LASAT MODEM

User's Reference
LASAT MULTICOM

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LASAT

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LASAT RMP16

LASAT CCU32

User's Reference

TABLE OF CONTENTS:

1. Introduction.

LASAT MultiCom consists of a LASAT RMP16 rack with a LASAT CCU32 control card unit.

LASAT MultiCom makes it possible to obtain a systems solution with up to 512 modems allocated in 32 racks each comprising 16 modems.

It is possible to control and monitor all the modems from only one terminal, which is connected to the master control card unit.

The LASAT MultiCom Concept comprises:

Local and remote monitoring
- Direct monitoring of the active state of the modem (real time).
- Direct monitoring of the V.24 signals (real time).
- Immediate indication of subscribed events/alarms.

Local and remote diagnostics
- Automatic accumulation of all operational statistics.
- Automatic accumulation of the subscribed event/alarm statistics.

Local and remote configuration
- Configuration of the individual modem either via the easily operated menu system (MultiCom) or via the command interpreter (AT).
- Local configuration is possible via the built-in keyboard and display, or via a terminal (VT100) / computer (PC).
- Remote configuration via the serial interface by use of the PSTN.

Built-in security systems
- For communication to LASAT CCU32 a dialback security system with user-code ID is offered (48 user-codes with an attached telephone number).
- For intensive communication to a connected database a dialback security system with user-code ID is offered (min. 100 user-codes with corresponding telephone numbers, alternatively defined when dialling in).
- Dial back-up (automatic establishing and re-establishing) for leased line operation.
- Error correction (100% by use of V.42, including MNP1-4).
- Automatic alarm notification at communication interference.
- EMC-approval in order to maximize communication security.

This manual consists of the following chapters:

Chapter 2, "Getting Started", a description of how LASAT RMP16 and LASAT CCU32 look and how they are installed.

Chapter 3, "Software Interface", a description of how to communicate with LASAT CCU32.

Chapter 4, "Menu Points", an overall description of all the menu points in the LASAT CCU32 menu.

Appendix 1-20 contains various detailed surveys of interface possibilities to LASAT RMP16 and LASAT CCU32.

2. Getting Started.

In this chapter the installation and connection of LASAT RMP16 and LASAT CCU32 are described.

The rack and the control card must be configured in accordance with the functions expected to be carried out by the system.

The configuration is made either by use of the keyboard on the front of CCU32 or by a terminal/computer with a VT100 terminal emulation connected to the serial port on CCU32. The actual configurations are made via a menu system.

In order to install, configure and use LASAT RMP16 and LASAT CCU32 the following are needed:

* **LASAT RMP16**
* **LASAT CCU32**
* **220V/(50-60 Hz) Net cable**
* **Data Cables**
* **1-16 modems**
* **Terminal or computer comprising VT100 emulation**

Note:
Do not forget to remove the transportation security device on the power supply before installing this. If the system does not operate properly, check whether the power supply has been correctly installed.

2.1 Installation of LASAT RMP16 and LASAT CCU32.

The following points state how LASAT RMP16 and LASAT CCU32 are installed correctly to a terminal/computer.

1. Having unpacked the rack, it is important to check whether the power supply is properly connected.
2. Install LASAT CCU32 in the slot to the far right in the rack.
3. Connect the data cable to the far left V.24 connector on the backplane.
4. Set the terminal/computer to asynchronous mode using VT100 emulation 9600 bps and N81 databit, then connect it to the data cable from CCU32.
5. Insert the required number of modems in LASAT RMP16. Place the cable to these modems on the backplane of the modem in question. (Count the number of slots

compared to the number of connectors).

6. Switch on the rack. The display on CCU32 shows the text "INITIALIZING", after a short period every single indicator on the top display will be lit. Then the select indicator on the modems will flash on and off 3-4 times after which the select indicator on the first modem in the rack will be permanently on.

7. Now LASAT CCU32 has been fully initialized and has determined which modems are placed in the rack and their location. The system is now ready for use.

8. On the front of CCU32 there are two displays. The upper display shows the configuration of the selected modem, the lower display shows the text "Enter pincode"/"******". If a terminal is connected it will show a text informing about the version of the CCU32.

2.2 Description of Front Panel on LASAT CCU32.

On LASAT CCU32 there are two displays and one keyboard.

The upper display "Status display" shows the active configuration of the selected modem.

REM-LP		LOC-LP		RETRANS		ERROR		TST	Red
SYNC		V25 BIS		ERR-COR		GSTN		AA	Green
ASYNC		AT		COMPRESS		ONLINE		2-W	Green
WARNING		DUMB		DIAL-BCK		LEASED		4-W	Green
V33	V32	TCM	V29	V27	V23	V22 BIS		V21	Blue
DTR 108	DSR 107	DCD 109	RTS 105	CTS 106	TXD 103	RXD 104	RI 125	CHS 126	Blue

***Fig. 1** Status Display.*

The lower display, the "menu display" is used together with the keyboard for handling of the menu system for LASAT CCU32 and the selected modem.

2.2.1 Status Display.

The status display shows the active configuration of the selected modem.

The display is divided into three groups, at the bottom blue, in the middle green and on the top red.

The red group shows whether a test is currently running or whether there are errors or warnings.

The green group shows the active configuration of the modem.

The blue group shows the V.24 signals of the modem.

Red group.

REM-LP — Remote digital loop (V.54 loop 2.

Switched on, when the modem is in digital loop.

LOC-LP — Local analog loop (V.54 loop 3).

Switched on, when the modem is in local analog loop.

RETRANS — Re-transmission.

Switched on, when the modem is making a re-transmission of a data block in one of the error correcting protocols.

ERROR — Error indicator.

Switched on, when a state of error has been registered.

TST — Test indicator.

Switched on, when the modem is in test mode, either local or remote loop, or self test. When initializing the test indicator will be on for one second. After completion of an error free test the active configuration indicates that the modem is ready for use. When the TST indicator is on, the V.24-124 signal is ON.

Green group.

SYNC — Synchronous.

Switched on, when the modem is in synchronous mode.

ASYNC — Asynchronous.

Switched on, when the modem is in asynchronous mode.

WARNING — Warning indicator.

Switched on, when the modem is in a mode which could result in error mode.

V.25 BIS — V.25bis command interpreter.

Switched on, when the modem is using V.25bis command interpreter. (Both asynchronous and synchronous mode).

AT — AT command interpreter.

Switched on, when the modem is set to use the AT command interpreter. This facility can be used in asynchronous mode.

Green group (cont'd).

DUMB — Passive command interpreter.

Switched on when the command interpreter is disabled.

ERR-COR — Error correcting protocol.

Switched on, when the modem is using V.42 or MNP error correcting protocol to data transmission in asynchronous mode.

COMPRESS — Data compression.

Switched on when the modem uses V.42bis or MNP5 data compression protocol to data transmission in asynchronous mode.

DIAL-BC — Dial-backup.

Switched on, if the modem uses the dial-backup facility. If the modem is set to leased line, and this is switched off, the modem changes to origin mode.

GSTN — Switched line.

Switched on, when the modem is used on a switched line, both as an origin modem and as an answer modem.

ONLINE — Enabled.

Switched on, when the modem is enabled on leased line or called connection.

LEASED — Leased line operation.

Switched on, when the modem is used on a leased line.

AA — Auto Answer.

Switched on, when the modem is set to auto answer.

2-W — 2-wire leased line.

Switched on, when the modem is set to 2-wire leased line modem.

4-W — 4-wire leased line.

Switched on, when the modem is set to 4 wire leased line modem.

V.32 (TCM)
V.23
V.22 (bis)
V.21 — Communication standards specified by CCITT.

Switched on, when the modem has a connection to another modem.

Blue group.

DTR-108 — Terminal Ready.

Switched on, when a terminal is connected to the modem. The modem is in the command state if V.24-108/2 is OFF. The modem will ignore this signal when the command AT &D0 is entered.

The indicator follows the V.24-108 signal (serial interface pin 20).

DSR-107 — Data Set Ready.

Switched on, when the modem establishes a connection. The indicator will be on until the connection is switched off.

The indicator follows the V.24-107 signal (serial interface pin 6).

DCD-109 — Carrier Detect.

Switched on, as long as the modem detects a carrier. Can be set on permanently by entering the command AT &C0. When the DCD indicator is on, the V.24-109 is ON.

The indicator follows the V.24-109 signal (serial interface pin 8).

RTS-105 — Request To Send.

Switched on, when the terminal is ready to send data.

The indicator follows the V.24-105 signal (serial interface pin 4).

CTS-106 — Clear To Send.

Indicates to the terminal that the modem is ready to receive data.

The indicator follows the V.24-106 signal (serial interface pin 5).

TXD-103 — Send data.

Switched on, when the modem is receiving data from the terminal/computer, either as a command or as data transmitted to the telephone line.

The indicator follows the V.24-103 signal (serial interface pin 2).

Blue group (cont'd).

RXD-104 Receive data.

Switched on when the modem transmits data to the terminal/computer - either as data received from the telephone line or answers to commands.

The indicator follows the V.24-104 signal (serial interface pin 3).

RI-125 Ring indicator.

Switched on, when the modem registers an incoming call.

The indicator follows the V.24-125 signal (serial interface pin 22).

2.2.2 The Menu Display.

The menu display comprises two lines of each 16 characters. The top line will always show the previous level in the menu system. The lower line shows the menu point to be executed.

2.2.3 Keyboard.

The keyboard consists of 5 keys, which are used for handling of the menu system and for entering passwords.

2.3 Description of the Rear Panel.

The rear panel of LASAT RMP16 consists of a number of serial connectors to the individual modems and serial connectors for LASAT CCU32, telephone line connections for the modem, leased line operation and Public Switched Telephone Network. The rear panel of LASAT RMP16 comprises connectors for datascope for power supply, main distributing frame connector and ON/OFF switch. (See fig. 2 and Appendix 20).

In the following the connectors and their function on LASAT RMP16 backplane will be described.

2.3.1 Serial Connector for the Modem.

The first 16 connectors seen from the right are for the modem's DCE interface. These connectors are dependent upon whether it is a 37 pole d sub or 25 pole d sub, to RS449 or RS232C. Both asynchronous and synchronous operation can be controlled. It is dependent on the modem in use (See Appendix 20).

2.3.2 Serial Connector for LASAT CCU32.

Connector No. 17 from the right is the DCE interface of LASAT CCU32. This is a RS232 interface for asynchronous operation (See Appendix 20).

2.3.3 Telephone Connections to Leased Line and PSTN of the Modem.

Below the 16 serial modem connectors there are two telephone plugs.

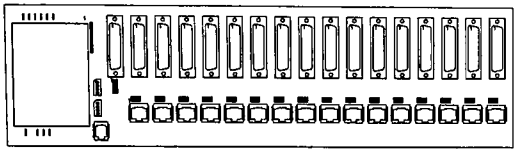


Fig. 2 Backplane with plugs and connectors.

The upper connector is a 8 pole pinheader, where the lower row comprises PSTN lines and the upper row contains the leased line connection, both 2 wire and 4 wire leased lines. See fig. 3.

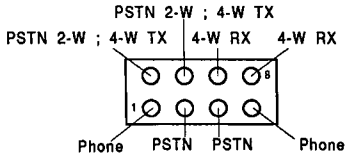
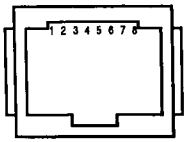


Fig. 3 Telephone connector pinheader.

This telephone connector is primarily used for connections of the telephone lines in a common 64 pole connector on the rear panel.

One of the connectors comprises the leased line connection and the other one comprises PSTN line. (See fig. 7).

The telephone connector at the bottom is a 8 pole modular jack. "Normal" line comprising both leased line and PSTN connections. See the below fig. 4.



1) 2-W ; 4-W/TX
2) 2-W ; 4-W/TX
3) Phone
4) PSTN
5) PSTN
6) Phone
7) 4-W/RX
8) 4-W/RX

Fig. 4 Telephone connector (modular-jack).

2.3.4 LASAT MultiCom Bus.

Besides the serial connector for LASAT CCU32 there are two more. These two connectors are parallelly connected and are used for connecting several racks (LASAT CCU32). The connections are based on RS485 specifications and specify that the racks can be placed with a mutual distance of at least 300 meters. The connections in the connector are shown in the below fig. 5.

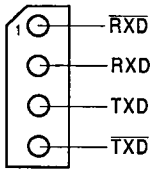


Fig. 5 RS-485 connectors.

2.3.5 Datascope on Rear Panel.

On the rear panel there is a connector for the datascope. This connector makes it possible to monitor the selected modem's serial interface provided that it is based on RS232.

Note:
It is not possible to write to the port. All signals in the connector are output signals. The connections in the connector are shown in fig. 6.

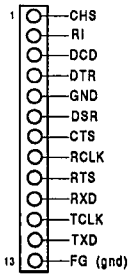


Fig. 6 Datascope connector.

2.3.6 Main Distributing Frame on the Rear Panel.

It is possible to combine all PSTN and leased line connections in two main distributing frames. This will make it easier to make connection to another rack. The line connections of the modem can be seen in fig. 7.

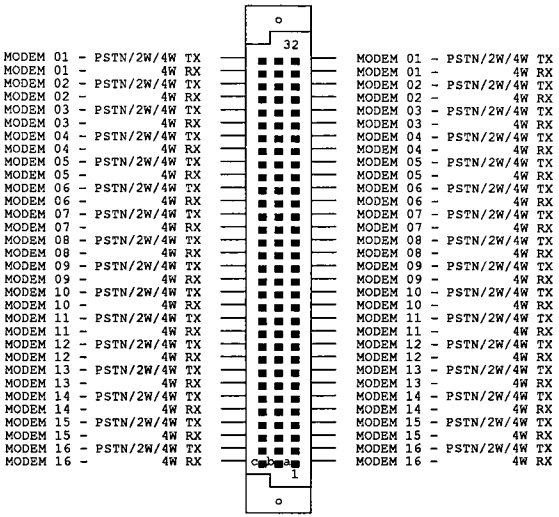


Fig. 7 Connector for PSTN- and leased lines.

2.3.7 220 Volt - AC / - 48 V DC.

LASAT RMP16 can be supplied with either 220 V AC or -48VDC depending on the version of the rack.

When using 220 VAC (50 - 60 Hz) the male power connector comprises a connector with 3 poles.
In the connector there is a fuse (1.5/240 VAC). The connections can be seen in the Appendix, fig. A-14.

When using -48DC the connector comprises a male connector with 5 poles, which are placed in a way that the connector cannot be misused.
It is important that the rack must be grounded, the connection can be seen in the Appendix, fig. A-13.

2.3.8 ON/OFF.

On top of the LASAT RMP16 rear panel the ON/OFF button is placed. When activating this it is possible to turn the whole system on respectively off. When switching on LASAT CCU32 all modems will be supplied with power. All modems will then initialize, and LASAT CCU32 will initialize after this, then the whole rack will be configured in

accordance with configuration stored in the memory. LASAT CCU32 comprises a battery backup which ensures that the information saved in the memory will not be lost. The LASAT CCU32 can keep this information for at least 2 years without power.

2.3.9 Description of Menu Displays.

There is a third front to this system. This will emphasize when the control of the system takes place via a terminal or computer. This can either be connected to LASAT CCU32 locally via a data cable or remotely via a modem connection to LASAT CCU32. This means that the structure of the menu displays must be able to give the same information, as if the keyboard on CCU32 was used.

The menu display is divided into 5 parts. Parts 1 and 2 will always show the same actual information of the system, and part 3 is for handling the menu system or for menu displays.

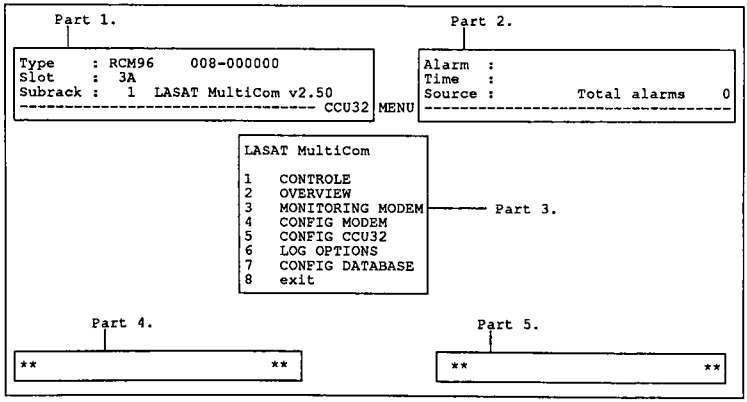


Fig. 8 *The 5 parts of the menu display.*

Part 4 and 5 are used for giving messages to the user.

Part 1

This part contains information about the selected modem. Even though one modem is always selected, this does not mean that the other modems cannot be monitored.

Type: The modem type and serial number will be stated.

Slot: The slot in which the modem is placed is stated here as a 20 character identification of the individual modem. The 20 characters are fully optional for the user.

Subrack: The subrack on the rack in use is monitored together with a 20 character identification of the active rack. The 20 characters are fully optional for the user.

Part 2

This part states whether alarms have been activated in one of the 32 inter connected racks.

Alarm: Here the name of the last alarm in the system is stated. This could be one of the permanently defined alarms or one special alarm defined by the user.

Time: Date and time for the last received alarm.

Source: Here it is stated on which modem the alarm has been received.

Total alarms: Here the actual number of active alarms is stated. As it is only possible to show the last incoming alarm, this is an indicator for the number of active alarms in the system. The alarm state will be de-activated after 30 seconds, if the mode which activated the alarm will disappear.

Part 3

This part has three functions. It is used for handling of the menu system of LASAT CCU32, or the menu system of only one modem. The other function is used for indication of displays which shows a display of the front or the back of the rack, or other special displays as f.ex. statistics, alarms, log information etc.

The menu system of the modems and LASAT CCU32 are built identically. Actually, the two displays and the keyboard on LASAT CCU32 are identical to the one on the external "Prestige" modems.

The menu system on LASAT CCU32 is therefore only used for handling of functions on the control card, where LASAT CCU32 works as a presentation manager for the menu system of the individual modem.

This means that even though the user has an old version of LASAT CCU32 and then buys a new modem, it will be possible to use the menu system completely, and thereby use the functions of the new modem.

With regard to versions the modems and LASAT CCU32 are mutually independent.

Part 4
In this part information in connection with the menu system is shown.

Part 5
In this part information in connection with the internal rack connection is shown.

3. Software Interface.

3.1 Menu System.

In this chapter the possible configurations of the CCU 32 modem will be described. The configuration is made via the menu system which is available via the control card unit CCU32.

The menu system of CCU32 is based upon a LCD display and a keyboard, which is placed directly on the front panel of CCU32 together with a terminal port for VT100 emulation. The menu system of the front operated keyboard is identical to the one used from the optional terminal. As to the terminal part there are a number of points in the system which render the possibility of various key displays.

After power up, the menu system will always be active. This means that it is always possible to re-configure a modem and thereby return to a known configuration. It is also possible to select other modems for monitoring without interfering with the communication flow on the individual modem.

The total menu system is designed in a "flat tree structure" (see fig. 3.1) in order to minimize the number of commands necessary for configuring the modem.

The structure can be described as a tree turned upside down, i.e. the "stem" is turned upwards, and the "branches" are turned downwards, shown in the below figure.

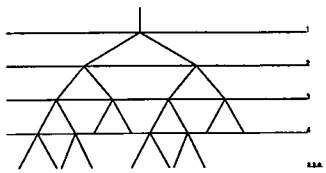


Fig. 3.1 *The menu structure.*

The menu system is built into two separate parts, where one part is used for configuration and monitoring of CCU32, and the other part is used for configuration of the selected modem mounted in the rack. Actually, two menu systems are combined, so that the menu system of CCU32 remains the same, but the modem menu system varies depending on the selected modem. The menu system of the modem is therefore located on the modem and not on the control card unit (CCU32). The menu system of the modem is based upon the Hayes command set, but the texts to the individual commands are more detailed. This means that the menu system gives the same possibilities for configuration as in the Hayes command set.

The selected menu point appears from the bottom line of the display or from the cursor position on the connected terminal, if any. The top line of the small two lines display will always indicate the level above the present.

Capital letters are used for indicating that there are further menus down the tree. Small

letters are used when the menu can be executed.

3.1.1 Front Operated Menu System.

The front operated menu system of CCU32 is based on two displays and a keyboard. On the front panel of CCU32 there is a custom display which shows the active state of the selected modem, both with regard to configuration and V.24 status. The lower display of the two comprises two lines of each 16 characters, these are used for controlling the menu system.

The keyboard comprises 5 keys. All these keys have two functions each, except the ENTER key. The main function of the keys is to handle the menu system, but they can also be used for giving passwords at login. A password consists of a pin code of 6 digits.

For handling of the menu system, the following keys are used:

HOME : The user moves to the top of the tree.

BACK : The user moves one level up in the tree.

-> : The user moves to the right on the same level in the tree.

<- : The user moves to the left on the same level in the tree.

ENTER : The selected command is executed, or the user moves one level down in the tree.

3.1.2 Terminal Operated Menu System.

The menu system of the terminal is similar to the one on the small display, but on the terminal it is possible to observe the whole level of the tree. The individual menus can be selected either by using the cursor arrows and the RETURN key or by typing the number.

Furthermore, it is possible to get a view of the different products installed in the rack, their configuration, whether alarms have occurred, the different modes and also statistics of the individual modem.

As the terminal operated menu system may be located centrally, the RS232 interfaces can be configured so that it is possible to connect a modem instead of a terminal, and thereby be able to call the CCU32 system. This call is secured via a dialback system.

The menu displays comprise information of the modem selected, and in which type of rack the modem is placed, in order to secure that the terminal connection can take place without having visual contact with LASAT CCU32. Furthermore, the terminal comprises an alarm device stating the last incoming alarm.

3.1.3 The Syntax of the Menu System.

The menu system is designed as a "tree" divided into 7 levels, and it is possible to select the required function by moving down in the tree. See the following example.

In order to select the menu point **"view DB-log"** follow the below points:

After login select menu point no. 7

"CONFIG DATABASE" (level 2)

Under **"CONFIG DATABASE"** there are 8 menu points, these are also selected by using the arrows.

Under point 6 **"DATABASE LOG"** (level 3) there are two menu points to be selected either

"view DB log" (level 6)

or

"clear DB log" (level 6)

Select the required option.

On the following pages there is a detailed description of the menu structure.

```
LOGIN <->  :--1 CONTROL                "ENTER"  <-> :-- 1 modem select          "ENTER"  B. 1.1
           :                                    :
           :                                <-  :-- 2 subrack select         "ENTER"  B. 1.2
           :                                    :
           :                                <-  :-- 3 setup utils            "ENTER"  B. 1.3
           :                                    :
           :                                <-  :-- 4 CCU32 HW/SW-id         "ENTER"  B. 1.4
           :
     <-    :--2 OVERVIEW                 "ENTER"  <-> :-- 1 status overview       "ENTER"  B. 2.1
           :                                    :
           :                                <-  :-- 2 V24 overview           "ENTER"  B. 2.2
           :                                    :
           :                                <-  :-- 3 ID overview            "ENTER"  B. 2.3
           :                                    :
           :                                <-  :-- 4 S/N overview           "ENTER"  B. 2.4
           :                                    :
           :                                <-  :-- 5 rack overview          "ENTER"  B. 2.5
           :
     <-    :--  3 MONITORING MODEM        "ENTER"  <-> :-- 1 view status           "ENTER"  B. 3.1
           :                                    :
           :                                <-  :-- 2 view statistics        "ENTER"  B. 3.2
           :                                    :
           :                                <-  :-- 3 view config            "ENTER"  B. 3.3
           :                                    :
           :                                <-  :-- 4 view phone numb        "ENTER"  B. 3.4
           :                                    :
           :                                <-  :-- 5 dump statistics        "ENTER"  B. 3.5
           :                                    :
           :                                <-  :-- 6 clr statistics         "ENTER"  B. 3.6
           :
     <-    :--  4 CONFIG MODEM            "ENTER"  <-> :-- 1 modem menu            "ENTER"  see modem menu.
           :                                    :
           :                                <-  :-- 2 talk through           "ENTER"  DTE EMULATION
           :                                    :
           :                                <-  :-- 3 V24 talk through       "ENTER"  DCE EMULATION
           :                                    :
           :                                <-  :-- 3 move config            "ENTER"  B. 4.3
           :
     <-    :--  5 CONFIG CCU32            "ENTER"  <-> :-- 1 password/dialb        "ENTER"  B. 5.1
           :                                    :
           :                                <-  :-- 2 modem pseudo/ext       "ENTER"  B. 5.2
           :                                    :
           :                                <-  :-- 3 set nmc numb           "ENTER"  B. 5.3
           :                                    :
           :                                <-  :-- 4 set busy               "ENTER"  B. 5.4
           :                                    :
           :                                <-  :-- 5 SUBRACK INIT           "ENTER"  M. 1
           :                                    :
           :                                <-  :-- 6 SETUP RS232            "ENTER"  M. 2
           :                                    :
           :                                <-  :-- 7 SETUP MODEM            "ENTER"  M. 3
           :                                    :
           :                                <-  :-- 8 DUMP SETUP             "ENTER"  M. 4
           :                                    :
           :                                <-  :-- 9 SET AUTOCONFIG         <-> :-- 1 disabled "ENTER"  B.5.9.1
           :                                                                     :
           :                                                                 <-  :-- 2 enabled  "ENTER"  B.5.9.2
           :
     <-    :--  6 LOG OPTIONS             "ENTER"  <-> :-- 1 view alarm log        "ENTER"  B. 6.1
           :                                    :
           :                                <-  :-- 2 view event log         "ENTER"  B. 6.2
           :                                    :
           :                                <-  :-- 3 set alarm mask         "ENTER"  B. 6.3
           :                                    :
           :                                <-  :-- 4 log dump               "ENTER"  B. 6.4
           :
     <-    :--  (7 CONFIG DATABASE)       "ENTER"  Menu point no. (7) is located in LASAT CCU32 security.  M. 5
           :
     <-    :--  7 (8) exit                "ENTER"
```

Active	Menu points are indicated by the text in the menu display is flashing on and off.
"HOME"	Moves to the top of the tree.
"BACK"	Moves one level up in the tree.
"<" and ">"	Moves to the left and the right on the same level in the tree.
"ENTER"	The selected command is executed, or the user moves on level down the tree.

M. 1 — SUBRACK INIT	<->	1 subrack pseudo	"ENTER"	B. 5.5.1	
	<-	2 subrack address	"ENTER"	B. 5.5.2	
	<-	3 load ccu32 setup	"ENTER"	B. 5.5.3	
	<-	4 dump ccu32 setup	"ENTER"	B. 5.5.4	
	<-	5 MASTER/SLAVE	<->	1 master	"ENTER"
			<-	2 slave	"ENTER"
	<-	6 set watch	"ENTER"	B. 5.5.6	
	<-	7 INIT RAM	<->	1 clr alarms	"ENTER"
			<-	2 clr special alarm	"ENTER"
			<-	3 clr log	"ENTER"
			<-	4 clr statistics	"ENTER"
			<-	5 clr mod pseud/ext	"ENTER"
			<-	6 clr subrack pseud	"ENTER"
			<-	7 clr config pseud	"ENTER"
			<-	8 clr passwords	"ENTER"
			<-	9 clr nmc numb	"ENTER"
	<-	8 initial setup	"ENTER"		
	<-	9 CCU32 reset	"ENTER"		
M. 2 — SETUP RS232	<->	1 8N1 9600 bps	"ENTER"		
	<-	2 7O1 9600 bps	"ENTER"		
	<-	3 7E1 9600 bps	"ENTER"		
	<-	4 7N2 9600 bps	"ENTER"		
	<-	5 RS232 DCE normal	"ENTER"		
	<-	6 RS232 DTE modem	"ENTER"		
	<-	7 RS232 DTE prn.	"ENTER"		
	<-	8 XON/XOFF fl-ctrl	"ENTER"		
M. 3 — SETUP MODEM	<->	1 disabled	"ENTER"		
	<-	2 enabled	"ENTER"		
	<-	3 XON/XOFF fl-ctrl	"ENTER"		

Active	Menu points are indicated by the text in the menu display is flashing on and off.
"HOME"	Moves to the top of the tree.
"BACK"	Moves one level up in the tree.
"<" and ">"	Moves to the left and the right on the same level in the tree.
"ENTER"	The selected command is executed, or the user moves on level down the tree.

```
M. 4 --- DUMP SETUP          <->  :--- 1 LOG DUMP SETUP      <->  :--- 1 DUMP CONTROL      <->  :--- 1 no dump                  "ENTER"
                                  :                                                             :
                                  :                                                       <-    :--- 2 dump alarm log          "ENTER"
                                  :                                                             :
                                  :                                                       <-    :--- 3 dump event log          "ENTER"
                                  :                                                             :
                                  :                                                       <-    :--- 4 fixed time dump         "ENTER"
                                  :                                                             :
                                  :                                                       <-    :--- 5 buffer full dump        "ENTER"
                                  :                                                             :
                                  :                                                       <-    :--- 6 clear after dump        "ENTER"
                                  :
                             <-   :--- 2 STAT. DUMP SETUP     <->  :--- 1 DUMP CONTROL      <->  :--- 1 no dump                  "ENTER"
                                  :                                :                                :
                                  :                                :                           <-   :--- 2 fixed time dump         "ENTER"
                                  :                                :                                :
                                  :                                :                           <-   :--- 3 stat. full dump         "ENTER"
                                  :                                :                                :
                                  :                                :                           <-   :--- 4 clear after dump        "ENTER"
                                  :                                :
                                  :                           <-   :--- 4 DUMP FILE FORMAT      <->  :--- 1 ','-file                 "ENTER"
                                  :                                :                                :
                                  :                                :                           <-   :--- 2 ','-file CR+LF           "ENTER"
                                  :                                :                                :
                                  :                                :                           <-   :--- 3 text file                "ENTER"
                                  :                                :
                                  :                           <-   :--- 5 set dump mask         "ENTER"   B. 5.8.2.3
                                  :
                             <-   :--- 3 SET DUMP TIME        <->  :--- 1 once per month       "ENTER"
                                  :                                :
                                  :                           <-   :--- 2 once per week        "ENTER"
                                  :                                :
                                  :                           <-   :--- 3 once per day         "ENTER"
                                  :                                :
                                  :                           <-   :--- 4 once per hour        "ENTER"
                                  :                                :
                                  :                           <-   :--- 5 set exact time       "ENTER"   B. 5.8.3.5
                                  !
                             <-   :--- 4 DUMP DEVICE          <->  :--- 1 to term/printer      "ENTER"
                                  :                                :
                                  :                           <-   :--- 2 to nmc numb          "ENTER"

M. 5 --- CONFIG DATABASE     <->  :--- 1 disabled             "ENTER"
                                  :
                             <-   :--- 2 no dialback          "ENTER"
                                  :
                             <-   :--- 3 pool dialback        "ENTER"
                                  :
                             <-   :--- 4 user dialback        "ENTER"
                                  :
                             <-   :--- 5 LINE OPTION          <->  :--- 1 one line dialb.      "ENTER"
                                  :                                :
                                  :                           <-   :--- 2 two line dialb.      "ENTER"
                                  :
                             <-   :--- 6 DATABASE LOG         <->  :--- 1 view DB-log          "ENTER"   B. 7.6.1
                                  :                                :
                                  :                           <-   :--- 2 clear DB-log         "ENTER"
                                  :
                             <-   :--- 7 SETUP SYSTEM         <->  :--- 1 set DB-pw/dialb.     "ENTER"   B. 7.7.1
                                  :                                :
                                  :                           <-   :--- 2 setup DB-system      "ENTER"   B. 7.7.2
                                  :                                :
                                  :                           <-   :--- 3 set dialb.-str.      "ENTER"   B. 7.7.3
                                  :
                             <-   :--- 8 SET TIMEOUT          <->  :--- 1 no timeout           "ENTER"
                                  :                                :
                                  :                           <-   :--- 2 5 min                "ENTER"
                                  :                                :
                                  :                           <-   :--- 3 10 min               "ENTER"
                                  :                                :
                                  :                           <-   :--- 4 15 min               "ENTER"
                                  :                                :
                                  :                           <-   :--- 5 30 min               "ENTER"
```

Active	Menu points are indicated by the text in the menu display is flashing on and off.
"HOME"	Moves to the top of the tree.
"BACK"	Moves one level up in the tree.
"<" and ">"	Moves to the left and the right on the same level in the tree.
"ENTER"	The selected command is executed, or the user moves on level down the tree.

4. Menu Points.

In this chapter each individual menu point in CCU32 will be described.

Each menu point contains an indication of how to choose the point, a brief headline, a description of the point and how the menu point is to be used when a choice has to be made.

The menu points can be compared with transcripts of screens of information shown in the Appendix.

CONTROL\modem_select (M)

Definition: Selects one of the 16 modems.

Description: This function is used to choose which of the 16 modems in the subrack can be monitored for more specific information. The status of the selected modem will be shown in the status display on LASAT CCU32, and it is possible to monitor the serial interface in the status display and on the datascope on the rear panel.

Note:
There is always one modem that has to be selected. The LASAT CCU32 will select the first modem in the subrack at power up. It is possible to choose a modem by typing the number opposite the modem description. This facility makes it possible to create macro in order to handle the selecting part of the modem.

Selection: To select a modem move the cursor using the arrow keys, or the "L", "R", "D" and "U" keys to the modem of interest and press <CR>. Or type the number of the desired modem and press <CR>. The number indicates the position in the subrack.

CONTROL\subrack_select (S)

Definition: Selects one of the up to 32 subracks to monitor.

Description: This function is used to choose another subrack. It is necessary to select the subrack in which a specific modem resides in order to be able to use the monitoring functions of LASAT CCU32.

Note:
It is not possible for more than one user to have access to a specific subrack at the same time. However the "super user" has certain priorities. A user with lower priority will be logged out, if the "super user" wants to log in.

Selection: To select a subrack move the cursor using the arrow keys, or the "L", "R", "D" and "U" keys to the subrack of interest and press <CR>. Or type the number of the desired subrack and press <CR>.

CONTROL\setup_utils

Definition: Enables/disables specific utilities.

Description: This menu point offers four functions, which can be enabled or disabled.

1. You can obtain "Bell" when an alarm occurs.
2. You can enable timeout on logins, i.e. the user is logged out after 20 min. of inactivity (Keyboard activity).
3. You can enable confirmations at warnings, i.e. you need to accept that you have seen the warning, by pressing <CR>.
4. Finally, you can enable the LASAT CCU32 to sort the modems in groups (defined by extensions). This means that users can have access to only certain groups of modems and not all other modem groups in the system. This option has only effect for users at level 3.

Note:
When you have a modem connection to the LASAT CCU32, you may have problems using the escape characters "+" and "-". The equivalent for "+" and "-" is "*" and "/".

Selection: Use the arrow keys to select the functions you want to change, and use "+" or "-", keys to change them.

CONTROL\CCU32_HW/SW-Id

Definition: Hardware and software version.

Description: This display shows the hardware and software version and the serial number of the LASAT CCU32.

Note:
The software version is backwards compatible.

OVERVIEW\status_overview

Definition: Overview of the state of the modems in the selected subrack.

Description: This display is generated to give the user the same indication of the state of the modems as the LASAT CCU32 status display.

State:	I	Idle	No connection.
	O	Online	Connected.
	B	Busy Out	Something has caused a busy out on the modem.
Select:	S	Selected	This modem is selected.
Test:	T	Test	Test is running.
Error	E	Error	Indicator for error either in test or according to setup.
Warning	W	Warning	Indicator for a situation which may later cause error.
Alarm	A	Alarm	Indicator for an alarm, either a predefined or a user defined. Present for 30 sec. after the event that caused the alarm.
Line QU	xx	Line quality	Indicator for the line quality given in BER.

Note:
When using modem boards with two modems on the same PCB, use the hotkey "o" to change between the two modems.

OVERVIEW\V24_overview

Definition: Overview of the serial interface for the modems in one subrack.

Description: This display is generated to give the user the same indication of the state of the serial interfaces, as if the user was looking directly at the signal in the back of the subrack.

X	Indicates that the signal is active.

Note:
When using modem boards with two modems on the same PCB, use the hotkey "o" to change between the two modems.

OVERVIEW\ID_overview

Definition: Overview of the hardware and software version in one subrack.

Description: This display is generated to give the user indication of the hardware and software versions of each modem in the selected subrack.

OVERVIEW\S/N_overview

Definition: Overview of the serial number for each modem in one subrack.

Description: This display is generated to give the user indication of the serial number of each modem in a subrack.

Note:
The first four digits of the serial number are not present, e.g. the country code.

OVERVIEW\rack_overview

Definition: Overview of the state of the modems in up to 32 subracks.

Description: This display is generated to give the user the same indication of the modems, as if the user was standing in front of the subrack itself. It is possible to see the status of 12 subracks at a time. Where the OVERVIEW\status_overview reflects one subrack directly, this display reflects a subrack in each line on the screen. The same information is available, except the type of modem, and line quality.

State:	I	Idle	No connection
	O	Online	Connected
	B	Busy Out	Something has caused a "busy out" on the modem
	S	selected	This modem is selected
	T	test	Test is running
	E	error	Indicator for error either in test or according to setup
	W	warning	Indicator for a situation which may later cause error.
	A	alarm	Indicator for an alarm, either a predefined or a user defined. Present for 30 sec after the event that caused the alarm.

Note:
When using modem boards with two modems on the same PCB, use the hotkey "o" to change between the two modems.

Selection: Use the hotkey "n" and "p" for paging.

MONITORING_MODEM\view_status

Definition: Status for the selected modem.

Description: This display is used to show more specific status details of the selected modem. Actually it reflects the same information as the STATUS DISPLAY on the front of LASAT CCU32. This information is more detailed regarding speed and protocols.

Note:
By activating Hotkey "T" it is possible to see the result of the latest performed test.

When using modem boards with two modems on the same PCB the hotkey "o" gives status for the second modem on each board. "o" changes between the A and B modems.

MONITORING_MODEM\view_statistics

Definition: Statistics for the selected modem.

Description: This display is used to show the statistics about the performance of the modem. All events in the modem are registered whether selected or not. The statistics are divided into two pages. The User id 1-5 on page 2 reflects the last 5 users which have changed something in the modem. In the Appendix there is a more detailed description of how to use and interpret the result.

Note:
When using modem boards with two modems on the same PCB the hotkey "o" gives status for the second modem on each board. "o" changes between the A and B modems.

Selection: Change between the pages with hotkeys "n" and "p".

MONITORING_MODEM\view_config

Definition: Displays the current configuration of the modem.

Description: The current configuration is given by means of AT commands.

Note:
Avoid using this command when the modems are making contact with other modems.

MONITORING_MODEM\view_phone_numb

Definition: Lists the stored telephone numbers.

Description: This function lists the current telephone numbers stored in the modem NOV-RAM.

Note:
This only applies to dialup modems.

MONITORING_MODEM\dump_statistics

Definition: Dump statistics.

Description: This function enables the ability to dump the statistical information saved in LASAT CCU32 to a local hard disc, printer or the like. You can specify the device to dump under the menu point:

CONFIG_CCU32\DUMP_SETUP\SET_DUMP_DEVICE

Note:
Use hardware flow control on your equipment. Ref. to the Appendix.

MONITORING_MODEM\clr_statistics

Definition: Clears statistics.

Description: Clears the statistic block for the selected modem. Can be used to initialize after dump statistics.

CONFIG_MODEM\modem_menu

Definition: Gate to the menu system of the modem.

Description: This point enables the user to use the menu system on the modem. The menu system has the same syntax as the LASAT CCU32. It is important to note that the menu system that is reachable from the LASAT CCU32, is the same as the one that can be operated from the front keyboard of the stand-alone modem which is equivalent to the rack modem. The menu system is based on the AT-command set, but presented with a more informative text. Further, the menu system is divided into groups to simplify the use, one group covering the terminal utilities, line utilities etc.

Note:
When entering the menu system you enter the modem and only use the LASAT CCU32 as a presentation manager. Therefore it is necessary to type ESC twice to go to the menu system of LASAT CCU32. It is not advisable to use the menu system when the modems are making contact with other modems.

CONFIG_MODEM\talk_through

Definition: Redirection of serial interface.

Description: This feature enables the user to redirect the modem's serial interface to the LASAT CCU32's serial interface. When choosing this facility, you "close" the serial interface towards the user or the network. This means that it is possible to use the AT-command interpreter on the modem, no matter if you are connected to the LASAT CCU32's interface.

Note:
The max. throughput on this redirected channel is about 1200 bps. When entering talk_through the redirection can result in unwanted behaviour for the modem user.

Selection: Use ESC to leave and return to normal use.

CONFIG_MODEM\V24_talk_through

Definition: Redirection of serial interface.

Description: Like talk_through this feature redirects the modem's serial interface. The serial interface of the modem will be shut off, and the LASAT CCU32 works as a DCE terminal to the equipment connected to the modem.

Note:
The max. throughput on this redirected channel is about 1200 bps. When entering talk_through the redirection can result in unwanted behaviour for the modem user.

Selection: Use ESC to leave and return to normal use.

CONFIG_MODEM\move_config

Definition: Moving configurations between modems and LASAT CCU32.

Description: Features fast configuration of all modems in up to 32 interconnected subracks.

Note:
Refer to the Appendix.

CONFIG_CCU32\password/dialb

Definition: Editing of LASAT CCU32 passwords, user definitions and dialback numbers.

Description: This is the system manager level, where passwords and the connected user pseudonym with user level are defined. It is also possible to programme a dialback number if required for login through modem and an extension for dividing users at level 3 into groups.

Note:
If no level zero password is indicated except for the password of the super user do not forget the user password. If it is forgotten it requires an operative intervention from LASAT's side.

Selection: Place the cursor at the field to edit and enter editor mode using <CR>.

CONFIG_CCU32\modem_pseudo/ext

Definition: Editing of the modem pseudonym and extension.

Description: Namegiving of modems with pseudonyms and grouping with extensions.

Selection: Place the cursor at the field to edit and enter editor mode using <CR>.

CONFIG_CCU32\set_nmc_numb

Definition: Programming of 5 telephone numbers to the network managing centre.

Description: Editing of telephone numbers where LASAT CCU32 will send a statistic dump or an event buffer dump.

Selection: Place the cursor at the field to edit and enter editor mode using <CR>.

CONFIG_CCU32\set_busy

Definition: Sets or removes busyout setting of 16 GSTN lines.

Description: Any of the 16 lines connected to a subrack can be programmed to busyout depending on different criteria.
The criteria can be:

Forced Not Busy
Busy if Slot Empty
Busy if Modem Failed
Busy if no DTR
Busy if DCD disappear
Forced Busy

By making a line busy out you will receive a busy tone when you try to call that line.

Selection: Place cursor on the number of line (subrack modem slot) and change the setup using '+' and '-'.

CONFIG_CCU32\SUBRACK_INIT\subrack_pseudo

Definition: Change of the subrack pseudonym.

Description: Editing the subrack pseudonym.

Selection: Use <CR> to enter editor mode, use <BS> to erase and enter subrack pseudonym and finally save using <CR>.

CONFIG_CCU32\SUBRACK_INIT\subrack_address

Definition: Change of the subrack address.

Description: Like subrack pseudonym, but here numbers from 1 to 32 only.

Note:
The subrack number represents the subrack address and therefore no subrack connected together may have the same number. One and only one of the subracks must be a master.

Selection: Use <CR> to enter editor mode, use <BS> to erase and enter subrack pseudonym and finally save using <CR>.

CONFIG_CCU32\SUBRACK_INIT\load_ccu32_setup

Definition: Reads a LASAT CCU32 backup file.

Description: Configurates the LASAT CCU32 subrack using a previously saved backup file.

Note:
The configuration file does not contain the subrack number or the master/slave setting.

Selection: Use <CR> to prepare LASAT CCU32 for reception of a backup file, then send the file to the subrack. And finally when having sent the backup, use <ESC> to return to menu control.

CONFIG_CCU32\SUBRACK_INIT\dump_ccu32_setup

Definition: Creates a backup of the LASAT CCU32 setup.

Description: Saves the complete configuration.

Note:
The configuration file does not contain the subrack number or the master/slave setting.

Selection: Before pressing <CR> prepare a file for the backup. The file will be the backup file. Then start the backup using <CR>. When finished, close the file and use <ESC> to return to menu control.

CONFIG_CCU32\SUBRACK_INIT\MASTER/SLAVE\master

Definition: Configurates subrack as master.

Description: The subrack will be the master of communication between the subracks.

Note:
Only one of the subracks may be configurated as master.

Selection: Use <CR>.

CONFIG_CCU32\SUBRACK_INIT\MASTER/SLAVE\slave

Definition: Configurates subrack as slave.

Description: The master subrack will control the communication between the subracks.

Note:
Only one of the subracks may be configurated as master.

Selection: Use <CR>.

CONFIG_CCU32\SUBRACK_INIT\set_watch

Definition: Sets the LASAT CCU32 watch.

Description: Edits the time using the watch editor.

Selection: Use <CR> to enter editor mode, specify time and terminate with <CR>.

CONFIG_CCU32\SUBRACK_INIT\INIT_RAM\clr_alarms

Definition: Clears alarm settings.

Description: Clears the alarm settings, so that no modem event, which is not a special event, will result in an alarm.

Selection: Use <CR> and confirm using 'y'.

CONFIG_CCU32\SUBRACK_INIT\INIT_RAM\clr_special_alarms

Definition: Clears special alarms.

Description: Clears all the masks for special events.

Selection: Use <CR> and confirm using 'y'.

CONFIG_CCU32\SUBRACK_INIT\INIT_RAM\clr_log

Definition: Clears log.

Description: Clears the contents of the alarm/event-buffer.

Selection: Use <CR> and confirm using 'y'.

CONFIG_CCU32\SUBRACK_INIT\INIT_RAM\clr_statistics

Definition: Resets statistics.

Description: Clears the contents of the accumulating statistic counter for all modems.

Selection: Use <CR> and confirm using 'y'.

CONFIG_CCU32\SUBRACK_INIT\INIT_RAM\clr_mod_pseu/ext

Definition: Clears the modem pseudonyms and extension.

Description: The modem pseudonyms and extension will be deleted and replaced with spaces.

Selection: Use <CR> and confirm using 'y'.

CONFIG_CCU32\SUBRACK_INIT\INIT_RAM\clr_subrack_pseu

Definition: Clears the subrack pseudonym.

Description: The subrack pseudonym will be deleted and replaced with spaces.

Selection: Use <CR> and confirm using 'y'.

CONFIG_CCU32\SUBRACK_INIT\INIT_RAM\clr_config_pseu

Definition: Clears the config pseudonyms.

Description: The configuration pseudonyms will be deleted and replaced with spaces.

Selection: Use <CR> and confirm using 'y'.

CONFIG_CCU32\SUBRACK_INIT\INIT_RAM\clr_passwords

Definition: Clears passwords.

Description: Clears all login passwords besides the super user passwords, and replaces with spaces. Spaces in a password are illegal.

Note:
Deleting passwords will delete all passwords besides the super user password.

Selection: Use <CR> and confirm using 'y'.

CONFIG_CCU32\SUBRACK_INIT\INIT_RAM\clr_nmc_numb

Definition: Clears the nmc telephone numbers.

Description: The telephone numbers to the network management control will be deleted and replaced with spaces.

Selection: Use <CR> and confirm using 'y'.

CONFIG_CCU32\SUBRACK_INIT\initial_setup

Definition: Clears the complete setup.

Description: Clears all LASAT CCU32 setup besides the super user password.

Note:
This is a super user option only.

Selection: Use <CR> and confirm using 'y'.

CONFIG_CCU32\SUBRACK\INIT_CCU32\reset

Definition: LASAT CCU32 hardware reset.

Description: Forces the watchdog to create a hardware reset pulse, thus performs a hardware reset.

Selection: Use <CR> twice.

CONFIG_CCU32\SETUP_RS232\8N1_9600_bps

Definition: Sets the RS232 interface async interface format to 8N1.

Description: Sets the RS232 interface async interface format to 8N1.

Note:
If this setup is done through the RS232 interface, do not forget to change the format on your terminal.

Selection: Use <CR>.

CONFIG_CCU32\SETUP_RS232\7O1_9600_bps

Definition: Sets the RS232 interface async interface format to 7O1.

Description: Sets the RS232 interface async interface format to 7O1.

Note:
If this setup is done through the RS232 interface, do not forget to change the format on your terminal.

Selection: Use <CR>.

CONFIG_CCU32\SETUP_RS232\7E1_9600_bps

Definition: Sets the RS232 interface async interface format to 7E1.

Description: Sets the RS232 interface async interface format to 7E1.

Note:
If this setup is done through the RS232 interface, do not forget to change the format on your terminal.

Selection: Use <CR>.

CONFIG_CCU32\SETUP_RS232\7N2_9600_bps

Definition: Sets the RS232 interface async interface format to 7N2.

Description: Sets the RS232 interface async interface format to 7N2.

Note:
If this setup is done through the RS232 interface, do not forget to change the format on your terminal.

Selection: Use <CR>.

CONFIG_CCU32\SETUP_RS232\RS232_DCE_normal

Definition: Setup RS232 as DCE interface.

Description: Setup the RS232 interface for terminal connection.

Note:
It is only possible to alter this setup through the LASAT CCU32 keyboard.

Selection: Use the ENTER key on the LASAT CCU32 keyboard.

CONFIG_CCU32\SETUP_RS232\RS232_DTE_modem

Definition: Setup RS232 as DTE interface.

Description: Setup the RS232 interface for modem connection. The signals will not be crossed which is why a special cable is necessary. Refer to the Appendix.

Note:
It is only possible to alter this setup through the LASAT CCU32 keyboard. The modem interface will be disabled.

Selection: Use the ENTER key on the LASAT CCU32 keyboard.

CONFIG_CCU32\SETUP_RS232\RS232_DTE_prn.

Definition: Setup RS232 as DTE interface.

Description: Setup the RS232 interface for a printer connection. The management of the system can be done through the modem interface or the LASAT CCU32 keyboard.

Note:
It is only possible to alter this setup through the LASAT CCU32 keyboard.

Selection: Use the ENTER key on the LASAT CCU32 keyboard.

CONFIG_CCU32\SETUP_RS232\XON/XOFF_fl-ctrl

Definition: Selects XON/XOFF software flow control.

Description: If a serial cable without RTS and CTS connection is used between terminal and LASAT CCU32, it is necessary to use this option to avoid loss of data.

Selection: Use <CR> to change.

CONFIG_CCU32\SETUP_MODEM\disabled

Definition: Disables the modem interface.

Description: The modem interface will be disabled to avoid disturbing noise when not in use.

Note:
This is not possible through the modem interface.

Selection: Use <CR>.

CONFIG_CCU32\SETUP_MODEM\enabled

Definition: Enables the modem interface.

Description: The modem interface will be enabled and ready to use. Login through the modem interface is of dialback type using telephone numbers stored in the LASAT CCU32.

Note:
This is not possible through the modem interface.

Selection: Use <CR>.

CONFIG_CCU32\SETUP_MODEM\XON/XOFF_fl-ctrl

Definition: Selects XON/XOFF software flow control.

Description: If a serial cable without RTS and CTS connection is used between modem and LASAT CCU32, it is necessary to use this option to avoid loss of data.

Selection: Use <CR> to change.

CONFIG_CCU32\DUMP_SETUP\LOG_DUMP_SETUP\DUMP_CONTROL\no_dump

Definition: No automatic dump of log to nmc.

Description: Disables the automatic dump of log to the network management centre (nmc).

Selection: Use <CR> to change.

CONFIG_CCU32\DUMP_SETUP\LOG_DUMP_SETUP\DUMP_CONTROL\dump_alarm_log

Definition: Automatic dump of alarm log to nmc.

Description: Enables automatic dump of the alarm events on the log to the network management centre (nmc).

Selection: Use <CR> to change.

CONFIG_CCU32\DUMP_SETUP\LOG_DUMP_SETUP\DUMP_CONTROL\dump_event_log

Definition: Automatic dump of event log to nmc.

Description: Enables automatic dump of the event log to the network management centre (nmc).

Selection: Use <CR> to change.

CONFIG_CCU32\DUMP_SETUP\LOG_DUMP_SETUP\DUMP_CONTROL\fixed_time_dump

Definition: Dumps log to nmc at a fixed time and interval.

Description: If enabled the log will be dumped to the network management centre (nmc) at a specific time and interval set in:

CONFIG_CCU32\DUMP_SETUP\SET_DUMP_TIME

Selection: Use <CR> to change.

CONFIG_CCU32\DUMP_SETUP\LOG_DUMP_SETUP\DUMP_CONTROL\buffer_full_dump

Definition: Dumps log to nmc when log buffer is full.

Description: If enabled the log will be dumped to the network management centre (nmc) when the log buffer contents has reached a maximum level. Even though the log buffer is full it is possible to receive data for a period of time in order to avoid a loss of data.

Selection: Use <CR> to change.

CONFIG_CCU32\DUMP_SETUP\LOG_DUMP_SETUP\DUMP_CONTROL\clear_after_dump

Definition: Resets the log buffer after dump.

Description: The log will be reset after dump.

Selection: Use <CR> to change.

CONFIG_CCU32\DUMP_SETUP\STAT.DUMP_SETUP\DUMP_CONTROL\no_dump

Definition: Disables automatic dump of statistics.

Description: No automatic dump of statistics to the network managing centre (nmc).

Selection: Use <CR> to change.

CONFIG_CCU32\DUMP_SETUP\STAT.DUMP_SETUP\DUMP_CONTROL\fixed_time_dump

Definition: Selects fixed time dump to nmc.

Description: If enabled the statistics will be dumped to the network management centre (nmc) at a specific time and interval set in:

CONFIG_CCU32\DUMP_SETUP\SET_DUMP_TIME

Selection: Use <CR> to change.

CONFIG_CCU32\DUMP_SETUP\STAT.DUMP_SETUP\DUMP_CONTROL\stat.full_dump

Definition: Dumps statistics to nmc when statistic accumulator is full.

Description: If enabled the statistics will be dumped to the network management centre (nmc) when the event counters have reached a maximum level. Even though the statistic accumulator is full it is possible to receive data for a period of time in order to avoid loss of data.

Selection: Use <CR> to change.

CONFIG_CCU32\DUMP_SETUP\STAT.DUMP_SETUP\DUMP_CONTROL\clear_after_dump

Definition: Clears statistics after dump.

Description: The statistic accumulator will be reset after dump.

Selection: Use <CR> to change.

CONFIG_CCU32\DUMP_SETUP\STAT.DUMP_SETUP\DUMP_FILE_FORMAT\','-file

Definition: Dump of statistics in ','-file format.

Description: The dump format will be in ASCII characters separated by commas. Refer to the Appendix.

Selection: Use <CR>.

CONFIG_CCU32\DUMP_SETUP\STAT.DUMP_SETUP\DUMP_FILE_FORMAT\','-file_CR+LF

Definition: Dump of statistics in ','-file CR+LF format.

Description: The dump format will be in ASCII characters separated by commas, a <CR> and <LF>. Refer to the Appendix.

Selection: Use <CR>.

CONFIG_CCU32\DUMP_SETUP\STAT.DUMP_SETUP\DUMP_FILE_FORMAT\text file

Definition: Dump of statistics in text format.

Description: The dump format will be in readable text. Refer to the Appendix.

Selection: Use <CR>.

CONFIG_CCU32\DUMP_SETUP\STAT.DUMP_SETUP\set_dump_mask

Definition: Setup statistic dump modem mask.

Description: Select which modem statistics to be dumped.

Selection: Use arrows, or 'l', 'r', 'u', 'd', to select and '+' to set and '-' to reset.

CONFIG_CCU32\DUMP_SETUP\SET_DUMP_TIME\once_per_month

Definition: Sets log and statistic dump interval timer.

Description: Dump will be performed once a month.

Selection: Use <CR>.

CONFIG_CCU32\DUMP_SETUP\SET_DUMP_TIME\once_per_week

Definition: Sets logs and statistic dump interval timer.

Description: Dump will be performed once a week.

Selection: Use <CR>.

CONFIG_CCU32\DUMP_SETUP\SET_DUMP_TIME\once_per day

Definition: Sets log and statistic dump interval timer.

Description: Dump will be performed once a day.

Selection: Use <CR>.

CONFIG_CCU32\DUMP_SETUP\SET_DUMP_TIME\once_per_hour

Definition: Sets log and statistic dump interval timer.

Description: Dump will be performed once an hour.

Selection: Use <CR>.

CONFIG_CCU32\DUMP_SETUP\SET_DUMP_TIME\set_exact_time

Definition: Specifies fixed time to start dump.

Description: The dump time for statistics and log must be specified down to seconds.

Selection: Use arrow keys to select item to be changed, and enter editor mode using <CR>. Erase is possible using <BS>.

CONFIG_CCU32\DUMP_SETUP\DUMP_DEVICE\to_term/printer

Definition: Dumps to a printer through the RS232 interface.

Description: If selected the dump will not be sent to the network management centre (nmc) but directly through the RS232 interface, if connected to a printer.

Note:
The RS232 interface must be configurated for printer.

Selection: Use <CR>.

CONFIG_CCU32\DUMP_SETUP\DUMP_DEVICE\to_nmc_numb

Definition: Dumps to a printer through the RS232 interface.

Description: If selected the dump will call the network management centre (nmc), if a modem is connected to LASAT CCU32.

Selection: Use <CR>.

CONFIG_CCU32\SET_AUTOCONFIG\disabled

Definition: Disables auto configuration.

Description: Modems will not be configurated automatically upon modem reset, or if the communication between modem and LASAT CCU32 has to many errors.

Selection: Use <CR>.

CONFIG_CCU32\SET_AUTOCONFIG\enabled

Definition: Enables auto configuration.

Description: Modems will be configurated automatically after modem reset, or if the communication between modem and LASAT CCU32 has to many errors.

Selection: Use <CR>.

LOG_OPTIONS\view_alarm_log

Definition: Views the alarm log.

Description: Views the alarm events recorded on the event log.

Selection: Use arrows, 'u' and 'd' to switch pages, and '+' and '-' to change between alarms on CCU32, modems or every alarm.

LOG_OPTIONS\view_event_log

Definition: Views the event log.

Description: Views the event log.

Selection: Use arrows, 'u' and 'd' to switch pages, and '+' and '-' to change between events on CCU32, modems or every event.

LOG_OPTIONS\set_alarm_mask

Definition: Selects events to activate an alarm.

Description: A series of predefined events can be recorded on the log as events or as alarms. It is furthermore possible to define up to 16 special events described by one single event or as a sequence of two events. If two events are indicated an alarm will occur if they do not succeed each other within a predetermined time interval.

Selection: Use arrows to select item, and activate/deactivate using '+' or '-'. Refer to the Appendix.

LOG_OPTIONS\log_dump

Definition: Real time log dump.

Description: Events will be written on the screen as they occur. The format is the same as in the 'view event log' and all events will be written.

Note:
This function has no effect on the log recording.

Selection: Use <CR> to activate and <ESC> to return to CCU32 menu.

CONFIG_DATABASE\disabled

Definition: Disables database interface.

Description: The database interface will be disabled.

Selection: Use <CR>.

CONFIG_DATABASE\no_dialback

Definition: Enables database interface.

Description: Enables database interface with password entry but no dialback.

Note:
Do not forget to setup the database system before enabling.

Selection: Use <CR>.

CONFIG_DATABASE\pool_dialback

Definition: Enables database interface using pool dialback.

Description: Enables database interface with password entry and dialback using a LASAT CCU32 stored telephone number.

Note:
Do not forget to setup the database system before enabling.

Selection: Use <CR>.

CONFIG_DATABASE\user_dialback

Definition: Enables database interface using user dialback.

Description: Enables database interface with password entry and dialback using a telephone number typed by the user after the password acknowledgement.

Note:
Do not forget to setup the database system before enabling.

Selection: Use <CR>.

CONFIG_DATABASE\LINE_OPTION\one_line_dialb.

Definition: Dialback using the same line.

Description: The database interface will perform dialback using the same modem (line) as used receiving the call.

Selection: Use <CR>.

CONFIG_DATABASE\LINE_OPTION\two_line_dialb.

Definition: Dialback using another line.

Description: The database interface will perform dialback by using another modem than the one originally used. However, this is only possible if another modem line is free.

Selection: Use <CR>.

CONFIG_DATABASE\DATABASE_LOG\view_DB-log

Definition: Displays the database log.

Description: Displays the events recorded on the database log.

Note:
The database log is different from the event/alarm-log.

Selection: Use arrows 'u' and 'd' to switch page and <ESC> to return to menu.

CONFIG_DATABASE\DATABASE_LOG\clear_DB-log

Definition: Clears database log.

Description: The database log will be reset.

Selection: <CR>.

CONFIG_DATABASE\SETUP_SYSTEM\set_DB-pw/dialb.

Definition: Editing of passwords and dialback numbers for the database interface.

Description: Editing the database passwords and the associated dialback numbers.

Selection: Select item to be edited using the arrow keys and enter editor mode using <CR>. <BS> will delete and <CR> will save the new text. Otherwise use <ESC> to abort.

CONFIG_DATABASE\SETUP_SYSTEM\setup_DB-system

Definition: Selects modems for the database interface.

Description: Modems can be selected either for reception or dialback or both.

Selection: Use arrow keys to select modem, and use '+' to activate and '-' to de-activate.

CONFIG_DATABASE\SETUP_SYSTEM\set_dialb.-str.

Definition: Edits the dialback prefix.

Description: Edits the prefix command for dial (normally ATD).

Selection: Use <CR> to enter editor mode, edit and delete using <BS>. <CR> will save and return to the menu. Otherwise use <ESC> to abort.

CONFIG_DATABASE\SET_TIMEOUT\no_timeout

Definition: Disables timeout.

Description: There is no timeout on the database.

Selection: Use <CR>.

CONFIG_DATABASE\SET_TIMEOUT\5_min

Definition: Sets timeout to 5 minutes.

Description: The user is only connected to the database for 5 minutes.

Selection: Use <CR>.

CONFIG_DATABASE_10_min

Definition: Sets timeout to 10 minutes.

Description: The user is only connected to the database for 10 minutes.

Selection: Use <CR>.

CONFIG_DATABASE_15_min

Definition: Sets timeout to 15 minutes.

Description: The user is only connected to the database for 15 minutes.

Selection: Use <CR>.

CONFIG_DATABASE_30_min

Definition: Sets timeout to 30 minutes.

Description: The user is only connected to the database for 30 minutes.

Selection: Use <CR>.

Appendix

A1. Modem Interface for CCU32.

Connections to LASAT CCU32 can take place through a terminal connected to the V24/RS232 interface on the backplane, or via a modem connection in the form of an externally located modem connected to the same interface.

If an external modem is connected to the V24/RS232 interface, the interface to the installed modem will be disabled.

It is possible to use the dialback facility on LASAT CCU32 together with a modem. This modem can be installed on LASAT CCU32, it can be located in the rack, or it can be a "stand alone" type. It is a necessity that the modem is capable of receiving data on the serial interface with 9600 bps. When receiving large data quantities it will be necessary to use flow control RTS/CTS or XON/XOFF, if the selected modem has a lower transmission rate on the telephone line than 9600 bps.

The configuration of the LASAT CCU32 interface must be executed via the keyboard on the front panel.

A1.1 Application of an Installed Modem.

The modem is installed on the LASAT CCU32 card, and the interface for LASAT CCU32 takes place through a 20 pole plug (CCU32 J6) with TTL signals.

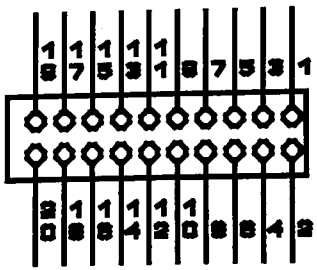


Fig. 1 Plug for modem interface.

Pin configuration:

1:	Tel1	6:	+12V	11:	RxD	16:	0V
2:	Tel2	7:	0V	12:	DTR	17:	0V
3:	0V	8:	0V	13:	RTS	18:	-5V
4:	0V	9:	TxD	14:	CTS	19:	+5V
5:	-12V	10:	DCD	15:	0V	20:	+5V

The modem interface must be enabled.
If using a slow terminal XON/XOFF flow control is advisable. The RS232/V24 interface must be configured to RS232 DCE normal.

A1.2 Application of an External Modem.

The external modem must be connected to LASAT CCU32 through the RS232/V24 interface via a special cable. The connections through the cable appear from the draft below:

CCU32			MODEM	
0	DTR	———	DCD	8
8	DCD	———	DTR	20
4	RTS	———	CTS	5
5	CTS	———	RTS	4
2	TXD	———	RXD	3
3	RXD	———	TXD	2
7	SGND	———	SGND	7

Procedure for activation

1. Login from front keyboard
2. Press 4 * > to **CONFIG CCU32** and press **ENTER**
3. Press 4 * >8 to **SETUP RS232** and press **ENTER**
4. Press 1 * > to **RS232 DTE modem** and press **ENTER**
5. Press **HOME**
6. Press 6 * > to **exit** and press **ENTER**

After this the LASAT CCU32 can be connected to a modem.

Procedures for deactivation

1. Login from front keyboard
2. Press 4 * > to **CONFIG CCU32** and press **ENTER**
3. Press 4 * > to **SETUP RS232** and press **ENTER**
4. When **RS232 DCE normal** press **ENTER**
5. Press **HOME**
6. Press 6 * > to **exit** and press **ENTER**

Then the LASAT CCU32 can be connected to a terminal/computer.

The above procedure implies that the external modem is a Hayes AT compatible product.

The following command is given to the modem:

```
AT &F1 S0=2 Q1 E0 &W &Y
```

The modem works like an auto answer modem, therefore it will switch off the connection if not receiving DTR.

A2. File Syntax for RAM-backup.

When using the RAM backup function on LASAT CCU32 for configuration, it is necessary to be able to recognize the syntax of the backup file.

The file consists of strings containing readable characters, and it can be edited immediately.

The format appears from the below text:

```
,0001 (The beginning of the backup is the password pseudonym number 2 (index = 0x01))
,
,060A2020202020202020202020202020202020202020.<CR><LF>
,(Backup of modem pseudonym number 11a - 20 spaces)
,
,
<EOT><EOF> (The file must be completed with <EOT> and <EOF> hex 0x04 and 0x1A)
```

The beginning of the string is indicated by a comma, followed by the actual backup string.

The string is completed with a full stop, <CR> and <LF>. After the backup strings the file must be completed with <EOT and <EOF> (hex 0x04 and 0x1F).

The backup string is structured as stated below:

All characters are '0' - '9' or 'A' - 'F', which appear in pairs and represent a byte value written in hex format. The first two characters indicate the type of data in question. The next two bytes indicate the number of the given data type (data index).

Possible backup (P.T. CCU32 ver. 2.20):

Data type	Menu point	Data type code	Possible data index	Data length
Password pseudonym	(51)	00	01 - 2F	20
Password dialb. No.	(51)	01	01 - 2F	20
Password	(51)	02	01 - 2F	10
Password type	(51)	03	01 - 2F	1
Password access text	(51)	04	01 - 2F	3
Pincode	(51)	05	01 - 2F	6
Modem pseudonym	(52)	06	00 - 1F	20
Modem extension	(52)	07	00 - 1F	3
Config pseudonym	(43)	08	00 - 1F	20
Config S-Registers	(43)	09	00 - 1F	40
Std. Config pseudonym	(43)	0A	00 - 05	20
Std. Config S-Registers	(43)	0B	00 - 05	40
Config Origin	(43)	0C	00	32
Config Origin Type	(43)	0D	00	6
Make Busy Settings	(54)	0E	00	16
Set Alarm Modem mask A	(63)	0F	00	2
Set Alarm Modem mask B	(63)	10	00	2
Set Alarm Event mask	(63)	11	00	16
Set Alarm Modem Ext.	(63)	12	00	1
SetUpUtils	(13)	13	00	1
NMCNumb	(53)	14	00 - 04	20
DumpInterval	(581)	15	00	1
DumpDevice	(582)	16	00	1

To be continued from page A-3

Data type	Menu point	Data type code	Possible data index	Data length
DumpControl	(583)	17	00	1
AutoConfig	(59)	18	00	1
reserved	19			
reserved	1A			
reserved	1B			
reserved	1C			
DumpTime	(5815)	1D	00	5
DumpMask	(585)	1E	00	4
ModemSetUp	(59)	1F	00	1
EventMask	(63)	20	00	16
DBPassword	(77)	21	00 - 2F	10
DBPassword dialb.No.	(77)	22	00 - 2F	20
DataBaseEnable	(7)	23	00	1
DataBaseSetUp	(78)	24	00	16

DBPassword - DataBaseSetUp will be ignored if it is not a CCU32 security version.

The modems 1a to 16a are numerated from 0x00 to 0x0F (data index) and the modems 1b to 16b are numerated from 0x10 to 0x1F (data index). Likewise, all the indexes are numerated from 0, i.e. modem pseudonym 1a has index 0x00.

With regard to backup of Make Busy and Alarm Settings it is recommended to use the control card to make the file, and not to edit the file for backup of these functions, as incorrect information may cause data conflicts. However, the control card will not break down due to incorrect information in the ram backup file.

If modem pseudonyms are to be entered via the backup system, the additional information from the backup file must be deleted, but the file form must be observed and the file must be completed with <EOT> and <EOF>.

Actually <EOF> is unnecessary, but it should be included for the sake of good order.

A3. Possible Recordable Events on CCU32.

The number of events to be logged comprise:

CCU32 events
normal modem events
special modem events

16 special events made by the user of CCU32 are available. Alarms can be placed on normal modem events, and also on V24/RS232 control signals, but not on CCU32 events.

CCU32 events:	Normal modem events:
Card Error.	No Carrier.
Card Reset.	No Dialtone.
Card Made Busy.	No Answer.
Card Removed.	Busy.
	Fall Back.
Log In.	Retrain.
Log Out.	Off Hook.
CCU32 Reset.	On Hook.
Config Modems.	OnLine.
Set Watch.	OffLine.
Set CCU32 Address.	Start Local loop.
Set Password/Dialback number.	Start Remote Loop.
Set Modem Pseudonym.	Start Test.
Set Alarm Mask.	Stop Test.
Dump Statistics.	Lost Local Carrier.
Reset Statistics.	Lost Synchronism.
	V24 Change.

Normal modem events continued:

Connect XXXXXXX	
other	(unknown std.)
V21	
V22	
V22 bis	
V23	
V26	
V27	
V27 bis	
V27 ter	
V29	
V32	
V32 TCM	
V33	
V33 TCM	
DOV	(data over voice)
BB	(base band)

Furthermore, protocols will be added - data compression and data correction initializing events.

Connect XXXXXX	XXXX
	Unknown Protocol
	MNP2-4
	MNP2-4/V42bis Tx
	MNP2-4/V42bis Rx
	MNP2-4/V42bis
	MNP2-4/MNP5
	MNP2-4/MNP7
	MNP2-4/MNP10
	LAP-M
	LAP-M/V42bis Tx
	LAP-M/V42bis Rx
	LAP-M/V42bis
	X25
	Other Protocol

Furthermore, the modem rate will be registered and also whether the connection has been established as a result of a call.

V24/RS232 events to special alarm:

DTR Goes On
DTR Goes Off
DSR Goes On
DSR Goes Off
DCD Goes On
DCD Goes Off
RTS Goes On
RTS Goes Off
CTS Goes On
CTS Goes Off
RI Goes On
RI Goes Off
CHS Goes On
CHS Goes Off

special event alarm

(1) hvis event 2 tom giver event 2 alarm

(2) hvis event 2 exist start timer
ske event 2 inden tidsodløb
kommer der ikke Alarm.

A4. File Syntax for Dump of Statistics.

Dump of statistics is divided in 2 different modes:

text format
or
',' format

and which one to be used depends on the configuration of the statistics setup.

',' format is designed for use with a data accumulation programme and the text format is used when the accumulative media f.ex. is a printer.

The Text Syntax:

The text format is designed as the VIEW STATISTICS image, only the statistics for one single modem are placed on one page <FF>. The line is completed with <FF>.

The ',' format and the ',' format <CR>+<LF>:

As to the ',' format <CR> and <LF> are inserted in order to facilitate the readability. Also commas to separate the individual figures from each other are inserted.

The figures are stated between the commas as decimal values with ascii characters. The line is completed with <EOT> and <EOF>.

The difference between the ',' format respectively with and without <CR>+<LF> is that the extra characters may be omitted.

The following will be transmitted if ',' format:

```
<CR><LF>
xx<CR><LF>                          ; Subrack number.
,xxxxxxxxxxxxxxxxxxx<CR><LF>        ; Subrack pseudonym.
,xxx<CR><LF>                        ; Modem number.
,xxxxxxxxxxxxxxxxxxx<CR><LF>        ; Modem pseudonym.
,xxx<CR><LF>                        ; Modem extension.
,xxx<CR><LF>                        ; Modem type.
,xxxxxxxxx<CR><LF>                  ; Serial number (TEXT II).
,YYMMDDHHMMSS<CR><LF>               ; Statistics start.
,YYMMDDHHMMSS<CR><LF>               ; Last update.
,YYMMDDHHMMSS<CR><LF>               ; Last clear/dump.
,YYMMDDHHMMSS<CR><LF>               ; Last modem reset.
,HHHHHMMSS<CR><LF>                  ; Period.
,HHHHHMMSS<CR><LF>                  ; Active.
,HHHHHMMSS<CR><LF>                  ; Idle.
,HHHHHMMSS<CR><LF>                  ; Busy Out.
,xxxxx<CR><LF>                      ; 0 NumbDialInConnect.
,xxxxx<CR><LF>                      ; 1 NumbDialOutConnect.
,xxxxx<CR><LF>                      ; 2 NumbDialInNoConnect.
,xxxxx<CR><LF>                      ; 3 NumbDialOutNoConnect.
,xxxxx<CR><LF>                      ; 4 NumbDialInNoCarrier.
,xxxxx<CR><LF>                      ; 5 NumbDialOutNoCarrier.
,xxxxx<CR><LF>                      ; 6 NumbDialInRetrains.
,xxxxx<CR><LF>                      ; 7 NumbDialOutRetrains.
```

To be continued from page A-7

,xxxxx<CR><LF>	; 8 NumbOfBusy.
,xxxxx<CR><LF>	; 9 NumbNoAnswer.
,xxxxx<CR><LF>	; 10 NumbNoDialTone.
,xxxxx<CR><LF>	; 11 NumbOfReset.
,xxxxx<CR><LF>	; 12 NumbLostCarrierLL.
,xxxxx<CR><LF>	; 13 NumbLostSync.
,xxxxx<CR><LF>	; 14 NumbFallBack.
,xxxxx<CR><LF>	; 15 NumbV54_LP2_511_ERROR.
,xxxxx<CR><LF>	; 16 NumbV54_LP3_511_ERROR.
,xxxxx<CR><LF>	; 17 NumbV54_LP2_QBF_ERROR.
,xxxxx<CR><LF>	; 18 NumbV54_LP3_QBF_ERROR.
,xxxxx<CR><LF>	; 19 Numb V42 Annex A (MNP2-4).
,xxxxx<CR><LF>	; 20 Numb V42 Annex A (MNP2-4)/V42bis.
,xxxxx<CR><LF>	; 21 Numb V42 Annex A (MNP2-4)/MNP5.
,xxxxx<CR><LF>	; 22 Numb V42 Annex A (MNP2-4)/MNP7.
,xxxxx<CR><LF>	; 23 Numb V42 Annex A (MNP2-4)/MNP10.
,xxxxx<CR><LF>	; 24 Numb V42 (LAP-M).
,xxxxx<CR><LF>	; 25 Numb V42 (LAP-M)/V42bis.
,xxxxx<CR><LF>	; 26 X25.
,xxxxx<CR><LF>	; 27 Other Protocol.
,xxxxx<CR><LF>	; 28 NumbRetrans.
,xxxxx<CR><LF>	; 29 NumbOfAlarms.
,xxxxx<CR><LF>	; 30 NumbOtherConnectInCall
,xxxxx<CR><LF>	; 31 NumbOtherConnectOutCall
,xxxxx<CR><LF>	; 32 NumbV32bisTCMInCall
,xxxxx<CR><LF>	; 33 NumbV32bisTCMOutCall
,xxxxx<CR><LF>	; 34 NumbV32bisInCall
,xxxxx<CR><LF>	; 35 NumbV32bisOutCall
,xxxxx<CR><LF>	; 36 NumbV32TCMInCall
,xxxxx<CR><LF>	; 37 NumbV32TCMOutCall
,xxxxx<CR><LF>	; 38 NumbV32InCall
,xxxxx<CR><LF>	; 39 NumbV32OutCall
,xxxxx<CR><LF>	; 40 NumbV27terInCall
,xxxxx<CR><LF>	; 41 NumbV27terOutCall
,xxxxx<CR><LF>	; 42 NumbV26terInCall
,xxxxx<CR><LF>	; 43 NumbV26terOutCall
,xxxxx<CR><LF>	; 44 NumbV26bisInCall
,xxxxx<CR><LF>	; 45 NumbV26bisOutCall
,xxxxx<CR><LF>	; 46 NumbV23InCall
,xxxxx<CR><LF>	; 47 NumbV23OutCall
,xxxxx<CR><LF>	; 48 NumbV22bisInCall
,xxxxx<CR><LF>	; 49 NumbV22bisOutCall
,xxxxx<CR><LF>	; 50 NumbV22InCall
,xxxxx<CR><LF>	; 51 NumbV22OutCall
,xxxxx<CR><LF>	; 52 NumbV21InCall
,xxxxx<CR><LF>	; 53 NumbV21OutCall
,xxxxx<CR><LF>	; 54 NumbV33TCM
,xxxxx<CR><LF>	; 55 NumbV29
,xxxxx<CR><LF>	; 56 NumbV27bis
,xxxxx<CR><LF>	; 57 NumbV27
,xxxxx<CR><LF>	; 58 NumbV26
,xxxxx<CR><LF>	; 59 NumbBB
,xxxxx<CR><LF>	; 60 NumbDOV
<EOT><EOF>	

A5. Dialback Security System.

The data base interface system has been implemented to the LASAT MultiCom CCU32 security version 2.20 and later versions.

The purpose of the system is to prevent unwanted users from gaining access through a dialback system. At least 2 GSTN lines must be available (one can also be used, but this will be at the expense of security). One line is for receiving incoming calls and executing a password sequence through which a user can be identified. The other line is for dialback from the data base to the identified user. The same line can be used both for dialback and incoming calls, this function can be selected in the menu point "LINE OPTIONS" (7.5).

The modem receiving the original call has not established a connection to the data base, as the connection will not be obtained until a call from the data base has been completed with a correctly stated password.

The password sequence can be configured in three ways: No dialback, pool dialback or user dialback.

No dialback gives immediate access to the database when the correct password has been entered.

When using pool dialback every password includes a telephone number. When the user has entered the correct password, an instruction of hanging up and awaiting a call will appear. The call from LASAT MultiCom CCU32 security will give access to the data base.

The user dialback function is not quite as secure as the pool dialback function, as after the correct password - one out of 48 - the user enters his telephone number. Otherwise the procedure is similar to pool dialback.

Via database log and database statistics it is possible to monitor the database interface.

A5.1 CCU32 Setup:

Via the menu point CONFIG DATABASE it is possible to design a database interface dialback system.

CONFIG DATABASE

1 disable	Disables the database interface.
2 no dialback	Database access via password.
3 pool dialback	Application of CCU32 pool telephone numbers for dialback.
4 user dialback	The user must enter telephone number for dialback.
5 LINE OPTIONS	It can be selected whether dialback uses one or two lines.
6 DATABASE LOG	Analysis of logged events and deleting of log.
7 SETUP SYSTEM	Configuration of the dialback system.
8 SET TIMEOUT	The maximum period of time during which a user has access to the database.

5 LINE OPTIONS

1 one line dialb.	Dialback is made on the same line as the call. If the extra security obtained via dialback is unnecessary, select the above option. (Possible application of all 16 terminals).
2 two line dialb.	Dialback is made via another line than the call. Select this option for maximum security against hackers. (Max. 15 terminals).

6 DATABASE LOG

1 view DB-log	Monitoring of database events.
2 clear DB-log	The database log will be erased.

7 SETUP SYSTEM

1 set DB-pw/dialb.	Entering of passwords and telephone numbers for dialback. Enter up to 48 passwords and corresponding dialback numbers, which are used for pool dialback. With the arrows or 'U','D','R','L' it is possible to move the cursor around among passwords and dialback numbers. To start an editor use <CR> the selected point will then be executed. In edit mode the <BS> (delete key) is used for deleting the contents of the editor and entering of a new text. If the changes are to be cancelled, the edit mode can be terminated by <ESC> or through the new text from the editor using <CR>.
2 setup DB-system	Selection of modems to enter the database interface. Select the rack modems to enter the database interface. By using the arrows the cursor can be moved around in the menu display. Using the '+' and '-' keys the individual modems can be added or removed from the data base interface. Note that the modems can be used as either receiver modem /dialback modem or both.
3 set dialb.-str.	Entering of modem command line to call instruction. Here is an editor, which is loaded by <CR>, and which can be used for entering of dial code, f.ex. "ATD".

8 SET TIMEOUT

1 no timeout	Gives unlimited time on the database after completed dialback.
2 5 min	The data base modem interface disables the connection after 5 minutes.
3 10 min	Do - 10 min.
4 15 min	Do - 15 min.
5 30 min	Do - 30 min.

During re-configuration the database interface must be disabled.

A5.2 Modem Setup.

The modems which enter the database interface, must have a configuration corresponding to the following Hayes commands:

```
AT &F# S0=0 E0 Q1 &W0 &Y0
```

The basis is a factory configuration.
Auto answer is switched off.
Echo of commands is off.
Hayes result codes are off.
The configuration is saved as userconfig 1.
Userconfig 1 is used at power up.

Note that the modem must have DTR from the connected equipment.
DTR is used for disabling the connection or allowing the modem to answer the call.

If the modem only is to receive calls without having connection to the data base, a &D0 for modem setup must be added in the command string after AT &F1 in order for the modem to ignore DTR

```
AT &F1 &D0 S0=0 E0 Q1 &W0 &Y0
```

The commands can be entered to the modems via the CCU32 menu point CONFIG MODEM -talkthrough.

A5.3 DB-statistics

The statistics comprise a census of the following events (max. 64000).

Call in.	Number of answered calls.
Database busy.	Number of busy calls.
Failed password attempts.	Number of calls disabled due to PW error.
Database timeout.	Number of calls disabled due to timeout.
Accepted password attempts.	Number or correctly stated password.
Failed dialback attempts.	Number of unsuccessful dialback attempts.
Completed dialback.	Number of successful dialback attempts.

A5.4 DB-log.

Call in detected.
Call in failed - DB was busy.
PW-attempt failed 1.
PW-attempt failed 2.
PW-attempt failed 3.
PW-attempt failed 4.
Call in failed - PW-error.
Call in failed - timeout.
PW-attempt 1 recognized - user XX.
PW-attempt 2 recognized - user XX.
PW-attempt 3 recognized - user XX.
PW-attempt 4 recognized - user XX.
Dialback in progress.
Dialback failed - timeout.
Dialback completed.

A6. Configuration of Rack Modems.

The configuration of modems can be executed in several ways. By using the control card unit it is possible to obtain a quick configuration of one or more modems placed in a rack and also to transmit a configuration to another rack in the system.

To generate a configuration either the menu system of the modem (4.1) or talkthrough (4.2) is used, which is an asynchronous terminal emulation with the one exception that the character ESC - 27 hex - cannot be used. Then the configuration can be moved to the other modems in the rack or some of these via the CCU32 menu point "move config" (4.3).

If the configuration is to be used in different racks, it is saved as one of two possible master configurations, which are transparent on all the connected control cards via the RS485 channel.

"move config" is a menu point in LASAT MultiCom CCU32 control card unit, which enables quick configuration of several modems in a rack. It also enables copying of a configuration to other racks through RS485 channel.

The menu display is divided into two 16 points with pseudonyms, which represent the configuration of the individual modem in the rack and 8 points comprising standard configurations and corresponding pseudonyms. Furthermore, the standard configuration is divided into two units, 6 standard configurations and 2 master configurations, which are transparent through the RS485 channel, i.e. the 2 master configurations are also present in the other racks. To each of the 16 modem configurations there is a number (1-6) stating which of the 6 standard configurations is being used in the modem. The number may be followed by a question mark, indicating that the configuration does not correspond 100% to the original. If a configuration is executed followed by a question mark, a re-configuration will be necessary.

To each of the standard configurations the type of modem configuration is stated. It is not possible to move a configuration from one modem to another if the modems are not the same type. A modem not responding to the CCU32 cannot be configured.

If the CCU32 configuration is to be used with AUTOCONFIG (5.9) this function must be disabled during the configuration process.

Example of a configuration procedure:

If one configuration is to be used for several modems in the rack and saved as the master configuration, follow these points:

1. Disable "AUTOCONFIG" (5.9).

2. When using "modem menu" (4.1) or "talk through" (4.2) the required configuration will be generated.

3. Select the menu point "move config" (4.3).

4. Use the arrows to place the cursor at the required configuration. The number corresponds to the number on the modem used for generating the required configuration.

5. It is possible to change the pseudonym of the configuration, to do this enter editor mode by pressing <ENTER>. The <BS> key is used for deleting and the new pseudonym is entered. To complete the line use <CR>, or to cancel use <ESC>.

6. Using the space bar the required configuration for the source configuration is selected. Using the arrows and the space bar to select the target modems or to save the configuration as one of the 6 fixed (1-6) and/or to save as master configuration (M1 or M2) this requires that there has been logged in on the master control card. To cancel a target, place the cursor at the target and press the space bar, in this way the target can be disabled or enabled. Source can be disabled and enabled in the same way, but note that all targets and point 6 have to be run again.

7. The configuration is executed by placing the cursor at the bottom in the point "Execute configuration" and by pressing <CR>.

8. Enable "AUTOCONFIG" (5.9), if this is required.

9. If you wish to send a master configuration to another rack the following should be executed:

   - Choose the rack desired
   - Use "move config"
   - Indicate master configuration as source
   - Follow points 1-8, with the exception of point 2

A7. Applications of DUMP SETUP.

It is possible to configure LASAT CCU32 for automatic dumping of statistics and to log to a collective media, either initiated by the log buffer getting full or initiated for given period of time. The procedure is similar for the statistics.

If dump with a permanent frequency is required, this frequency can be selected in the menu point (8.3) and the exact time of the dumping can then be entered under menu point (8.3.5.). If dump is selected when buffer is full, dump will be initiated when the log buffer is full or a statistics counter runs almost full.

It is impossible to start dumping of statistics as long as a user is operating on the system, but as soon as the user logs out the dumping will begin. It is also impossible for a user to log in during a dump session.

The dump media can either be a terminal/printer or a modem, which enables a connection to a remote media. If a printer or a terminal is used, this must be connected to the V.24/RS232 interface and this must be adjusted to RS232 DTE prn in menu point (5.6). If a dump is to be sent to a NMC number, LASAT CCU32 must be connected to a modem - see the chapter of modem interface for CCU32.

Log dump can either be dump of alarms or all logged events. If buffer is full and dump is selected, the log will be deleted after a dump. When fixed time dump, it can be selected whether the log is to be deleted after a dump.

Dump of statistics can be configured to comprise only some of the rack modems, if dump of all the statistics is unwanted. The format of statistics dump can either be text for ',' file format for a data accumulating programme.

All the possible configurations for dumping are placed under the menu point DUMP SETUP (5.8).

A8. Description of Alarms and Events.

For location of any errors there is a log for accumulating information of the different events. The events can be graduated to unimportant (i.e. will not be logged) events or alarms. The logged events can be analysis of the contents in the log. The alarm log is the same as the event log, but only alarms will be displayed.

For recording of events LASAT CCU32 comprises a menu point called SET ALARM MASK (6.3). It is possible to graduate predefined events in 3 levels and also to filter modems, where logs are unwanted. The filter can select individual modems or a group of modems selected by extension. Besides the predefined events it is possible to define a single event or 2 coherent events as a special alarm with its own modem mask.

The graduation of predefined logs is displayed with a <SPACE>, an 'E' or 'A'. 'E' corresponds to a graduation as a normal event to be logged and 'A' corresponds to a an event logged with alarm flag. The modem mask is indicated by a * at the individual modem numbers. To change the active configuration use the '+' key or '*' to set a flag or increase the graduation. To decrease the graduation use the '-' key or '/' key.

Definitions of special alarms are fundamentally a monitoring of 2 following events. If the first event is registered, the other event must occur within a certain period of time otherwise an alarm will appear. In order to define an alarm only comprising one event, the other event must be defined as "no event". If the first event in the sequence occurs, this will result in an alarm (event to be logged with alarm flag) to the log.

It is possible to specify 16 different special alarms each defining which modem to be monitored.

A special alarm definition include the following points:

Alarm number:	1 - 16, Select forward with '+' or '*' and backwards with '-' or '/'.
Selected modem:	1A - 16B or a pseudonym.
Active flag:	ON or OFF.
Time interval:	5 sec. - 30 min.
Event 1:	All recordable events.
Event 2:	All recordable events and no event.
Pseudonym:	User defined text for description of the alarm - can be seen in the log.

In order to edit the pseudonym place the cursor at the text and press enter. In edit mode <BS> is used for deleting so a new pseudonym can be entered. The enter key is also used for saving the new pseudonym and then editor mode can be left. To cancel the selected item press <ESC> before leaving edit mode.

A9. Start - Initializing of Subrack.

In order to install a LASAT MultiCom RMP16 rack with a CCU32 control card unit, it is necessary to initialize the control card. Upon receipt of a new rack containing a CCU32 control card, the card is designed for connection to a VT100 or ANSI terminal on the V24/RS232 interface on the backplane. The V24/RS232 interface is configured to RS232 DCE normal 8N1 asynchronous format with 9600 bps. The conditions for working with the menu system on CCU32 now exist. Note that some of the menu points require that there has been logged in on the small keyboard on the front of the control card and that other menu points are only operative when using terminal emulation programmes comprising file functions.

The first item to appear, when the terminal has been connected and the rack has been powered up, is a line for password entry. The factory configuration ('initial setup' 5.5.8.y) gives a password/pincode, named 382822. Enter the 6 digits followed by <enter> and access to the menu system will be obtained.

Using the arrows (or 'U' for up and 'D' for down) it is possible to move the cursor around in the various menu points and <ENTER> is used for selecting the menu point in question. As a shortcut it is possible only to enter the digit referring to the required menu point. To move a level back, use 'B' corresponding to back, or if the selected menu point is a special function menu display, it is necessary to use <ESC>. Use <ESC> one or two times depending on the selected menu point, the cursor will return to the top of the menu structure. As a good exercise try to move around in the menu system and find the menu points shown in chapter 3.1. After this it is now time for the actual installation/initialization.

The following must be done when initializing:

1. The menu point 5.5.8 "initial setup" deletes everything. The super user password and the pincode are changed to 382822, only access for super user. In order not to delete everything use menu point 5.5.7 "init ram", the super user password will not be changed.

2. The menu point 5.5.2 "subrack address" is used for giving a subrack number. Using <CR> the number editor will be started and a new number can be entered (1-32), complete the line with <CR>. The master card should have No. 1 and no connected racks must have the same number.

3. Menu point 5.5.1 "subrack pseudonym" is used for naming a subrack. Start the text editor by <CR>. The old pseudonym, if any, may be deleted with <BS> and the new pseudonym may then be entered. Complete the line with <CR>.

4. If more sub racks are to be connected, only one rack must be selected to be master, the rest to be slaves. Use the menu point 5.5.5 "MASTER/SLAVE". The selected item is indicated by blinking.

5. Due to the log the watch must be set in the menu point 5.5.6 "set watch". First the week in text, then year, date, hours, minutes and seconds as a two digit number. Use <CR> to enter editor mode and then a number for the weekday is entered (Monday is 1, Sunday 7). To complete the line use <CR>. Similar procedure is followed by moving the arrows to the point in question.

6. Entering/alteration of passwords takes place in menu point 5.1 "PASSWORD/DIALB". Password No. 1 is defined as super user and the super user has access to everything. When logging in for the first time using the password 382822, you become super user and are consequently able to change password for the super user. Use the arrows to move the cursor to the point to be changed. The editor is initiated by <CR> and press the <BS> key for deleting and enter a new password. It is possible to cancel a correction as long as editor mode has not been left - <ESC>. Otherwise editor is terminated and the alteration is executed by using <ENTER>.

   'Password pseudonym' is a user identification (f.ex. user name). 'Type' is a user level, i.e. access is available.

A10. Definition of User level and User Extension.

It is possible to group the users of the control card CCU32 in different levels. The intention is to confine the access to the configuration menu points for users who are not allowed to configure, but only to view statistics. There are also different levels between the configuration of CCU32 and modems.

One super user and 4 levels have been defined, and they are represented by the digits 0,1,2 and 3. Furthermore, level 3 has a possibility of grouping with extensions, consisting of three characters. If the user has been given level 3 and the usage of 'Sort by extension' (menu point 1.3) is 'ON', only data for modems with the same extension as the one defined under "PASSWORD/DIALB" will be displayed/selected.

The grouping is made as follows:

Level 0 (super user)	Unlimited access.
Level 0 (normal user)	Unlimited access, except for password No. 1.
Level 1	Limited access to CCU32 setup.
Level 2	Modem operator level, no access to CCU32 setup.
Level 3	External user/customer, no access for setup (neither modem nor CCU32) - possibility of sorting with extension.

Definition of one user and access level takes place in the menu point "PASSWORD/DIALB" (5.1). The following points are defined:

1)	Password pseudonym	20 characters for userID f.ex. a name.
2)	Level	1 digit (0-3) user level, 0 is the highest.
3)	Ext	3 characters for user extension.
4)	Pincode	6 digits (0-9) with code for login on the small keyboard.
5)	Password	1-10 characters (not <SPACE>) for definition of password for login on terminal. The security depends on the number of characters.
6)	Dialback number	20 characters with code for dialback. F.ex. ATD7182 where ATD is the dial command on LASAT modems with Hayes command interpreter and the rest is a 4 digit telephone number.

Up to 48 passwords can be defined, where number 1 per definition is super user (level 0) which ignores level and extension codes. The super user password and the corresponding codes can only be changed by the super user.

A11. Upgrade of Software.

The procedure for upgrading software is the following:

1) Save the active configuration by using menu point (5.5.4) 'dump CCU32 setup'.

2) The CCU32 card is installed with 4 screws which must be loosened. The card can be removed immediately after this and taken out of the rack. Due to the battery the CCU32 must not be placed on electrical material in order to avoid a short-circuit.

3) The software has been implemented on the card via an EPROM (IC102 for H.W. > 3 or IC4 for older hardware versions). This EPROM is carefully taken out of the socket, and if it has not been damaged the EPROM can be used again.

4) If the hardware versions are older than version 4, a socket converter must be installed (can be bought at LASAT A/S) otherwise the new software can be installed in the empty socket. Please note the orientation of the EPROM.

5) Install the CCU32 in the rack. Remember to tighten the 4 screws.

6) Log in using password 382822. Get the active configuration via menu point 5.5.3 'load CCU32 setup'.

7) The software upgrade is complete and ready for use. Any new functions are now usable.

A12. Selection of Subrack via CCU32 LASAT LINK.

If there has been logged in on a terminal, which is connected to the CCU32 master card, it is possible via CCU32 LASAT LINK (a master/slave bus) to log in on up to 31 connected slave racks. Use the menu point (1.2) 'select subrack'. It is not necessary to enter password, as the system has already identified the user through the login procedure on the CCU32 master card. The same functions are available as if the terminal had been directly connected to the RS232 interface on the subrack selected via LASAT LINK. A lower communication rate might be registered.

The subrack select menu display shows the pseudonym for up to 32 connected racks. To select the required rack enter the number of the rack in question (1-32) followed by <CR>, or move the cursor to the required rack and press <CR>.

A13. Selection of Modem for Config/Monitoring.

In order to show configuration or status display of a specific modem, this modem must be 'selected'.

The selected modem can be seen on the VT100 monitor in the upper left corner. Here modem type, serial number, modem number and modem pseudonym will be displayed. One single rack can contain 16 modems, single as well as double, where the double modems are divided into an A-modem and a B-modem.

Selection of modem can be made in the menu point 'modem select' (1.1). The menu display comprises the numbers of all possible modems with matching modem pseudonym, and if there is an operational modem in the slot, the type will appear after the pseudonym.

The actual selection will be made by entering the modem number directly (1-16 or 1A 16A and 1B to 16B) followed by <CR> or by moving the cursor to the number of the modem in question and press <CR>.

A14. Application of OVERVIEW.

On a VT100 monitor it is possible to view 5 different main displays:

1. 'status overview' displays the most important modem modes. The menu display is divided into two, where the first displays modem 1-16 (1A-16A) and the other displays the modems 1B-16B. To shift between the A and B page use the 'O' key.

   The display reports the modem type and a number of modes described with letter codes:

   I for Idle
   O for Online
   B for Busyout
   S for Selected
   T for Testmode
   E for Error
   W for Warning

2. 'V24 overview' has been divided into two as 'status overview'. The modem type and the control signal of the V.24 interface is displayed. The active state is indicated by an 'X'.

3. 'ID overview' indicates modem type and the two 3 digit codes for hardware version respectively software version of the contents of the 16 slots in the rack.

4. 'S/N overview' indicates modem type and a 10 digit serial number for the contents of each of the 16 slots in the rack.

5. 'rack overview' gives an abbreviated version of the contents in 'status overview', and the same codes are used. The 3 displays show subrack 1-12, 13-24 and 25-32. Furthermore, the displays are divided into two for indication of B modems. In order to move between the three pages, use the 'N' key for next and the 'P' key for previous. For shifting between the A and B page, use 'O' for other.

A15. Application of MONITORING MODEM.

The menu point MONITORING MODEM comprises a number of sub points, which enable further information about the selected modem.

1) 'view status' indicates a number of information of the state of the modem. If the modem is in a test mode with a test generator, the results will be updated accordingly on the bottom of the page. The result of the latest test can be seen by entering 'T'.

2) 'view statistics' which are arranged in two pages, show the number of different events between the statistics start and last update. It is shown for how long the modem has been active and the time for the latest reset. Furthermore, the user identification for the latest manually deleted statistics are displayed. To shift between page 1 and 2 use 'N' for next and 'P' for previous.

3) 'view config' is a modem terminal emulation with the only purpose to effect a AT &V2 (Hayes) command. The result is a page showing the configuration of the modem.

4) 'view phone number' is similar to 'view config', only the AT&V1 command and the result is a display of the telephone numbers saved in the modem.

5) 'dump statistics' dumps the contents of the statistics to the terminal in the form selected in 'DUMP SETUP' for statistics dump setup. The purpose is to be able to open a log file, dump the statistics and close the file again.

6) 'clr statistics' enables a manual cancellation of the statistics for the selected modem, f.ex. in connection with an installation or when removing the modem.

ad 1:

The menu point 'view status' indicates the status of the selected modem.
To the left on the display the V.24 control signalling and an alarm indication if any are shown.

In the middle the modem standard is shown together with the line signal std, the serial interface std, line type, data protocol between modem and the DCE interface, the active mode of the modem and whether dialback has been executed.

To the right the signalling rate on the telephone line (only if V.24 DCD is present), the command interpreter and possible retransmissions in connection with error correcting DCE protocol are shown, and whether the modem is an origin modem (A) or an answer modem (B).

A16. Application of 'HotKeys'.

A number of 'HotKeys' are defined in order to facilitate the use of menu system. Some of the keys are dependent upon the user's position in the menu system.

The following HotKeys are defined:

<ESC>: 'ESCAPE' Move out of special menu displays - f.ex. overview displays. Move out of editor mode without saving the changes. Move to the top of the menu system - if in the standard part of the menu system.

<B>: 'BACK' Move one level back in the menu system.

<C>: 'CLEAR' Delete alarm window (in the top right corner) - not available if in editor mode.

<H>: 'HELP'.

<N>: 'NEXT' next page in the special menu displays.

<P>: 'PREVIOUS' the previous page in special menu displays.

<O>: 'OTHER' shift between channel A and channel B in f.ex. overview displays.

<M>: 'MODEM SELECT' moves to special menu display 'MODEM SELECT'.

<S>: 'SUBRACK SELECT' moves to special menu display 'SUBRACK SELECT'.

<U>: 'UP' moves one line up if in the standard part of the menu system.

<D>: 'DOWN' moves one line down.

<L>: 'LEFT' moves one position to the left.

<R>: 'RIGHT' moves one position to the right.

<T>: 'TEST RESULTS' give the latest test results - only under the menu point view status (3.1).

A17. Login Procedure.

In order to be able to work with the control card, it is for security reasons necessary to identify the user and the access level. Therefore a 'password entry' has been implemented, i.e. a menu point from where the user must enter a correct password in order to proceed. Login can either be made via the small keyboard on the front panel of the control card or via a terminal connected directly to the RS232 interface or through a modem connection for the modem interface.

For the small keyboard a pincode comprising digits from 0 to 9 has been defined. Use the keys <LO-DIG> and <HI-DIG> to find a digit for the pincode, and use <ENTER> to select the code. To cancel press <CLEAR>.

For the terminal interface a password code comprising from 1 to 10 characters has been defined. The code must not contain <SPACE>. The security level is selected from the number of characters in the password and is counted from start of password and until the first space character or max. 10 characters.

The entering of password is completed with <CR> to start check and user identification. If the password is acknowledged access to the menu system will be given.

A successful login (correctly stated password) with user identification and time and not unacknowledged password attempts if any will appear from the CCU32 log.

If the login is made via a modem a further security procedure is possible in the form of dialback. If the modem is connected the modem interface and the dial back function will automatically take place after correctly stated password. During dialback 4 attempts to enter the correct password are given, otherwise the connection will be disabled. If the modem is connected to the RS232 interface and if dialback in connection with login is required, this must be configured as 'RS232 DTE modem'. If dialback is not required, select 'RS232 DCE normal'. For further details see the chapter of modem interface.

A18. Application of Busy Out.

'Busy Out' enables blocking of one or more of the 16 GSTN lines connected to the 16 modem slots in the rack. The purpose is to be able to remove a modem without interrupting the other modems and preventing incoming calls from using the removed modem. To block a line use the menu 'SET BUSY' (5.4) and do as follows:

1) Use the arrows to select the modem to be removed or configured.

2) Use the '+ key' to move to 'Busy if DCD disappear' but not any further .

3) Wait until the modem card is busy - this is indicated by a 'B' under status.

4) Execute the required change.

5) Use the '-'-key to re-install the modem in the slot, until 'Forced Not Busy' is displayed.

There are 6 possible settings of a slot with regard to the criteria for setting a slot busy:

1) Forced Not Busy.

2) Busy if Slot Empty.

3) Busy if Modem Failed.

4) Busy if no DTR.

5) Busy if no DCD.

6) Forced Busy.

A19. Power backup of Ram and Watch.

In order to supply the watch and ram with power, even though the rack has been switched off, a lithium battery has been installed. This ensures that the watch is working and modem configurations, pseudonyms, passwords and so on are not deleted when switching off the rack.

Note:
If CCU32 is removed from the rack, it must not be placed on electrical material in order to avoid a short-circuit. The card is placed standing - with the card up-right and the display in even position.

A20. Hardware Interface.

The hardware interface comprises connectors and power switches, these are placed partly on the rear panel and partly on the backplane.

A20.1 Connectors and Interfaces on LASAT RMP16S Backplane.

Fig. A-1 shows the backplane with modular jacks and connectors. These will be referred to by letters and they will be described in detail in the following.

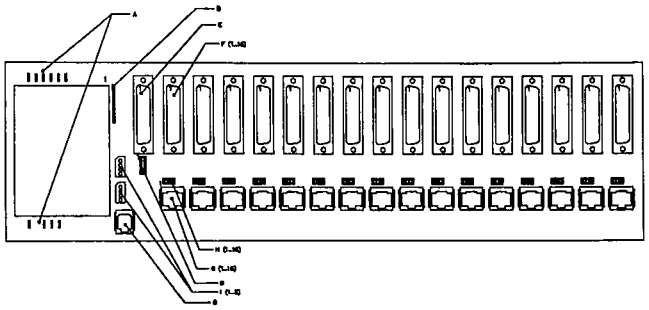


Fig. A-1 Backplane with plugs and connectors.

Figures:

A:	Power	Fig. A-2
B:	Datascope	Fig. A-3
C:	(expansion)	
D:	Busy-Out	Fig. A-4
E:	D-sub CCU32	Fig. A-5
F:	D-sub (modem 1 to 16)	Fig. A-6
G:	Tele (modular 1 to 16)	Fig. A-7
H:	Tele (X-field 1 to 16)	Fig. A-8
I:	RS-485 (1 and 2)	Fig. A-9

A20.1.1 Description of Power Connector

A: +5V
B: GND
C: -12V
D: +12V
E: Ground

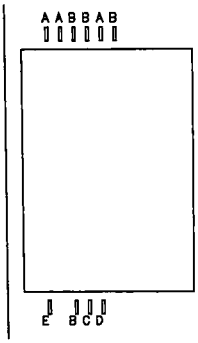


Fig. A-2 Fower connectors.

A20.1.2 Description of Datascope Flat Cable Connector.

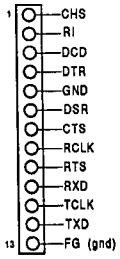
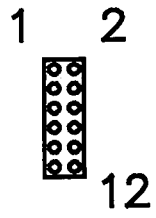


Fig. A-3 Datascope connector.

A20.1.3 Description of Busy-Out Connector.



GND	1	2	MBS0
MBS1	3	4	MBS2
MBS3	5	6	MBS4
MBS5	7	8	MBS6
MBS7	9	10	MBS-S
MBS-E	11	12	+5V

Fig. A-4 Connectors for the Busy-Out card.

A20.1.4 LASAT CCU32 RS-232C/V.24 Interface.

Fig. A-5 The CCU32 RS-232/V.24 connector.

101	FG	1
103	TXD	2
104	RXD	3
105	RTS	4
106	CTS	5
107	DSR	6
102	SG	7
109	DCD	8
	nc	9
	nc	10
126	CHS	11
	nc	12
	nc	13

14	nc	
15	TCLK	114
16	nc	
17	RCLK	115
18	LP3	141
19	nc	
20	DTR	108.2
21	LP2	140
22	RI	125
23	HS	111
24	XTCLK	123
25	TM	142

The connector is a type B female, DIN subminiature, (D-sub DB-25 female), with a metal shield. The shield is internally connected to FG (Ground/FG/101).

Seen from behind the plug is located to the far left.

A20.1.5 Modem RS-232C/V.24 Connector.

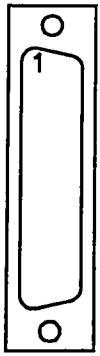


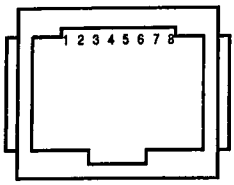
Fig. A-6 Modem RS-232/V.24 connector.

101	FG	1	14	nc	
103	TXD	2	15	TCLK	114
104	RXD	3	16	nc	
105	RTS	4	17	RCLK	115
106	CTS	5	18	LP3	141
107	DSR	6	19	nc	
102	SG	7	20	DTR	108.2
109	DCD	8	21	LP2	140
	nc	9	22	RI	125
	nc	10	23	HS	111
126	CHS	11	24	XTCLK	123
	nc	12	25	TM	142
	nc	13			

The connector is a type B female, DIN subminiature, (D-sub DB-25 female), with a metal shield. The shield is internally connected to FG (Ground/FG/101).

The connectors are named - seen from behind - from right to left (modem No. 1 far to the right - modem No. 16 is plug No. 2 from the left).

A20.1.6 Telephone Connector - Modular Jack Type.



1) 2-W ; 4-W/TX
2) 2-W ; 4-W/TX
3) Phone
4) PSTN
5) PSTN
6) Phone
7) 4-W/RX
8) 4-W/RX

Fig. A-7 Telephone connector (modular-jack).

The plug is a 8/8 modular jack, the opposite part is of a similar type (i.e. 8/4 8/6 and 8/8 can be used).

A20.1.7 Telephone Connector - Pinheader for Main Distributing Frame.

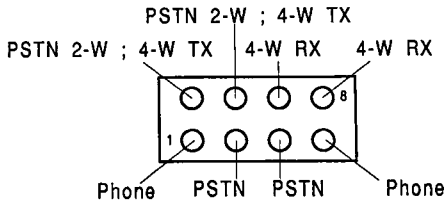
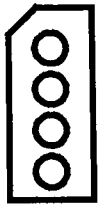


Fig. A-8 Telephone connector pinheader.

The plugs are placed after a similar pattern as the D-sub plugs.

The plugs are 2*4 pole, with extra length - this is adapted for the opposite IDC connector.

A20.1.8 Description of Multi Channel Bus RS-485 Connector.



1	\RXD
2	RXD
3	TXD
4	\TXD

Fig. A-9 RS-485 connectors.

LASAT CCU32 network interface connector consists of 2 parallel connectors.

The connectors are of the type JST XH.

If no other LASAT RMP16 racks are connected, one of the connectors must be terminated (150R).

When connecting 2 LASAT RMP16 racks, it is possible to use either one of the connectors.

A20.2 Connectors and Plugs of LASAT RMP16S Rear Panel.

LASAT RMP16 can be delivered in several versions, therefore several telephone connection plugs, besides the modular jack connectors on the rear panel, are available.

Figur A-10 *Connectors and switches on the rear panel.*

1:	Main distributing frame connector for PSTN lines and leased lines.	Fig. A-11
2:	Data scope connector.	Fig. A-15
3:	Power switch.	Fig. A-14
4:	Power connection (48 Volt).	Fig. A-13

The power connection can also be supplied in a 220 Volt version, where the 48 volt plug is replaced with a 3 pole net connection plug.

A20.2.1 Main Distributing Frame Connections.

The main distributing frame connector is a female 96 pole standard DIN norm connector of a NORMAL version (DIN 41612 Shell style C), where only header a and c are to be used, turned so that pin 32, header a is in the top right corner when the plug is seen from the back of LASAT RMP16.

The type used is 3M type No.: 6964-0001-EB.

All the connections are grouped in pairs in the headers of the connector. The individual pairs are all unpolarized regardless of modem type or line.

Example:
To select a PSTN connection on modem No. 4, select header 26 pin a and c. The A and B core of the PSTN lines are connected either a,c or c,a, regardless of the forward and back channel or the signalling and reference core.

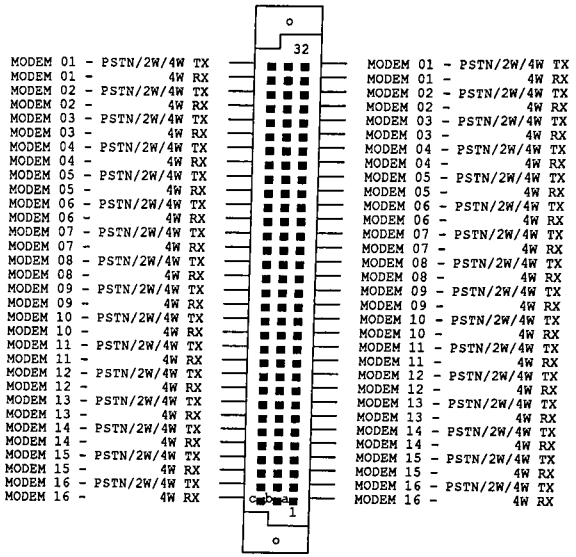


***Fig. A-11** Connector for PSTN- and leased lines.*

A20.2.2 The Connectors to the Main Distributing Frame Connector.

As a connection to the main distributing frame connector, several different types and brands are available. Below is a description of 2 types and brands as examples.

a: As the opposite plug a male DIN connector of a normal version can be used (DIN 41612 Shell-style C) with the connections as stated above (see fig. 2.2).

Example:
CANON DIN-41612
Part no: G06M96P4BBBL/004

b: A male connector of the REVERSE version (DIN41612 shell-style R) can also be used. The individual connections must then be applied with the PIN numbering placed opposite (see figure 2.2.a).

b: cont'd

Example:
AMP DIN-41612
Part no: 826102-1

CANON DIN-41612
Part no: G60M096P4BDBM1/004

or others compatible with these.

***Fig. A-12** Pin numbering for the DIN 41612V connector.*

A20.2.3 48V DC Supply.

The power connector for LASAT RMP16 48V DC version.

Description:

On the rear panel of LASAT RMP16 a 6 pole FEMALE-house with FEMALE switches has been installed.

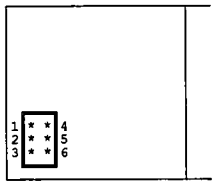


***Fig. A-13** Power connectors for LASAT RMP16.*

Type of plug:

HOUSE:	AMP no:	926 682-3
SWITCH:	AMP no:	926 893-1

Electrical connection:

Pin no:	*Tele:*	*Normal:*	*Cable colour:*
1:	-48V DC	(0V DC)	Red/
2:	Frame Ground	Ground	yellow/green
3:	0V DC	(+48V DC)	Sort/
4,5,6:	nc	nc	nc

Opposite part:

HOUSE: AMP no: 350 715-1
SWITCH: AMP no: 926 894-1, (926 896-1), (926 900-1)

A20.2.4 220V AC Supply.

The power connector for LASAT RMP16 220V AC version.

Description:

On the rear panel of LASAT RMP16 a 3 pole net male plug has been installed (with DPE ground).

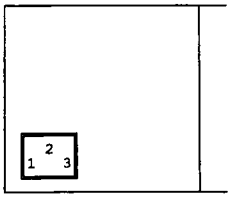


Fig. A-14 *Power connector for LASAT RMP16.*

Type of plug:

Teller 5200-1-43

Electrical connection:

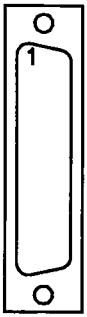
Pin no:

1: 220V AC (a)
2: Frame Ground
3: 220V AC (b)

Opposite part:

220v power cord with DPE ground.

A20.2.5 Datascope D-sub Connector.



Figur A-15 Datascope D-sub connector.

101	FG	1
103	TXD	2
104	RXD	3
105	RTS	4
106	CTS	5
107	DSR	6
102	SG	7
109	DCD	8
	nc	9
	nc	10
126	CHS	11
	nc	12
	nc	13

14	nc	
15	TCLK	114
16	nc	
17	RCLK	115
18	nc	
19	nc	
20	DTR	108.2
21	nc	
22	RI	125
23	nc	
24	nc	
25	nc	

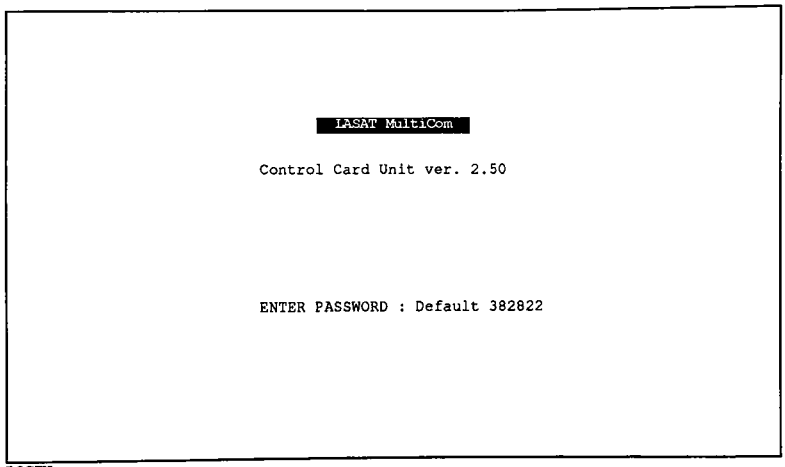
The connector is a type B female, DIN subminiature, (D-sub DB-25 female), with a metal shield. The shield is internally connected to FG (Ground/FG/101).

Note: Signals can only be seen on the plug.

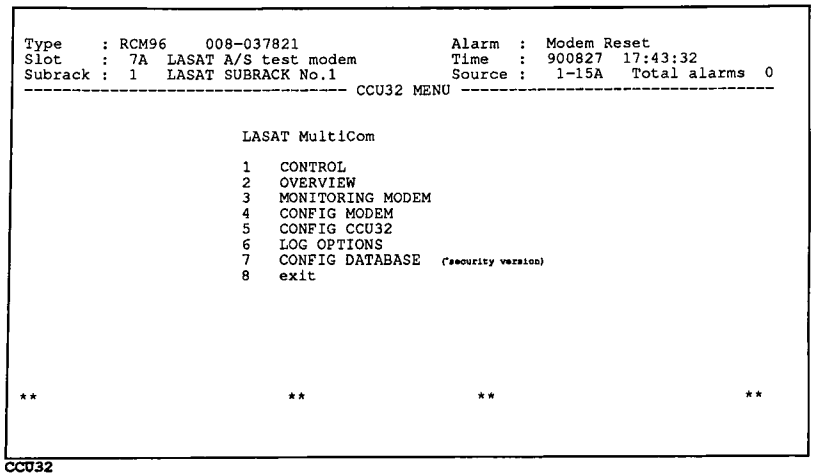
A21. Screens of Information.

The Appendix contains all screens of information of the menu system in CCU32.

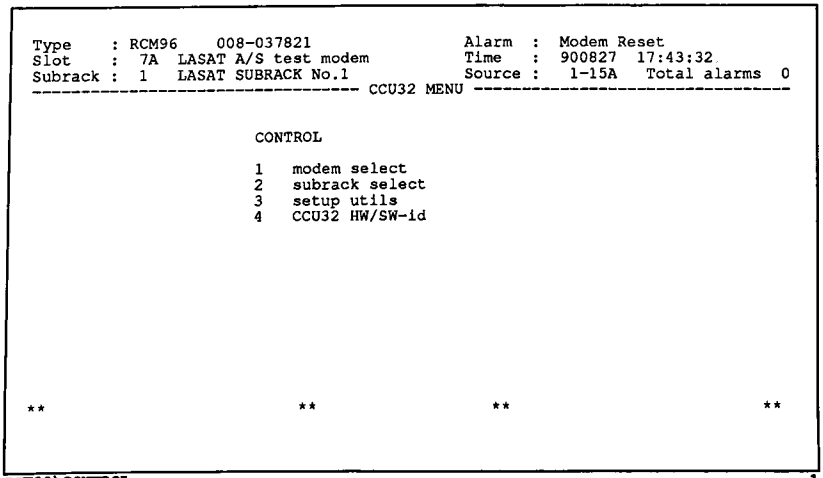
The specific points are described in detail in the previous Appendixes and in chapter 4.



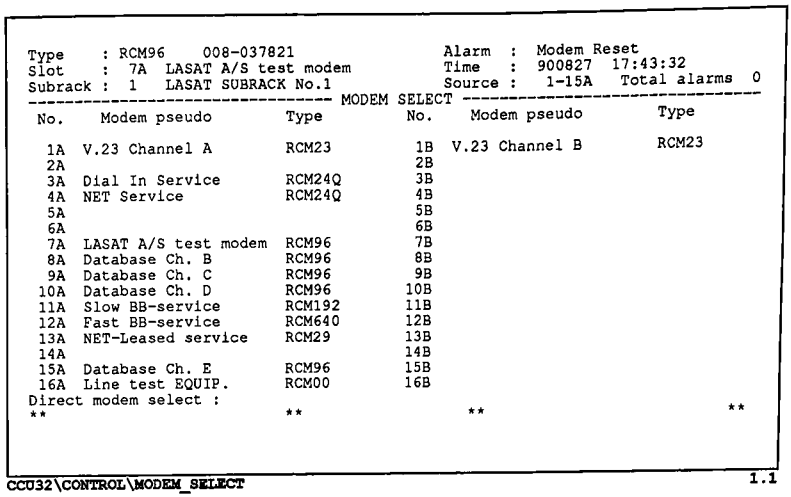
Active keys : ascii.



Active keys : hotkeys, 0-8, arrows, b, ESC and CR.



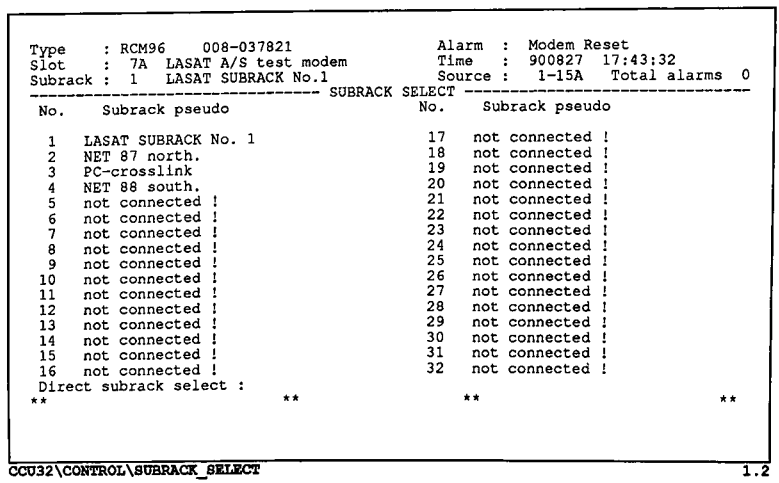
Active keys : hotkeys, 0-4, arrows, b, ESC and CR.



```
Type    : RCM96    008-037821              Alarm  :  Modem Reset
Slot    :  7A  LASAT A/S test modem        Time   :  900827  17:43:32
Subrack :  1   LASAT SUBRACK No.1          Source :   1-15A   Total alarms  0
--------------------------------- MODEM SELECT ---------------------------------
 No.    Modem pseudo          Type          No.    Modem pseudo          Type

  1A  V.23 Channel A         RCM23          1B  V.23 Channel B         RCM23
  2A                                        2B
  3A  Dial In Service        RCM24Q         3B
  4A  NET Service            RCM24Q         4B
  5A                                        5B
  6A                                        6B
  7A  LASAT A/S test modem   RCM96          7B
  8A  Database Ch. B         RCM96          8B
  9A  Database Ch. C         RCM96          9B
 10A  Database Ch. D         RCM96         10B
 11A  Slow BB-service        RCM192        11B
 12A  Fast BB-service        RCM640        12B
 13A  NET-Leased service     RCM29         13B
 14A                                       14B
 15A  Database Ch. E         RCM96         15B
 16A  Line test EQUIP.       RCM00         16B
Direct modem select :
**                           **                 **                        **
```

CCU32\CONTROL\MODEM_SELECT 1.1

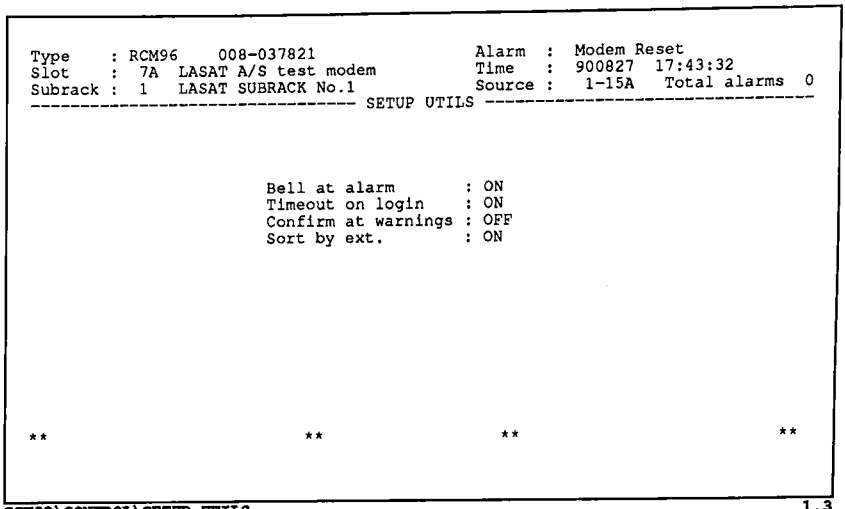
Active keys : hotkeys, 0-9 and A-B, arrows, ESC and CR.



```
Type    : RCM96    008-037821              Alarm  :  Modem Reset
Slot    :  7A  LASAT A/S test modem        Time   :  900827  17:43:32
Subrack :  1   LASAT SUBRACK No.1          Source :   1-15A   Total alarms  0
-------------------------------- SUBRACK SELECT --------------------------------
 No.    Subrack pseudo                     No.    Subrack pseudo

  1   LASAT SUBRACK No. 1                  17   not connected !
  2   NET 87 north.                        18   not connected !
  3   PC-crosslink                         19   not connected !
  4   NET 88 south.                        20   not connected !
  5   not connected !                      21   not connected !
  6   not connected !                      22   not connected !
  7   not connected !                      23   not connected !
  8   not connected !                      24   not connected !
  9   not connected !                      25   not connected !
 10   not connected !                      26   not connected !
 11   not connected !                      27   not connected !
 12   not connected !                      28   not connected !
 13   not connected !                      29   not connected !
 14   not connected !                      30   not connected !
 15   not connected !                      31   not connected !
 16   not connected !                      32   not connected !
 Direct subrack select :
**                          **                 **                        **
```

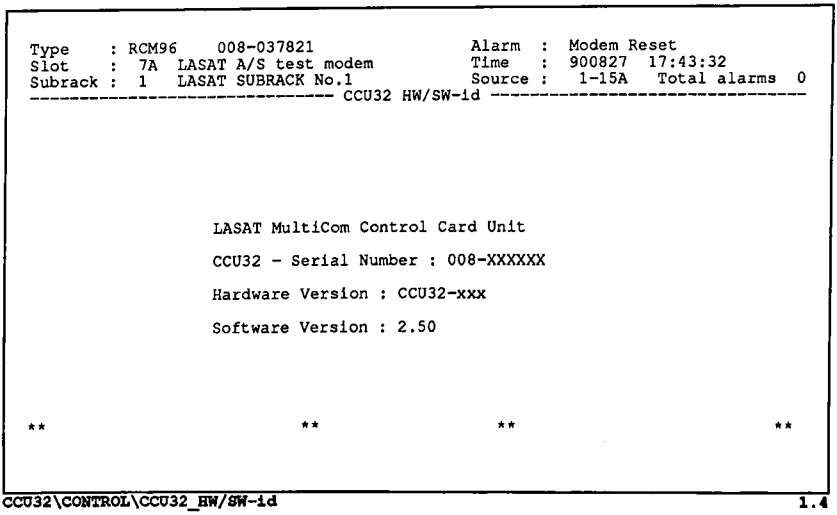
CCU32\CONTROL\SUBRACK_SELECT 1.2

Active keys : hotkeys, 0-9, arrows, ESC and CR.



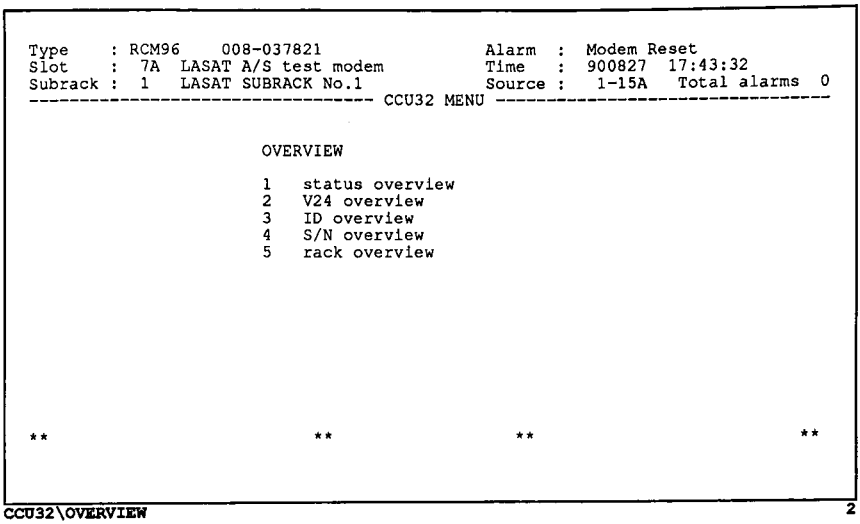
CCU32\CONTROL\SETUP_UTILS **1.3**

Active keys : arrows, +, *, -, / and ESC.

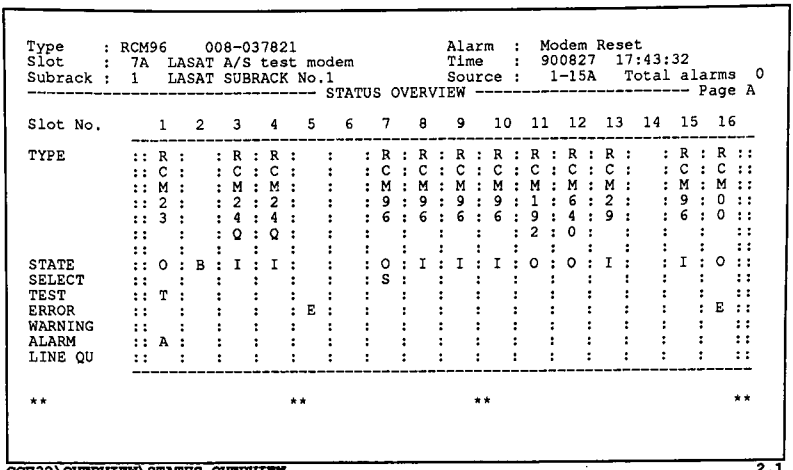


CCU32\CONTROL\CCU32_HW/SW-id **1.4**

Active keys : arrows, ESC.

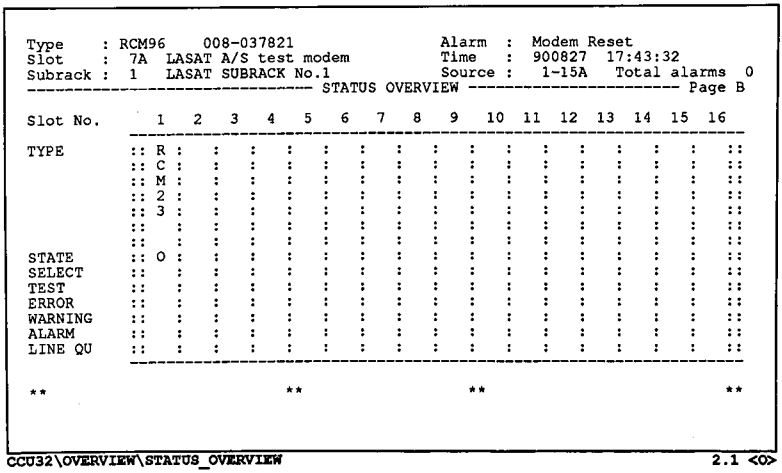


Active keys : hotkeys, 0-5, arrows, b, ESC and CR.



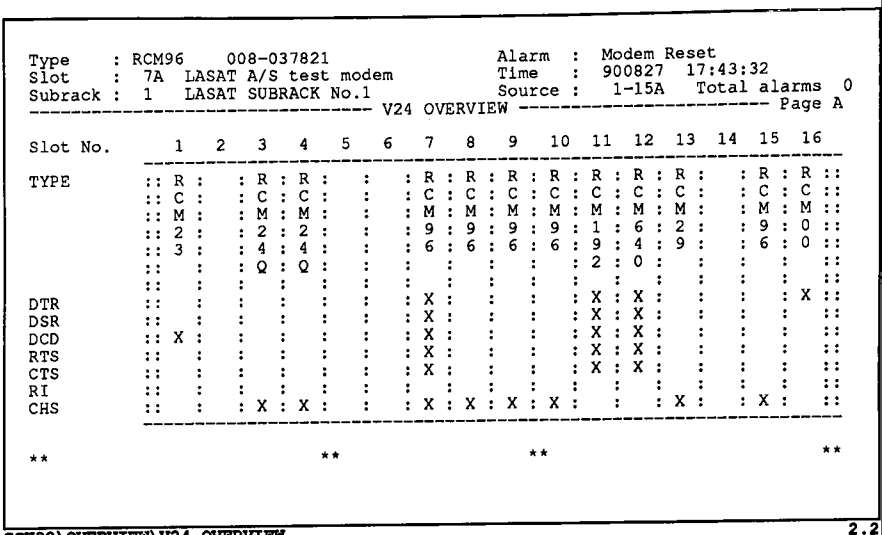
CCU32\OVERVIEW\STATUS_OVERVIEW 2.1

Active keys : hotkeys, o and ESC.



CCU32\OVERVIEW\STATUS_OVERVIEW 2.1 <O>

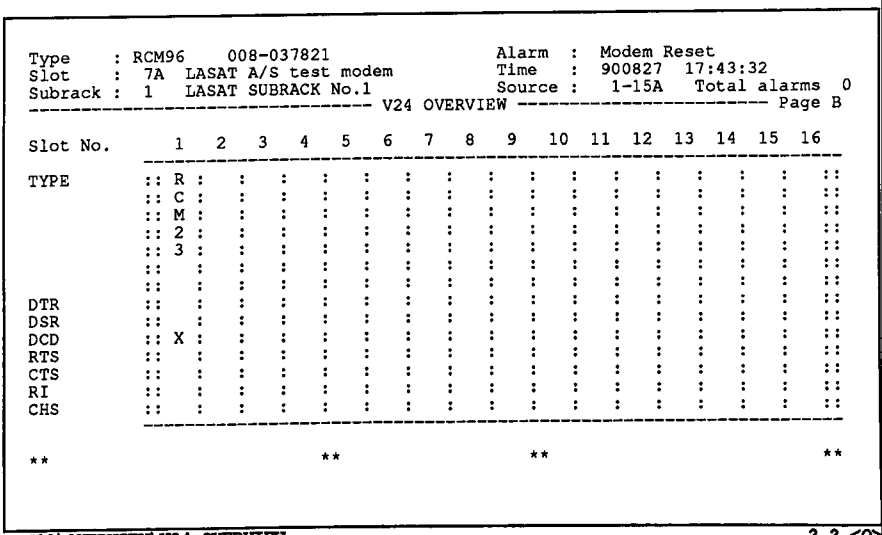
Active keys : hotkeys, o and ESC.



```
Type     : RCM96    008-037821                    Alarm  :  Modem Reset
Slot     :  7A  LASAT A/S test modem              Time   :  900827  17:43:32
Subrack  :  1   LASAT SUBRACK No.1                Source :   1-15A   Total alarms  0
---------------------------------- V24 OVERVIEW ---------------------------- Page A

Slot No.      1   2   3   4   5   6   7   8   9   10  11  12  13  14  15  16
-------------------------------------------------------------------------------
TYPE        :: R : : R : R : : : : R : R : R : R : R : R : R : : : R : R ::
            :: C : : C : C : : : : C : C : C : C : C : C : C : : : C : C ::
            :: M : : M : M : : : : M : M : M : M : M : M : M : : : M : M ::
            :: 2 : : 2 : 2 : : : : 9 : 9 : 9 : 9 : 1 : 6 : 2 : : : 9 : 0 ::
            :: 3 : : 4 : 4 : : : : 6 : 6 : 6 : 6 : 9 : 4 : 9 : : : 6 : 0 ::
            ::   : : Q : Q : : : :   :   :   :   : 2 : 0 :   : : :   :   ::
            ::   :   :   :   : : : :   :   :   :   :   :   : : :   :   ::
DTR         ::   :   :   :   : : : : X :   :   :   :   : X : X : : :   : X ::
DSR         ::   :   :   :   : : : : X :   :   :   :   : X : X : : :   :   ::
DCD         :: X :   :   :   : : : : X :   :   :   :   : X : X : : :   :   ::
RTS         ::   :   :   :   : : : : X :   :   :   :   : X : X : : :   :   ::
CTS         ::   :   :   :   : : : : X :   :   :   :   : X : X : : :   :   ::
RI          ::   :   :   :   : : : :   :   :   :   :   :   :   : : :   :   ::
CHS         ::   :   : X : X : : : : X : X : X : X :   :   :   : X :   : X ::
-------------------------------------------------------------------------------

**                              **                  **                      **
```

CCU32\OVERVIEW\V24_OVERVIEW 2.2

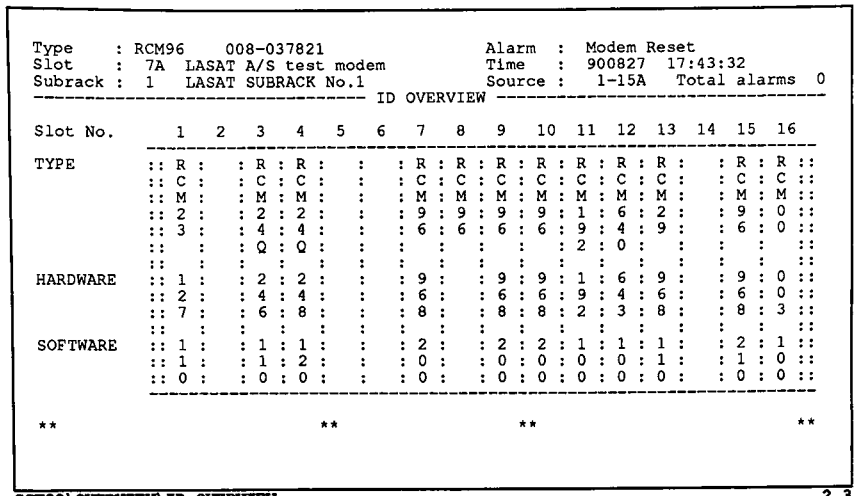
Active keys : hotkeys, o and ESC.



```
Type     : RCM96    008-037821                    Alarm  :  Modem Reset
Slot     :  7A  LASAT A/S test modem              Time   :  900827  17:43:32
Subrack  :  1   LASAT SUBRACK No.1                Source :   1-15A   Total alarms  0
---------------------------------- V24 OVERVIEW ---------------------------- Page B

Slot No.      1   2   3   4   5   6   7   8   9   10  11  12  13  14  15  16
-------------------------------------------------------------------------------
TYPE        :: R : :   :   :   :   :   :   :   :   :   :   :   :   :   :   ::
            :: C : :   :   :   :   :   :   :   :   :   :   :   :   :   :   ::
            :: M : :   :   :   :   :   :   :   :   :   :   :   :   :   :   ::
            :: 2 : :   :   :   :   :   :   :   :   :   :   :   :   :   :   ::
            :: 3 : :   :   :   :   :   :   :   :   :   :   :   :   :   :   ::
            ::   : :   :   :   :   :   :   :   :   :   :   :   :   :   :   ::
            ::   : :   :   :   :   :   :   :   :   :   :   :   :   :   :   ::
DTR         ::   : :   :   :   :   :   :   :   :   :   :   :   :   :   :   ::
DSR         ::   : :   :   :   :   :   :   :   :   :   :   :   :   :   :   ::
DCD         :: X : :   :   :   :   :   :   :   :   :   :   :   :   :   :   ::
RTS         ::   : :   :   :   :   :   :   :   :   :   :   :   :   :   :   ::
CTS         ::   : :   :   :   :   :   :   :   :   :   :   :   :   :   :   ::
RI          ::   : :   :   :   :   :   :   :   :   :   :   :   :   :   :   ::
CHS         ::   : :   :   :   :   :   :   :   :   :   :   :   :   :   :   ::
-------------------------------------------------------------------------------

**                              **                  **                      **
```

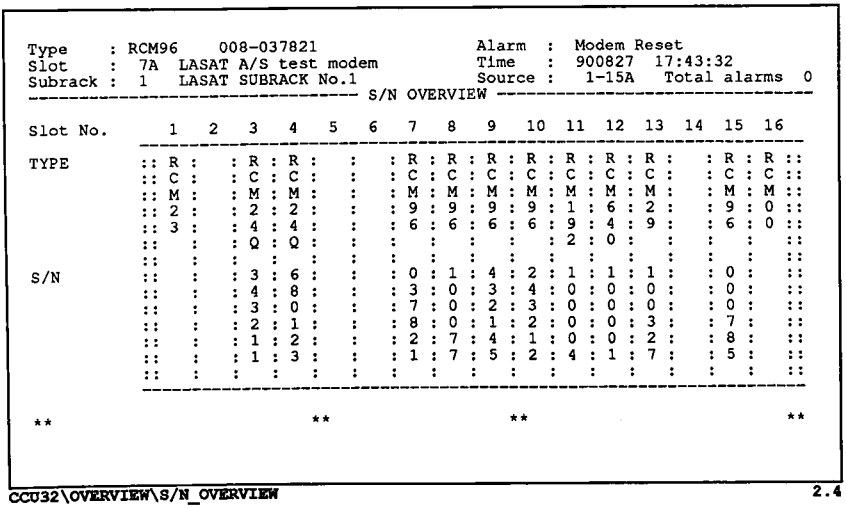
CCU32\OVERVIEW\V24_OVERVIEW 2.2 <O>

Active keys : hotkeys, o and ESC.



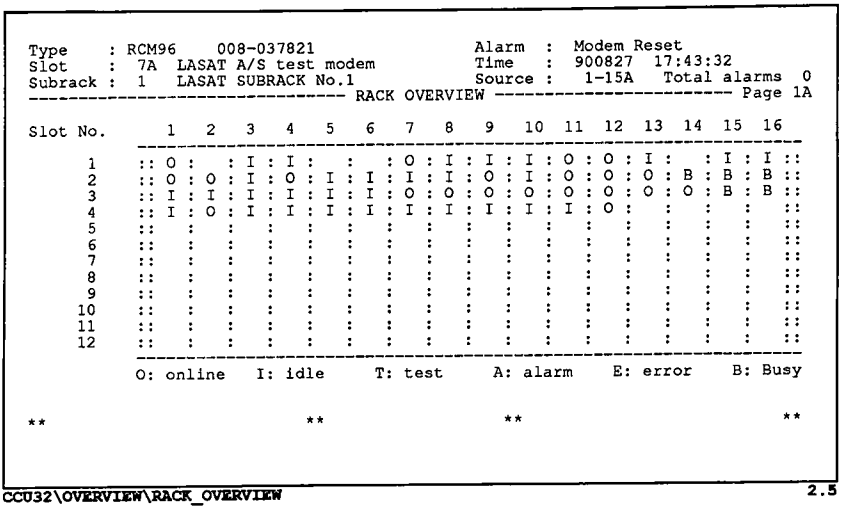
CCU32\OVERVIEW\ID_OVERVIEW 2.3

Active keys : hotkeys and ESC.



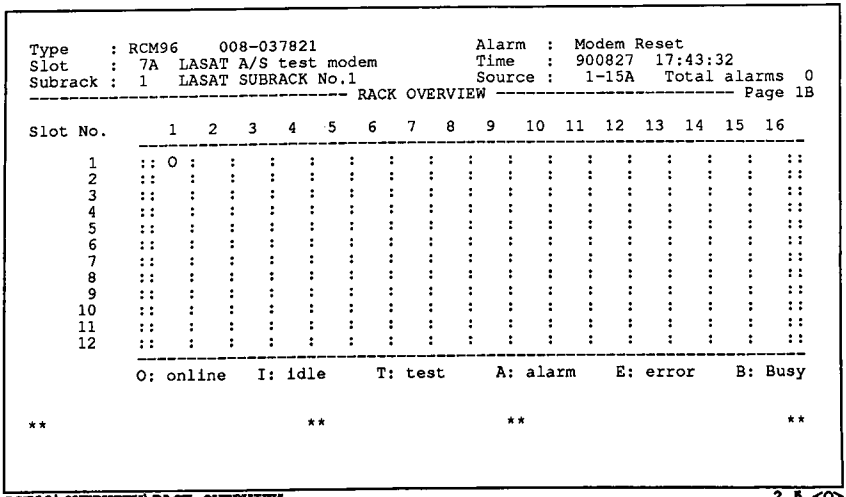
CCU32\OVERVIEW\S/N_OVERVIEW 2.4

Active keys : hotkeys and ESC.



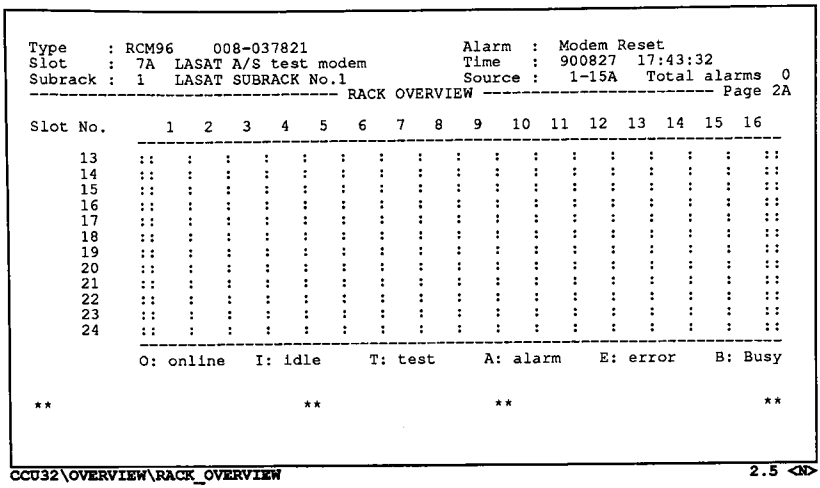
CCU32\OVERVIEW\RACK_OVERVIEW 2.5

Active keys : hotkeys, n, p, o and ESC.

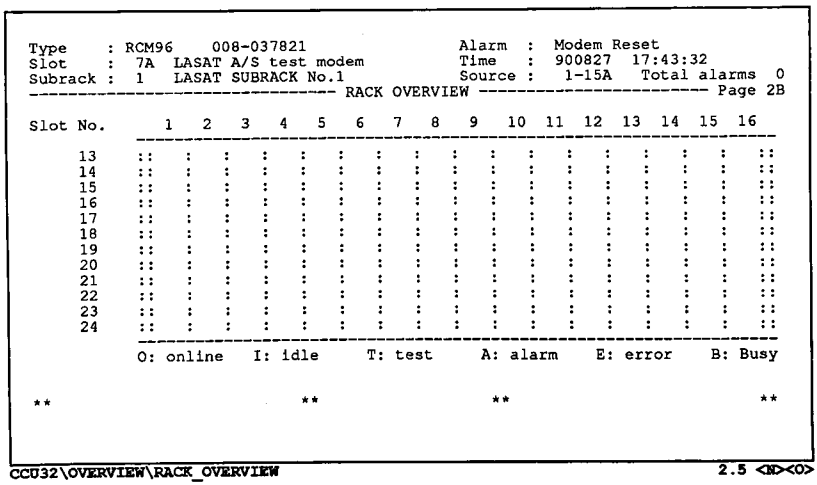


CCU32\OVERVIEW\RACK_OVERVIEW 2.5 <O>

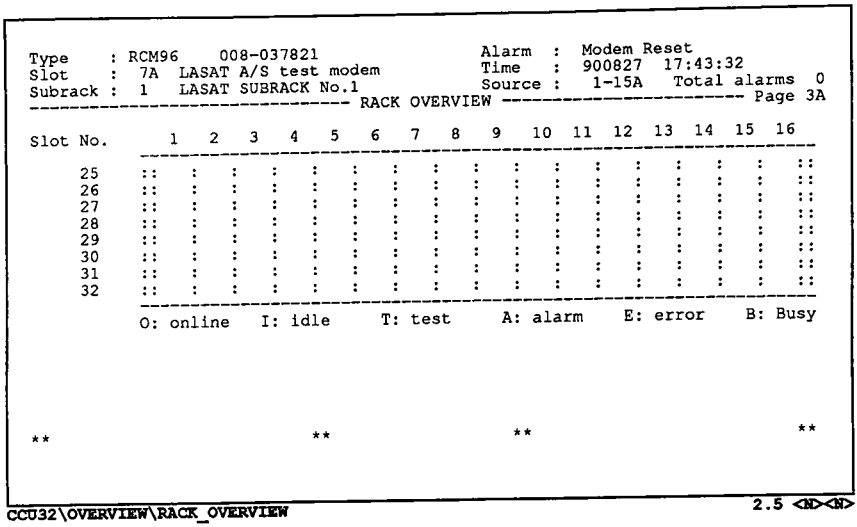
Active keys : hotkeys, n, p, o and ESC.



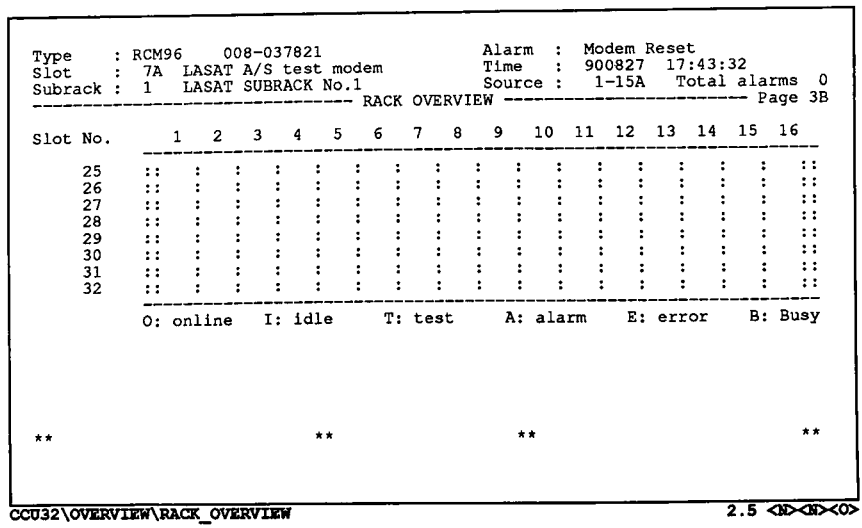
Active keys : hotkeys, o, n, p and ESC.



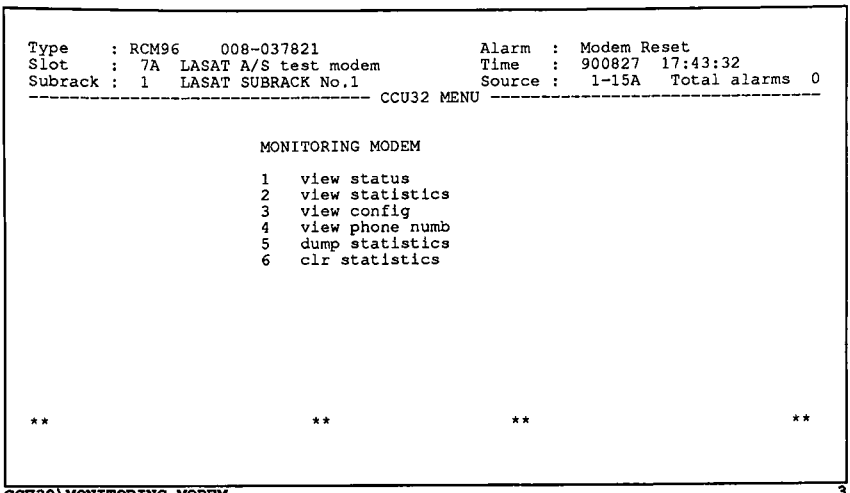
Active keys : hotkeys, o, n, p and ESC.



Active keys : hotkeys, o, n, p and ESC.

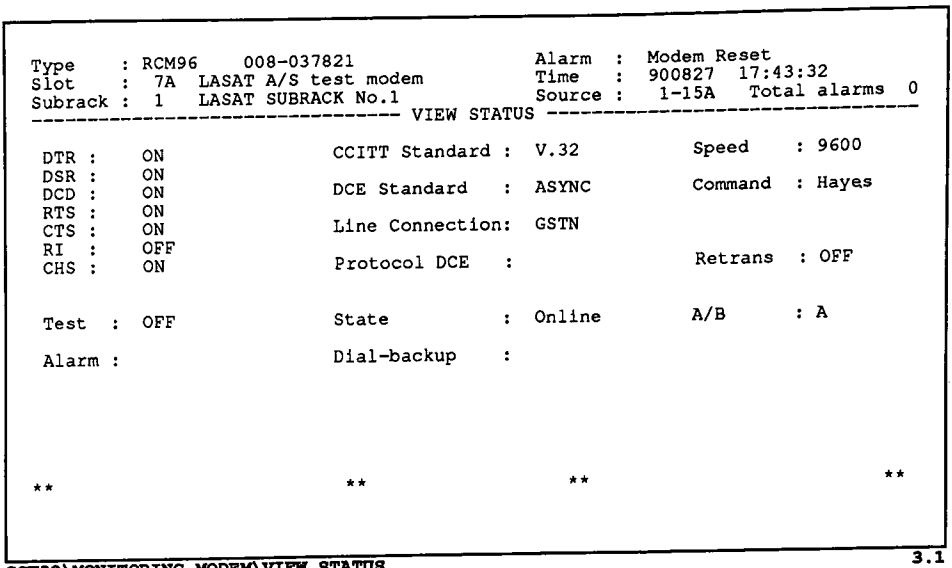


Active keys : hotkeys, o, n, p and ESC.



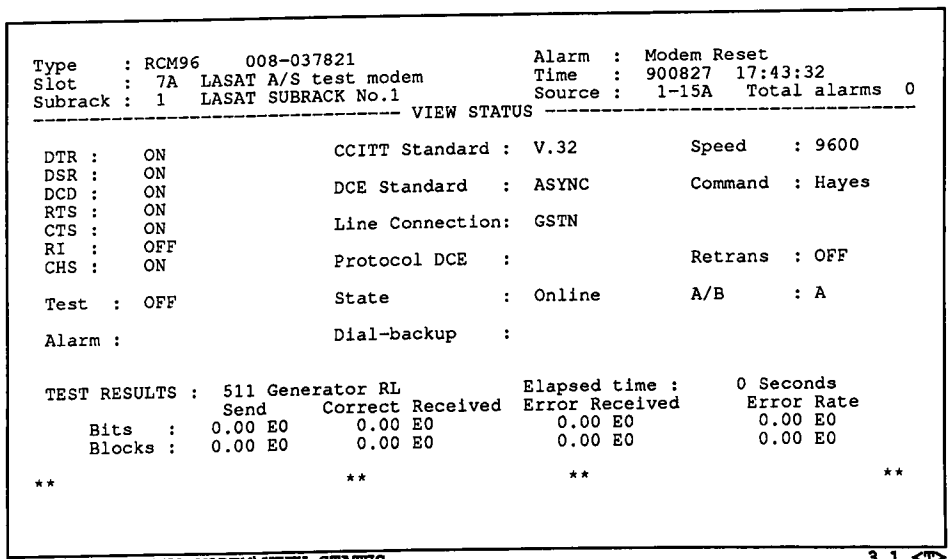
CCU32\MONITORING_MODEM 3

Active keys : hotkeys, 0-6, arrows, b, ESC and CR.



CCU32\MONITORING_MODEM\VIEW_STATUS 3.1

Active keys : hotkeys, t and ESC.



CCU32\MONITORING_MODEM\VIEW_STATUS 3.1 <T>

Active keys : hotkeys, t and ESC.

```
Type     : RCM96    008-037821                Alarm  :  Modem Reset
Slot     :  7A  LASAT A/S test modem          Time   :  900827  17:43:32
Subrack  :  1   LASAT SUBRACK No.1            Source :   1-15A   Total alarms  0
------------------------------ VIEW STATISTICS ---------------------- Page 1

 Statistics Start  :  900827 16:59:05          Period   :  00015:57:03
 Last Update       :  900828 10:05:56          Active   :  00000:16:52
 Last Clear/Dump   :  000000 00:00:00          Idle     :  00015:40:11
 Last Modem Reset  :  900828 09:38:12          Busy Out :  00000:00:00

                  Dial out        Dial in                          Errors
 Connect        :     0               0              V.54_lp2_511 :      0
 No Connect     :     0               0              V.54_lp3_511 :      0
 No Carrier     :     0               0              V.54_lp2_QBF :      0
 Retrain        :     0               0              V.54_lp3_QBF :      0
 Busy           :     0
 No Answer      :     0
 No Dialtone    :     0
 Resets         :           6                        Alarms       :     12
 Lost Lo. Car.  :           0
 Lost Syncronism:           0
 Fall Back      :           0

**                          **              **                          **
```

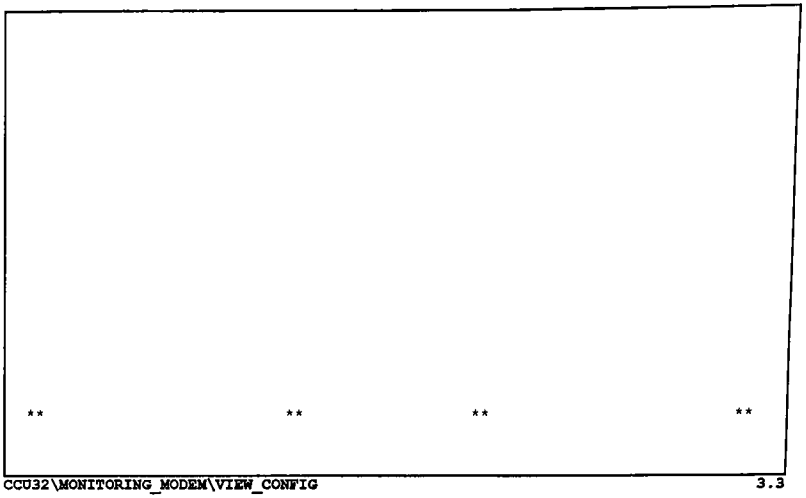
CCU32\MONITORING_MODEM\VIEW_STATISTICS **3.2**

Active keys : hotkeys, n, p and ESC.

```
Type     : RCM96    008-037821                Alarm  :  Modem Reset
Slot     :  7A  LASAT A/S test modem          Time   :  900827  17:43:32
Subrack  :  1   LASAT SUBRACK No.1            Source :   1-15A   Total alarms  0
------------------------------ VIEW STATISTICS ---------------------- Page 2

                 Dial out       Dial in
 V.33     :          0              0          V.42 (LAP-M)    :       0
 V.32-TCM:           0              0          V.42 (MNP2-4)   :       0
 V.32     :          0              0          V.42bis         :       0
 V.27ter  :          0              0          MNP5            :       0
 V.23     :          0              0          MNP7            :       0
 V.22bis  :          0              0
 V.22     :          0              0          Retrans         :       0
 V.21     :          0              0

                 Connect LL
 V.29     :          0
 V.27bis  :          0                         Userid 1:    RS485 User
 V.27     :          0                         Userid 2:    LASAT Init Password
 V.26     :          0                         Userid 3:    LASAT Init Password
                                               Userid 4:    LASAT Init Password
                                               Userid 5:    LASAT Init Password

**                          **                  **                          **
```

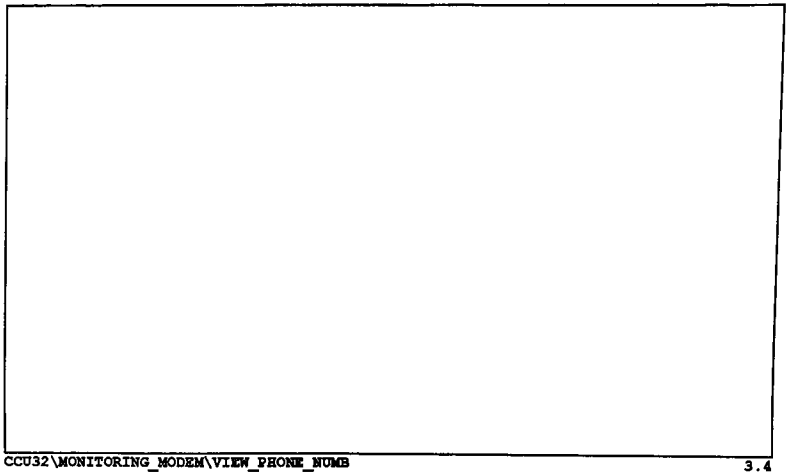
CCU32\MONITORING_MODEM\VIEW_STATISTICS **3.2 <N>**

Active keys : hotkeys, n, p and ESC.



CCU32\MONITORING_MODEM\VIEW_CONFIG 3.3

Active keys : ESC.



CCU32\MONITORING_MODEM\VIEW_PHONE_NUMB 3.4

Active keys : ESC.

```
,00000
,00000
,00000
,00002
,00000
,00000
,00000
,00000
,00000
,00000
,00000
,00000
,00000
,00000
,00000
,00000
,00000
,00000
,00000
,00000
,00000
,00000
,00000
,00000
```

CCU32\MONITORING_MODEM\DUMP_STATISTICS 3.5

Active keys : hotkeys and ESC.

```
Statistics for Subrack Number : 32   LASAT MultiCom v.210
              Modem Number    : 6A

Modem Type : RCM96  Serial Number : 008-654321

Statistic Start  : 910507 07:47:06        Period    : 00000:02:02
Last Update      : 910507 07:49:08        Active    : 00000:00:00
Last Clear/Dump  : 910507 07:47:06        Idle      : 00000:02:02
Last Modem Reset : 000000 00:00:00        Busy Out  : 00000:00:00

                  Dial out        Dial in                                Errors
Connect         :       0               0             V.54_lp2_511 :       0
No Connect      :       0               0             V.54_lp3_511 :       0
No Carrier      :       0               0             V.54_lp2_QBF :       0
Retrain         :       0               0             V.54_lp3_QBF :       0
Busy            :       0
No Answer       :       0
No Dialtone     :       0

Resets          :       0                             Alarms       :       0
Lost Lo. Car.   :       0
Lost Syncronism :       0
Fall Back       :       0
```

CCU32\MONITORING_MODEM\DUMP_STATISTICS **3.5**

Active keys : hotkeys and ESC.

```
Type     : RCM96     008-037821                Alarm  :  Modem Reset
Slot     :  7A  LASAT A/S test modem           Time   :  900827  17:43:32
Subrack  :  1   LASAT SUBRACK No.1             Source :   1-15A   Total alarms  0
---------------------------------- CCU32 MENU ----------------------------------

                        MONITORING MODEM

                        1   view status
                        2   view statistics
                        3   view config
                        4   view phone numb
                        5   dump statistics
                        6   clr statistics




**          Ok              **                **                          **
```

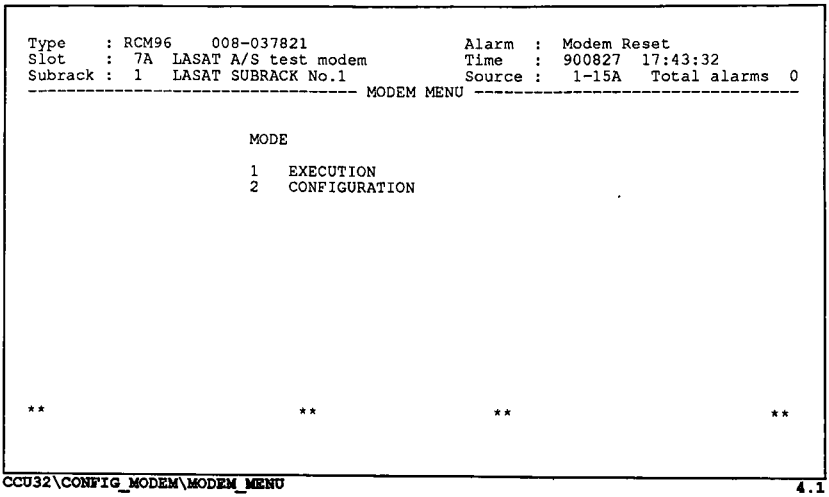
CCU32\MONITORING_MODEM\CLEAR_STATISTICS 3.6

Active keys : hotkeys, 0-6, arrows, b, ESC and CR.

```
Type     : RCM96     008-037821                Alarm  :  Modem Reset
Slot     :  7A  LASAT A/S test modem           Time   :  900827  17:43:32
Subrack  :  1   LASAT SUBRACK No.1             Source :   1-15A   Total alarms  0
---------------------------------- CCU32 MENU ----------------------------------

                          CONFIG MODEM

                        1   modem menu
                        2   talk through
                        3   V24 talk through
                        4   move config




**                      **                **                          **
```

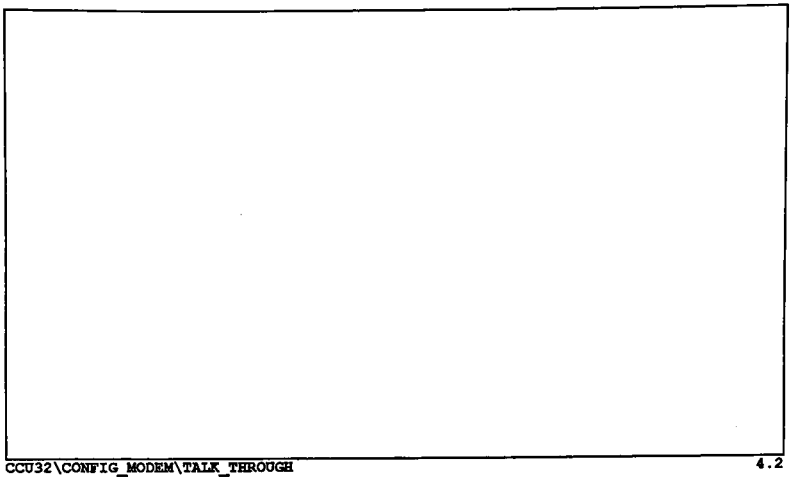
CCU32\CONFIG_MODEM 4

Active keys : hotkeys, 0-4, arrows, b, ESC and CR.



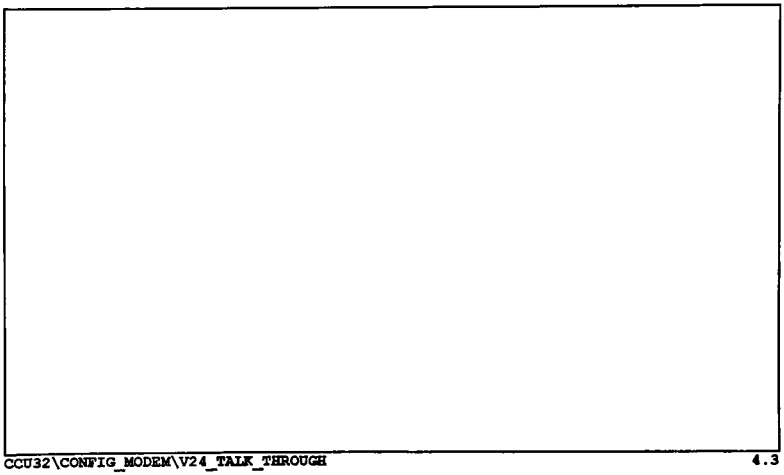
CCU32\CONFIG_MODEM\MODEM_MENU 4.1

Active keys : hotkeys, 1-2, arrows, b, ESC and CR.



CCU32\CONFIG_MODEM\TALK_THROUGH 4.2

Active keys : ascii and ESC.



CCU32\CONFIG_MODEM\V24_TALK_THROUGH 4.3

Active keys : ascii and ESC.

```
Type     : RCM96     008-037821                Alarm   :  Modem Reset
Slot     :  7A  LASAT A/S test modem           Time    :  900827  17:43:32
Subrack  :  1   LASAT SUBRACK No.1             Source  :   1-15A   Total alarms  0
---------------------------------- MOVE CONFIG ------------------------- Page 1

 Modem No.  Config Pseudonym    Origin     Modem No.  Config Pseudonym    Origin

    1A                           6?          9A    RCM96 GSTN             3
    2A                           1?         10A    RCM96 GSTN             3
    3A    RCM24 4w               1          11A                           3?
    4A    RCM24 2w               2          12A                           3?
    5A                           4?         13A    RCM29 4w               4
    6A                           1?         14A                           3?
    7A    RCM96 GSTN             3          15A    RCM96 4w               5
    8A    RCM96 GSTN             3          16A                           3?

 Config No. Config Pseudonym    Type     Config No. Config Pseudonym    Type

     1    RCM24 4w              RCM24Q       4    RCM29 4w              RCM29
     2    RCM24 2w              RCM24Q       5    RCM96 4w              RCM96
     3    RCM96 GSTN            RCM96        6
     M1   unused                 ?           M2   unused                 ?
 Execute configuration
**                          **                **                          **
```

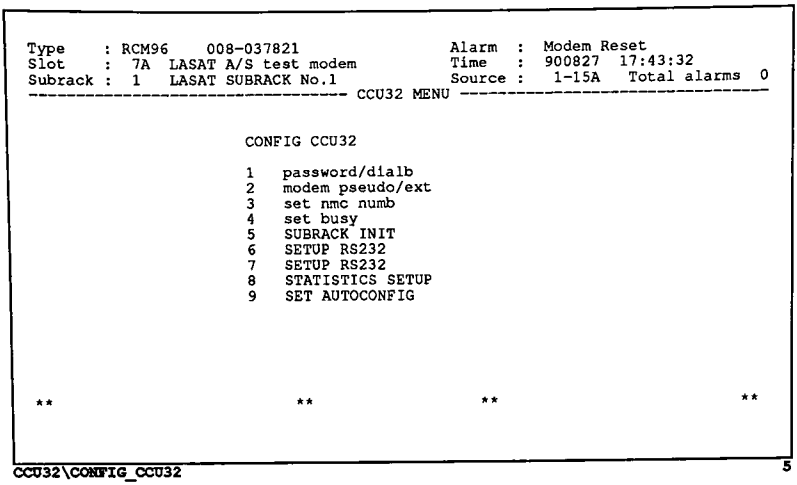
CCU32\CONFIG_MODEM\MOVE_CONFIG 4.4

Active keys : hotkeys, arrows, o, spacebar, ESC and CR.

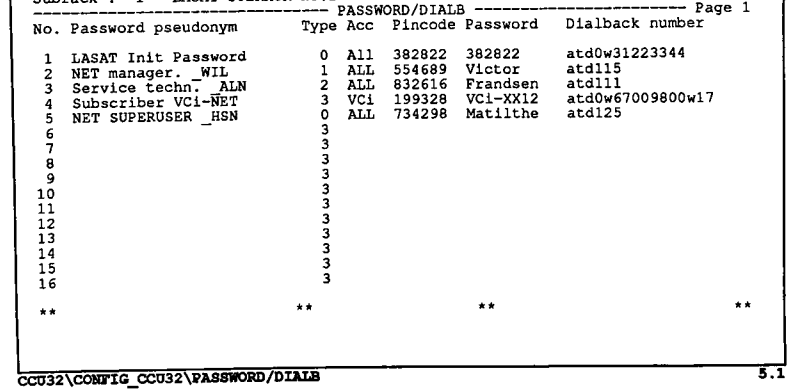
```
Type     : RCM96     008-037821                Alarm   :  Modem Reset
Slot     :  7A  LASAT A/S test modem           Time    :  900827  17:43:32
Subrack  :  1   LASAT SUBRACK No.1             Source  :   1-15A   Total alarms  0
---------------------------------- MOVE CONFIG ------------------------- Page 2

 Modem No.  Config Pseudonym    Origin     Modem No.  Config Pseudonym    Origin

    1B                           6?          9B                           3?
    2B                           1?         10B                           3?
    3B                           1?         11B                           3?
    4B                           2?         12B                           3?
    5B                           4?         13B                           4?
    6B                           1?         14B                           3?
    7B                           3?         15B                           5?
    8B                           3?         16B                           3?

 Config No. Config Pseudonym    Type     Config No. Config Pseudonym    Type

     1    RCM24 4w              RCM24Q       4    RCM29 4w              RCM29
     2    RCM24 2w              RCM24Q       5    RCM96 4w              RCM96
     3    RCM96 GSTN            RCM96        6
     M1   unused                 ?           M2   unused                 ?
 Execute configuration
**                          **                **                          **
```

CCU32\CONFIG_MODEM\MOVE_CONFIG 4.4 <O>

Active keys : hotkeys, arrows, o, spacebar, ESC and CR.



Active keys : hotkeys, 0-8, arrows, b, ESC and CR.



Active keys : hotkeys, arrows, ESC and CR.

```
Type     : RCM96     008-037821                Alarm   :  Modem Reset
Slot     :  7A  LASAT A/S test modem           Time    :  900827  17:43:32
Subrack  :  1   LASAT SUBRACK No.1             Source  :   1-15A   Total alarms  0
------------------------------ PASSWORD/DIALB ---------------------- Page 2
No. Password pseudonym        Type Acc  Pincode Password   Dialback number

17                              3
18                              3
19                              3
20                              3
21                              3
22                              3
23                              3
24                              3
25                              3
26                              3
27                              3
28                              3
29                              3
30                              3
31                              3
32                              3

**                            **                **                      **
```

CCU32\CONFIG_CCU32\PASSWORD/DIALB 5.1 <N>

Active keys : hotkeys, arrows, ESC and CR.

```
Type     : RCM96     008-037821                Alarm   :  Modem Reset
Slot     :  7A  LASAT A/S test modem           Time    :  900827  17:43:32
Subrack  :  1   LASAT SUBRACK No.1             Source  :   1-15A   Total alarms  0
------------------------------ PASSWORD/DIALB ---------------------- Page 3
No. Password pseudonym        Type Acc  Pincode Password   Dialback number

33                              3
34                              3
35                              3
36                              3
37                              3
38                              3
39                              3
40                              3
41                              3
42                              3
43                              3
44                              3
45                              3
46                              3
47                              3
48                              3

**                            **                **                      **
```

CCU32\CONFIG_CCU32\PASSWORD/DIALB 5.1 <N><N>

Active keys : hotkeys, arrows, ESC and CR.

```
Type    : RCM96    008-037821              Alarm  :  Modem Reset
Slot    :  7A  LASAT A/S test modem        Time   :  900827  17:43:32
Subrack :  1   LASAT SUBRACK No.1          Source :   1-15A   Total alarms  0
---------------------------------- MODEM PSEUDO/EXT ----------------------------------
 No.    Modem pseudonym          Ext       No.    Modem pseudonym          Ext

  1A  V.23 Channel A             SAT        1B  V.23 Channel B
  2A                                        2B
  3A  Dial In Service            WED        3B
  4A  NET Service                XNT        4B
  5A                                        5B
  6A                                        6B
  7A  LASAT A/S test modem       LAS        7B
  8A  Database Ch. B                        8B
  9A  Database Ch. C                        9B
 10A  Database Ch. D                       10B
 11A  Slow BB-service                      11B
 12A  Fast BB-service                      12B
 13A  NET Leased service                   13B
 14A                                       14B
 15A  Database Ch. E                       15B
 16A  Line rest EQUIP.                     16B

**                          **                **                          **
```

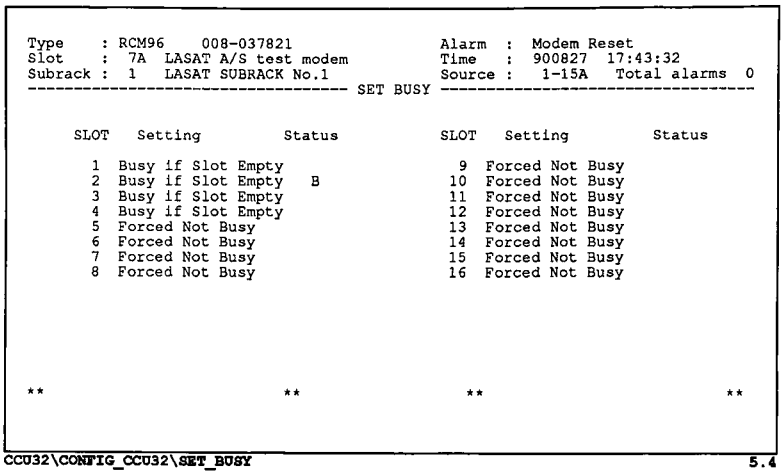
CCU32\CONFIG_CCU32\MODEM_PSEUDO/EXT **5.2**

Active keys : hotkeys, arrows, ESC and CR.

```
Type    : RCM96    008-037821              Alarm  :  Modem Reset
Slot    :  7A  LASAT A/S test modem        Time   :  900827  17:43:32
Subrack :  1   LASAT SUBRACK No.1          Source :   1-15A   Total alarms  0
------------------------------ SET NMC NUMBER ------------------------------------




                          No. 1 :     atd98382822w28
                          No. 2 :     atd98382822w28
                          No. 3 :     atd98382822w28
                          No. 4 :     atd98382822w28
                          No. 5 :     atd98382822w28









**                          **                **                          **
```

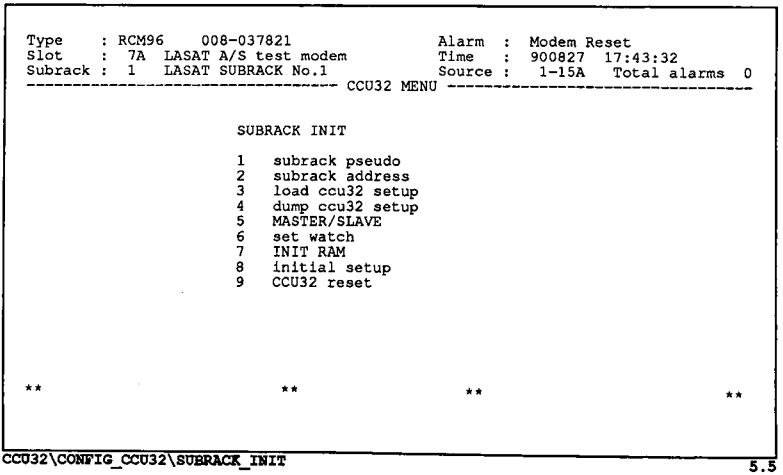
CCU32\CONFIG_CCU32\SET_NMC_NUMB **5.3**

Active keys : hotkeys, arrows, ESC and CR.



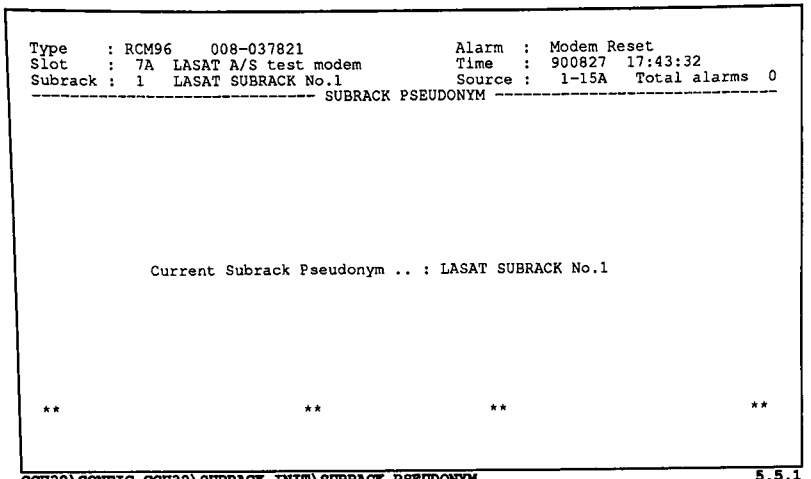
CCU32\CONFIG_CCU32\SET_BUSY 5.4

Active keys : hotkeys, +, -, *, /, arrows, ESC.



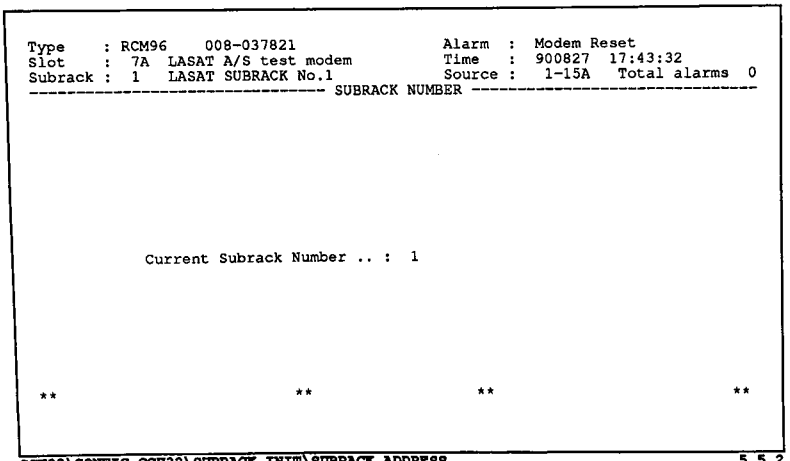
CCU32\CONFIG_CCU32\SUBRACK_INIT 5.5

Active keys : hotkeys, 0-8, arrows, b, ESC and CR.



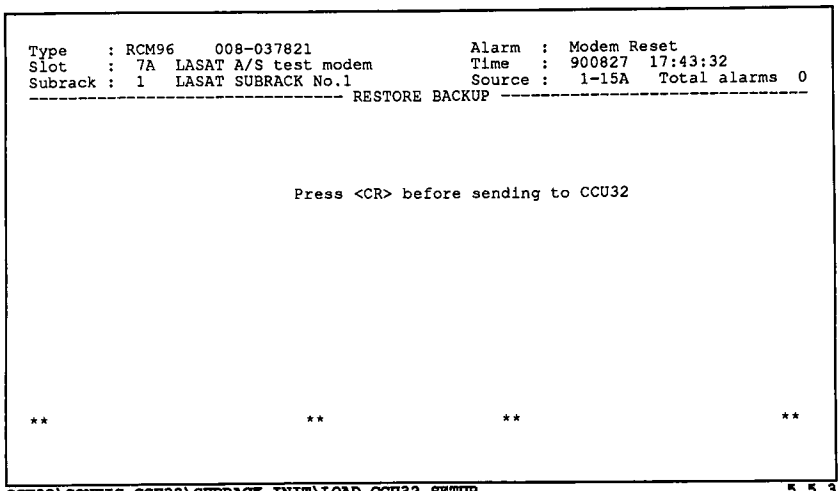
CCU32\CONFIG_CCU32\SUBRACK_INIT\SUBRACK_PSEUDONYM **5.5.1**

Active keys : hotkeys, ascii, ESC and CR.



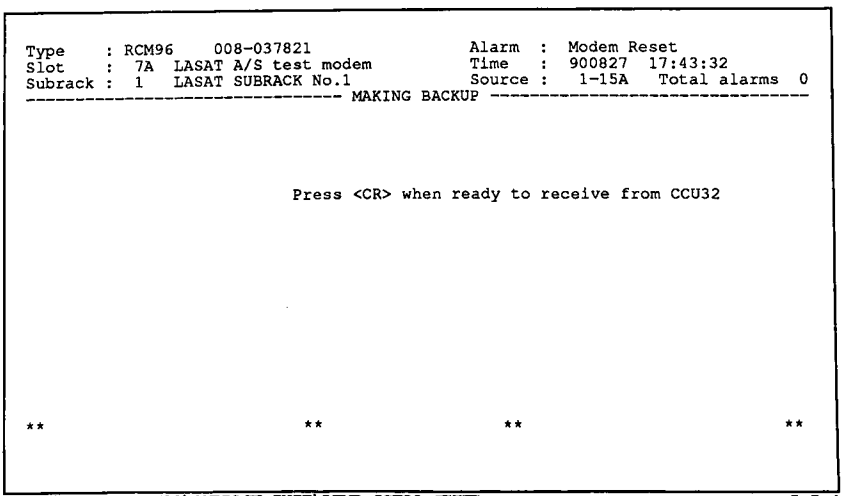
CCU32\CONFIG_CCU32\SUBRACK_INIT\SUBRACK_ADDRESS **5.5.2**

Active keys : hotkeys, ascii, ESC and CR.



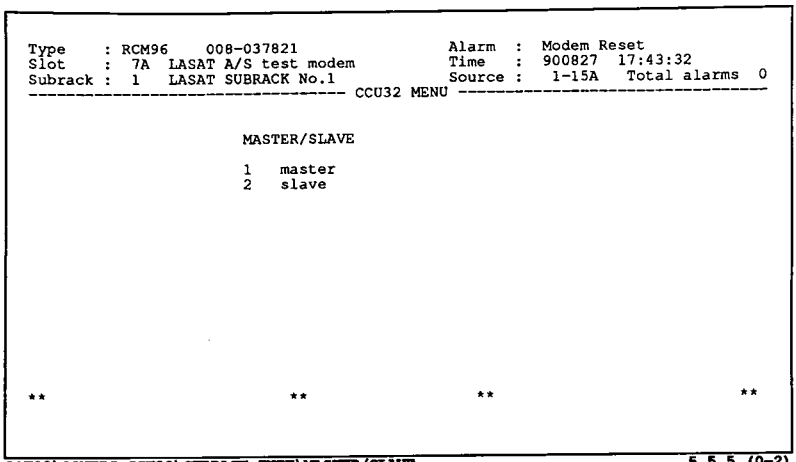
CCU32\CONFIG_CCU32\SUBRACK_INIT\LOAD_CCU32_SETUP **5.5.3**

Active keys : hotkeys, ESC and CR.



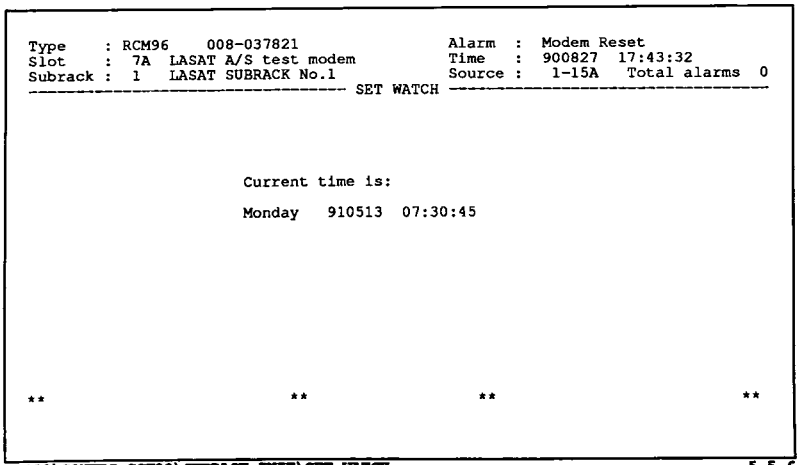
CCU32\CONFIG_CCU32\SUBRACK_INIT\DUMP_CCU32_SETUP **5.5.4**

Active keys : hotkeys, ESC and CR.



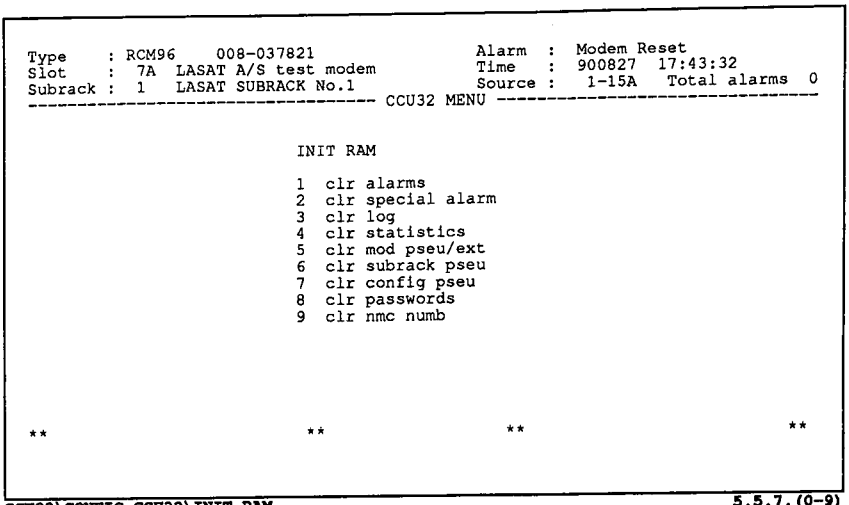
CCU32\CONFIG_CCU32\SUBRACK_INIT\MASTER/SLAVE **5.5.5.(0-2)**

Active keys : hotkeys, 0-2, arrows, b, ESC and CR.



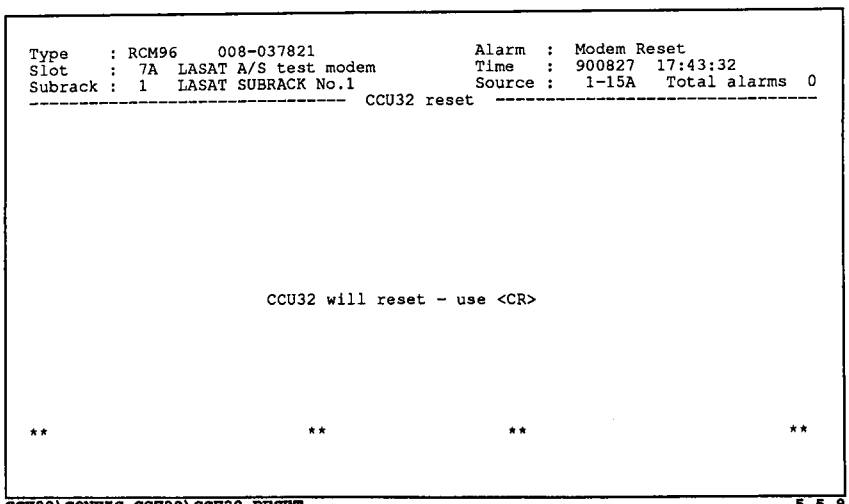
CCU32\CONFIG_CCU32\SUBRACK_INIT\SET_WATCH **5.5.6**

Active keys : hotkeys, 0-9, arrows, ESC and CR.



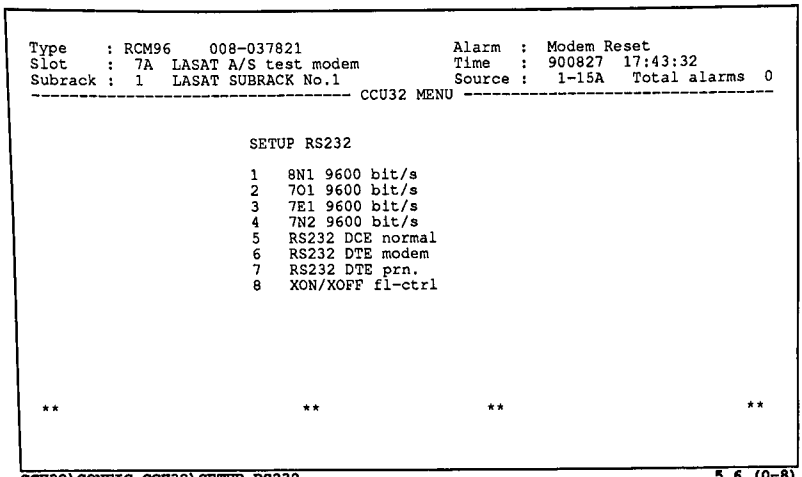
CCU32\CONFIG_CCU32\INIT_RAM **5.5.7.(0-9)**

Active keys : hotkeys, 0-8, y, n, arrows, b, ESC and CR.



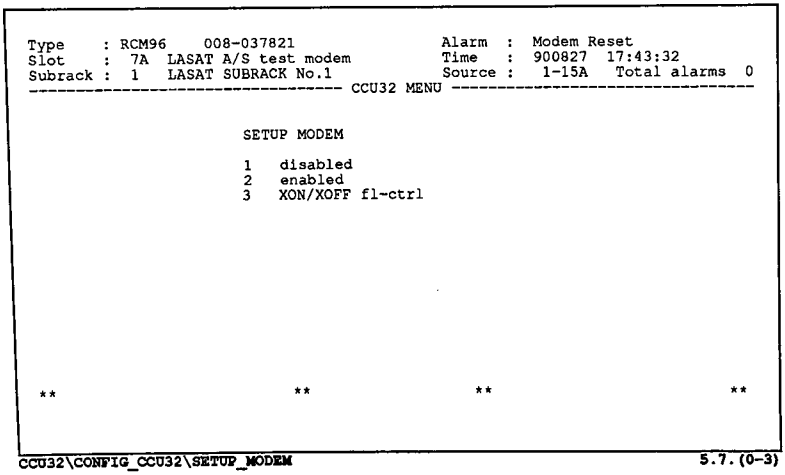
CCU32\CONFIG_CCU32\CCU32_RESET **5.5.8**

Active keys : hotkeys, ESC and CR.



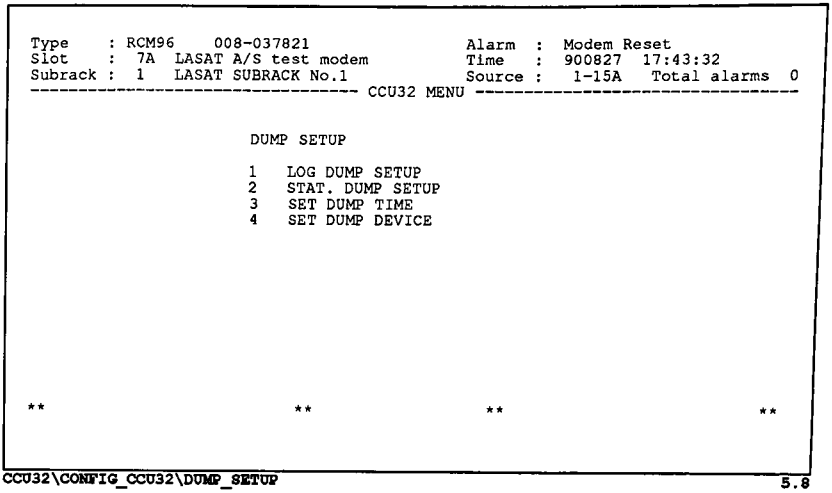
CCU32\CONFIG_CCU32\SETUP_RS232 **5.6. (0-8)**

Active keys : hotkeys, 0-8, arrows, b, ESC and CR.

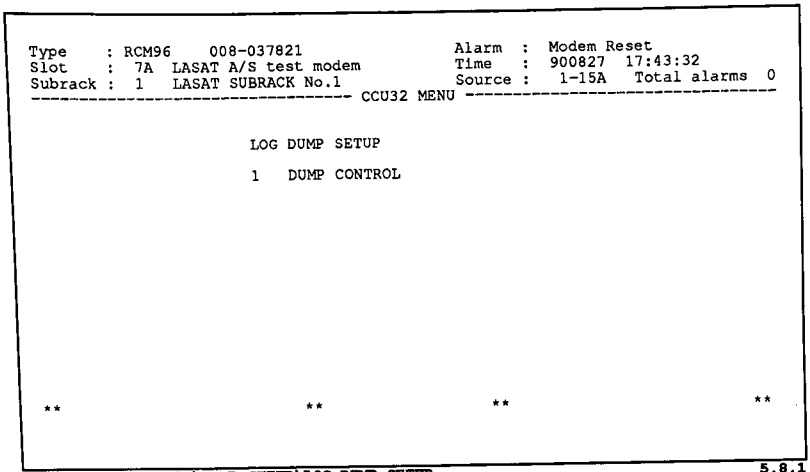


CCU32\CONFIG_CCU32\SETUP_MODEM **5.7. (0-3)**

Active keys : hotkeys, 0-3, arrows, b, ESC and CR.

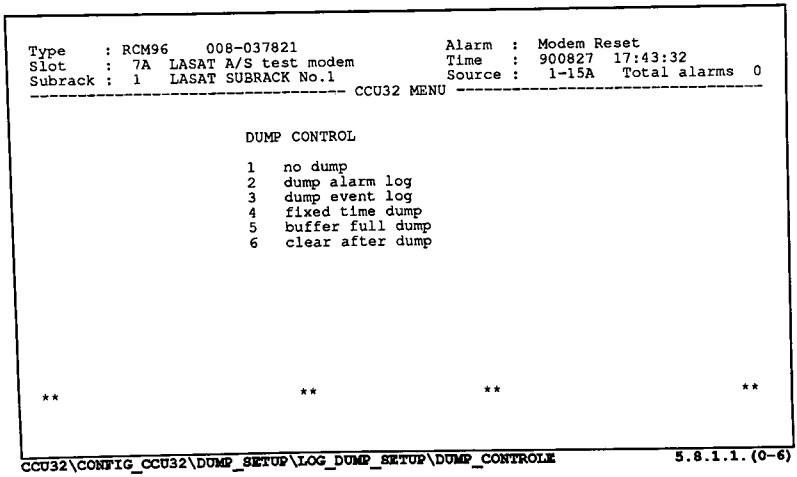


Active keys : hotkeys, 0-4, arrows, b, ESC and CR.



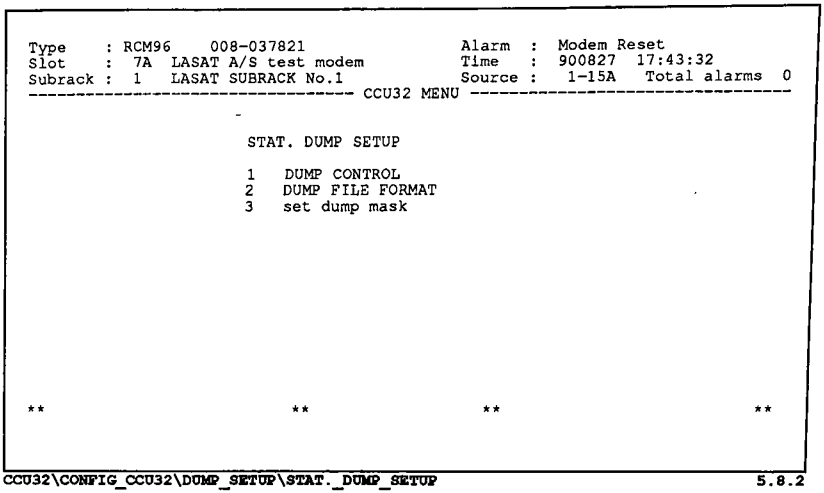
CCU32\CONFIG_CCU32\DUMP_SETUP\LOG_DUMP_SETUP 5.8.1

Active keys : hotkeys, 0-1, arrows, b, ESC and CR.



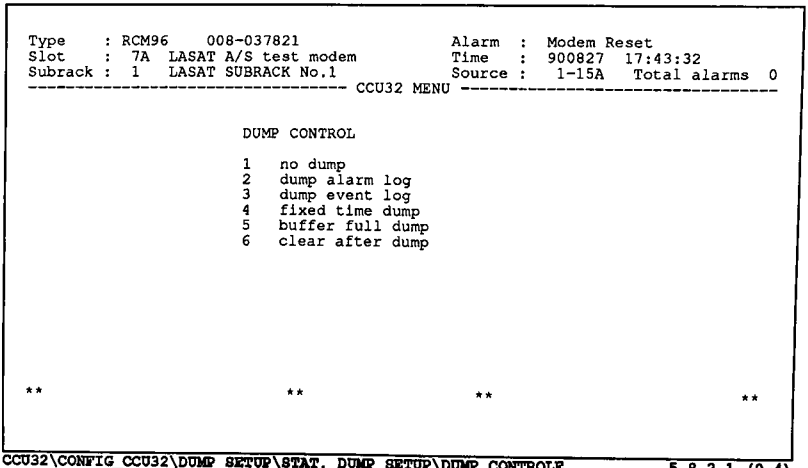
CCU32\CONFIG_CCU32\DUMP_SETUP\LOG_DUMP_SETUP\DUMP_CONTROLE 5.8.1.1.(0-6)

Active keys : hotkeys, 0-6, arrows, b, ESC and CR.



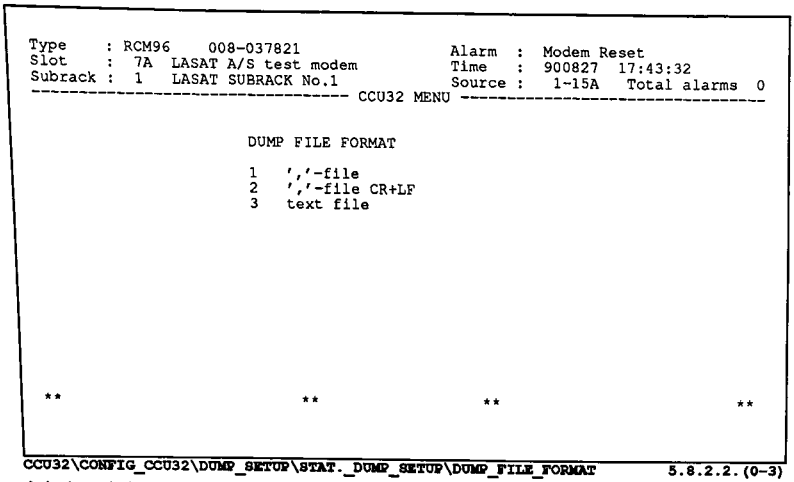
CCU32\CONFIG_CCU32\DUMP_SETUP\STAT._DUMP_SETUP **5.8.2**

Active keys : hotkeys, 0-3, arrows, b, ESC and CR.



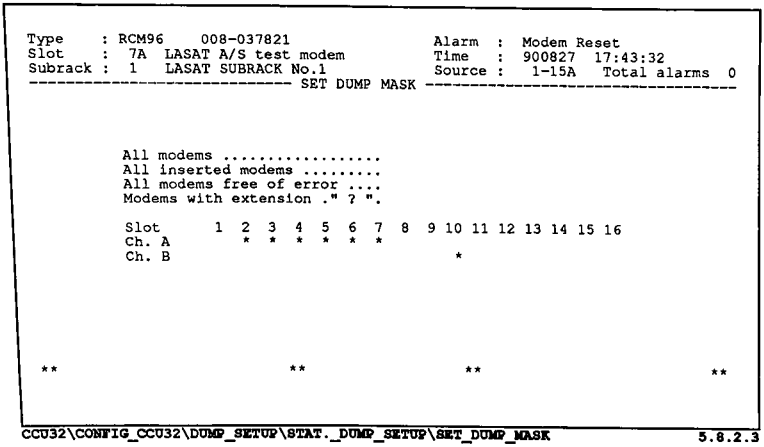
CCU32\CONFIG_CCU32\DUMP_SETUP\STAT._DUMP_SETUP\DUMP_CONTROLE **5.8.2.1.(0-4)**

Active keys : hotkeys, 0-6, arrows, b, ESC and CR.



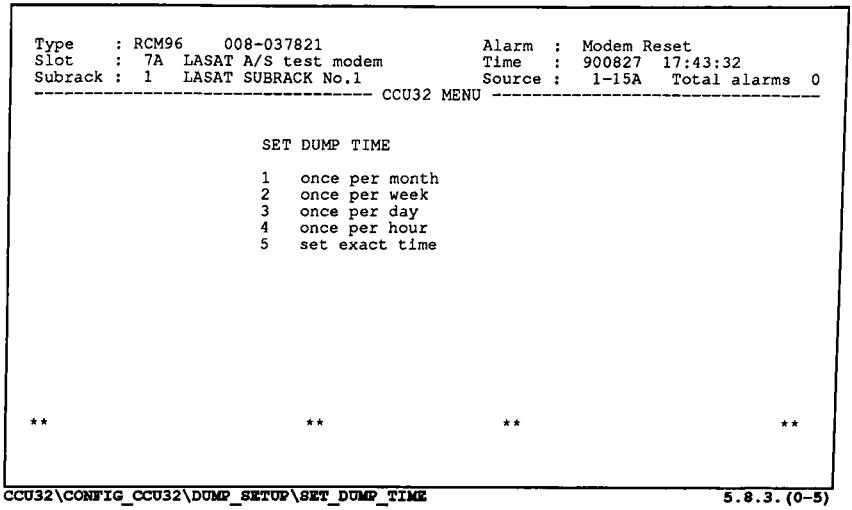
CCU32\CONFIG_CCU32\DUMP_SETUP\STAT._DUMP_SETUP\DUMP_FILE_FORMAT 5.8.2.2.(0-3)

Active keys : hotkeys, 0-3, arrows, b, ESC and CR.



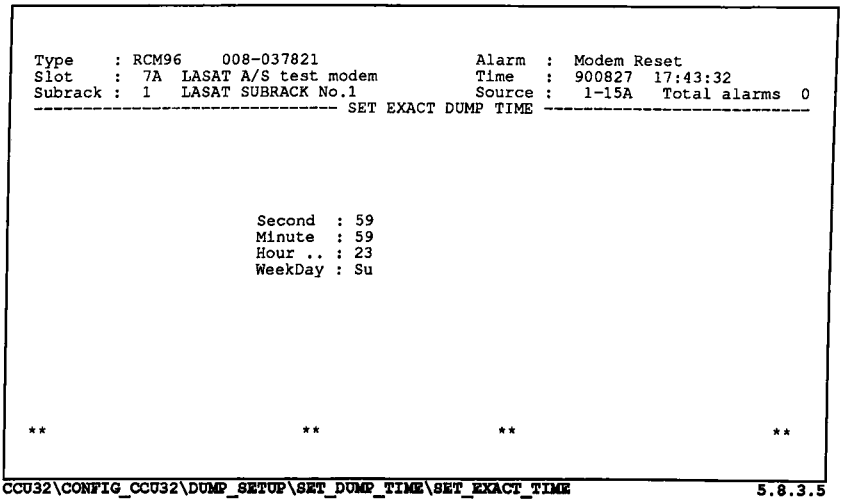
CCU32\CONFIG_CCU32\DUMP_SETUP\STAT._DUMP_SETUP\SET_DUMP_MASK 5.8.2.3

Active keys : hotkeys, arrows, +, -, *, /, ESC and CR.



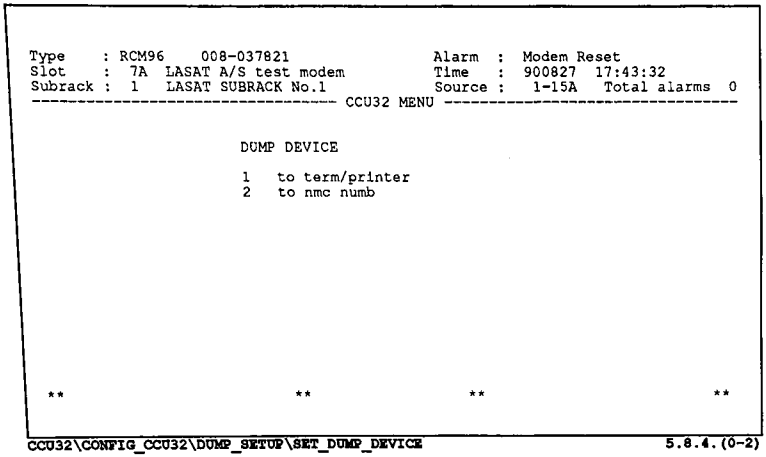
CCU32\CONFIG_CCU32\DUMP_SETUP\SET_DUMP_TIME **5.8.3.(0-5)**

Active keys : hotkeys, 0-5, arrows, b, ESC and CR.



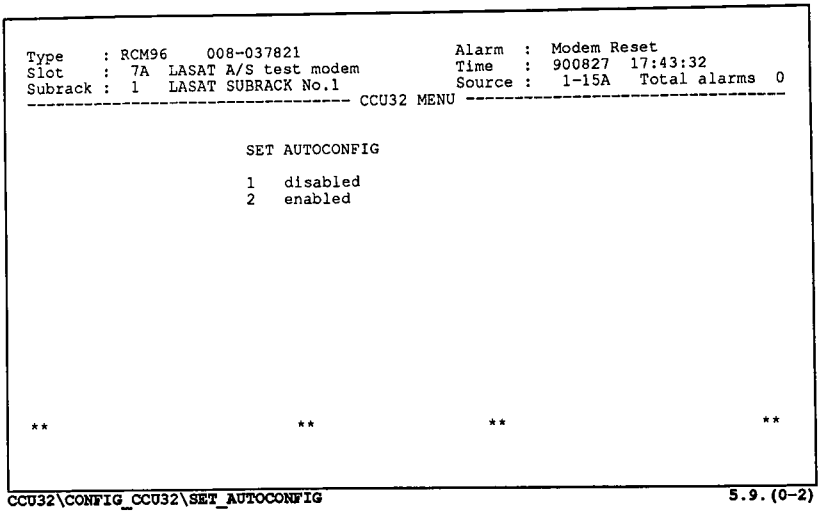
CCU32\CONFIG_CCU32\DUMP_SETUP\SET_DUMP_TIME\SET_EXACT_TIME **5.8.3.5**

Active keys : hotkeys, arrows (up and down), ESC and CR.



CCU32\CONFIG_CCU32\DUMP_SETUP\SET_DUMP_DEVICE 5.8.4.(0-2)

Active keys : hotkeys, 0-2, arrows, b, ESC and CR.



CCU32\CONFIG_CCU32\SET_AUTOCONFIG 5.9.(0-2)

Active keys : hotkeys, 0-2, arrows, b, ESC and CR.

```
Type    : RCM96    008-037821                Alarm  :  Modem Reset
Slot    :  7A  LASAT A/S test modem          Time   :  900827  17:43:32
Subrack :  1   LASAT SUBRACK No.1            Source :   1-15A   Total alarms  0
---------------------------------- CCU32 MENU ----------------------------------

                        LOG OPTIONS

                        1   view alarm log
                        2   view event log
                        3   set alarm mask
                        4   log dump

 **                      **                 **                      **
```

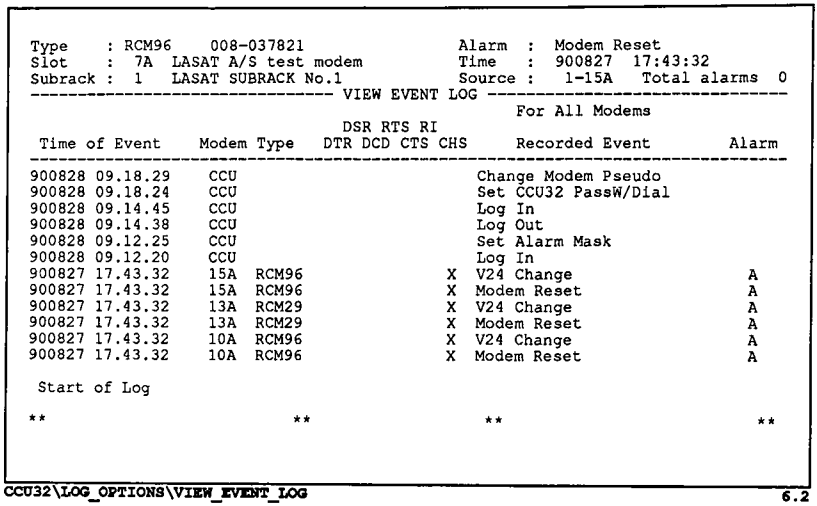
CCU32\LOG_OPTIONS 6

Active keys : hotkeys, 0-4, arrows, b, ESC and CR.

```
Type    : RCM96    008-037821                Alarm  :  Modem Reset
Slot    :  7A  LASAT A/S test modem          Time   :  900827  17:43:32
Subrack :  1   LASAT SUBRACK No.1            Source :   1-15A   Total alarms  0
-------------------------------- VIEW ALARM LOG --------------------------------
                                                        For All Modems
                                  DSR RTS RI
 Time of Event     Modem Type   DTR DCD CTS CHS      Recorded Event          Alarm
-------------------------------------------------------------------------------
900827 17.43.32     15A  RCM96              X  V24 Change                    A
900827 17.43.32     15A  RCM96              X  Modem Reset                  A
900827 17.43.32     13A  RCM29              X  V24 Change                    A
900827 17.43.32     13A  RCM29              X  Modem Reset                  A
900827 17.43.32     10A  RCM96              X  V24 Change                    A
900827 17.43.32     10A  RCM96              X  Modem Reset                  A
900827 17.43.32      9A  RCM96              X  V24 Change                    A
900827 17.43.32      9A  RCM96              X  Modem Reset                  A
900827 17.43.32      8A  RCM96              X  V24 Change                    A
900827 17.43.32      8A  RCM96              X  Modem Reset                  A
900827 17.43.32      7A  RCM96              X  V24 Change                    A
900827 17.43.32      7A  RCM96              X  Modem Reset                  A

  Start of Log

 **                      **                 **                      **
```

CCU32\LOG_OPTIONS\VIEW_ALARM_LOG 6.1

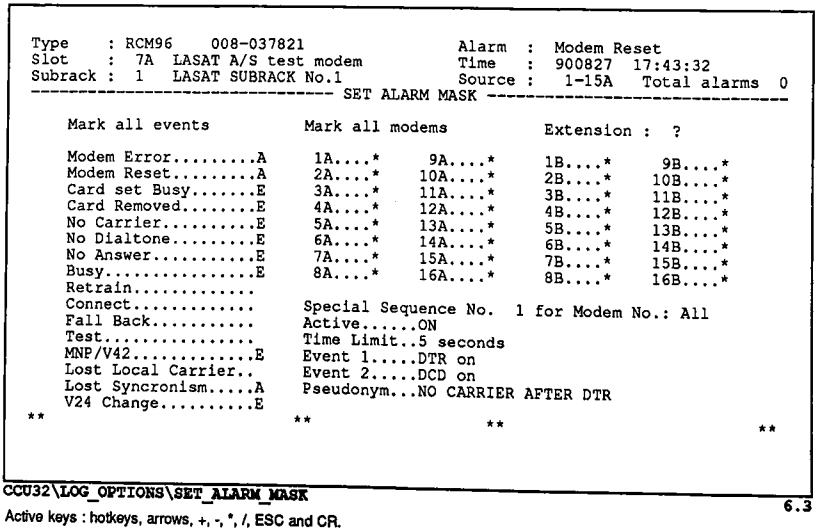
Active keys : hotkeys, arrows, n, p, ESC and CR.



```
Type     : RCM96    008-037821                Alarm  :  Modem Reset
Slot     :  7A  LASAT A/S test modem          Time   :  900827  17:43:32
Subrack  :  1   LASAT SUBRACK No.1            Source :   1-15A   Total alarms  0
--------------------------------- VIEW EVENT LOG ---------------------------------
                                                        For All Modems
                                    DSR RTS RI
 Time of Event     Modem Type     DTR DCD CTS CHS      Recorded Event          Alarm
--------------------------------------------------------------------------------
900828 09.18.29     CCU                               Change Modem Pseudo
900828 09.18.24     CCU                               Set CCU32 PassW/Dial
900828 09.14.45     CCU                               Log In
900828 09.14.38     CCU                               Log Out
900828 09.12.25     CCU                               Set Alarm Mask
900828 09.12.20     CCU                               Log In
900827 17.43.32     15A  RCM96                   X    V24 Change                A
900827 17.43.32     15A  RCM96                   X    Modem Reset               A
900827 17.43.32     13A  RCM29                   X    V24 Change                A
900827 17.43.32     13A  RCM29                   X    Modem Reset               A
900827 17.43.32     10A  RCM96                   X    V24 Change                A
900827 17.43.32     10A  RCM96                   X    Modem Reset               A

 Start of Log

**                          **                    **                          **
```

CCU32\LOG_OPTIONS\VIEW_EVENT_LOG 6.2

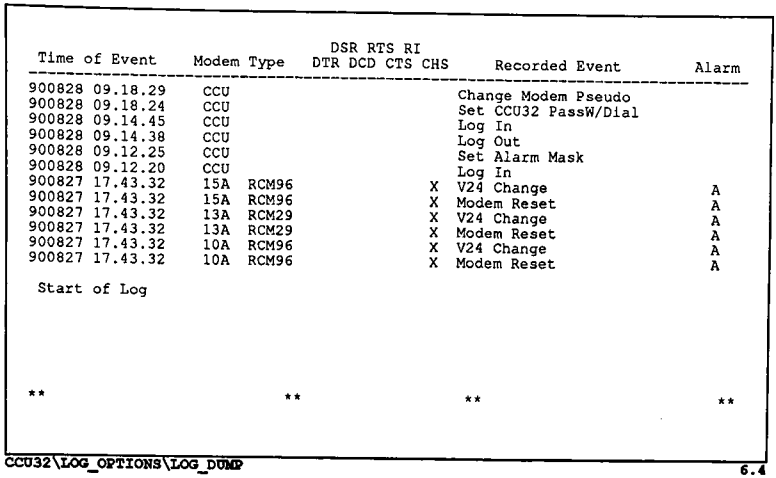
Active keys : hotkeys, arrows, n, p, ESC and CR.



```
Type     : RCM96    008-037821                Alarm  :  Modem Reset
Slot     :  7A  LASAT A/S test modem          Time   :  900827  17:43:32
Subrack  :  1   LASAT SUBRACK No.1            Source :   1-15A   Total alarms  0
--------------------------------- SET ALARM MASK ---------------------------------

    Mark all events          Mark all modems          Extension :  ?

    Modem Error.........A     1A....*    9A....*       1B....*    9B....*
    Modem Reset.........A     2A....*   10A....*       2B....*   10B....*
    Card set Busy.......E     3A....*   11A....*       3B....*   11B....*
    Card Removed........E     4A....*   12A....*       4B....*   12B....*
    No Carrier..........E     5A....*   13A....*       5B....*   13B....*
    No Dialtone.........E     6A....*   14A....*       6B....*   14B....*
    No Answer...........E     7A....*   15A....*       7B....*   15B....*
    Busy................E     8A....*   16A....*       8B....*   16B....*
    Retrain.............
    Connect.............     Special Sequence No.  1 for Modem No.: All
    Fall Back...........     Active......ON
    Test................     Time Limit..5 seconds
    MNP/V42.............E    Event 1.....DTR on
    Lost Local Carrier..     Event 2.....DCD on
    Lost Syncronism.....A    Pseudonym...NO CARRIER AFTER DTR
    V24 Change..........E
**                           **                    **                          **
```

CCU32\LOG_OPTIONS\SET_ALARM_MASK 6.3

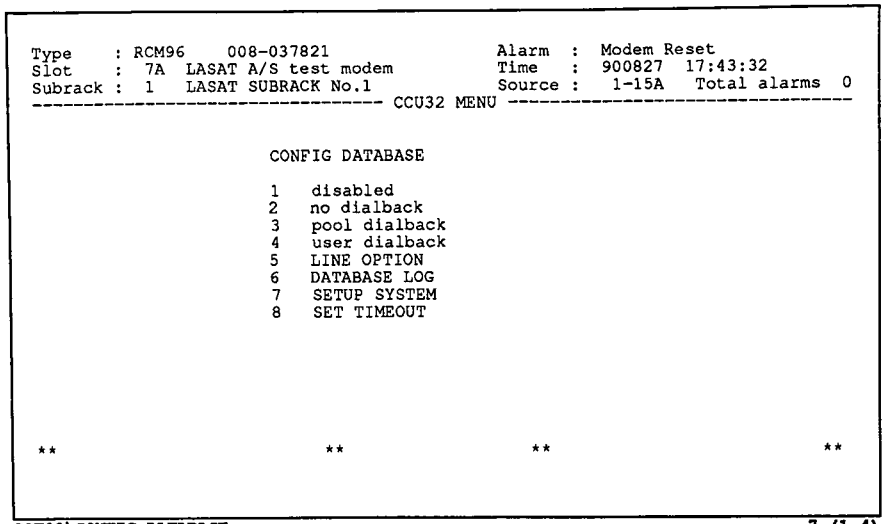
Active keys : hotkeys, arrows, +, -, *, /, ESC and CR.



Time of Event	Modem Type	DSR RTS RI DTR DCD CTS CHS	Recorded Event	Alarm
900828 09.18.29	CCU		Change Modem Pseudo	
900828 09.18.24	CCU		Set CCU32 PassW/Dial	
900828 09.14.45	CCU		Log In	
900828 09.14.38	CCU		Log Out	
900828 09.12.25	CCU		Set Alarm Mask	
900828 09.12.20	CCU		Log In	
900827 17.43.32	15A RCM96	X	V24 Change	A
900827 17.43.32	15A RCM96	X	Modem Reset	A
900827 17.43.32	13A RCM29	X	V24 Change	A
900827 17.43.32	13A RCM29	X	Modem Reset	A
900827 17.43.32	10A RCM96	X	V24 Change	A
900827 17.43.32	10A RCM96	X	Modem Reset	A
Start of Log				
**	**	**		**

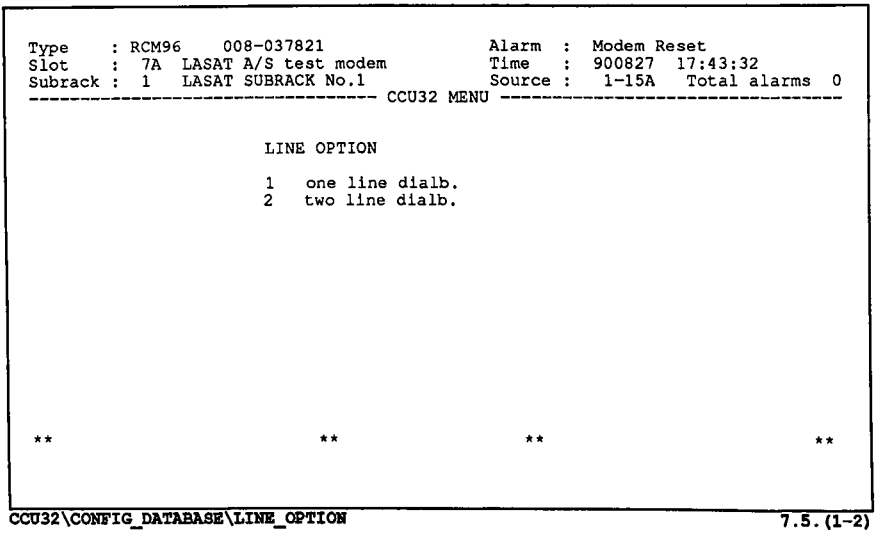
CCU32\LOG_OPTIONS\LOG_DUMP 6.4

Active keys : ESC.



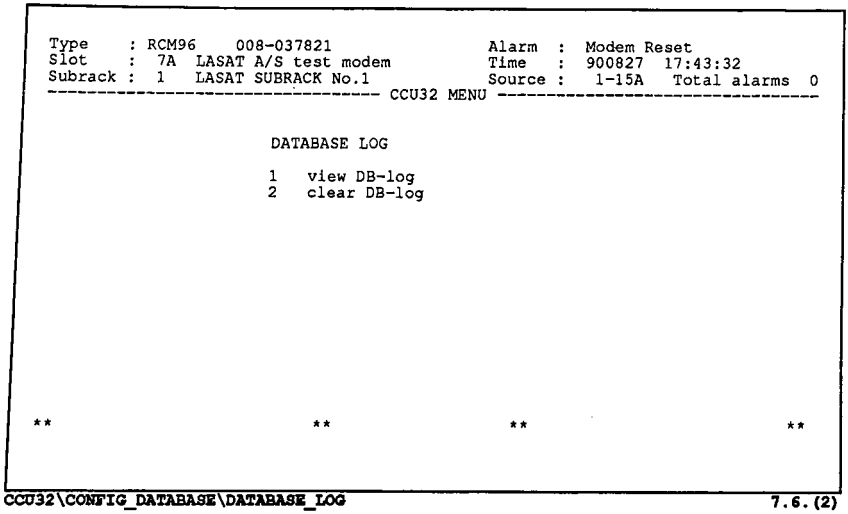
CCU32\CONFIG_DATABASE **7.(1-4)**

Active keys : hotkeys, 0-7, arrows, b, ESC and CR.



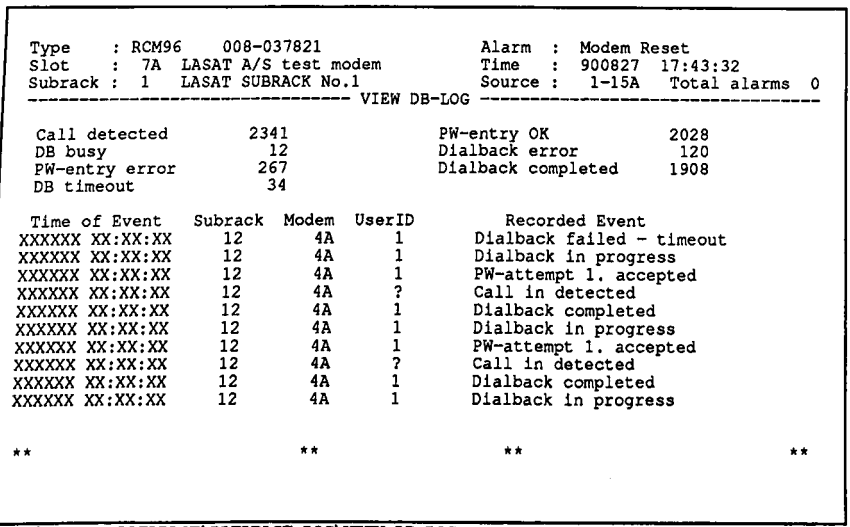
CCU32\CONFIG_DATABASE\LINE_OPTION **7.5.(1-2)**

Active keys : hotkeys, 0-2, arrows, b, ESC and CR.



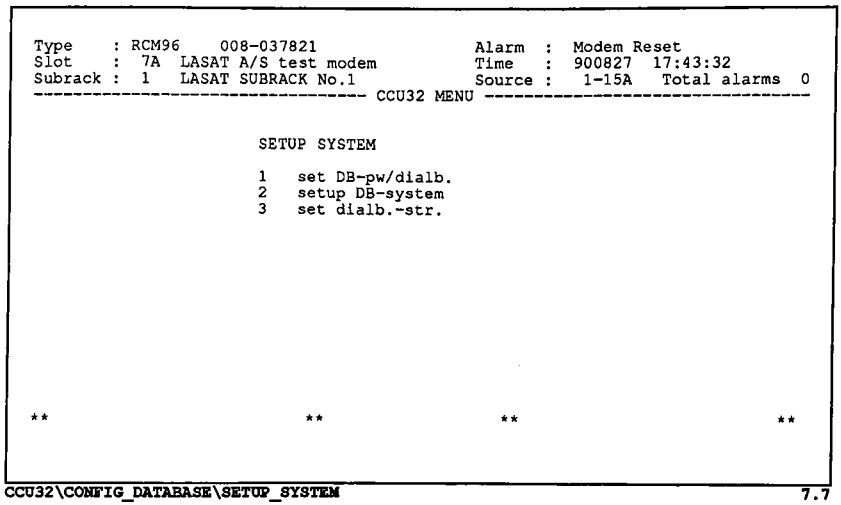
CCU32\CONFIG_DATABASE\DATABASE_LOG 7.6.(2)

Active keys : hotkeys, 0-2, arrows, b, ESC and CR.



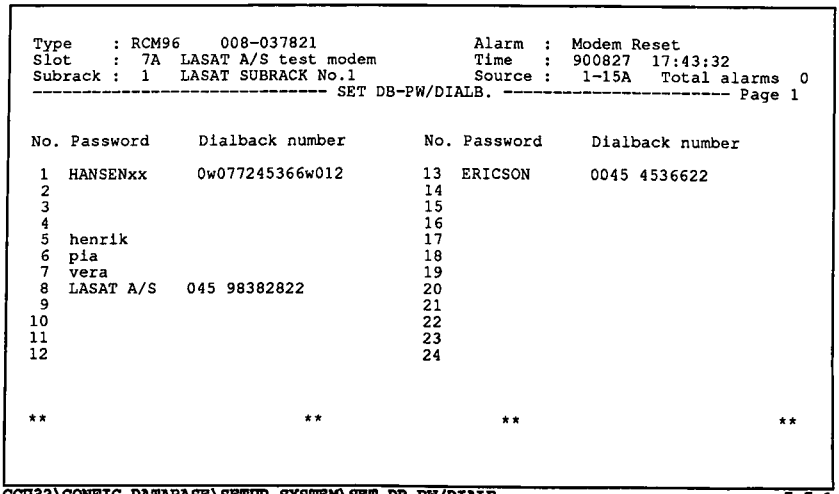
CU32\CONFIG_DATABASE\DATABASE_LOG\VIEW_DB-LOG 7.6.1

ctive keys : hotkeys, arrows, ESC.



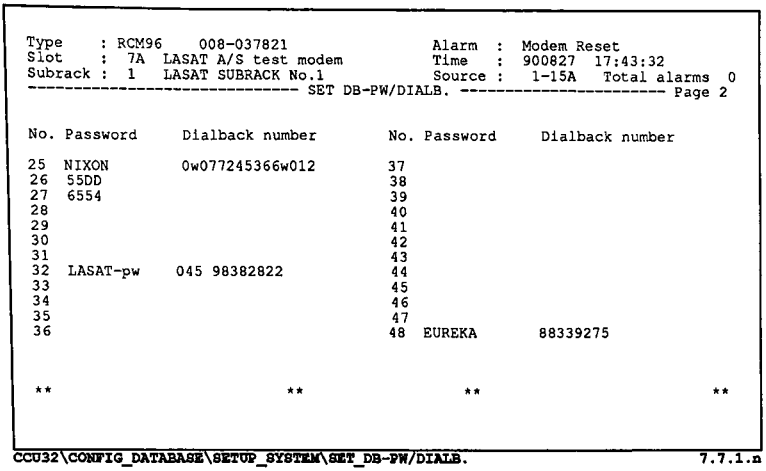
CCU32\CONFIG_DATABASE\SETUP_SYSTEM 7.7

Active keys : hotkeys, 0-4, arrows, b, ESC and CR.



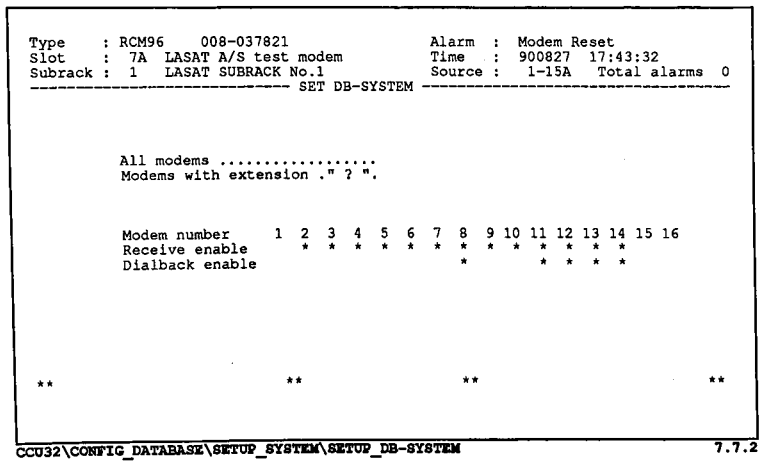
CCU32\CONFIG_DATABASE\SETUP_SYSTEM\SET_DB-PW/DIALB. 7.7.1

Active keys : hotkeys, ascii, arrows, n, p, ESC and CR.



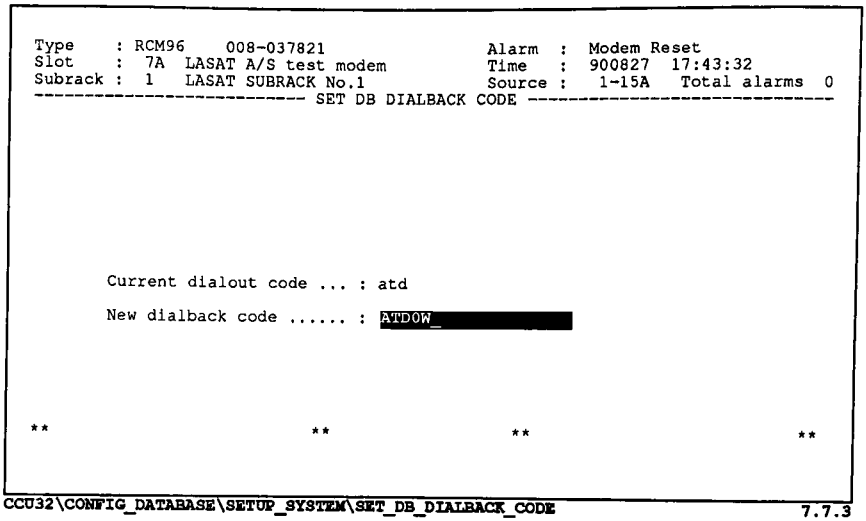
CCU32\CONFIG_DATABASE\SETUP_SYSTEM\SET_DB-PW/DIALB. 7.7.1.a

Active keys : hotkeys, ascii, arrows, n, p, ESC and CR.



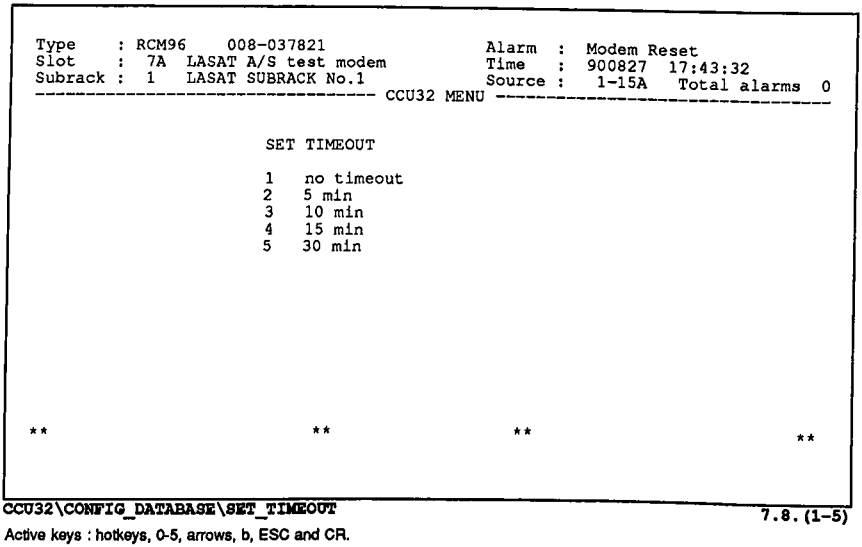
CCU32\CONFIG_DATABASE\SETUP_SYSTEM\SETUP_DB-SYSTEM 7.7.2

Active keys : hotkeys, arrows, +, -, *, /, ESC and CR.



CCU32\CONFIG_DATABASE\SETUP_SYSTEM\SET_DB_DIALBACK_CODE **7.7.3**

Active keys : hotkeys, arrows, +, -, *, /, ESC and CR.



CCU32\CONFIG_DATABASE\SET_TIMEOUT **7.8.(1-5)**

Active keys : hotkeys, 0-5, arrows, b, ESC and CR.

```
Type     : RCM96    008-037821                Alarm  :  Modem Reset
Slot     :  7A  LASAT A/S test modem          Time   :  900827  17:43:32
Subrack  :  1   LASAT SUBRACK No.1            Source :   1-15A   Total alarms  0
---------------------------------- HELP SCREEN ------------------------- Page 1


                                ESC : Return to top menu
                                  B : Return to last menu
                                  C : Clear alarm window
                                  H : Helpscreen
                                  N : Next Page
                                  P : Previus page
                                  O : Other page
                                  M : Modem select
                                  S : Subrack select
                                  U : Up arrow
                                  D : Down arrow
                                  L : Left arrow
                                  R : Right arrow
                                  T : Test results


**                          **                  **                          **
```

CCU32 HELP_SCREEN nr.1 <H>

Active keys : n, p and ESC.

```
Type     : RCM96    008-037821                Alarm  :  Modem Reset
Slot     :  7A  LASAT A/S test modem          Time   :  900827  17:43:32
Subrack  :  1   LASAT SUBRACK No.1            Source :   1-15A   Total alarms  0
---------------------------------- HELP SCREEN ------------------------- Page 2

: CONTROL             : OVERVIEW            : MONITORING MODEM  : CONFIG MODEM      :
: modem select        : status overview     : view status       : modem menu        :
: subrack select      : V24 overview        : view statistics   : talk through     :
: setup utils         : ID overview         : view config       : V24 talk through  :
: CCU32 HW/SW-id      : S/N overview        : view phone numb   : move config       :
:                     : rack overview       : dump statistics   :                   :
:                     :                     : clear statistics  :                   :

: CONFIG CCU32        : LOG OPTIONS         : CONFIG DATABASE   : exit              :
: password/dialb      : view alarm log      : disabled          :                   :
: modem pseudo/ext    : view event log      : no dialback       :                   :
: set nmc numb        : set alarm mask      : pool dialback     :                   :
: set busy            : log dump            : user dialback     :                   :
: SUBRACK INIT        :                     : LINE OPTION       :                   :
: SETUP RS232         :                     : DATABASE LOG      :                   :
: SETUP MODEM         :                     : SETUP SYSTEM      :                   :
: DUMP SETUP          :                     : SET TIMEOUT       :                   :
: SET AUTOCONFIG      :                     :                   :                   :
**                          **                  **                          **
```

CCU32 HELP_SCREEN nr.2 <H><N>

Active keys : n, p and ESC.