

**SHARP**

**ELECTRONIC CALCULATOR WITH ELSI**

**Micro  
COMPET QT-8B**

**INSTRUCTION MANUAL**



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## INTRODUCTION



Sharp's revolutionary Micro Compet QT-8B incorporating four ELSIs (Extra Large Scale Integrations) with one 4-phase clock generator marks another major advance in the world of space-age miniaturization. Years of pioneering research and achievement in electronic engineering have enabled Sharp to develop an exceptionally remarkable mini-calculator that offers maximum portability and a wide range of mathematical versatility. The QT-8B is thoroughly reliable and carries out calculations with amazing speed and efficiency. This booklet provides a detailed explanation of the Micro Compet's operation.

## FEATURES

### 1. ULTRA-COMPACT AND EASY TO HOLD

ELSI miniaturization considerably reduces overall dimensions and weight; increases dependability and lowers operating costs.

### 2. SIMPLE OPERATION

Only four function keys. No special training is required. Simply touch the keys and the answer to almost any practical mathematical problem appears instantly.

### 3. UNDER-FLOW SYSTEM

Simplifies long answers. For example, 8 digits  $\times$  8 digits = 16 digits can be carried out despite the 8 digit display panel. Counting from the left the first 8 digits of the answer are displayed and the rest discarded.

### 4. DECIMAL POINT CALL BACK SYSTEM

If the integral portion of the result exceeds 8 digits, the decimal point functions even though it doesn't appear on the display panel.

### 5. SOFT LIGHTING GREEN DISPLAY

Our specially developed non-glare green display panel eliminates eye-strain, improves reading ease.

### 6. MINUS SIGN INDICATOR

Automatically turns on when the result is negative.

### 7. DOUBLE-SETTING PROTECTIVE KEYS

Eliminate error, speed up operation . . . . no more worry about double-setting of keys.

## 8. OVERFLOW ERROR CHECK

If the result exceeds 16 digits, all the decimal points turn on and the calculation stops. More than 8 digits can not be entered.

## 9. MINIMUM POWER CONSUMPTION

The 4-phase logic features require minimum power consumption.

## HINTS

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1. As the Micro Compet uses highly sensitive ELSIs and electronic components, avoid placing the unit in hot, dusty or humid locations, or on surfaces subject to excessive vibration.
2. Do not jolt or drop the units.
3. Do not stand them on their sides or turn them over.
4. Do not place articles on top of the units.
5. When cleaning the cabinet, use the enclosed cloth. Do not use a wet cloth or any organic solutions such as kerosene or benzine.
6. When carrying QT-8B connected with QTA-2, hold the bottom of QTA-2 and carry them together.
7. Be sure to switch off QT-8B after use and charge the battery unit as soon as the alarm sign turns on. Otherwise the battery unit is completely discharged and its life is shortened.
8. Do not charge QT-8B with a dust cover over it.
9. For best results operate the QT-8B on the battery unit occasionally, not always on AC. This assures longer battery life.
10. Do not take the battery unit out of the QT-8B and use it for other instruments.
11. Avoid charging the battery unit in a cold place. (below 0°C or 32°F)
12. Do not use QTA-2 for other instruments.

## SPECIFICATIONS

### ■ CALCULATING UNIT QT-8B

- Battery: 6 rechargeable nickel cadmium batteries in unit: 130cc (288g), 1,200mAH, 7.2V
- Usable time: 2.5 – 3.0 hours
- Charging time: 14 – 15 hours
- Average life: 1,000 hours (approximately 1.5 – 2 years.)
- Temperature; 0°C – 40°C (32°F – 104°F)
- Note: The battery unit is supplied and changed only by Sharp dealers. Do not try to change it by yourself.
- Charging: Charging is performed while operating the Micro Compet on AC. When charging only the battery unit, connect the Micro Compet to the QTA-2 and turn off the Micro Compet.
- Alarm sign: Located in the first display tube from the right side and turns on when the battery unit should be charged.
- Capacity: 8 digits
- Addition & Subtraction: 8 digits ± 8 digits = 8 digits
- Multiplication: 8 digits × 8 digits = 8 digits
- Product: up to 8 digits In case that a product exceeds 8 digits, lower digits are discarded, but the decimal point is kept in a register and called back by decimal point call back system.
- Division: 8 digits ÷ 8 digits = 8 digits
- Decimal point: Complete floating decimal point with call back system
- Negative: Minus sign indication
- Calculation speed:
- Addition & subtraction - 20 milliseconds
- Multiplication - 150 milliseconds
- Division - 200 milliseconds
- ELSI: 4

IC:	1
IC (for a clock generator)	1
Modules:	3
Transistors:	5
Diodes:	11
Clock pulse:	78 kHz
Temperature:	0 - 40°C (32 - 104°F)
Power consumption:	7W
Dimensions:	135mm(W) x 72mm(H) x 247mm(D) 5-5/16"(W) x 2-13/16"(H) x 9-11/16"(D)
Weight:	1.65kg (3.63 lbs.)

### ■ AC ADAPTOR QTA-2

Please refer to the notice on "HOW TO CONNECT MICRO COMPET TO AC ADAPTOR" on the bottom of the unit.

Power source: AC 100/110/120/200/220/240V 50–60 Hz

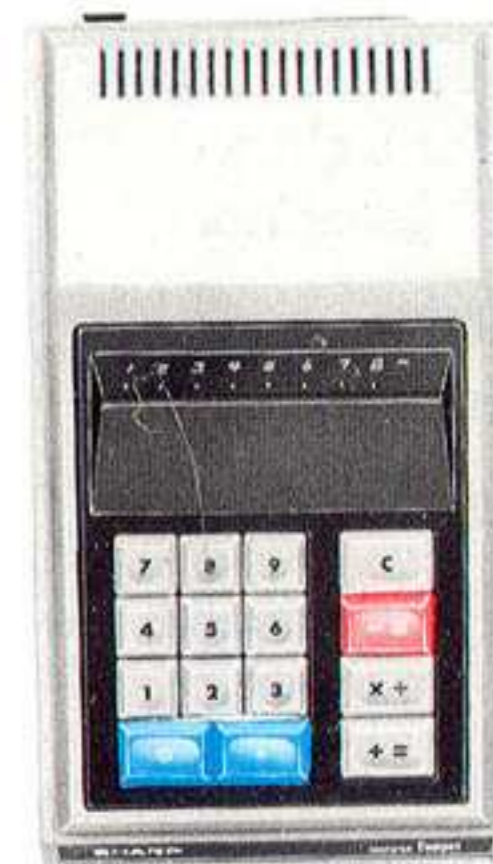
Weight: 1.05 kg(2.31 lbs .)

### ■ CAR ADAPTOR QTA-3

Use this car adaptor when operating the Micro Compet in your car on the car battery (12V).

## KEY IDENTIFICATION

- 0** ~ **9** Numeral keys. Used for entering numbers.
- .** Determines the decimal point position.
- C** Clears the calculator and corrects mistaken entry. (See Ex. 6.)
- + =** When  **$\times \div$**  key is set, multiplication is carried out. When  **$\times \div$**  key is not set, addition is carried out.
- =** When  **$\times \div$**  key is set, division is carried out. When  **$\times \div$**  key is not set, subtraction is carried out.
- $\times \div$**  Used when carrying out multiplication and division.



## BEFORE OPERATION

When the power is turned on, press the **C** key twice to clear the machine.

Example    power on    7567.0987- (appears at random.)  
              press **C** key  
              (first time)    .0225- (appears at random.)  
              press **C** key  
              (second time) 00000000



## OPERATION

Connect power cord to an electric outlet, and turn the unit on. Be sure to press **C** key twice before starting calculations.

### 1. ADDITION

Ex. 1 – 1      $123.1 + 864.2$

Steps	operation	display
1	123.1	123.1
2	<b>+=</b>	123.1
3	864.2	864.2
4	<b>+=</b>	987.3

Ex. 1 – 2      $2.3 + 2.45 + 2.678$

Steps	operation	display
1	2.3	2.3
2	<b>+=</b>	2.3
3	2.45	2.45
4	<b>+=</b>	4.75
5	2.678	2.678
6	<b>+=</b>	7.428

Ex. 1 – 3      12.345678 + 1234.5678

Steps	operation	display	note
1	12.345678	12.345678	
2	$\boxed{+=}$	12.345678	
3	1234.5678	1234.5678	
4	$\boxed{+=}$	1246.9134 $\boxed{78}$	← invisible part

NOTE: Underflow system

In this calculation, the decimal point is aligned to that of addend and the lowest two digits of the answer which exceeds 8 digits, "78," are discarded.

Ex. 1 – 4      8246246 + 3963966 + 98457823 + 35

Steps	operation	display	note
1	8246246	8246246.	
2	$\boxed{+=}$	8246246.	
3	3963966	3963966.	
4	$\boxed{+=}$	12210212.	
5	98457823	98457823.	
6	$\boxed{+=}$	11066803 $\boxed{5.}$	← invisible part
7	35	35.	
8	$\boxed{+=}$	00000000	

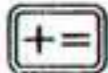


NOTE: In continuous addition:

1. If the answer exceeds 8 digits, the last digit is shifted one digit to the right

- with the decimal point according to the underflow system as shown in step 6.
2. However, if the addition is performed continuously when the decimal point is not displayed, all decimal points turn on and the calculation stops.

## 2. SUBTRACTION

Ex. 2       $358.8 - 1241.6 - 27.5$

Steps	operation.	display
1	358.8	358.8
2		358.8
3	1241.6	1241.6
4		882.8-
5	27.5	27.5-
6		910.3-

### 3. MULTIPLICATION

Ex. 3 – 1      $1.1 \times 2.2$

Steps	operation	display
1	1.1	1.1
2	$\times \div$	1.1
3	2.2	2.2
4	$+=$	2.42

Ex. 3 – 2      $2.2 \times 3.3 \times 4.4 \times 5.5$



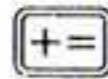
Steps	operation	display
1	2.2	2.2
2	$\times \div$	2.2
3	3.3	3.3
4	$+=$	7.26
5	$\times \div$	7.26
6	4.4	4.4
7	$+=$	31.944
8	$\times \div$	31.944
9	5.5	5.5
10	$+=$	175.6920

Ex. 3 – 3      824005.1 x 930047.2




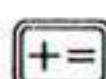
Steps	operation	display	note
1	824005.1	824005.1	
2	$\times \div$	824005.1	
3	930047.2	930047.2	
4	$+=$	76636363 <span style="border: 1px solid black; padding: 2px;">6040.72</span>	← invisible part
5	$\times \div$	76636363 <span style="border: 1px solid black; padding: 2px;">6040.72</span>	decimal point call back
6	.0000001	.0000001	
7	$+=$	76636.363 <span style="border: 1px solid black; padding: 2px;">0000.</span>	correct number of digit (12)

- NOTE: 1) When the result of calculation exceeds 8 digits, only the upper 8 digits are displayed. (step 4)
- 2) In the above case, the decimal point call back system indicates the number of digits in answer.
- 3) In the above example, by multiplying 76636363 by 0.0000001 ( step 6), the decimal point is called back as 76636.363 (step 7). This indicates that the decimal point is at the fourth digit from the last figure (step 4).
- 4) Thus, by this operation, the correct integer digits of product are known in the above example . . . 12 digits.

Ex. 3 – 4      $(-4) \times 5$



Steps	operation	display	note
1		—	minus sign indicator on
2	4	4.—	
3		4.—	
4	5	5.—	
5		20.—	

Ex. 3 – 5      $(-4) \times (-5)$



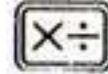



Steps	operation	display	note
1		—	minus sign indicator on
2	4	4.—	
3		4.—	
4		4.	minus sign indicator off
5	5	5.	
6		20.	

## 4. DIVISION




Ex. 4 – 1      $264 \div 12$

Steps	operation	display
1	264	264.
2		264.
3	12	12.
4		22.000000

Ex. 4 – 2      $256 \div 12 \div 0.56 \div 2.3$

Steps	operation	display	note
1	256	256.	
2		256.	
3	12	12.	
4		21.333333	The 7th decimal place is discarded.
5		21.333333	
6	.56	.56	
7		38.095237	The 7th decimal place is discarded.
8		38.095237	
9	2.3	2.3	
10		16.563146	The 7th decimal place is discarded.

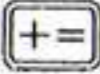
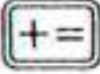
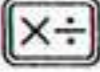
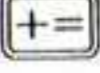
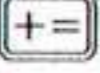

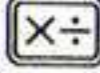

Ex. 4 – 3       $(-264) \div 12$

Steps	operation	display	note
1		—	minus sign indicator on
2	264	264.—	
3		264.—	
4	12	12.—	
5		22.000000—	



## 5. MIXED CALCULATION

Ex 5. 
$$\frac{(5 + 12) \times 0.2 + 48 - 16}{4}$$

Steps	operation	display
1	5	5.
2		5.
3	12	12.
4		17.
5		17.
6	.2	.2
7		3.4
8	48	48.
9		51.4
10	16	16.
11		35.4
12		35.4
13	4	4.
14		8.8500000

## 6. CORRECTING MISTAKES

Ex. 6

3 x 5 (mistake)      4 (correct)

Steps	operation	display	note
1	3	3.	
2	$\times \div$	3.	
3	5	5.	(mistake)
4	C	3.	}
5	$\times \div$	3.	
6	4	4.	(correct)
7	$+=$	12.	

## 7. OVERFLOW ERROR


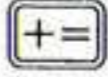
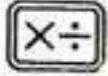
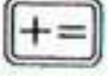
1) Addition

Ex. 7 – 1      23456789 + 98765437 + 24689

Steps	operation	display	note
1	23456789	23456789.	
2	$+=$	23456789.	
3	98765437	98765437.	
4	$+=$	12222222 6.	← invisible part
5	24689	24689.	
6	$+=$	00000000	



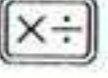

## 2) Multiplication

Ex. 7 – 2      642895 x 56782 x 425566

Steps	operation	display	note
1	642895	642895.	
2		642895.	
3	56782	56782.	
4		36504863 <span style="border: 1px solid black; padding: 2px;">890.</span>	← invisible part
5		36504863 <span style="border: 1px solid black; padding: 2px;">890.</span>	
6	425566	425566.	
7		00000000 00000000	

## 3) Division

Ex. 7 – 3      89898989 ÷ 0.0000012 ÷ 0.0000023

Steps	operation	display	note
1	89898989	89898989.	
2		89898989.	
3	.0000012	0.0000012	
4		74915824 <span style="border: 1px solid black; padding: 2px;">166666.</span>	← invisible part
5		74915824 <span style="border: 1px solid black; padding: 2px;">166666.</span>	
6	.0000023	0.0000023	
7		00000000 00000000	

NOTE: As seen in examples 7 – 2, 7 – 3, if the whole number exceeds 16 digits, all decimal points turn on and the calculation stops.



## SHARP ELECTRONICS CORPORATION

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