COMPUTER KEY BOARDS (MEMBRANE TYPE)

1. INTRODUCTION

Computers are one of the most essential devices to not only operate businesses but also to run our own personal lives efficiently. It is very difficult to think of a day without operating computers for manifold personal and professional needs. The computer operates through input and output devices that interface with the central processor. The keyboard is one such device that is used universally to provide inputs to the computer. Due to the heavy demand for computers, there is a corresponding demand for keyboards. Additionally, to take care of the repairs and maintenance needs of existing computers there is a growing demand for keyboards.

2. PRODUCT & ITS APPLICATION

The keyboard is used for data entry, document creation/editing, browsing,and interacting with the computer. A good keyboardshould offersmooth travel to the touchwithout jamming and should be able tomount firmlywithout any flexing. The keyboard should also be free of keybounce. A good keyboard should havekeys properly and uniformly spaced for easy use. Keyboards with contactpoints exposed todust are particularly susceptible to keybounce.The keyboard may be easily detachablefrom the computer. It can beused as a part of thecomputer or as aseparate unit when connected througha flexible cable. The actual number ofkeys on the keyboard will depend onthe combination of languages that canbe used with the system. Normally keyboards of 107 to 108 keys (WIN 98/2000 version) are presently catering tothe demand of computer industry.

However keyboards of 111 keys are alsobeing used for multimedia applications.The keyboard shall operate on powerderived from the computer.The function ofthe keys shall beindelibly marked. The interface of thekeyboard shall correspond totheinterface option available with thecomputer.

3. DESIRED QUALIFICATION FOR THE PROMOTER

Being an IT based product, it is important that the promoter has certain basic qualifications in computers and information processing. Following qualifications are recommended, though even people without these qualifications but with very good entrepreneurial qualities may also engage in these activities:-

a) Any graduate in computer science / engineering
b) Diploma in electronics / electrical / computer science
c) Any graduate with a certification in hardware technology / software applications
Additionally, the entrepreneur can also obtain training and guidance from the National Institute of Electronics & Information Technology, and IIHT.

4. INDUSTRY OUTLOOK& TRENDS

The Indian computer industry has registered significant growth rates in recent years and even after excluding the software growth, the hardware industry alone has shown an average growth of around 15% in the last ten years. The computer hardware and software industry is showing a healthy trend of growth due to various kind of automation in manufacturing and service industries and the need to rely on computers for faster and accurate reporting, analysis and growth. While there is a trend towards incorporating touch screen based data inputs, the demand for keyboards will continue to drive the industry for various kinds of customised inputs.

5. MARKET POTENTIAL & ISSUES IF ANY

Considering the growth and demandsof micro and personal computers in thecountry especially with reference toInternet'sphenomenal growth, there is agood demand for computer keyboardsin the country. It is either for selling with new computers or as replacement for existing ones. The major requirementof computer keyboards for thecomputer industry is presently met by small scale sector. It is estimated that more than 80% of production of computer keyboards is in the SSI sector. The demand of computer is estimated to be of the order of more than 20, 00,000 Nos. per annum. There may be about 30-50 good units in this sector producing more than 10, 00,000 key boards per annum. The rest of the demand is met through imports.

6. RAW MATERIAL REQUIREMENTS:

A membrane keyboard is a multi-layer plastic or rubber assembly which is commonly used as key board in various devices such as video game machines, calculators, cash registers etc. In this keyboard, two rubber or plastic sheets are used as row conductor sheet and column conductor sheet. These row and column sheets are separated by another sheet with holes at the key top positions.

When the key top is pressed, it forces the row conductor sheet through the hole to touch the column conductor sheet.When the row lines on the row conductor sheet touch the column line on the column conductor sheet, key contact is made. This is interpreted by the keyboard interface as key closure. Normally keyboards have 108 keys but boards with 111 keys are also popularly used in multimedia applications. The keyboard operates on power derived from the computer. A good keyboard offers smooth travel to touch without any hindrance. The keyboard should also be free of key bounce. A good keyboard should have keys properly spaced for easy use.

A normal keyboard has various keys for different operations. The keys may be categorized as:

- Typewriter or alphabet keys
- Numeric keys
- Cursor movement keys
- Function keys
- Special purpose keys etc.

7. Manufacturing process

The manufacture of keyboard involves the assembly of electronic and mechanical sub-assembles 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 subassembly 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 subassemblies are then integrated by aligning for appropriate contact points on the membrane. The whole assembly is enclosed in an appealing silicone/plastic case.

The completed keyboard is finally tested for performance as per the relevant specification. The tested keyboards are then packed well in card board packing cases to withstand shock and vibration during transportation and handling.

8. MANPOWER REQUIREMENT:

Sr.No.	Designation of Employees	Monthly Salary ₹	Number of employees required	Annual cost ₹. in lacs
1	Workers / Labour	8,000	5	4.80
2	Watchman	8,000	2	1.92
1	Manager	40,000	1	4.80
2	Sales / Service Engineer	30,000	2	7.20
3	Accountant	20,000	1	2.40
4	Marketing Executive	20,000	1	2.40
5	Assistant	8,000	2	1.92
6	Skilled workers	20,000	4	9.60
	Total		18	35.04

9. IMPLEMENTATION SCHEDULE

The major activities in the implementation of the project have been listed and the average time for implementation of the project is estimated at 12 months. However, once finance is arranged, then the implementation time required for this project can be speeded up to approximately 6-8 months after arranging the finance from the bank. Main time required is in the fabrication and delivery of plant and machinery. The factory building may be purchased or rented readily and hence implementation may be expedited.

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

6.	Recruitment of Manpower, etc.	2
7.	Trial production	1
8.	Commercial production	From 9-12 months(*)

(*) 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 ofproject may vary from 12 months to 15 months.

10. COST OF PROJECT (Figures are assumed based on local market rates and project size)

Sr. No.	Particulars	₹ in Lacs
1	Land	-
2	Building	4.00
3	Plant & Machinery	68.20
4	Furniture, Electrical Installations	13.00
5	Other Assets including Preliminary / Pre-operative expenses	0.50
6	Margin for Working Capital	1.93
	Total	**87.63**

11. MEANS OF FINANCE

Sr. No.	Particulars	₹ in Lacs
1	Promoter's contribution	36.22
2	Bank Finance	51.41
	Total	**87.63**

12. WORKING CAPITAL CALCULATION

Sr. No.	Particulars	Gross Amt	Margin %	Margin Amt	Bank Finance

1	Inventories	1.18	25%	0.30	0.89
2	Receivables	3.25	25%	0.81	2.44
3	Overheads	5.67	25%	1.42	4.25
4	Creditors	-2.37	25%	-0.59	-1.78
	Total	7.74		1.93	5.80

13.LIST OF MACHINERY REQUIRED AND THEIR MANUFACTURERS

Sr. No.	Particulars	Nos.
1.	Bench drilling machine	30
2.	Bench grinder	30
3.	Computer set with loaded software	10
4.	Power supply UPS	10
5.	Digital multimeter	30
6.	Assembly & testing unit	30

Sr. No	Machine	Supplier(s)
1.	Bench drilling machine	• Pavan Machine Tools & Services India Pvt Ltd, Peenya, Bangalore • Machine Tool Traders, Fort, Mumbai • Master Machinery Exports, Dholewal Chowk, Ludhiana • Perfect Machines Center, Linghi Chetty Street, Chennai
2.	Bench Grinder	• Amit Electricals, Vatva Industrial Estate, Ahmedabad • Jeet Machine Tools Corporation, Old Delhi • Con Air Equipments Pvt Ltd, Yewalewadi, Pune • Pavan Machine Tools India Pvt Ltd, Peenya, Bangalore
3.	Computer set with installed software	From local computer vendors as appropriate
4.	UPS	Any local electrical retailer.

		BIS, EAC and CE certified
5.	Digital Multimeter	Any local electrical retailer. BIS, EAC and CE certified

NOTE:-

- Only some sample suppliers are indicated for reference. This is neither an exhaustive list nor are the suppliers recommended by the proposer.
- Entrepreneurs may do a due diligence of the suppliers and the appropriate applicable product quality checks before investing in them.
- The writer undertakes no liability for any loss, damage, performance problems or claims.

14 PROFITABILITY CALCULATIONS

Sr. No.	Particulars	Year 1	Year 2	Year 3	Year 4	Year 5
1	Sales	109.2	124.8	140.4	140.4	140.4
2	Raw Materials & Other direct inputs	36.63333	41.86667	47.1	47.1	47.1
3	Gross Margin	72.576	82.944	93.312	93.312	93.312
4	Overheads except interest	32.872	37.568	42.264	42.264	42.264
5	Depreciation	6.085333	6.954667	7.824	7.824	7.824
6	Interest	5.37	4.52	3.39	2.26	1.13
	Net Profit before tax	28.24867	33.90133	39.834	40.964	42.094

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 assumed rates for calculation purposes. 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 equipment 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.

15 BREAKEVEN ANALYSIS

Sr. No.	Particulars	UOM	Value
1	Sales Realization (SR)	₹. In Lacs	117.00
2	Variable costs (VC)	₹. In Lacs	39.25
3	Fixed costs incl. interest (FC)	₹. In Lacs	41.63
4	BEP = FC/(SR-VC) x 100	% of sales	53.54%

16. STATUTORY/ GOVERNMENT APPROVALS

There is no specific statutory requirement for making this product. However, MSME & GST registration, IEC Code for Export of end products and local authority clearance may be required for Shops and Establishment, for Fire and Safety requirement and registration for ESI, PF and Labour laws may be required as applicable. Entrepreneur may contact State Pollution Control Board where ever it is applicable.

17. BACKWARD & FORWARD INTEGRATION

As forward integration and expansion, Entrepreneur may think of going for the production of desktop computers, mouse, etc.

18. TRAINING CENTERS / COURSES:

For computer hardware maintenance and network training, short term courses may be availed from National Institute of Electronics and Information Technology centers in the country. More over training and guidance are also provided by various centres of IIHT (Indian Institute for Hardware Training).

Udyamimitra Portal' (link : www.udyamimitra.in) can also be accessed for handholding services viz. application filling / project report preparation, EDP, financial Training, Skill Development, mentoring etc.

Entrepreneurship development programs help to run businesses successfully and are available from Institutes like Entrepreneurship Development Institute of India (EDII) and its affiliates all over India.

Disclaimer:

Only few machine manufacturers are mentioned in the profile, although many machine manufacturers are available in the market. The addresses given for machinery manufacturers have been taken from reliable sources, to the best of knowledge and contacts. However, no responsibility is admitted, in case any error or incorrectness is noticed therein. Further the same have been given by way of information only and do not carry any recommendation.