Laser-Scan Ltd.

<PACKAGE>

User Guide

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<PACKAGE> reference documentation change record

Version 0.0 <Date> <Author(s)>

Provisional issue of <PACKAGE> reference documentation.

Version 1.0 <Date> <Author(s)>

First customer issue of <PACKAGE> reference documentation.

PREFACE

Intended audience

Structure of this document

Associated documents

Conventions used in this document

Convention	Meaning
<CR>	The user should press the carriage return key on the terminal
<CTRL/x>	The phrase <CTRL/x> indicates that the user must press the key labelled CTRL while simultaneously pressing another key, for example, <CTRL/Z>.
$ **IINFO JIM<CR>**	Command examples show all user entered commands in **bold** type.
$ **IFIXAREA JIM<CR>** . . .	Vertical series of periods, or ellipsis, mean either that not all the data that IMP would display in response to the particular command is shown or that not all the data that the user would enter is shown.
file-spec...	Horizontal elipsis indicates that additional parameters, values or information can be entered.
[logical-name]	Square brackets indicate that the enclosed item is optional. (Square brackets are not, however, optional in the syntax of a directory name in a file-specification, or in the syntax of a substring specification in a VMS assisnment statement).
'integer'	An integer number is expected in the specified input or output field. (See "Command line data types" below).
'real'	A real number is expected in the specified input

or output field. (See "Command line data types" below).

Convention	Meaning
FSN 'integer' ('integer')	FSN followed by two integer arguments indicates an IFF feature serial number. The integer number enclosed in round brackets is the feature internal sequence number.
00003DE7	A hexadecimal address of a location within an IFF file. IMP modules express all IFF addresses using hexadecimal radix. The address is always padded with leading zeros to a standard field width of 8 characters.

Command line data types

<PACKAGE> utilities use the VMS Command Line Interpreter (CLI) to get and parse the program command line. <PACKAGE> utilities thus offer a VMS emulating user interface. Unfortunately the VMS Digital Command Language (DCL) does not support the real (or "floating point") data type. Many <PACKAGE> utilities require real value arguments for the specification of tolerances and distances etc. To meet this requirement, Laser-Scan have developed an enhanced CLI based command line decoding mechanism. This enables the interpretation of numbers as either "real" or "integer". Throughout this document the number types are differentiated by the words 'integer' for integer numbers and 'real' for real (or "floating point") numbers.

<PACKAGE> command line decoding operates in decimal radix.

CHAPTER 1

INTRODUCTION

INTRODUCTION

<PACKAGE> is the Laser-Scan ...

<PACKAGE> - FEATURES

<PACKAGE> and IFF

Within the VAX/VMS system IFF files can be treated as any other file type for file management purposes. To enable the user to distinguish an IFF file from a file of another type IFF files have by default the file extension '.IFF'. To provide great flexibility in the production environment IFF files are referenced by all the <PACKAGE> modules using logical name LSL$IF:. (For an explanation of logical names see the VAX/VMS document set). Logical name LSL$IF: is assigned to a device and directory specification either using the VMS DEFINE command or the Laser-Scan SI utility.

<PACKAGE> and DCL symbol $STATUS

Like VMS utilities, all <PACKAGE> modules generate VMS format messages and set VMS DCL symbol $STATUS on image exit. This is a valuable feature as a non-interactive process can test the success of a preceding <PACKAGE> module before proceeding. $STATUS will always be set to a VMS 32 bit condition code. Successful program execution will result in $STATUS being set to SS$_NORMAL. If an error occurred during <PACKAGE> processing, SS$_ABORT of varying severities, or a VMS System or CLI (Command Line Interpreter) condition code will be used. The user may simply test $STATUS for TRUE or FALSE within a DCL command procedure. If $STATUS is TRUE then processing was successful. If it is FALSE, an error occurred during processing. For a detailed description of the uses of $STATUS see the VAX VMS document set.

Getting started with <PACKAGE>

Once logged in the user must give two commands to initialise the <PACKAGE> package. Before the <PACKAG> package can be used DCL symbols and logical names must be assigned to enable the user to invoke the modules. This is dome using a command procedure <PACKAGE>INI.COM which is supplied as part of the <PACKAGE> package. <PACKAGE>INI itself will be defined as a DCL symbol at your site and should be invoked thus: (see the PREFACE for explanation of presentation conventions)

$ **<PACKAGE>INI<CR>**

The <PACKAGE>INI command invokes a command procedure which defines a DCL symbol (the module name) for each of the <PACKAGE> modules. After using <PACKAGE>INI the user need only type the symbol name to activate

the required module.

As an alternative to explicitly typing the <PACKAGE>INI command each time the user wishes to use the <PACKAGE> package, the <PACKAGE>INI command may be placed in the users login file, or in the site dependent default login file.

The second command which must be given before using the <PACKAGE> package is the SI command. The SI command assigns the logical name LSL$IF: (or IF: for short) to the device-directory specification which contains the IFF file(s) that are to be manipulated. For example:

$ **SI DUA3:[BUREAU.TRIALS.DIGITISING]**

This will assign logical name LSL$IF: to the device and directory specification DUA3:[BUREAU.TRIALS.DIGITISING]

Opening IFF file with <PACKAGE>

All <PACKAGE> modules open IFF files using the Laser-Scan LSLLIB library of service routines. This results in a standard set of four messages for successful IFF file opening and three primary messages for IFF opening errors:

Messages to indicate that the IFF file was successfully opened:

IFFOPENED, 'file-spec' opened for read

Explanation: The indicated file was successfully opened, readonly, for input.

User action: None, other than to check that the correct file has been opened.

IFFOPENED, 'file-spec' opened for write

Explanation: The indicated file was successfully created and opened for output.

User action: None, other than to check that the correct file has been opened.

IFFOPENED, 'file-spec' opened for update

Explanation: The indicated file was successfully opened for in-situ modification or extension. Beware that the original status of the file will now be irrevocably changed.

User action: None, other than to check that the correct file has been opened.

Messages to indicate that the IFF file could not be opened:

All the messages in this category will be supported by supplementary Laser-Scan and VMS System or RMS (Record Management Services) messages. These supplementary messages will normally convey all the information required to determine **why** the file could not be opened. It is recommended that the user becomes familiar with the location of the VMS error message explanations within the VMS documentation set.

IFFOPEN, IFF error opening file 'file-spec' for read

Explanation: An error occurred while attempting to open the specified file for readonly input.

User action: The supplementary Laser-Scan, VMS system or RMS messages which are output in support of this message will facilitate diagnosis. One common mistake is to forget to assign the logical name LSL$IF: to the directory containing the desired file. If the RMS message "file not found" is issued check the assignment of LSL$IF:.

Possible causes for the error are:

- the file-spec was mis-typed,
- logical name LSL$IF: was incorrectly assigned,
- the file does not exist.

IFFCREATE, IFF error creating file 'file-spec'

Explanation: An error occurred while attempting to create and open the specified file for output.

User action: The supplementary Laser-Scan, VMS system or RMS messages which are output in support of this message will facilitate diagnosis.

Possible causes for the error are:

- the file-spec was invalid
- logical name LSL$IF: was incorrectly assigned to a non-existent device or directory
- the device, directory or file is write protected
- the device is full

IFFMODIFY, IFF error opening file 'file-spec' for update

Explanation: An error occurred while attempting to open the specified file for modification.

User action: The supplementary Laser-Scan, VMS system or RMS messages which are output in support of this message will facilitate diagnosis.

Possible causes for the error are:

- the file-spec was mis-typed
- logical name LSL$IF: was incorrectly assigned
- the file does not exist
- the device, directory or file is write protected
- the device is full

How to specify <PACKAGE> command qualifier arguments

<PACKAGE> utilities use the VMS Command Line Interpreter (CLI) to get and parse the program command line. <PACKAGE> utilities thus offer a VMS emulating user interface. As many <PACKAGE> utilities require floating point arguments to command, qualifiers Laser-Scan have developed an enhanced CLI based command line decoding mechanism. This enables the interpretation of numbers as either "real" or "integer".

The CLI allows the user to specify single and lists of integer qualifier arguments. If a list of arguments is specified, each argument must be separated by a comma and the whole list enclosed within parentheses, for example:

Single argument:

$ **EXAMPLE/QUALIFIER=7<CR>**

Where "EXAMPLE" is the command and /QUALIFIER is a qualifier to that command. There is one qualifier argument - 7

Argument list:

$ **EXAMPLE/QUALIFIER=(2,5,8,9,10,11,12,13,14)<CR>**

Where "EXAMPLE" is the command and /QUALIFIER is a qualifier to that command. There are 9 qualifier arguments within the argument list.

Integer value ranges

While developing the floating point command line data type (see Preface) it was recognised that there is a need for numeric range decoding within a VMS emulating command line. Argument ranges are specified with the syntax:

n:m

Where n is the lower limit of the range and m is the upper limit of the range (inclusive).

Such ranges are expanded in full. A maximum of 1024 arguments can be specified to any one command qualifier.

If we take our example argument list used above, i.e:

$ **EXAMPLE/QUALIFIER=(2,5,8,9,10,11,12,13,14)<CR>**

and now use the Laser-Scan argument range decoding mechanism:

$ **EXAMPLE/QUALIFIER=(2,5,8:14)<CR>**

we see that a more compact command line results but yields the same arguments. This is clearly an advantage in an IFF map processing environment where a single file could contain hundreds of attributes which the user may wish to reference via command line arguments.

Other examples are:

$ **EXAMPLE/QUALIFIER=2:9<CR>**

This yields 8 integer arguments: 2, 3, 4, 5, 6, 7, 8, and 9

$ **EXAMPLE/QUALIFIER=:8<CR>**

This yields 9 integer arguments: 0, 1, 2, 3, 4, 5, 6, 7, and 8

If when ranges are decoded, a qualifier has more than 1024 arguments the Laser-Scan LSLLIB library issues the error message:

%LSLLIB-E-RESPARSOVF, result of parse overflowed buffer

and program execution is terminated.

Floating point value ranges

Floating point value ranges are decoded in a different manner to integer value ranges. Instead of expanding the range to yield all its component integer values the command decoder merely leaves the range as a lower limit and an upper limit. Processing then takes account of any possible value lying between these limits (inclusive).

For example:

$ **ISELECT/HEIGHT=(23.5:110.2)<CR>**

Select all features having a height which lies within the range 23.5 to 110.2 inclusive.

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