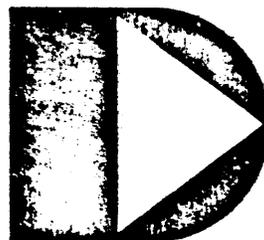# 1500 SYNCHRONOUS DATAPOLL DISK SPOOLING PROGRAM DPS15S User's Guide

Version 1

November, 1977

Model Code No. 50300

DATAPOINT CORPORATION

The leader in dispersed data processing ™

1500 SYNCHRONOUS DATAPOLL DISK SPOOLING PROGRAM
DPS15S

User's Guide

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PREFACE

This user's guide contains information on the operating procedures for DPS15S and is intended to be used in conjunction with the synchronous DATAPOLL system's guide. Before attempting to use this program, it is essential that the synchronous DATAPOLL system's guide be read and understood, Also, it is imperative that the associated master station's User's Guide be referred to.

DPS15S is intended for use only with the 1500 processor. The communications protocol is compatible with the version 3 (or later) synchronous master stations which operate on either the 1130, 1150, 1170, 1500, 2226 or 5548 processor.

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CHAPTER 1.   INTRODUCTION

DPS15S is a communications program used to transmit and receive data between Datapoint processors over a dial-up telephone network or private lines. DPS15S belongs to a series of programs using a common line discipline called synchronous DATAPOLL. The synchronous DATAPOLL Systems Guide gives a detailed description of the line discipline and program structure common to all synchronous DATAPOLL programs. DPS15S acts as a slave station to various master station programs version 3 or later. Basically, DPS15S functions as an unattended automatic spooling program for disk systems. DPS15S is capable of sending or receiving text, object, Databus code, and library files. If a printer is available, data can also be received directly to the printer or a disk file can be printed after it has been received in an off-line mode. Whether it is communicating with a master station equipped with cassettes, magnetic tape, or disk, file compatibility is maintained. Thus, a magnetic tape created on an IBM system can be transmitted to DPS15S and the data received will be written to disk in a format which is compatible with other standard Datapoint software.

CHAPTER 2.   INSTALLATION

DPS15S requires a Datapoint 1500 processor which contains an integral synchronous communications adaptor, and a RS232 compatible modem. The modem must be RS232 compatible at the interface to the synchronous communications adaptor.

A printer is optional, and may be a serial Freedom printer.

2.1 Software installation

When DPS15S is loaded from diskette, it attempts to process configuration data contained on disk in the file named DPS15S/CFG. If the configuration file is not found, or there is an error in any of the configuration options, the documented default values will be used and the message 'DEFAULT CONFIGURATION ASSUMED' will be displayed to the operator. If the configuration record is found, the values specified are those used for the current execution of the program. The values may be changed using the DOS EDIT program provided the option record is the first text record in the file. Additional comment records follow the options, which are not processed by the program. The four options are separated from one another by one and only one blank. The second field must contain two digits, even if the leading digit is zero. A detailed discussion of each option is provided below.

2.1.1 Maximum Buffers (default: 7, range: 1-7)

DPS15S is initially configured to transmit seven buffers before requesting a response. This value may changed to any value between one and seven as recommended in the synchronous Datapoll system's guide. The master station must be configured for the same number of buffers for communications to succeed.

2.1.2 Maximum NAKs (default: 25, range: 01-99)

DPS15S will, if necessary, send 25 consecutive negative acknowledgements (NAKs) before terminating the link with a Device Error 45. The counter is reset any time a transmission is positively acknowledged. This value may be changed to any value between 01 and 99, depending upon the requirements of the user.

2.1.3 Answer Option (default: S, range: S or P)

DPS15S is initially configured to provide "selective" answering of the phone line. In other words, the program must be loaded and the telephone ring before the dataset will be conditioned to answer the phone and begin communications. This method helps ensure that a valid connection will be established. "Permanent" answering (specify "P") should be used when the slave station is to transmit or receive data after voice communications has occurred during the same phone connection. The program will begin communications when the "DATA" button on the telephone handset is depressed. "Permanent" answering should also be used if operating over private networks.

2.1.4 External Clock Rate (default: 3)

DPS15S is initially configured to use the clock signal provided by the processor. The user should configure the system to use the same clock rate as the modem being used. The default rate of 2400 baud is indicated by the digit "3". The possible values are:

    0   - use external clock signal

    1   - 1800 baud

    2   - 2000 baud

    3   - 2400 baud

    4   - 4800 baud

    5   - 9600 baud

CHAPTER 3. DPS15S OPERATING PROCEDURES

DPS15S operates automatically in an unattended mode. After DPS15S has been loaded, it is under the control of the master station and operator intervention will not be required.

When DPS15S is loaded into the 1500, it will hang up the telephone line (terminating any previously established connection), and will determine if a serial printer is a part of the system. If the printer is not attached to the system in an online state the message 'PRINTER NOT FOUND. PRINT MODULE DISABLED' is displayed. If the print module is not enabled, DPS15S will subsequently reject any commands from a master station which would require a printer. After hanging up the phone, DPS15S will display the following format on the screen:

```
STATUS      FILE NAME    ERROR MESSAGES    OTHER INFORMATION
WAITING FOR RINGING                                         ,
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After the above format has been displayed, DPS15S monitors the line for dataset ready. When dataset ready is detected, DPS15S answers the phone. It expects a polling command which will tell it what task to perform. The polling command can be any of those listed in the synchronous DATAPOLL Systems Guide. Once a valid command has been received, DPS15S will perform the task indicated in the command. If for any reason (device error or time-out) communications fail, DPS15S will go back into the 'WAITING FOR RINGING' state and wait for the master station to initiate recovery procedures.

DPS15S displays the current status at all times under the column entitled 'STATUS'. Below is a list of the messages which may be displayed under 'STATUS' and where necessary, an explanation of the message.

WAITING FOR RINGING
    DPS15S is monitoring the telephone line for an incoming call.

WAITING FOR POLL
DPS15S has received a call and is waiting for a valid polling
command. When a valid command has been received, the task
indicated in the command is performed. If a valid polling
command is not detected within 30 seconds, DPS15S will go back
into the 'WAITING FOR RINGING' state.

TRANSMITTING
DPS15S is transmitting the disk file listed under 'FILE NAME'.

RECEIVING
DPS15S is receiving to the disk file listed under 'FILE NAME'.

LISTING
DPS15S has been told by the master program to hangup the
telephone line and list the files contained in unit 1 or unit
2.

KEYIN REQUESTED
The master station is requesting a keyboard entry from DPS15S.
The cursor will be positioned on the bottom line of the screen
and if an operator is present, he must type in a character
every thirty seconds or DPS15S will cancel the keyin request.
The backspace key can be used to backspace the cursor one
character at a time and the cancel key can be used to clear
the line and re-enter the characters. When the ENTER key is
pressed, the keyin buffer will be transmitted to the master
station.

KEYIN CANCELED
The request for a keyin entry has been canceled. Either DPS15S
canceled the keyin request as described above or the master
station canceled it.

COMPLETED
This message is displayed when any operation has been
successfully completed. After displaying 'COMPLETED', DPS15S
will display the number of cassette block images transmitted
or received under the column entitled 'OTHER INFORMATION'.
After displaying the above messages, the screen is rolled up

one line. If more polling commands are received, their status
will be displayed. If the master station hung up the phone,
the 'WAITING FOR RINGING' message will be displayed.

RELOADING DOS
    A polling command has been received from the master station
    instructing the program to disconnect the phone connection and
    reload the DOS.

    The two messages which may be displayed under the column
entitled 'ERROR MESSAGES' are given below.

TIME-OUT

    Once a telephone connection has been established, DPS15S
    starts a time-out clock. The time-out clock is reset whenever
    a valid message is received (this includes acks and naks). If
    30 seconds go by and DPS15S has not received a valid message,
    DPS15S hangs up the phone and goes into the 'WAITING FOR
    RINGING' state. It is the responsibility of the master station
    to initiate recovery procedures. Time-outs can occur if the
    telephone line is extremely bad and the channel drops for a
    period of 30 consecutive seconds.

DEVICE ERROR XX

    A condition has been detected by DPS15S which caused
    communications to fail. This message is used to indicate
    errors such as read parity error on disk, disk offline, write
    parity error on disk, etc. The XX is replaced with a number
    from 01 through 99. The synchronous DATAPOLL Systems Guide
    provides a detailed description of all device errors and their
    meaning.

The following information is provided under the column 'OTHER INFORMATION'.

After transmission is completed, DPS15S always displays a record count under the column entitled OTHER INFORMATION. The record count (not to be confused with logical records of a text file) displayed can be compared with the record count displayed at the master station to insure that all records were transmitted. The record count contains eight digits and can handle a count as high as 99,999,999. An example of a possible screen format is given below.

STATUS	FILE NAME	ERROR MESSAGE	OTHER INFORMATION
TRANSMITTING	DATA1/TXT:DRO		
	DATA2/ABS:DR1		
COMPLETED			124 RECORDS
RECEIVING	DATA3/TXT:DRO		
	DATA4/ABS:DR1		
COMPLETED			67 RECORDS

3.1 Control files

In the synchronous DATAPOLL Systems Guide, all control messages which tell the slave station what task to perform are oriented towards a unit 1 or unit 2. The master station can tell DPS15S to send unit 1 or unit 2. In a cassette system, unit 1 and unit 2 refer to deck 1 (rear) and deck 2 (front). To maintain compatibility between the cassette based systems and the disk systems, control files are used as unit 1 and unit 2. The function of the control files is to contain a list of file names that DPS15S is to use when it is told to transmit or receive data. The names of the control files are: TUNIT1/TXT, TUNIT2/TXT, RUNIT1/TXT, and RUNIT2/TXT.

3.2 Transmitting a disk file

When DPS15S is told to transmit unit 1 or unit 2, a disk file named TUNIT1/TXT or TUNIT2/TXT is used to obtain a list of the disk files which are to be transmitted. TUNIT1/TXT or TUNIT2/TXT contain the file names, extensions, and drive number of all disk files which are to be transmitted. TUNIT1/TXT is used in lieu of unit 1 and TUNIT2/TXT is used in lieu of unit 2.

The DOS EDIT utility can be used to create TUNIT1/TXT and

TUNIT2/TXT. When creating these files, each file name must be entered on a separate line. If the extension is not given, TXT will be assumed. If the drive number is not given, all drives will be searched.

Once a file name has been obtained from TUNIT/TXT or TUNIT2/TXT, that file is opened and examined to determine the file type. If it is an object file it is converted into the cassette loader format and transmitted. If it is a library or DATABUS code file, 252 data bytes are read from each disk sector and transmitted. If it is a text file, the data in each sector is read, up to and including, the end-of-sector character (003) and is transmitted. Characters within a text file (i.e., not one of the above) following the end-of-sector character are not transmitted. Space compression sequences (011,count) are sent as they are on disk. Deleted data (characters replaced with 032) is not transmitted and no indication is made of its being skipped over. DPS15S assumes an end of file has been reached when it detects one of the following: range trap, format trap, or an end of file indication as defined for the file type. Multi-volume file support is provided for text files. For more information refer to the section on Multi-volume file support.

3.3 Receiving to disk

As provided in the synchronous DATAPOLL Systems Guide, a master station uses unit 1 or unit 2 when it wants to tell the slave station to receive data. When DPS15S receives a command telling it to receive to unit 1, it uses a file named RUNIT1/TXT to obtain a list of the file names into which the received data should be written.

If RUNIT1/TXT exists, it must contain the file names, extensions, and drive numbers of the files where the received data will be placed. If DPS15S is told to receive to unit 1 but RUNIT1/TXT does not exist, a device error will be displayed and reception will be terminated. If DPS15S is told to receive to unit 2, the same procedure is used except that a file named RUNIT2/TXT is used in place of RUNIT1/TXT.

In addition to solving any compatiblity problems between cassette systems and disk systems, the system described above provides enhanced flexibility in the area of control. If the user at the master station wanted to transmit some files to a slave station but did not want the operator at the slave station to be responsible for creating the file names, the following procedures could be followed.

The master station could first transmit the list of file names to unit 1 which would cause DPS15S to place them in a file named RUNIT1/TXT. If the master station then transmitted the data files to unit 1, DPS15S would use RUNIT1/TXT to obtain the file names of the data being received. If the master station wanted the slave station to transmit some files to the master station without the intervention of the slave station operator, a similar scheme could be used. First the master could transmit the names of the files he wanted to collect into TUNIT1/TXT.

Then, if the master told DPS15S to transmit unit 1, the files contained in TUNIT1/TXT would be transmitted. Flexibility in the area of control is provided by allowing the master station to create any of the above control files or allowing the operator at the slave station to create the files using the general purpose editor. Only the disk master program is capable of creating the RUNIT and TUNIT files from the master station. If using one of the other master programs, the operator at the slave station is responsible for creating the necesary RUNIT and TUNIT files.

Refer to the user's guide for the disk master program for details on creating control files at the slave station.

3.4 Multi-volume file support

Within communication programs, text files on disk may have a multi-volume format. This facilitates receiving and transmitting more data than which can be contained on a single disk volume.

The format of a multi-volume text file is that the <filename> always remains the same and the <extension> is increased by one in the least significant position, and if necessary, a carry to the next position. If the character is not a digit, it is changed to a one. For example: MULTI/TXT, MULTI/TX1, MULTI/TX2, MULTI/TX3.

On input, final end of file is determined by not being able to find an extension within the present sequence. Note that the program will NOT skip a missing file to find a following sequence. For example: MULTI/TXT, MULTI/TX1, MULTI/TX3; end of file is returned after reading MULTI/TX1.

On output, any existing multi-volume file segment will be over-written if necessary, and if it does not already exist, it will be placed on the first available drive. Also when creating a multi-volume file, a logical record will NOT cross file boundaries. If necessary, the program will backspace into the file and carry the entire logical record over to the new file.

The process of creating multi-volume segments will be repeated as necessary until either all of the data has been written or all online disk space has been filled.