
RCSL No: 991 10624
Edition: September 1986
Author: Karl Kristensen

Title:

RC8000 CSP terminal process
Reference Manual

Keywords:

RC8000, Terminal, External Process
Local Area Network, ADP.

Abstract: Reference Manual for RC8000 Terminal Process.

The manual describes the user interface and the associate functions. It covers the specific aspects of using the terminal process for Local Area Network communication, and is meant to be used by RC8000 users.

(16 printed pages)

<u>TABLE OF CONTENTS</u>	<u>PAGE</u>
1.0 Introduction.....	3
1.1 Changed.....	3
2.0 General rules.....	4
2.1 Terminal kind.....	5
2.1.1 Conversational line mode.....	5
2.1.2 Conversational screen mode.....	6
2.1.3 File transfer mode used by ACP.....	6
3.0 Operations.....	6
3.1 Attention message.....	6
3.2 Sense operation.....	7
3.3 Lookup specification operation.....	7
3.4 Set specification operation.....	8
3.5 Input operation.....	8
3.6 Output operation.....	10
4.0 Summary of messages and answers.....	11
Appendix.....	12
A. References.....	12

1.0 Introduction.

This manual describes the conventions of an external process controlling a CSP (character stream protocol) terminal.

The terminal is connected to RC8000 via a local area network (LAN) using IMC (inter module communication).

RC8000 is connected to LAN by an Attached Device Processor (ADP), and here the mapping between RC8000 operation and network operation take place.

The network operations are handled by IMC.

The CSP terminal is represented in RC8000 as an external process with kind = 8 and may either be a traditional character-oriented (asynchronous start/stop) terminal e. g. RC822, or an intelligent terminal, workstation or PC with an emulator providing similar functionality i. e. RC855, RC45, or RC750.

A CSP terminal support a repertoire of 95 displayable characteres coded according to some scheme in compliance with ISO-646. However, extension to 7-bits coding are also allowed.

1.1 Changed.

- The format of 'set specification' and 'lookup specification' has been changed.
- No conversion tables are used. Only field editing characters and NL and CR may be converted. All other characters are transmitted unchanged even characters in the interval 128...255.
- The number of input and output modes are decreased.

- The text 'unknown' will not appear in case of unknown attention request.
- The character 128 has no longer any special meaning.

2.0 General rules.

Operations can be initiated by an internal process that is user of the device. Initialization has no effect. A terminal process accepts messages simultaneously from more than one internal process provided no internal process has reserved it.

The external process is able to handle the following operations: sense, attention, input message, output message, lookup specification and set specification.

Input and output conversion can be changed by set specification operation and mode in input and output message.

The operations are delivered to the external process with 'send message' and the possible results from the corresponding 'wait answer' are:

result = 1: Message accepted, answer contains further status information.

result = 2: Violation of user/reserver requirement.

result = 3: Unintelligible message: illegal operation, mode, or in case of input/output operation the specified core area outside calling process or first address > last address.

result = 4: Malfunction, ADP controller troubles.

result = 5: Receiver unknown, the specified external process does not exist.

2.1 Terminal kind.

In the terminal process for the terminals connected to the RC8303 device controller a terminal could use ten different conversion tables. The conversion table defined the conversion and attributes of the characters. The attributes could be attention, termination and, field editing like delete character and delete buffer.

This implementation of the terminal is not as general in respect to defining terminal kinds.

Three terminal kinds are available:

- conversational line mode
- conversational screen mode
- file transfer mode used by ACP (ref. 1)

2.1.1 Conversational line mode.

- The character <CR> is echoed as <CR><NL> and the value <NL> returned to RC8000.
- The character <BS> is echoed as <BS><SP><BS> and the last character in the input buffer is removed.
- The character <ENQ> is echoed as <CR><NL> and the entire contents of the input buffer is deleted.
- All other control characters, i. g. characters with values in the interval 0..31, or 127 are not echoed, but they terminate input and the value is returned to RC8000 without any conversion.

2.1.2 Conversational screen mode.

- Control characters are not echoed but they terminate input and the value is returned to RC8000 without any conversion.
- Characters in the range 32..126 are returned to RC8000 without conversion.

2.1.3 File transfere mode used by ACP.

- All characters are returned to RC8000 without conversion.
- Only ETX or buffer full or timeout terminates input.

3.0 Operations.

3.1 Attention message.

If the operator presses the ESC buttom the text 'att' is displayed on the terminal and the operator can now identify the internal process he want to communicate with by writing its process name.

In normal case an attention message is sent to the internal process identifying the device by its process description address as sender address. However, if the name does not identify an exsisting internal process, nothing is done.

If the terminal process is reserved, no 'att' is written, but an attention message is sent to the reserving internal process.

Attention message:

0
0
0
0

3.2 Sense operation.

The operation is dummy and is answered with status = 0

Sense message:	answer:
0	0

3.3 lookup specification operation.

The answer informs about the terminals present characteristics.

Lookup specification message:	answer:
2<12 or 132<12	0
	echo<11 + type
	0
	prompt<8
	0
	0
	timer<8
	0

echo: 1 = echoing is enabled (default)
0 = echoing is disabled.

type: 1 = conversational line mode
2 = conversational screen mode

9 = file transfer mode used by ACP.

prompt: >0 means value of prompt character.
0 no prompt character is output.
The default value is 7 (BELL).

timer the number of seconds elapsed between two lines read
before an input message is returned. The default value
is 60 seconds.

3.4 Set specification operation.

The operation changes the attributes of the terminal according to the contents of the message.

set specification message:	answer:
4<12+0 or 134<12+0	0
echo<11 + type	
0	
prompt<8	
0	
0	
timer<8	

The interpretation of the message is the same as the answer to a lookup specification message.

3.5 Input operation.

input message:	answer:
3<12 + trail<4 + mode	status word
first storage address	number of halfwords
last storage address	number of characters

When an input message is sent to the external process, the name of the sending process is displayed if it differs from the name of the last internal process that communicated with the external process. The name will be output in the following format:

<new line> to <name of sender> <new line>

A prompt character is output, normally a BELL, but it can be changed or suppressed with a set specification message.

The input buffer size is fixed to:

$$((\text{last address} - \text{first address}) + 2) / 2 * 3 - \text{trail}.$$

If trail cause input buffer size to be negative the size is set to zero.

Now the operator can input characters to a memory area within the sending process. Characters are stored with three characters per word. Unused character positions in the last input word are filled with NULL characters.

The mode in an input message can have two different values 0 and 8:

Mode = 0

This mode is intended for conversational operation by means of the keyboard.

Mode = 8

Mode 8 is used when the characters read must be invisible i. e. when reading passwords. The input message is handled in the same way as an input message in mode 0, but input from the terminal is not echoed.

Input message in mode 0 and 8 are returned in the following cases:

- when then storage area is full
- operator key interrupt (type independent)
- when the timeout occurs
- when the terminal is disconnected
- when a termination character is read

3.6 Output operation.

output message:	anwer:
5<12 + mode	status word
first storage address	number of halfwords
last storage address	number of characters

When an output message is sent to the external process, the name of the sending process is displayed if it differs from the name of the last internal process that communicated with the external process. The name will be output in the following format:

<new line> from <name of sender> <new line>

A textstring consisting of one or more lines is output from the storage area within the sending process pointed out by the message. Characterers must be stored with three characters per word.

Output is terminated and answer returned to the sending process in the following cases:

when all characters in the storage area is output.

when the device is disconnected.

operater key interrupt (input type independent)

whichever occurs first.

output can be performed in three modes: 0, 2, 4.

Mode = 0:

Mode 0 is the normal text mode. The characters CR or NL will be converted to <13><10>

Mode = 2.

Mode 2 is transparent output mode where all characters are written without any change.

Mode = 4.

Mode 4 is like mode 2.

4.0 Summary of messages and answers.

	message	answer:
sense:	0	0
Lookup specification:	2<12	0 echo<11 + type 0 prompt<8 0 0 timer<8 0
set specification:	4<12+0 echo<11 + type 0 prompt<8 0 0 timer<8	
input message:	3<12+trail<4+mode first storage address last storage address	status word number of halfwords number of characters
output message:	5<12+mode first storage address last storage address	statusword number of halfwords number of characters

Status bits.

The following bits can be returned in the statusword.

2 timer
7 operator key (attention)

APPENDIX

A.

References:

1. RCSL No. 42-i2498
Asynkron Kommunikations Protokol (ACP)
Protokol beskrivelse.



RETURN LETTER

Title: RC8000 CSP terminal process
Reference Manual.

RCSL No.: 991 10624

A/S Regnecentralen af 1979/RC Computer A/S maintains a continual effort to improve the quality and usefulness of its publications. To do this effectively we need user feedback, your critical evaluation of this manual.

Please comment on this manual's completeness, accuracy, organization, usability, and readability:

Do you find errors in this manual? If so, specify by page.

How can this manual be improved?

Other comments?

Name: _____ Title: _____

Company: _____

Address: _____

Date: _____

Thank you

RCSL Nr. 46-F 0093

..... Fold here

..... Do not tear - Fold here and staple

Affix
postage
here

E **REGNECENTRALEN**
af 1979

Information Department
Lautrupbjerg 1
DK-2750 Ballerup
Denmark