

Computer Key Boards (Membrane Type)

PRODUCT CODE (ASICC)	: 78314
QUALITY AND STANDARDS	: N.A.
PRODUCTION CAPACITY	: Qty. : 48,000 Nos. (per annum) Value : Rs. 1,32,00,000
YEAR OF PREPARATION	: 2002–2003
PREPARED AND UPDATED BY	: Small Industries Service Institute Kurla Andheri Road, Sakinaka, Mumbai And Office of the Development Commissioner (Small Scale Industries), Electronics and Electrical Division, 7th Floor, Nirman Bhavan, New Delhi - 110 011.

INTRODUCTION

The key board is used for data entry to the computer. A good key board should offer smooth travel to the touch without catching and should be able to mount firmly without no flexing. The key board should also be free of key bounce. A good key board should have keys properly spaced for easy use. Key boards with contact points exposed to dust are particularly susceptible to key bounce.

The key board may be easily detachable from the computer. It can be used as a part of the computer or as a separate unit when connected through a flexible cable. The actual number of keys on the key board will depend on the combination of languages that can be used with the system. Normally key boards of 107 to 108 keys (WIN' 98/

2000 version) are presently catering to the demand of computer industry. However Key Boards of 111 Keys are also being used for multimedia applications. The Key board shall operate on power derived from the computer.

The function of the keys shall be indelibly marked. The interface of the key board shall correspond to the interface option available with the computer.

MARKET POTENTIAL

Considering the growth and demands of micro and personal computers in the country specially with reference to Internet phonemental growth, there is a good demand for computer key boards in the country. The major requirement of Computer key boards for the computer industry is presently met by

small scale sector. It is estimated that more than 80% of production of computer boards is in the SSI sector. The annual demand of computer is estimated to be of the order of more than 20,00,000 Nos. per annum. There may be about 10-12 good units in this sector producing more than 10,00,000 key boards per annum.

The rest of the demand is met through imports.

BASIS AND PRESUMPTIONS

- i) The basis for calculation of production capacity has been taken on single shift basis on 75% efficiency.
- ii) The maximum capacity utilization on single shift basis for 300 days a year. During first year and second year of operations the capacity utilization is 60% and 80% respectively. The unit is expected to achieve full capacity utilization from the third year onwards.
- iii) The salaries and wages, cost of raw materials, utilities, rents, etc. are based on the prevailing rates in and around Mumbai. These cost factors are likely to vary with time and location.
- iv) Interest on term loan and working capital loan has been taken at the rate of 16% on an average. This rate may vary depending upon the policy of the financial institutions/agencies from time to time.
- v) The cost of machinery and equipments refer to a particular make / model and prices are approximate.
- vi) The break-even point percentage indicated is of full capacity utilization.
- vii) The project preparation cost etc. whenever required could be considered under pre-operative expenses.
- viii) The essential production machinery and test equipment required for the project have been indicated. The unit may also utilize common test facilities available at Electronics Test and Development Centres (ETDCs) and Electronic Regional Test Laboratories (ERTLs) set up by the State Governments and STQC Directorate of the Department of Information Technology, Ministry of Communication and Information Technology, to manufacture products conforming to Bureau of Indian Standards.

IMPLEMENTATION SCHEDULE

The major activities in the implementation of the project has been listed and the average time for implementation of the project is estimated at 12 months:

Sl. No.	Name of Activity	Period in Months (Estimated)
1.	Preparation of project report	1
2.	Registration and other formalities	1
3.	Sanction of loan by financial institutions	3
4.	Plant and Machinery:	
	(a) Placement of orders	1
	(b) Procurement	2
	(c) Power connection/ Electrification	2
	(d) Installation/Erection of machinery/Test Equipment	2

Sl. Name of Activity No.	Period in Months (Estimated)
5. Procurement of raw materials	2
6. Recruitment of Technical Personnel etc.	2
7. Trial production	11
8. Commercial production	12

Notes

1. Many of the above activities shall be initiated concurrently.
2. Procurement of raw materials commences from the 8th month onwards.
3. When imported plant and machinery are required, the implementation period of project may vary from 12 months to 15 months.

TECHNICAL ASPECTS

Process of Manufacture

The manufacture of key board involves the assembly of electronics and mechanical sub-assemblies and integrating them into a compact unit. As per the design the electronic circuitry is assembled on a printed circuit board using ICs, transistors, diodes and passive components and is tested for performance. The mechanical sub-assembly involves fixing the membrane cable and rubber key boards etc. on the base plate as per the design. The key buttons shall have indelible marking for their function. These two sub-assemblies are then integrated by aligning for appropriate contact points on the membrane. The whole assembly is enclosed in a appealing plastic case. The completed key board is finally tested for performance as per the relevant specification. The tested key boards are

then packed well in card board packing cases to withstand shock and vibration during transportation and handling.

Quality Control and Standards

No. of Keys	107/108/111 Keys
(a) Key travel	Uniform travel 3.1 mm.
(b) Power	5VDC derived from the computer

Production Capacity (per annum)

Quantity	Value (Rs.)
48,000 Nos.	1,32,00,000

Motive Power 5 KVA (Approx.)

Pollution Control

The Govt. accords utmost importance to control environmental pollution. The small-scale entrepreneurs should have an environmental friendly attitude and adopt pollution control measures by process modification and technology substitution.

India having acceded to the Montreal Protocol in Sept. 1992, the production and use of Ozone Depleting Substances (ODS) like Chlorofluoro Carbon (CFC), Carbon Tetrachloride, Halons and Methyl Chloroform etc. need to be phased out immediately with alternative chemicals/solvents. A notification for detailed Rules to regulate ODS phase out under the Environment Protection Act, 1986 have been put in place with effect from 19th July 2000.

The following steps are suggested which may help to control pollution in electronics industry wherever applicable:

- i) In electronic industry fumes and gases are released during hand

soldering/wave soldering/Dip soldering, which are harmful to people as well as environment and the end products. Alternate technologies may be used to phase out the existing polluting technologies. Numerous new fluxes have been developed containing 2-10% solids as opposed to the traditional 15-35% solids.

- ii) Electronic industry uses CFC, Carbon Tetrachloride and Methyl Chloroform for cleaning of printed circuit boards after assembly to remove flux residues left after soldering, and various kinds of foams for packaging.

Many alternative solvents could replace CFC-113 and Methyl Chloroform in electronics cleaning. Other Chlorinated solvents such as Trichloroethylene, Perchloroethylene and Methylene Chloride have been used as effective cleaners in electronics industry for many years. Other organic solvents such as Ketones and Alcohols are effective in removing both solder fluxes and many polar contaminants.

Energy Conservation

With the growing energy needs and shortage coupled with rising energy cost, a greater thrust in energy efficiency in industrial sector has been given by the Govt. of India since 1980s. The Energy Conservation Act, 2001 has been enacted on 18th August'2001, which provides for efficient use of energy, its conservation and capacity building of Bureau of Energy Efficiency created under the Act.

The following steps may help for

conservation of electrical energy:

- i) Adoption of energy conserving technologies, production aids and testing facilities.
- ii) Efficient management of process/manufacturing machineries and systems, QC and testing equipments for yielding maximum Energy Conservation.
- iii) Optimum use of electrical energy for heating during soldering process can be obtained by using efficient temperature controlled soldering and desoldering stations.
- iv) Periodical maintenance of motors, compressors etc.
- v) Use of power factor correction capacitors. Proper selection and layout of lighting system; timely switching on-off of the lights; use of compact fluorescent lamps wherever possible etc.

FINANCIAL ASPECTS

A. Fixed Capital

(i) Land and Building

Built up area	175 Sq. mts.
Office, Stores	50 Sq. Mts.
Assembly and testing	125 Sq. Mts.
Rent payable/annum	Rs. 96,000

(ii) Machinery and Equipments

Sl. No.	Description	Ind./ Imp.	Qty.	Total (Rs.)
1.	Bench Drilling Machine $\frac{1}{2}$ "	Ind.	1	5000
2.	Bench Grinder	Ind.	1	7000
3.	Computer (IBM-PC Compatible) with Standard Key Board, monitor and Software for testing of Key board	Ind.	2	50000
4.	Power Supplies (30 V, 2A)	Ind.	1	4500

Sl. No.	Description	Ind./ Imp.	Qty.	Total (Rs.)
5.	Digital Multimeter (3½ Digit)	Ind.	1	3500
Total				70000
(iii) Other Fixed Assets				
6.	Electrification charges @ 10% of the cost of machinery and equipment			7000
7.	Office equipments, furniture and working table etc.			50,000
8.	Tools, jigs and fixtures, soldering iron/station etc.			20,000
9.	Pre-operative expenses			8,000
Total				85000
Total Fixed Capital				155000

B. Working Capital (per month)

(i) Staff and Labour

Designation	No.	Salary/ month (Rs.)	Total (Rs.)
1. Manager	1	6,000	6,000
2. Sales and Service Engineer	1	3,500	3,500
3. Accountant	1	2,500	2,500
4. Marketing Assistant	2	2,500	5,000
5. Clerk/Typist	1	2,000	2,000
6. Peon/Watchman	1	2,000	2,000
7. Skilled Workers	4	2,500	10,000
8. Unskilled workers	5	2,000	10,000
Total			41,000
Add Perquisites @ 15% of salary			6,150
Total			47,150
or Say			47,000

(ii) Raw Material Requirement (per month)

Particulars	Ind./ Imp.	Rate (Rs.)	Cost for 4000 unit (Rs.)
1. IC's , Diodes etc.	Ind.	35	140000
2. Resistors, capacitors, Presets, Transistors, LEDs etc.	Ind.	10	40000
3. PCB's	Ind.	10	40000

Particulars	Ind./ Imp.	Rate (Rs.)	Cost for 4000 unit (Rs.)
4. Membrane key tops and Plunger	Ind.	60	240000
5. Key Board Housing case and accessories	Ind./ Imp.	60	240000
6. Cable with Connector	Ind.	25	100000
7. Packing materials	Ind.	10	40000
8. Consumables, Solder, flex etc.	Total	10	40000
Total			880000

(iii) Utilities (per month)	(Rs.)
Power	6000
Water	500
Total	6500

(iv) Other Contingent Expenses (per month) (Rs.)

1. Rent	8000
2. Postage and stationery	1500
3. Telephone/Telex/Fax charges	2000
4. Repair and maintenance	500
5. Transport and conveyance charges	10000
6. Advt. and publicity	8500
7. Insurance and taxes	500
8. Miscellaneous expenditure	5000
Total	36000

(v) Total Recurring Expenditure (per month)
(i + ii + iii + iv) **Rs. 969500**

C. Total Capital Investment

Fixed Capital	Rs. 155000
Working Capital on 3 months basis	Rs. 2908500
Total	Rs. 3063500

FINANCIAL ANALYSIS

(1) Cost of Production (per annum)	(Rs.)
Total recurring expenditure	11634000
Depreciation on machinery and equipments @ 10 %	7000
Depreciation on tools, jigs and fixtures @ 25%	5000
Depreciation on office equipment, furniture @ 20%	10000

(1) Cost of Production (per annum)		(Rs.)
Interest on total capital investment @ 16%		490160
Total		12146160
or Say		12146000

(2) Turnover (per annum)

Item	Qty. (Nos)	Rate/ Unit (Rs)	Total (Rs.)
Computer Key Boards 107 /108/111 Keys	48000	275	1,32,00,000

(3) Profit (per annum) (Before Taxes) Rs. 10,54,000

$$\begin{aligned}
 \text{(4) Net Profit Ratio} &= \frac{\text{Profit (per annum)} \times 100}{\text{Sales (per annum)}} \\
 &= \frac{10,54,000 \times 100}{13200000} \\
 &= \mathbf{7.98\%}
 \end{aligned}$$

$$\begin{aligned}
 \text{(5) Rate of Return} &= \frac{\text{Profit (per annum)} \times 100}{\text{Total capital investment}} \\
 &= \frac{10,54,000 \times 100}{3063500} \\
 &= \mathbf{34.40\%}
 \end{aligned}$$

(6) Break-even Point

Fixed Cost (per annum)	(Rs.)
Rent	96000
Depreciation on machinery and equipment @ 10 %	7000
Depreciation on tools, jigs and fixtures @ 25%	5000
Depreciation on office equipment, furniture @ 20%	10000
Interest on total capital investment @ 16%	490160
Insurance	6000
40% of Salaries and wages	225600
40% of other contingent expenses and utilities (excluding rent and insurance)	163200
Total Fixed Cost	777360
or Say	777000

B.E.P.

$$\begin{aligned}
 &= \frac{\text{Fixed cost} \times 100}{\text{Fixed cost} + \text{Profit}} \\
 &= \frac{777000 \times 100}{777000 + 1054000} \\
 &= \mathbf{42.43\%}
 \end{aligned}$$

Additional Information

- (a) The Project Profile may be modified/tailored to suit the individual entrepreneurship qualities/capacity, production programme and also to suit the locational characteristics, wherever applicable.
- (b) The Electronics Technology is undergoing rapid strides of change and there is need for regular monitoring of the national and international technology scenario. The unit may, therefore, keep abreast with the new technologies in order to keep them in pace with the developments for global competition.
- (c) Quality today is not only confined to the product or service alone. It also extends to the process and environment in which they are generated. The ISO 9000 defines standards for Quality Management Systems and ISO 14001 defines standards for Environmental Management System for acceptability at international level. The unit may therefore adopt these standards for global competition.
- (d) The margin money recommended is 25% of the working capital requirement at an average. However, the percentage of margin money may vary as per bank's discretion.

Addresses of Suppliers of Machinery, Testing Equipment and Raw Material/Components

Machinery/Tools

1. M/s. International Machine/Tools Corporation
5, Bankstreet,
Behind Bank,
Fort, Mumbai-400023.
2. M/s. Machinery and Spares
30, Apollo Street,
Fort, Mumbai-400023.
3. M/s. Shubh Machinery Corporation Pvt. Ltd.
15, Bank Street,
Mumbai-40002.
4. M/s. HMT Ltd.
9, N. S. Patkar Marg,
Mumbai-63

Testing Equipments

1. M/s. Applied Electronics Ltd.
A-5, Wagle Indl. Estate,
Thane, Mumbai-4
2. M/s. Peico Electronics and Electrical Ltd.
Shivasagar Estate, Block-A,
Dr. Annie Besant Road,
Mumbai-12
3. M/s. Agronic Instruments Pvt. Ltd.
201, Shiva Shakti Indl. Estate,
Mumbai-400086
4. M/s. Systonica
89-92, Indl. Area,
Naroda-382330
5. M/s. Noble Electronics
354, Lajpat Rai Market,
Delhi-110006
6. M/s. Meco Instruments Pvt. Ltd.
Bharat Indl. Estate,
T. J. Road, Sewree,
Mumbai-400015

Soldering Equipment and Circuit Aids

1. M/s. Syeco Associates
30/106, (New No. 234),
11th Main, Melleswaram,
Bangalore-3.
2. M/s. Navanidhi Electronics Pvt. Ltd.
1-60/1, Shehapuri, Nacharam,
Hyderabad-7
3. M/s. India Associates
16, Rest House, Crescent Off.
Church St., Bangalore-1
4. M/s. Bergen Associate Pvt. Ltd.
1082, Sector-27B,
Chandigarh-19.
5. M/s. Techtronics
B-70, End Cross, 1stage,
Peanya Ind. Estate,
Bangalore-560058
6. M/s. Sumitron Marketing
A-46, Naraina Indl. Area,
Phase-I, P. Box-10227,
New Delhi-110028.
7. M/s. Scientific Mea- Technik Pvt. Ltd.
B-114, Indl. Estate, Pologround,
Indore-452003

Raw Material and Components

1. M/s. Electronics Trades and Technology Dev. Corp. Ltd.
New Delhi-110021
2. M/s. Amar Radio Corp.
11/1, Thiglar Poriyana Lane,
SPP Road,
Bangalore-560002
3. M/s. Bharat Electronics Ltd.
Jalaballi Post,
Bangalore-560013
4. M/s. Southern Electronics
No. 113, Sadarpatrapa Road,
Bangalore-2
5. M/s. Continental Devices India Ltd.
C-120, Naraina Indl. Area,
New Delhi-110028

6. M/s. Biprint Corporation
29, New Okhla Indl. Complex,
Phase-I, New Delhi-110020
7. M/s. Precision Electronics Ltd.
Unit-1, 1-9E,
DLF Ind. Area,
Faridabad-121003
8. M/s. Saini Electronic
Pushpadant Nivas,
3, Chuman Lane,
Dr. D. Bhadkamkar Marg,
Mumbai-400007
9. M/s. Interco Ltd.
456, Alexandra Road,
14.00 NOL Bldg.,
Singapore.
10. M/s. General Electronics
19, 5th Floor,
Tardeo Air Conditioned Market,
Mumbai-400034
11. M/s. Bakumbhai Ambalal
Electronics Deptt.
Kaiser-I-Hind Bldg.,
Ballard Estate,
Mumbai-400038
12. M/s. Shilpa International
107, Parklane,
Secunderabad-3.