

PROJECT ADMINISTRATION DATA SHEET

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OCA Contact Brian J. Lindberg X4820

Sponsor Technical Contact: 2) Sponsor Admin/Contractual Matters:

Mr. Calvin Horton

Assistant City Manager

City of Decatur, GA

509 North McDonough Street

P. O. Box 220

Decatur, GA 30031

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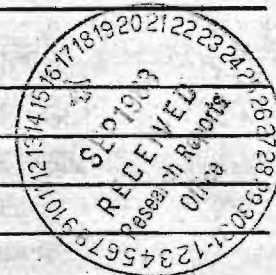
RESTRICTIONS

See Attached N/A Supplemental Information Sheet for Additional Requirements.

Travel: Foreign travel must have prior approval - Contact OCA in each case. Domestic travel requires sponsor approval where total will exceed greater of \$500 or 125% of approved proposal budget category.

Equipment: Title vests with Sponsor; However none proposed.

COMMENTS:



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Other I. Newton

SPONSORED PROJECT TERMINATION/CLOSEOUT SHEET

Date December 13, 1983

Contract No. A-3640

~~SCSL~~ Lab ECSL/CCD

Subproject No.(s) \_\_\_\_\_

Contract Director(s) C. Pinson GTRI / ~~EKK~~

City City of Decatur, GA

"Study of Microcomputer Applications in Police Services"

Effective Completion Date: 10/15/83 (Performance) 10/15/83 (Reports)

Contract Closeout Actions Remaining:

- None
- Final Invoice ~~Final Invoice~~
- Closing Documents
- Final Report of Inventions
- Govt. Property Inventory & Related Certificate
- Classified Material Certificate
- Other \_\_\_\_\_

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- Services

- Library
- GTRI
- Research Communications (2)
- Project File
- Other \_\_\_\_\_

**STUDY OF  
MICROCOMPUTER  
APPLICATIONS IN  
POLICE SERVICES**

**STUDY OF MICROCOMPUTER APPLICATIONS IN POLICE SERVICES**

**Final Technical Report  
GIT/EES Project Number A-3640**

**Prepared for:**

**Mr. Calvin Horton  
Assistant City Manager  
City of Decatur, Georgia  
Decatur, Georgia**

**Presented to:**

**Edward E. Mathews  
Chief of Police  
City of Decatur  
Decatur, Georgia**

**Prepared by:**

**Charles P.B. Pinson, II  
J. Benjamin Atha**

**of the  
Command and Control Division  
Electronics & Computer Systems Laboratory  
Engineering Experiment Station  
GEORGIA INSTITUTE OF TECHNOLOGY  
Atlanta, Georgia 30332**

**October, 1983**



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## STUDY OF MICROCOMPUTER APPLICATIONS IN POLICE SERVICES

### 1.0 INTRODUCTION

#### 1.1 Purpose

Advances in computer technology have made the implementation of computer systems a complex, specialized task. In order to create a system of hardware and software that functions as a flexible, integrated whole, knowledge of implementation tradeoffs is required. Systems implemented without proper consideration of the economic, organizational, technical, and legal factors are often not as successful as they could be with proper planning. The purpose of this study is to provide an analysis of the Decatur police department's information processing requirements and recommend a strategy for the implementation of a microcomputer system to automate manual record keeping procedures.

#### 1.2 Scope

The scope of this investigation is limited to a systems analysis of four database applications as well as the computer communications requirements of the police department. The applications evaluated are:

1. Parking Ticket Control.
2. Incident Report Database.
3. Court Calendar Management.
4. Court Collectables.

The computer communications discussed are those related to the requirement for the police department to access certain federal, state, and county databases through communications with the DeKalb County Data Processing Center.



### 1.3 Overview

The City of Decatur has recognized that the use of microcomputer systems can be of great benefit where records are to be quickly accessed and updated. Several Apple II microcomputers have been purchased and are now being used for simple database applications and expansion of computer literacy within the police department. To ensure the orderly implementation of Decatur's microcomputer systems, the Georgia Tech Engineering Experiment Station was engaged to evaluate the application areas of greatest importance and recommend a development plan. Such a development plan would be used to avoid the obsolescence, incompatibilities, and limitations of computer systems that are the result of unplanned growth. This report will discuss the information handling requirements of the police department, provide an analysis of four proposed applications, and make recommendations concerning the implementation of a microcomputer network.

## 2.0 POLICE DEPARTMENT DATA/INFORMATION HANDLING REQUIREMENTS

### 2.1 Federal, State, and County Database Access

The DeKalb County Data Processing Center can provide several information services to the City of Decatur: access to county records, and access to state and federal criminal databases. County databases include real estate tax, county jail records, water bill data, and voter registration. The county facility provides access to the Federal Bureau of Investigation National Crime Information Center (NCIC) at the federal level, and the Georgia Crime Information Center (GCIC) at the state level. At the present time, there is no direct computer communication with the DeKalb County databases.

There is a need to improve the flow of information from these databases to the end users of this information: police officers on patrol. Timely receipt of information can make the difference between "convicted" and "no suspects" or sometimes between life and death. The majority of time critical information would come from the state and federal levels. Therefore, the availability of computer terminals that can access this information quickly, is a high priority.

### 2.2 Internal Record Keeping

The four application areas evaluated are database oriented; they involve the storage and retrieval of records. Currently, the records for parking tickets, incident cards, and traffic court are paper based and manually processed. There are numerous records concerning personnel, equipment, schedules, assignments, inventory, evidence, expenses, and revenues that would benefit from automation. Specifically, the court calendar, court collectables, traffic tickets, and incident cards are a high priority for implementation. Of these, the need for improved parking ticket records and follow up are most critical. It is required that the proposed system be capable of performing these functions in a flexible and cost effective manner. Applications such as graphics, spreadsheet, accounting, word processing, and

electronic mail would also be of benefit to the police department. Future expansion capability for both hardware and software is an important design constraint.

## 1.0 SYSTEM ANALYSIS

There are two primary capabilities that the proposed system must have:

1. Provide computer communications to NCIC and GCIC via the DeKalb County data processing facility.
2. Provide for local processing of information and databases.

The first requirement implies that the system will be capable of standard IBM 3270 Binary Synchronous protocol at a data rate of 4800 baud. This constraint is due to the IBM communications equipment that the system must interface with at the DeKalb County Data Processing Center. In addition, the displays and keyboards must not be incompatible with the application software that is either now in place or planned. The second requirement will require a number of microcomputers together with a mass storage system, printer(s), and applications software.

The following sections will present an analysis of these two requirements and discuss possible implementations.

### 1 Communications Requirements

The required communications equipment consist of five devices: modems, line sharing unit, controller, printer, and display stations. The first two are relatively low cost items and are available directly from American Bell as well as many other communications equipment suppliers. See Chart 3.1 for a list of the required communications equipment. Monthly maintenance costs are shown in this chart.



<u>AMERICAN BELL</u>	<u>DESCRIPTION</u>	<u>QUANTITY</u>	<u>EACH</u>	<u>COST</u>
2123-LSU	LINE SHARING UNIT	1	967.50	967.50
21253	INTERFACE CARDS	2	184.50	369.50
2123-250	SINGLE STAND ALONE LADS	1	837.00	837.00
	LSU MOUNTING	1	63.00	63.00
	I/F CARD INSTALLATION	1	44.00	44.00
	AMERICAN BELL TOTAL			<u>\$2,395.50</u>

Chart 3.1 - Required Communications Equipment

The terminal controller, printer and display stations represent the largest portion of the communication equipment investment. There are three approaches that can be taken to purchase equipment that will perform these functions:

1. Purchase IBM supplied 327x BiSync controller, printer, and display stations.
2. Purchase "IBM compatible" 327x BiSync controller, printer, and display stations from a company that manufactures bisync emulation equipment.
3. Purchase protocol conversion equipment (bisync to asynchronous) and low cost asynchronous terminals and printer.

The first approach is to purchase IBM equipment consisting of a 3276 controller/display station and a 3287 printer. Additional display stations would be of the 3278 type. The cost of the IBM approach is approximately \$12,248 for the first display and printer and \$2,185 for each additional display. (See chart 3.1.) The cost of a four terminal configuration with printer would be \$18,803. The advantages of this approach are: manufacturing reliability, guaranteed compatibility within the IBM family of hardware and software, high quality local service, and upgrade support. The disadvantages of this approach are the high cost and inflexibility of the equipment. IBM terminal equipment can not be interconnected with terminals, personal computers, or printers from other vendors.

UNIT	MDL/FC	DESCRIPTION	QTY	MONTHLY			MONTHLY LEASE
				RENTAL	PURCHASE	MMMC	CHARGES (MLO)
3276	002	DISPLAY STATION -DSC	1	264.00	5535.00	35.00	225.00
	3701	EXTERNAL MODEM INTERFACE	1	16.00	337.00	3.00	14.00
	4621	75-KEY TYPEWRITER KEYBOARD	1	18.00	463.00	2.00	15.00
	6302	COMM FEAT W/O BUS MACH CLOCK	1	14.00	365.00	2.00	12.00
	9491	NON-SWITCHED FACILITIES	1	NC	NC	NC	NC
				312.00	6700.00	42.00	266.00
							MLC2
3287	002	PRINTER	1	314.00	5150.00	46.50	267.00
	4550	FORMS STAND +	1	N/O	82.00	N/O	N/O
	8331	3274/3276/4300/8775 ATTACH	1	6.00	165.00	.50	5.00
	8700	VARIABLE WIDTH FORMS TRACTOR	1	6.00	151.00	.50	5.00
	9082	EBCDIC CHARACTER SET	1	NC	NC	NC	NC
	9185	PAPER HANDLING - WIDTH 3/8"	1	NC	NC	NC	NC
	9522	CHAR PRT OPERATION 1920 CHAR	1	NC	NC	NC	NC
	9091	NON-LOCKING PLUG	1	NC	NC	NC	NC
				326.00	5548.00	47.50	277.00
		HARDWARE TOTALS		638.00	12248.00	89.50	
		PURCHASE ONLY			82.00*		
		MONTHLY LEASE CHARGE 2 YEARS TOTAL			543.00*		
		HARDWARE MINIMUM MONTHLY CHARGE			543.00*		
		THE HARDWARE MINIMUM MONTHLY CHARGE EXCLUDES PURCHASE ONLY MACHINES, AND SINGLE USE CHARGES FOR MACHINES. THE CHARGE IS CALCULATED BY TOTALLING THE LOWER OF EITHER THE ARC OR THE MINIMUM MLC FOR EACH MACHINE					
		THE PRICES QUOTED ARE FOR YOUR INFORMATION ONLY AND ARE SUBJECT TO CHANGE. APPLICABLE TAXES ARE NOT SHOWN.					
		NC - NO CHARGE					
		N/O - NOT OFFERED					
		P - PURCHASE ONLY					
		+ - ACCESSORY FEATURES					
		MMMC - MINIMUM MONTHLY MAINTENANCE CHARGE					

Chart 3.2 - 3270 Configuration

The second approach is to purchase IBM 3270 compatible controllers, display stations and printers. An example of this approach is the equipment available from Racal-Milgo Information Systems. An equivalent configuration using Racal-Milgo would consist of a 4274 controller, 8278 display stations, and a 4287 printer. The cost of this configuration is approximately \$9,533 for the first display and printer and \$1,590 for each additional display. For a single display configuration this represents a savings of \$2,715 over an IBM system. If four terminals are purchased, the cost would be \$14,303 with a resulting saving of \$4,500 over IBM.

The advantage of this approach is a reduction in the purchase cost of the equipment. This may, however, be outweighed by the disadvantage of possible future incompatibilities with IBM hardware or software.

The third approach is to purchase a device known as a "protocol converter" that translates information from inexpensive terminals into the complex format expected by the IBM communications equipment at the data center. This format is known as the 3270 Binary Synchronous Protocol. Most computer terminals communicate in a much simpler protocol known as the start/stop, or asynchronous protocol. By utilizing a protocol converter such as the PCI-1071, from Protocol Computers, Inc. (PCI), the cost of "IBM-like" display stations and printers is greatly reduced. This reduction results from being able to see that terminals can be low-cost, asynchronous devices such as the Hazeltine sprit, ADDS Viewpoint, and the LSI ADM 3A. See Chart 3.3 for a list of compatible terminals. In addition, PCI makes a compatible terminal, the PCI-1071 that has the same physical layout as the IBM 3278 display station. The cost of the PCI-1071 depends on the number of available device connections supplied with the unit. A configuration that is comparable to the IBM system in approach one, consists of the PCI-1071-7 (seven ports), one PCI-78 display station, and a suitable printer. The cost of the PCI-1071-7 is \$7,000 and the PCI-78 is \$995. A printer that is comparable in performance to the IBM 3278 would cost approximately \$2,000. Thus, for a single display and printer, the cost of the protocol converter approach is \$9,995 plus \$995 for each additional display. A configuration with four displays and one printer would cost \$12,980. If it is desired to reduce costs further, the five port unit (PCI-1071-5) can be purchased for \$5,800, which is a reduction of \$1,200. The





## ASCII TERMINALS AND PCI

Listed here are just some of the ASCII terminals which communicate with SNA/SDLC when linked to a PCI protocol converter. Many of these terminals represent whole groups of devices which function successfully with a PCI interface. The LSI and VT 100 listings, for example, extend not only to their whole lines but to products that emulate them as well. Generally speaking, any ASCII terminal with the technical specifications--cursor control, full duplex and asynchronous protocol--is compatible with PCI.

### 1076--ASCII TO 3270 SNA/SDLC

ADDS Viewpoint	IBM 3101
AJ 510	
ADDS Regent	KDE-820
ADDS Consul	
Beehive DM78	LSI ADM 5
	LSI ADM 3A
	LSI ADM 2/31/32
	LSI ADM 31
CODEX (M68SVS)	
Concept HDS 108	
Datagraphix 132B	MVI-7
Decwriter LA 120	
Diablo 1640	RAMTEK 6211/12T
Digital VT 100	
Digital VT 132	Scanset
Displayphone	Syfa (CA)
Falco TS-1	
Hazeltine 1400	TAB 132/15
Hazeltine 1420	TEC 500
Hazeltine 1500	Teleray
Hazeltine Esprit	Televideo 950
HDS 108	Tektronics 4014
Honeywell 7200	Tektronics 4027
Honeywell (VIP7800)	Tektronics 4112
HP 2621 A/P Interactive Terminal	Texas Instruments 765
HP 2621 A/P National Terminal	Texas Instruments 787
HP 2640	Texas Instruments 940
HP 2642	Triformation
HP 2645	TRS 80-DT-1
HP 2645A	TRS 80 Model 11
HP 2648A	
HP 2654	VT 100/TAB (VT52)
	VT 100/TAB (ANSI)
	2621 A/P National

Chart 3.3 - PCI-1071 Compatible Terminals



five port unit may be upgraded to seven ports at a later time when the requirement for additional ports occurs.

An additional benefit of the protocol converter approach is that PCI provides software support for a number of personal computers. That is, hardware and software exists to use personal computers as 3278 display stations. This benefit will add flexibility to the application of personal computers that are used in the Decatur local area network because they could be used to obtain and process information from the Dekalb County databases. Currently PCI provides software for the Apple II, Apple III, Apple Lisa, IBM PC, Radio Shack TRS-80 II, DEC Rainbow, and others. See Chart 3.4 for a complete list of supported personal computers. In effect, the addition of a serial port and a software package to those personal computers transforms them into IBM 3278 display stations.

An important issue is that of upgrades. There are two upgrades that Decatur would be interested in: increasing the number of ports and switching from 3270 BiSync to SNA (Systems Network Architecture, another IBM protocol). Both the IBM equipment and the protocol converter approaches provide for these upgrades. Protocol Computer, Inc. will upgrade the PCI-1071 from BiSync to SNA for fifteen percent of the cost of the unit should that be desired at a later date. This approach is a strong possibility due to the fact that many IBM mainframe installations are upgrading to SNA and the Dekalb County computer installation may well be among them.

<b>Personal Computer</b>	<b>Software package for personal computer used with PCI</b>	<b>IBM-PC</b>	<b>IBM-PC Support (From Protocol Computers)</b>
<b>Apple II</b>	Softerm (from Softronics)	<b>Kay Comp</b>	Comm Support (From Kay Comp)
<b>Apple III</b>	Access III (From Apple)	<b>NEC</b>	Comm Support (From NEC)
<b>Apple Lisa</b>	Lisa Terminal Support (From Apple)	<b>Osborne</b>	Comm Support (From Osborne)
<b>Cannon CX1</b>	Comm Support (From Cannon)	<b>Sanyo</b>	Sanycom (From Sanyo)
<b>DEC (Rainbow)</b>	Comm Support (From DEC)	<b>Sony</b>	Comm Support (From Sony)
<b>Hewlett Packard 85, 86, 125</b>	Comm Support (From H.P.)	<b>Tandy/Radio Shack MOD II</b>	Comm Support (From Radio Shack)
		<b>MOD 16</b>	Comm Support (From Radio Shack)
		<b>Xerox 820</b>	ASCOM (From Xerox)

Chart 3.4 - PCI-1071 Compatible Personal Computers

### 3.2 Local Processing Requirements

The advantages of local data processing include flexibility, local control, privacy, security, cost, and reliability. With these advantages also come a few disadvantages: greater control results in greater responsibility. By reducing dependency on a centralized mainframe computer, the requirement for a degree of technical knowledge is transferred to the end user.

A local area network (LAN) is a communications link that interconnects a number of standalone computer systems. The motivations for interconnection are sharing of computer resources and information at a reduced cost. Sharing eliminates the need for each workstation to have a dedicated printer and disk storage unit, since they can be shared by all computers on the LAN. The result is a significant savings when there are more than two stations (i.e., the cost of the most expensive peripherals is distributed over more users). In addition, an important advantage of the networked method over standalone computers is the fact that all stations can access a common database stored on the shared disk unit. A common database means that all users will always have the same information; which is not necessarily true if standalone stations must periodically interchange data. A network may actually reduce the effectiveness of a computer system if it is not designed to handle the information load placed on it. Although most networks allow a very large number of stations to be connected to them, the network will perform poorly if all stations are attempting to use the network simultaneously. In some applications, there may be only a sporadic need for the network and a large number of stations will still result in good performance (i.e., fast response). In other applications, such as online order processing, every station is used almost continually and the maximum number of stations that can be connected without performance degradation is greatly reduced. The networked microcomputer approach is most effective for three to ten stations.

The selection of a microcomputer system can be a complex task when all factors are considered. A few of the questions that should be answered before a particular configuration is purchased are:

1. Specifically, what is it that the computer will do?
2. How much will it cost? This is the cost of the computer and all associated peripherals, memory, mass storage, and software that will be needed to operate it.
3. How will it be repaired when (not if) it breaks? Is there a maintenance contract for it with local service?
4. What software and hardware is available for it?
5. Does it use industry standard components, such as diskettes, paper, ribbons, connectors, and displays?
6. Does it have an industry standard operating system such as CP/M, UNIX, MS-DOS, PC-DOS, or UCSD p-system? If you are purchasing an 8-bit system, if it does not run the CP/M operating system (Digital Research, Inc.) then it is non-standard. The situation is not quite so clear in the 16 bit arena since this is a newer market. There are, however, a few leaders in the field: MS-DOS, PC-DOS, CP/M-86, UNIX, MP/M, and Concurrent CP/M-86.
7. What are the current and future market trends for the proposed machine? Machines that sell poorly often have little or no support from the industry.
8. Is it modular or is it an "integrated" system? If it is modular, can the components be purchased from more than one source? This applies to disk units, printers, modems, keyboards, and displays. Avoid single source purchases, especially for software, at all costs.
9. What type of mass data storage will be needed? Choices include: floppy disc, Winchester fixed and cartridge disks, data cassettes, and streaming tape drives.
10. How will backup copies of important information be made? Choices include: floppy disks, cartridge disks, data cassettes, streaming tape drives, and video cassettes.
11. Who will be responsible for system control, backups, and administration? There should be one person that is responsible for software configuration, supplies, database backups, passwords, and storage allocation.
12. Will there be computer communications involved either now or in the future? If so, is there hardware and software available to communicate using the required protocols, or will it have to be developed?
13. What software will be needed in addition to the operating system? Languages such as BASIC, FORTRAN, and PASCAL will be required if application software is to be written. In addition, software for word processing, spreadsheets, electronic mail, mailing labels, and databases may be needed. The cost of software can be as much, or more, than the cost of the hardware it runs on.



14. What is the impact of the computer being unavailable during power outages? If downtime due to power failure is unacceptable, it will be necessary to purchase an uninterruptable power supply (UPS).
15. What type of printer is needed? There is a tradeoff between cost, speed, and print quality.

### 3.2.1 Software Requirements

There are three types of software that will be required: system/utility, purchased applications, and developed applications software.

System and utility software is used to control and operate the computer. The largest and most important system software is the so-called "operating system" software. The operating system schedules, coordinates, and controls the computer to complete the tasks requested by the user. It performs the complex task of maintaining disk files, allocating resources such as printers, memory, and computer processing time. The most important factors to consider when selecting and operating system are:

1. Single user or multi-user/single or multi-tasking
2. Available software: Languages, databases, communications, financial, spreadsheet, and word processing.
3. Hardware requirements: Central processor and memory size. For 8 bit operating systems the most common CPU is the Z-80A with 64K of RAM memory and two 5 1/4" floppy disks. For 16 bit operating systems, the most common CPU's are the Intel 8086 or 8088, and the Motorola 68000. These systems usually have 128K or more of RAM memory, and floppy or Winchester hard disks.
4. Cost is usually not a factor, since all operating systems must compete for the same market. However, some of the more complex packages are substantially higher priced, especially if they include multi-tasking, multi-user, security, and hard disk support.

In addition to the operating system, certain other "system" software will be required: a Database Management System (DBMS), communications software, and one or more languages such as BASIC, FORTRAN, and Pascal. A DBMS is used to organize, store, and retrieve information in the computer. Communications software is used to allow the computer to communicate with another computer, possibly through the use of a modem, and often provides the capability to



transfer files between computers. Although BASIC is an excellent language for short programs and for use by novice programmers, it is not recommended for large, complex applications software development. FORTRAN is used primarily for scientific computing rather than business applications. Pascal is an excellent language for use by professional programmers. However, it is considerably more difficult to master than BASIC. Current prices for a DBMS range from \$300 to \$1,500. Communications software packages range from \$200 to \$300. Languages normally cost from \$200 to \$500.

Purchased applications software can include:

- Accounting
- File and Mailing List Management
- Graphics
- Inventory Control
- Office Administration
- Project Management
- Word Processing
- Parking Ticket Collection Tracking
- Incidence Report Database Court
- Calendar Scheduling
- Court Collectables
- Crime Statistics Reports
- Police Office Activity Reports
- Specialized Report Generation

#### 3.2.1.1 Parking Ticket Collection Tracking

There are several shortcomings with the current manual processing of parking tickets. The most important problem is the collection of unpaid fines. It has been estimated that the city loses \$5,000 per month in fines that are not collected. At the present time, the only record of a violation is the

officer's copy of the ticket. If this copy is lost or misplaced, the fine cannot be followed up on if it becomes delinquent. There is insufficient manpower to generate citation delinquency notices in a timely manner using the current manual procedures. It is recommended that the parking ticket collection software be made a first priority in the order of implementation since this represents a very real and tangible loss of revenue to the city. Figure 3.1 shows the data elements of the parking ticket database. Copies of the currently used parking ticket and delinquent citation notice are shown in appendix D, pages D-3 and D-4.

<b>DATE</b>	<b>TIME</b>
<b>TAG NUMBER</b>	<b>STATE</b>
<b>OFFICER</b>	
<b>LOCATION</b>	
<b>CHARGE</b>	<b>FINE</b>
<b>NAME</b>	
<b>ADDRESS</b>	

Figure 3.1 - Parking Ticket Record

The parking ticket system performs two functions: tracking of tickets and generation of delinquent payment notices. The following information from each ticket written is entered into the computer daily:

1. Date
2. Time
3. Ticket number
4. Officer
5. Tag number/state
6. Location code
7. Charge
8. Fine Amount

The paper copy would be filed for reference if it were required that the original copy be produced. The daily operation would also include entering the name and address corresponding to each delinquent record without this information. The name and address to which the delinquency notice would be sent will be obtained through the use of the GCIC and NCIC automobile license tag databases.

As tickets are paid, the database is updated to reflect this payment and the record is destroyed. Reports would be generated each week of outstanding ticket statistics as well as generate delinquent notices. These reports could provide management information that would be useful to determine the effectiveness of the collection procedures. Examples of these reports are:

1. Financial data on total fines paid and unpaid.
2. Total number of tickets issued by charge.
3. Number of tickets issued by officer.
4. Number and amount of unpaid fines by ticket age.

Delinquency notices could be printed from information stored in the parking ticket database. It is suggested that various messages be printed based on the length of time the ticket has gone unpaid. Notices could be sent after five, ten, and twenty days. Beyond the third notice, it is probably not cost effective to continue to mail notices. Uncollectable fines would then be placed into a special file for archive purposes.



Special multi-part forms can be purchased that will allow the computer to print the address and notice in such a way that the notice can not be read without separating the forms. This would provide for the necessary privacy of the notice and eliminate the labor of applying mailing labels to pre-printed envelopes. These forms also serve as the return mailer for the remittance.

In order to prevent the loss of data in the event of a system failure, a copy, or "backup", of the database should be made periodically. Good data processing procedure would require daily backup of the database to allow for nearly complete recovery. The procedure for the generation of backups should be as nearly automatic as possible to ensure that they are performed with the required frequency.

#### 3.2.1.2 Incident Card Database

Incidence reports are summarized on an estimated 100,000 3" x 5" cards and are kept on file within the police department for reference and archive purposes. There is a substantial effort required to create and maintain these cards. There is currently no convenient means to duplicate this information or to provide for the periodic, systematic review of obsolete records. If cards are filed in error, they are essentially lost in the system. In addition, these cards are filed by victim or defendant name only; an automated information system could provide access by additional indexing means. The automation of the incident card system would not only reduce the time to access information, but it would reduce the cost of the file generation and maintenance. Figure 3.2 shows the data elements of an incident card.

The database would be accessed from personal computers and would be displayed on standard CRT displays. There should also be a capability to optionally print this information in hardcopy form.

The incident card database is the largest single file that will be maintained. The estimated size of a 100,000 card database is approximately fifteen megabytes. Due to the large size and criticality of this information, backup procedures must be designed in such a way as to minimize the



<b>DEFENDANT / VICTIM OR TICKET NUMBER</b>		<b>DATE OF REPORT</b>
<b>NAME</b>		
<b>SEX</b>	<b>RACE</b>	<b>DATE OF BIRTH</b>
<b>ADDRESS</b>		
<b>DRIVER'S LICENSE</b>	<b>SOCIAL SECURITY</b>	<b>FINGERPRINT I.D.</b>
<b>CHARGES</b>		
<b>OFFICER</b>		

Figure 3.2 - Incident Record

<b>DATE</b>		<b>TIME</b>	
<b>CASE NUMBER</b>		<b>LICENSE NUMBER</b>	
<b>NAME</b>			
<b>ADDRESS</b>			
<b>SEX</b>		<b>RACE</b>	
<b>VIOLATION</b>			
<b>DRIVING CONDITIONS</b>			
<b>LOCATION</b>			
<b>OFFICER</b>			
<b>COURT DATE</b>	<b>BOND</b>	<b>PLEA</b>	
<b>ADJUDICATED</b>		<b>FINE</b>	

Figure 3.3 - Traffic Court Record

possibility of loss of data. There should be a multi-level backup system to provide for daily and weekly backups. Each day, new entries to the system will go into a smaller update file that can be easily backed up. Once each week, the update files will be merged into the main database file and the entire database will be backed up. Thus there will be two categories of backup storage: the update file backups and the main (weekly) backups. Enough backup media should be purchased to provide for three or more update and main backups. The media would be used in rotation, always using the oldest backup media. The importance of proper backup procedures can not be overemphasized; this is a requirement of storing data in a computer.

#### 3.2.1.3 Court Calendar

Currently, an Apple II personal computer is being used to generate the court calendar through manual entry of data into text files. This approach was implemented using an available software package. Additional applications software is required to generate the court calendar from traffic citations and produce management oriented statistical reports. Figure 3.3 shows the data elements of the traffic court record. See appendix D, page D-2, for a copy of the Decatur traffic citation and pages D-5 and D-6 for examples of court calendar formats.

The court calendar software could generate the following reports:

1. Court Calendar (listing information on each case)
2. Updated Court Calendar (resolution of each case)
3. List of Cases by Officer (pending cases vs. officer)
4. Statistical Report (number and type of cases etc.)

#### 3.2.1.4 Court Collectables

This software will improve the tracking of fines from the court calendar. Information of each case will be maintained to reflect the amount outstanding. Reports generated could include:

1. List of persons with outstanding fines by debt age.
2. Financial summary
3. List of persons with fines deemed to be uncollectable.

### 3.2.2 Hardware Requirements

The following hardware items are the minimum recommended to provide the necessary computational, communications, and data storage capabilities:

1. 16 bit processor such as 8086, 8088, or 68000.
2. 128 Kilobytes of RAM memory.
3. 20 Megabytes of Winchester hard disk mass storage.
4. 20 Megabytes backup device (cartridge hard disk or tape) expandable to 40 megabytes.
5. One floppy disk drive for software transport.
6. One Dot matrix printer (132 column, RS-232 C).
7. 24 line, 80 column monochrome display.
8. Two serial communications ports (RS-232 C).
9. Local area network interfaces (e.g. Omninet or Ethernet).
10. Standard keyboard preferably with function keys and numeric pad.



## 4.0 ALTERNATIVE APPROACHES TO IMPLEMENTATION

There are two methods of implementation that should be considered: parallel and phased. The parallel method results in the full operation of the proposed system in the shortest time because effort is expended to find solutions to all implementation problems simultaneously. There is some degree of risk involved with this method for two reasons. First, a organization that is unfamiliar with computer technology may not have a good understanding of what goals are realistic. Either the expectations will be so high that implementation will be difficult and expensive, or so low that the implementation results in a system that is not useful. Secondly, the problems to be solved are never clearly defined at the outset. This can result in solving the wrong problems, or placing emphasis on issues that are later are found to be of little importance.

The phased implementation approach is to develop a basic capability as quickly as possible and then to add additional features as the developers and users more fully understand the problems to be solved. This avoids the risks of the parallel method and minimizes the initial costs. Although a full system is not available as quickly as with the parallel method, a basic system can be available sooner with a phased approach. By building up capabilities incrementally, the users will have time to learn to use the system early on, rather than in one lumped effort. When the system is completed, the phased approach is more likely to better serve the needs of the users because they have more input to the design and implementation.

### 4.1 Parallel Development

A parallel development of communications and local processing would consist of the following actions being taken:

TASK #1. Purchase and installation of American Bell communications equipment in Chart 3.4

Line Sharing Unit  
Interface cards  
Stand alone local area data set (LADS)

- TASK #2. Selection and purchase of a BiSync controller, display station, and printer
- TASK #3. Installation of BiSync terminal equipment (hardware and software)
- TASK #4. Selection and purchase of personal computers
- TASK #5. Selection and purchase of software:  
Operating System  
Application Language  
Database Management System  
Word Processing  
Mailing list
- TASK #6. Development of Applications Software  
Parking Ticket Collection Tracking  
Incident Card Database  
Court Calendar  
Court Collectable  
Communications
- TASK #7. Installation of personal computer equipment  
Power lines  
Furniture
- TASK #8. Training of Personnel  
Operation  
Preventative Maintenance  
Database Backup Procedures  
Startup/Shutdown Procedures
- TASK #9. Expansion of network  
Additional Personal Computers  
Additional Mass Storage Devices  
Electronic Mail

#### 4.2 Phased Development

A phased approach to the implementation of the proposed system would consist of three phases. The first phase is the development of an initial hardware and software configuration. This would include the purchase of off-the-shelf components and minimize the extent of any custom software. Tasks #1-#5 of the parallel approach would be undertaken during phase one.

The second phase would be development of initial applications software. Task #6 would be undertaken during this period. The parking ticket software would be completed during phase two. This software would then be used during the development of the balance of the applications software.

The third phase consists of the completion of the remaining applications software and expansion of the network under Task #9. This expansion consists of the purchase of additional personal computers, mass storage devices, and the investigation of new applications areas, such as electronic mail.

## 5.0 CONCLUSIONS AND RECOMMENDATIONS

There is an opportunity for the City of Decatur to reduce costs and improve police services by implementing a microcomputer network to replace some of the manual record keeping procedures now in use. The most important application is the automation of the parking ticket collection and tracking functions. Current operations result in a loss of about \$5,000 per month to the city due to uncollected fines. The effective collection of these funds could pay for the necessary computer hardware and software within two years. In addition, there are other applications in court records and police files that would benefit by computer automation.

### 5.1 Implementation Approach

A phased approach to the implementation of the proposed computer system is recommended. The advantages of the the phased approach are clear: reduced initial investment, more opportunities for users to become involved in the solution. In addition, developers and users have more interaction which results in a system that better serves the users.

Phase I: Purchase of initial hardware and software.

Phase II: Development of parking ticket software.

Phase III: Development of incident card database, court calendar, court collectables, and expansion of network.

### 5.2 Hardware

#### 5.2.1 Communications

The immediate purchase and installation of the American Bell equipment listed in Chart 3.1 is recommended. It is also recommended that monthly maintenance be purchased for this equipment.



### 5.2.2 BiSync Terminal Equipment

In section 3.1, three approaches were given to establish communications with the DeKalb County computer facility. The purchase of IBM supplied equipment, has two drawbacks. First, personal computers and other devices cannot be interconnected with this equipment. Second, this is the highest cost solution. Significant saving would result from other options. The purchase of Racal-Milgo equipment provides functionally equivalent operation at a reduced cost. However, this is with some risk due to possible incompatibilities, either now or in the future. There are no benefits to the Racal-Milgo equipment other than cost savings.

The protocol conversion approach is recommended for two reasons: It is the lowest cost and it is the most flexible method of establishing BiSync communications. Both personal computers and low cost terminals from a variety of manufacturers can be connected to the DeKalb computer facility with this scheme. Protocol Computers, Inc. has offered to provide Decatur with a seven port PCI-1071-7 protocol converter as well as a PCI-78 display station for evaluation at no cost. If this equipment proves to be satisfactory, then purchase is recommended. The Datasouth DS-180 printer may be available under the same evaluation terms if evaluation were desired. If the protocol conversion equipment does not prove to be compatible, then the alternatives are to either evaluate conversion equipment from other manufacturers or to purchase the IBM terminal equipment. It is not recommended that "IBM-like" terminal equipment be purchased. The only advantage of purchasing equipment that emulates IBM is reduced cost. By using protocol conversion, cost is reduced and flexibility is enhanced.

The costs of each of the approaches are compared in Figure 5.1.

	MODEL NUMBERS	COST OF BASIC CONFIG. (NOTE 1)	COST OF EXPANDED CONFIG. (NOTE 2)	COST OF ADDITIONAL DISPLAY	PERSONAL COMPUTER INTERFACE
IBM	3276 3287 3278	\$12,248	\$18,803	\$2,185	No
Racal-Milgo Information Systems	4274 8278 4287	\$ 9,533	\$14,303	\$1,590	No
Protocol Computers	PCI-1071-7 PC-78	\$ 9,995	\$12,980	\$ 995	Yes

NOTE 1: A basic configuration consists of a controller, one printer and one display station.

NOTE 2: An expanded configuration consists of a controller, one printer and four display stations.

Figure 5.1 - BiSync Equipment Cost Comparison

### 5.2.3 Personal Computers

There are many personal computers on the market today. Most of these are designed for the consumer market and are not suitable for commercial user. It is recommended that a careful examination of the specifications of any candidate system be made to evaluate the following factors:

1. Degree of component standardization.
2. Availability of hardware and software from third parties. Look for the hardware and software items that are likely to be required during the life of the system.
3. Future market trends for the vendors products.
4. Compliance with accepted interface standardization.

5. Initial cost and expansion cost.
6. Maximum configuration limits such as memory size, number of printers, modems, disk drives, terminals, etc.
7. Maintenance and repair availability and cost.

### 5.3 Software

It is recommended that all four applications studied be implemented using a suitable high level language and database management system. Implementation of the parking ticket collection and tracking software is a high priority because Decatur now has about \$5,000 per month in uncollectable parking fines.

It is believed that implementation of the incident card database, court collectables, and court calendar applications would result in significant cost reductions.

Figure 5.2 shows the integrated system of parking tickets, incident cards, and court records. Parking tickets are entered daily into a database with all information from the ticket. As tickets are paid, they are removed from the system. When a ticket becomes delinquent, the name and address corresponding to the automobile tag number on the ticket is obtained through NCIC and GCIC. Each week, printed notices are mailed to these persons. When a fine has been deemed uncollectable, an entry is made in the incident card database for archive purposes.

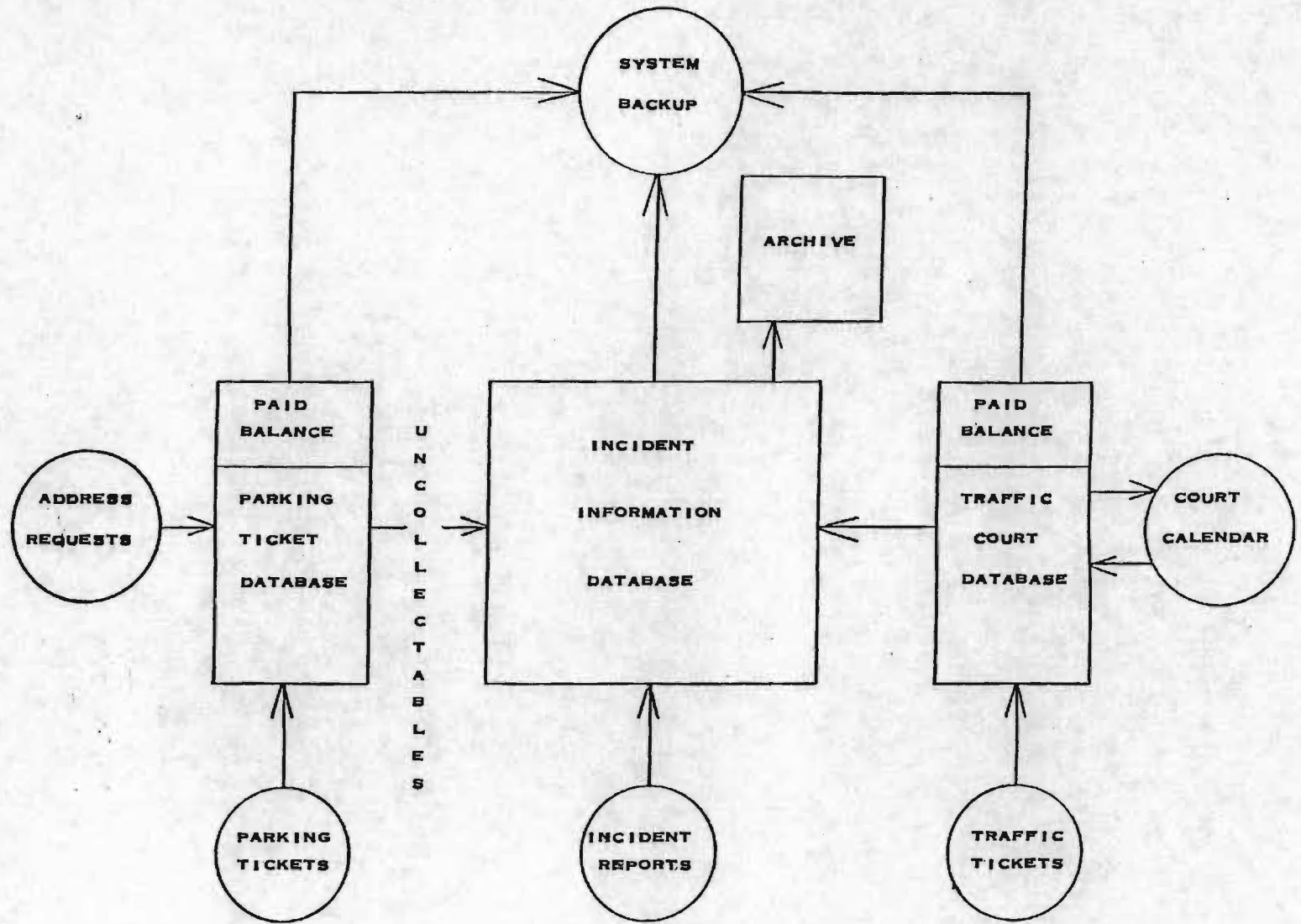


Figure 5.2 Integrated System



Incident reports are summarized and entered into the incident card database daily. These records would be retrieved for viewing or printing on a personal computer. Backup copies of the database will be made periodically to prevent the loss of data in the event of a system failure.

The court calendar and collectables records will be generated from traffic citation forms and updates from weekly court session and will provide the capability to update the incident card database.

The contractor engaged to develop applications software should be required to furnish complete and accurate documentation, to the extent that is generally accepted in the computer industry for industrial applications. Without documentation, maintenance and upgrade of the software becomes extremely difficult. Emphasis should be placed on the ease of use by operators without special computer training. Reliability, correctness, and utility are of greater importance than lowest cost or shortest delivery time.

APPENDIX A  
Protocol Computers

# PCI 1071

## UPGRADE TO SNA/SDLC. PRESERVE YOUR ASCII INVESTMENT.

The PCI 1071 allows the use of virtually any ASCII device - CRT's, printers, hard copy keyboards, special devices - in the place of those traditionally used in a Bisync network.

But more importantly, PCI recognizes that many companies using Bisync contemplate a move to SNA/SDLC in the near future. The 1071 lets you use ASCII devices in your Bisync network immediately. When and if you want to move to SNA, PCI will upgrade your 1071 to an SNA/SDLC protocol converter for approximately 15% of your initial 1071 investment. You'll move to SNA/SDLC using the same ASCII devices and the same converter upgraded, while preserving your initial investment.

### Where The PCI 1071 Fits Into Your System.

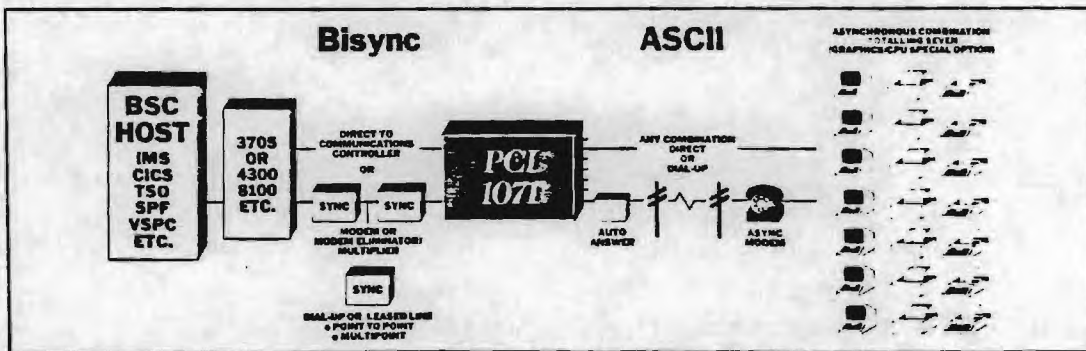
The PCI 1071 takes the place of the 3271's in your system and causes any ASCII terminals - CRT's and printers - to look like Bisync terminals to the host. Even though the Bisync host may not notice the difference, your budget certainly will.

### SPECIFICATIONS:

- One PCI 1071 controller is equivalent to one IBM Bisync 8-port 3271. Bisync CU addresses switch selectable (multipoint BSC).
- Supports up to 8 asynchronous ASCII devices (up to 7 ports + 1 dynamic printer port) - CRT, printer, hard copy, computers - personal computers, special devices.
- 7 bits ASCII
- Even parity (or no parity)
- XON/XOFF
- Auto speed detect - 300-1200 BPS on asynchronous ports.
- Physical connections:
  - 1 Bisync RS-232C to modem or direct connect up to 9600 BPS.
  - 7 ASCII RS-232C modem or direct connect up to 9600 BPS.
- Personal Computer support.
- Dynamic printer assignment.
- CoaxFACE™ available.
- Graphics option available.
- PaperCRT™ option available.

Using the PCI 1071, whether or not you upgrade to SNA/SDLC later, opens the door to ASCII terminals giving you a wider variety of choices. Get terminals with features that meet your specific needs, terminals for which your operators are already trained, terminals that start in price as low as just a few hundred dollars. Add it up and you end up saving money all the way around.

Personal computers, graphics devices and portables, will all be among the ASCII terminals that can be used with your Bisync system, and if you upgrade to SNA/SDLC, on that network communications line as well. PCI's 1071 gives you versatility with money to spare.



### HOW TO ORDER AND INSTALL THE PCI 1071.

To see for yourself how the PCI 1071 operates, call 800-423-5904, (213-716-5500 in California) for a dial-up remote demonstration. Your ASCII terminal can communicate with our Bisync host by

remote connection through a PCI 1071 at our location. All you need is a modem and a telephone line for the remote connection.

**PCI** PROTOCOL  
COMPUTERS, INC.

6150 Canoga Avenue, Suite 100, Woodland Hills, California 91367-3773 • In California (213) 716-5500

(800) 423-5904

## NETWORKING FLEXIBILITY

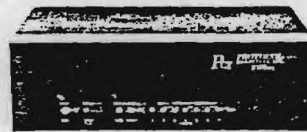
Sure, the PCI 78 Networker looks like the IBM 3278 CRT and emulates the IBM 3278 keyboard. But it sure isn't just another 3270 "look-alike." PCI's ASCII CRT solution eliminates operator retraining, and, with the PCI 1076, makes 3270 SNA/SDLC networking flexibility a reality.

The PCI 78 converses in an asynchronous start-stop protocol, so it can conveniently and easily communicate over switched (dial-up) communication lines.

It also features a tilt-and-swivel display head, low profile keyboard, front surface-mounted on-off switch, menu-selectable options and low persistence green

phosphor display. The PCI 78 provides operators with clarity, flexibility and convenience.

The PCI 78 also accepts PCI's "Dynamic Printer Assignment" feature so a single communications line can support a complete host workstation when used with the 1076 protocol converter. This means that a remote dial-in application can now have 3278 keyboard emulation and a printer on the same phone connection.



• Menu-selectable options eliminate having to toy with dip switches.

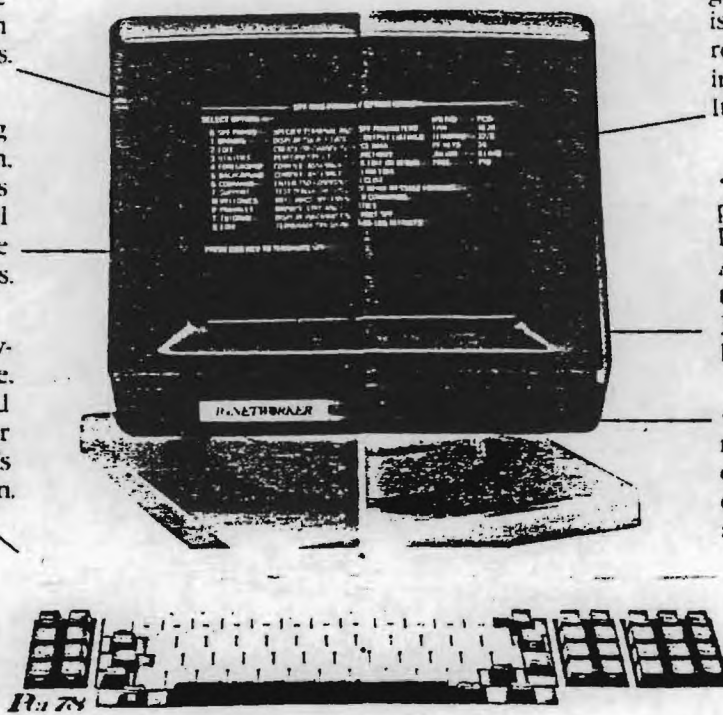
• The display, featuring a full 24x80 screen, includes a 25th status line which supports all 3270 status line characters.

• The detachable, low-profile 3278 look-alike, feel-alike keyboard eliminates operator retraining; there's nothing new to learn.

• The high-resolution, green phosphor display is easy on the eyes, reducing fatigue, increasing productivity. It's comfy!

• A transparent printer port accepts PCI's Dynamic Printer Assignment feature for total support of 3278/3287 workstation emulation on a single line.

• The front surface-mounted power switch eliminates groping forever; it's in plain sight and easy-to-reach.



PCI



## PCI 78 TECHNICAL SPECIFICATIONS

The PCI 78 is an asynchronous CRT that operates in a conversational mode and incorporates a '3278' keyboard format.

### **MENU SELECTABLE OPTIONS**

- 0. Keyboard - 3278 or 5251
  - 1. Alternate Keypad - PF or Numeric
  - 2. Lead-In Character - Tilde or ESC
  - 3. Communication Mode - Half Duplex or Full Duplex
  - 4. Attribute Mode - Field or Character
  - 5. Scroll Mode - Yes or No
  - 6. Auto New Line - Yes or No
  - 7. Diagnostic Test - Yes or No
  - 8. Cursor - Block or Underline
  - 9. Frame Rate - 50 or 60 Hz
  - A. Baud Rate (Main) - 300 to 9600 bps
  - B. Baud Rate (Aux) - 300 to 9600 bps
  - C. Parity (Main) - Even, Odd, Mark, Space
  - D. Parity (Aux) - Even, Odd, Mark, Space
  - \* XON/XOFF Protocol always enabled
- All Menu options saved on non-volatile memory

### **ERGONOMIC CHARACTERISTICS**

Tilt and Swivel Display  
High Contrast Non-Glare P31 Green Phosphor  
Non-Reflective Surfaces  
Low-Profile Detachable '3278' Keyboard  
Front-Mounted power switch

### **DISPLAY**

Screen Format - 80 characters x 24 lines with 25th line for status  
Viewing Area - 8.51" (21.6cm) wide x 5.91" (15cm) high  
Character Format - 7 x 9 matrix with 2 lower case descenders in a 9 x 12 window  
Character Size - .082" (2.1mm) wide by .197" (5.0mm) high  
Character Set - 96 displayable ASCII characters + special EBCDIC characters and symbolics for status line.  
Attributes - High intensity, blink, reverse video, underline and column separator at every display station.

## MONITOR PERFORMANCE

Green Phosphor - 12" (30.5cm) diagonal  $\pm$  1% geometry  
Video Bandwidth - 18 MHz  
Horizontal Frequency - 20.2 KHz  
Frame Rate - 50/60 Hz non-interlaced refresh

## PHYSICAL CHARACTERISTICS

### Console:

Height	15 1/4" (38.7cm)
Width	13 1/2" (34.6cm)
Depth	16 3/4" (42.5cm)

### Pedestal:

Width	13 1/2" (33.6cm)
Depth	13 5/8" (34.6cm)

### Keyboard:

Maximum Height	2 1/2" (7.5cm)
Width	19" (48.3cm)
Depth	8" (20.5cm)

Total Weight - 36 lb (16.3kg)

## ELECTRICAL CHARACTERISTICS

### Console:

Power Consumption	48 Watts
Power Input	Selectable 115/230 $\pm$ 10%

\* Separate Power Source Recommended

### Keyboard:

Input Power	5 VDC
Rollover	N Key

### Keyboard Mechanical Data:

Key Total Travel	.171" (4.34mm)
Key Activating Force	2.0 oz (57gr)

Keypop Color: Dark Gray Cicolac 3502 and white Cicolac 3502

Keyswitch Reliability: 100 million MCBF



**PCI 7887+ COMMUNICATIONS SUPPORT PACKAGE  
FOR THE IBM PERSONAL COMPUTER**

The PCI 7887+ software package is a comprehensive and sophisticated terminal emulation application which operates in tandem with PCI's Protocol Converters and the IBM Personal Computer. The development of this software brings a new technology to personal computer communications with IBM 3270 data terminal networks. This package is specifically designed to turn your IBM Personal Computer into an intelligent, full screen communications terminal with innovative enhancements which fully utilize the functions of the microcomputer.

Through the use of our Protocol Converters operating in an IBM SNA/SDLC or BSC 3270 Network, the IBM Personal Computer (PC) and our PCI 7887+ software package, the PC now becomes an integral part of your data communications architecture. This combination provides communications flexibility and savings. All of the following benefits of networking are brought to the PC using PCI's 7887+:

- Connection to the host can be direct, via leased line, or dial-up
- File transfer from the host to the PCI (down-load) is fully supported
- Full-screen terminal emulation (IBM 3278) including screen attributes and function keys
- System support of the locally attached printer to the PC



**CAPABILITIES OF THE  
PCI 7887+ COMMUNICATIONS SUPPORT PACKAGE**

- Operates under IBM DOS 1.1 or 2.0
- Use of simplified ASYNC/ASCII communication support on the IBM PC.
- Complete compatibility with the PCI 1076 and 1071 Protocol Converters, indicating no special set-up options needed for the program.
- Baud rate adjustments (110-9600) are made from keyboard entries.
- System support of the locally attached printer to the IBM PC via the PCI exclusive dynamic printer assignment.
- The ability to exit the terminal mode and remain on-line, then run other applications and return to the terminal mode where you left off.
- User designed keyboard mapping for easy use of PF keys, cursor control, etc.
- Down-load a printer file to the IBM PC disk, printer or both, with the capability to strip off the ASCII printer control characters.
- The ability to interface user written routines to the terminal package, use smart modems, autoexec initiation, etc.
- Extremely comprehensible and user friendly.
- Plus, there are features which are installed in the package which are being retro-fitted into the PCI Converters:
  - Four-color support
  - IBM PC file up-loading to the IBM Host
  - Twenty-fifth status line indication
  - Mosiac graphic support





## HARDWARE REQUIREMENTS FOR THE IBM PERSONAL COMPUTER

- IBM Personal Computer with a minimum of 64K memory and one disk drive or the IBM Personal Computer XT
- Monochrome or color display (CRT)
- RS 232 port in your IBM Personal Computer such as:
  - IBM Asynchronous Communications card
  - Seattle Computer RAM+ card
  - Most other serial RS 232 cards compatible with the IBM Personal Computer
- RS 232 cable for connection to modem or direct connection to the protocol converter.

IBM PC and IBM PC XT are trademarks of International Business Machines Corporation.

PCI 7887+, PCI 1076 and PCI 1071 are trademarks of Protocol Computers, Inc.

**PURCHASE  
AGREEMENT**



Date \_\_\_\_\_  
Purchase Order # \_\_\_\_\_  
Purchaser \_\_\_\_\_  
Billing Address \_\_\_\_\_  
City \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_  
Contact \_\_\_\_\_ Telephone ( ) \_\_\_\_\_  
Delivery Address \_\_\_\_\_  
City \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_  
Delivery Location Contact \_\_\_\_\_ Telephone ( ) \_\_\_\_\_

**PERPETUAL SOFTWARE LICENSE**

Included in each PCI product is a substantial quantity of software. This software is, or may be, contained in various media including, but not limited to ROM, PROM, RAM, diskette and disk. This software shall remain the exclusive property of PCI. PCI grants with each unit a perpetual license to use this software to Purchaser and to subsequent purchasers, with the following express limitations: THE SOFTWARE MAY NOT BE COPIED OR USED IN ANY OTHER PRODUCT FOR ANY PURPOSE. IT MAY NOT BE REVERSE ENGINEERED, OR USED FOR ANY OTHER PURPOSE OTHER THAN IN AND WITH THE COMPUTER HARDWARE SOLD BY PCI.

**WARRANTIES/LIABILITIES**

All PCI equipment is warranted to be free of defects in material and workmanship for a period of ninety (90) days from the date the equipment is delivered to Purchaser. PCI's sole obligation to Purchaser under its warranty is limited to the repair and, or replacement of defective goods provided the equipment is returned to PCI within a reasonable time. The cost of all transportation, insurance and handling is that of Purchaser. This warranty will not extend to equipment subjected to accident, misuse, alteration or repair made by non-authorized representatives of PCI. PCI does not warrant that the functions contained in its software will meet Purchaser's requirements, will be error-free or that all errors will be corrected.

PCI shall not be liable for any damages to Purchaser beyond the purchase price of the equipment for any claimed breach of its obligations or warranties. In no event shall PCI be liable for any consequential damages.

THE FOREGOING WARRANTIES ARE EXCLUSIVE AND IN LIEU OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUSIVE BUT NOT LIMITED TO WARRANTIES OF MERCHANTABILITY AND FITNESS FOR INTENDED USE.

**MAINTENANCE SERVICE**

PCI will provide maintenance services for its products at authorized repair centers. The cost of transportation, insurance and handling to and from the centers shall be that of Purchaser. PCI will endeavor to repair and/or replace any and all inoperative components in the most timely manner. At Purchaser's option an annual maintenance fee may be paid during the initial warranty period or subsequent to the expiration of any annual term. All other maintenance/repair service will be charged to Purchaser at the then-in-effect hourly rates plus all parts and materials used.

**PROTOCOL COMPUTERS, INC.**

**PURCHASER**

Accepted \_\_\_\_\_  
Title \_\_\_\_\_  
Date \_\_\_\_\_

Name \_\_\_\_\_  
Title \_\_\_\_\_  
Date \_\_\_\_\_

APPENDIX B

Datasouth DS180 Dot Matrix Printer

# THE DATASOUTH DS 180 MATRIX PRINTER



## TO SHOW WHAT A VALUE THE DS180 PRINTER IS, WE'RE OPENING IT FOR YOUR PERSONAL INSPECTION.

*Some companies offer a wide range of printers to fit unique applications, but at Datasouth we designed a unique printer to fit a wide range of applications. Whatever your matrix printer requirements, chances are the DS180 will handle them.*

*Innovative product planning and careful attention to detail make the DS180 a high-quality machine that is simple in design, yet rugged in construction. With no duty cycle restrictions, you can look forward to hundreds of hours of trouble-free performance. If problems do occur, the simple modular design with single-board electronics facilitates easy maintainability.*

*For operator convenience, a unique control panel provides instant access to all machine features. And, if the requirements change, so will the DS180. No other printer offers this kind of performance and versatility—at any price.*

*Look inside. We believe that a close examination of the DS180 matrix printer will convince you of the exceptional value designed into this exciting product. High performance and low cost combine to make the DS180 an ideal output device for mid-range systems, CRT slave applications and remote terminal networks. Not a stripped-down printer with expensive options, the DS180 is equipped with a large array of user programmable features designed to allow integration into your system quickly and easily.*

*Matrix printers have never been better!*

## KEYPAD

A focal point of the DS180 printer is the programming keypad located on the front panel. Through a simple sequence of keystrokes, up to 50 features can be programmed by the user. This approach eliminates the need for confusing and cumbersome jumpers and dipswitches. LED indicators and digital display prompt the operator as each feature is configured. The setting is then stored in a special non-volatile memory which retains the format when printer power is turned off. Features can also be configured programmatically from the data source using CONTROL and ESCape commands.

In addition to the set-up keys, the front panel includes convenient keys for top of form, line feed and 1/48" form alignment.

The standard DS180 includes both an RS232 serial interface and an 8-bit parallel interface. Baud rates from 110 to 9600 may be selected. Both X-on, X-off and data terminal ready restraint mode may be selected as communications synchronization protocols. The 2000 character FIFO print buffer can accept a full CRT screen dump without delaying the host system.

Programmable forms control and formatting features include top of form, form length, horizontal and vertical tabs, form perforation skipover and margin settings.





## PRINTING

High speed bidirectional printing at 180 CPS generates throughput ranging from 75-400 + lines per minute. Under microprocessor control, carriage movement is optimized so that the printhead automatically takes the shortest path to the next printable character. Bidirectional printing eliminates time-consuming carriage returns for even higher throughput. The DS180 prints both upper and lower case characters up to 132 columns wide at 10 characters per inch. The variable horizontal pitch option also allows printing at 12 and 16.5 characters per inch. Expanded print may be selected for highlighting portions of the text.

A 9-wire printhead produces highly legible 9x7 characters with true lower case descenders and underlining. The head may be easily adjusted to print on up to 6-part forms with no degradation in print quality. Life-tested at over 650 million characters, the head is one of the most durable in the industry.

The specially designed cartridge ribbon can be changed in seconds with no mess or inconvenience to the operator. Containing a 1/2" fabric ribbon, the cartridge is rated for a life of 3 to 4 million characters.



## PACKAGING

The DS180 is packaged in an injection-molded structural foam cover with special acoustic insulation added to dampen noise. The compact desk-top design makes the DS180 an attractive addition to the office environment. For freestanding installations, the DS180 may be mounted on the optional printer pedestal.

## GRAPHICS

The dot-addressable graphics feature permits printing of computer-generated charts, maps, and graphs. Precise pictorial presentations of data can be output at a resolution of 75 dots per inch horizontally and 72 dots per inch vertically.



## MODULAR DESIGN

The modular design of the DS180 makes servicing quick and simple. With only three major subassemblies, trouble-shooting and repair can be performed quickly with only minimal training. Module replacement maintenance has never been more practical for a printer.

Mechanical simplicity is one key to the superior reliability of the DS180. Through the use of a microprocessor based controller, many mechanical parts found in older model printers have been eliminated. With fewer moving parts, the printer mechanism is less vulnerable to failure. A stepper motor controlled by the microprocessor positions the carriage for precise print registration. The carriage ribbon is driven by print carriage



The forms tractors adjust from either end of the carriage to accommodate widths from 3" to 15". Forms may be fed from the front for use in desk-top installations, or from the bottom when mounted on the optional printer stand. An optical detects a paper out condition and lights an LED indicator. In addition, an audible alarm sounds and a stop transmission command is sent to the computer.

A single printed circuit board contains both the power supply electronics and digital controller for the printer. An 8085 microprocessor controls all printing, forms handling and communications functions.

Reliable performance is ensured by a stringent quality control program. Datasouth uses pre-tested, high reliability parts from leading manufacturers. Multiple tests are performed on sub-assemblies during each stage of production, with each unit undergoing an extensive burn-in followed by an exhaustive final print test. The DS 180 carries a 90-day warranty on materials and workmanship.

## DS180 PRINTER STANDARD FEATURES

- Microprocessor Control
- 180 CPS Print Speed
- Bidirectional/Logic Seeking
- 2000 Character Buffer
- 9x7 Dot Matrix
- Expanded Characters
- Adjustable Printhead/1-6 Copies
- 96 ASCII Character Set
- Cartridge Ribbon
- 132 Column Print Width
- Tractor Feed (Front or Bottom)
- Non-Volatile Format Retention
- Top of Form
- Horizontal Tabs
- Compressed Print — 10, 12, 16.5 cpi
- Vertical Tabs
- Perforation Skip-Over
- Auto Line Feed
- 6/8 LPI
- Auto End of Line Carriage Return
- 5 IPS Paper Slew
- Parallel and Serial Interfaces
- 110-9600 Baud Communications
- Terminal Status Indicators
- Audio Alarm
- Self-Test
- X-on, X-off
- Paper Out Detection
- Display Mode
- High Resolution Dot-Addressable Graphics

## OPTIONAL FEATURES

- APL/ASCII Character Set
- Quietized Cover
- Current Loop Interface

## PHYSICAL & ELECTRICAL

- Power: 110 Vac, 60 Hz or 220 Vac, 50 Hz
- Temperature: 40° - 100° F
- Humidity: 20 to 90% (No Condensation)
- Size: 7" H x 24" W x 16" D
- Weight: 35 lbs.

**datasouth**  
computer corporation

P. O. Box 240947 • Charlotte, N. C. 28224 • 704/523-8500 • Telex 584301DASOU UW

APPENDIX C

Racal-Milgo

Racal-Milgo

Computer  
Products  
Division

Model 4274  
Remote Cluster  
Controller

#### Model 4274 Remote Cluster Controller

##### Features

- IBM 3270 compatible
- Model 4274B: BSC communications protocol
- Model 4274N: Switchable BSC or SNA/SDLC communications protocols
- SDLC NRZ or NRZI options
- Advanced microprocessor technology
- Software controlled and configurable
- Self diagnostic test capability
- Ease of expansion up to 32 devices
- 20 off-line commands

The Model 4274 Remote Cluster Controller is the nucleus of Racal-Milgo's 4270 Cluster Terminal System. Based on an advanced system design, the 4274 Controller incorporates the benefits of the latest microprocessor hardware and software technology. This state-of-the-art architecture provides a modular path for system upgrades and added capabilities.

The 4274 Remote Cluster Controller emulates the following IBM 3270 models:

Model 3274-1C	Model 3274-51C
Model 3274-21C	Model 3276-2
Model 3274-31C	Model 3276-12

The Racal-Milgo Model 4274B Controller operates in BSC protocol only. The Model 4274N operates in either BSC or SNA/SDLC protocols, with switching capability as a standard feature. Both models support expansion features for a combination of up to 32 Model 4278 Display Stations, and a full range of optional line and character printers. All terminals connect to the 4274 via coaxial cables, to a maximum distance of 5,000 feet.

A standard EIA RS-232C interface connects the controller to a modem and the network. Transmission speeds range from 1200 to 9600 bps over point-to-point or multipoint networks, using full- or half-duplex dedicated communications lines. Both EBCDIC and ASCII character sets are supported, with either NRZ or SDLC NRZI line control options.

The system has a self diagnostic test capability that is initiated automatically each time the controller is powered on. If a problem is detected, an error code status is reported to the operator. This information also aids the field service engineer in trouble-shooting and fixing problems rapidly. In addition, there are 20 off-line commands that allow extended diagnostic testing, maintenance aids, status monitoring, and dynamic system reconfiguration without moving cables.



The 4274 is controlled by a 16 bit microprocessor with 32K to 128K of Random Access Memory (RAM). Independent 8 bit microprocessors perform input/output functions for host communications, display stations, and printers. A single floppy diskette drive unit, housed in the 4274 Controller, is used for storage of the system emulator and configuration utility program.

The Controller is available with a standard set of software on 5¼" floppy diskettes. There are two system software emulator options: (1) BSC emulation only, and (2) switchable BSC and SNA/SDLC emulation. Included as a part of each diskette is a Configuration Utility Program used to customize the system emulator diskette after the system has been installed, or whenever the configuration changes (by the addition of one or more display stations).

The 4274 may be configured with any combination of devices from 1 to 32 displays and printers. Racal-Milgo offers a broad selection of high performance printers, ranging in speed from 120 characters per second to 300 lines per minute.



## Specifications

### Racal-Milgo Model 4274 Remote Cluster Controller

#### IBM Compatibility

**Control Units:** IBM Models 3274-1C, 3274-21C, 3274-31C, 3274-51C, 3276-2, and 3276-12

**Communications Protocol:** BSC, SNA/SDLC

**Character Sets:** ASCII (BSC only)  
EBCDIC (BSC, SNA/SDLC)

**SDLC Line Control:** NRZ or NRZI

#### SNA Support Characteristics:

Format Identification 2 (FID2)

Physical Unit 2 (PU2)

Logical Unit types: LU1-SCS Printer  
LU2-Display Station  
LU3-3270 DSC Printer

#### Communications

1200 to 9600 bps, over full- or half-duplex point-to-point or multipoint non-switched lines

#### Device Expansion

1- 8 devices - Standard (minimum 1 display station)  
9-16 devices - Requires 4901 Terminal Adapter  
17-24 devices - Requires 4902 Terminal Adapter  
25-32 devices - Requires 4903 Terminal Adapter

#### System Software Emulators

(Including Configuration Utility)  
4650-BSC 3270 EBCDIC Emulator  
4656-BSC 3270 ASCII Emulator  
4661-Switchable BSC, SNA/SDLC  
3270 EBCDIC Emulator

#### Physical Dimensions

**Height** 13.0" (33.0 cm)

**Width** 17.0" (43.2 cm)

**Depth** 20.0" (51.0 cm)

**Weight** 35 pounds (15.8 Kg)

#### Power Requirements

155 Watts

#### Line Voltage

115 Volts ( $\pm 10\%$ ), 60 Hz

#### Heat Generated

530 BTU/Hour (approx)

#### Environmental Requirements

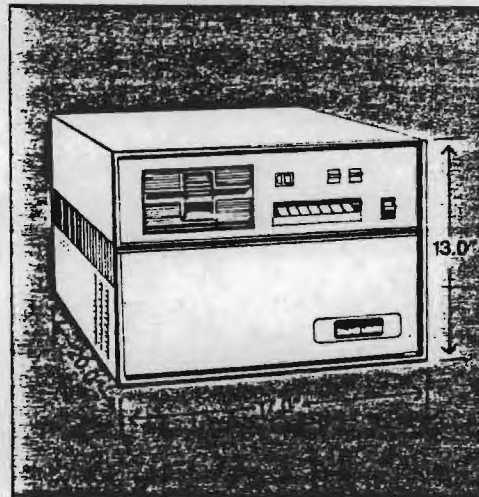
Temperature: 50 to 90° F

Relative Humidity: 20 to 80% (No Condensation)

#### Device Attachments

Model 4278 Display Station  
Model 4287N SCS/DSC, 200 cps Printer  
Model 4285 80 column, 120 cps Printer  
Model 4295 132 column, 300 LPM Printer  
Model 4293/94 200 cps Printer  
Model 4550 Printer Interface  
(used with the Model 4285, 4293, 4294,  
and 4295 printers)

For additional information regarding any of the above devices, refer to the appropriate product bulletin.



The Racal-Milgo policy of continuous development may cause the information and specifications contained herein to change without notice.

## Racal-Milgo Computer Products Division

6250 N.W. 27th Way Ft. Lauderdale, Florida 33309 Telephone: (305) 979-4000

**RACAL**

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Racal-Milgo

Computer  
Products  
Division

Model 8278  
Display Station  
Family

### Model 8278 Display Station Family

#### Features

- Low power consumption/heat generation
- IBM 3278 Models 2, 3, 4, and 5 Compatibility
- High resolution 15" diagonal screen
- Tilt and swivel display capability
- Non-Glare, smudge resistant green phosphor screen
- Compact size for desk top use
- Quiet operation for office environments
- "Screen Protector"
- Convenient front mounted operator controls
- Blink, underline, and reverse video, extended attribute support (standard)
- Security keylock (standard)
- Detachable typewriter and data entry style keyboards with sculptured non-glare keycaps
- 14-key numeric keypad (standard)
- Variable audible alarm (standard)

The Racal-Milgo Model 8278 Display Station family is functionally compatible with the IBM Model 3278 -2, -3, -4, and -5 Display Stations. Because it was designed with the operator in mind the readily configured 8278 minimizes operator fatigue while increasing productivity. Operating in either SNA or NON-SNA environments, the 8278 may attach to any of the full range of Racal-Milgo, Local and Remote Cluster Controllers. A variety of optional keyboards allows the user to select the optimum display configuration for his application. Simplicity of design provides high reliability, easy transportability and interchangeability with other Racal-Milgo Cluster Display Stations.

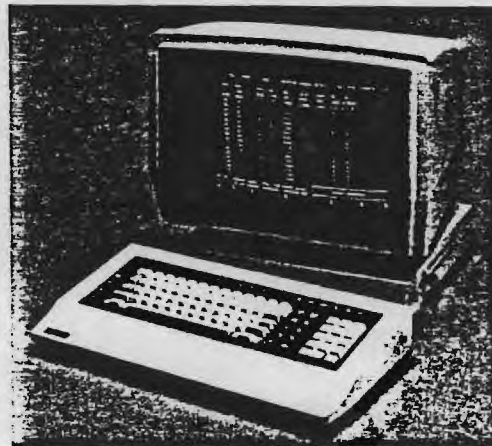
Designed for office environments, the compact display base, only 14.5" wide by 13.4" deep allows the display station to be installed where space is at a premium. Unlike some other display stations, the 8278 is silent because there is no cooling fan.

The screen protector feature automatically blanks the 8278 screen during its idle periods. This protects the CRT phosphor from being permanently burned by the continual display image of an application program.

Four models are available:

Model	Format
8278-2	1920 Characters, 80 columns x 24 lines
8278-3	2560 Characters, 80 columns x 32 lines
8278-4	3440 Characters, 80 columns x 43 lines
8278-5	3564 Characters, 132 columns x 27 lines

Models -3, -4 and -5 have both a primary and an alternate screen format. The primary screen format for each model is 1920 characters, 80



columns x 24 lines. Alternate screen formats are selected by the Host Application Program, using a 3270 Data Stream Command to switch the 8278 Display Station format. All alternate screen formats fill the entire screen for comfortable operator viewing.

Other outstanding ergonomic features include conveniently located operator controls, and an anti-glare, smudge resistant screen which tilts 30° vertically and swivels 60° horizontally, suitable for any viewing perspective. In addition, the bottom line of the screen provides operational status and cursor location.

Other features include Field Attributes such as protected, unprotected, blink, blank, high intensity, reverse video and underline. An off-line mode allows self-test diagnostics and performs fault isolation.

Both typewriter and data entry style keyboards are available with sculptured non-glare, matte finished keycaps. The keyboards attach to the display with a two-foot detachable cable and have an extended palm rest for operator comfort. The keyboards are designed to provide tactile feedback for a true touch typing feel. The standard keyboard layout has 24 PF keys and a 14-key numeric pad. The amount of shifting keystrokes has been reduced by eliminating the ALT (Alternate) shift key. Full editing, cursor control and local print keys are also supported.

In addition to the 8278 Display Station, the Racal-Milgo 4270 Cluster Terminal System supports a wide range of printers with speeds from 120 characters per second to 300 lines per minute.

# Specifications

## Racal-Milgo Model 8278 Display Station

### IBM Compatibility

**Displays:** IBM Models 3278-2, -3, -4, -5.

**Character Sets:** EBCDIC or ASCII up to 128 displayable characters.

**Keyboards:** Typewriter/Data Entry with 24 PF keys and a 14-key numeric pad.

**SNA Characteristics:** Logical Unit (LU) Type 2.

### Display Module

**Screen Characteristics:** High resolution 15" diagonal, anti-glare, smudge resistant, green phosphor.

**Screen Formats:** 1920 Characters, 80 columns x 24 lines, 2560 Characters, 80 columns x 32 lines, 3440 Characters, 80 columns x 43 lines, 3564 Characters, 132 columns x 27 lines.

**Character Sizes:** 8278-2, 3, 5 (7x9 dot matrix), 8278-4 (7x8 dot matrix).

**Screen Protector Feature:** 5 minute time out.

**Operator Controls:** 30° vertical tilt and 60° horizontal swivel, screen brightness, On/Off switch, Audible alarm volume.

**Cursor:** Operator selectable, block or underline, blinking or non-blinking.

**Display Status:** Bottom line of screen.

**Controller Attachments:** Racal-Milgo Model 4274B and 4274N Remote Controllers; and 4274LB and 4274LN Local Controllers.

**Interface:** RG-62/U Coaxial cable up to 5,000' away. A maximum of 32 displays can attach to the 4274 controller.

### Keyboards

All contain 103 keys, including 24 PF keys and a 14-key numeric keypad.

Model 4227 EBCDIC Typewriter

Model 4263 ASCII Typewriter

Model 4225 Data Entry

### Physical Dimensions

Overall	Display/Base	Keyboard
Height	17.5" (44.45 cm)	3.5" (8.9 cm)
Width (front)	14.5" (36.83 cm)	19.0" (48.3 cm)
Width (rear)	15.2" (38.6 cm)	19.0" (48.3 cm)
Depth	13.4" (34.04 cm)	10.0" (25.4 cm)
Weight	38.0 lbs. (17.1 kg)	6.5 lbs. (3.0 kg)

### Power Requirements

Line Voltage	115 VAC ± 10%, 60 Hz
Watts	58
Current (Nominal)	0.5 amps
Heat Generated	196 BTU/HR

### Environmental Requirements

#### Temperature:

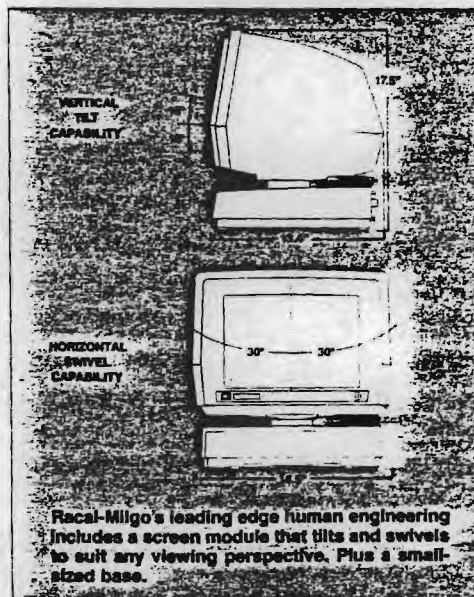
operating 50°F to 104°F (10°C to 40°C)  
non-operating 40°F to 150°F (4°C to 66°C)

#### Relative Humidity:

operating 10% to 80%, non-condensing  
non-operating 5% to 90%, non-condensing

#### Altitude:

operating 10,000 ft. (3.048 kilometers)  
non-operating 30,000 ft. (9.144 kilometers)



Racal-Milgo 8278 versus IBM 3278

	8278	3278
Weight	38 lbs.	80 lbs.
Power	58 watts	125 watts
Space	3400 cubic inches	6384 cubic inches
Heat	196 BTU/hr.	420 BTU/hr.

The compact and economical Racal-Milgo 8278 is less than one-half the weight of the IBM 3278 and occupies just over one-half the space. The 8278 also provides significant operational savings by consuming less than one-half the power and generating less than one-half the heat of the IBM 3278.

The Racal-Milgo policy of continuous development may cause the information and specifications contained herein to change without notice.

## Racal-Milgo

### Computer Products Division

6250 N.W. 27th Way Ft. Lauderdale, Florida 33309 Telephone: (305) 979-4000

**RACAL**

1983 Printed in U.S.A. 3C662 3/83

**Racal-Milgo**

**Computer  
Products  
Division**

**Model 4287  
Printer**

**Model 4287 Printer**

**Features**

- 200 cps print speed
- Microprocessor control
- Bi-directional print mechanism
- Self-test diagnostics
- Loadable electronic Vertical Format Unit (VFU)
- Adjustable paper-feed tractors
- Out-of-paper indicator/alarm
- Disposable ribbon cartridge
- Variable page length: 0-99 lines
- Double-width printing (when software supported)
- Standard/compressed printing (operator switch selectable)

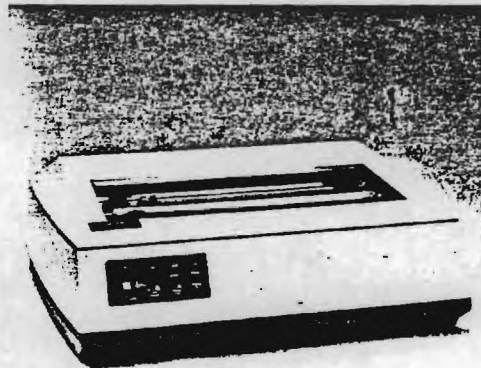
The Racal-Milgo Model 4287 is a smartly styled tabletop printer with a printing speed of 200 characters per second. Its acoustically designed enclosure assures quiet operation and makes the 4287 ideal for the office environment. Microprocessor technology and a print mechanism with a minimum of moving parts provide high levels of reliability and minimize the need for preventive maintenance.

The Model 4287 is functionally compatible with several types of terminal systems, including the IBM 3270 series, a number of UNIVAC systems, and systems operating under Bell 8A1 protocol. The 4287 is intended for printing under any application when connected to these Racal-Milgo products:

- Model 4270 Cluster Terminal System
- Model 4276 Standalone Display Station
- Model 4010 8A1 and Model 4015 8A1 Terminal Systems
- Model 4220/U200 and Model 4220/UTS20 Terminal Systems

The 4287 prints a 132-character line, using standard ASCII upper and lower case codes. Bi-directional operation, in which the print head moves either forward or backward, minimizes wasted carriage-return time. After each line is printed, the 4287 calculates the closest beginning or ending print position of the following line; the print head moves to the new position, and printing is resumed in the appropriate direction for highest throughput.

Paper handling, forms control, and ribbon operation have been engineered for operator efficiency. The 4287's ribbon is a disposable cartridge which snaps easily into position; ribbon life is estimated at well over one million characters. Two adjustable tractors accept paper in widths from 4" to 15". Standard size continuous fan-fold forms are accommodated by the



printer's 60-line format with 6-line bottom-of-form skip. The 4287 prints an original and up to 5 carbon copies. An out-of-paper sensor alerts the operator via indicators on the control panel and an audible alarm, whose volume is adjustable.

For added capability the Model 4287 offers many additional features. There's an electronic Vertical Format Unit (VFU) under application program control, easy-to-use operator control panel, switch-selectable 6- or 8-lines/inch vertical spacing, and self-test diagnostics that perform printer test patterns and paper feed tests. The self-test feature also allows off-line forms set-up and alignment.

Other standard features include double-width character printing (when supported by the host application program), compressed character printing with 16.5 characters/inch, and 132 columns on 8½" wide forms. Forms length selection is operator controlled for automatic top-of-form, from 0 to 99 lines per page.



## Specifications

### Racal-Milgo Model 4287 Printer

#### Configuration Interface

Standard interface with Racal-Milgo Model 4276 Standalone Display Station, Model 4010 8A1 Communications System, and Model 4220 Communications System.

Model 4550 Printer Interface required with Racal-Milgo 4270 Cluster System.

#### Printing Speed

200 characters per second.

#### Print Mechanism

Impact dot matrix. Bi-directional operation.

#### Number of Columns

132

#### Character Set

ASCII 96-character set, upper and lower case. (Expandable to 192 characters).

#### Character Style

7x7 dot matrix.

#### Character Size

0.08" x 0.106"

#### Print Density

10 characters per inch. (Also double-width and compressed).

#### Vertical Line Spacing

6 or 8 lines per inch.

#### Paper Handling

**Feed Mechanism** Adjustable sprocket.

**Type of Forms Accommodated** Continuous fanfold, edge perforated.

**Size of Forms Accommodated** Variable, 4.0" to 15" wide.

**Number of Forms (Copy capacity)** Original plus five copies.

**Forms Control Mechanism** Loadable electronic Vertical Format Unit (VFU).

**Paper Advance Speed** 8.5 inches/second; single line advance 70Ms.

#### Ribbon

Continuous-loop cartridge, 1/4" x 15 yards.

### Physical Dimensions

**Height** 8.5" (21.6 cm)

**Width** 25.5" (64.8 cm)

**Depth** 19.5" (49.6 cm)

**Weight** 64 pounds (28.8 Kg)

### Power Requirements

200 Watts

### Line Voltage

90-132 Volts, 60 Hz ( $\pm 2\%$ )

187-264 Volts, 50 Hz ( $\pm 2\%$ )

### Environmental Limits

#### Operating

Temperature: 50° to 100° Fahrenheit (10° to 38° Celsius)

Humidity: 10% to 90%, non-condensing

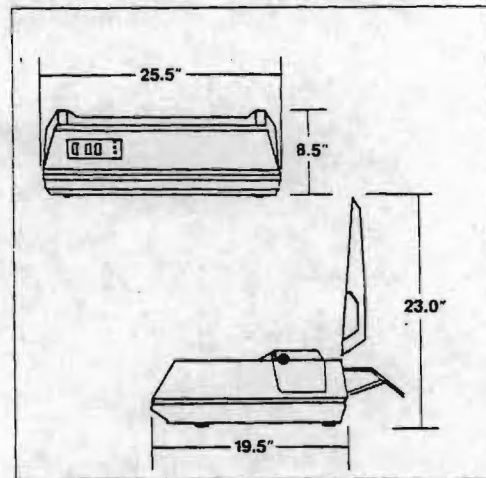
#### Non-operating

Temperature: -4° to 140° Fahrenheit (-20° to 60° Celsius)

Humidity: 10% to 90%, non-condensing

### Heat Generated

720 BTU/hour (approx.)



The Racal-Milgo policy of continuous development may cause the information and specifications contained herein to change without notice.

## Racal-Milgo<sup>®</sup> Computer Products Division

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**RACAL**

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APPENDIX D  
Forms Used in Current Records

UNIFORM TRAFFIC CITATION, SUMMONS, ACCUSATION / WARNING

SS NR-GA 0440100

06054

Court Case Number

NCIC NO

CITY OF DECATUR POLICE DEPARTMENT

Upon Date Month (Day) (Yr) at AM PM

License Class or Type Expires State License No

Name (Last) (First) (Middle)

Address

City State Zip Code

DOB Hair Hgt Wgt Sex Eyes

Veh Yr Make Style Color

Registration No Yr State ACCIDENT

Upon the Public Highway and/or Street did unlawfully Operate Park Vehicle in the city County within the State of Georgia And did therefore commit the following offense

EXCESSIVE SPEED MPH MPH Zone RADAR Radar Serial #

While under the influence of Alcohol and/or Drugs (DUI) Calibrated

Test given BLOOD BREATH URINE OTHER Results

OFFENSE (other than above)

In Violation of Section of State Law Local Ordinance

REMARKS

RELEASED TO

Table with columns: WEATHER, CONDITION, ROAD, TYPE, TRAFFIC, LIGHT. Includes checkboxes for CLEAR, CLOUDY, RAINING, OTHER, DRY, WET, ICE, OTHER, CONCRETE, BLACKTOP, DIRT, OTHER, LIGHT, MEDIUM, HEAVY, DAYLIGHT, DARKNESS, OTHER.

County of AND Miles of

City on At or Near Mile Post

OFFICER Badge # Div

You are hereby ordered to appear in Court to answer this charge on day of 19 at AM PM in the RECORDER'S

Court at 420 WEST TRINITY PLACE

City DECATUR Georgia

LICENSE SURRENDERED IN LIEU OF BAIL YES NO

SIGNATURE ACKNOWLEDGES SERVICE OF THIS SUMMONS AND RECEIPT OF COPY OF SAME.

SIGNATURE Pursuant to Georgia Code 17-6-11, if license is surrendered in Lieu of Bail, copy of citation shall serve as a temporary driver license until court date, or for not more than 45 days from date of citation, whichever is shorter

ARRESTING OFFICERS CERTIFICATION

The undersigned, being duly sworn, upon his oath disposes and states that he has just and reasonable grounds to believe and does believe, that the person named herein has committed the offense herein set forth, contrary to law

SIGNATURE Signature of Officer Badge #

Sworn to and subscribed before me this day of 19

SIGNATURE AND TITLE AUTHORIZED AND APPROVED PURSUANT TO CODE 40-13-1 O.P.S. Reg. 570.19

COURT COPY









FENDANI	CHARGE	PLEA	BOND	ADJ	FINE/TIME	STATE%	POR	TOTAL
GADES DARRYL	SPEED 49/35		42.00	FTD		4.20	4.00	42.00
GADES TERESA L	SPEED 49/35		42.00	FTD		4.20	4.00	42.00
CHARLSON JULIE	SPEED 47/30		51.00	FTD		5.10	5.00	51.00
VERA MARITZA	SPEED 53/35		54.00	FTD		5.40	5.00	54.00
SS WILLIAM	SPEED 42/35		39.00	FTD		3.90	4.00	39.00
DOW SUSAN	SPEED 45/30		45.00	FTD		4.50	4.00	45.00
UMATE BILLY FRED	SPEED 50/35		45.00	FTD		4.50	4.00	45.00
MS KATHY ELLEN	RED LIGHT		50.00	FTD		5.00	4.00	50.00
MS KATHY ELLEN	EXP LIC			P.C.	20.00			20.00
GAN OREG	SPEED 48/35							CO91393
ITH JOSEPH	SPEED 38/25		39.00	FTD		3.90	4.00	39.00
ITH VICTOR	STOP SIGN		50.00	FTD		5.00	4.00	50.00
IVEY ELIZABETH	SPEED 43/30		39.00	FTD		3.90	4.00	39.00
OMPSON LINDA L	SPEED 53/35		54.00	FTD		5.40	5.00	54.00
OTSI HUGH	F/OBEY T/C DEV		50.00	FTD		5.00	4.00	50.00
RSHON KAREN	SPEED 53/35		54.00	FTD		5.40	4.00	54.00
RWEDEL PAUL	SPEED 49/35		42.00	FTD		4.20	4.00	42.00
TSON TOMMY LEE	SPEED 37/25		36.00	FTD		3.60	4.00	36.00
GGINS JAMES	SPEED 47/35		50.00	FTD		5.00	4.00	50.00
ZIN GARY M	SPEED 51/35		48.00	FTD		4.80	4.00	48.00
ITH BETTY JO	SPEED 48/35		39.00	FTD		3.90	4.00	39.00
TTNER ROBERT	SPEED 49/30		42.00	FTD		4.20	4.00	42.00
RDAN CORNELIA	SPEED 43/30		39.00	FTD		3.90	4.00	39.00
NGLEY JORRE	SPEED 43/30		39.00	FTD		3.90	4.00	39.00

Example of Court Calendar