

CRT Data Display Monitor (Monochrome)

PRODUCT CODE (ASICC)	: 78321
QUALITY AND STANDARDS	: N.A.
PRODUCTION CAPACITY	: Qty. : 2400 Nos. (per annum) Value : Rs. 72,00,000
YEAR OF PREPARATION	: 2002–2003
PREPARED AND UPDATED BY	: Small Industries Service Institute 10, Industrial Estate, Pologround, Indore-452003 And Office of the Development Commissioner (Small Scale Industries), Electronics and Electrical Division, 7th Floor, Nirman Bhavan, New Delhi – 110011

INTRODUCTION

CRT data display monitors form a very essential part of a computer as they are not only used at the console for the display of input/output data but also in the peripherals such as data entry terminals. The users of CRT monitor can be divided into the following subgroups:

1. Computer manufacturers,
2. Data acquisition system manufacturers
3. Data entry terminals manufacturers,
4. Home computer users (Direct consumers)
5. Education institutions

The CRT monitors are not only compact and easier to operate but can

also handle more data at much faster rate. Computer manufacturers these days are going in for O.E.M. contracts with small scale units for CRT monitors thus reducing their own inventory and overheads.

MARKET POTENTIAL

Computers are being extensively used in the country in educational institutions viz. schools and colleges, organization, defence, industry, R & D Centre and Govt. organisations.

The market of CRT Data Display monitor is directly proportional to the production of computers. It is estimated that the entire demand for CRT monitor (Mono) is met indigenously. The contribution of SSI sector is quite

significant. It is estimated that about 80% of the demand of the CRT-Monitor (Mono) in the country is met by the SSI Sector.

With the introduction of the new hardware featurers like LAN connectivity and new generation software productions, the production of computers is likely to increase at greater pace. With this growth rate envisaged for the computer Industry, the demand of the CRT Monitors is also likely to go up substantially.

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 Indore. 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

Sl. Name of Activity No.	Period in Months (Estimated)
d) Installation/Erection of machinery/Test Equipment	2
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 main PC Board is assembled by mounting the various active and passive components. All the mechanical fittings are fitted to the Cabinet alongwith Cathode Ray Tube and other controls and terminations. Printed circuit board is tested individually with the help of oscilloscope, multimeter and power supplies and then fitted into the cabinet. The writing is completed for PCB. The final testing is done with the help of personal computer and software package of CRT monitor testing.

Quality Control and Standards

- (a) The incoming raw material and components shall be inspected for any defect before going into assembly.

(b) The components which are used to control the functioning of the equipment shall be fixed in such a way that it should not cause any strain to the operator and shall be clearly accessible to the operator.

(c) The functioning of each control knob shall be clearly indicated on the control panels. The control panels require maximum attention and careful design since they form the main interaction point.

(d) The components on the control panel shall be interconnected by neat and tidy wiring in order to avoid any loose connection and shall be firmly fixed to the panels to withstand vibration and shock.

(e) The enclosure shall have accessibility for assembly, maintenance and service etc. The enclosure shall have effective electrical grounding systems to avoid any hazard from electrical shock.

Production Capacity (per annum)

Quantity	Value (Rs.)
2400 Nos.	72,00,000

Motive Power 10 KVA.

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 CFCs, 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	200 Sq. mtrs.
Office and Stores	50 Sq. mtrs.
Working Shed	150 Sq. mtrs.
Rent	10,000 p.m.

(ii) Machinery and Equipments

Sl. No.	Description	Qty.	Ind./ Imp	Price (Rs.)	Total (Rs.)
1.	Drilling machine (general pupose)	1	Ind.	5,000	5,000
2.	Grinder (Portable)	1	Ind.	4,000	4,000
3.	Oscilloscope (50 MHz)	1	Ind./	45,000	45,000
4.	Personnel computer with composite video output and software package for monitor testing	2	Ind.	30,000	60,000
5.	Digital Multimeter (4½ digit)	2	Ind.	8,500	17,000
6.	Multimeter (Analog type)	4	Ind.	1,000	4,000
7.	Break down tester (5 KV)	1	Ind.	7,000	7,000
8.	EHT probe	2	Ind.	1,500	3,000
9.	DC Power supplies (30V, 2A)	3	Ind.	4,500	13,500
10.	LCR meter (digital)	1	Imp	15,000	15,000
11.	Variacs	2	Ind.	2,000	4,000
12.	Servo Voltage stablizer (3 KVA)	1	Ind.	8,000	8,000
13.	Lux Meter	1	Ind.	5,000	5,000
	Total			1,90,500	
	<i>Electrification and installation charges @ 10% of cost of machinery and equipment</i>				19,050
	<i>Cost of tools/jigs/fixtures</i>				20,000
	<i>Cost of office equipments/working tables etc.</i>				50,000
	(iii) Pre-operative Expenses				10,000
	Total				99,050
	Total Fixed Capital				2,89,550

B. Working Capital (per month)

(i) Staff and Labour

Sl. No.	Description	No.	Salary (Rs.)	Total (Rs.)
1.	Works Manager (Engineer)	1	9000	9000
2.	Engineers	2	6,000	12,000
3.	Skilled workers	3	4,000	12,000
4.	Semi skilled workers	3	3,500	10,500
5.	Helper	2	2,000	4,000
6.	Accounts Officer	1	4,000	4,000
7.	Sales Engineer (tech.)	1	5,000	5,000
8.	Typist/clerk	2	3,500	7,000
9.	Peons	2	2,500	5000
	Total			68,500
	<i>Add perquisites@ 15% of salaries</i>			10,275
	Total			78,775

(ii) Raw Material Requirements (per month)

Sl. No.	Description	Qty./ unit	Imp/ Ind.	Total (Rs.)
1.	Cathode ray tube softwhite (data grade high resoulution Antiglare) 14" (90° def)	1	Ind./Imp	700
2.	Fly back transformer	1	Ind./Imp	250
3.	Deflection yoke	1	Ind./Imp	
4.	Plastic Cabinet	1	Ind./imp	300
5.	Coils (1 set), Hor. width coil, Hor. Linearity coil, Peaking coil, Osc. coil	1 set	Ind./Imp	90
6.	Transistors/IC's	1 set	Imp	185
7.	Bipolar capacitor	1	Imp	10
8.	Electrolytic cap.	1 set	Ind.	180
9.	Cermet resistor/ metal, Oxide resistors, Carbon film resistor	1 set	Imp./Ind	20
10.	Presets/ Potentiometer	1 set	Ind.	40
11.	Rectifier/dioxides	-	Ind.	35
12.	Printed circuit board	-	Ind.	50

Sl. No.	Description	Qty./unit	Imp/Ind.	Total (Rs.)
13.	Main transformer	–	Ind.	50
14.	Misc. hardware Solder Cables etc./Packing case	–	Ind.	100
	Total			2,010
	Total (200 sets/months)			4,02,000

(iii) Utilities (per month)	(Rs.)
Power	4400
Water	300
Total	4700

(iv) Other Contingent Expenses (per month)(Rs.)	(Rs.)
1. Rent	10000
2. Postage and stationery	1000
3. Telephone/Telex/Fax charges	2000
4. Repair and maintenance	1000
5. Transport and conveyance charges	10000
6. Advt. and publicity	8000
7. Insurance and taxes	500
8. Miscellaneous expenditure	2000
Total	34,500

(v) Total Recurring Expenditure (per month) (i + ii + iii + iv) Rs. 5,19,975

C. Total Capital Investment

Fixed Capital	Rs. 289550
Working Capital on (3 Months Basis)	Rs. 1559925
Total	Rs. 1849475

FINANCIAL ANALYSIS

(1) Cost of Production (per annum)	(Rs)
Total recurring expenditure	6239700
Depreciation on machinery and equipment @ 10 %	19050
Depreciation on tools, jigs and fixtures @ 25%	5000
Depreciation on office equipment, furniture @ 20%	10000
Interest on total capital investment @ 16%	295916
Total	6569666
or Say	6569700

(2) Turnover (per annum)

Item	Qty. (Nos.)	Rate/Unit (Rs.)	Total sales (Rs.)
CRT Data Display Monitor (Monochrome)	2400	3000	7200000

(3) Profit (per annum) (Before Taxes) Rs. 630300

$$\begin{aligned} \text{(4) Net Profit Ratio} &= \frac{\text{Profit (per annum)} \times 100}{\text{Sales (per annum)}} \\ &= \frac{630300 \times 100}{7200000} \\ &= 9.59\% \end{aligned}$$

$$\begin{aligned} \text{(5) Rate of Return} &= \frac{\text{Profit (per annum)} \times 100}{\text{Total capital investment}} \\ &= \frac{630300 \times 100}{1849475} \\ &= 34.08\% \end{aligned}$$

(6) Break-even Point

Fixed Cost (per annum)	(Rs.)
Rent	120000
Depreciation on machinery and equipment @ 10 %	19050
Depreciation on tools, jigs and fixtures @ 25%	5000
Depreciation on office equipment, furniture @ 20%	10000
Interest on total capital investment @ 16%	295916
Insurance	6000
40% Salaries and wages	378120
40% other contingent expenses and utilities (excluding rent and insurance)	137760
Total Fixed Cost	971846
or Say	971800

B.E.P.

$$\begin{aligned} &= \frac{\text{Fixed cost} \times 100}{\text{Fixed cost} + \text{Profit}} \\ &= \frac{971800 \times 100}{971800 + 630300} \\ &= 60.66\% \end{aligned}$$

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 Machinery, Testing Equipment and Raw Material/Component Suppliers

Machinery/Tools

1. M/s. International Machine/Tools Corporation
5, Bank Street,
Behind State Bank, Fort,
Mumbai-400023
2. M/s. Machinery and Spares
30, Apollo Street, Fort,
Mumbai-23
3. M/s. Shubh Machinery Corporation Pvt. Ltd.
15, Bank Street,
Mumbai-23
4. M/s. H M T 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. Pieco Electronics and Electrical Ltd.
Shivasagar Estate, Block-A,
Dr. Annie Besant Road,
Mumbai-400012
3. M/s. Agronic Instruments Pvt. Ltd.
201, Shiva Shakti Ind. Estate,
Mumbai-400086
4. M/s. Systronics
89-92, Ind. Area,
Naroda-382330
5. M/s. Noble Electronics
364, Lajpat Rai Market,
Delhi-110006
6. M/s. Mecco 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 Associates Pvt. Ltd.
1082, Sector-27B,
Chandigarh-19.
5. M/s. Techtronics
B-70, End Cross, 1 Stage,
Peanya Ind. Estate,
Bangalore--560058
6. M/s. Sumitron Marketing
A-46, Naraina Indl. Area, Phase-I,
Post Box-10227,
New Delhi-110028.
7. M/s. Scientific Mea- Technik Pvt.
Ltd.
B-114, Indl. Estate,
Pologround,
Indore-452003
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-110020
6. M/s. Biprint Corporation
29, New Okhla Ind. Complex,
Phase-I,
New Delhi-110020
7. M/s. Precision Electronics Ltd.
Unit 1, 1-9-E,
DLF Ind. Area,
Faridabad,-121003
8. M/s. Saini Electronics
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

Raw Material and Component Suppliers

1. M/s. Electronics Trade and
Technology Dev. Corp. Ltd.
15/48, Malcha Marg,
Chanakya Puri,
New Delhi
2. M/s. Amar Radio Corp.
11/1, Thiglar Poriyanna Lane,
SPP Road,
Bangalore-560002
11. M/s. Bakumbhai Ambalal
Electronics Dept.
Kaiser-I- Hind Bldg.,
Ballard Estate,
Mumbai-400038
12. M/s. Shilpa International
107, Park Lane,
Secunderabad-3