

PERKIN-ELMER

ENVIRONMENT CONTROL MONITOR/32

(ECM/32) Systems

Programming and Operations Manual

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PREFACE

This manual describes the Perkin-Elmer Environment Control Monitor/32 (ECM/32). ECM/32 is a supervisory terminal monitor which enables terminal users to readily transfer between local monitor tasks, including Reliance environments and the Multi-Terminal Monitor (MTM) and to access remote processor systems via PENnet. ECM/32 operates under OS/32.

This manual, the *Environment Control Monitor/32 Systems Programming and Operations Manual*, describes how to operate and control the monitor.

Information on how Reliance terminal users make use of ECM/32's facilities is in the *ITC Systems Programming and Operations Manual*, Publication Number 29-712.

The relationship between ECM/32 and other components of Reliance is described in the *Reliance Overview*, Publication Number 29-718. A list of publications describing associated Perkin-Elmer software can be found in the Bibliography for the Reliance system.

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The Environment Control Monitor/32 ECM/32 is licensed software, subject to restricted rights as defined in the Department of Defense, Armed Service Procurement Regulations, ASPR, paragraph 7-104.9(a) (Rights in Data and Computer Software).

In summary, the following apply:

- The ECM/32 software can be used with the computer for which or with which ECM/32 was acquired.
- The ECM/32 software can be used with a backup computer if the computer for which or with which ECM/32 was acquired is temporarily inoperative.
- The ECM/32 software can be copied for safe-keeping (archives) or backup purposes.
- The ECM/32 software can be modified or combined with other software, subject to the provision that those portions of the derivative software incorporating restricted rights software are subject to the same restricted rights.

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1. Provided there is no change in ownership of the computer for which or with which ECM/32 was acquired, ECM/32 may be used at any installation to which the computer may be transferred.
2. Licence assignment and sublicense facilities are provided by PERKIN-ELMER DATA SYSTEMS to enable third party use of ECM/32.

TABLE OF CONTENTS

PREFACE	i
RESTRICTED RIGHTS	ii
1 THE ENVIRONMENT CONTROL MONITOR	1-1
1.1 Summary of Facilities	1-1
1.1.1 Function	1-1
1.1.2 Action	1-1
1.1.3 Mode of Use	1-1
1.2 Operating Instructions	1-2
1.2.1 Environment	1-2
1.2.2 Error Messages	1-2
1.3 Definition of Commands	1-3
SEND ADD	1-3
SEND BROADCAST	1-4
SEND DISABLECONF	1-5
SEND ENABLECONF	1-6
SEND QUIESCE	1-7
SEND READOPTIONS	1-8
SEND REMOVE	1-9
SEND STATUS	1-10
SEND SWEEP	1-12
START	1-13
2 USER WRITTEN MONITOR REQUIREMENTS	2-1
2.1 Introduction	2-1
2.2 ECM/32 Communication and Terminal Handling	2-1

APPENDICES

APPENDIX 1	OPERATIONAL AND ERROR MESSAGES
------------	--------------------------------

INDEX

THE ENVIRONMENT CONTROL MONITOR

1.1 Summary of Facilities

1.1.1 Function

The Reliance Environment Control Monitor (ECM/32) provides facilities for terminal users to transfer control of their terminals between local monitor tasks and to access remote processor systems via PENnet without use of the system console or a Reliance Controller's terminal. Local monitor tasks include Reliance environments and the Multi-Terminal Monitor (MTM). Transfer of control is subject to the task being able to accept and interpret the 'ADD terminal' command sent by ECM/32.

1.1.2 Action

ECM/32 has overall supervisory control over a group of terminals. In response to appropriate input by the terminal user, any such terminal may be transferred to the control of a suitable monitor task, including MTM or a specified Reliance environment, in a local or remote system, and back again to ECM/32. Switching between monitors (for example, Reliance and MTM or between different Reliance environments) is thus achieved via ECM/32.

The terminals usable in this way may be some or all of the terminals in the Reliance environment: Reliance may also have dedicated terminals which are in no way controlled by ECM/32.

1.1.3 Mode of Use

ECM/32 is a program which is loaded, started and ended from the system console. At that time it has a group (or 'pool') of named terminals assigned to its control. Each terminal displays an ECM/32 identification message and prompts the user to specify which system (for example, MTM or a specified Reliance environment) he wishes to sign on to. Following his selection, a normal (for example, MTM or Reliance) identification is displayed and he signs on normally. Sign off procedures (extended in the case of Reliance) return such terminals to ECM/32.

It is possible to add terminals to, and remove them from, the pool of terminals operating under ECM/32's overall supervisory control while ECM/32 is running. (Adding to, and removing from, ECM/32's terminal pool is of course distinct from the temporary transfers of control achieved by the individual terminal user.) It is also possible to obtain a display of the status of all terminals in the pool, and to send broadcast messages. ECM/32 also provides facilities enabling Model-1251 terminals to be automatically configured appropriately (for use by MTM and Reliance, for example).

The full summary list of operations and commands is:

SEND ADD	Add a terminal to ECM/32's terminal pool.
SEND BROADCAST	Send a message to all terminals not currently in use as MTM or Reliance terminals.
SEND DISABLECONF	Switch off automatic configuration of Model-1251 terminals.
SEND ENABLECONF	Switch on automatic configuration of Model-1251 terminals.
SEND QUIESCE	End ECM/32 operation.
SEND READOPTIONS	Create a Model-1251 configurations file from a terminal.
SEND REMOVE	Remove a terminal from ECM/32's terminal pool.
SEND STATUS	Produce a display of the status of all terminals in the pool.
SEND SWEEP	Adjust the time interval between the successive 'sweeps' by which ECM/32 resumes control over terminals.
START	Start ECM/32 and identify the terminals initially assigned to the pool.

The ADD, REMOVE and READOPTION commands, and start parameters contain terminal names. ECM/32 allows terminal names to be either simple device names or multidrop terminal names of the form line:name.ext.

Note: Model-1251 terminals must be generated with a device code of 157 when carrying out OS/32 generation if automatic configuration is required. No terminals other than Model-1251's should be connected to the relevant device addresses.

1.2 Operating Instructions

1.2.1 Environment

ECM/32 is loaded from the system console. The load command takes the form:

`LOAD task-id, ECM, segment size increment`

Where

task-id is the name to be used for the ECM/32 task.

segment size increment takes a value determined by the following formula (where *n* is the number of terminals to be included in the pool):

$$\frac{172n}{1000} \quad (\text{rounded up}) \text{ kilobytes}$$

An overall maximum of 240 terminals may be included in the pool. Logical unit 3 must be assigned before the program is started as follows:

`ASSIGN 3, ECM.MSG`

1.2.2 Error Messages

See Appendix 1.

1.3 Definition of Commands

The commands listed in Section 1.1.3 above are defined fully below.

Function

To add one or more terminals to ECM/32's terminal pool.

Format

```
SEND ADD terminal1 ,terminal2 . . . ,terminaln
```

Where

terminal1, . . . ,*terminaln* is the list of names of the terminals to be added.

Action

ECM/32 assumes control of each terminal named and displays its identification message. If any of the terminals named are already independently in use by some other monitor (for example MTM or Reliance), this action will not occur until the control of each terminal is relinquished by its respective monitor. In the case of MTM, this occurs when the terminal user signs off. In the case of Reliance, control of the terminal is relinquished when the terminal user types 'EX' in the signon screen action box or the terminal is removed via the CONTROL transaction.

Examples

To add a terminal ITA4: to ECM/32's terminal pool:

```
SEND ADD ITA4:
```

To add terminals ITA4:, ITA5: and BSC:T3270.001 to ECM/32's terminal pool:

```
SEND ADD ITA4:, ITA5:, BSC:T3270.001
```

Error Messages

See Appendix 1.

Function

To send a message to all terminals currently under ECM/32 control, i.e. not in use as MTM or Reliance terminals.

Format

SEND **BROADCAST** *message*

Where

message is a string of characters making up the message to be displayed on each terminal. The character string must be separated from the word 'BROADCAST' by at least one space, and together with the command 'BROADCAST', must be no longer than 64 characters, or the end of the input line, whichever is shorter.

Action

The specified message is displayed on all terminals currently under ECM/32 control, i.e. not in use as MTM or Reliance terminals. A warning message is issued if no terminals in the pool are currently under ECM/32 control.

Example

SEND BROADCAST ALL SYSTEMS NOW AVAILABLE

Error Messages

See Appendix 1.

Function

To switch off automatic configuration of Model-1251 terminals.

Format

SEND **DISABLECONF**

Action

After execution of this command, Model-1251 terminals are not checked and re-configured by ECM/32. The normal mode of operation of ECM/32 is to check the configuration of each Model-1251 terminal and, if necessary, re-configure it correctly (for MTM/Reliance use, for example), whenever control is transferred to ECM/32. A message is displayed on the terminal informing the user whenever re-configuration is found to be necessary. This command switches off these operations and would thus normally be input only when all Model-1251 terminals in the pool can be guaranteed to be configured correctly before ECM/32 is started, and when it is particularly important to eliminate the slight delay involved in checking the terminal's configuration at each transfer of control to ECM/32.

Error Messages

See Appendix 1.

Note

SEND DISABLECONF may be used to achieve a quicker start up time for terminals under ECM/32 if slow baud line 1251 terminals that do not require reconfiguration are present. To achieve a quicker start up time, add the faster baud line 1251 terminals requiring configuration checks by specifying them in the START command parameters. The terminal list should be in descending order of baud rate. After these terminals have been checked on configuration and started up, the SEND DISABLECONF command should be input, followed by SEND ADD to add the rest of the terminals not requiring configuration checks. As in the START command parameters, the SEND ADD terminal list should be in descending order of baud rate. SEND ENABLECONF may finally be input to allow configuration checks on 1251 terminals returning from other monitors back to ECM/32's control.

Function

To switch on automatic configuration of Model-1251 terminals.

Format

SEND **ENABLECONF**

Action

After input of this command, Model-1251 terminals are checked and, if necessary, re-configured by ECM/32 correctly (for MTM/Reliance use, for example) whenever control is transferred to ECM/32. A message is displayed on the terminal informing the user whenever re-configuration is found to be necessary. As checking and re-configuration is the normal mode of operation of ECM/32, this command should only be used to switch this mode back on after a previous input of a SEND DISABLECONF command.

Error Messages

See Appendix 1.

Function

To initiate an orderly end to ECM/32 operation and send a closing message to all assigned terminals.

Format

SEND QUIESCE *message*

Action

A message indicating that ECM/32 has closed is sent to all terminals currently assigned to ECM/32 and then ECM/32 goes to end-of-task. If *message* is specified, the message *message* is displayed on all terminals assigned to ECM/32, otherwise the standard system message 'ECM/32 has closed' is displayed.

Examples

```
SEND QUIESCE
```

```
SEND QUIESCE SYSTEMS ARE CLOSING DOWN
```

Error Messages

See Appendix 1.

Function

To create a Model-1251 configuration options file by reading the options from an appropriately configured terminal in the terminal pool.

Format

SEND **READOPTIONS** *terminal*

Where

terminal is the name of the terminal whose configuration options are to be read.

Action

The configuration options of *terminal* are read from the terminal and written to the standard configuration file ECMCONF.IMG. Any existing file should be renamed to preserve it in the event of a failure which leaves the configuration data unusable.

Example

To set up a configuration options file via terminal ITA1:

SEND READOPTIONS ITA1:

Error Messages

See Appendix 1.

Function

To remove one or more terminals from ECM/32's terminal pool.

Format

```
SEND REMOVE terminal1 ,terminal2 . . . ,terminaln
```

Where

terminal1, . . . *terminaln* is the list of names of the terminals to be removed.

Action

If any terminal named is currently under ECM/32 control, then ECM/32 relinquishes control, and the terminal is available for use elsewhere. If a terminal specified is displaying the ECM captions screen the standard system message 'This terminal has been removed from ECM/32' is displayed upon it.

Examples

To remove a terminal ITA2: from ECM/32's terminal pool:

```
SEND REMOVE ITA2:
```

To remove terminals ITA2:, ITA3: and BSC:T3270.001 from ECM/32's terminal pool:

```
SEND REMOVE ITA2:, ITA3:, BSC:T3270.001:
```

Error Messages

See Appendix 1.

Function

To produce a display of the status of all terminals in the terminal pool.

Format

SEND STATUS

Action

A display is output on the system console showing whether configuration is enabled, the sweep time and the status of each terminal in ECM/32's terminal pool. The following is displayed for each terminal:

- terminal name;
- logical unit number;
- a brief indication of status;
- task name;
- system name;

Status values are:

- | | |
|--------------|---|
| inactive | under ECM/32 control, not in use by a monitor (for example, MTM or Reliance); |
| I/O err xxxx | reporting I/O errors to ECM/32 the last error code received was xxxx; |
| ADD pnd | due to be added to the terminal pool when control of the terminal is relinquished by its respective monitor (for example, MTM or Reliance); |
| REM pnd | transient state - terminal is being removed; |
| switched | switched to another monitor - task name is given and remote system name if appropriate. |

If no terminals are added to ECM, a message to this effect is displayed.

Example

SEND STATUS					
*09:01:09	ECM:1251 configuration disabled				
*09:01:10	ECM:Sweep period 5 seconds				
*09:01:11	ECM:Terminal	LU	Status	Task	System
*09:01:11	ECM: ITA2:	5	inactive		
*09:01:11	ECM: ITA3:	6	I/O err 8205		
*09:01:12	ECM: ITA4:	7	ADD pnd		
*09:01:12	ECM: ITA5:	8	REM pnd		
*09:01:12	ECM: ITA6:	9	switched	.MTM	
*09:01:13	ECM: BSC:T3270.001	10	switched	ITCLNCT	PENnet

Error Messages

See Appendix 1.

Function

To adjust the time interval between the successive 'sweeps' by which ECM/32 attempts to resume control over terminals.

Format

SEND **SWEEP** *nn*

Where

nn is the sweep interval in seconds, in the range 1 to 99 inclusive.

Action

If this command is not input, ECM/32 'sweeps', i.e. attempts to resume control over the terminals in the pool, every five seconds. By this means, terminals relinquished by a monitor (MTM or Reliance by user sign off, for example) return promptly to ECM/32 control. The effect of this command is to adjust this interval. Increasing the interval will delay transfers of control between monitors (for example, MTM and Reliance), but will also reduce the level of ECM/32 activity and thus improve system throughput. Terminals which report I/O errors when ADD'ed or when ECM/32 attempts to resume control, will be retried at the same time interval.

Example

To set the sweep interval to three seconds:

SEND SWEEP 3

Error Messages

See Appendix 1.

Function

To start ECM/32 and identify the terminals to be initially assigned to its terminal pool.

Format

```
START ,terminal1 . . . ,terminaln
```

Where

terminal1 , . . . ,*terminaln* is the list of names of the terminals to be initially assigned to ECM/32's terminal pool. The maximum length of this list is determined by the length of the system input command line. Other terminals may be added by means of SEND ADD.

Action

ECM/32 is started and the named terminals assigned to its control. Each terminal displays an ECM/32 identification message and prompts the user to specify which system (for example, MTM or a specified Reliance environment) he wishes to sign on to. If any of the terminals named are already independently in use by some other monitor task (for example, MTM or Reliance), this action will not occur for any of these particular terminals until the control of a terminal is relinquished by its respective monitor. In the case of MTM this happens when the terminal user signs off. In the case of Reliance, control of the terminal is relinquished when the terminal user types 'EX' in the signon screen action box or the terminal is removed via the CONTROL transaction.

Example

To start ECM/32, initially assigning three terminals ITA1:, ITA2:, and ITA3: to its control:

```
START ,ITA1:,ITA2:,ITA3:
```

Error Messages

See Appendix 1.

USER WRITTEN MONITOR REQUIREMENTS

2.1 Introduction

ECM/32 may add a terminal to any user written monitor task provided this task is able to accept and interpret the 'ADD *terminal*' command sent by ECM/32 and that the monitor relinquishes control of the terminal when the terminal user has signed off from the monitor. ECM/32 will then gain control of this terminal on its next sweep cycle.

2.2 ECM/32 Communication and Terminal Handling

The SVC 6 Send Message issued by ECM/32 stores the command in the format:

ADD terminal

in a message buffer supplied by the monitor task. Upon receiving the command, the monitor task should immediately assign the terminal with ERW access if it is connected via a direct line, or with ERSW access if a dial-in line. When the monitor task wishes to relinquish the terminal then it should close the logical unit to which it is assigned, or change the access to SRO if a dial-in line. ECM/32 will then pick up the terminal on its next sweep. Since the sweep time may be quite long, the terminal may remain unassigned for several seconds; performance can be improved by closing the LU and then sending an 'ADD *terminal*' command to ECM.

Monitors may use SVC6 Send Message to issue any of the standard commands to ECM.

OPERATIONAL AND ERROR MESSAGES

A1.1 ECM/32 Messages

Add pending for terminal *terminal*

This message is output to the system console in response to a SEND ADD or START command if the terminal concerned is already independently in use by another monitor task (for example, MTM or Reliance).

Cannot allocate and/or assign options file

This message is output to the system console following a SEND READOPTIONS command if a new standard options file cannot be allocated and/or assigned. This almost certainly indicates insufficient disc space or system space. The command should be re-input after correction of the problem.

Cannot assign options file

This message is output to the system console if ECM/32 is unable to assign the file containing the standard options for 1251 terminal configuration. The file may have the wrong name, or may not be present in the system account. ECM/32 continues to run with automatic configuration switched off.

Cannot enable 1251 configuration - no file

This message is output to the system console in response to a SEND ENABLECONF command if no action has been taken following a 'CANNOT ASSIGN OPTIONS FILE' message. The standard options file may be created by means of the SEND READOPTIONS command.

Configuration in progress - there will be a short delay

This is an information message output to a terminal which is being automatically configured by ECM/32.

1251 configuration enabled

This is an information message output to the system console following a successful SEND ENABLECONF command.

1251 configuration disabled

This is an information message output to the system console following a successful SEND DISABLECONF command.

Operational and Error Messages

Device specified must be interactive

This message is output to the system console in response to a SEND ADD or START command if the device specified is not interactive. The command should be re-input correctly.

ECM/32 has closed

This is an information message output to the system console which follows a successful SEND QUIESCE command. This message is also broadcast to all terminals assigned to ECM/32 if no parameter is specified with the SEND QUIESCE command.

Environment Control Monitor *revision number*

This is an information message to the system console which follows a successful START command to tell the operator that ECM/32 *revision number* has started and that ECM/32 commands may now be entered.

Error reading checksum response from *terminal*

This message is output to the system console following configuration of a Model-1251 terminal and may indicate a terminal hardware error. The terminal user should be warned and the terminal REMOVE'd for error correction.

Insufficient memory to support any terminals

This message is output to the system console in response to a START command if ECM/32 has been loaded with no segment size increment or an increment which is too small to support any terminals at all. ECM/32 goes to end-of-task.

Invalid command

This message is output to the system console in response to an invalid command being entered. The command should be re-input correctly.

Invalid parameter

This message is output to the system console in response to a SEND SWEEP command if a non-numeric or out-of-range parameter is specified. The command should be re-input correctly.

Invalid terminal mnemonic specified

This message is output to the system console in response to any command which specifies a terminal mnemonic in an invalid format.

I/O error *nnnn* reading from *terminal*

This message is output to the system console if an error has occurred in reading from the specified terminal. *nnnn* is the OS/32 error reply code. Appropriate corrective action should be taken. The terminal will be retried indefinitely by ECM/32.

I/O error *nnnn* attempting to read message *mmm*

This message is output to the system console if an I/O error has occurred in reading from the message file ECM.MSG. *nnnn* is the OS/32 error reply code, *mmm* is the ECM/32 message number. The ECM/32 task is paused. Appropriate corrective action should be taken and the task continued.

I/O error *nnnn* writing to *terminal*

This message is output to the system console if an error has occurred in writing to the specified terminal. *nnnn* is the OS/32 error reply code. Appropriate corrective action should be taken. The terminal will be retried indefinitely by ECM/32.

Maximum terminals supportable = *nnn*

This is an information message to the system console which follows a successful START command to tell the operator that *nnn* terminals can be included in the terminal pool with the segment size increment specified.

Message broadcast

This is an information message to the system console which follows a successful SEND BROADCAST command to tell the operator that the message was successfully broadcast to at least one INACTIVE terminal.

Missing parameter

This message is output to the system console in response to certain ECM/32 operator commands when a parameter is required but not entered.

Monitor *task-id* not available for use

This message is output to a terminal in response to a selection of a monitor system (for example, MTM or a Reliance environment) when the target system is not running or the terminal is not compatible with the selected system. (For example, *task-id* may take the value 'MTM' or 'xxxxLNCT' where 'xxxx' is the Reliance environment name.)

New sweep period set

This is an information message output to the system console which follows a successful SEND SWEEP command.

No terminal available for broadcast

This message is output to the system console following a SEND BROADCAST command to warn the operator that no terminals were INACTIVE at the time the command was input and accordingly the message concerned was not broadcast.

PENnet is not available

This message is output to a terminal in response to a selection of a remote monitor system when PENnet is not available to ECM/32.

Operational and Error Messages

Read of terminal options and file update starting

This is an information message output to the system console following input of a SEND READOPTIONS command.

Remote system name not recognised

This message is output to a terminal in response to a selection of a remote monitor system in which the syntax of the remote system name is not correct.

Terminal not available for use

This message is output to the system console if the terminal name specified is not known to the system. The input command should be checked and, if possible, re-input correctly.

Terminal previously added

This message is output to the system console in response to a SEND ADD command if the terminal specified is already added to the ECM/32 terminal pool.

Terminal *terminal* cannot be used to create an options file

This message is output to the system console in response to a READOPTIONS command in which *terminal* was either, not added to ECM/32, not a Model-1251 or not currently displaying ECM/32 captions. In the last of these cases the command may be retried when the terminal reaches necessary status.

Terminal *terminal* has been added

This is an information message output to the system console in response to a successful SEND ADD command.

Terminal *terminal* has been removed

This is an information message output to the system console in response to a successful SEND REMOVE command.

Terminal *terminal* is not ADDED to ECM/32

This message is output to the system console in response to a SEND REMOVE or SEND READOPTIONS command if the terminal specified is not already added to the ECM/32 terminal pool.

Terminal workspace full

This is an information message output to the system console in response to a SEND ADD command as a result of which the maximum number of terminals is now included in the ECM/32 terminal pool.

This terminal has been removed from ECM/32

This message is output to a terminal when it is REMOVED from ECM/32.

Unable to read options file

This message is output to the system console if ECM/32 is unable to read the standard options from the standard options file. ECM/32 operation should be ended and the error corrected before it is re-started.

Unable to read terminal options for *terminal*

This message is output to the system console if, during an attempt to check the configuration of a Model-1251 terminal, or execution of a SEND READOPTIONS command, ECM/32 is unable to read the options from the terminal. An accompanying message gives further details. The terminal should be REMOVE'd and the error corrected.

Unable to remove *terminal*

This message is output to the system console in response to a SEND REMOVE command if the terminal specified is already removed from the ECM/32 terminal pool.

Unable to write options file

This message is output to the system console if, during execution of a SEND READOPTIONS command, ECM/32 is unable to successfully write the options to the standard options file. An accompanying message gives further details. The options file may be left in an unreadable state. ECM/32 should be ended, the options file restored from a security copy, and the error corrected before ECM/32 is re-started.

Unable to write terminal options to *terminal*

This message is output to the system console if, during an attempt to re-configure a Model-1251 terminal, ECM/32 is unable to successfully write the options to the terminal. An accompanying message gives further details. The terminal may be left in an unusable state. The terminal should be REMOVE'd and the error corrected before it is ADDED again.

Update of options file successful

This is an information message output to the system console following a successful SEND READOPTIONS command.

INDEX

Adding terminals, 1-3, 2-1
Assigning terminals, 1-13

Configuration of terminals, 1-5, 1-6
Configuration options file (Model-1251), 1- 8

Dedicated terminals, 1-1
Device code, 1-2

End ECM/32, 1-7

Generation of terminals, 1-2

Identification message, 1-1

LOAD, 1-2
Logical unit assignment, 1-2, 1-10

Message
 Error, A1-1
 To Send, 1-4

Number of terminals (maximum), 1-2, 1-13

Removal of terminals, 1-7, 1-9, 2-1

Segment size increment, 1-3
SEND ADD, 1-3
SEND BROADCAST, 1-4
SEND DISABLECONF, 1-5
SEND ENABLECONF, 1-6
SEND QUIESCE, 1-7
SEND READOPTIONS, 1-8
SEND REMOVE, 1-9
SEND STATUS, 1-10
SEND SWEEP, 1-12
Sign on procedure, 1-1
START, 1-13
Status values, 1-10
Sweep interval, 1-12

User written monitor requirements, 2-1

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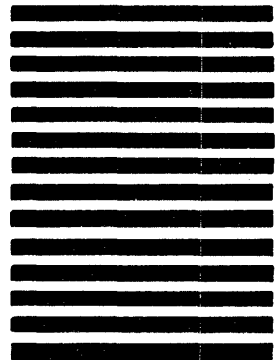
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