



# NATURAL

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**Natural**  
SYSERR Utility  
Version 5.1.1 for Windows



This document applies to Natural Version 5.1.1 for Windows and to all subsequent releases. Specifications contained herein are subject to change and these changes will be reported in subsequent release notes or new editions.

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# SYSERR Utility - Overview

When you develop a Natural application, you may want to separate error or information messages from your Natural code and manage them separately. This makes it easy for you, for example, to standardize messages, to have predefined message ranges for different kinds of messages, to translate the messages into another language or to attach a long text to a message, which explains it in more detail.

With SYSERR, you can write your own application-specific messages. In addition, you can modify the texts of the existing Natural system messages; this is not recommended, however, because with new Natural releases these modifications will be lost.

Select any of the following topics:

 General Information on Messages	Message types and languages.
 Invoking SYSERR	Starting the SYSERR utility.
 SYSERR Window and Functions	SYSERR window elements and functions available for creating and maintaining messages.
 Converting Short Messages	Converting characters in message texts.
 Generating Message and Text Files	Creating or recreating text files and generating message modules.
 User Exit USR0020P	Reading messages from Natural system files.

# General Information on Messages

- Message Types
  - Message Languages
  - Which Messages Do You Receive?
  - Displaying Natural Long Messages
- 

## Message Types Texts

There are two types of messages:

- Natural system messages which are stored in the system file FNAT and which are not attached to libraries, and
- User-defined messages which are stored in the system file FUSER or FNAT and which are attached to libraries (including SYS-libraries).

There are four types of message texts which can be created and maintained with SYSERR:

- Natural (system) short message
- Natural (system) long message
- User-defined short message
- User-defined long message

A short message is the one-line message which is displayed in the message line when the corresponding error situation occurs.

A long message is a detailed explanation of the corresponding short message. See also Displaying Natural Long Messages.

### **To invoke a user-defined short message in a Natural program**

- Issue the statement "REINPUT \**nnnn*", where *nnnn* is the number of the requested message.  
Or issue the statement "INPUT WITH TEXT \**nnnn*" statement where *nnnn* is the message number.

## Message Languages

Messages can be created in up to 60 languages.

The following rules and restrictions apply:

- Natural short messages must be entered in English first, and can then be translated into any other language.
- Natural long messages can be entered in English, but cannot be translated into other languages.
- User-defined short messages can be entered in any language, and then translated to any other language.
- User-defined long messages can be entered in any language, but only if the corresponding short message already exists.

## Which Messages Do You Receive?

### Natural Short Messages

When a program issues a Natural short message, Natural looks for the requested message number on the system file FNAT in the following order:

1. under the current language code as determined by the system variable \*LANGUAGE,
2. under Language Code 1 (English).

If neither of the above is found, you only receive the message number prefixed with NAT, for example, NAT0230.

### User-defined Short Messages

When a program issues a user-defined short message, Natural first looks for the requested message number *nnnn* under the current language code as determined by the system variable \*LANGUAGE (see the Natural Programming Reference documentation). If that message does not exist, Natural looks for the requested message number *nnnn* under Language Code 1 (English). If that message does not exist either, Natural looks for message number *n000* (where *n* is the first digit of the requested message number) under Language Code 1.

These three search steps are first performed in the current library. If nothing is found there, further libraries are searched in the same way until a corresponding message is found.

The sequence of libraries for the search is as follows:

1. the current library as determined by the system variable \*LIBRARY-ID,
2. the steplib; if Natural Security is installed, the sequence in which the steplib are specified in the Natural Security profile of the current library,
3. the default steplib as determined by the system variable \*STEPLIB,
4. the library SYSTEM on the system file FUSER (\*),
5. the library SYSTEM on the system file FNAT (\*).

(\*) If the name of the current library begins with SYS, SYSTEM FNAT is searched before SYSTEM FUSER.

## Displaying Natural Long Messages

When you receive a Natural short message, you may be looking for further explanations regarding the problem situation. Most of the short messages have corresponding long messages with additional information and resolution instructions.

If the current library does not contain a corresponding long message, the one contained in the library indicated by \*STEPLIB is displayed.

 **To display the long message of the most recent Natural short message**

- Choose Help from the Error dialog box.  
Or enter the command "HELP *nnnn*"  
Or enter the command "? *nnnn*"  
where *nnnn* represents the message number of up to four digits.

See also the system command HELP as described in your Natural User's Guide.

The language code of the long message displayed is the same as for the corresponding short message. If no long message exists under that language code, the corresponding long message under Language Code 1 is displayed. If such a long message does not exist either, no long message is displayed at all.

# Invoking SYSERR

This section describes alternative methods of invoking the SYSERR utility window for specified message files. You may use either the SYSERR dialog box or select a message file from a Natural directory. Note that for accessing Natural system messages you can only use the selection function of the SYSERR dialog box.

From the SYSERR window, you can invoke all functions available for message maintenance. The functions are explained in the section SYSERR Window and Functions.

## ▶ To invoke SYSERR via dialog box

- From the Natural View menu, choose Direct Command and, in the Command field, enter the system command SYSERR.

Or, from the Natural Tools menu, choose Development Tools and Error Messages...

The SYSERR dialog box appears:



- Overwrite the library name or select a library from the Library drop-down list box and select a language from the Language list box.

### To access Natural system messages:

From the Library list box, select "<natsys>" or remove the library name and leave the box blank, from the Language list box, select the standard language defined for your Natural environment.

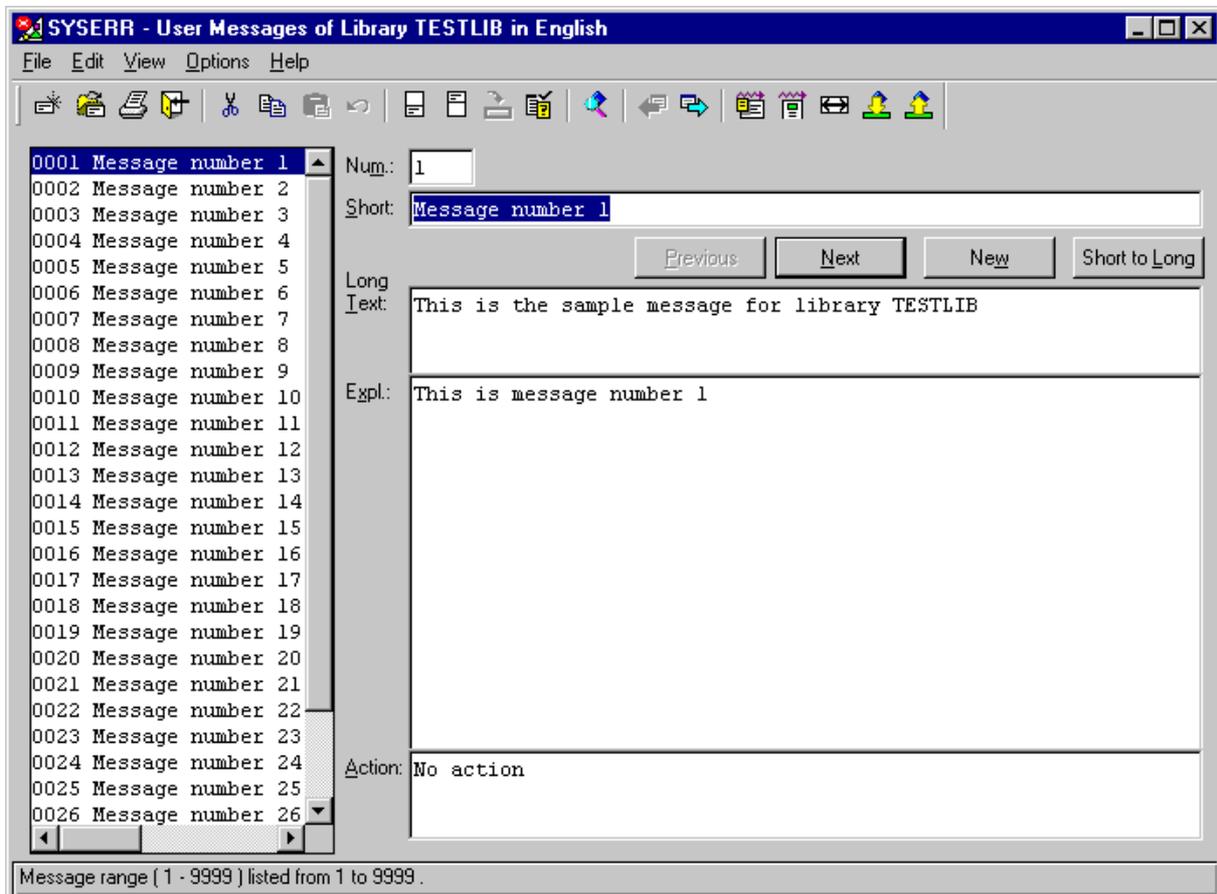
- Choose OK to confirm your selection.  
The SYSERR window is displayed.

## ▶ To invoke SYSERR directly from a directory

- From the Natural View menu, choose Library Workspace and click the Logical View button.
- From the Natural directory tree, select the library desired.  
The message files are listed per language in the subdirectory Error Messages.
- In the subdirectory Error Messages, double-click a message file.  
The SYSERR window is displayed.

# SYSERR Window and Functions

From the SYSERR window, you can invoke all commands and functions available for message maintenance:



The window contains two panes. To modify the size of the window, move the mouse pointer over the right border until two arrows point in opposite directions. Then, drag the border using the mouse until the window has the desired size.

There are context menus available for several dialog elements. A context menu is displayed by right clicking the dialog element. The available commands are either Cut and Paste functions or correspond to the commands in the menu or to push buttons.

As an alternative to the menus and the push buttons, most of the SYSERR functions and commands can be executed with the buttons of the toolbar.

This section covers the following topics:

- Title Bar
- Push Buttons
- Menu Bar
- Toolbar
- List Box
- Fields

## Title Bar

The title bar displays the

- Message type  
(Natural system or user-defined)
- Selected library  
For Natural system messages, no library is displayed.
- Selected language  
For more information, see the system variable \*LANGUAGE in the Natural Programming Reference documentation.

## Push Buttons

The following commands can be executed using push buttons:

Command	Explanation
Copy	Only visible if a sample message exists. If activated, the text of the sample message is copied into the Short field of the message. See also Fields below.
Previous / OK	Toggles between Previous and OK, depending on the status of the current message:  OK        Saves the current message to the message file after modification.  Previous    Scrolls from the current message to the previous message if no modification was made.  <b>Note:</b> You can only save a message if text was entered in the Short text field. See also Fields below.
Cancel / Next	Toggles between Cancel and Next, depending on the status of the current message:  Cancel    Cancels modifications made to the current message and displays the original message.  Next        Scrolls from the current message to the next message if no modification was made.
New	Searches for the next free message number starting from the current message. Free means that this message number is available and has not yet been assigned to a message file in any language.  The direction of search is downwards by default, but depends on the last search specification (perhaps upwards) executed with the New Message command of the Edit menu.
Short to Long	Copies the text of the Short field to the first line of the Long Text field.

## Menu Bar

The commands available with the SYSERR menu are described below. Some menu items are used to switch between modes or set a status. The check mark next to a menu item indicates which mode or status is active.

Below is information on:

- File Menu
- Edit Menu
- View Menu
- Options Menu
- Help Menu

## File Menu

Command	Explanation
New Lib/Lang	Selects a new library and/or a new language. A dialog prompts you for input. Only libraries and languages are displayed for which no message file exists. After you have made your selection, an empty SYSERR window appears, in which you can enter a new message.
Open Lib/Lang	Selects another library and/or another language. A dialog prompts you for input. Only libraries and languages are displayed for which messages already exist. After you have made your selection, you can modify the existing messages or add new ones.
Open File	This function does not apply if you wish to access data on mainframe servers.  Selects an existing message file from the Natural file tree (FNAT, FUSER or Natural system) or from another directory.  See also the section Message and Text Files.
Print	Invokes the print function.  A dialog box prompts you to enter the error numbers, mark the Long Text print-out option, specify layout parameters and select the output device (printer or source area). The initial assignment is the default printer set by Windows.  See also how to print all Natural system messages below.
Exit	Exits SYSERR.

### To print all Natural system messages

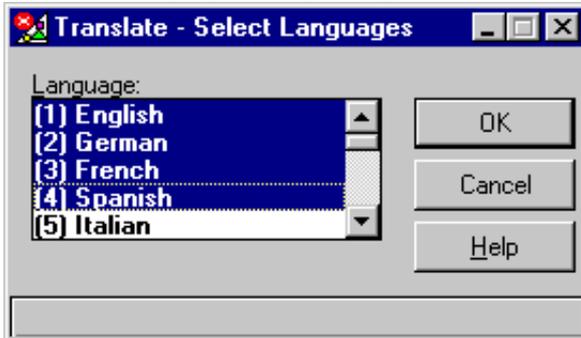
1. Select library "<natsys>".
2. Select language English or German.
3. From the File menu, choose Print:  
Specify the options provided, and leave the default values for the message range (1-9999).
4. Choose OK.

## Edit Menu

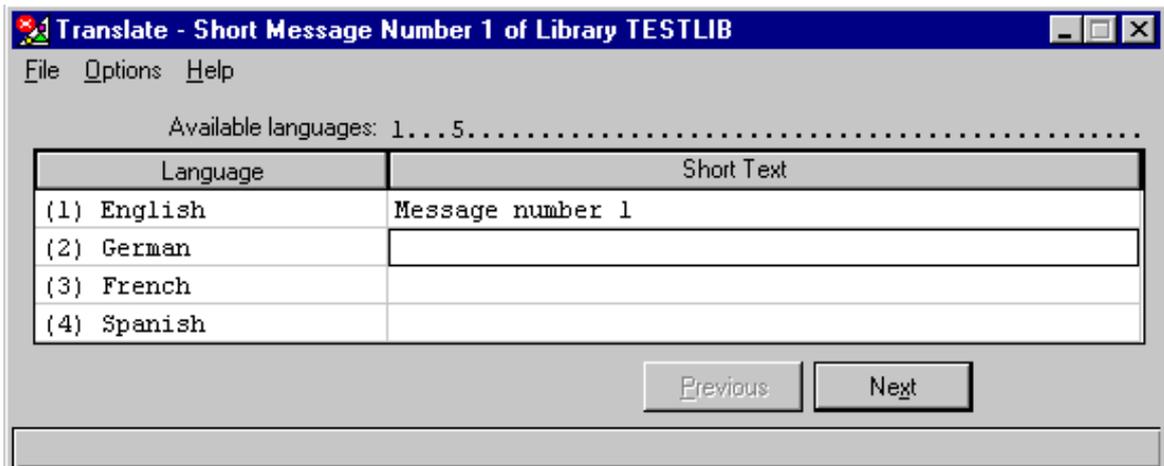
Command	Explanation
Cut	Supported clipboard functions.
Copy	
Paste	
Undo	Standard edit functions.
Delete	
New Message	Searches for the next free message number, for which no other message exists in any language. Upwards/Downwards: the next lower/higher message number from the current message.
Delete Selected	Removes all messages selected (highlighted) in the list box. A dialog box prompts you to confirm the action.
Delete All	Removes all messages displayed in the list box. A dialog box prompts you to confirm the action.  When all messages of a message file have been deleted, the message file is deleted too.
Read All	Reads all messages from a message file into the list box in one step. This command applies to message files with more than 200 messages. Otherwise, for performance reasons, only 200 messages are read by default when the SYSERR window is started. Additional messages can be displayed scrolling down the list box to the end or using the Read All command.
Translate	Supports the creation of error messages for different languages. Applies to short messages only. See To translate languages below.

► To translate languages

- From the Edit menu, choose Translate.  
The Select Languages dialog box opens:



- Select one language or more into which you wish to translate the current message and choose OK.
- Another dialog box opens:



Command/Fields	Explanation
Select Languages (Options menu)	Invokes the Select Languages item from of the Options menu to add additional languages unless selected earlier, during Step 1 above.
Available Languages	The language code(s) of the language(s) already available for the current message number.
Language	Code and language of the new language selected.
Short Text	The text of the short message.
Previous/OK	Same as described for Previous/OK under Push Buttons.
Cancel/Next	Same as described for Cancel/Next under Push Buttons.
Help	Display SYSERR help text.

- Enter the translation in the Short Text field of the relevant language.
- Choose OK.  
The language code of the new language appears under Available Languages.

The language of the current short message (in the example above English) is always listed in the first position of the translation dialog.

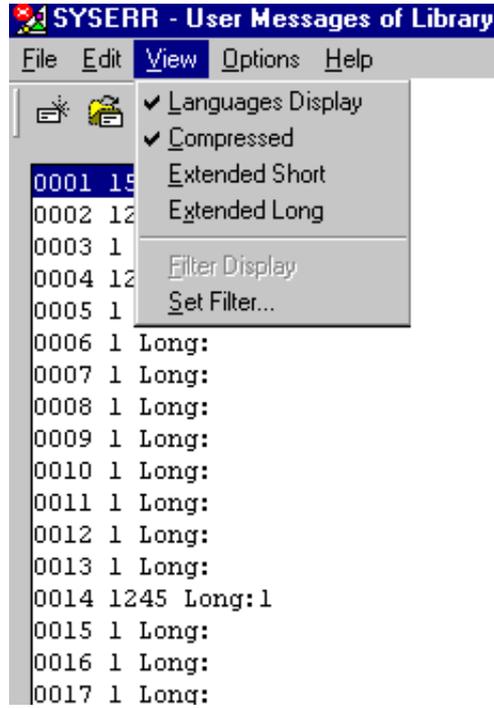
## View Menu

Command	Explanation
Languages Display	Enables/disables the Languages Display. The Languages Display gives an overview of all available languages for one message number. Default is the Compressed display as described below.
Compressed	Applies to the Languages Display command. See Compressed below.
Extended Short	Applies to the Languages Display command. Enables/disables the code display of languages in which the short texts exist next to the error number.
Extended Long	Applies to the Languages Display command. Enables/disables the code display of languages in which the long texts exist next to the error number.
Filter Display	Applies to the Set Filter function described under To activate the Set Filter function. Enables/disables the display of short messages that match the scan criteria defined as filter values in the Set Filter dialog box.
Set Filter	Enables/disables the Set Filter function. Scans the short messages in conjunction with the Set Filter search criteria and displays the results in the list box. See To activate the Set Filter function.

**Compressed**

The Compressed view displays the code(s) of the language(s) in which the message exists

- next to the message number for short texts, and
- next to the Long column for long texts.



In the above example the short text for message number 14 exists in English = 1, German = 2, Spanish = 4, and Italian = 5. The long text for message number 14 exists in English = 1.

▶ **To activate the Set Filter function**

1. From the View menu, choose Set Filter.  
A dialog box prompts you to enter the scan criteria:



The following options are provided:

Option	Function
Filter Values	There are four fields available to enter search criteria.
Or/And/Not	You can include the conditional operands OR (default), AND or NOT between the search items.  If you only fill one of the Filter Value fields, the conditional operands are ignored.
Find Whole Words	By default, the scan is restricted to match entire words only and not parts of a search string.
Case Sensitive	If marked, the scan is restricted to words in lower and upper case.

In the example above, the search would be for the short message which contains both the words "buffer" and "pool". If the operand NOT were specified, then the search would find all messages which contain neither the word "buffer" nor the word "pool".

2. Enter the search criteria and choose OK.  
The Set Filter function is enabled and the short messages matching the criteria are displayed in the list box.

To deactivate the Set Filter function, disable Filter Display from the View menu.

## Options Menu

Command	Explanation
Sample	<p>Creates a sample message to be used as a master for creating short messages. If the string <b>0000</b> has been entered in the sample message, when copied, the string is replaced by the number of the new message.</p> <p>You can define one sample message for each language.</p>
Layout	See Layout below.
Shift Short Left	If enabled, automatically shifts the text of a short message to the left margin when adding a new message or choosing OK after modification.
Size	<p>Startup Resizes the dialog to the size it had at startup.</p> <p>Full List Box Resizes the dialog to display the short message in full length.</p>
Confirm Window	<p>Enables/disables a pop-up window to confirm:</p> <ul style="list-style-type: none"> <li>● the new message number,</li> <li>● that the short text is copied to the first line of the Long Text field if "Short to Long" was chosen,</li> <li>● that the Sample text is copied to the Short Text field if Copy was chosen.</li> </ul>
Import Text File	<p>This function does not apply if you wish to access data on mainframe servers.</p> <p>Imports a text file and converts it into a message file. Note that you always need to specify the full path of a file.</p> <p>For further information on file formats and how to recreate a text file, see Message and Text Files.</p> <p>From (text file) The name of the text file from which the message file will be generated.</p> <p>To (message file) The name of the message file into which the text file will be generated. Default is the full path name of the current library and message file.</p> <p>For user-defined messages, the file name must be <i>Nnn</i>APMSL.MSG.                      For Natural system messages, the file name must be <i>NnnLmmmm</i>.MSG.</p>

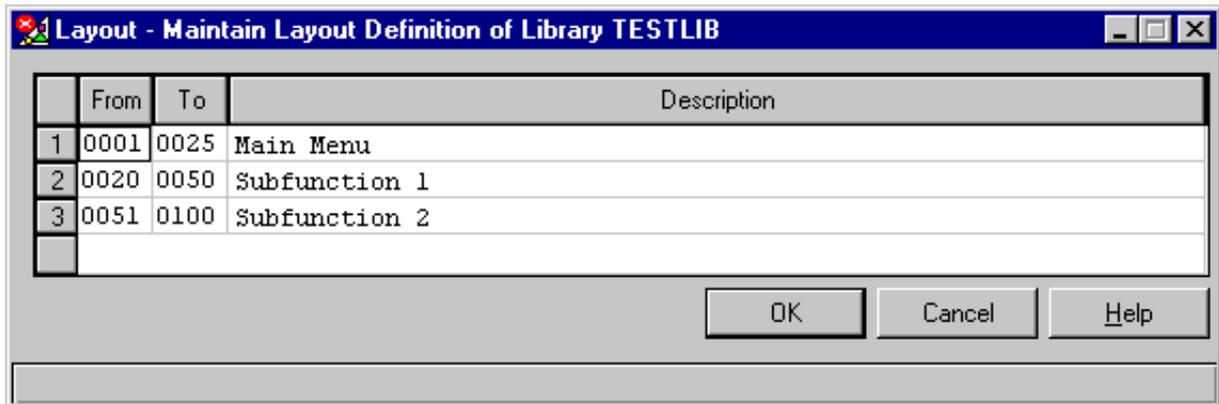
Command	Explanation
Export Message File	<p>This function does not apply if you wish to access data on mainframe servers.</p> <p>Exports a message file and converts it into a text file. Note that you always need to specify the full path of a file.</p> <p>For further information on file formats and how to recreate a text file, see Message and Text Files.</p> <p>From (message file)      The name of the message file, from which the text file will be generated. Default is the full path name of the current library and message file.</p> <p>For user-defined messages, the file name must be <i>NnnAPMSL.MSG</i> For Natural system messages, the file name must be <i>NnnLmmmm.MSG</i>.</p> <p>To (text file)            The name of the text file that will be generated.</p>

**Layout**

Allows specification of valid message ranges to categorize messages. Overlapping of ranges is possible. A new message can only be added if its number is within the range defined in the layout.

The layout definition applies to **all** languages. It is stored in the English message file.

To insert or delete rows, mark a row and press the insert or delete key. If the maximum of 18 rows is displayed, you may have to delete or overwrite another row before you can insert a new one.



**Help Menu**

Displays SYSERR help text.

## Toolbar

The toolbar buttons represent the following menu commands or push buttons:

-  New Library/Language (File menu)
-  Open Library/Language (File menu)
-  Print (File menu)
-  Exit SYSERR (File menu)
-  Cut (Edit menu)
-  Copy (Edit menu)
-  Paste (Edit menu)
-  Undo (Edit menu)
-  New Message upwards (Edit menu)
-  New Message downwards (Edit menu)
-  Read All (Edit menu)
-  Translate (Edit menu)
-  Filter Display (View menu)
-  Previous (push button)
-  Next (push button)
-  OK (push button)
-  Cancel (push button)
-  Sample (Options menu)
-  Layout (Options menu)
-  Size Startup (Options menu)
-  Import Text File (Options menu)
-  Export Message File (Options menu)

## List Box

The list box appears on the left side of the SYSERR window. It contains the short messages of one language for one library. The short texts are preceded by the message number. The messages are sorted by the message number in ascending order.

If a message file contains more than 200 messages, for performance reasons, not all messages are read in one step. When initializing the SYSERR window, up to 200 messages are read from the message file at once, and about 30 of them are displayed in the list box. Scrolling down the list with the vertical scroll bar, the next 200 messages are read and displayed as soon as the scroll bar reaches the bottom of the list box. The command Read All as described in the section Menu Bar reads all remaining messages in one step.

The selected (highlighted) short message is the current message. It is displayed on the right side of the SYSERR window. There, you can modify the short and long text. See also Fields below.

## Fields

The following fields appear in the SYSERR window:

Field	Explanation
Sam.	Output field displaying the text of a sample message if created.  To create a sample message, see Sample in the section Menu Bar.
Num.	Modifiable field displaying the number of the current message. It corresponds to the selected message in the list box.  It is possible to select another message number or to insert a new one. The maximum message number for a library is 9999. The message number 0000 is not allowed.
Short	Modifiable field displaying the short message text of the current message number.  If you enter .C, the sample message for the selected language and library is copied into this field. See also Sample in the Menu Bar section.  A new message can only be saved if text has been entered in the Short field. Therefore, if no text is displayed for the current message, the message number is free and can be assigned to a new message.
Long Text	Modifiable field displaying the long message text of the current message number. It consists of three sections:  Long description Explanation Action

# Converting Short Messages

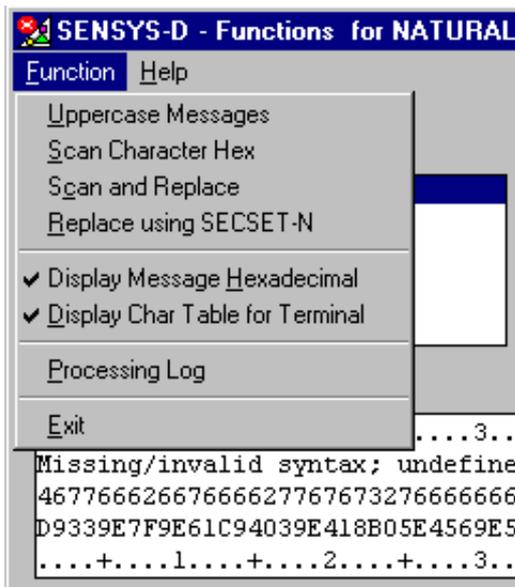
If your terminal does not display certain characters correctly or if your terminal cannot display lower-case characters, it is possible to convert the characters of Natural short messages with the SENSYS-D dialog.

▶ **To convert characters of messages**

1. From the SYSERR subdirectory Dialogs, select SENSYS-D.  
Or select library SYSERR and enter command SENSYS-D.  
The Functions for Natural Short Messages dialog box opens:



2. Specify the error message range and the Language.  
If desired, enter hexadecimal values in the Scan Value and Replace Value fields.
3. From the Function menu, choose an item:



The following functions are provided:

Function	Description
Uppercase Messages	Converts messages to upper case. Once converted to upper case, you cannot convert them back to lower case. To recover lower-case messages, unload the error messages using SYSTRANS, save the transfer file and, when required, reload the messages using SYSTRANS. See also the Natural SYSTRANS Utility documentation.
Scan Characters Hex	Scans for hexadecimal characters entered in the Scan Value field.
Scan and Replace	Scans hexadecimal characters entered in the Scan Value and replaces them with the hexadecimal characters entered in the Replace Value fields. This function may, for example, be useful to replace special signs.
Replace using SECSET-N	Replaces the characters of a message by the character set defined in the subprogram SECSET-N. SECSET-N is stored in the SYSERR subdirectory Subprograms.
Display Message Hexadecimal	Enables/disables the display of a message in hexadecimal format.
Display Char Table for Terminal	Enable/disable this function to determine the characters your terminal can represent.
Processing Log	Enable/disable the processing log to view the results of the executed functions.

# Generating Message and Text Files

Message modules are created and maintained with the import and export functions of the SYSERR utility. They are generated from text files and stored as message files with the file extension .MSG in operating system directories.

The message files are located in the following Natural directories:

```
FUSER \<library>\ERR
FNAT \<library>\ERR
Natural \ERR
```

User-defined messages are stored in the subdirectory ERR of the library on the FNAT or FUSER system file from which the application is executed, the steplib, or the library SYSTEM.

For Natural system messages, the message modules must be located in the subdirectory ERR in the Natural root directory. Natural system messages are stored in eight message modules.

Below is information on:

- Creating Text Files
  - Generating a Message Module
  - Recreating Text Files
- 

## Creating Text Files

For Natural system or user-defined messages, the import function of SYSERR generates a message module from one text file.

To create such a text file, you must use a specific layout, as shown in the following example:

### Example:

```
NAT
0010
0100
0010E NO MESSAGE TEXT DEFINED!
0020E MISSING/INVALID SYNTAX; UNDEFINED VARIABLE-NAME.
0025E ERROR IN ENTRY FOR NUMBER OF RECORDS TO BE PROCESSED.
0050E INCORRECT FIELD SPECIFICATION IN 'WHERE' CLAUSE.
#PLEASE CHECK PROGRAM
#FOR ERRORS
0100E FUNCTION NOT AVAILABLE.
```

### Explanation:

NAT	Group ID (library name) and prefix for the number that will be displayed with the message. It can have up to eight characters.
0010	Four-digit starting number of the range of messages.
0100	Four-digit ending number of the range of messages. All error numbers that are defined in this text file must be within this range.
0010E	<p>NO MESSAGE TEXT DEFINED.</p> <p>This is the message for error number 0010. The <b>E</b> is mandatory and means "error". This message will be issued with the statement "REINPUT *0010".</p> <p>Explanatory long texts must be placed immediately below this message; each of these additional lines must start with a hash/number (#) sign. Up to 20 additional lines are allowed.</p>

## Generating Message Modules

Once the text files have been created, you can generate a message module from the text files with the SYSERR utility.

For user-defined messages, one output error file can be created in one language for each library. Each error file must be in the ERR subdirectory of that library.

### Naming Conventions

For user-defined messages, the name of the message file must be:

*Nnn*APMSL.MSG,

where *nn* is the language code (01 - 60), for example 01 for English.

For Natural system messages, the name of the message file must be:

*NnnLmmmm*.MSG,

where *nn* is the language code to be used and *mmmm* the starting number of the message range.

The ranges of message numbers are fixed, as defined during Natural system installation, for example:

N01L0000	Messages 1 - 1999
N01L2000	Messages 2000 - 2999

#### To generate a message text file

- See the Import Text File function of the Options menu as described in the section SYSERR Window and Functions.

## Recreating Text Files

With the SYSERR utility, you can also recreate a text file for message text maintenance. This is done by reconvertng an error messages module into a sequential text file.

#### To recreate a message text file

- See the Export Message File function of the Options menu as described in the section SYSERR Window and Functions.

# User Exit USR0020P

The user exit program USR0020P in the library SYSEXT is provided to read messages from the FNAT or FUSER system file. Thus, it is possible, for example, to have long messages displayed in an application (as part of your own user-defined help system) without having to use the library SYSERR.

Log on to the library SYSEXT and enter the command MENU. On the list provided, mark the program USR0020P with a question mark (?); a window is displayed, on which you can select the function to be executed for the program. If you enter an **I**, detailed information on the use of USR0020P is displayed.