### SCIENTIFIC CALCULATOR WriteView OPERATION MANUAL

#### INTRODUCTION

Thank you for purchasing the SHARP Scientific Calculator Model EL-W506T.

After reading this manual, store it in a convenient location for future reference.

**Note:**
- On the sheet with calculator examples is used English notation (with a decimal point).
  - This product uses a period as a decimal point.

**Operational Notes:**
- Do not carry the calculator around in your back pocket, as it may break when you sit down.
- The display is made of glass and is particularly fragile.
- Keep the calculator away from extreme heat sources such as an oven, dryer, or water, or against strong sunlight, as excessive heat or humidity may cause the display to deteriorate or the battery to leak.
- Since this product is not waterproof, do not expose it to rain or store it where fluids, for example water, can splash onto it. Raindrops, water spray, juice, coffee, perspiration, etc., also cause malfunction.
- Clean with a soft, dry cloth. Do not use solvents or a wet cloth.
- Do not drop or apply excessive force.
- Never dispose of batteries in a fire.

**Clearing the Entry and Memories**

- To clear all memory contents
  - Press and the display will show “C”.
  - To clear the display. Unless otherwise specified, calculation examples are performed in the WriteView editor.

**Display notation:**

- SHARP strongly recommends that separate permanent written records be kept of all important data. Data may be lost or altered in virtual any electronic memory product under certain circumstances. Therefore, SHARP assumes no responsibility for data lost or otherwise rendered unusable whether as a result of improper use, repairs, defects, battery replacement, use after the specified battery life has expired, or any other cause.
- SHARP will not be liable for any incidental or consequential economic or property damage caused by misuse and/or malfunctions of this product and its peripherals, unless such liability is acknowledged by law.

**Priorities:**

- The closing parenthesis () have been pressed and the hyperbolic functions are enabled.
- Functions followed by their argument (sin, cos, etc.)

**Mode Selection:**

- In the following cases, calculation results may be displayed using decimal numbers.

**Operational Notes:**

- When using the Line editor, you can enter and display fractions or certain functions as you would write them.
  - The WriteView editor can be used in NORMAL mode.
  - Displaying calculation results (when EXACT is selected)
    - In trigonometric calculations, when entering values such as those in the table to the right, the result may be shown using.
    - In the case of mixed fractions, the maximum number of displayable digits (including integer) is 8.

**Entering and displaying, and editing the equation**

- In the WriteView editor, the recurring part is indicated by “−”. In the Line editor, the recurring part is shown in parentheses.

**Entering and editing the username:**

- Name display function

**Multi-line Playback Function**

- The Line editor (LINE) mode change, RESET, N-base conversion, angular unit conversion, editor change and other calculation ending instructions.

**Setting the recurring decimal**

- In NORMAL mode, calculation results can be shown in a recurring decimal format.
  - Recurring decimal is OFF (default). When using the Line editor, the recurring part is indicated by “…” in the Line editor. When the recurring part is indicated in parentheses.
  - For 10 digits, including the recurring part, the result cannot be displayed in recurring decimal format.

**Display of the native values**

- You can show the decimal point in the calculation result as either a dot or a comma. Dot, (default) (dot)

**Operational Notes:**

- Be careful when operating this calculator in this case. When you turn the power off, the saved user name is displayed momentarily.

**Number display format:**

- The character may be split by over two lines.

**Setting of the decimal point**

- After reading this manual, store it in a convenient location for future reference.

**SCIENTIFIC CALCULATIONS**

**Arithmetic Operations**

- The closing parenthesis ( ) just before or may be omitted.
### Differential Integral Functions

Integral and differential calculations can be performed in NORMAL mode.

#### Integration

* $\int_a^b f(x) \, dx$

**Formulas**

1. $\int \frac{a}{b} \, dx$
2. $\int \frac{a}{b} \, dy$
3. $\int \frac{a}{b} \, dz$

#### Differential Calculations

$\frac{dy}{dx}$

**Formulas**

1. $\frac{dy}{dx}$
2. $\frac{dy}{dx}$
3. $\frac{dy}{dx}$

### Coordinate Conversions

- **Rectangular to Polar**
  
  \[ r = \sqrt{x^2 + y^2}, \quad \theta = \arctan \left( \frac{y}{x} \right) \]

- **Polar to Rectangular**
  
  \[ x = r \cos \theta, \quad y = r \sin \theta \]

### Physical Constants and Metric Conversions

#### Calculations using physical constants

- Obtain a constant, press $\text{常数}$, then select a physical constant from the list.
- To scroll up or down the list of constants, press $\uparrow$ or $\downarrow$.
- Use $\text{常数}$ or $\text{指数}$ to jump to the first or last page.
- Enter the digit of the constant you wish to jump to the page containing the number that begins with that digit.

- **Note:** The second digit, the constants displayed automatically according to the display and decimal placement settings.
- **Note:** Physical constants can be recalculated in NORM (excluding NBASE), STAT, COMPLEX, MATRIX, VECTOR and EQUATION modes.

<table>
<thead>
<tr>
<th>Constant</th>
<th>No.</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Atomic mass unit-kilogram</td>
<td>01</td>
<td>Proton mass</td>
</tr>
<tr>
<td>Atomic mass unit-kilogram</td>
<td>02</td>
<td>Neutron mass</td>
</tr>
<tr>
<td>Electron charge</td>
<td>03</td>
<td>Electron mass</td>
</tr>
<tr>
<td>Electron magnetic moment</td>
<td>04</td>
<td>Electron magnetic moment</td>
</tr>
<tr>
<td>Magnetic flux quantum</td>
<td>05</td>
<td>Magnetic flux quantum</td>
</tr>
<tr>
<td>Magnetic moment of electron</td>
<td>06</td>
<td>Magnetic moment of electron</td>
</tr>
<tr>
<td>Conductance quantum</td>
<td>07</td>
<td>Conductance quantum</td>
</tr>
<tr>
<td>Planck constant</td>
<td>08</td>
<td>Planck constant</td>
</tr>
<tr>
<td>Von Klitzing constant</td>
<td>09</td>
<td>Von Klitzing constant</td>
</tr>
<tr>
<td>Molar volume of ideal gas</td>
<td>10</td>
<td>Molar volume of ideal gas</td>
</tr>
<tr>
<td>Standard gravity of acceleration</td>
<td>11</td>
<td>Standard gravity of acceleration</td>
</tr>
<tr>
<td>Standard atmosphere</td>
<td>12</td>
<td>Standard atmosphere</td>
</tr>
<tr>
<td>Standard atmosphere</td>
<td>13</td>
<td>Standard atmosphere</td>
</tr>
<tr>
<td>Molar mass constant</td>
<td>14</td>
<td>Molar mass constant</td>
</tr>
<tr>
<td>Newtonian constant of gravitation</td>
<td>15</td>
<td>Newtonian constant of gravitation</td>
</tr>
<tr>
<td>Elementary charge</td>
<td>16</td>
<td>Elementary charge</td>
</tr>
<tr>
<td>Proton mass</td>
<td>17</td>
<td>Proton mass</td>
</tr>
<tr>
<td>Electron mass</td>
<td>18</td>
<td>Electron mass</td>
</tr>
<tr>
<td>Electron magnetic moment</td>
<td>19</td>
<td>Electron magnetic moment</td>
</tr>
<tr>
<td>Magnetic flux quantum</td>
<td>20</td>
<td>Magnetic flux quantum</td>
</tr>
<tr>
<td>Magnetic moment of electron</td>
<td>21</td>
<td>Magnetic moment of electron</td>
</tr>
<tr>
<td>Conductance quantum</td>
<td>22</td>
<td>Conductance quantum</td>
</tr>
<tr>
<td>Planck constant</td>
<td>23</td>
<td>Planck constant</td>
</tr>
<tr>
<td>von Klitzing constant</td>
<td>24</td>
<td>von Klitzing constant</td>
</tr>
<tr>
<td>Molar volume of ideal gas</td>
<td>25</td>
<td>Molar volume of ideal gas</td>
</tr>
<tr>
<td>Standard gravity of acceleration</td>
<td>26</td>
<td>Standard gravity of acceleration</td>
</tr>
</tbody>
</table>

#### Metric Conversions

- Enter a value to be converted, then press $\text{other}$, and select a metric conversion by entering its 2-digit number.
- The metric conversion list is used in the same manner as the list of physical constants.
- **Note:** Unit conversions can be performed in NORMAL (excluding NBASE), STAT, COMPLEX, MATRIX, VECTOR and EQUATION modes.

<table>
<thead>
<tr>
<th>Metric Conversion</th>
<th>Conversion</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>inch to cm</td>
<td>$\text{in} \rightarrow \text{cm}$</td>
<td>Conversion factor</td>
</tr>
<tr>
<td>cm to mm</td>
<td>$\text{cm} \rightarrow \text{mm}$</td>
<td>Conversion factor</td>
</tr>
<tr>
<td>mm to µm</td>
<td>$\text{mm} \rightarrow \text{µm}$</td>
<td>Conversion factor</td>
</tr>
<tr>
<td>µm to nm</td>
<td>$\text{µm} \rightarrow \text{nm}$</td>
<td>Conversion factor</td>
</tr>
<tr>
<td>meter to inch</td>
<td>$\text{m} \rightarrow \text{in}$</td>
<td>Conversion factor</td>
</tr>
<tr>
<td>centimeter to inch</td>
<td>$\text{cm} \rightarrow \text{in}$</td>
<td>Conversion factor</td>
</tr>
<tr>
<td>millimeter to kilometer</td>
<td>$\text{mm} \rightarrow \text{km}$</td>
<td>Conversion factor</td>
</tr>
<tr>
<td>kilometer to meter</td>
<td>$\text{km} \rightarrow \text{m}$</td>
<td>Conversion factor</td>
</tr>
</tbody>
</table>

#### Calculations Using Engineering Prefixes

Calculation can be executed in NORMAL mode (excluding NBASE) using the 9 types of prefixes.

<table>
<thead>
<tr>
<th>Prefix</th>
<th>Operation</th>
<th>Unit</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>MEGA</td>
<td>$\times 10^{9}$</td>
<td>( \mu \text{m} \rightarrow \text{Mm} )</td>
<td>Conversion factor</td>
</tr>
<tr>
<td>GIGA</td>
<td>$\times 10^{9}$</td>
<td>( \mu \text{m} \rightarrow \text{Gm} )</td>
<td>Conversion factor</td>
</tr>
<tr>
<td>TERA</td>
<td>$\times 10^{12}$</td>
<td>( \mu \text{m} \rightarrow \text{Tm} )</td>
<td>Conversion factor</td>
</tr>
<tr>
<td>PETA</td>
<td>$\times 10^{15}$</td>
<td>( \mu \text{m} \rightarrow \text{Pm} )</td>
<td>Conversion factor</td>
</tr>
<tr>
<td>EXA</td>
<td>$\times 10^{18}$</td>
<td>( \mu \text{m} \rightarrow \text{Em} )</td>
<td>Conversion factor</td>
</tr>
</tbody>
</table>

#### Modified Function

- **Decimal Rounding Result**: Decimal calculations result are internally obtained in scientific notation, with up to 12 digits in the mantissa. However, since methods of rounding are displayed in the format designated by the display notation and the decimal places indicated, the internal calculation result may not be displayed as intended. For example, if you press $\text{5.678}$ and enter into the calculation with the modified function \( \text{INT} \), the internal value is converted to match that of the displayed value, so the displayed value may be used without change in subsequent operations.

  - When using the View/Write editor, if the calculation result is displayed using fractions or irrational numbers, press $\text{ABC}$ to convert it to decimal form.

  - The modified function can be used in NORMAL, STAT, MATRIX, or VECTOR modes.
Coefficient of regression equation
Population standard deviation (σ)
Population variance (σ²)
Sample variance (s²)
Maximum value of samples (x_max)
Σ (sum of samples)

After entering statistical data from the input screen, press [STAT]. Statistical calculations can be performed in STAT mode.

2. Input an expression with an
• Change the “Start” value (e.g. to a negative value)
• To change the X value and see its corresponding values in table format,
Simulate Calculation (ALGB)

If you have found values consecutively using the same expression, such as plotting a curve line for 2

Enter exponential, logarithmic regression, power regression, inverse regression, and general exponential regression calculations

Linear regression calculation
Statistics of (σ, Med, and 0) and the value of the normal probability function.

Please note that when making a table, the values for variable X are rewritten.

Simulation Calculation (ALGB)

If you entered two functions, the ANS1 and ANS2 columns appear. You can use &&x or &&y to change the X value when invoking a function.

The following features are not used in TABLE mode: coordinate conversions, conversion between decimal and sexagesimal numbers, and angular unit conversions.

You can make a table using any data, as long as it is placed into simultaneous linear equations.

You can also enter X and FRQ (or X, Y, and FRQ) at once.

If none of the solutions are decimal, a set of data items with an assigned frequency of one is counted as two data items, while a set of items with an assigned frequency of 2 or higher is stored as a set of two data items.

Use and to move the cursor and select the desired data. Press [ ( or )] to jump to the beginning or end of the data.

The solver function finds the value for a given

You can see the changes in values of one or two functions using TABLE mode.

To carry out addition, subtraction, multiplication, and division using complex numbers, press m annunciator to select the complex number mode.

Results of complex number calculations are expressed in two modes:

• More than two solutions appear to be possible (e.g. a cubic equation).
• A positive integer greater than 2 and no more than 10 digits can be factored into primes.
• Single-variable statistics

You can see the values by pressing .

The default starting value is 0.

The table is for display only and you cannot edit the table.

For simultaneous linear equations with two unknowns (2-VLE) or with three unknowns (3-VLE) may be solved using the following functions.

• To solve simultaneous linear equations.

You can clear all the coefficients, press and use the same procedure as for entering the expression.

You can use or to move the cursor up or down through the coefficients.

Normal Probability Calculations

In STAT mode, the three probability density functions can be accessed under the MATH menu, with a random number used as a normal distribution variable.

Notes:

• (P(y), Q(y), and R(y)) will always take positive values, even when x = 0, because these functions follow the same principle used when solving for an area.

Values for P(y), Q(y), and R(y) are given to six decimal places.

• Irrational numbers such as can also be entered into a starting value or a step value. You cannot use or a negative value as a step value.

You can use cursor to select a regression coefficient (or X column).

The absolute value of an intermediate result or calculation result is equal to or greater than 10^100.

The determination is zero.

• Coefficients for these equations can be entered in the same manner as those for simultaneous linear equations.

• Values for P(y), Q(y), and R(y) are given to six decimal places.

The determination is zero.

• The standardization conversion formula is as follows:

For simultaneous linear equations with two unknowns (2-VLE) or with three unknowns (3-VLE) may be solved using the following functions:

Quadratic and Cubic Equations

Quadratic (ax^2 + bx + c = 0) or cubic (ax^3 + bx^2 + cx + d = 0) equations may be solved using the following functions:

Quadratic equation solver

• There are two or more solutions, those solutions are also shown.

With five values (a, b, c, d, and e), the maximum value when (e ≠ 0) of a quadratic function.

Solving quadratic and cubic equations

• Coefficients for these equations can be entered in the same manner as those for simultaneous linear equations.
When you use the QUADRATIC equation solver, continue by pressing \( \text{ref} \) (or \( \text{ref} \)).

To display the minimum value or maximum value. To return to the solution, press \( \text{ANS} \).

**ELEMENTS**

- **Matrix dimensions (row \times column)**
- **Element fields**
- **Entry field**

**MATRIX EQUATIONS**

You can store and calculate up to four matrices.

**Entering and Storing Matrices**

1. Press \( \text{Mat} \) and select the matrix name (MATH menu), then select the matrix (MATH menu) you wish to edit.
2. Press \( \text{Mat} \) and select the matrix (MATH menu) you wish to load.
3. \( \times \) Table

When the battery is replaced, the memory contents are erased. Erasure can also occur if the calculator is defective or when the battery is replaced. Make a note of all important memory contents in case accidental erasure occurs.
When to Replace the Battery

If the display has poor contrast or nothing appears on the display even when the button is pressed in dim lighting, it is time to replace the batteries.

Cautions
• An exhausted battery left in the calculator may leak and damage the calculator.
• Fluid from a leaking battery accidentally entering an eye could result in serious injury. Should this occur, wash with clean water and immediately consult a doctor.
• Should fluid from a leaking battery contact with your skin or clothes, immediately wash with clean water.
• If the product is not to be used for some time, to avoid damage to the unit from leaking batteries, remove them and store in a safe place.
• Do not leave exhausted batteries inside the product.
• Keep batteries out of the reach of children.
• Explosion risk may be caused by incorrect handling.
• Do not throw batteries into a fire as they may explode.

Replacement Procedure
1. Turn the power off by pressing [OFF].
2. Remove the screws. (Fig. 1)
3. Lift the battery cover to remove.
4. Remove the used battery by prying it out with a ball-point pen or other similar pointed device. (Fig. 2)
5. Install new battery. Make sure the “+” side is facing up.
6. Replace the cover and screws.
7. Press the RESET switch with the tip of a ball-point pen or similar object.

Automatic Power Off Function
This calculator will turn itself off to save battery power if no key is pressed for approximately 10 minutes.

SPECIFICATIONS
Display: 96 × 32 dot matrix liquid crystal display
Display of calculation results:
Mantissa: 10 digits
Exponent: 2 digits
Internal calculations: Mantissas of up to 14 digits
Pending operations: 64 calculations, 10 numeric values
Internal calculations: 5 numeric values in COMPLEX mode, and 1 numeric value for Matrix/Vector data
Power source: Built-in solar cells
Approx. 3,000 hours when continuously displaying 55555 at 25°C (77°F)
(varies according to use and other factors)
Power input temperature: 0°C – 40°C (32°F – 104°F)
Weight: Approx. 108 g (with batteries)
Dimensions: 80 mm × 166 mm × 15 mm
Accessories: Battery × 1 (installed), operation manual and hard case

FOR MORE INFORMATION ABOUT SHARP CALCULATORS VISIT:
http://www.sharp-calculators.com

CALCULATION EXAMPLES
1. [SETUP] (FSE)

2. [SETUP] (EDIT)

3. [SETUP] (RECURRING DECIMAL)

4. [SETUP] (CON)

5. [SETUP] (C)

6. [SETUP]

7. [SETUP]

8. [SETUP]

9. [SETUP]

10. [SETUP]

11. [SETUP]

12. [SETUP]

13. [SETUP]

14. [SETUP]

15. [SETUP]

16. [SETUP]

17. [SETUP]

18. [SETUP]

19. [SETUP]

20. [SETUP]

21. [SETUP]

22. [SETUP]

23. [SETUP]

24. [SETUP]

25. [SETUP]

26. [SETUP]

27. [SETUP]

28. [SETUP]

29. [SETUP]

30. [SETUP]

31. [SETUP]

32. [SETUP]

33. [SETUP]

34. [SETUP]

35. [SETUP]

36. [SETUP]

37. [SETUP]

38. [SETUP]

39. [SETUP]

40. [SETUP]

41. [SETUP]

42. [SETUP]

43. [SETUP]

44. [SETUP]

45. [SETUP]

46. [SETUP]

47. [SETUP]

48. [SETUP]

49. [SETUP]

50. [SETUP]

51. [SETUP]

52. [SETUP]

53. [SETUP]

54. [SETUP]

55. [SETUP]

56. [SETUP]

57. [SETUP]

58. [SETUP]

59. [SETUP]

60. [SETUP]

61. [SETUP]

62. [SETUP]

63. [SETUP]

64. [SETUP]

65. [SETUP]

66. [SETUP]

67. [SETUP]

68. [SETUP]

69. [SETUP]

70. [SETUP]

71. [SETUP]

72. [SETUP]

73. [SETUP]

74. [SETUP]

75. [SETUP]

76. [SETUP]

77. [SETUP]

78. [SETUP]

79. [SETUP]

80. [SETUP]

81. [SETUP]

82. [SETUP]

83. [SETUP]

84. [SETUP]

85. [SETUP]

86. [SETUP]

87. [SETUP]

88. [SETUP]

89. [SETUP]

90. [SETUP]

91. [SETUP]

92. [SETUP]

93. [SETUP]

94. [SETUP]

95. [SETUP]

96. [SETUP]

97. [SETUP]

98. [SETUP]

99. [SETUP]

100. [SETUP]
Function & Dynamic range

<table>
<thead>
<tr>
<th>Function</th>
<th>Dynamic range</th>
</tr>
</thead>
<tbody>
<tr>
<td>sin, cos, tan, x</td>
<td></td>
</tr>
<tr>
<td>tan(x), sin^(-1), cos^(-1)</td>
<td></td>
</tr>
<tr>
<td>log_{10}, log_{2}, log_{e}</td>
<td></td>
</tr>
<tr>
<td>exp, expm1, exp2, exp10, exp10m1, exp20, exp100</td>
<td></td>
</tr>
<tr>
<td>sqrt, cbrt</td>
<td></td>
</tr>
<tr>
<td>=, +, -, *, /, ^</td>
<td></td>
</tr>
<tr>
<td>R.Int(n, m)</td>
<td></td>
</tr>
<tr>
<td>(A + B) + (C + D)</td>
<td></td>
</tr>
<tr>
<td>(A + B) - (C + D)</td>
<td></td>
</tr>
<tr>
<td>(A + B) * (C + D)</td>
<td></td>
</tr>
<tr>
<td>(A + B) / (C + D)</td>
<td></td>
</tr>
<tr>
<td>DEC</td>
<td></td>
</tr>
<tr>
<td>BIN</td>
<td></td>
</tr>
<tr>
<td>PEN</td>
<td></td>
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<td>XOR</td>
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<td>NOT</td>
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<td>Neg</td>
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<tr>
<td>Normal pdf</td>
<td></td>
</tr>
<tr>
<td>Normal cdf</td>
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</tr>
<tr>
<td>Inverse Normal</td>
<td></td>
</tr>
<tr>
<td>Binomial pdf</td>
<td></td>
</tr>
<tr>
<td>Binomial cdf</td>
<td></td>
</tr>
<tr>
<td>Poisson pdf</td>
<td></td>
</tr>
<tr>
<td>Poisson cdf</td>
<td></td>
</tr>
</tbody>
</table>

* n, m, r integer

Information on the Disposal of this Equipment and its Batteries

1. In the European Union

Attention: If you want to dispose of this equipment, please do not use the ordinary dust bin!

Used electrical and electronic equipment must be treated separately and in accordance with legislation that requires proper treatment, recovery and recycling of used electrical and electronic equipment.

Following the implementation by member states, private households within the EU states may return their used electrical and electronic equipment to designated collection facilities free of charge*. In some countries* your local retailer may also take back your old product free of charge if you purchase a similar new one.

*) Please contact your local authority for further details.

If your used electrical or electronic equipment has batteries or accumulators, please dispose of these separately beforehand according to local requirements.

By disposing of this product correctly you will help ensure that the waste undergoes the necessary treatment, recovery and recycling and thus prevent potential negative effects on the environment and human health which could otherwise arise due to inappropriate waste handling.

2. In other Countries outside the EU

If you wish to discard this product, please contact your local authorities and ask for the correct method of disposal.

Manufactured by:
SHARP CORPORATION
1 Takumi-cho, Sakai-ku, Sakai City, Osaka 590-8522, Japan

For EU only:
Imported into Europe by:
MORAVIA Consulting spol. s r.o.
Olomoucká 83, 627 00 Brno, Czech Republic

For UK only:
Imported into UK by:
MORAVIA Europe Ltd.
Belmont House, Station Way, Crawley, West Sussex RH10 1JA, Great Britain