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#### WHY BUY A LITRONIX CALCULATOR? You can count on them!

In fact, Litronix calculators are the only cress the world that you can REALLY count creunconditionally, for one whole year. We guarantee them longer because we make trebetter—it's as simple as that.

#### Extra value is the key.

Litronix calculators deliver more value to users Sure, there are more costly and complex caculators at much higher prices, for the few rea sophisticated users. And there are less expensive calculators that do a whole lot less for just a little saving. Litronix calculators are designed and built to do much more for your money that anyone else's, while being easy to use. How come? We make EVERYTHING in our caculators, so we can build more into them at lower cost—and that means more value for you

# YOU'LL BE GLAD YOU CHOSE LITRONIX! 1

**Curt Busse's** marble shipment from Italy was huge—and in cubic meters. His 2200 told him EXACTLY how big, in cubic yards (as shown on page 34 inside).

Jack Wilson calculated discount percentages and inventory values with his 2200—in seconds. In retailing, time is money!

**Sam Jones,** meteorologist, is an international weather expert with his 2200. It gave him English-to-metric conversions instantly (see page 31).

**Bob Kellman,** engineer and foreign car buff, saved time and money by working out metric wrench and oil capacities in English with his 2200 (example on page 26).

**Mary Garcia**, student and wage earner, balanced her budget with her 2200, got metric conversion for her studies as a bonus (look for it on page 22).

**Guiseppi Tortolino,** California wine grower, shipped wine to Italy profitably. His 2200 gave him vital business data for the import-export forms (page 28 gives details).

**Nancy Evans,** trucking company clerk, used her 2200 for a whole range of work calculations, saved arduous pencil work, and earned a nice raise.

**Dale Vail's** wholesale paint company made a big hit with a new line of French paint—thanks to her 2200, that gave her needed facts for the can labels (note page 34).

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# PROGRAMMED PERFORMANCE BONUS

### Metric conversion

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What's the big 'plus' in your Litronix 2200 Memory Plus? It's pre-programmed for up-tothe-minute performance, with metric conversion, to meet the needs of users affected by the coming world changeover to metric measurements.

Metric conversion is easy, as detailed in the instruction book. You can leave the overlay in place, attach it permanently by removing the backing to reveal the adhesive, or store it in the calculator pouch.



# 4 FEATURES

**Full Accumulating Memory** Accumulates and recalls subtotals of prior calculations. Any displayed number may be added to or sub-tracted from data saved in memory. Data in display may be exchanged with data saved in memory at anytime during calculation.

- Built-in Conversion Factors 16 preprogrammed English-Metric conversion factors are built-in and may be activated with the press of a key. A drop-in template is included with your 2200 for use with these conversions. It may be stored in the calculator pouch when conversion calculations are not needed.
- Percent Key Provides for percentage, add-on, discount, markup and yield calculations.
- Automatic Constant Performs repetitive addition, subtraction, multiplication and division operations without need to re-enter constant or function.
- Algebraic Logic Allows entry sequence to be in same order as problem develops.
- Full Floating Decimal Calculator automatically positions decimal point to maintain full 8 digit accuracy.
- Overflow Save In case of overflow in display, a single press of  $\frac{9}{000}$  clears the overflow condition and allows calculator to continue using the overflowed results divided by  $10^{\circ}$ .
  - Error Message When improper sequence entry is made into calculator, word "Error" will flash in display until 90% is pressed once.

- Battery Saving Display Flasher After apprexmately 30 seconds of non use, the displawill flash on and off to conserve batter, power. The display will reset to normal operation when the next key is pressed.
- Automatic Power Off If power is not turned off for approximately 8 minutes of non use, the calculator will automatically be turned off.
- Throw Away Batteries This calculator uses 3 A penlight batteries for up to 8 hours of cortinuous operation. Up to 16 hours of cortinuous operation can be expected when A kaline Batteries are used.
- Free A.C. Adapter This unit is available for use as an option. The internal batteries are automatically disconnected to conserve batter, life when the A.C. Adapter is in use.
- **Model 2200R** This optional model comes with an internal battery pack that provides up to 6 hours of continuous use. The batteries can be recharged in 12-14 hours with the enclosed A.C. Adapter/Charger.
- **UNCONDITIONAL ONE YEAR GUARANTEE** A full one year unconditional guarantee on parts and labor from date of purchase.

#### DISPLAY

- **Error Signal** When an improper sequence of functions is entered into the calculator, word "*Error*" will flash in the display. A single press of  $\mathcal{O}_{ON}$  restores display.
- Memory Indicator A memory indicator light appears at the left side of the display window when non-zero data is saved in memory.
- Minus Sign Appears immediately to left of the displayed number to indicate a negative number.
- **Decimal Point** Calculator automatically positions decimal point to maintain full eight digit accuracy.
- **Overflow Indication** A square around the decimal point ⊡ will appear in the display when calculation has gone beyond capacity and refuse to permit further entries until  $\heartsuit_{ON}$  Key has been pushed.
- Battery Saving Display Flasher After approximately 30 seconds of non-use, display will begin flashing on and off and continue to do this until approximately 8 minutes of nonuse have passed at which time it will automatically turn itself completely off.

#### BATTERY HINTS

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- **BATTERY LIFE**—This calculator is designed to operate on 3 AA penlight batteries, which will provide up to 8 hours of continuous use. For the best cost/power ratio for your unit. use leak-proof Alkaline Batteries, which will improve operating life up to 16 hours of continuous use. When the display becomes erratic, dim or refuses to turn on, the batteries should be replaced.
- A.C. ADAPTER OPERATION—The A.C. Adapter/Battery Eliminator (Model #102 for 110 volt operation and Model #104 for 230 volt operation) that will allow this unit to be used with normal A.C. Power. When the adapter is used, the internal batteries are automatically disconnected to conserve battery life.
- **OPTIONAL MODEL 2200R (RECHARGE-ABLE)**—This model comes with an internal battery pack that provides up to 6 hours of normal use. The batteries can be recharged in 12-14 hours with the enclosed A.C. Adapter/Charger (Model #102/103 for 110 volt operation, Model #104/105 for 230 volt operation.)

The battery pack should be recharged when the calculator display becomes erratic, dim or calculator refuses to turn on. To obtain a maximum charge in a 12-14 hour time period, the calculator should be turned off during the charging, however, the calculator can be operated while the charger is connected. It is further recommended that if the machine has not been used for four or more weeks, it be recharged before using on battery power.

#### OPERATING INSTRUCTIONS

The following is a summary of functions performed by individual keys. Refer to these functions once you have learned how to use the calculator. See examples which follow in order to learn how to use the calculator.

#### KEYS

- Initial power on clears calculator, including memory. If last entry was a number, one press clears last entry. If the display indicates an overflow, one press clears the overflow conditions. Two presses will clear the calculator, but not data saved in memory.
- off Turns calculator off. Once off, all data is erased from calculator, including that which was saved in memory.
- 1-9 Number entry keys.

Enters decimal point.

Used in conjunction with x, the % key is used to find the percentage of a given number. Used in conjunction with +, the % of a base number is added to that base in the display. Used with -, the % of a base number is discounted from that base in the display.
When used in conjunction with ÷, the

% function can be used for yield calculations.

Used to terminate a calculation.

←

When this key is pressed, the calculator finishes any uncompleted operation and saves the display value. When the next operation key (+, -,  $\times$ ,  $\div$ , =) is pressed, the calculator adds the number currently in the display to the value which was saved.

When this key is pressed, the calculator finishes any uncompleted operation and saves the display value. When the next operation key  $(+, -, \times, \div, =)$  is pressed, the calculator subtracts the number currently in the display from the value which was saved.

When this key is pressed, the calculator finishes any uncompleted operation and saves the display value. When the next operation key  $(+, -, \times, \div, =)$  is pressed, the calculator multiplies the number currently in the display by the value which was saved.

×

÷

When this key is pressed, the calculator finishes any uncompleted operation and saves the display value. When the next operation key  $(+, -, \times, \div, =)$  is pressed, the calculator divides the number currently in the display into the value which was saved.

Directs the calculator to convert the display from its English value to its metric value when the appropriate conversion key is pressed subsequently. Note that when the conversion template is in place on the calculator keyboard, the display 11

is converted from the appropriate unit of measurement to the upper left of the key to the unit of measurement to the upper right of the key. In addition, this key completes any unfinished operation.

Directs the calculator to convert the display from its Metric value to its English value when the appropriate conversion key is pressed subsequently. Note that when the conversion template is in place on the calculator keyboard, the display is converted from the appropriate unit of measurement to the upper right of the key to the unit of measurement to the upper left of the key. In addition, this key completes any unfinished operation.

**NOTE:** Successive presses of the key will increase the order of the conversion to the number on the right of the display. For example, three presses of will indicate cubic conversion. If  $\dots \dots 2$  is in the display, the in  $-\mathbf{cm}$  key becomes the  $\mathbf{in}^2 - \mathbf{cm}^2$  key. The above description also holds for the key.

Example: 2 is entered in the display. is pressed, the 8 key now becomes the inch-millimeter (in — mm) key. Pressing the 8 key results in a display of 50.8, the number of millimeters equal to 2 inches.

EX	Exchanges data in display with data saved in memory.
RM	One press of key recalls data saved ir memory to the display. Two presses of key clears data saved in memory.
M	Subtracts the display from data saved in memory. Repetitive subtractions of the display from data saved in memory can be done with this key.
M+	Adds the display to data saved in mem- ory. Repetitive addition of the display to

		Key Depressed	
1. Ente	ering Numbe	Irs	
Ente	r 25		
Clea	r display	C/ON	
Pres	s 2	2	
Press	s 5	5	
2. Ente	ering Numbe	rs with Decimal	Poi
	r 3.141		
Clear	r display	C/ON	
Press	s 3	3	
Press	S .		
Press	s 1	1	
Press	; 4	4	
Press	1	1	
3. <b>Епte</b>	ring Decima	I Numbers Smal	ller t
	.651		
Clear	display	C/ <sub>ON</sub>	
Press			
		6	
Press	6		
		5	

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14 4. To Enter a Negative Number 7. Addition of Whole Numbers Display Enter -1.2**Key Depressed** Add 40 and 47 C/ON Clear display Clear display C/ON Press 1 1 Enter first number 40 Press . Press plus + Press 2 2 Enter second number 47 Press Press equals Press % 8. Addition of Numbers (Dollars) with Decimals (Cents). 5. **Clearing Entries** Add \$10.13, \$6.00, \$5.70 11.2 Enter 11.2 Clear display ℃/<sub>ON</sub> × Press multiply Enter first number 10.13 4 Enter 4 Press plus + ℃/<sub>ON</sub> Press % 6.00 Enter second number 17.5 Enter 17.5 Press plus + Press % C/ON 5.70 Enter third number Enter 5 5 Press equals Press equals = 9. **Subtracting Whole Numbers** 'Overflow' 6. Subtract 16 from 17 888888.8 Enter 888888.8 Enter number Press multiply × 17 to be subtracted from 999.9 Enter 999.9 Press minus Press equals Enter number to subtract 16 15

=

Press equals

The 'box' around the decimal point and the flashing display indicate the 'overflow' condition. The machine will not allow further entry until  $\frac{9}{000}$  is pressed once. Correct answer is then 8.8879991 x 10<sup>8</sup>.





# 20 CALCULATION EXAMPLES

1. Joyce Black has a problem. She can buy 7 oz. of Brand X detergent for 59¢ or she can buy the economy size which is 16 oz. for \$1.89. Which is the better value? To answer this question we compute the price per ounce. The smaller price per ounce is the better value.

### 7 oz. for 59¢





# CALCULATION EXAMPLES

2. Mary Garcia wants to balance her budget. She will take her income and subtract her fixed expenses to arrive at the amount of money she is free to spend. Mary is paid \$195 per week. She pays \$140 a month for rent, \$45 a week for food, \$125 a month on her car, \$10 a week for gas and oil, \$40 monthly for her insurance bills, and \$15 monthly for her utility bills. To calculate,

	Key Depressed	Display	1
Clear display	℃/ <sub>ON</sub>		•
Enter weekly incon	ne 195		
	×		
Enter number of w	eeks		
in month	4.3		
Store this value in	memory M+		
Enter rent payment	ts 140		
Subtract from men	nory M—		
Enter weekly food	bill 45		
Monthly (automati	с		
constant)	=		
Subtract from men	nory M—		2
Enter monthly car	payment 125		1
Subtract from men			
			ς.





4. Bob Kellman's foreign car needs work, and while he has most of the necessary items he finds he has two problems. He wants to tighten his wheel nut, but the sockets in his socket set will not fit. His 7/8 in. socket is too small, and he can not get a good grip with his 15/16 in. socket. In addition, he is changing the oil, and his shop manual calls for 2.2 liters of oil. Bob uses his Litronix calculator to find out precisely what he needs.

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To find the size of the socket he needs in millimeters. he turns 7/8 into millimeters. Then he turns 15/16 into millimeters and discovers what value he needs. First, he must calculate the decimal value of 7/8.



He now calculates the decimal value of 15/16 and then converts it to millimeters.

Clear display	°/ <sub>ON</sub>
Enter 15	15
	÷
Enter 16	16
Press right arrow	$\rightarrow$
Press 8 (in—mm)	8

To calculate how many quarts of oil he needs, Bob does the following simple sequence.

Clear display	C/ <sub>ON</sub>	
Enter number of liters	2.2	
Press left arrow	← <b>1</b>	
Press 0 (qt.—I)	0	

Bob needs a 23 millimeter socket and 2.32 quarts of oil.

5. Giuseppi Tortolino, a northern California wine 'grower, wishes to ship quantities of his wine to Italy, where he feels he will be able to get a better price. He will ship 10,000 gallons of Chablis, 15,000 gallons of Vin Rose, 10,000 gallons of Burgundy, 18,000 gallons of Chianti, 5,000 gallons of Dry Sherry, and 5,000 gallons of Champagne. His shipper will bill him by the gallon, the importer will pay by the liter and expects delivery in liters, and the Italian government taxes by the liter. Giuseppi has the following table to complete.

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	Gallons	Shipping Cost at 2¢/Gallon	Liters	Tax at 8⊄/Liter	Cost <b>Pe</b> r Gallon	Bill Importer
Chablis	10,000				\$1.50	
Vin Rose	15,000				\$1.25	
Burgundy	10,000				\$1.25	
Chianti	18,000				\$1.75	
Sherry	5,000				\$1.50	
Champagne	5,000				\$2.50	

To fill in the row for Chablis, Giuseppi performs the following simple steps on his Litronix calculator.



Giuseppi will pay \$200 in shipping charges for his Chablis. Giuseppi returns the number of gallons to the display and converts to liters.





Add this value to memory M+ Memory now contains Giuseppi's shipping and duty

Enter tax rate

charges, the display shows his duty charges.

Giuseppi wants, to bill the importer according to this formula:

Bill = Basic cost + 25% Markup + Duty and Shipping

Giuseppi re-enters the number of gallons, then calculates the final bill.



Giuseppi will bill the importer \$21978.33 for his Chablis. He completes the table using the indicated method with the following results.

		GIU	seppi's t <i>i</i>	<b>\BLE</b>		
		Shipping				
		Cost at		Tax at	Cost Per	Bill
	Gallons	2¢/Gallon	Liters	8¢/Liter	Gallon	Importer
Chablis	10,000	200.	37854.12	3028.33	\$1.50	21978.33
Vin Rose	15,000	300.	56781.18	4542.49	1.25	28279.99
Burgundy	10,000	200.	37854.12	3028.33	1.25	18853.33
Chianti	18,000	360.	68137.42	5450.99	1.75	45185.99
Sherry	5.000	100.	18927.06	1514.16	1.50	10989.16
Champagne	5,000	100.	18927.06	1514.16	2.50	17239.16

#### English Metric Wind velocity 10-15 knots from NW Temperature 82°F 0.0 in. Rain day Rain season 4.1 in. Barometric 29.63 in mercury pressure 5 miles Visibility

To fill in the rest of his table, Sam uses his Litronix calculator in the following manner.

	Display	
Wind velocity nau (knots) to mete		
Clear display	C/ON	
Enter knots	10	
Press left arrow	←	
Press 5 (mi-naut)	5	

Note that (mi-naut) can also be used to convert miles per

hour to nautical miles per hour.

Press left arrow Press EX (fps-mph)

←	
ΕX	



Barometric pressure (inches of mercury-millimeters of mercury)

Barometric pressure	29.63 in.	752.6 mm.
Visibility	5 mi.	9.26 km.

10.41 cm.

4.1 in.

Rain season

7. Dale T. Vail, marketing director for Snyder Imports, is going to sell a new line of French paints. She wishes to be able to tell her clients how much paint a one gallon can will cover. Unhappily, the paint can indicates it will cover 100 sq. meters. To convert it to square feet, Dale uses her Litronix calculator in the following manner.

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Key Depn	Display	
Clear display	C/ON	
Enter number of sq. meters	100	
Press left arrow	←	
Press left arrow	→	
Press 9 (ft - m)	9	

One can of the French paint will cover 1076.4 sq. feet of surface.

8. Curt Busse, a shipping agent for Trans-Oceanic Cargo, wants to know how many cubic yards in a shipment of marble from Italy. His contact in Rome has given him the size in cubic meters (461 cu. m.), Curt must do the conversion. With his Litronix calulator, he does these simple steps.



Curt's block of marble is a monstrous602.96 cubic yards.

# TABLE OF CONVERSION FACTORS 35

Кеу	Left Symbol <	Constant		Right Symbol 🗪
0 qt 1 oz 2 in <sup>3</sup> 3 gal 4 yd 5 mi 6 mi 6 mi 7 in 8 in 9 ft EX fps RM oz M- lb M+ deg • */-	Quarts Ounces Cubic inches Gallons 'Yards Miles Inches Inches Inches Feet feet per second Ounces Pounds Degrees Farenheit Change Sign	$\begin{array}{c} 0.946353\\ 29.57364\\ 0.01638706\\ 3.7854118\\ 0.9144\\ 0.8689762\\ 1.609344\\ 2.54\\ 2.54\\ 0.3048\\ 0.68181818\\ 28.34952\\ 0.45359237\\ 0.01745329\\ C= 5/9\ F-32 \end{array}$	L cc L m naut Km cm mm m m m kg rad °C +/_	Liters Cubic Centimeters Liters Meters Nautical Miles Kilometers Centimeters Milimeters Miles per hour Grams Kilograms Radians Centigrade Change Sign

For conversions with the left arrow (  $\leftarrow$  ) the number to be converted is divided by the constant.

For conversion with the right arrow (  $\longrightarrow$  ) the number to be converted is multiplied by the constant.

#### FULL ONE YEAR UNCONDITIONAL WARRANTY

Litronix, Inc. unconditionally guarantees that your Litronix calculator will function properly for one full year from the date of purchase by the original owner. Should your Litronix calculator cease functioning properly at any time within one year from the date of purchase by the original owner because of a defect, malfunction or accident, Litronix, without charge, will promptly repair the calculator or replace it with a new one. HOWEVER, CONSEQUENTIAL DAMAGES FOR BREACH OF WARRANTY ARE EXCLUDED.

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BEFORE RETURNING YOUR LITRONIX CAL-CULATOR FOR WARRANTY REPAIR, PLEASE CHECK THE BATTERIES. If, after checking the batteries, your Litronix calculator still requires repair covered by this warranty, send it to Litronix, Inc., P.O. Box 6000, Cupertino, California 95014, Attention: Quality Assurance Department.

Litronix issues this guarantee in good faith and with full confidence in the workmanship and quality of Litronix products.

YOUR OCCUPATION: STUDENT EDUCATOR/TEACHER DOCTOR/LAWYER ENGINEER/SCIENTIST RESEARCHER SALESMAN ACCOUNTANT OTHER	ADDRESS YOUR APPROX. AGE: UNDER 18 25-34 35-49 50 & OVER	LITRONIX 2200 WARRANTY REGISTRATION Complete and Mail To: Litronix, Inc., P.O. Box 6000, Cup Name
	WHERE WII AT HOME AT SCHOOL AT WORK	NARRANTY
Including This New Litronix How Many Personal Calculators Are owned by Your Immediate Household? One One Two Three or More	WHERE WILL MACHINE BE PRIMARILY USED? AT HOME CARACTERISTIC AS SCHOOL CARACTERISTIC AT WORK CARACTERISTIC AS A STATEMENT AT WORK CARACTERISTIC AS A STATEMENT AT WORK CARACTERISTIC AS A STATEMENT AS A STATEMENTAS AS A STATEMENT AS A STATEMENT AS A STATEMENTAS A STATEMENTAS AS	LITRONIX 2200 WARRANTY REGISTRATION TO REGIST COMPLETE AND MAIL TO: LITRONIX, INC., P.O. BOX 6000, CUPERTINO, CALIFORNIA 95014 NAME SERIAL # DATE OF PUR
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TYPE OF STORE PURCHASED FROM: DEPARTMENT STORE DISCOUNT STORE OFFICE SUPPLY STORE BOOK STORE MAIL ORDER COLLEGE BOOK STORE DRUG STORE DRUG STORE OTHER	STATE ZIP BOUGHT FOR SELF BOUGHT FOR GIFT AMOUNT PAID FOR CALCULATOR (NOT INCLUDING TAX) \$	TO REGISTER YOUR CALCULATOR UPON PURCHASE INIA 95014 ERIAL # JATE OF PURCHASE
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