November 1984

This manual explains the installation procedure for the SHOP FLOOR
GATEWAY. It specifies the VAX/VMS parameters that should be set or
adjusted to optimize performance. The Release Notes provide.
additional information about SHOP FLOOR GATEWAY.

SHOP FLOOR GATEWAY

Software Installation Guide/Release Notes

SUPERSESSION/UPDATE INFORMATION: This is a new document
                                    for this release.

OPERATING SYSTEM AND VERSION: VAX/VMS V3. 5

SOFTWARE VERSION: SHOP FLOOR GATEWAY
                                    Version 1. 0

ORDER NUMBER:

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PREFACE

1.0   Manual Objectives

The **SHOP FLOOR GATEWAY Software Installation Guide/Release Notes** manual shows how to install the SHOP FLOOR GATEWAY on VAX/VMS and provides additional information about tailoring the product for specific applications.

2.0   Audience

This manual is intended for individuals responsible for setting up and maintaining the VAX/VMS operating system and SHOP FLOOR GATEWAY software.

3.0   Prerequisites

Readers of this manual should have a solid understanding f VAX/VMS operations and administration and VAX application oftware. In addition, a knowledge of the specific requirements of the installation site is essential.

4.0   Structure of This Document

This manual is organized as follows:

Chapter 1:   Gives an overview of SHOP FLOOR GATEWAY.

Chapter 2:   Describes procedures to perform prior to installation.

Chapter 3:   Describes the SHOP FLOOR GATEWAY distribution kit, installation prerequisites, and the actual installation procedure.

Chapter 4:   Contains Release Notes which you should read before installing SHOP FLOOR GATEWAY. This chapter includes information not included elsewhere in the documentation set, changes made late in the development cycle, software errors, and documentation omissions.

Appendix A: Shows a sample installation procedure.

Appendix B: Gives information needed to modify drivers for Allen-Bradley devices.

Appendix C: Gives information needed to modify drivers for Modicon device support.

Appendix D: Gives information about DEC terminal device support.

5.0 Associated Documents

Further information on various topics covered in this manual may be found in the following manuals:

o DECnet VMS System Manager's Guide

    (order number AA-H803B-TE)

o DECnet-M Version 3.1 System Manager's Guide

o RSX11-M Version 4.1 System Manager's Guide, Installation Guide

o RSX11-S Version 4.1 System Manager's Guide, Installation Guide

o BASEWAY Installation Guide/Release Notes (order number XX-12345-01)

o SHOP FLOOR GATEWAY Installation Guide/Release Notes (order number XX-12355-01)

o BASEWAY System Programmer's Guide

    (order number XX-12346-01)

o BASEWAY User's Manual and Utilities Guide

    (order number XX-12347-01)

o VAX Software Installation Guide

    (order number AA-M545A-TE)

o VAX/VMS Command Language User's Guide

    (order number AA-D023B-TE)

o   VAX/VMS System Manager's Guide

    (order number AA-M547A-TE)

6.0   Disposition of Software Performance Reports (SPRs)

        Questions, problems, and enhancements to Digital software
should be reported on a Software Performance Report (SPR) form
and mailed to the appropriate Digital office.   Only one
problem should be described concisely on each SPR form.
Please include all programs and data in machine-readable form
and reference the SPR form number on the materials.

Preface

CHAPTER 1

OVERVIEW OF SHOP FLOOR GATEWAY

The SHOP FLOOR GATEWAY serves as a data collector which interfaces a network of programmable devices with a user application. The GATEWAY can work together with Digital's BASEWAY product which provides application program communications and control functions. A manufacturing application built on Digital's BASEWAY can use the GATEWAY to read and write to programmable devices on the shop floor.

1.1 Terminology

The following terminology is used in descriptions of the SHOP FLOOR GATEWAY system:

gateway--a PDP-11 processor running the SHOP FLOOR GATEWAY. There may be up to four PDP-11/24s or PDP-11/44s per system (running memory-only RSX-11S operating system), DECnet-11S, and SHOP FLOOR GATEWAY application software.

host node--a VAX/VMS DECnet node that is physically adjacent to the gateway node. This node will be used to downline DECnet load the GATEWAY software to the PDP-11 processor. The SHOP FLOOR GATEWAY software must be installed on the host node for each gateway. A VAX may be the host node for more than one gateway, but each gateway must have one and only one host node. There may be up to four VAX/VMS processors which communicate with the SHOP FLOOR GATEWAY and receive data from it.

application--a group of processes running on a VAX/VMS system that will send and receive data to the gateway. Applications appear as a logical node to the gateway. A gateway can communicate with more than one application, and an application can communicate with more than one gateway.

1.5 Tailoring the SHOP FLOOR GATEWAY

At times you may wish to tailor the SHOP FLOOR GATEWAY to fit your needs; for example, you might want to add new devices or modify system images.

NOTE: Devices must be supported by the current version of BASEWAY to be added.

The SHOP FLOOR GATEWAY software to be downloaded to the PDP-11/24 is located in the SFG$SYSTEM: directory. The system image is GATEWAY.SYS and is created by the command file SFG$SYSTEM:GATEWAY.COM. This runs the RSX utility VMR (Virtual Monitor Routine) and the RSX DECnet utility VNP (Virtual Network Program). VMR is responsible for setting up partitions, loading drivers, and installing and running tasks in GATEWAY.SYS. It uses commands from the file SFGVMR.CMD. VNP is responsible for setting up DECnet data structures and attributes in the SFG system image. It uses commands from the file SFGVNP.CMD.

To change references to drivers, expand partitions, add tasks to GATEWAY.SYS, modify the SFGVMR.CMD file and invoke GATEWAY.COM. If it is necessary to alter some of the DECnet attributes, modify SFGVNP.CMD and invoke GATEWAY.COM.

It is not possible to generate the RSX-11S system itself with the files distributed as part of the SHOP FLOOR GATEWAY package. Nor is it possible to rebuild DECnet.

It is possible, however, to do the following:

o   add or modify some programs run as part of the SHOP FLOOR GATEWAY system

o   add or modify device drivers

o   modify some DECnet attributes through the VNP (Virtual Network Program)

For further information, see Appendixes B, C, and D.

1.3 Hardware Requirements

- VAX 11/750 or 11/780 (memory size dependent upon application)

- PDP-11/24 (or PDP-11/44) with a minimum of 512K bytes of memory for RSX-11S, DECnet-11S, SHOP FLOOR GATEWAY tasks, and the dynamic programmable device database (more devices and larger messages may require more memory)

- DMR-11 line interface to support DECnet links between the VAX and PDP 11/24, including the automatic boot module for the 11/24.

- DZ-11 asynchronous interfaces for communicating with shop floor devices; one (1) for

    . each set of 8 Modicon lines

    . each set of 8 Allen-Bradley lines

    . each set of terminal lines

1.4 Software Requirements

- DECnet-S, Version 3.1

- RSX-11S, Version 4.1

- VAX/VMS, Version 3.5

- BASEWAY, Version 1.0

NOTE: When the SHOP FLOOR GATEWAY is installed on a system using VAX/VMS Version 4.0 or later, VAX RSX is required as a prerequisite.

1.2   Network Configuration Supported

The system may be tailored to   meet   your   specific   needs.   See
Section 1.5 and Appendixes B, C, and D.

```
            +---------------+
            ! (user-written!
            ! application) !
            +---------------+
            ! BASEWAY       !
            +---------------+
                  !
                  !
                  !
            +---------------+
            !   PDP-11/xx   !
            !   SHOP FLOOR  !
            !   GATEWAY     !
            +---------------+
            !DZ ! !DZ ! !DZ!
            +---+ +---+ +--+
                        !!!!   vendor-specific
                        !!!!     protocol
                        !!!!
                        +---+
                        ! PD ! programmable devices,
                        +---+   bar code readers, etc.
```

Figure 1.   Typical Configuration

CHAPTER 2

PREPARING FOR INSTALLATION

2.1 Preliminary Steps

DECnet must be installed and the names of the host and shop floor gateways that will be monitored by a single application must be defined as DECnet nodes before the PDP-11/24s can be downloaded. There must be one node for each gateway.

Each GATEWAY DECnet node must have specific characteristics defined manually before BASEWAY is installed. See the RSX DECnet System Manager's Guide for information on using the NCP utility. The following is an example GATEWAY definition:

```
$ RUN SYS$SYSTEM: NCP
NCP> DEFINE NODE "NODE"                     -
            ADDRESS "ADDRESS"               -
            SERVICE CIRCUIT "NAME"          -
            LOAD FILE "FILENAME"
```

where "node" must be the name of the gateway (each DECnet node must have a unique node name), "address" must be a unique node ID number, "name" is the service circuit name, and "filename" is the file to be loaded.

An example node definition is given below:

```
$   RUN SYS$SYSTEM: NCP
NCP> DEFINE NODE GATE01
        ADDRESS 4
        SERVICE CIRCUIT DMC-0
        LOAD FILE SFG$SYSTEM: GATEWAY. SYS
```

After defining various nodes, you can see if the desired characteristics are set up properly by running NCP.

```
$  RUN SYS$SYSTEM: NCP
NCP> SET NODE GATE01 ALL
NCP> SHOW CHAR NODE GATE01

Node Volatile Characteristics as of 28-SEP-84 07:55:00

Remote node = 4 (GATE01)

Service circuit              = DMC-0
Load file                    = SFG$SYSTEM: GATEWAY. SYS

NCP> ^Z

$
```

NOTE: The node is now defined to both the permanent and volatile
databases.

2.2 Default CSR and Vector Assignments

In order to set up the SHOP FLOOR GATEWAY properly, the CSR
(Control and Status Register) and vector addresses of certain devices
must either conform with those in the standard SHOP FLOOR GATEWAY or
the recommended software must be tailored after installation (see
section 1.5).

Device		CSR	Vector
DMR from SHOP FLOOR GATEWAY to host		160070	310
RS-232	DZ11 (first 8 lines)	160150	360

CHAPTER 3

INSTALLING THE SOFTWARE

The system manager should be familiar with the installation process as described herein for use in installing upgrades and updates.

Depending on the mass storage device and the system load, the installation of SHOP FLOOR GATEWAY may take from 10 to 30 minutes.

3.1 Backing Up the System Disk Before Software Installation

It is recommended that the system disk be backed up prior to installation. The procedure for doing the backup is described in the VAX Software Installation Guide.

3.2 Contents of the Distribution Kit

The GATEWAY installation kit is distributed on magnetic tape. All files required to install and tailor the SHOP FLOOR GATEWAY system are contained on the distribution.

Each volume is labeled with an external serial number corresponding to the SHOP FLOOR GATEWAY product number and has a unique volume label.

Volume Label	Medium	Contents
SFG010	1600 bpi magnetic tape	SHOP FLOOR GATEWAY installation procedures and software

Installing the Software

NOTE: Be sure to check that the distribution kit you receive contains everything listed in the bill of materials enclosed with it.

3.3 Installation Procedure

3.3.1 Preliminary Requirements

> NOTE: SHOP FLOOR GATEWAY requires VAX/VMS Version 3.5 or later.

- o approximately 5000 blocks (SFG peak usage) during installation;

- o approximately 4900 blocks (SFG net usage) after installation;

- o previous installation of VAX RSX (when installed on system with VAX/VMS Version 4.0 or later);

- o previous installation of BASEWAY (Version 1.0) and VAX-DECnet (Version 3.0).

3.3.2 Instructions for Installation

Messages are printed at your terminal during the installation procedure. Most are simple "Yes" or "No" questions which require either a Y or N response.

Proceed as follows at the console terminal (user input is shown in uppercase letters):

3.3.2.1 STEP 1: Log In to the System Manager's Account –

1. Log in under a privileged system manager's account, as shown in the following example:

```
cr
Username:  SYSTEM cr
Password:     cr
```

2. Now set up the proper group and user number and set the default directory to SYSUPD as follows:

```
$ SET UIC [1,4]
$ SET DEFAULT SYS$UPDATE
```

3.3.2.2   STEP 2:   Invoke VMSINSTAL -

When you invoke VMSINSTAL, it checks the following:

o   Are you logged into the system manager's account?

        It is recommended that you install layered software from
    the system manager's account. However, any account with the
    necessary privileges is acceptable.

o   Do you have adequate account quotas for installing layered
    products?

        As long as the quotas listed in Section 2.2.1 are met,
    you can continue with the installation.

o   Is DECnet up and running?

        You should bring down DECnet before installing BASEWAY.
    Although the installation may succeed, problems can occur if
    someone tries to access any file associated with SHOP FLOOR
    GATEWAY   (including   the   system HELP files) during the
    installation.

o   Are any users logged into the system?

        Users should be asked to log out before SHOP FLOOR
    GATEWAY is installed. Although the installation may succeed,
    problems can occur if someone tries to use SHOP FLOOR GATEWAY
    while the installation is in progress.

    If any of these conditions are noted, VMSINSTAL will give you an
opportunity to stop the installation procedure (see below):

To invoke VMSINSTAL, enter the following:

    $ @VMSINSTAL SFGnnn ddn:

The VMSINSTAL command procedure takes two parameters:

1. product name--for SHOP FLOOR GATEWAY, the name always begins
    with "SFG" and ends with a 3-digit version number. For
    example, Version 1.6 would be called SFG016.   Hereinafter,
    this document will refer to the version number as Vn.n.

2. device name--device names have the form ddn:, where dd is the
    device code and n is the unit number. For example, the first
    floppy diskette drive would be called "DY0:".

NOTE: It is not necessary to use the console drive for nstalling SHOP FLOOR GATEWAY. However, if you do use it, be sure to replace any media you may have found in the drive when the installation is complete.

VAX/VMS Software Product Installation Procedure

It is dd-mmm-19yy at hh:mm.
Enter a question mark (?) at any time for help.

Are you satisfied with the backup of your system disk [YES]? Y

If you feel that there are conditions which may adversely affect the installation, enter N. To continue, enter the letter Y (or press RETURN). Note that the VMSINSTAL procedure gives the default user response in brackets.

3.3.2.3 STEP 3:   Insert the First Installation Kit Volume -

Please mount the first volume of the set on ddn:.

Insert the first volume of the distribution kit in the tape drive.   Enter "Y" when you are ready to continue. Note that you must explicitly enter a "Y" or "N"; pressing RETURN is not an adequate response here.

* Are you ready? Y

The SHOP FLOOR GATEWAY installation procedure now assumes control.   The procedure checks to see that there is adequate disk space to build the product. If not, it issues an error message and terminates.   Otherwise, the procedure processes the first volume of the backup save set.

NOTE: If the SYSGEN parameters MOUNTMSG or DISMOUMSG at your site have been set to 1, you will receive a message from OPCOM each time a disk, tape, or floppy diskette is mounted or dismounted. These messages are normally disabled, but if they have been activated and you are installing from a console terminal, they will appear from 1 to 30 seconds after each mount or dismount.

%MOUNT-I-MOUNTED, SFGnnn mounted on dnn:

The following products will be installed:

SFG Vn.n   _

Beginning installation of SFG Vn.n at hh:mm

%VMSINSTAL-I-RESTORE, Restoring product saveset A...

At this point, if you need to exit from the installation
procedure, you must press CTRL/Y.

NOTE: If you press CTRL/Y, the installation procedure deletes
all files it has created up to that point and exits.

> SFGSTART.COM, the startup procedure, is used to set up the
> environment for SHOP FLOOR GATEWAY downline loading and tailoring.
> During installation it will be placed in the [SYSMGR] directory
> of the system root on which this installation is being performed.
> SYSTARTUP.COM, your system startup procedure, should be modified
> to invoke this procedure when the system boots. However, it will
> not be necessary to reboot the system after the installation, since
> this procedure is invoked as part of the installation.
>
> If you have not already set up the DECnet database for downline
> loading this SHOP FLOOR GATEWAY, please do so after this
> installation.
>
> %VMSINSTAL-I-MOVEFILES, Files will now be moved to their target
> directories...

The Installation Verification Procedure (IVP) next runs tests to
check that the installation procedure was successful.

> Installation Verification Procedure (IVP) starting
>
> The installation verification procedure tests that the SHOP FLOOR
> GATEWAY was installed correctly by rebuilding the software system
> image that will be downline loaded to a SHOP FLOOR GATEWAY computer.
>
> Several of the compatibility mode utilities used in the IVP log their
> normal actions to SYS$OUTPUT. These messages will not be in the
> standard VMS message format. If an error occurs, the IVP will attempt
> to detect it.
>
> Please ignore the following "VMR -- *DIAG* and "VNP -- SET" messages.
>
> VMR -- *DIAG*-Loadable driver larger than 4K
> LOA TT:/PAR=DRVPAR   !   TERMINALS
> VMR -- *DIAG*-Installed tasks may no longer fit in partition
> SET /TOP=DRVPAR:-*
> VMR -- *DIAG*-Installed tasks may no longer fit in partition
> SET /TOP=INIPAR:-*
> VNP -- SET PROCESS AUX
> VNP -- SET PROCESS ECL

```
VNP -- SET PROCESS XPT
VNP -- SET LINE DMC-0-0 CSR 160070 VEC 310 PRI 5
```

The installation verification of SHOP FLOOR GATEWAY vn.n was successful.

Successful installation of SFG Vn.n at hh:mm

SHOP FLOOR GATEWAY images and libraries are now successfully installed.

You may now install more products, or you can end the installation procedure. To end the installation procedure, type EXIT (or press RETURN).

Enter the products to be installed from the next distribution volume set.
* Products [EXIT]: EXIT

VMSINSTAL procedure done at hh:mm

$

If you removed any media from the console drive before beginning, you can replace it now.

The SHOP FLOOR GATEWAY system is now installed and can be downline loaded with the NCP trigger command:

```
$RUN SYS$SYSTEM:NCP
NCP > TRIGGER NODE GATE01
```

3.3.3 Error Conditions

If the installation procedure or IVP fail for any reason, the following messages are displayed:

```
%VMSINSTAL-E-SFGFAIL, The installation of SFG Vn.n has failed.
%VMSINSTAL-E-IVPFAIL, The IVP for SFG Vn.n has failed.
```

An error during the installation or IVP can be caused by one or more of the following conditions:

o insufficient disk space to complete the installation

o   insufficient system virtual page count parameter

o   insufficient process paging file quota

o   insufficient process working set quota

o   insufficient system maximum working set

o   corrupt distribution

To change a system parameter, or to increase an authorized quota value, you may need to contact your installation system manager.

3.4 Backup Procedure After Installation

After installing SHOP FLOOR GATEWAY you should back up the system disk and save the original for future reference. See the VAX Software Installation Guide for information on the proper procedure.

3.5 SHOP FLOOR GATEWAY Directory Structures

Root directory	SYS$SYSROOT: [SFG]
GATEWAY parameter and global library	SYS$SYSROOT: [SFG. LIBRARY]
Device interface modules	SYS$SYSROOT: [SFG. SOURCE. DIM]
Direct I/O server	SYS$SYSROOT: [SFG. SOURCE. DIRSRV]
Generic I/O server	SYS$SYSROOT: [SFG. SOURCE. GENSRV]
Mailbox driver	SYS$SYSROOT: [SFG. SOURCE. MAILBOX]
Allen-Bradley PLC driver and ACP	SYS$SYSROOT: [SFG. MAILBOX. ALLENB]
Modicon programmable device driver and ACP	SYS$SYSROOT: [SFG. MAILBOX. MODICON]
Polled I/O server	SYS$SYSROOT: [SFG. SOURCE. POLSRV]
Utility source files	SYS$SYSROOT: [SFG. SOURCE. UTILITY]
RSX-11S support files	SYS$SYSROOT: [SFG. SUPPORT]
System image and task files	SYS$SYSROOT: [1, 64]

3.6 GATEWAY Logical Names

SFG$SYSTEM   "SYS$SYSROOT:[001064]"

3.7 Complete List of Installed Files

Filename	Purpose

SYS$SYSROOT:[SYSMGR]

SFGSTART.COM   GATEWAY startup command file

SYS$SYSROOT:[1,64]

AUX.DAT	Required file for DECnet-11S
AUX.STB	Required file for DECnet-11S
AUX.TSK	Required file for DECnet-11S
BASMCR.TSK	Required file for RSX-11S
BUSWCH.TSK	SHOP FLOOR GATEWAY Bus Watcher task
CETAB.MAC	Required file for DECnet-11S
CETAB.STB	Required file for DECnet-11S
CETAB.TSK	Required file for DECnet-11S
CEX.STB	Required file for DECnet-11S
CEX.TSK	Required file for DECnet-11S
COMINI.TSK	Initialization task for common areas
DIRSRV.TSK	SHOP FLOOR GATEWAY Direct Service server task
DLX.DAT	Required file for DECnet-11S
DLX.STB	Required file for DECnet-11S
DLX.TSK	Required file for DECnet-11S
DLXTAB.STB	Required file for DECnet-11S
DLXTAB.TSK	Required file for DECnet-11S
DMC.DAT	Required file for DECnet-11S
DMC.STB	Required file for DECnet-11S
DMC.TSK	Required file for DECnet-11S
DTR.TSK	Required file for DECnet-11S
DTS.TSK	Required file for DECnet-11S
ECL.DAT	Required file for DECnet-11S
ECL.STB	Required file for DECnet-11S
ECL.TSK	Required file for DECnet-11S
ECLTAB.STB	Required file for DECnet-11S
ECLTAB.TSK	Required file for DECnet-11S
GATEVP.TSK	SHOP FLOOR GATEWAY Event Processor task
GATEWAY.COM	Command file to create GATEWAY system image
GATEWAY.STB	SHOP FLOOR GATEWAY symbol table
GATEWAY.SYS	SHOP FLOOR GATEWAY system image

GENSRV.TSK	SHOP FLOOR GATEWAY Generic Server task
KZDRV.STB	Allen-Bradley 13/NET DZ-11 device driver
KZDRV.TSK	Allen-Bradley 13/NET DZ-11 device driver
LOGDEFS.COM	Commands to set up environment for GATEWAY tailoring
MBDRV.STB	Mailbox device driver
MBDRV.TSK	Mailbox device driver
MBINIT.TSK	Initialization task for mailbox driver
MDH11S.TSK	Initialization task for 13/NET support
MIR.STB	Required file for DECnet-11S
MIR.TSK	Required file for DECnet-11S
MMO11S.TSK	Initialization task for Modicon support
MODACP.TSK	Modicon Modbus ACP
MZDRV.STB	Modicon Modbus device driver
MZDRV.TSK	Modicon Modbus device driver
NCP.TSK	Required file for DECnet-11S
NDA.TSK	Required file for DECnet-11S
NET.TSK	Allen-Bradley 13/NET ACP
NETACP.STB	Required file for DECnet-11S
NETACP.TSK	Required file for DECnet-11S
NETINT.TSK	Required file for DECnet-11S
NICE.TSK	Required file for DECnet-11S
NTINIT.STB	Required file for DECnet-11S
NTINIT.TSK	Required file for DECnet-11S
OVDRV.STB	Required file for RSX-11S
OVDRV.TSK	Required file for RSX-11S
POLSRV.TSK	SHOP FLOOR GATEWAY Polled Data server task
RSDV1H.TSK	Required file for RSX-11S
RSX11S.STB	Required file for RSX-11S
RSX11S.TSK	Required file for RSX-11S
SFGVMR.CMD	VMR command file for generating GATEWAY system
SFGVNP.CMD	VNP command file for generating GATEWAY system
SLD.TSK	Required file for RSX-11S
STATUS.STB	SHOP FLOOR GATEWAY common area
STATUS.TSK	SHOP FLOOR GATEWAY common area
TKN.TSK	Required file for RSX-11S
TSKWCH.TSK	SHOP FLOOR GATEWAY Task Watcher task
TTDRV.STB	RSX-11S Terminal Driver
TTDRV.TSK	RSX-11S Terminal Driver
XPT.DAT	Required file for DECnet-11S
XPT.STB	Required file for DECnet-11S
XPT.TSK	Required file for DECnet-11S

SYS$SYSROOT: [SFG.LIBRARY]

DIMLIB.OLB	Gateway object library containing DIMs
DIMMAC.MLB	Macro library containing DIM parameters
MACROLIB.MLB	Macro library containing GATEWAY parameters
SFGLIB.OLB	Object library containing GATEWAY library routines

SYS$SYSROOT: [SFG.SOURCE.DIM]

```
        DEVVEC.MAC       DIM device vector table
        XXDIM.MAC        Sample DIM source file
```

SYS$SYSROOT: [SFG. SOURCE. DIRSRV]

```
        DIRSRV.OLB       DIRSRV.TSK objects
        DIRSRV.TKB       Command file to rebuild DIRSRV.TSK
```

SYS$SYSROOT: [SFG. SOURCE. GENSRV]

```
        GENSRV.OLB       GENSRV.TSK objects
        GENSRV.TKB       Command file to rebuild GENSRV.TSK
```

SYS$SYSROOT: [SFG. SOURCE. MAILBOX]

```
        MAILBOX.BLD      Command file to rebuild mailbox driver
        MBDRV.MAC        Mailbox driver source
        MBDRV.OLB        Object library containing mailbox driver
        MBDRV.TKB        Command file to relink mailbox driver
        MBINIT.MAC       Mailbox driver initialization task
        MBINIT.TKB       Command file to relink MBINIT.TSK
        MBTAB.MAC        Device driver data structures for mailbox driver
```

SYS$SYSROOT: [SFG. SOURCE. PCSUPPORT. ALLENB]

```
        13NET.BLD        Command file to rebuild 13/NET
        KZDRV.BLD        Command file to rebuild 13/NET driver
        KZDRV.TKB        Command file to relink 13/NET driver
        KZTAB.MAC        Symbol table for 13/NET driver
        MDH11S.BLD       Command file to rebuild initialization task
        MDH11S.MAC       Initialization task source file
        MDH11S.TKB       Command file to relink initialization task
        NET.BLD          Command file to rebuild 13/NET ACP
        NET.TKB          Command file to relink 13/NET ACP
        NETBUF.MAC       Network buffer source file
        NETDATA.MAC      Network data source file
        NETMAC.MAC       Parameter source file
        NETWORK.OLB      Object library containing 13/NET routines
```

SYS$SYSROOT: [SFG. SOURCE. PCSUPPORT. MODICON]

```
        ACPOOL.MAC       Source file for ACP
        MM011S.MAC       Source file for initialization task
        MODACP.MAC       Source file for ACP
        MODDEF.MAC       Source file for ACP
        MODDRV.ASM       Command file to reassemble Modicon driver
        MODDRV.BLD       Command file to rebuild Modicon driver
        MODDRV.OLB       Object library containing Modicon driver
        MODDRV.TKB       Command file to relink Modicon driver
        MODMAC.MAC       Source file for ACP
        MODML.MLB        Macro library for ACP
```

```
        MODPRE.MAC      Prefix file containing Modicon parameters
        MZDRV.MAC       Source file for driver
        MZTAB.MAC       Source file for driver database
```

SYS$SYSROOT:[SFG.SOURCE.POLSRV]

```
        POLSRV.OLB      POLSRV.TSK objects
        POLSRV.TKB      Command file to rebuild POLSRV.TSK
```

SYS$SYSROOT:[SFG.SOURCE.UTILITY]

```
        COMINI.TKB      Command file to relink COMINI.TSK
        POOL.TKB        Command file to relink POOL.TSK
        UTILITY.OLB     Object library containing utility routines
```

SYS$SYSROOT:[SFG.SUPPORT]

```
        11SLIB.OLB      RSX-11S object library
        EXELIB.OLB      RSX-11S object library
        EXEMC.MLB       RSX-11S macro library
        RSXMAC.SML      RSX-11S macro library
        RSXMC.MAC       RSX-11S parameter source file
        SYSLIB.OLB      RSX-11S object library
        VMR.TSK         RSX-11S VMR task
        VNP.TSK         DECnet-11S VNP task
```

CHAPTER 4

RELEASE NOTES

This chapter contains information important to the installation and operation of the SHOP FLOOR GATEWAY.

4.1 Operation Without an Application

Normally, the SHOP FLOOR GATEWAY will continue operating without an application running. Messages that are destined for an application are purged. When the application starts again, the GATEWAY will continue sending messages with the next poll.

SAMPLE INSTALLATION PROCEDURE

```
$ SET UIC [1,4]
$ SET DEFAULT SYS$UPDATE
$ @VMSINSTAL SFG010 MSA0:
```

VAX/VMS Software Product Installation Procedure

It is 1-JUN-1984 at 12:05.
Enter a question mark (?) at any time for help.

* Are you satisfied with the backup of your system disk [YES]? YES

 lease mount the first volume of the set on MSA0:.
* Are you ready? YES

%MOUNT-I-MOUNTED, SFG010   mounted on _MSA0:

The following products will be installed:

  SFG V1.0

        Beginning installation of SFG V1.0 at 12:07

%VMSINSTAL-I-RESTORE, Restoring product saveset A...

SFGSTART.COM, the startup procedure, is used to set up the environment
for SHOP FLOOR GATEWAY downline loading and tailoring. During
installation it will be placed in the [SYSMGR] directory of the system
root on which this installation is being performed. SYSTARTUP.COM,
your system startup procedure, should be modified to invoke this
procedure when the system boots. However, it will not be necessary to
reboot the system after the installation, since this procedure is
invoked as part of the installation.

Sample Installation Procedure

If you have not already set up the DECnet database for downline loading
this SHOP FLOOR GATEWAY, please do so after this installation.

%VMSINSTAL-I-MOVEFILES, Files will now be moved to their target directories...

              Installation Verification Procedure (IVP) starting

The installation verification procedure tests that the SHOP FLOOR
GATEWAY was installed correctly by rebuilding the software system
image that will be downline loaded to a SHOP FLOOR GATEWAY computer.

Several of the compatibility mode utilities used in the IVP log their
normal actions to SYS$OUTPUT. These messages will not be in the
standard VMS message format. If an error occurs, the IVP will attempt
to detect it.

Please ignore the following "VMR -- *DIAG* and "VNP -- SET" messages.

    VMR -- *DIAG*-Loadable driver larger than 4K
    LOA TT:/PAR=DRVPAR   !   TERMINALS
    VMR -- *DIAG*-Installed tasks may no longer fit in partition
    SET /TOP=DRVPAR:-*
    VMR -- *DIAG*-Installed tasks may no longer fit in partition
    SET /TOP=INIPAR:-*
    VNP -- SET PROCESS AUX
    VNP -- SET PROCESS ECL
    VNP -- SET PROCESS XPT
    VNP -- SET LINE DMC-0-0 CSR 160070 VEC 310 PRI 5

The installation verification of SHOP FLOOR GATEWAY v1.0 was successful.

    Successful installation of SFG V1.0 at 12:32

Enter the products to be installed from the next distribution volume set.
* Products [EXIT]: EXIT

        VMSINSTAL procedure done at 12:35

APPENDIX B

ALLEN-BRADLEY DEVICE SUPPORT INFORMATION

B.1 Allen-Bradley Devices Supported

SHOP FLOOR GATEWAY currently supports Allen-Bradley PLC-2/30 and PLC-3 programmable devices. Up to 64 Allen-Bradley stations on each programmable device network are supported.

B.2 Publications

The following publication is useful if the user is writing a Device Interface Module (DIM) for unsupported Allen-Bradley devices, or another utility program:

o User's Guide to the Allen-Bradley Data Highway TM Network Communication Software (13/NET). (1) Available from Allen-Bradley Corporation.

---

1 Data Highway TM is a registered trademark of Allen-Bradley Corporation.

```
          +---------+
          !   VAX   !
          +---------+
               ! DECnet
               !/
               !
. . . . . . . .!. . . . . . . . . . . . . . . . . . . . . . . . . .
               !
               !            STATION 12          STATION 13
               !
               !
          +-------+
          !DMR-11!
          +-----------+        +---------+        +---------+
          !SHOP FLOOR !        !   PLC   !        !  PLC-3  !
          !GATEWAY    !        !         !        !         !
          +-----------+        +---------+        +---------+
               ! 9.6K Baud          ! 19.2K Baud         ! DMA
                                    !                    !
          STATION 10                !                    !
               !                    !                    !
               !                    !                    !
          +-------+            +-----------+        +-----------+
          !1771-KC!            ! 1774-KA   !        ! 1775-KA   !
          ! or -KD!            !           !        !           !
          ! or -KE!            +-----------+        +-----------+
          ! or -KF!                 !                    !
          +-------+                 !                    !
               !                    !                    !
          Data Highway TM      Communication        Communication
          Monitor Modem        Adapter Modem        Adapter Modem
               !                    !                    !
. . . . . . . .!. . . .D A T A . . . . . . .!. .H I G H W A Y  TM. .! . . . . . . . . .
                                    !Cup to 64 stations]
                                    !
                                    !
                               Communication
                               Adapter Modem
                                    !
                               +-----------+
                               ! 1771-KA   !
                               +-----------+
                                    !19.2K Baud
                               +-----------+
                               !PLC-2/30 A !
                               +-----------+
                               STATION 11
```

Figure 2. Typical Allen-Bradley Configuration

B.3 Modifying Allen-Bradley Drivers

The drivers provided for Allen-Bradley may need to be reassembled, task-built, and loaded into the system to accomplish the following:

o define the number of DZ11 controllers and units supported

o define the CSR and vectors for controllers

o define line characteristics such as baud rate

o set buffer sizes

The line characteristics for the DZ11 devices are defined as follows:

```
        Line Parameter Register
        ---------------------------------
        ! ! ! ! ! ! ! ! ! ! ! ! ! ! ! ! !
        ---------------------------------
            !< 8-11  >! ! !<3-4> <0-2>
            !        !  ! ! !  !     line number
            !        !  ! ! !  character length
            !     !   ! ! stop code
            !        !  ! parity
            !        !  odd parity
            !     speed select
        receiver on
```

The standard line parameter configuration for the DZ11 on Allen-Bradley drivers is octal 17030 plus the line number. This translates to 8 bits, 1 stop bit, no parity, speed=9600. If the octal code is written in decimal, the value is 7700.

The octal values to select the speed are given in the following table:

```
        300 baud = 2400
       1200 baud = 3400
       2400 baud = 5000
       4800 baud = 6000
       9600 baud = 7000
```

B.4 Default CSR and Vector Assignments

Device	CSR	Vector
Allen-Bradley DZ11 (first 8 lines)	160110	320
Allen-Bradley DZ11 (second 8 lines)	160120	330

B.4.0.1 Allen-Bradley 13/NET Modification -

Since the 13/NET package as implemented with this system is
stored on a VAX and it is presumed that development will take place on
a VAX, the command files which come with the 13/NET package for
generation are not generally useful. Instead, several VMS command
files and parameter files are available to rebuild the system. The
files are found in the directory
SYS$SYSROOT:[SFG.SOURCE.PCSUPPORT.ALLENB]:

Filename	Purpose
13NET.BLD	Reassembles and rebuilds (TKB) 13/NET.
NETBUF.MAC	Used to define the number and size of buffers, the number of logical units or lines to be supported, and the number of application tasks or requests which may be accessed simultaneously.
NET.TKB	Units parameter in the TKB options must equal the number of lines supported.
KZTAB.MAC	Contains the line description options for each line supported in the system, CSRs, and vectors for each DZ11.

The unit parameters are numbered from 0 to 7 for each DZ11. The
vector and CSR must agree with that set by hardware installation. All
lines on the same DZ11 must have the same values. The priority and
time parameters (intercharacter timeout in ticks) should not need to
be changed.

The LPR parameter refers to the Line Parameter Register described above.

B.4.0.1.1 Buffer Size Considerations —

The size and number of buffers are determined by the type of programmable device access which characterizes the application and the number of lines to be supported by the system.

For large transfers of data, as would occur in downline loading of programmable devices, the most efficient size is the largest (up to a maximum of 230). Small buffers are most useful when smaller amounts are being transmitted in a single operation, e.g., polling of a single register every ten seconds. In general, larger rather than smaller buffers are desirable, if there is room in the task. Refer to the memory map KZDRV.MAP to find out how much memory is available.

B.4.0.1.2 Driver Modification Procedure —

The following steps are necessary to modify the 13/NET driver/ACP:

1.   Invoke @SFG$SYSTEM:LOGDEFS.COM

2.   Edit the KZTAB.MAC file.

3.   Edit the NETBUF.MAC file.

4.   Edit the NET.TKB file.

5.   Execute the 13NET.BLD procedure (@13NET.BLD). This reassembles and rebuilds the driver/ACP.

6.   Copy the resulting KZDRV.TSK, NET.TSK, and KZDRV.STB to the SFG$SYSTEM directory (the SHOP FLOOR GATEWAY download task directory).

7.   Set the default to SFG$SYSTEM.

8.   Make modifications to SFGVMR; add another copy of the NET ACP for each 8 KZ lines.

9.   Run the VMR utility to set up the SHOP FLOOR GATEWAY system (@GATEWAY) again.

The next time the SHOP FLOOR GATEWAY system is booted, the new driver should be operational.

B.4.1 RSX-11S System Image

In order for the drivers to be used, they need to be loaded into
the RSX operating system as well as the ACP.   This is done through VMR
commands in the file SFGVMR.CMD.   Any modification to the distributed
Allen-Bradley configuration will require re-VMRing the GATEWAY and
possible modification of SFGVMR.CMD.

A copy of the 13/NET ACP must be installed for each group of 8
lines that the driver is built for.

If a third (or additional) group of 8 lines is needed, you will
need to increment the partition and task name (e.g., NET002, see
below)

Shown below are the current references to Allen-Bradley 13/NET
tasks.   Note that there are two (2) ACPs for 16 lines.

Allen-Bradley References in SFGVMR.CMD:

```
LOA KZ:                                    ! Allen-Bradley driver
SET/MAIN=NET000: *:  400: TASK
INS NET/PAR=NET000/TASK=NET000/FIX=YES     ! Ports 1--8
SET/MAIN=NET001: *:  400: TASK
INS NET/PAR=NET001/TASK=NET001/FIX=YES     ! Ports 9--16
INS MDH15S                                 ! Allen-Bradley
                                           ! initializer
                                           ! (MOUnt command)
                                           ! program
RUN MHD11S                                 ! Run Allen-Bradley
                                           ! initializer program
```

B.5 Keyswitch Positions for Downloading Allen-Bradley Devices

The following chart gives the keyswitch positions which must be used when downloading Allen-Bradley programmable devices.

Model	Keyswitch Position
Allen-Bradley 1772 PLC-2/30 with 1771-KA Data Highway TM Interface Card, Series A, Rev. F or later	PROGRAM or RUN/PROGRAM
Allen-Bradley 1772 PLC-2/30 with 1771-KA Data Highway TM Interface Card Prior to Series A, Rev. F	TEST or RUN/PROGRAM with PLC operating in REMOTE TEST mode (accomplished via Industrial Terminal)
Allen-Bradley 1775 PLC-3	MEMORY PROTECT OFF

```
+-------+----+---+                        +----------+---+
|       |    |   |                        | |--+     |   |
|       |  U |   |                        | | K |    |   |
|       |  Z |   |-----------------------|-| A |    |   |
|       |    |   |                        | |--+     |   |
|       |    |   |                        |          |   |
+-------+----+---+                        +----------+---+
```

25 Pin Female   25 Pin Female
Connector   Connector

```
DZ                                                    KA
+-+                                                   +--+
|2|-------------------------------------------------|2 |
| |                                                 |  |
|3|-------------------------------------------------|3 |
| |                                                 |  |
| |                                    +-------- |4 |
| |                                    |           |  |
| |                                    +-------- |5 |
| |                                                 |  |
|7|-------------------------------------------------|7 |
+-+                                                 |  |
                                       +-------- |6 |
                                       |           |  |
                                       +-------- |8 |
                                       |           |  |
                                       +-------- |20|
                                                   +--+
```

25 Pin Female   25 Pin Female
Connector   Connector

DZ	KA
Pin 2 Transmit Data (Tx)	Pin 2 Transmit Data (Rx)
Pin 3 Receive Data (Rx)	Pin 3 Receive Data (Tx)
Pin 7 Signal Ground (Gnd)	Pin 4 Request to Send (RTS)
	Pin 5 Clear to Send (CTS)
	Pin 6 Data Set Ready (DSR)
	Pin 7 Signal Ground (Gnd)
	Pin 8 Data Carrier Detect (DCD)
	Pin 20 Data Terminal Ready (DTR)
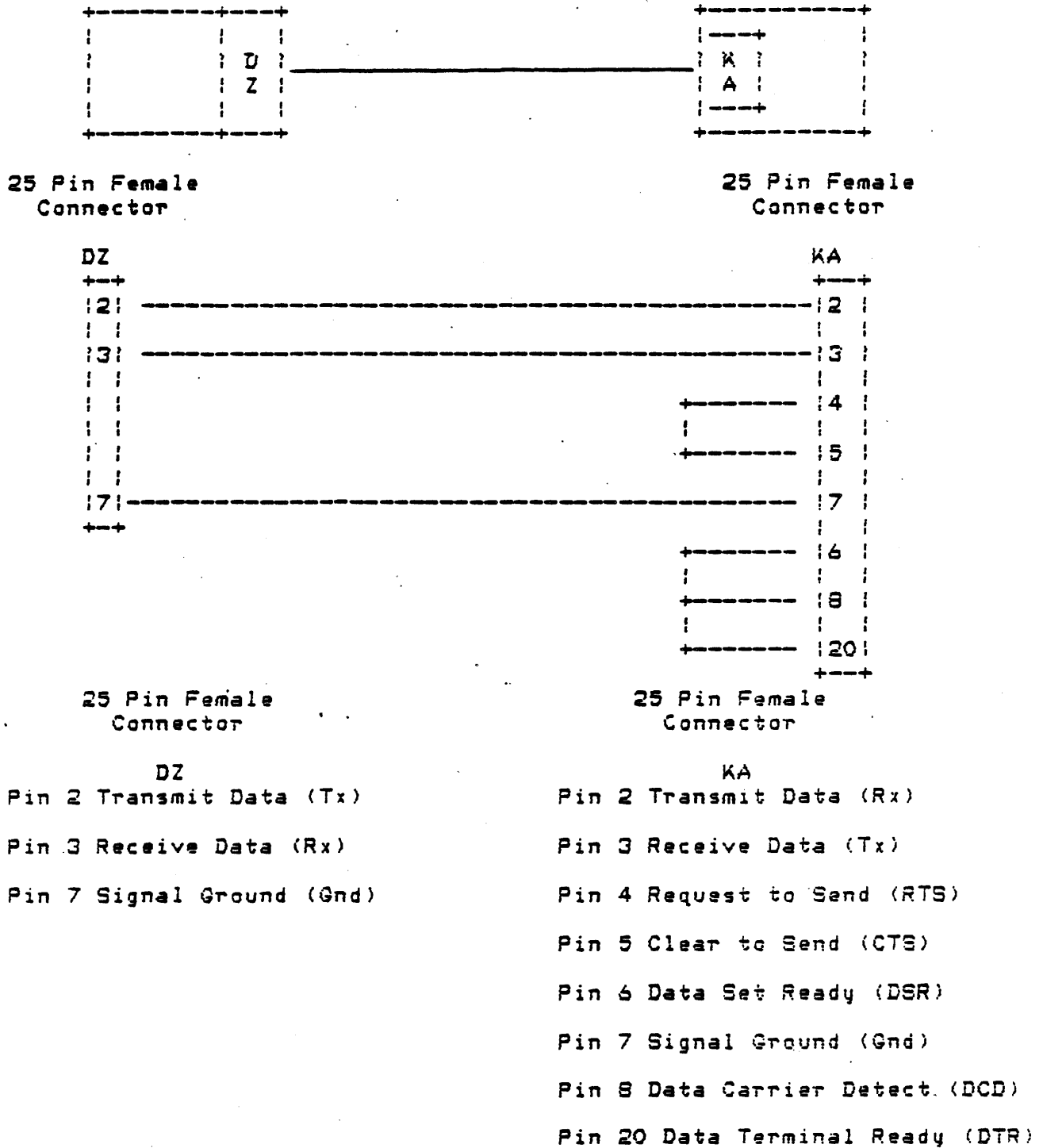
Figure 3.   Cable Wiring Diagram for Computer to
1775-KA Modem Connection
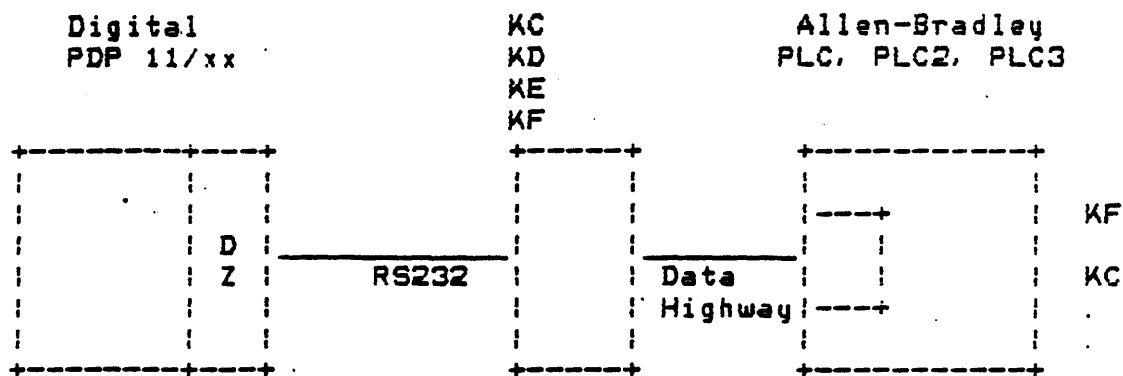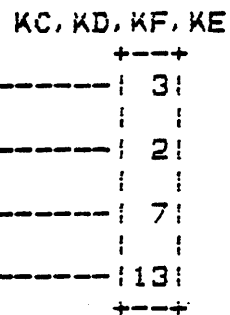
```
      Digital                  KC              Allen-Bradley
      PDP 11/xx                KD              PLC, PLC2, PLC3
                               KE
                               KF
    +-------+---+     +-----+                  +----------+
    |       |   |     |     |              |--->|          |  KF
    |     D |   |     |     |              |   |           |
    |     Z |   |---RS232---|     |---Data |   |           |  KC
    |       |   |     |     |     |Highway|--->+           |
    |       |   |     |     |     |          |             |
    +-------+---+     +-----+     +----------+
```

      25 Pin Female   15 Pin Female
       Connector   Connector

      DZ   KC, KD, KF, KE
    +-+   +--+
    |2|--| 3|
    | | | |
    |3|--| 2|
    | | | |
    |7|-------------------------------------+----| 7|
    +-+ | | |
                                            +----|13|
                                                 +--+

           25 Pin Female   15 Pin Female
            Connector   Connector

               DZ   KF, KC, ...

    Pin 2 Transmit Data (Tx)   Pin 2 Receive Data (Rx)

    Pin 3 Receive Data (Rx)   Pin 3 Transmit Data (Tx)

    Pin 7 Signal Ground (Gnd)   Pin 7 Signal Ground (Gnd)

                                       Pin 13

          Figure 4. Cable Wiring Diagram for Computer to
                  KC, KD, KE, or KF Interface

APPENDIX C

MODICON DEVICE SUPPORT INFORMATION

C.1 Devices Supported

The SHOP FLOOR GATEWAY currently supports Modicon 484 and 584 programmable devices.   Up to 32 Modicon devices on each programmable device network are supported.

```
                        +-----------+
                        !   VAX     !
                        !           !
                        +-----------+
                             !
                             !  DECnet
                             !/
                             !
. . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .
              !
          +-------------------+
          ! PDP-11/24         !
          !                   !
          +-------------------+
          !DZ-11              !
          +-------------------+
          ! ! ! ! ! ! ! ! !
          ! ! ! ! ! ! ! ! !
          !
          !   (up to 8
          !    per DZ)
          !
          +-----------------+
          ! J474            !
          +-----------------+
          !
          !
. . . . . . . . . . . . . . M O D B U S TM  (2) . . . . . . . . . . . . . . . . . .
                   !                 !
                   !                 !
              +---------+       +---------+
              ! J474    !       ! J474    !
              +---------+       +---------+
                   !                 !
                   !                 !
              +---------+       +---------+
              !   484   !       !   584   !
              +---------+       +---------+
```
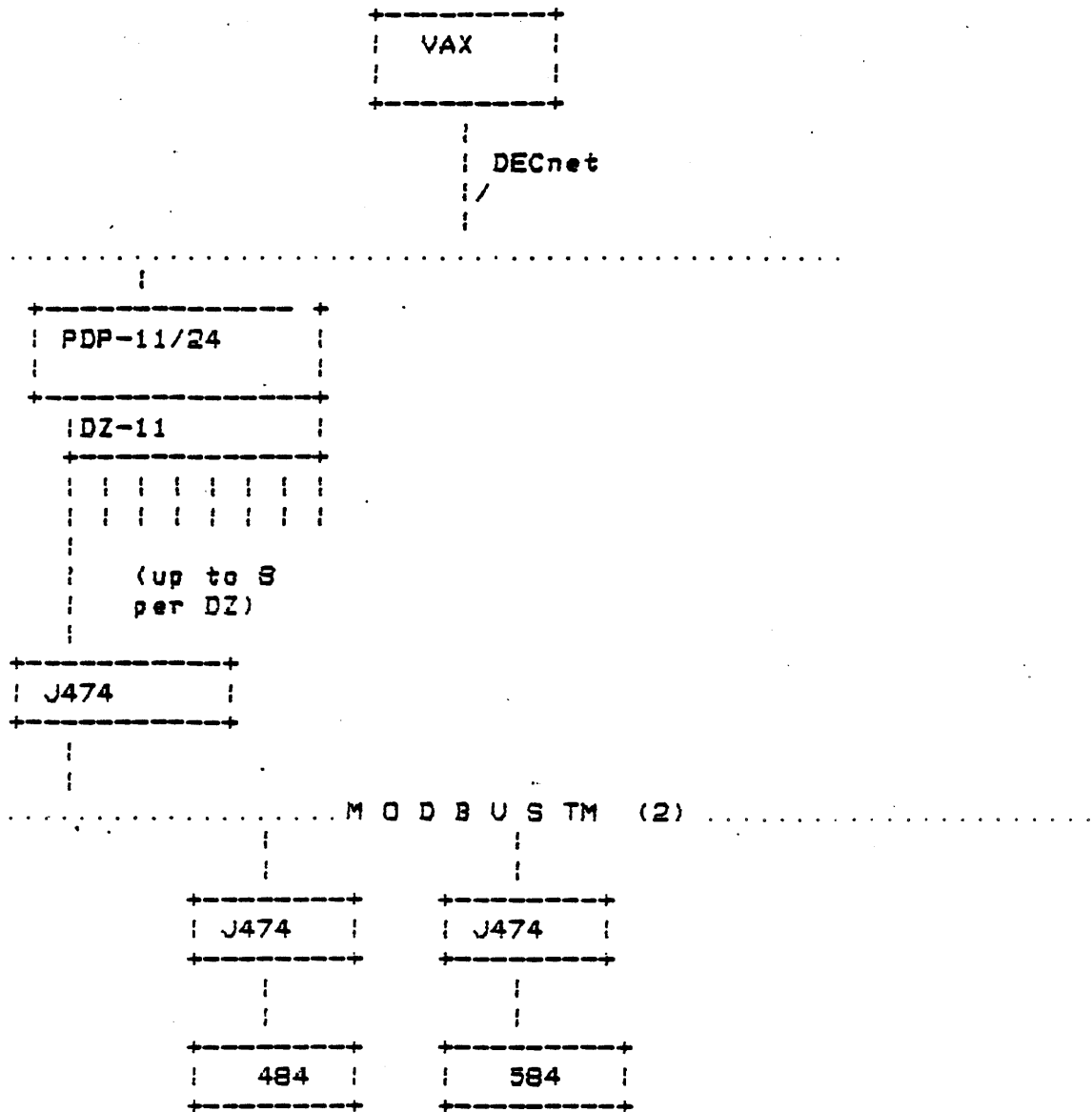
Figure 5. Typical Modicon Configuration

_____

2 Modbus TM is a registered trademark of Gould   Incorporated,   Modicon
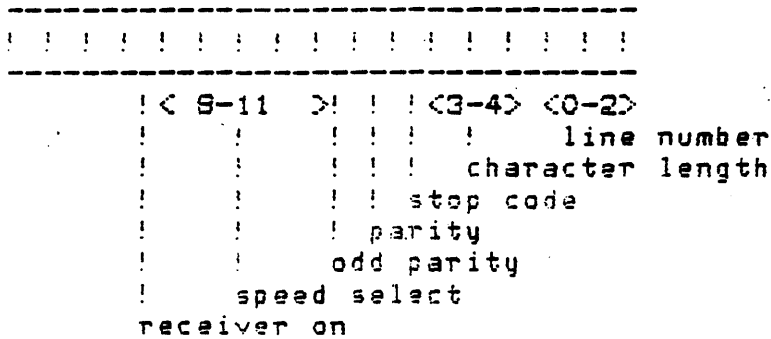 Division.

C.2 Modifying Modicon Drivers

The drivers provided for Modicon may need to be reassembled, task-built, and loaded into the system to accomplish the following:

o define the number of DZ11 controllers and units supported

o define the CSR and vectors for controllers

o define line characteristics such as baud rate

o set buffer sizes

The line characteristics for the DZ11 devices are defined as follows:

```
    Line Parameter Register
    ------------------------------------
    ! ! ! ! ! ! ! ! ! ! ! ! ! ! ! ! !
    ------------------------------------
         !<  8-11  >! ! !<3-4> <0-2>
         !     !      ! ! !    !    line number
         !     !      ! ! !  character length
         !     !      ! ! stop code
         !     !      ! parity
         !     !     odd parity
         !   speed select
       receiver on
```

The standard line parameter configuration for the DZ11 on Modicon drivers is octal 17030 plus the line number. This translates to 8 bits, 1 stop bit, no parity, speed=9600. If the octal code is written in decimal, the value is 7700.

The octal values to select the speed are given in the following table:

```
    300 baud = 2400
    1200 baud = 3400
    2400 baud = 5000
    4800 baud = 6000
    9600 baud = 7000
```

Modicon Device Support Information

NOTE: In the macro source file MODPRE.MAC, the LPR that is to be entered does not contain the baud rate. For the above example, LPR should be set to 10030. The baud rate is specified by another parameter. When the driver is built, the baud rate code and base LPRs are OR-ed together.

C.3 Default CSR and Vector Assignments

Device		CSR	Vector
Modicon	DZ11 (first 8 lines)	160130	340
	DZ11 (second 8 lines)	160140	350

C.3.0.1 Modicon Driver/ACP Modification -

The parameters defining the number of lines, line speeds, etc. for the Modicon driver are found in the SYS$SYSROOT:[SFG.SOURCE.PCSUPPORT.MODICON]MODPRE.MAC file. This file may be edited and the driver package rebuilt using the MODDRV.BLD command file in the same directory. For example, to change the speed of a line, simply change the BDXX value for the appropriate line.

The following example may be helpful:

```
$ SET DEF SYS$SYSROOT:[SFG.SOURCE.PCSUPPORT.MODICON]
$ @SFG$SYSTEM:LOGDEFS              ! DEFINE LOGICAL NAMES AND
                                   ! SYMBOLS FOR PROGRAM DEVELOPMENT
$ EDIT MODPRE.MAC                  ! EDIT CSR/VECTOR/SPEED/PARITY, ETC.
```


To reassemble and rebuild the Modicon driver, execute the command file as follows:

```
$ @MODDRV.BLD
```

Next, copy the MODACP.TSK, MZDRV.TSK, and MZDRV.STB files to the SFG$SYSTEM directory. Finally, use the VMR utility to install the new images on the RSX system by invoking SFG$SYSTEM:GATEWAY.COM.

C.3.1   RSX-11S System Image

In order for the drivers to be used, they need to be loaded into
the RSX operating system as well as the ACP. This is done through VMR
commands in the command file SFGVMR.CMD.   Any modification to the
distributed Modicon configuration will require re-VMRing the GATEWAY
and possible modification of SFGVMR.CMD.

Shown below are the current references to Modicon-related tasks
in SFGVMR.CMD.

Modicon References in SFGVMR.CMD:

```
LOA MZ:/PAR=DRVPAR                      ! Modicon driver
INS MODACP/PAR=GEN/PRI=120/FIX=YES      ! Modicon ACP
INS MM011S/PAR=INIPAR/FIX=YES           ! Modicon initializer (MOUnt
                                        ! command)

RUN MM015S/155                          ! Run Modicon initializer in
                                        ! 15 seconds after booting
                                        ! gateway
```
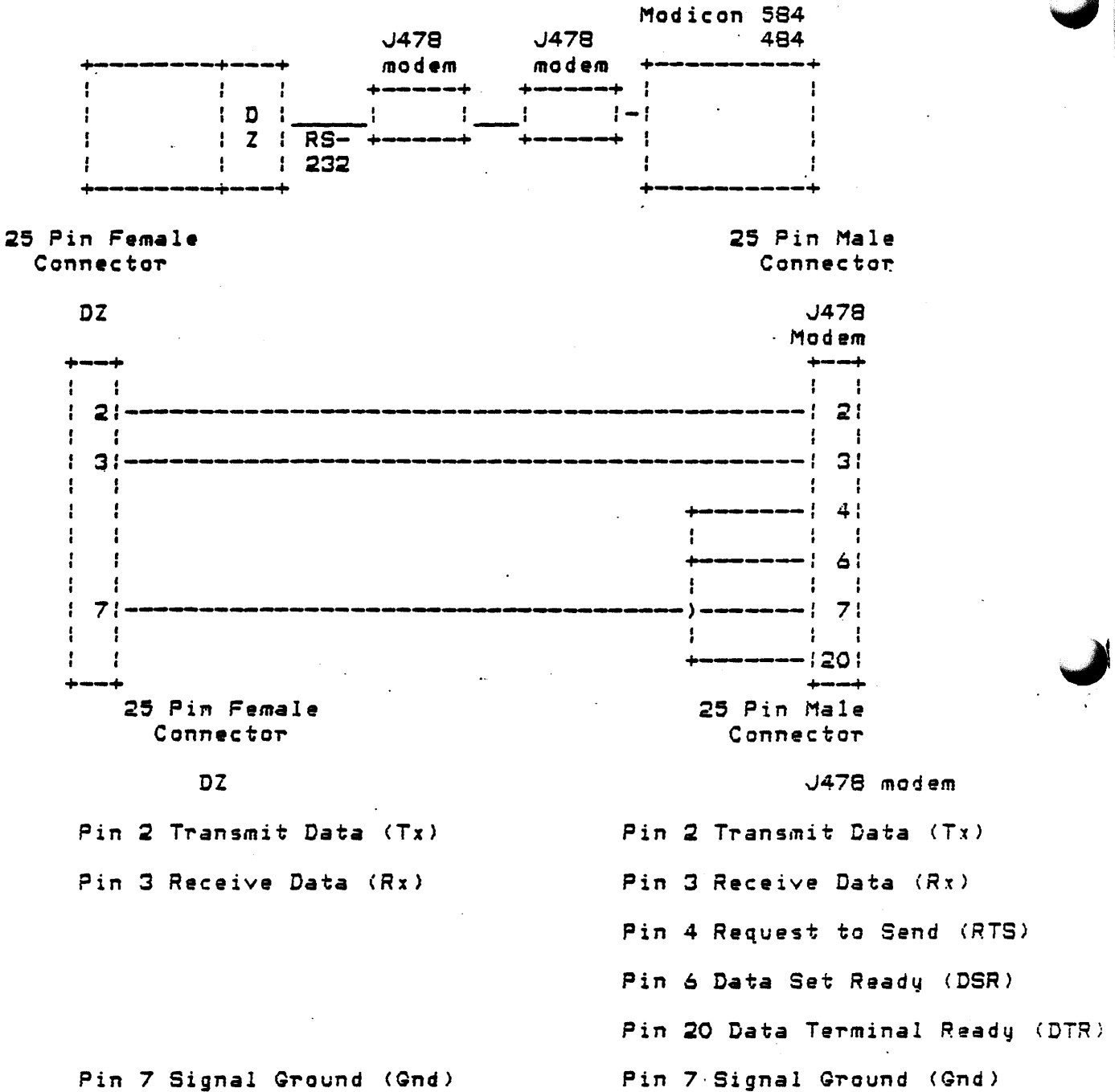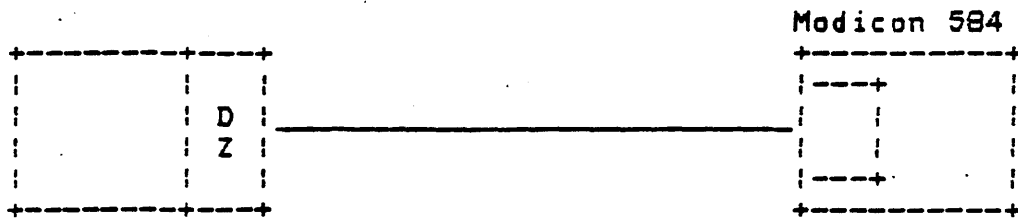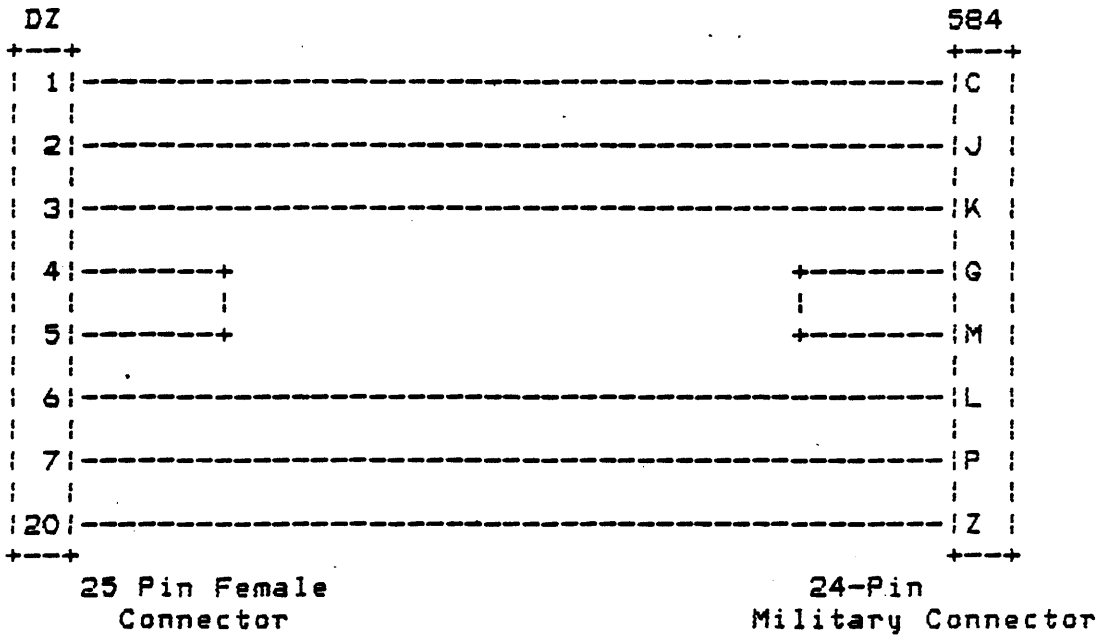
```
                                J478        J478        Modicon 584
                                modem       modem               484
       +--------+---+    +--------+    +--------+    +----------+
       |        |   |    |        |    |        |    |          |
       |        | D |____|  +-----+    +-----+  | -  |          |
       |        | Z | RS-   |     |    |     |  |    |          |
       |        |   | 232 +-----+    +-----+    |          |
       |        |   |      |     |    |     |    |          |
       +--------+---+    +--------+    +--------+    +----------+
```

25 Pin Female   **25 Pin Male**
Connector   **Connector**

           DZ   J478
                                                          Modem
```
       +--+                                              +--+
       |  |                                              |  |
       | 2|----------------------------------------------| 2|
       |  |                                              |  |
       | 3|----------------------------------------------| 3|
       |  |                                              |  |
       |  |                                   +--------| 4|
       |  |                                   |          |  |
       |  |                                   +--------| 6|
       |  |                                   |          |  |
       | 7|-------------------------------)--------| 7|
       |  |                                   |          |  |
       |  |                                   +--------|20|
       |  |                                              |  |
       +--+                                              +--+
```
       25 Pin Female   **25 Pin Male**
       Connector   **Connector**

              DZ   J478 modem

      Pin 2 Transmit Data (Tx)   Pin 2 Transmit Data (Tx)

      Pin 3 Receive Data (Rx)   Pin 3 Receive Data (Rx)

                                            Pin 4 Request to Send (RTS)

                                            Pin 6 Data Set Ready (DSR)

                                            Pin 20 Data Terminal Ready (DTR)

      Pin 7 Signal Ground (Gnd)   Pin 7 Signal Ground (Gnd)

Figure 6. Cable Wiring Diagram for Computer to J478 Modem Connection

Modicon 584

```
    +--------+--+--+                          +----------+
    |        |  |  |                          |---+      |
    |        | D|  |                          |   |      |
    |        | Z|  |----------------------    |   |      |
    |        |  |  |                          |---+      |
    +--------+--+--+                          +----------+
```

25 Pin Female   24-Pin
   Connector   Military Connector

```
    DZ                                              584
   +--+                                            +--+
   | 1|------------------------------------------|C |
   |  |                                          |  |
   | 2|------------------------------------------|J |
   |  |                                          |  |
   | 3|------------------------------------------|K |
   |  |                                          |  |
   | 4|--------+                      +---------|G |
   |  |        |                      |          |  |
   | 5|--------+                      +---------|M |
   |  |                                          |  |
   | 6|------------------------------------------|L |
   |  |                                          |  |
   | 7|------------------------------------------|P |
   |  |                                          |  |
   |20|------------------------------------------|Z |
   +--+                                          +--+
```

25 Pin Female   24-Pin
   Connector   Military Connector

DZ   584

Pin 1 Signal Ground (Gnd)   Pin C Cable Ground (Gnd)

Pin 2 Transmit Data (Tx)   Pin J Receive Data (Rx)

Pin 3 Receive Data (Rx)   Pin K Transmit Data (Tx)

Pin 4 Request to Send (RTS)   Pin G Request to Send (RTS)

Pin 5 Clear to Send (CTS)   Pin M Clear to Send (CTS)

Pin 6 Data Set Ready (DSR)   Pin L Data Terminal Ready (DTR)

Pin 7 Signal Ground (Gnd)   Pin P Signal Ground (Gnd)

Pin 20 Data Terminal Ready (DTR)   Pin Z Data Set Ready (DSR)

Figure 7. Cable Wiring Diagram for Computer to 584 Connection

APPENDIX D

DEC TERMINAL DEVICE SUPPORT INFORMATION

BASEWAY also supports DEC RT137 ruggedized terminals. These terminals have the functionality of VT100 terminals and allow bar code input and data/transmission to be displayed.

Most bar code devices that generate ASCII character sequences followed by a carriage return are supported.

D.1 Default CSR and Vector Assignments

Device		CSR	Vector
RS-232	DZ11 (first 8 lines)	160150	360

INDEX