



NATURAL

Natural
SYSERR Utility
Version 4.1.2 for Windows



Order Number: NAT314-084WIN

This document applies to Natural Version 4.1.2 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 unify 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 depending on your operating system environment:

All Platforms			
<input type="radio"/>	General Information on Messages		
<input type="radio"/>	User Exit USR0020P		
Mainframes, UNIX and OpenVMS		Windows	
<input type="radio"/>	Invoking SYSERR	<input type="radio"/>	Invoking SYSERR
<input type="radio"/>	Direct Commands	<input type="radio"/>	Window Elements
<input type="radio"/>	Parameters	<input type="radio"/>	Converting Natural Short Messages
<input type="radio"/>	Functions		
<input type="radio"/>	Converting to Upper Case - ERRUPPER		
<input type="radio"/>	Replacing Characters - ERRCHAR		
Mainframes only		Windows, UNIX and OpenVMS	
<input type="radio"/>	Unloading Messages - ERRULDUS	<input type="radio"/>	Generating Message Files
<input type="radio"/>	Loading Messages - ERRLODUS		

SYSERR General Information on Messages

- Message Types
 - Message Languages
 - Which Messages Do You Receive?
 - Displaying Natural Long Messages
(not applicable to UNIX and OpenVMS)
-

Message Types

There are Natural system messages, which belong to Natural and there are user-defined messages attached to libraries (including SYS-libraries). The type of message depends on the library name.

▶ To access Natural system messages

- In CUI environments:
Enter a Function Code and Message Type **NS** or **NL**.
A Library name is not required and any entries are ignored.
- In GUI environments:
Select Library "<natsys>" or leave the field blank.

In all other cases, you will access user-defined messages.

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

- Natural short message
- Natural long message
- User-defined short message
- User-defined long message

▶ 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.

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

A long message is meant to be a detailed explanation of the corresponding short message. See also Displaying Natural Long Messages (not applicable to UNIX and OpenVMS).

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 requesting a Natural short message from a program, 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 requesting a user-defined short message from a program, Natural first looks for the requested message number *nnnn* under the current language code as determined by the system variable *LANGUAGE (see the Natural 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.

At first, these three search steps are 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

Not applicable to UNIX and OpenVMS.

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

- In GUI environments:
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.
- In CUI (mainframe) environments:
Place the cursor in the message line and press the help key, as assigned with a SET KEY statement (usually PF1).
Or enter the command "HELP *nnnn*"
Or enter the command "? *nnnn*"
where *n* 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.

Note for mainframes:

The library SYSEXT contains a user exit, USR2002P, which allows you to modify some elements of the long-text display invoked with PF1 (see above).

SYSERR Generating Message Files

Applicable to UNIX, OpenVMS and Windows only.

- Storing Messages
 - Creating Text Files
 - Generating Messages Modules
 - Recreating Text Files
-

Storing Messages

The messages created and maintained with the IMPORT and EXPORT commands of SYSERR are stored in operating system directories.

For Natural system messages, the utility SYSERR uses one or more text files (up to ten) to create a messages module.

For user-supplied messages, this module must be:

`NnnAPMSL.MSG`

where "*nn*" is the language code (01 - 60).

This module must be stored in the subdirectory ERR of either the library from which the application is executed or the steplib or the library SYSTEM.

User-supplied messages for a library are stored in the directory identified by the FUSER system file assignment made in the global configuration file as described in your Natural Operations documentation under Operations Environment (UNIX and OpenVMS) or Configuration Files (Windows).

For Natural system messages, the module must be located in the subdirectory ERR in the Natural root directory.

Creating Text Files

For Natural system messages, the IMPORT function of SYSERR generates a messages module from one text files.

The text files to be used must have a specific syntax, 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	NO MESSAGE TEXT DEFINED. This is the message for error number 0010. The E is mandatory and means "error". This message will be issued with the statement "REINPUT *0010". 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.

Generating Messages Modules

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

One output error file can be created for each library. Each error file must be in the ERR subdirectory of that library.

▶ To generate a message text file under UNIX and OpenVMS

1. Enter the IMPORT command of the SYSERR utility.
The "Import Text File to Message File" window is displayed.
2. In the From input field, specify the name of the input text file from which all information is to be read.
The full path name of the file must be specified. Error number ranges must not overlap for Natural system messages.
In the To input fields, specify the language and the library of the output error file to be generated.

▶ To generate a message text file under Windows

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

Recreating Text Files

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

▶ To recreate a message text file under UNIX and OpenVMS

- Enter the EXPORT command of the SYSERR Utility.
The "Export Text File from Message File" window is displayed.
- In the From input fields, specify the language and the library of the message to be used as input.
In the To input field, specify the name of the text file to be created.
The text file created will have the same format as an input text file.

▶ To recreate a message text file under Windows

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

Invoking SYSERR

▶ To invoke the SYSERR utility from the main Natural window

1. Enter the system command SYSERR

Or, from the Tools menu, choose Error Messages...

Or, if you have already created error messages for a library:

from the View menu, choose Library Workspace and click on the Logical View button.

The message files are listed per language under subdirectory Error Messages in the library specified.

Double-click a message file.

If no context information (library, language) is available, SYSERR prompts you for a library and a language:

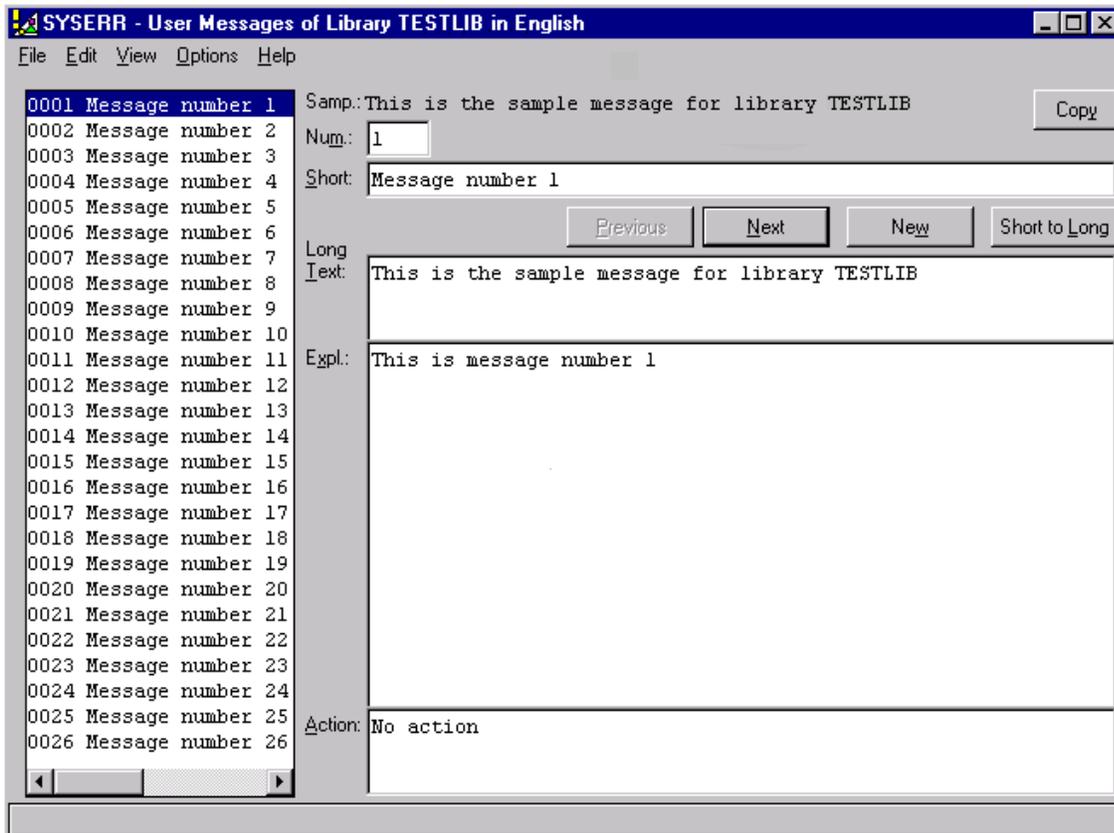


2. Choose OK.

The SYSERR window is displayed. See the section SYSERR Window Elements.

SYSERR Window Elements

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, showing two arrows pointing into 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 a click with the right mouse button on the dialog element. The available commands are either Cut and Paste functions or correspond to the commands in the menu or to push buttons.

This section covers the following topics:

- Title Bar
- Push Buttons
- Menu Bar
- 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 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. Note: 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	Selects an existing message file from the Natural file tree (FNAT, FUSER or Natural system) or from another directory. The message files are located in the Natural directories: <p style="margin-left: 40px;">FUSER \<i><library></i>\ERR FNAT \<i><library></i>\ERR Natural \ERR</p> For user-defined error messages, the file must have the name <i>Nnn</i> APMSL.MSG, where <i>nn</i> is the language code to be used, for example 01 for English. In a Natural System message file, the 2nd and 3rd character of the message file name are the language code, the 4th character is the letter L, and the last four characters are the starting number of the error message range.
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 the logical printer name; see the DEFINE PRINTER statement in the Natural Statements documentation for details on logical printer names. See also how to print all Natural system messages below.
Exit	Exit SYSERR.

To print all Natural system messages

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

Edit Menu

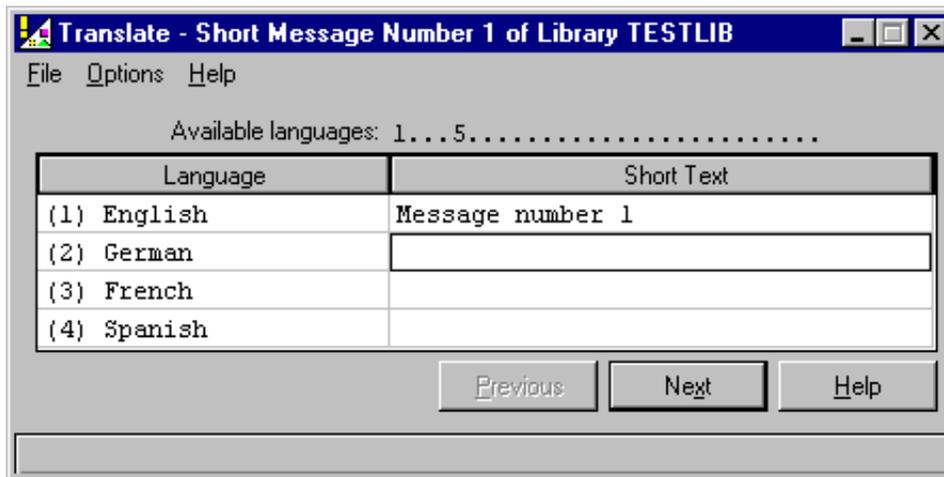
Command	Explanation
Cut, Copy, Paste, Delete, Undo	Supported clipboard functions.
New Message	Searches for the next free message number, for which no other message exists in any language. Upwards/Downwards: the next lower/higher message number from the current message.
Delete Selected	Deletes all messages selected (highlighted) in the list box. A dialog box prompts you to confirm the action.
Delete All	Deletes 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

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



2. 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.

3. Enter the translation in the Short Text field of the relevant language.
4. 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.

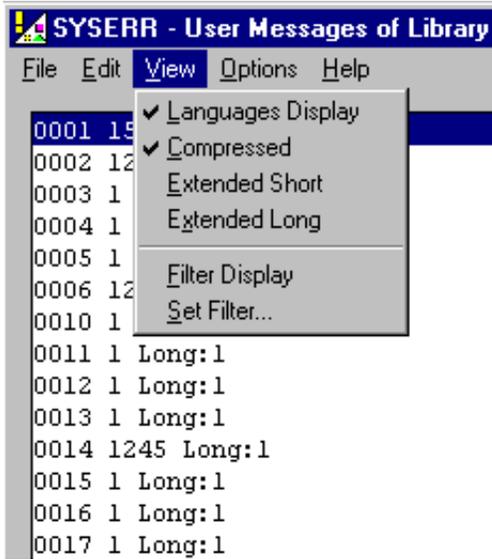
View Menu

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

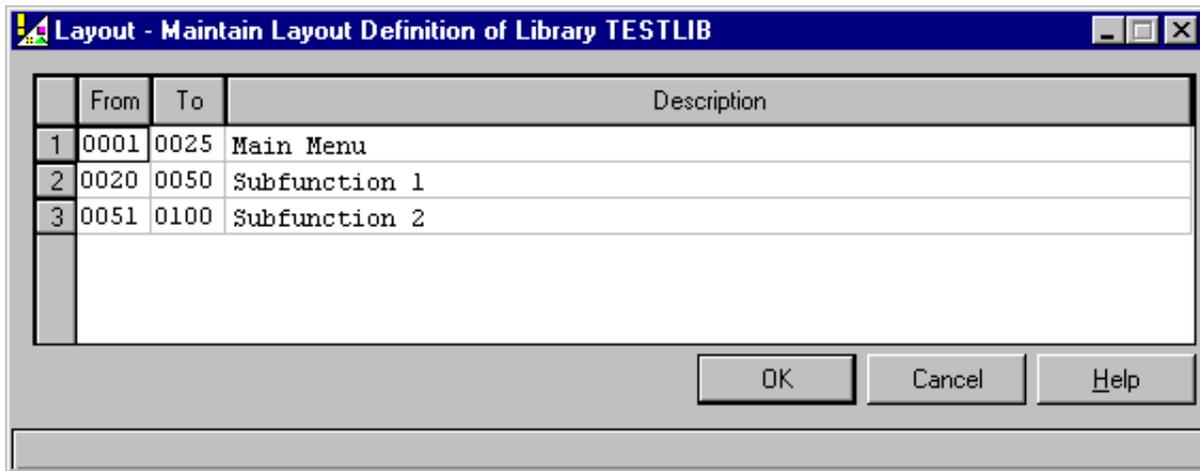
Command	Explanation
Sample	<p>Creates a sample message to be used as a master for creating short messages. If the string 0000 has been entered in the sample message, when copied, the string is replaced by the number of the new message.</p> <p>You can define one sample message for each language.</p>
Layout	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"> ● the new message number, ● that the short text is copied to the first line of the Long Text field if "Short to Long" was chosen, ● that the Sample text is copied to the Short Text field if Copy was chosen.
Import Text File	<p>Imports a text file and converts it to a message file:</p> <p>From (text file) Text file, from which the message will be generated.</p> <p>Generating messages modules:</p> <p>The full path name of the file must be specified. Error number ranges must not overlap for Natural system messages.</p> <p>To (message file) Message file that will be generated. Default is the current library and message file. For user-defined error messages the file must have the name <i>NnnAPMSL.MSG</i>, where <i>nn</i> is the language code to be used.</p> <p>For further information on file formats refer to Recreating a Text File as described under Error Messages Maintenance in the Natural Operations for Windows documentation.</p>
Export Message File	<p>Exports a message file and converts it to a text file.</p> <p>From (message file) Message file, from which the text file will be generated. Default is the current library and message file. For user-supplied error messages, the file has the name <i>NnnAPMSL.MSG</i>, where <i>nn</i> is the language code to be used.</p> <p>To (text file) Text file, which will be generated.</p> <p>For further information, refer to Recreating a Text File as described under Error Messages Maintenance in the Natural Operations for Windows documentation.</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.

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:

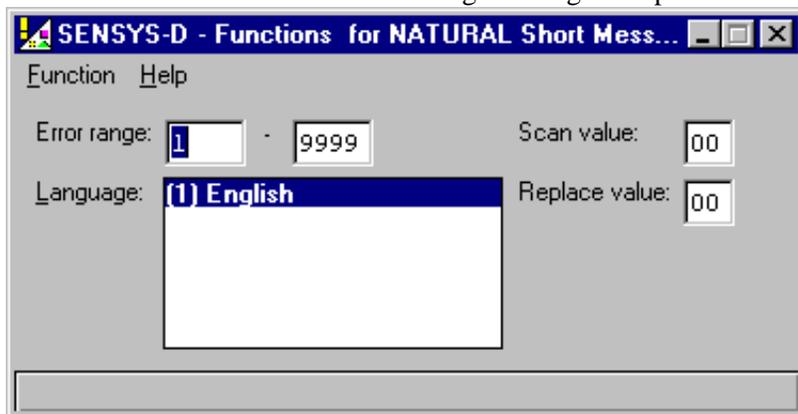
Field	Explanation
Sam.	Output field displaying the text of a sample message if created. To create a sample message, see Sample in the section Menu Bar.
Num.	Modifiable field displaying the number of the current message. It corresponds to the selected message in the list box. It is possible to select 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

SYSERR Converting Natural Short Messages

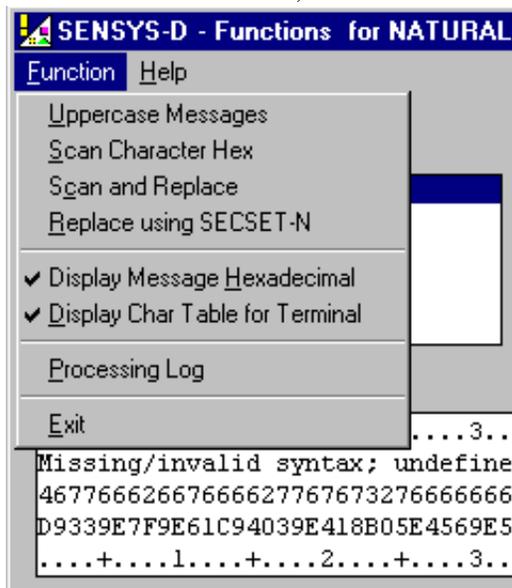
If your terminal does not display certain characters correctly or if your terminal cannot display lower-case characters, it is possible to convert the characters of Natural short messages with the SENSYS-D dialog.

▶ **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 find out the characters your terminal can represent.
Processing Log	Enable/disable the processing log to view the results of the executed functions.

SYSERR 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.

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