

## CHAPTER 9 I/O Commands

DATAPLOT can read and write variables, parameters, strings (and functions), and matrices. Data can be read directly from the keyboard or from a file. Likewise, data can be written to the terminal screen or to file.

By default, DATAPLOT performs free format reads. That is, data is assumed to be in an ASCII text file with variables separated by either spaces or commas. Free format reading has the advantage of being flexible (data does not have to be lined up neatly, you do not have to know what format your data has), but it has the disadvantage of being slower (each line has to be parsed individually). DATAPLOT can handle real numbers, integers (integers are stored internally in DATAPLOT as real numbers), and exponential numbers (either D or E format). DATAPLOT does NOT read character data (except when explicitly the reading strings or functions via the READ STRING command). The formatting commands ROW LIMITS and COLUMN LIMITS can be used to skip rows or columns that contain character data. By default, DATAPLOT writes numeric variables in exponential format. The SET WRITE DECIMALS command is frequently used to write data in a more readable non-exponential format.

In addition, DATAPLOT can read and write data with Fortran-like FORMAT statements. One reason for doing this is performance (formatted I/O is about 10 times faster than free format I/O on most systems). Generally speaking, performance is not a major issue for small and moderate size data sets (say less than 500 rows or so). It can also be useful for selectively reading columns and for generating neatly formatted output. However, to use formatted reads, your data columns must be in a consistent format.

The following are DATAPLOT's I/O commands. The most commonly used of these commands are SKIP, READ, SET WRITE DECIMALS, and WRITE.

### Reading data

READ	Read variables.
SERIAL READ	Read variables serially.
READ PARAMETER	Read parameters.
READ FUNCTION	Read one line of functions.
READ STRING	Read one line of strings.
READ MATRIX	Read a matrix

### Writing data

WRITE (or PRINT)	Write a variable, parameter, matrix, string, or function to either the terminal or a file.
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### Formatting data

SKIP	Specify the number of header lines to skip for subsequent READ commands.
ROW LIMITS	Specify row limits for the READ and SERIAL READ commands.
COLUMN LIMITS	Specify column limits for the READ and SERIAL READ commands.
END OF DATA	Define the end of data for the READ and SERIAL READ commands.

COMMENT CHECK	Check data files for comment lines (documented in the Support chapter).
SET READ FORMAT	Define a Fortran-like format statement for reading data.
SET WRITE FORMAT	Define a Fortran-like format statement for writing data.
SET READ REWIND	Specify whether the input file is rewound on subsequent reads.
SET WRITE REWIND	Specify whether the output file is rewound on subsequent writes.
SET WRITE DECIMALS	Define the number of digits to print to the right of the decimal point when writing data.

**Restrictions**

1. DATAPLOT cannot read binary files. Specifically, it cannot read files created with Fortran unformatted WRITE. It does not handle Fortran direct access files (even though these are not necessarily binary files). For these type of files, you will have to write a filter program to output the data in a formatted form for subsequent input into DATAPLOT.
2. It can read ASCII (but not binary) files created by C programs as long as the program writes the newline (\n) character to delineate records. Likewise, it can read ASCII files created by other languages as long as the output is broken into separate lines (either by the language I/O statements or by putting an explicit newline character in the file).
3. DATAPLOT does not have any capabilities for reading formats specific to given packages. That is, it does NOT read LOTUS 1-2-3, SPSS, SAS, or other package specific formats. Most of these packages have the capability for generating data in ASCII text files. Use this capability to prepare a file that DATAPLOT can read.
4. DATAPLOT is limited to 132 columns per line when reading free format ASCII text files (the SET READ FORMAT command does not have this restriction).