



The IME 26 is the outcome of many year's experience in the construction of electronic desk calculators. It is an ideal combination satisfying two important basic requirements for a culculator: high performance and simple operation. All four basic operations can be carried out with the small number of keys in the central zone of the keyboard; these are positioned in a logical manner, so that the calculator can be operated « blind ».

It should also be emphasized that in addition to the accumulating register three further operational registers are provided, enabling the last operation in each case to be recalled for verification or further processing.

The IME 26 was specially designed for all commercial arithmetical problems. Its electronic system provides a hitherto unattained degree of reliability in calculation.

The IME 26 is equipped with reliable semi-conductors and with interchangeable component boards. The individual component boards are connected by plugs and can easily be replaced.

# Index

#### Characteristics

Keyboard
Connection to power
Capacity
Entering of data
Re-utilization of results
Rounding off of results
Clearing

#### **Basic Operations**

Addition and Subtraction
Addition and Subtraction with repeated addends
Multiplication
Division
Raising to a power
Chain operations
Accumulation in the auxiliary register
Constant Factor Operations
Inverse Value calculations

# Examples of applications

Percentage analysis
Caiculation of depreciation
Calculation of percentage increase
Interest calculation
Interest calculation on bank account
Amortization rates
Loan repayment
Invoicing
Evaluation of polynomial

# Characteristics

# The Keyboard

The IME 26 keyboard has a functional and modern design. The ten keys by which all figures are entered and the keys for the fundamental operations are gathered together on an anodized aluminium back plate. The other keys are located in a practical and logical manner.

#### Reading keys for Operation Register

- A This key displays the contents of the 1st operation register without clearing it
- This key displays the contents of the entering register without clearing it
- This key displays the contents of the result register without clearing it

#### Clearing keys

- Initial clear key
- **CK** Displayed-register clear key

#### Keys for the fundamental operations

- Sign change key for any number in display
- X Multiplication key
- Division key
- Operation key for algebraic sums, multiplications and divisions.

  In additions the total or sub-total will appear after a second depression of this key.

#### Keys for Auxiliary Register

The auxiliary register is controlled by three aligned keys.

- The central key clears the register
- The key on the right displays the register contents without clearing
- The key on the left automatically accumulates in the register the data on display or the results of operations already entered in the operative registers.

  The presence of data in the auxiliary registers is indicated by a white band which appears automatically on the central key upon the depression of the register operation key.

# Decimal point selector

Controls the decimal point position, which can be selected as desired.

#### Connection to power

The IME 26 can operate with a voltage variation of  $\pm 10^{\circ}$ /<sub>o</sub> with respect to the nominal value.

If the voltage value is not available it is necessary to interpose an autotransformer of 60 VA at least.

To begin operating the machine, after switching it on, it is sufficient to press the key twice and then the clearing key of the auxiliary memory.

#### Capacity

The IME 26 has a capacity of 12 digits in all registers. This means that operations such as follows may be performed:

 $999999 \times 999999 = 999998000001$ 

By virtue of the automatic control of the decimal point and of the automatic discarding of the excessive decimal digits it is possible to perform calculations such as:

 $15.4764213277 \times 2.2744731219 = 35.2007043331$ 

without exceeding the machine capacity, the last digit of the result is automatically rounded off.

Any overflow of the machine capacity is indicated, for any operation, by the lighting of a red lamp on the right of the display. The result which appears under this condition on the display is meaningless.

Entering of data
The numbers entered on the keyboard are stored in the entering register.
For negative numbers press the key after entry. IME 26 executes algebraic calculations and each register records the sign.  For decimal numbers press the key after entering the unit digit.  The IME 26 operates with an automatically fixed decimal point in each operation, however the position of the decimal point is adjustable in any position between the 1st and 10th digit by means of the proper selector.
In the event of an error in entry, press the <b>CK</b> key and re-enter. It is possible to completely modify or substitute either the integral or decimal portion of a number leaving the other portion unchanged.
For the decimal portion, it is necessary to press the key and enter again the decimal digits.  For the integral portion, it is necessary to press the key and as often as necessary the key to make the number disappear on the left of the display; this accomplished, the number is entered again correctly.

#### Re-utilization of results

Each result or factor of any calculation on display may be immediately utilized for successive operations without the necessity of a transfer operation.

# Rounding off of results

If the effective number of decimals exceeds the machine capacity, the IME 26 automatically rounds off the last digit either upwards or downwards. Operating with the decimal point in second position, for example, we have:

 $12.6 \times 147.78 = 1862.03$ 

With the decimal poin in third position instead, we have:

 $12.6 \times 147.78 = 1862.028$ 

## Clearing

Clearing of the contents of the entering register is automatic with each new entering. Clearing of the other operative registers takes place automatically as is necessary.

Clearing of the other operative registers takes place automatically as is hossessary

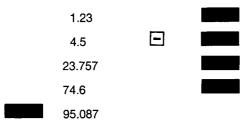
Clearing of the auxiliary register is performed by means of the appropriate key.

# **Basic operations**

#### Addition and subtraction

1.23 - 4.5 + 23.757 + 74.6 = 95.087

Decimal point in 3rd position

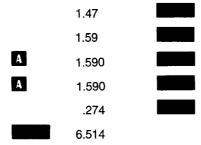


The total is obtained by pressing the key after the last addition. By pressing the A key after the addition key, it is possible to re-read the last item added. This allows the execution of operations with repeated addends (as indicated in the following example), or allows the correction of that entry by merely changing the sign.

# Addition and subtraction with repeated addends

1.47 + 1.59 + 1.59 + 1.59 + 0.274 = 6.514

Decimal point in 3rd position



# Multiplication

a)  $15.42 \times 7.23 = 111.487$ 

Decimal point in 3rd position

15.42 X

7.23

By pressing **A** and **B** keys, multiplicand and multiplier may be re-read, each one with its correct algebraic sign.

By pressing the key, the product may be re-read.

b) 
$$-5.36 \times 2.43 = -13.025$$

Decimal point in 3rd position

- 5.36
- 3

X

- 2.43
- **—** 13.025

#### Division

13:3=4.333

Decimal point in 3rd position

- 13
- :
- 3



By pressing the A key the division remainder (0.001) may be read.

- By pressing the **B** key the divisor (3) may be read.
- By pressing the **!!** key we return to read the quotient.

# Raising to a power

$$(-1.018)^5 = -1.093$$

Decimal point in 3rd position.

- 1.018
- 0
- 1.018
- X
- 1.018
- X
- \_\_ 1.018
- X
- M 1.018
- X
- **M** 1.018
- **—** 1.093

or

--- 1.055

# Chain operations

$$\frac{15.4 \times 7.23}{12.6} = 8.836$$

Decimal point in 3rd position

12.6 8.836

If it is required to read the intermediate results, operate as follows:

X

7.23

# Accumulation in the auxiliary register

a)  $1.3 \times 4.52 = 5.876$   $-0.15 \times 2.25 = -0.338$ 5.538

Decimal point in 3rd position

1.3 X

4.52

5.876

.15

2.25

-0.338

M 5.538

b) 12.56 x 2.5 x 35.2 = 1105.280

 $2.56 \times (-3.8) \times 4.5 = -43.776$  1061.504

Decimal point in 3rd position

12.56

X

2.5

X

35.2

1105.280

2.56

X

X

3.8

4.5

-43.776

M 1061.504

c) 
$$\frac{1}{3} + \frac{1}{5} + \frac{1}{7} = 0.67618$$

Decimal point in 5th position

1

3

0.33333

1

5

0.20000

B

7

0.14285

M 0.67618

# Constant Factor Operations

a) 
$$12.473 \times 11.6 = 144.687$$

 $8.2 \times 11.6 = 95.120$ 

Decimal point in 3rd position

11.6

0

12.473

X

M 11.600

144.687

8.2

X

M 11.600

95.120

or

11.6

X

12.473

144.687

11.600

X

8.2

Decimal point in 3rd position

6.2

0 

1483.6

M

6.200

239.290

1.2

:

М 6.200

0.193

#### Inverse value calculations

When the value, whose inverse is desired to be calculated, is a result of previous calculations, this process avoids the use of the auxiliary register.

$$\frac{a}{a+b}$$

$$\frac{3.27}{3.27+4.15} = 0.440$$

Decimal point in 3rd position

3.27

4.15

7.420

3.27

7.420

0.440

or

4.15

3,27

A

3.270

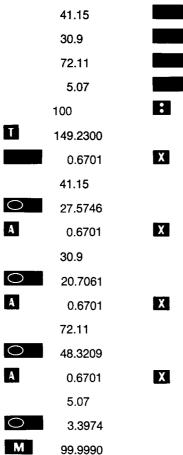
7.420

# Examples of applications

# Percentage Analysis

41.15	27.57 º/o
30.90	20.71 %
72.11	48.32 %
5.07	3.40 %
149.23	100.00 %

#### Decimal point in 4th position

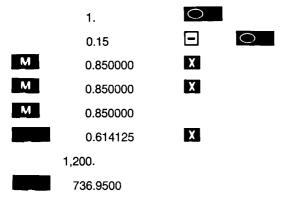


# Calculation of depreciation

One machine costs £ 1,200. What is its value after three years, assuming an annual depreciation of  $15^{\circ}/_{\circ}$ .

$$V = (1 - 0.15)^3 \times 1,200 = 736.95$$

Decimal point in 6th position.

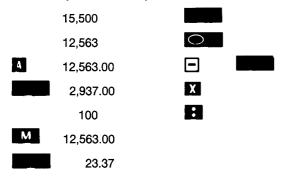


# Calculation of raising percentage

Calculate the percentage increase between the values:

$$x_1 = 12,563$$
 and  $x_2 = 15,500$  
$$\frac{15,500 - 12,563}{12,563} \times 100 = 23,37 \%$$

Decimal point in 2nd position



#### Interest calculation

interest on £ 15,000. for 120 days at 6.5 % per year

$$I = \frac{15,000 \times 120 \times 0.065}{360} = 325$$

Decimal point in 3rd position

X 15,000

120

.065

360

325.000

#### Interest calculation on bank account

Credit on 31st December 360 days £ 2,869 211 days £ 1,850 May 29 Deposit 193 days £ 680 June 17 Deposit £ 700 129 days August 21 Deposit £ 1,200 -September 19 Drawn 101 days 76 days £ 2,200 October 14 Deposit £ 7,099

£ 152.635 Interest on 31st December (3.25%)

£ 7,251.635 Credit on 31st December

$$I = \frac{3.25 \times \Sigma \text{ (days x Capital)}}{100 \times 360} = \frac{3.25 \times 1,690,730}{100 \times 360} = 152.635$$

Decimal point in 3rd position

X 360

2,869

 $\circ$ 1,032,840.000

> X 211

1,850

 $\circ$ 390,350.000

> X 193

680

131,240.000

X 129

700

0	90,300.000		
	101	X	
	1,200	_	
0	121,200.000		
	76	X	
	2,200		
0	167,200.000		
M	1,690,730.000	X	C <sub>M</sub>
	3.25	B	
	100	B	
	360		
$\circ$	152.635		
	2,869		
	1,850		
	680		
	700		
	1,200		
	2,200		
	7,099.000		
М	152.635		
	7,251.635		

#### Amortization rates

Property is purchased for \$ 128,500.

\$ 62,000 are paid in cash.

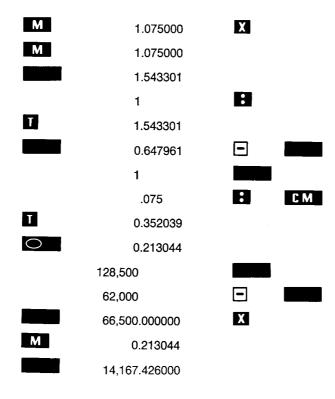
The remainder of the sum must be paid in six annual instalments at a yearly interest rate of  $7.5\,\%$ .

Calculate the amount of the single instalments.

$$R = (128,500 - 62,000) - \frac{0.075}{1 - (1 + 0.075)^{-6}} = 14,167.426$$

Decimal point in 6th position

	1	$\circ$
	.075	0
M	1.075000	X
М	1.075000	X
M	1.075000	X
M	1.075000	X



### Loan repayment

Capital for amortization \$ 5,000.00

Repayment rate 5% per annum Interest rate 8% per annum

Yearly quota: 5 % on 5,000.00 = \$250.00

 $8^{\circ}/_{\circ}$  on 5,000.00 =  $\frac{$400.00}{}$ 

\$ 650.00

Year	Interest	Repayment	Residual principal
1	400.00	250.00	4,750.00
2	380.00	270.00	4,480.00
3	358.40	291.60	4,188.40

and so on until the residual principal reaches zero.

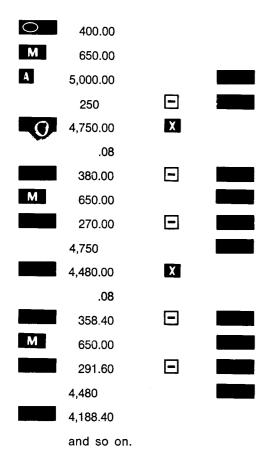
Decimal point in 2nd position

5,000 X

.05

250.00

**A** 5,000.00 **X** 



# Invoicing

 $16 \times 2,141 = 34,256.0000$ 

 $24 \times 311 = 7,464.0000$ 

41,720.0000

15 % discount 6,258.0000

35,462.0000

4 <sup>0</sup>/<sub>0</sub> sales tax 1,418.4800

36,880.4800

3 % discount 1,106.4140

Total 35,774.0660

#### Decimal point in 4th position

16 X

2,141

34,256.0000

24 X

311

7,464.0000

.04

# Evaluation of a polynomial

$$x^4 + 7.1 x^3 + 6.72 x^2 + 4 x - 16 = -131.5668$$

for 
$$x = -4.3$$

#### Decimal point in 4th position

X 4.3

18.4900

A X 4.3000

18.4900

**—** 79.5070

A X 4.3000

**--** 79.5070

Ò 341.8801

A X 4.3000

A 4.3000

18.4900 A

X 4.3000

18.4900 X - 79.5070

7.1

 $\circ$ **—** 564.4997

X 4.3

4.3000

X 18.4900

0	124.2528 4.3 4	⊡	X
M	<ul><li>17.2000</li><li>16</li><li>131.5668</li></ul>	-	0
or M	4.3 — 4.3000 7.1	₽	0
M	2.8000 — 4.3000 — 12.0400	X	
M	6.72 — 5.3200 — 4.3000 22.8760	X	
M	4 26.8760 — 4.3000	X	
	—115.5668 16 —131.5668	Ξ	



### schemi di calcolo calculation schedule schémas de calculs esquemas de calculo rechnungsbeispiele

25.22 + 32.57 — 11.6 = 46.19	25 • 22 • 32 • 57 • 11 • 6 • •	00000046,1900
42.5 × 5.7 = 242.25	42 • 5 <b>X</b> 5 • 7	000002422500
52.32 × 1.537 = 80.4158	52 • 32 <b>□ X</b> 1 • 537	-000000804158
26.68 : 2.56 = 10.4218	26 • 68 • 2 • 56	00000010,4218
$2.21^2 = 4.8841$	2 • 21 <b>X</b> A	00000004,8841
$(-3.2)^3 = -32.768$	3•2• X A A X T	-00000032,7680
$(5.31 \times 3.75) : 17 = 1.1713$	5 • 31 <b>X</b> 3 • 75 <b>3</b> 17	00000001,1713
$8.32 \times 2.25 \times 32.75 = 613.0800$ $5.27 \times (-4.31) \times 57.23 = -1299.9051$ $-686.8251$	8 • 32 <b>X</b> 2 • 25 <b>X</b> 32 • 75 • 5 • 27 <b>X</b> 4 • 31 • <b>X</b> 57 • 23 •	000006130800 -000012999051
	M	-00000686,8251

17.23 : 4.3 = 5.25 : 3.27 =		17 • 23 • 4 • 3	00000004,0069
	2.4014	5 • 25 <b>- :</b> 3 • 27	-00000001,6055
		М	000000024014
$12.47 \times 5.6 = 6$ $8.23 \times 5.6 = 4$		5 • 6 <b>X</b> 12 • 47	00000069,8320
		A X 8 • 23	00000046,0880
523.756 : 26.57 = 327.245 : 26.57 =		26 • 57 • 523 • 756 • M	00000019,7123
		327 <b>○</b> 245 <b>M</b>	000000123163
$\frac{3.27}{3.27 + 4.15} = 0$	0.4407	4 • 15 3 • 27 A : T	0000000 <sub>i</sub> 4407
572 × 53.25 = 75 × 105.75 =	7931.2500	572 <b>X</b> 53 • 25	000304590000
	38390.2500	75 <b>X</b> 105 • 75	00007931,2500
— 15º/ <sub>0</sub>	<u>— 5758.5375</u> <u>32631.7125</u>		
+ 40/0	1305.2685	<b>M</b> .	000383902500
	33936.9810		
		X • 15 •	-000057585375
		M	00032631,7125
		X • 04	000013052685
		M	00033936,9810
		<u> </u>	