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# Mini Electronic Calculator ICC-82D



Instruction Manual

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*In this mini-electronic calculator, Sanyo Electric has used still further improved ultra-precision, high performance LSIs, and, by incorporating Cadnica batteries which never need replacing, has produced a cordless instrument of unequalled portability.*

*We believe that this new dimension of convenience will make it an invaluable aid in the office and at home. Operation is extremely simple: we ask users simply to read through these instructions and perform the calculations themselves as they go along. Once learnt, calculation methods will never be forgotten and we are confident that the ICC-82D will give long years of valuable service.*

## 1. FEATURES

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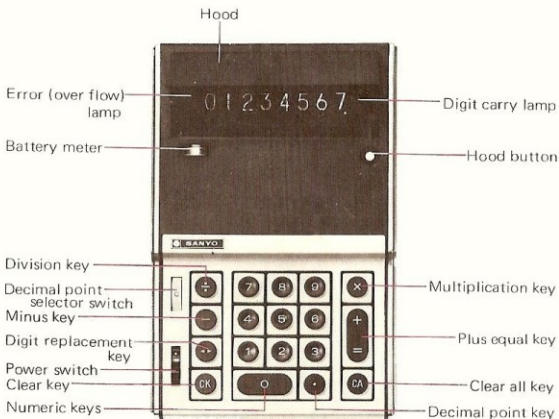
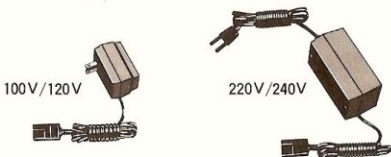
- 1 The LSIs used have been specially designed for this model, giving unsurpassed reliability.
- 2 With the high performance LSIs, calculations of all types, from the four rules to successive divisions and multiplications, divisions and multiplications with a constant, mixed calculations, square calculations and premium calculations are possible, while positioning of the decimal point is preselected. Operation, in short, is exactly the same as with conventional desk calculators.
- 3 Despite its ultra-small size, this calculator employs double length display selection which makes calculations of up to 16 digits possible.
- 4 Cadnica batteries are incorporated in this model. Not only can it be used in places with no electric power source, but the batteries never need replacing and cordless operation for up to 5 or 6 hours after full recharging is possible.
- 5 Other special features of this model include:
  - \*  $\text{\textcircled{E}}$  (Error) lamp which lights in cases of overflow or impossible calculations and locks all keys (except the clear key).
  - \* When the result of a calculation contains more than 8 digits the  $\Rightarrow$  lamp

lights to prevent errors in reading off figures.

- \* The built-in battery meter lets you see at a glance the condition of the batteries.
- \* The calculator is fitted with a protective hood. When it is closed, the display indicator is protected and an interlocking switch shuts off the batteries to avoid waste.

## 2. NAMES OF PARTS

AC adaptor (100V/120V or 220V/240V)



### 3. FUNCTION OF KEYS



Numeric keys

Press these keys to register figures, beginning from the left-most numeral. The figures will be displayed and memorized by the calculator. With figures of over eight digits, the surplus digits disappear from the display indicator but are memorized.



Clear all key

Clears all information registered in the calculator. This key should always be pressed before beginning new calculations.



Plus equal key

Pressing this key has the following effects:

With additions ... the registered figure is added to the result of the previous calculation and the total displayed on the indicator.

With multiplications and divisions .... products and quotients are displayed.



Minus key

Pressing this key has the following effects:

With subtractions ... the registered figure is subtracted from the result of the previous calculation and the remainder displayed on the indicator.

When the remainder is a negative number ... the complement is displayed. If this key is then pressed once again, the remainder is displayed (as a true number). Be sure to differentiate between positive and negative remainders.



Multiplication key

When multiplying, press this key after registering the multiplicand. Then register the multiplier and press the  $\oplus$  key, when the product will be displayed on the indicator.



Division key

When dividing, press this key after registering the dividend. Then register the divisor and press the  $\oplus$  key, when the quotient will be displayed on the indicator.



Decimal point  
key

When registering figures which include the decimal point, press this key at the appropriate place. The decimal point will be displayed on the indicator in its correct position.

The position of a decimal point in the result is preselected by the decimal point selector switch.



Clear key

Pressing this key clears only those figures displayed on the indicator. It should therefore be pressed after registering wrong figures; neither previously registered figures nor the result are affected and calculation can be continued immediately.



Digit replacement  
key

When registering ... when figures of more than eight digits are registered, the surplus digits will disappear from the display indicator but are memorized by the calculator.

If you wish to check the surplus digits, press the key and they will reappear on the indicator.



Digit carry lamp

With results ... when the result of a calculation contains more than eight digits, the ⇨ lamp automatically lights as a warning, and the first eight digits are displayed on the indicator. If the ⇄ key is now pressed, the second eight digits are displayed.

The final result is obtained by reading off the two sets of digits together.



Error lamp

If overflow occurs in the registered figures or result, this lamp lights to warn you that calculation is impossible. Press the Ⓐ key.

## 4. FUNCTION OF SWITCHES, METER, ETC.



Hood button

Opening and closing the hood

- \* When the hood button is pressed, the hood opens.
- \* To close the hood, push it gently down.



Power switch

Turning on the power

- \* Open the hood and turn the power switch ON.

Turning off the power

- \* Turn the power switch OFF and close the hood.

NOTE: The power switch doubles as a hood interlocking switch. If the power switch is not turned ON, no power will flow even though the hood is opened.



Decimal point selector switch

The position of the decimal point is preselected. Set the selector switch to the desired position. (For example: If the selector switch is set at 2, the result will be given to two decimal places, remaining decimal places being chopped off.) The switch can be set in six positions: 0, 2, 3, 4, 6 and 8. Figures are registered as normal, irrespective of the setting of this switch.



Battery meter

The battery meter shows the condition of the Cadnica battery. For further details, refer to the section on Battery Charging.

Foot

A foot is attached at the bottom of the calculator. Lifting it raises the display indicator for easier reading of figures.

## 5. BATTERY CHARGING

- 1 The Cadnica battery is a rechargeable, small, hermetically sealed cell. It never needs replacing and is handy and economical in use.
- 2 Charging procedure:
  - \* Insert charger AC plug into power socket.
  - \* Insert charger DC plug (with the white line upwards) into three-pin socket as far as the white line.
  - \* Charging now occurs irrespective of whether the power switch is ON or OFF - i.e. charging is possible even when the calculator is in use.
- 3 Charging time  
If the battery meter shows red, full recharging takes 10 or 15 hours. With the meter showing white, charging time is of course even shorter.
- 4 Battery meter (During cordless use with the power switch ON)

Meter reading	Battery condition	Recharging
Blue	Fully charged	Unnecessary
White	Considerably run down	Necessary
Red	Almost completely run down (Calculations incorrect or impossible)	Absolutely necessary (Avoid cordless Operation)

5. \* Operation is sometimes possible even with the battery meter showing red but errors are likely to occur. For cordless operation, therefore, make sure that the meter shows blue or white.


NOTE: If the meter shows red and you wish to continue operation AC operation is possible while the battery is being recharged.










## 6. BEFORE OPERATION

Before using the calculator, please carry out the following checks:

1. Open the hood and turn the power switch ON.
2. Press the CA key. The display indicator shows all Os.

NOTE :  ..... In this booklet, this sign means "Set the decimal point selector switch at zero".

Operation	Display
 CA 11.....1122.....22 $\oplus$ 8 digits   8 digits 55.....5577.....77 $\oplus$ 8 digits   8 digits 	11.....11 $\rightarrow$ 8 digits 66.....66 $\rightarrow$ 8 digits 99.....99. 8 digits
 CA 222 $\oplus$ 555 $\ominus$  -	222. 99.....99 $\rightarrow$ 8 digits 333.
 1 $\odot$ 248 $\otimes$ 99 $\oplus$ 	1.248 123. $\rightarrow$ 55200000
 1248 $\div$ 9 $\oplus$ 	1248. 138. $\rightarrow$ 66666666

If there are no anomalies in the above checks, the calculator is in correct working order.

- NOTE:
- When registered figures contain more than eight digits, the surplus digits will disappear from the display indicator. To check them, press the  $\blacktriangleleft$  key, when they will reappear on the indicator. Operation of the keys is also possible in this position.
  - When no decimal points are involved, set the decimal point selector switch to  $\boxed{0}$ . In all other cases, set it to the desired reading.

## 7. CALCULATIONS

### BASIC CALCULATION

#### 1. ADDITIONS

Ex. 1      $456 + 789 = 1245$

$\boxed{0}$  CA 456  $\oplus$  789  $\oplus$

1245.

Ex. 2      $1234567.8 + 1.234 = 1234569.034$

$\boxed{3}$  CA 1234567  $\odot$  8  $\oplus$  1  $\odot$  234  $\oplus$

12  $\rightarrow$

34569.034

Ex. 3)      $5.62 + 3.28 + 11.25 + 2.8 = 22.95$

$\boxed{2}$  CA 5  $\odot$  62  $\oplus$  3  $\odot$  28  $\oplus$  11  $\odot$  25  $\oplus$  2  $\odot$  8  $\oplus$

22.95

NOTE: If example 3 is calculated with the decimal point selector switch at  $\boxed{0}$  decimal points in the input figures can be registered, but the result will read 21 as all decimals are chopped off.

## 2. SUBTRACTIONS

Ex. 1      $456 - 123 = 333$

$\boxed{0}$  CA 456  $\oplus$  123  $\ominus$

333.

Ex. 2      $5 - 7 = -2$

$\boxed{0}$  CA 5  $\oplus$  7  $\ominus$   
 $\ominus$

99999999 →

2.

NOTE: When the result is a negative number as in example 2, the complement (in double length) is displayed first. If the  $\ominus$  key is then pressed a second time, the result is displayed as a true number. Be sure to differentiate between positive and negative results.

Ex. 3      $2 - 6 + 3 + 5 = 4$

$\boxed{0}$  CA 2  $\oplus$   
6  $\ominus$   
3  $\oplus$   
5  $\oplus$

2.

99999999 →

99999999 →

4.

NOTE: When a negative number occurs during a calculation, the complement is displayed but the calculation should be continued as normally. If instead the  $\ominus$  key is pressed a second time to obtain the true number, errors will occur if the calculation is continued immediately: in this case the  $\ominus$  key must be pressed again.

### 3. MULTIPLICATIONS

Ex. 1  $123 \times 27 = 3321$

$\boxed{0} 123 \times 27 \oplus$

$\boxed{3321.}$

Ex. 2  $1.2345 \times 9.8765 = 12.19253925$

(a)  $\boxed{0} 1.2345 \times 9.8765 \oplus$   $\boxed{12.}$

(b)  $\boxed{2}$   $\boxed{12.19}$

(c)  $\boxed{3}$   $\boxed{12.192}$

(d)  $\boxed{4}$   $\boxed{12.1925}$

(e)  $\boxed{6}$   $\boxed{12.192539}$

(f)  $\boxed{8}$   $\boxed{12.}$   $\rightarrow$

$\boxed{19253925}$



Ex. 3  $456 \times (-99) = 45144$

$\boxed{0} 456 \times 99 \oplus$

$\boxed{45144.}$

Operate the keys in this order and decide whether the result is positive or negative.

#### 4. SUCCESSIVE MULTIPLICATIONS

Ex. 1  $3 \times 6 \times 9 = 162$

$\boxed{0} 3 \times 6 \times 9$

$\boxed{162}$

Ex. 2  $1.478 \times 2.589 \times 3.69 = 14.11993998$

(a)  $\boxed{0} 1 \cdot 478 \times 2 \cdot 589 \times 3 \cdot 69$

$\boxed{11}$

(b)  $\boxed{2}$

$\boxed{14.09}$

(c)  $\boxed{3}$

$\boxed{14.117}$

(d)  $\boxed{4}$

$\boxed{14.1197}$

(e)  $\boxed{6}$

$\boxed{14.119939}$

(f)  $\boxed{8}$

$\boxed{14.}$   $\rightarrow$

$\boxed{11993998}$

Operation as for (a)

- NOTE:
1. With multiplications and successive multiplications clearing is automatic and there is no need to press the CA key at each step (though no damage is caused if it is pressed).
  2. With successive multiplications, press the  $\oplus$  key after each separate multiplication to obtain the product before proceeding to the next step.

#### 5. DIVISIONS

Ex. 1  $625 \div 25 = 25$

$\boxed{0} 625 \div 25$

$\boxed{25}$

Ex. 2  $9.87654312 \div 8 = 1.23456789$

(a)	<input type="text" value="0"/>	$9 \cdot 87654312 \div 8 \oplus$	<input type="text" value="1."/>
(b)	<input type="text" value="2"/>	} Operation as for (a)	<input type="text" value="1.23"/>
(c)	<input type="text" value="3"/>		<input type="text" value="1.234"/>
(d)	<input type="text" value="4"/>		<input type="text" value="1.2345"/>
(e)	<input type="text" value="6"/>		<input type="text" value="1.234567"/>
(f)	<input type="text" value="8"/>		<input type="text" value="1."/>
	<input type="text" value="↔"/>		<input type="text" value="23456789"/>

### 6. SUCCESSIVE DIVISIONS

Ex. 1  $625 \div 5 \div 5 = 25$

<input type="text" value="0"/>	$625 \div 5 \oplus \div 5 \oplus$	<input type="text" value="25."/>
--------------------------------	-----------------------------------	----------------------------------

Ex. 2  $789 \div 3.14 \div 1.414 = 177.70430364$

(a)	<input type="text" value="0"/>	$789 \div 3 \cdot 14 \oplus \div 1 \cdot 414 \oplus$	<input type="text" value="177."/>
(b)	<input type="text" value="2"/>	} Operation as for (a)	<input type="text" value="177.70"/>
(c)	<input type="text" value="3"/>		<input type="text" value="177.703"/>
(d)	<input type="text" value="4"/>		<input type="text" value="177.7042"/>
(e)	<input type="text" value="6"/>		<input type="text" value="1"/>
	<input type="text" value="↔"/>		<input type="text" value="77.704303"/>
(f)	<input type="text" value="8"/>		<input type="text" value="177."/>
	<input type="text" value="↔"/>	<input type="text" value="70430364"/>	

- NOTE: 1. With divisions and successive divisions, clearing is automatic and there is no need to press the  $\text{CA}$  key at each step (though no damage is caused if it is pressed).
2. With successive divisions, press the  $\text{+/-}$  key after each separate division to obtain the quotient before proceeding to the next step.

## APPLIED CALCULATIONS

### 1. MULTIPLICATION WITH A CONSTANT

Ex. 1  $2 \times 3.14 = 6.28$   
 $3 \times 3.14 = 9.42$   
 $3.5 \times 3.14 = 10.99$

$$\begin{array}{r} \boxed{2} \otimes 3 \odot 14 \oplus \\ \quad \quad \quad 3 \oplus \\ \quad \quad \quad 3 \odot 5 \oplus \end{array}$$

6.28
------

9.42
------

10.99
-------

NOTE: Second factor entered is the constant.

### 2. DIVISION BY A CONSTANT

Ex. 1  $56 \div 2.8 = 20$   
 $63 \div 2.8 = 22.5$   
 $14.7 \div 2.8 = 5.25$

$$\begin{array}{r} \boxed{2} 56 \div 2 \odot 8 \oplus \\ \quad \quad \quad 63 \oplus \\ \quad \quad \quad 14 \odot 7 \oplus \end{array}$$

20.00
-------

22.50
-------

5.25
------

NOTE: Calculate with the divisor as the constant.

### 3. MIXED CALCULATIONS

Ex. 1	$3.6 \times 2 \div 8 = 0.9$	
	$\boxed{2} \quad 3 \cdot 6 \times 2 \oplus \div 8 \oplus$	<input type="text" value="0.90"/>
Ex. 2	$(12 + 45) \times 7.8 = 444.6$	
	$\boxed{2} \quad \text{CA} \quad 12 \oplus 45 \oplus \times 7 \cdot 8 \oplus$	<input type="text" value="444.60"/>
Ex. 3	$(98 - 65) \div 5 = 6.6$	
	$\boxed{2} \quad \text{CA} \quad 98 \oplus 65 \ominus \div 5 \oplus$	<input type="text" value="6.60"/>
Ex. 4	$(2.3 \times 2) - 3 = 1.6$	
	$\boxed{2} \quad 2 \cdot 3 \times 2 \oplus \oplus 3 \ominus$	<input type="text" value="1.60"/>
Ex. 5	$(12 \div 3) + 3 = 7$	
	$\boxed{2} \quad 12 \div 3 \oplus \oplus 3 \oplus$	<input type="text" value="7.00"/>

NOTE: When performing additions or subtractions after multiplications or divisions, as in examples 4 and 5, press the  $\oplus$  key one additional time after the multiplication or division.



#### 4. SALES PRICE CALCULATIONS

Ex.	Determine the sales price which will yield the desired profit on the original cost.
	Original cost      \$12,500
	Desired profit rate    25%
	(Gross) profit        ?
	Sales price            ?
	$12,500 \times 0.25 = 3,125$ (\$) . . . . . profit
	$12,500 + 3,125 = 15,625$ (\$) . . . . . Sales price
	i.e. if the article is sold at a sales price of \$15,625 or above, the desired profit is forthcoming.

<div style="border: 1px solid black; padding: 2px; display: inline-block;">0</div> <span style="font-size: 2em; vertical-align: middle;">•</span> <span style="font-size: 2em; vertical-align: middle;">25</span> <span style="font-size: 2em; vertical-align: middle;">×</span> <span style="font-size: 2em; vertical-align: middle;">12500</span> <span style="font-size: 2em; vertical-align: middle;">±</span>	3125.
<span style="font-size: 2em; vertical-align: middle;">±</span> <span style="font-size: 2em; vertical-align: middle;">±</span>	15625.

NOTE: The desired profit rate is registered first.

Ex.	Calculate the sales price which include tax.
	Net price \$199      Tax 3½%
	Tax ?      Sales price ?      If pay \$210, Change?
	$0.035 \times 199 = 6.96$ (\$) . . . . . Tax
	$199 + 6.96 = 205.96$ (\$) . . . . . Sales price
	$210 - 205.96 = 4.04$ (\$) . . . . . Change

<div style="border: 1px solid black; padding: 2px; display: inline-block;">2</div> <span style="font-size: 2em; vertical-align: middle;">0.035</span> <span style="font-size: 2em; vertical-align: middle;">×</span> <span style="font-size: 2em; vertical-align: middle;">199</span> <span style="font-size: 2em; vertical-align: middle;">±</span>	6.96
<span style="font-size: 2em; vertical-align: middle;">±</span> <span style="font-size: 2em; vertical-align: middle;">±</span>	205.96
<span style="font-size: 2em; vertical-align: middle;">210</span> <span style="font-size: 2em; vertical-align: middle;">-</span>	9999999 →
<span style="font-size: 2em; vertical-align: middle;">-</span>	4.04

NOTE: The tax rate is registered first.

## 5. SIMPLE INTEREST CALCULATIONS

Ex.	An original sum of \$10,000 is placed at simple interest of 5-1/2% per annum for five years. Calculate the final amount including interest. Final amount inc. interest = Original sum x (1 + annual interest x no. of years)
-----	--

$$\boxed{3} \quad \circ \quad 055 \quad \times \quad 5 \quad \oplus \quad \oplus \quad 1 \quad \oplus \quad \times \quad 10000 \quad \oplus$$

**12750.000**

## 10. PRECAUTIONS

1. When the calculator is not in use, always turn the power OFF. Turn it OFF, especially when using cordless battery power.
2. This calculator is a precision instrument using high performance LSIs.
  - \* Do not subject it to abrupt changes of temperature.
  - \* Keep the calculator away from damp, dust and direct sunlight and do not subject it to physical shocks.
  - \* Do not place articles on top of the calculator, especially when the hood is open.
  - \* Never bang the calculator, press the keys with force or lean on the keyboard.
  - \* To clean the calculator, use the silicon cloth provided or another soft cloth. Do not use abrasive or volatile cleansers or rough cloths.

NOTE: We can accept no responsibility for damage resulting from unauthorized disassembly of the calculator.

# 11. SPECIFICATIONS

Type	Mini Electronic Calculator												
Model	ICC-82D												
Numeric keys	10 - key system												
Display	Nixie (Neon gas discharge tubes). Max 16 digits ; Error lamp, digit carry lamp												
Decimal point	Preselected (0, 2, 3, 4, 6, 8)												
Calculations	<p>Additions and subtractions Max. 16 digits <math>\pm</math> 16 digits</p> <p>Multiplications</p> <table> <tr> <td>Multiplicand</td> <td>Max. 14 digits</td> </tr> <tr> <td>Multiplier</td> <td>Max. 14 digits</td> </tr> <tr> <td>Product</td> <td>Max. 15 digits</td> </tr> </table> <p>Divisions</p> <table> <tr> <td>Dividend</td> <td>Max. 14 digits</td> </tr> <tr> <td>Divisor</td> <td>Max. 14 digits</td> </tr> <tr> <td>Quotient</td> <td>Max. 14 digits</td> </tr> </table>	Multiplicand	Max. 14 digits	Multiplier	Max. 14 digits	Product	Max. 15 digits	Dividend	Max. 14 digits	Divisor	Max. 14 digits	Quotient	Max. 14 digits
Multiplicand	Max. 14 digits												
Multiplier	Max. 14 digits												
Product	Max. 15 digits												
Dividend	Max. 14 digits												
Divisor	Max. 14 digits												
Quotient	Max. 14 digits												
Semiconductors	LSIs, transistors, diodes												
Calculating speeds	Additions and subtractions max. 0.1 sec. Multiplications and divisions max. 0.3 sec.												
Operating temperature range	0° - 40° (32°F - 104°F)												
Power consumption	DC 3W												
Power source	DC 6.0V DC 7.3 V												
External dimensions	50(h)×135(w)×210(d)mm, 1- <sup>15</sup> / <sub>16</sub> (h)×5- <sup>3</sup> / <sub>8</sub> (w)×8- <sup>15</sup> / <sub>16</sub>												
Weight	1kg (2 lbs. 3 ozs.) including Cadnica batteries												

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