

# FRIDEN MODEL 1202/1203 ELECTRONIC DISPLAY CALCULATOR



**SINGER OPERATING INSTRUCTIONS**

## INTRODUCTION

This manual will acquaint you with your new Friden\* Model 1202 or Model 1203 Electronic Display Calculator. If you have questions which are not answered in this manual, contact your local Singer Business Machines Sales Office for assistance.

## REGISTERS

All display, calculation, and storage operations of the Model 1202 and Model 1203 are performed in areas called registers. The following brief descriptions of the registers and their functions will help you to understand the operation of your calculator.

### DISPLAY REGISTER

The Display register contains the numbers that are seen on the display screen of the calculator.

### WORKING REGISTER

Addition, subtraction, multiplication and division are performed in the Working register.

### MEMORY REGISTER

Memory registers are used to store intermediate totals during a series of calculations. The Model 1202 has one Memory register; the Model 1203 has two Memory registers.

### ITEM COUNT REGISTER

The Item Count register records the number of times that the Plus and Minus keys are used during a series of calculations. A typical use for this register is to accumulate a total to be used as the divisor when calculating an average.

## UNDERFLOW and OVERFLOW

The Display register holds up to 14 digits. If an answer exceeds 14 digits, the calculator either automatically moves the decimal point to the right to retain the whole number portion of the answer or, if the decimal cannot be shifted, indicates that an error condition is present.

## UNDERFLOW

If an answer (whole number and decimal) exceeds the 14 digit capacity of the display, the decimal point shifts to the right. The significant whole number and a part of the decimal are retained. In the example shown below, 10, entered as a constant, is multiplied by 99999999.999999.

$$\begin{array}{r} 10 \\ 99999999.999999 \end{array} \times \begin{array}{r} 10 \\ 999,999,999.999999 \\ 9,999,999,999.9999 \\ 99,999,999,999.999 \\ 999,999,999,999.99 \\ 9,999,999,999,999.9 \\ 99,999,999,999,999. \end{array}$$

## OVERFLOW

Overflow occurs when the decimal point can no longer shift to the right. In the example shown above, if the Equals key was pressed once more, overflow would occur. The display would show 99,999,999,999,999.E. When overflow occurs, it is necessary to clear the Display register before resuming calculations.

\*A Trademark of The Singer Company

**MT (Memory Total)**  
 Pressing the MT key transfers the contents of the Memory register to the display. The displayed number can then be used in further calculations by pressing one of the function keys. The number is cleared from the Memory register. If the Decimal Selector dial is set to N, pressing the MT key (either key on the Model 1203) transfers the contents of the Item Count register to the display. The Item Count register is cleared.  
 To clear a Memory register, press the MT key once.

**CHANGE SIGN**  
 Pressing this key changes the algebraic sign of a number in the display from + to - or from - to +.

**√ (Square Root)**  
 As an option, the calculator may be equipped with a Square Root key instead of a CHANGE SIGN key. To determine the square root of a number, enter the number and press the Square Root key. The square root will be shown in the display.

**÷ (Divide)**  
 Pressing this key enters the number in the display as the dividend (first figure) in a division calculation. The divisor (second figure) becomes a constant for use in constant division.

**× (Multiply)**  
 Pressing this key enters the number in the display as the multiplier (first figure) in a multiplication calculation. The multiplier becomes a constant for use in constant multiplication.

**R (Recall)**  
 Pressing this key exchanges the contents of the Display and the Working registers. Pressing the key again returns the numbers to their original locations.

**CLEAR**  
 If only numeric keys have been pressed, pressing the CLEAR key clears the Display register. If a function key has been pressed, pressing the CLEAR key clears the Display, Item Count and Working registers. Pressing the CLEAR key does not affect the contents of a Memory register. To clear a Memory register, press the MT key once.

**% (Percent)**  
 To determine a percentage of a number, enter the number, press the Multiply key, enter the desired percentage, and press the Percent key. The percentage is shown in the display.

**= (Equals)**  
 Pressing this key displays the answer to a multiplication or division problem.

**0 through 9 and Decimal (Numeric Keys)**  
 Numbers are entered into the calculator in the same order as they are written on paper. Enter each digit in the number, reading from left to right, touching the Decimal key as the decimal point appears in the number.

**- (Minus)**  
 Pressing this key subtracts the number in the Display register from the contents of the Working register. The contents of the Item Count register are increased by one each time the key is pressed.

**+ (Add)**  
 Pressing this key adds the number in the Display to the contents of the Working register. The contents of the Item Count register are increased by one each time the key is pressed.

## SAMPLE PROBLEMS

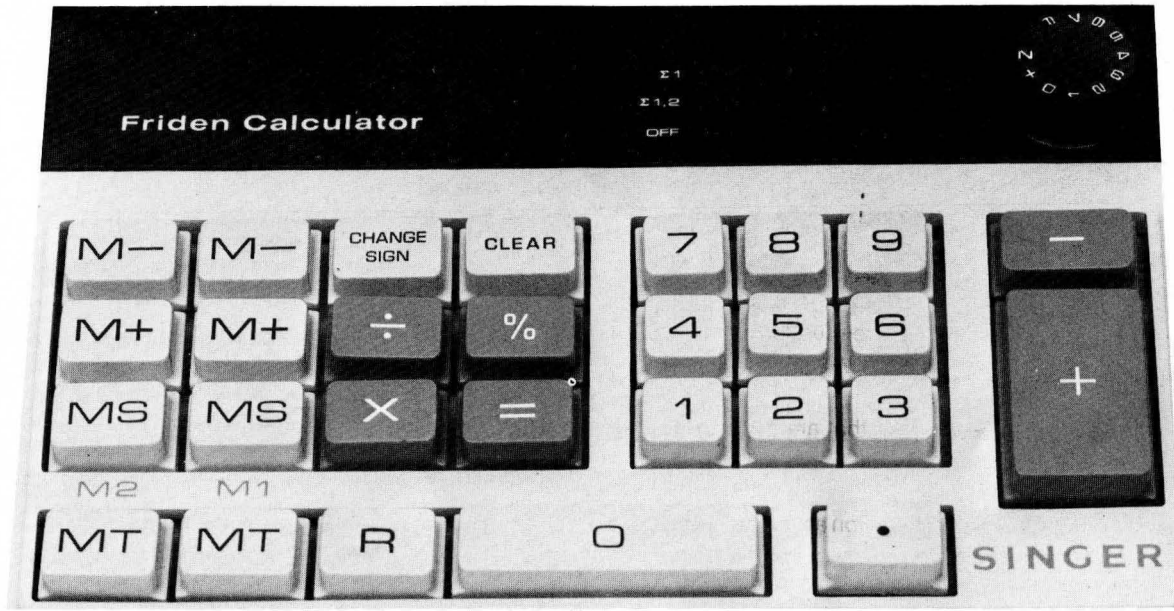
### ADDITION/SUBTRACTION

#### PROBLEM 1

Automatic decimal in + position.  
 Fast correction of incorrect entry.  
 Automatic repeat of previous entry.

	Enter	Touch	Display
\$ .12			
45.63			
-1.20			
187.55			
1.25			
1.25			
\$234.60			
	Set decimal at +		
		CLEAR	
	12	+	0.12
	4563	+	45.75
	120	-	44.55
	18755	+	232.10
	125	+	233.35
		+	234.60

# CONTROLS, INDICATORS, and KEYS



Note that a Model 1203 is shown in the photograph. Differences between the Model 1203 and the Model 1202 are discussed in the text.

## DISPLAY

The display holds up to 14 digits including a decimal point. If the number in the display is less than one, it is preceded by a zero (for example, 0.175). If the number in the display is greater than 999, it is automatically punctuated (for example, 1,203).

## INDICATORS

The indicators are located on the right side of the display. The indicators light when a number is stored in a Memory register, when a negative number is present in the display, and when an overflow condition exists.



### MEMORY INDICATOR

Lights when a number is stored in a Memory register. The Model 1202 has one Memory indicator; the Model 1203 has two indicators.

### MINUS INDICATOR

Lights when a negative number is in the display.



### E OVERFLOW INDICATOR

Lights when a product or quotient contains more than 14 significant digits. To turn the indicator off, press the CLEAR key; to clear the display, press the CLEAR key again.

## MEMORY SELECTOR SWITCH

The Memory Selector switch controls automatic accumulation of data in Memory registers.

- When the switch is in the  $\Sigma 1$  position, all products and quotients are automatically accumulated in Memory (Register M1 on the Model 1203).
- When the switch is in the  $\Sigma 1,2$  position (Model 1203 only), all products and quotients are automatically accumulated in register M1 and all multiplicands and dividends are accumulated in register M2.
- When the switch is OFF, no automatic Memory register accumulation occurs.

## ON-OFF SWITCH

Turns the calculator on and off. Press the switch forward to turn the calculator on. When the calculator is turned on, all registers are cleared and the value 0. is displayed.

## DECIMAL SELECTOR DIAL

The Decimal Selector dial determines the decimal accuracy of an answer. The dial has 11 settings:

- N The N setting is used when calculating averages. When the dial is set to N, pressing the Memory Total or Memory Subtotal key transfers the contents of the Item Count register to the Display register.
- + The + setting is used during calculations involving dollars and cents. Entries are automatically pointed to two decimal places without entering a decimal point (for example: 1050 is displayed as 10.50; 99 is displayed as 0.99; and 5 is displayed as 0.05.).
- 0-7 Answers are automatically rounded-off to the number of decimal places indicated by the dial setting.
- F Answers are not rounded-off.

## MEMORY KEYS

The Memory keys are located on the left side of the keyboard. The Model 1202 has one row of Memory keys. The Model 1203, having two Memory registers, has two rows of Memory keys. In the Model 1203, the keys in row M1 control Memory register one and the keys in row M2 control Memory register two.

### M- (Subtract from Memory)

Pressing this key subtracts the number in the display from the contents of the Memory register. The result remains in the display for further calculations.

### M+ (Add to Memory)

Pressing this key adds the number in the display to the contents of the Memory register. The result remains in the display for further calculations.

### MS (Memory Subtotal)

Pressing the MS key transfers the contents of the Memory register to the display. The displayed number can be used in further calculations by pressing one of the function keys (Add, Subtract, Multiply, Divide, Percent). The subtotal remains in the Memory register.

If the Decimal Selector dial is set to N, pressing the MS key (either key on the Model 1203) transfers the contents of the Item Count register to the display. The number remains in the Item Count register.

## PROBLEM 2

Negative answer displayed with minus sign.

	Enter	Touch	Display
	Set decimal at +		
.27		CLEAR	
<u>-1.36</u>	27	+	0.27
-1.09	136	-	1.09-

## MULTIPLICATION

### PROBLEM 1

Mixed decimal entries,  
fixed decimal answer.

	Enter	Touch	Display
	Set decimal at 5		
		CLEAR	
$4.8771 \times .081143 = 0.39574$	4.8771	$\times$	4.8771
	.081143	=	0.39574

### PROBLEM 2

Negative multiplication.

	Enter	Touch	Display
	Set decimal at 5		
		CLEAR	
$14.36 \times (-4.3) = -61.748$	14.36	$\times$	14.36
	4.3	CHANGE SIGN	4.3-
		=	61.74800-

## CHAIN MULTIPLICATION

	Enter	Touch	Display
	Set decimal at 5		
		CLEAR	
$4.26 \times 6.94 \times 3.6 = 106.43184$	4.26	$\times$	4.26
	6.94	$\times$	29.5644
	3.6	$\times$	106.43184

## SQUARING

	Enter	Touch	Display
	Set decimal at F		
		CLEAR	
$21.698^2 = 470.803204$	21.698	$\times$	21.698
		=	470.803204

## CONSTANT MULTIPLICATION WITH ACCUMULATION

First factor does not have to be reentered.  
Automatic accumulation of individual answers.

	Enter	Touch	Display
			Set decimal at 2
			Set Memory Selector switch to $\Sigma 1$
			CLEAR
$3 \times 8 = 24$	3	$\times$	3.
$3 \times 15 = 45$	8	=	24.00-
$3 \times 9.2 = 27.6$	15	=	45.00-
$\quad\quad\quad 96.6$	9.2	=	27.60-
		MT	96.60

## ACCUMULATIVE MULTIPLICATION

Automatic round off.  
Automatic accumulation in memory.  
Mixed decimal entries, fixed decimal answer.

### METHOD 1

	Enter	Touch	Display
			Set decimal at 2
			Set Memory Selector switch to $\Sigma 1$
			CLEAR
$4 \times 3.6 = 14.4$	4	$\times$	4.
$7.1 \times 9.49 = 67.38$	3.6	=	14.40-
$8.3 \times (-6.9) = -57.27$	7.1	$\times$	7.1-
$\quad\quad\quad 24.51$	9.49	=	67.38-
	8.3	$\times$	8.3-
	6.9	CHANGE SIGN	6.9=
		=	57.27=
		MT	24.51

### METHOD 2

	Enter	Touch	Display
			Set decimal at 2
			Set Memory Selector switch OFF
			CLEAR
$4 \times 3.6 = 14.4$	4	$\times$	4.
$7.1 \times 9.49 = 67.38$	3.6	=	14.40
$8.3 \times (-6.9) = -57.27$		M+	14.40-
$\quad\quad\quad 24.51$	7.1	$\times$	7.1-
	9.49	=	67.38-
		M+	67.38-
	8.3	$\times$	8.3-
	6.9	=	57.27-
		M-	57.27-
		MT	24.51

## DIVISION

Mixed decimal entries,  
fixed decimal answer.  
Automatic round off.

	Enter	Touch	Display
			Set decimal at 5
			CLEAR
$589.256 \div 12.9 = 45.67876$	589.256	$\div$	589.256
	12.9	=	45.67876

## CHAIN DIVISION

	Enter	Touch	Display
	Set decimal at 2		
		CLEAR	
$\frac{144.98}{36.9} \div 197 = 0.02$	144.98	÷	144.98
	36.9	÷	3.9289972899728
	197	=	0.02

## CONSTANT DIVISION WITH ACCUMULATION

Second factor does not have to be reentered.  
Positive and negative accumulation of individual answers.

	Enter	Touch	Display
	Set decimal at 2		
	Set Memory Selector switch at $\Sigma 1$		
		CLEAR	
$14 \div 3 = 4.67$	14	÷	14.
$26 \div 3 = 8.67$	3	=	4.67-
$-14.8 \div 3 = -4.93$	26	=	8.67-
$\frac{8.41}{8.41}$	14.8	CHANGE SIGN	14.8=
		=	4.93=
		MT	8.41

## ACCUMULATIVE DIVISION

Automatic round off.  
Automatic accumulation in memory.  
Mixed decimal entries, fixed decimal answer.

### METHOD 1

	Enter	Touch	Display
	Set decimal at 5		
		CLEAR	
$\frac{26.39}{15.1} + \frac{5.55}{2.3} - \frac{6.6}{4.1} = 2.55096$	26.39	÷	26.39
	15.1	=	1.74768
		M+	1.74768-
	5.55	÷	5.55-
	2.3	=	2.41304-
		M+	2.41304-
	6.6	÷	6.6-
	4.1	=	1.60976-
		M-	1.60976-
		MT	2.55096

### METHOD 2

	Enter	Touch	Display
	Set decimal at 2		
	Set Memory Selector switch to $\Sigma 1$		
		CLEAR	
$\frac{26.39}{15.1} + \frac{5.55}{2.3} - \frac{6.6}{4.1} = 2.55$	26.39	÷	26.39
	15.1	=	1.75-
	5.55	÷	5.55-
	2.3	=	2.41-
	6.6	÷	6.6-
	4.1	CHANGE SIGN	4.1=
		=	1.61=
		MT	2.55

## PERCENT INCREASE

	Enter	Touch	Display
	Set decimal at 5		
	CLEAR		
7894 (this year)	7894	+	7,894.
6375 (last year)	6375	M+	6,375.-
1519 (amount change)		-	1,519.-
0.23827 (% change)		÷	1,519.-
23.827 Increase		MT	6,375.
		=	0.23827

## PERCENT DECREASE

	Enter	Touch	Display
	Set decimal at 4		
	CLEAR		
3975 (this year)	3975	+	3,975.
5582 (last year)	5582	M+	5,582.-
-1607 (amount change)		-	1,607.=
-.28789 (% change)		÷	1,607.=
-28.789 Decrease		MT	5,582.
		=	0.2879

## PERCENT PRORATION

Automatic constant divisor.  
Automatic accumulation with round off.  
Use of intermediate storage.

	Enter	Touch	Display
	Set decimal at 2		
	Set Memory Selector switch to $\Sigma$ 1		
	CLEAR		
1111	1111	+	1,111.
2222	2222	+	3,333.
3333	3333	+	6,666.
4444	4444	+	11,110.
5555	5555	+	16,665.
16665		÷	16,665.
	1111	R	16,665.
6.67		%	6.67-
13.33	2222	%	13.33-
20.00	3333	%	20.00-
26.67	4444	%	26.67-
33.33	5555	%	33.33-
100.00		MT	100.00



# PAYROLL

Calculation of gross pay, net pay, premium pay, total deductions.

Use of % key for percent deductions.

Use of intermediate storage.

Hours worked 48.75

Straight time	40 hours × \$3.875 rate =	\$155.00
Overtime	8.75 × 5.81 rate =	<u>50.86</u>
(1½ × \$3,875)	Gross pay	\$205.86
S.D.I.	@ 1%	\$ 2.06
F.I.C.A.	@ 5.85%	12.04
Withholding	25.75	<u>-39.85</u>
	Net pay	\$166.01

Enter	Touch	Display
	Set decimal at 2	
	Set Memory Selector switch to $\Sigma$ 1	
	CLEAR	
3.875	×	3.875
40	=	155.00-
	R	3.875-
	×	3.875-
1.5	×	5.8125-
8.75	=	50.86-
	MS	205.86-
	×	205.86-
1	CHANGE SIGN	1.=
	%	2.06=
	R	205.86-
	×	205.86-
5.85	CHANGE SIGN	5.85=
	%	12.04=
25.75	M-	25.75-
	MS	166.01-
	R	205.86-
	M-	205.86-
	MT	39.85-

# AMORTIZATION SCHEDULE

Automatically calculate monthly interest and new balance.

Principal	\$12,500
Annual interest rate	8.75%
Monthly payment	\$200

	Enter	Touch	Display
	Set decimal at F		
		CLEAR	
	.0875	÷	0.0875
	12	%	0.729166666666
		×	0.729166666666
	12500	M+	12,500.-
		Set decimal at 2	
		Set Memory Selector switch to $\Sigma$ 1	
First month's interest		%	91.15-
	200	M-	200.00-
New balance		MS	12,391.15-
Second month's interest		%	90.35-
	200	M-	200.00-
New balance		MS	12,281.50-

For each new balance, repeat %, 200, M-, and MS steps

# INVOICING

Automatic individual extensions and total.

Automatic intermediate totals.

Automatic percent discount.

Automatic percent tax.

Automatic round off.

135.5 @ 5.255 = \$712.05  
 194.125 @ .09315 = 18.08  
 330.59 @ 2.24 = 740.52  
 660.215

Gross total = \$1,470.65  
 Less 14% discount = 205.89  
 Net total (less tax) = 1,264.76  
 Plus 5% tax  
 Final Invoice: \$1,328.00

Enter	Touch	Display
Set decimal at 2		
Set Memory Selector switch to $\Sigma$ 1,2		
CLEAR		
135.5	×	135.5-
5.255	=	712.05=
194.125	×	194.125=
.09315	=	18.08=
330.59	×	330.590=
2.24	=	740.52=
Turn Memory Selector switch OFF		
	(M1) MS	1,470.65=
	×	1,470.65=
14	%	205.89=
	(M1) M-	205.89=
	(M1) MS	1,264.76=
	×	1,264.76=
5	%	63.24=
	(M1) M+	63.24=
	(M1) MT	1,328.00-
	(M2) MT	660.215

# EXPENSE PRORATION

Accumulate two totals for verification of square footage and dollar amounts.

Use of intermediate storage in memory.

Use of automatic constant multiplier.

In-step decimal change.

Dept.	Sq. Ft.	Rent
A	575	783.44
B	1650	2248.13
C	2525	3440.31
D	450	613.12
	5200	7085.00
	1.3625 per square foot	

783.44 (ANS)  
 2248.13 (ANS)  
 3340.31 (ANS)  
 613.12\* (ANS)  
 7085.00

\*\$.01 adjustment

Enter	Touch	Display
Set decimal at 2		
Set Memory Selector switch to $\Sigma$ 1		
CLEAR		
575	+	575.
1650	+	2,225.
2525	+	4,750.
450	+	5,200.
	÷	5,200.
7085	R	5,200.
	×	1.3625
575	=	783.44-
1650	=	2,248.13-
2525	=	3,440.31-
450	=	613.13-
	MT	7,085.01

# AVERAGE

Be sure memory is clear.  
Each plus and minus keystroke adds one to the memory.

$$\frac{12.25 + 7.35 - 19 + 22.785 + 16.5}{5} = 7.98$$

Enter	Touch	Display
Set decimal at 2		
	MT	
	CLEAR	
	CLEAR	
12.25	+	12.25
7.35	+	19.60
19.	-	0.60
22.785	+	23.385
16.5	+	39.885
	÷	39.885
Set decimal at N		
	MT	5.
	=	7.98

# COMPLEX CALCULATIONS

Not necessary to reenter intermediate answers.

## METHOD 1

$$\frac{7.69 \times 144.6}{11.8} + (8.6 \times .9 \times 17) = 101.58402$$

$$-3.14159$$

Enter	Touch	Display
Set decimal at 5		
	CLEAR	
7.69	÷	7.69
11.8	×	0.6516949152542
144.6	÷	94.235084745757
3.14159	CHANGE SIGN	3.14159-
	=	29.99598-
	M+	29.99598=
8.6	×	8.6-
.9	×	7.74-
17	=	131.58000-
	+	131.58000-
	MT	29.99598-
	+	101.58402

## METHOD 2

$$\frac{7.69 \times 144.6}{11.8} + (8.6 \times .9 \times 17) = 101.58402$$

$$-3.14159$$

Enter	Touch	Display
Set decimal at 5		
Set Memory Selector switch at $\Sigma$ 1		
	CLEAR	
7.69	÷	7.69
11.8	×	0.6516949152542
144.6	÷	94.235084745757
3.14159	CHANGE SIGN	3.14159-
	=	29.99598=
8.6	×	8.6-
.9	×	7.74-
17	=	131.58000-
	MT	101.58402

**SINGER**  
BUSINESS MACHINES

Publication Number 51-7008/Printed in U.S.A.