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Title: RC890 Control Unit,
Operation and System Customization Manual

Keywords: RC890, RC855, Operation, Customization

Abstract: Describes operation of the RC890 control unit and customization of the RC890 based RC855 terminal system.

CONTENTS

1. INTRODUCTION 1.

The RC890 control unit permits RC855 terminals to access host systems utilizing the SNA/SDLC as well as the BSC protocol for remote connection of IBM 3270 Display Stations. The RC855 terminals are connected to the RC890 control unit by means of a multidropped terminal network, called RcCircuit.

The RC890 control unit is available in two models: RC890-2 (BSC protocol) and RC890-12 (SNA/SDLC protocol). Either model handles a single communication line with a maximum speed of 9,600 bits per second. Either model supports up to sixteen RC855 terminals; to each of these terminals a printer may be connected, for local or remote printing. For both models, three features are available:

- Upgrade feature, e.g. the SNA/SDLC model instead of the BSC model.

- High performance feature: a single communication line with a maximum speed of 19,200 bits per second, and up to thirty-two RC855 terminals.

- Dual host feature, e.g. BSC protocol, two 9,600 bps lines, and up to sixteen RC855 terminals.

Application programs for RC855 terminals connected to the RC890 control unit are downline loaded from diskette, after selection from a user-specified menu. An RC855 which is itself equipped with a diskette drive may be used for local data processing (the RC855 being loaded from the local diskette with the CP/M operating system) as well as remote host communication.

The present operation and system customization manual for the RC890 control unit describes, in Chapter 2, the operation of the control unit and, in Chapter 4, the customization of the control unit and connected terminals to suit individual user requirements. As a background for customization of the terminal system,

Chapter 3 contains a short account of the RC855 terminal, RC890 CU customization parameters, downline loading, and terminal menus.

Information about matters other than control unit operation and terminal system customization will be found in the referenced publications, which are listed in the appendix.

2. OPERATION OF THE RC890 CONTROL UNIT 2.

The front panel of the RC890 control unit (CU) is of primary interest to the RC890 operator. The front panel contains a diskette drive, a row of status lamps, and a power switch. Figure 1 shows the front panel of the RC890 control unit.

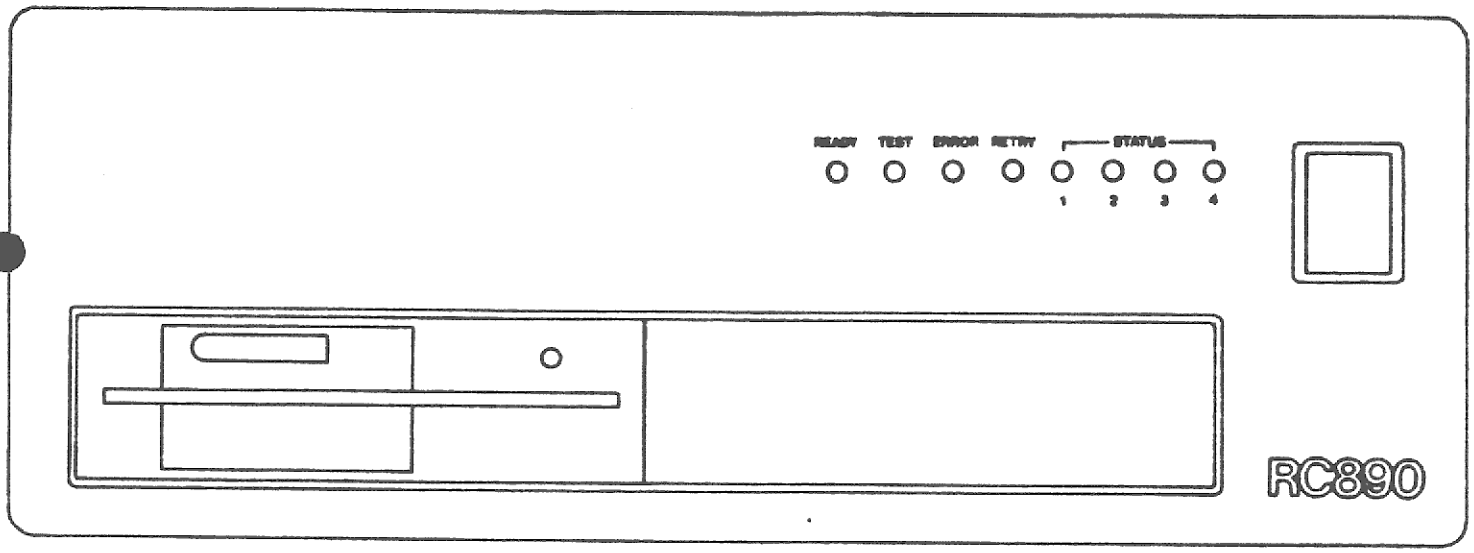

Fig. 1. RC890 Control Unit, Front Panel

2.1 System Startup Procedure 2.1

1. Check that the CU diskette is in the RC890 diskette drive.
2. Apply power to the RC890.
3. Observe the RC890 status lamps.
4. Apply power to the connected RC855 terminals.

In the normal system startup sequence, the status lamps on the RC890 will light as follows:

Lamps Lit	Duration	Phase
all	less than 1 sec.	RC890 power switched on
TEST	approximately 1 sec.	RC890 self-test
READY TEST	30 to 60 secs.	RC890 program load
READY STATUS 3	30 secs. or more	RC855 menu transmission and program load
READY		normal operation

READY will be lit, and STATUS 3 will flash on and off, during RC855 menu transmission and program loading.

From the moment power is applied to the connected RC855 terminal until its menu is received, the RC855 status line will display the message:

```
|RC855                                                              LC|
```

The menu transmission time is approximately 5 seconds, once the RC890 is past its own program load phase. When the menu has been received, the RC855 status line will display the message:

```
|RC855                                                               |
```

The above message is displayed during automatic selection of the terminal's default application (no menu displayed) or while the RC855 operator is selecting an application (from the displayed menu). When loading of the selected application program begins, the RC855 status line will display the message:

```
|RC855                                                              LA|
```

The program load time is approximately 30 seconds; however, if several RC855 terminals must be loaded simultaneously, a longer time will be required (two or more minutes).

The operation of the RC890 control unit is described in detail in the remaining sections of this chapter. The RC855 terminal, down-line loading, and terminal menus are further described in Chapter 3.

2.2 Diskette Drive and the CU Diskette 2.2

The programs to be loaded on the RC890 control unit (CU) are contained in files on the CU diskette (4.2).

It is wise to make one or more backup copies of the CU diskette, if possible, before proceeding to operate the control unit.

Backup copies may be made on an RC855 terminal running under the CP/M operating system. The RC855 in question must be equipped with an RC874 diskette unit. The copying procedure is described in the RC855 Work Station User's Guide [5]. For the operation of the RC855 terminal and the care of diskettes in general, see the RC855 Operating Guide [3].

Backup copies of the CU diskette may be ordered separately.

To return to the RC890 control unit, the CU diskette can be inserted in the diskette drive only when the latch on the drive is horizontal. The label on the diskette must face up and away from the drive. The diskette is inserted by pushing it gently into the drive slot until it is seated. The latch must then be turned clockwise until it is vertical.

Note that the application and removal of power (2.3) has no effect on the CU diskette when the latter is in the diskette drive; in fact, it is good practice just to leave it there.

The CU diskette is removed from the diskette drive by turning the latch on the drive counter-clockwise until it is horizontal. This will unseat the diskette, so that it can be easily withdrawn from the slot.

The lamp on the diskette drive lights when the drive is selected and the diskette revolves.

2.3 Power Switch 2.3

With the power cable (on the back panel) properly connected, the power switch, at the extreme right of the front panel, can be pressed to apply power to the control unit. The switch will light, and remain lit as long as the power is on. Power is removed from the control unit by pressing the same switch again.

2.4 Status Lamps 2.4

The front panel of the RC890 control unit contains a row of eight status lamps, labeled, from left to right: READY, TEST, ERROR, RETRY, STATUS 1, STATUS 2, STATUS 3, and STATUS 4. The significance of these lamps is explained in the following.

The RC890 control unit is reset when power is applied, and thereafter whenever the reset button (on the back panel) is pressed. On being reset, the control unit automatically performs a built-in self-test. On successful completion of the self-test, the programs for the control unit are automatically loaded from the CU diskette.

2.4.1 Self-Test and Program Load 2.4.1

The self-test is performed by the COM and CPU boards in the control unit. Each of these printed circuit boards has its own microprocessor and runs its own program (cf. 4.2.1). The CPU board has overall control of the system. The COM board is the communication line interface. Some features require an additional COM board.

When power is applied to the control unit, all lamps light for a moment (or for as long as the reset button is held depressed). Then the TEST lamp lights, and remains lit during the COM test. If an error is detected, the ERROR lamp lights together with at least one of the RETRY and STATUS lamps. The control unit will normally stop in this situation, and the operator should note down which of the RETRY and STATUS lamps are lit, as this is an error code.

On successful completion of the COM test, the READY lamp lights, and the TEST lamp remains lit.

READY and TEST stay lit together while the CPU board concludes its self-test, loads its own software, reads the textfiles MENU.DLL and PARAMS.CU, and finally loads the program which is to run on the COM board. The TEST lamp is not extinguished until the final loading operation has been successfully completed. The time required for program loading depends on the length of the text-files read (cf. 2.1).

If an error is detected during either of the above loading operations, the ERROR lamp lights, and the READY lamp is extinguished. The TEST lamp remains lit. None of the RETRY and STATUS lamps lights, i.e. the error code is 0.

2.4.2 Normal Operation 2.4.2

During normal operation, READY is lit, whereas TEST and ERROR are not. The other five lamps are used in the following manner:

RETRY : when lit, retransmission on a communication line
STATUS 1 : when lit, activity on host line 1
STATUS 2 : when lit, activity on host line 2
STATUS 3 : when lit, activity on RcCircuit
STATUS 4 : reserved for local area network activity

On a detected unrecoverable error, i.e. in a situation where the control unit has no way of continuing, the ERROR lamp lights, and the READY lamp is extinguished. Again, the operator should note down the error code indicated by the RETRY and STATUS lamps.

2.4.3 Résumé 2.4.3

READY, TEST, and ERROR have primary significance.

TEST is lit only during the self-test. If TEST remains lit, it is owing to an error.

During normal operation, READY is the only one of these three lamps which is lit.

READY lights toward the end of the self-test, while TEST is still lit, as the programs for the control unit are loaded from the CU diskette. If READY and TEST remain lit together, it is owing to an erroneous conclusion of the self-test (on the CPU board).

ERROR lights on a detected error. If TEST is lit, too, the error occurred before the start of normal operation. If none of the RETRY and STATUS lamps is lit, the error was detected during program loading from the CU diskette. The operator should check that the CU diskette is in the diskette drive.

If ERROR lights after TEST has been extinguished, it is owing to an error detected by the control unit's communication program (i.e. the IBM 3274 emulator).

2.5 Error Handling 2.5

Whenever the ERROR lamp lights, the operator should observe and note down which status lamps are lit and which not.

The operator should then correct any obvious error, such as inserting a missing CU diskette, and thereafter reset the control unit by means of the reset button on the back panel.

If the error persists, the operator should report it together with the status lamps observed.

Before resetting the control unit, the operator should, if possible, display and print (or at least note down) the contents of the ERRORLOG. file on the CU diskette (4.2.1). This may be done on an RC855 terminal running under the CP/M operating system (cf. 2.2).

2.6 Back Panel and Signal Cable Connectors 2.6

The back panel of the RC890 control unit contains a fuse, a reset button, a power cable connector, and eight connectors for signal cables. Figure 2 shows the back panel of the control unit.

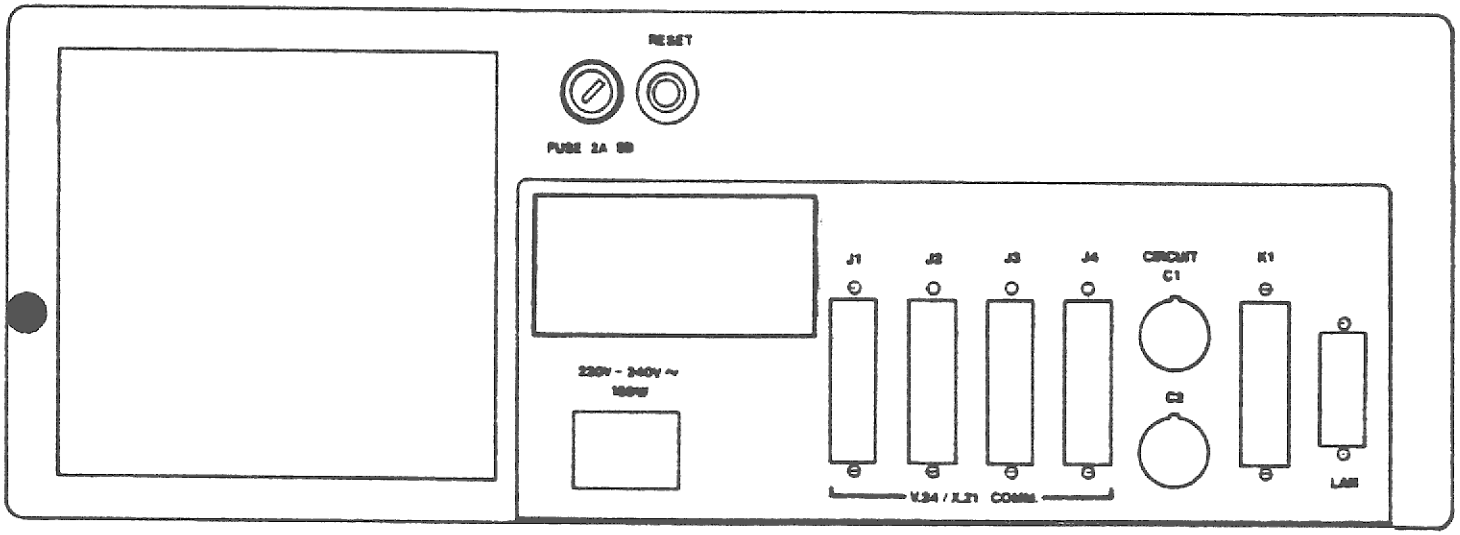

Fig. 2. RC890 Control Unit, Back Panel

The signal cable connectors are used as follows:

Connector	Use
J1-J2	first COM board: J1 : BSC J2 : SNA/SDLC
J3-J4	described below
C1	RcCircuit
C2	not used
K1	TTY to port on CPU board
LAN	local area network

The use of the signal cable connector group labeled V.24/X.21 COMM. is dependent on the particular model and features of the RC890 control unit as follows:

Model or Feature	Connector
RC890-2: BSC, 9600 bps	J1
High performance: BSC, 19200 bps	J3
Dual host: BSC, line 2	J3
RC890-12: SNA/SDLC, 9600 bps	J2
High performance: SNA/SDLC, 19200 bps	J4
Dual host: SNA/SDLC, line 2	J4

For a complete description of the signal cable connectors as well as the back panel generally, see the RC890 System Maintenance Manual [2].

3. THE TERMINAL SYSTEM IN A NUTSHELL 3.

The present chapter briefly describes the RC855 terminal, RC890 CU customization parameters, downline loading, and terminal menus. This information is included in the manual primarily as a background for the customization of the terminal system described in the next chapter.

3.1 RC855 Terminal 3.1

The RC855 is based on a soft-programmed microcomputer. This means that, in the case of an RC855 work station, the RC855 may be alternately loaded from the RC890 with the IBM 3270 emulator and from the local diskette with the CP/M operating system. Thus the RC855 may be used interchangeably for remote host communication and local data processing.

The RC855 is reset when power is applied, and thereafter whenever its reset button is pressed. On being reset, the RC855 automatically performs a built-in self-test. An application program can then be loaded into the RAM (random-access memory) of the RC855 and executed.

Various media are employed to load RC855 application programs, e.g. RcCircuit, where the program is fetched from the RC890 CU diskette, or a diskette on a drive connected to the RC855 itself (3.3).

The current load medium and several other configuration parameters for the individual terminal are stored in the NVM (nonvolatile memory) of each RC855. The values of these NVM parameters can be set to suit the requirements of the terminal system as a whole as well as those of the particular RC855 operator. The NVM parameters that relate to CU-terminal communication are briefly described in Section 4.1.

The first twenty-four lines of the RC855 display screen are used for the terminal menu and for interaction between the RC855 operator and the application program. The bottom (twenty-fifth) line,

which is called the status line, is used for system messages to the operator.

The RC855 is described in detail in other publications, viz. the RC855 Operating Guide [3], the RC855 IBM 3270 Emulator Operating Guide [4], and the RC855 Work Station User's Guide [5].

3.2 RC890 CU Customization Parameters 3.2

The IBM 3274 emulator in the RC890 CU contains a number of user-specifiable parameters. These RC890 CU customization parameters are read during the RC890 program load phase (2.4.1) from a text-file named PARAMS.CU. The parameters can be modified by editing this textfile.

The modification of textfiles in general is described in Section 4.2.2. The PARAMS.CU file is described in Section 4.3.

3.3 Downline Loading and Terminal Menus 3.3

The application program to be run on the RC855 terminal can be loaded from any of several media. This section describes down-line loading of RC855 terminals (where the load medium is RcCir-cuit) and program selection from terminal menus.

The terminal system offers a selection of RC855 application pro-grams. (The standard selection is modest). These applications are specified in a textfile on the CU diskette named MENU.DLL, which also contains the menus specified for the individual terminals. This file is read during the RC890 program load phase (2.4.1).

The menu for a terminal includes applications, contained in pro-gram-image files on the CU diskette, which are loaded from the RC890 via RcCircuit. CP/M based applications, on a local RC855 diskette, may also be included in the menu when the RC855 in question is equipped with a diskette drive. Each terminal has ac-cess to all or a portion of the applications in the system, as specified in the MENU.DLL file. For each terminal, one of the specified applications may be designated the default application.

The contents of the MENU.DLL file can be modified by editing. The modification of textfiles in general is described in Section 4.2.2. The MENU.DLL file is described in Section 4.4.

In the description to follow, it is assumed that the value of the RC855 NVM parameter LD is 1, i.e. the load medium is RcCircuit, default application (4.1).

Whenever the RC855 is reset, the reset event is signaled to the RC890 via RcCircuit. Using the information contained in the MENU.DLL file, the RC890 returns the appropriate menu to the RC855.

Once the RC855 has received the menu, the application can be selected in either of two ways:
- The default application is selected.
- The terminal menu is displayed, and the RC855 operator selects an application from the menu.

The terminal menu is displayed in either of two situations:
- If no default application has been specified.
- If the operator holds the key marked "M" depressed while the RC855 is performing its self-test (4.1).

If the menu is displayed, the operator must first enter any user parameters required and then press the proper function key. The program thus selected will thereafter be loaded and started with the specified parameters. Here is an example of a menu displayed on a terminal:

```
                RC855 APPLICATION MENU
                Key  Description
                PA1  RC855 Configurator
                PA2  3270 Emulator
                PA3  WordStar
                ...
Press function key to select application
RC855
```

If no menu is displayed, the default application program is automatically loaded and started with default user parameters (taken from the MENU.DLL file).

Whether the menu is displayed or not, a parameter string is passed to the loaded application program before it is started. This parameter string consists of the standard parameters concatenated with the user parameters (4.4.2).

The following errors can occur:

1. The downline load software in the RC890 cannot access the CU diskette. The following message is displayed on the RC855 status line:

   | RC855 - CU diskette error |

2. The connection between the RC855 and the RC890 is lost. The following message is displayed:

   | RC855 - CU disconnected |

3. A checksum error is detected in the program image loaded on the RC855. The following message is displayed:

   | RC855 - Checksum error |

4. The selected program is not present on the CU diskette. The following message is displayed:

   | RC855 - CU program not found |

5. The RC855 operator presses a function key not associated with a program. No error message is displayed on the status line, but the RC855 gives a beep.

On the first four errors, the operator must reset the RC855 by pressing the CLEAR key while holding the CTRL key depressed. On the last error, the operator need only press another function key.

The status texts above (e.g. "CU diskette error") are contained in the MENU.DLL file.

4. CUSTOMIZATION OF THE TERMINAL SYSTEM 4.

This chapter describes how the RC890 control unit and connected RC855 terminals are customized to suit individual user requirements. It is strongly suggested that the reader acquaint himself with the background information provided in Chapter 3.

4.1 NVM Parameters 4.1

The RC855 configuration parameters which relate to the terminal system as a whole, i.e. to CU-terminal communication, are briefly described in this section. These and other RC855 configuration parameters are stored in the NVM (nonvolatile memory) of each RC855 terminal. The user can assign values to the NVM parameters by running the RC855 configurator program on the individual terminal. The configurator program is described in the RC855 IBM 3270 Emulator Operating Guide [4].

The NVM parameters relevant to CU-terminal communication are as follows:

Name	Description
LD	Program load medium for the terminal. Values: 0..15. The following values are defined: 1 ("C") = RcCircuit, default application 2 ("M") = RcCircuit, menu 3 ("P") = terminal ROM (read-only memory) 4 ("D") = terminal hard disk 6 ("F") = terminal diskette 7 ("I") = terminal image load The stored value of the LD parameter may be overridden by holding one of several character keys depressed while the RC855 is performing its self-test. The appropriate keys are indicated in parentheses above. For a complete description of the LD parameter, see the RC855 Operating Guide [3].

Name	Description
SA	Secondary address of the terminal on RcCircuit (cf. 4.3.5). Values: 0..15 (with high performance feature, 0..31).
DDN	Display device number of the terminal in the IBM 3270 device cluster. Values: 0..31.
PDN	Printer device number of a printer physically connected to the terminal. Values: 0..31.
HCP	Printer device number of the hardcopy printer logically associated with the terminal. Values: 0..31.

4.2 Files on the CU Diskette

This section gives a survey of the files on the CU diskette, and then describes how the user may go about modifying the contents of two of the textfiles on the CU diskette.

4.2.1 Survey of the CU Diskette Files

Filename	Description
PARAMS.CU	Textfile. See further Sections 4.2.2 and 4.3.
MENU.DLL	Textfile. See further Sections 4.2.2 and 4.4.
*.855	File containing a program image which can be downline loaded, e.g. CONFI.855 or 3270.855.
S.	File containing the (root) program for the CPU board.
*.OBF	File containing object code which is loaded on the CPU board.

Filename	Description
COM*.*	File containing the program for the first or an additional COM board.
ERRORLOG.	Textfile containing error log information (cf. 2.5).

Note that the filenames S. and ERRORLOG. have no extension.

4.2.2 Modification of Textfiles 4.2.2

The contents of the textfiles PARAMS.CU and MENU.DLL on the CU diskette can be modified by the user. These files are described in detail in Sections 4.3 and 4.4, respectively. Modifications may be made on an RC855 terminal, using a text editing program run under the CP/M operating system. The RC855 in question must be equipped with an RC874 diskette unit. For further information, consult the RC855 Operating Guide [3] and the RC855 Work Station User's Guide [5].

Note that, in so far as a word processing program is used for editing, the PARAMS.CU and MENU.DLL files are not "documents" (e.g. "WP" files).

Before any modification is made, it is wise to print the contents of the files, if possible, in order to have a hardcopy record of the standard parameter values and the standard texts. It is also wise to print the files following a modification. The printing of textfiles is described in the RC855 Work Station User's Guide.

The modification of standard texts permits the user to supply his own (national) versions as required. A user-specified text should convey the same meaning as the standard text which it replaces. The standard display-screen texts in the PARAMS.CU file are numbered (4.3.4). The standard instructive texts and status texts in the MENU.DLL file are not numbered, but have predefined positions (4.4.1). It is important to secure a hardcopy record of the standard texts, because one must refer to these texts when reporting errors and the like.

4.3 PARAMS.CU File

4.3

The PARAMS.CU file contains a number of lines, each of which specifies one parameter value. Each line must be terminated by a CR character or a semicolon. A semicolon may be followed by a comment, which is ignored by the program. Each line contains a parameter identification and a parameter value separated by an equals sign. The parameter identification consists of a parameter name, which in most cases must be followed by a comma and an argument. The argument will be a decimal or hexadecimal number. A parameter value is either a decimal or hexadecimal number or a textstring. Here are some examples:

```
EBCDIC,20=F1;                    send space to the host as "1"
BSCCU,1=3;                       this CU is number 3
BSCDUP,1=0;                      the host line is half duplex
DSTEXT,1= Skriver standset;      national version of a status text
BSCID,1=-- myhost --;            a host line identification
```

If a semicolon, equals sign, comma, or percent sign is to be included in the actual contents of a line, it must be preceded by a percent sign. A CR character immediately following a percent sign is ignored.

The following sections describe each of the user-specifiable parameters. For each parameter, type specifications enclosed by "<" and ">" show how the argument and the parameter value must be stated. The lines that contain the syntax for a parameter are marked by ** in the margin. Here are some examples of the notation used:

"dec(0..31)" means "decimal number in the range 0 to 31".
"hex(0..BF)" means "hexadecimal number in the range 0 to BF".
"string(5)" means "textstring containing at most 5 characters".

Note that, in the event of a syntax error in a user-specified parameter, the IBM 3274 emulator in the RC890 CU will take the standard parameter value.

4.3.1 Character Set Conversion

4.3.1

In the communication with the host, the EBCDIC code (8 bits per character) is used. Internally in the CU and in the terminals, a code based on ISO 646 (ASCII), with values in the interval hex(0..BF), is used. The conversion between the two representations takes place before transmission/after receipt of each text to/from the host by table lookup. The conversion tables can be modified value by value.

Conversion to EBCDIC

** EBCDIC,<hex(0..BF)>=<hex(0..FF)>

specifies that the internal code indicated by the argument is to be converted to the parameter value.

Conversion to Internal Code

** INTCODE,<hex(0..FF)>=<hex(0..BF)>

specifies that the 8-bit EBCDIC code indicated by the argument is to be converted to the parameter value.

The EBCDIC and internal code sets are fully described in the RC890 IBM 3274 Emulator Reference Manual [1].

4.3.2 Communication Line Parameters, BSC

4.3.2

For each BSC communication line (to a host) one can specify the number of the CU as a number in the interval 0..31. The number of the CU determines the addressing sequences (poll and select) to which the CU will respond. It is also possible to specify whether the line is half or full duplex.

CU Number

** BSCCU,<1/2>=<dec(0..31)>

specifies the CU number for BSC line 1 or 2. (Line 2 occurs on models with the dual host feature). Standard value: 0.

Half/Full Duplex

** BSCDUP,<1/2>=<0/1>

specifies half duplex (0) or full duplex (1) for BSC line 1 or 2. Standard value: 1 (full duplex).

4.3.3 Communication Line Parameters, SNA/SDLC

4.3.3

For each SNA/SDLC communication line (to a host) one can specify the SDLC address of the CU. This address is used in all blocks (frames) sent from the host to the CU in question, i.e. blocks not containing the specified address will not be accepted by the CU. It is also possible to specify whether the line is full or half duplex, point-to-point or multipoint; whether the line is switched or nonswitched; and whether NRZI encoding is to be used. Note that a switched line is treated as half duplex, point-to-point, regardless of whatever else is specified. Finally, one can specify the terminal-ID of the CU, which is part of the response to an XID command from the host.

SDLC Address

** SDLCADDR,<1/2>=<hex(0..FF)>

specifies the SDLC address for SNA/SDLC line 1 or 2. (Line 2 occurs on models with the dual host feature). Standard value: $C1_{Hex}$.

NRZI Encoding

** SDLCNRZI,<1/2>=<0/1>

specifies that NRZI encoding is to be used (1) or not used (0) on SNA/SDLC line 1 or 2. Standard value: 0 (not used).

Half/Full Duplex

** SDLCDUP,<1/2>=<0/1>

specifies half duplex (0) or full duplex (1) for SNA/SDLC line 1 or 2. Standard value: 1 (full duplex).

Point-to-Point/Multipoint

** MPOINT,<1/2>=<0/1>

specifies a multipoint connection (1) or a point-to-point connection (0) on SNA/SDLC line 1 or 2. Standard value: 0 (point-to-point).

Switched/Nonswitched

** SWITCHED,<1/2>=<0/1>

specifies that SNA/SDLC line 1 or 2 is nonswitched (0) or switched (1). Standard value: 0 (nonswitched).

Terminal-ID

** TERMID,<1/2>=<string(5)>

specifies the terminal-ID with which the CU is to respond, if the host sends XID on SNA/SDLC line 1 or 2. The characters in the string must be hexadecimal digits. Standard value: 00000.

4.3.4 Display Screen Texts 4.3.4

Various texts are displayed on the RC855 status line (3.1) as an indication of the state of the terminal or the CU or in response to operator actions. The emulator has standard values for all of these texts, but it is possible to modify them. For a full description of the status line, see the RC855 IBM 3270 Emulator Operating Guide [4].

Device and Emulator System Status Texts

** DSTEXT,<1..11>=<string(21)>

specifies a device or emulator system status text which replaces one of the following standard texts (all of which are introduced by a blank):

1= Printer not ready
2= Print cancelled
3= Printer offline
4= Printer unavailable
5= Printer busy
6= Protected field
7= Card read error
8= Card format error
9= Field size error
10= Configuration error
11= CU disconnected

Communication Line Status Texts

** CSTEXT,<1..3>=<string(24)>

specifies a communication line status text which replaces one of the following standard texts (all of which are introduced by a blank):

1= Modem off
2= Line not ready
3= System not available

Note that the SNA emulator uses only the first two texts (and only the first 15 characters of a text).

Host Line Identification

** BSCID,<1/2>=<string(12)>
** SNAID,<1/2>=<string(12)>

specify the text which identifies BSC line 1 or 2 and SNA/SDLC line 1 or 2, respectively. This text is also used in the host line menu, as described in the RC855 IBM 3270 Emulator Operating Guide [4]. The same text may not be used to identify two different lines.

4.3.5 Miscellaneous

4.3.5

The user can specify the number of RC855 terminals (secondary addresses) to be polled on RcCircuit.

Number of Terminals

** NOTERMS=<dec(1..32)>

specifies that only secondary addresses in the interval 0..NOTERMS-1 are to be polled on RcCircuit.

Note that a terminal system must always include a terminal with secondary address 0.

4.4 MENU.DLL File 4.4

The MENU.DLL file contains a number of lines, each of which must be terminated by a CR character or a semicolon. A semicolon may be followed by a comment, which is ignored by the program. Some lines consist of several fields, separated by a comma. (An equals sign will also terminate a field). An example of a MENU.DLL file is given in Section 4.4.4.

If a semicolon, comma, equals sign, or percent sign is to be included in the actual contents of a line, it must be preceded by a percent sign. A CR character immediately following a percent sign is ignored.

The MENU.DLL file has three parts: instructive texts and status texts, application descriptions, and terminal menus. Each of these parts is specifiable by the user, as described in the following sections.

Note that, in the event of an error in a user-specified text, the control unit will stop during program loading from the CU diskette. The error situation is described in Section 2.4.1.

4.4.1 Instructive Texts and Status Texts 4.4.1

The MENU.DLL file begins with four lines containing instructive texts. These texts form the frame of the menu displayed on the screen:

```
RC855 APPLICATION MENU
Key  Description
Press function key to select application
RC855
```

The instructive texts are followed by four lines containing status texts. These texts are displayed only when errors occur:

CU diskette error
CU disconnected
Checksum error
CU program not found

The standard texts, listed above, can be replaced by user-specified texts. Note, however, that there must be precisely four lines of instructive texts and four lines of status texts, each containing a maximum of 45 characters. Note also that the position of the standard texts is predefined.

4.4.2 Application Descriptions 4.4.2

The four lines of instructive texts and the four lines of status texts are followed by the application descriptions. Each application to be known by the menu software in the RC890 is described in one line. Each line consists of the following fields:

- number of the application (0 <= number <= 25)

- filename (maximum 12 characters) of an application program residing on the RC890 CU diskette or, for a program to be loaded under CP/M on the RC855, the character sequence A:

- text (maximum 25 characters) to describe the application program in the displayed menu

- parameter fields (maximum 89 characters all told): standard parameters and default user parameters, e.g. a CP/M command

Here are some examples of application descriptions:

3,A:,WordStar,ws; CP/M based application
1,3270.855,3270 Emulator
2,TEST.855,Test System
0,CONFI.855,RC855 Configurator

There must at all times be agreement between the application descriptions and the program files actually present on the diskette.

Note that an application with number 0 must always exist.

4.4.3 Terminal Menus 4.4.3

The application descriptions are followed by the terminal menus, each on one line. A terminal menu consists of a number of fields, each of which contains a number. The first field contains the secondary address of the terminal (0..31); the address field must begin with a "T". The following fields contain the numbers of the applications to which the terminal is to have access, listed in the order in which they are to appear when the menu is displayed on the screen. A default application is marked by preceding it with a "D". The application numbers listed must, of course, occur in the application descriptions. Here are some examples of terminal menus:

```
T0,D1,0,2,3,4,5,6
T2,1,0,4,5,6
T6,1,2,0,6,5,4
```

4.4.4 Example of a MENU.DLL File 4.4.4

```
RC855 APPLICATION MENU;        four lines of instructive texts
Key  Description
Press function key to select application
RC855
CU diskette error;             four lines of status texts
CU disconnected
Checksum error
CU program not found
3,A:,Word Processing,rctext;   application descriptions
1,3270.855,3270 Emulator
2,TEST.855,Test System
0,CONFI.855,RC855 Configurator
T0,D1,0,2,3;                   terminal menus
T2,1,0
T4,1,2,0
```

A. REFERENCES A.

[1] In course of preparation:
RC890 IBM 3274 Emulator Reference Manual

[2] In course of preparation:
RC890 System Maintenance Manual

[3] RCSL No. 42-i2459:
RC855 Operating Guide
Susanne Berland, June 1984

[4] RCSL No. 42-i2461:
RC855 IBM 3270 Emulator Operating Guide
Susanne Berland, June 1984

[5] RCSL No. 42-i2347:
RC855 Work Station User's Guide
Jeffery C. Snider, July 1983