MODE** **6** — Pressed after a numeric value representing grads (g) is input.