BLACK BOX ®

NETWORK SERVICES

Management Controller Card for the Data-Link 16 Modem Rack

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Contents

Introduction

Description

According to the composition of the bay of modems, several chassis can be managed by the master controller card. In this case, the other chassis are linked to the master controller by slave controller cards.

The management of the bay is easily done through a local supervision terminal or from a remote location via the public switched network and the master controller card's built-in modem.

This same modem also provides the remote alarm report. (See page 23).

This diagram summarizes the different possibilities of utilization:
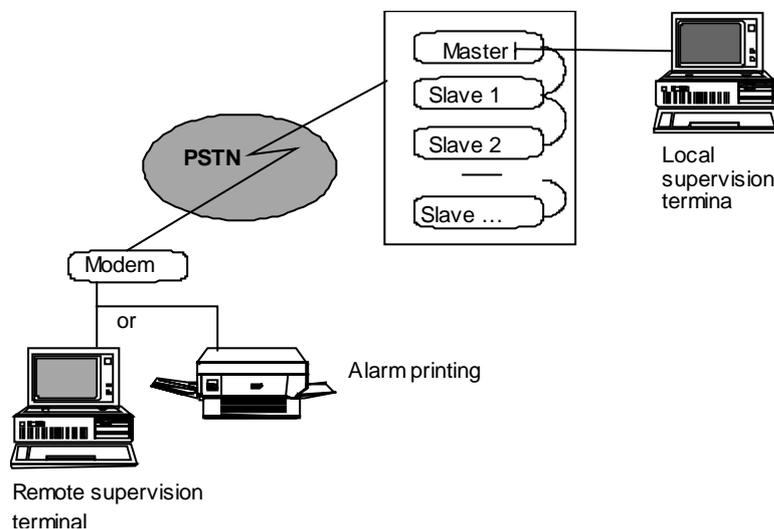
Master controller card (MDU906-R2)

The master controller card is the intelligent part of the Modem Management System - MMS. Based on a microprocessor and its firmware and memory, this card provides an interface to the modem cards fitted in the chassis

The front panel two Indicators:

♦ The green LED indicates the presence of the power supply 5 VDC,
♦ The alight or blinking red LED indicates the execution of the internal self test. In a normal operation, this LED must be extinguished.

A push button, accessible by means of a tip of pen, allows the controller card to be completely re-set.

A local supervision terminal or microcomputer in VT100 emulation, configured to 19200 bps or 9600 bps, 8 data bits, noparity, without flow control, can be connected to the DB25M connector .

The choice of the junction speed is set via the jumper W1. (The factory configuration is 19200bps).
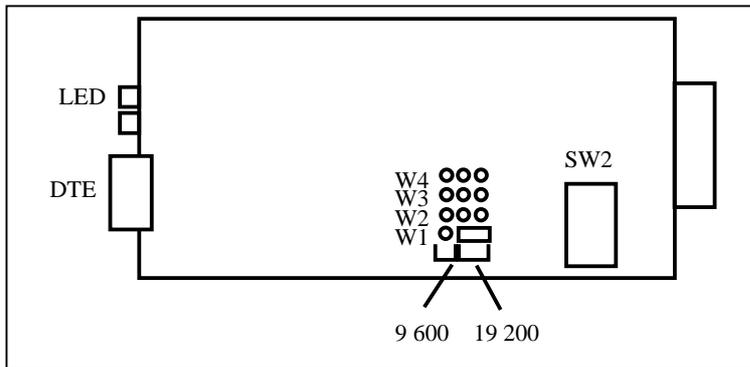
This card also includes a built-in V22Bis modem (2400 bps) for remote control or alarm reporting from / to a remote location.

The master controller card also has a dipswitch in SW2: make sure that all switches are in the OFF position.

Slave controller card (MDU907C-R2)

The slave controller card is a master controller card depopulated of master specific components. It presents the same LEDs and push buttons for re-initialisation.

You can configure the DIP switces in SW2 accordinng to the position of the chassis in the chain – See the table over leaf:

SALES: 0118 965 5100

Chassis	Function	Position of SW2 switches			
		(4)	(3)	(2)	(1)
1	Master	Off	Off	Off	Off
2	Slave	Off	Off	Off	**On**
3	Slave	Off	Off	**On**	**Off**
4	Slave	Off	Off	**On**	**On**
5	Slave	Off	**On**	**Off**	**Off**
6	Slave	Off	**On**	**Off**	**On**
7	Slave	Off	**On**	**On**	**Off**
8	Slave	Off	**On**	**On**	**On**
9	Slave	**On**	**Off**	**Off**	**Off**
10	Slave	**On**	**Off**	**Off**	**On**
11	Slave	**On**	**Off**	**On**	**Off**
12	Slave	**On**	**Off**	**On**	**On**
13	Slave	**On**	**On**	**Off**	**Off**
14	Slave	**On**	**On**	**Off**	**On**
15	Slave	**On**	**On**	**On**	**Off**
16	Slave	**On**	**On**	**On**	**On**

Fron panel

4 3 2 1   SW2

Off
On
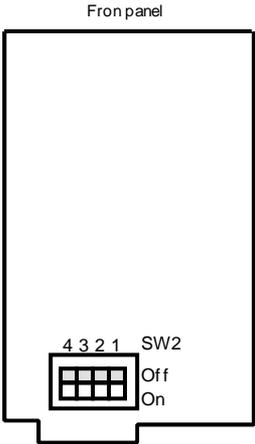
The slave controller card communicates with a main controller (MDU906C-R2) via the inter-chassis link.

The chaining of the different chassis is done through a straight RJ45 cable to the Shelves In / Shelf out located on the rear panel of the chassis as indicated on the following diagram:

In   **Master**
Out

In   **Slave**
Out

In   **Slave**
Out
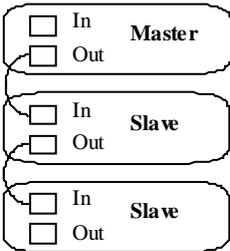
Operating mode

General

The main controller card can be controlled both loacally and remotely.

A local terminal or microcomputer will need to be running terminal emulation software, wires corresponding to pins 2, 3 and 7 are sufficient.

Parameters of configuration are as follows:

Parameters	Local terminal	Remote control via internal modem
Speed	19200 bps	2400 bps (V22bis - V42 / V42Bis)
Nbre data bits	8	8
Parity	None	None
Stop bit	1	1
Flow control	None	None

NOTE: The master controller manages the modem cards. Cards are referred to as channel cards, devices, or ports in the controller's menus and in the remainder of this manual.
Every card is tagged in the controller's menus by its number of chassis «SHELF» (1 for the chassis of the master controller) and by its number 1 to 16 of «SLOT» in the chassis.
The controller can manage a maximum of 256 channels, that is 16 chassis with 16 cards modems.

Password:

Once the chassis is powered on and the master controller and its terminal have started, the controller initiates a sesion by asking for a password: the message PASSWORD? appears on the screen. The password can contain a maximum of 8 characters with recognition of lower-case letters and capitals, finished by the code carriage return (return).

At the very first use, the password is empty and just a carriage return should be entered. Refer to the paragraph 2.3 n°6 for the definition and the management of passwords. The controller card allows 3 attempts for the entrance of the password within 30 seconds.

SALES: 0118 965 5100

Main menu:

If the password is correct, striking the carriage return displays the following main menu:

```
      29 Aug 1997      Data-Link Rack              07:52
M


                     Main Menu

        1)  Device Configuration
        2)  Alarm Monitoring
        3)  Diagnostics and Device Commands
        4)  Device Inventory
        5)  Cluster Connection Status
        6)  System Configuration
_____

        Type your choice [ 1 -- 6 ] and press RETURN
```

The operator chooses an option by hitting the number corresponding to the desired function then validating by a carriage return. The main menu allows the user to reach the following functions:

1. Device configuration :
After having selected a slot in a determined chassis this allows you to: read, edit, modify and to save the configuration of the modem. This menu also permits to recopy this configuration on a single or a range of modems of the bay.

2. Alarm management :
Displays the alarms appeared since the the chassis was powered on and describes the cause of alarm.

3. Diagnostics and commands:
This menu displays the state of connection of a card's data. A field to the bottom of the screen permits to converse with the modem (consignment of certain commands of AT type).

4. Inventory of the bay:
This menu lists all recognised cards. it is possible to identify each device by a circuit name.

5. Cluster connection status:
Displays the state of every device of the bay.

6. System configuration:
Saves the specific parameters of the bay: name of the site, time and the date of adjustement of the real time clock, activation of the remote alarm report and password definitions.

System configuration

Specific site parameters entered at the very first use of the ASM system: real time adjustment, name of the site, password assignements. (From the main menu, to hit 6 <RC>). The system menu is presented as follows:

```
   29 Aug 1997        Data-Link Rack                 07:52
M.6
                   System Settings
   1)  Set the time
   2)  Set the date
   3)  Set the Site Name    BB Test centre
   4)  Set the alarm reporting phone number   01189 655200
   5)  Remote alarm reporting is disabled.
   6)  Password Assignment
   7)  Firmware Management


   P)  Previous menu page
_____

        Type your choice [ 1 -- 7, P ] and press RETURN
```

1. Time adjustment:
The internal clock of the controller card can be set according to the HH:MM:SS syntax where:

HH represents the hours
MM represents minutes.
SS represents seconds.

2. Date adjustment:
The syntax for the date is DD MMM YYYY where:

DD represents the day (1 to 31).
MMM represents the month (JAN, FEB, MAR, APR, JUN, JUL, AUG, SEP, OCT, NOV, DEC).
YYYY represents the year – four digits must be entered.

3. Name of the site:
Identify the name of the site where is the bay of modems. It is a string of up to 30 characters. This identification message will be given out systematically when the remote alarm report is activated.

4. Telephone number for remote alarm reporting:
Stores the telephone number (up to 20 characters) that will be dialled to automatically report every alarm. If this function is activated, the master controller will transmit the alarm message and the name of the site via the internal modem.

5. Activation / Deactivation of the remote alarm report:
This command 5 <RC> activates (enables) or deactivates (disables) the remote alarm report.
6. Definition of passwords:
The controller card can manage seven different passwords with three levels of security.

The password menu is presented as follows:

```
    29 Aug 1997        Data-Link Rack                 07:52

M.6.6
                  Password Assignment Menu

           1)  System manager
           2)    Maintenance

           3)      Monitor 1
           4)      Monitor 2
           5)      Monitor 3
           6)      Monitor 4
           7)      Monitor 5

           8)    Auto-logout time limit  0

           P)   Previous menu page
    _____


                Type your choice [ 1 -- 8, P ] and press RETURN
```

Each password can contain a maximum of 8 characters with recognition of lower-case letters and capitals. The highest level of access corresponds to the supervisor password; it allows all access to the controller card, the management of alarms, modification of information and the configuration of modems as well as the definition of passwords. The intermediate password (Maintenance) imposes restrictions of access to the following functions:
MENU 1: reading only of the device configuration
MENU 2: All rights (identical at the level supervision)
MENU 3: AT command inhibited
MENU 4: Inventory and assignment of a device identification allowed
MENU 5: forcing a device in «busy out» is not allowed
MENU 6: only reading of parameters and firmware revisions

At the lower level, operator 1 to 5 passwords impose the following supplementary restrictions (in relation to the maintenance level):

MENU 1: no access at all to the device configuration
MENU 2: display only of alarms
MENU 3: Identical to the maintenance level
MENU 4: Identical to the maintenance level

TECHNICAL: 0118 965 6000

MENU 5: Identical to the maintenance level
MENU 6: Identical to the maintenance level

Menus which access right is insufficient are not displayed.

If a password is defined, the master controller comes back to the initial menu of password requests when the inactivity delay is reached. To end a session and come back to this boot menu, (log out) hit <ESC><ESC> keys from any menu.

Device inventory

Hit 4 <RC> from the main menu.

This menu displays the inventory of the bay, slot by slot. In order to identify links, it is possible to select every channel by circuit name, which is a string of up to 16 characters - hit A to assign an identification to a circuit.

This screen also allows you to visualize the chassis of the modem management system connected to the master controller by their slave controller card. See the line «These shelves are active». The value 1 is reserved for the maser controller and the other numbers are the addresses of the slave chassis's.

Device configuration

This menu is reached by hitting 1 <RC> from the main menu. The following configuration screen appears.

```
   22 Sep 1997          Data-Link Rack          09:46
M.1
             Configuration Utilities for Device Model MDU903C
                 Shelf 01:Slot 15, Circuit ID LIAISON TS12


        1)  Edit the device configuration
        3)  Edit the device's phone directory
        5)  Edit the device's security profile

        R)   Remote device access
        S)   select Source (Shelf:Slot)
        P)   Previous menu page
        _____

          Type your choice [ 1, 3, 5, R, S, P ] and press RETURN
        _____

```

Changing Configuration:

The procedure is as follows:

1) Select the card to configure by defining its address by S <RC>: enter the number of the chassis and of the slot.
2) Hit 1 <RC> to edit the modem's configurations.
3) The following device configuration menu 1.1 appears as follows:

```
   15 Sep 1997          Data-Link Rack                13:35
M.1.1
            Configuration Options for Device Model MDU903C

       1)VISUAL DISPLAY            6)  LEASE LINE
       2)INTERFACE SIGNALS         7)  FLOW CONTROL
       3)DIALING AND ANSWERING     8)  BREAK HANDLING
       4)ONLINE                    9)  ERROR CORRECTION
       5)FORMAT / DATA RATE        10)  BUSY-OUT AND TEST

                  P)  Previous menu page
_____
          Type your choice [ 1 -- 10, P ] and press RETURN
_____

```

These are groups of device parameters. Hit the associated number to access the actual parameters.
Refer to the AT command reference manual of the device to get all information on any command.

All parameters are displayed with their name, their current value and the associated AT command. The value of a parameter is easily changed by selecting the number of the command followed by a carriage return. The menu will then either display the next value of the parameter if the command has a limited number of values, or prompt for the literal value.

Example of parameter configuration menu:

```
 22 Sep 1997          Data-Link Rack          09:50
M.1.1.1a
         VISUAL DISPLAY Options for Device Model MDU903C

     OPTION                        STATUS      'AT' parameter

      1) COMMAND ECHO              ON          E1
      2) QUIET                     OFF         Q0
      3) RESULT TYPE                LONG       V1
      4) CALL PROGRESS             4           X4
      5) CONNECT MSG AT            CARRIER     *C0
      6) SPEED MSG IS              MODEM       *N0
      7) EXTENDED MSGS             ON          *V1

        M)  More options          P)  Previous menu page
   _____
     Type your choice [ 1 -- 7, M, P ] and press RETURN
```

If a group of parameters is to large to fit in a single screen then other parameters can be accessed by striking the 'M' <RC> keys

```
 22 Sep 1997          Data-Link Rack          09:52
M.1.1.1b
         VISUAL DISPLAY Options for Device Model
MDU903C

        OPTION          STATUS       'AT' parameter

    1)  <CR> CHAR        ^M           S3=13
    2)  <LF> CHAR        ^J           S4=10
    3)  <BS> CHAR        ^H           S5=8

  M)  More options          P)  Previous menu page
```

Once the device has been configured, hit P <RC> to come back to the previous menu. Note the page of the menu is modified (line 2 of the menu): Write & Save the edited configuration.

```
 22 Sep 1997            Data-Link Rack            09:53
M.1
            Configuration Utilities for Device Model MDU903C
             Shelf 01:Slot 15, Circuit ID LIAISON TS12


    1)  Edit the device configuration
    2)  Write & Save the edited configuration
    3)  Edit the device's phone directory

    5)  Edit the device's security profile

    R)  Remote device access
    S)  select Source (Shelf:Slot)
    P)  Previous menu page


    Type your choice [ 1, 2, 3, 5, R, S, P ] and press RETURN

```

The menu proposes to either write the configuration on a single device or on a range of modems. It is possible to unselect one or several devices in the range.

```
  22 Sep 1997            Data-Link Rack            09:55
M.1.2.2
+----------------- Selected as Destination for Configuration ----      +
| Shelf: Slots ----------------------  Shelf: Slots -------------------     |
| 01 : NONE                      09 : NONE                 |
| 02 : NONE                      10 : NONE                 |
| 03 : NONE                      11 : NONE                 |
| 04 : NONE                      12 : NONE                 |
| 05 : NONE                      13 : NONE                 |
| 06 : NONE                      14 : NONE                 |
| 07 : NONE                      15 : NONE                 |
| 08 : NONE                      16 : NONE                 |
+---------------------------------------------------------------      +

  S)  Select Shelf:Slot        Q)  Select a contiguous range
  D)  Deselect Shelf:Slot      R)  Deselect a contiguous range
  C)  Clear all selected       G)  GO (run the batch)

  P)  Previous menu - do not run the batch

    Type your choice [ S, D, C, Q, R, G, P ] and press RETURN

```

Every card to be configured for each chassis is listed.

Adding or removing cards from the list is achieved:
♦ By hitting S for to add or D to remove,
♦ By hitting Q add or R to remove a range of cards,
♦ By hitting C to remove all cards.

Hit G (go) to start saving the configuration. A summary of the cards being configured appears. States of writing of every channel are displayed and are passing by «+» for writing in progress and «D» when the operation is finished. Wait for the display of «D» on all channels before leaving this screen.

Editing the phone directory:

Telephone numbers and associated name, password and options for configuration and security can be entered in this menu.

```
    15 Sep 1997            Data-Link Rack                 13:16
M.1.3
                Phone List for Circuit EPTN MODEM 2
                Shelf 1    Slot 3     Device MDU903C

    1) NAME:          JOHN
    2) Password:      ETK1J
    3) Phone Number: 1234567890
    4) Link:          NONE
    5) Configuration: DEFAULT
    6) Auto-initiate?  YES        9) Call back access?   NO
    7) May dial out?  NO         10) Secured location?   NO
    8) Name code access? NO      11) Password transmit? NO

    T) tag/untag This record      A) tag All records
    P) return to Previous screen  U) Untag all records

        Type your choice [ 1 - 11, T, A, U, P ] and press RETURN
        '>' Next record  '<' Previous record  'J' Jump to record   Editing record: 0
```

Editing security parameters:

Security options can be entered from this menu: supervisor and operator passwords, Answer back answer security string and options.

```
   15 Sep 1997              Data-Link Rack                13:19
M.1.5
                  Security Definitions for Circuit EPTN MODEM 2
                  Shelf 1    Slot 3     Device MDU903C

   1)  Answerback:

   2)  Supervisor Passwork:
   3)  Operator Password:

   Security Options:                 Password Options:
   4)  AT Commands  OFF               9) Prompts          ON
   5)  Non-vol write   OFF           10) Entry attempts   1 TRY
   6)  Answer          OFF           11) Case sensitive   OFF
   7)  Down line load OFF            12) After callback   OFF
   8)  Rack control     OFF

   P) return to Previous screen

      Type your choice [ 1 - 12, P ] and press RETURN
```

These options can be saved into the modem's non-volatile memory when coming back to the previous menu by hitting P.

Remote management:

A modem remotely connected to a card modem in the bay can be managed from the Data-Link management controller by hitting R from the configuration menu. For dial up connections, the remote modem dial number must be entered. The access is immediate for a leased line connection.

The remote modem can be configured by using the controller's menus.

The remote modem must be either an MDU903C or MDU904C modem.

Alarm management

The alarm management menu displays the list of modems, their location, the hour and the date of the event that provoked an alarm. The following events correspond to an alarm:

Newly powered	:	modem newly powered up
Failed self test	:	Bad modem self-test
Event overflow	:	Saturation of the alarm memory
UADBU active	:	Modem in leased line dial backup
UADBU Inactive	:	Carrier loss in leased line dial backup
LL Active	:	modem connected in leased line
LL failed	:	Carrier loss in leased line
No dial tone	:	No dial tone detected before dialling
Local security	:	Local violation of security
Answer security	:	Violation of security in answer mode
Download security	:	Violation of security in remote control
In RDL from remote	:	Answer to a remote digital loop request
LAPM loop began	:	Starting a LAPM remote digital loop
Ended test	:	End of test
Reset by ATZ	:	ATZ reset command received
user change config	:	Non volatile mem was changed by the user – DTE side
Modem busy	:	Modem passed in busy out state
Device trap	:	Software reset
Device watchdog expired:		Hardware reset
Inactive	:	Device does not respond to the rack controller

Power supply cards can also provoke the following alarms:

Failed	:	Power supply voltage passed under a critical threshold
Restored	:	Power supply voltage come back to a correct value

The exam of alarm problems and a corrective action can be achieved while using the choice 3 of the main menu for diagnostics and modem commands.

Active alarms

Any new alarm is active, and provokes:
♦ The blinking display of the ALARM message on the first line of all controller screen.
♦ The activation of the alarm relay that can drive external equipment - light, siren…
♦ The report of the alarm by the internal modem of the controller card if this option has been activated.

```
   29 Aug 1997        ALARM        Data-Link Rack          07:52
M.2.1
                    Active Alarm Manager

   1) Retire Alarm              2) Erase Alarm
   P) Previous menu page        Z) ZAP (erase all) alarms

        Type your choice [ 1, 2, Z, P ] and press RETURN
  [To move in list: Up/Down arrows jump one row -- Left/Right jump one page]
     DATE    TIME    SHELF SLOT   Circuit ID    Alarm type

>  29 Aug 1997  11:11:30  01  --   POWER SUPPLY 2   FAILED

 Alarm summary: Active = 1    Retired = 0    Available = 271
```

These conditions are maintained until:

The alarm is erased (1. Manage Active Alarm and 2. Erase Alarm)

All alarms are erased (1. Manage Active Alarm and 2. ZAP Alarms)

The alarm is retired (1. Manage Active Alarm 1. Retire Alarm) and transferred in the area of acknowledged alarms and memorized for an ulterior diagnostic.

Retired alarms:

Alarms are stored in non-volatile memory for future analysis and to help diagnose the alarm cause.

Alarm actions are suspended once acknowledged by the operator (action of the relay, blinking message and remote alarm reporting through the internal modem). They can be displayed by the menu option:

2. Manage Retired Alarms
The cursor can move in the alarm list.

Alarms can be erased to free some memory space in the alarm list.

The alarm Log can hold up to 272 events. When the log is full, extra alarms generate the OVER FLOW message on the first line of the screen. The oldest alarm will be erased and replaced by the new alarm, regardless of whether it is active or stored.

The last line of the Alarm Management screen provides a summary of events in the log. The summary shows how many active and stored events are in the log, and how many log entries remain available.

Device control and diagnostics

The activity and status of a device can be displayed from one of these menus.

```
 22 Sep 1997              Data-Link Rack              10:06
M.3
          Diagnostic Tools for Device Model MDU903C
          Shelf 01   Slot 15   Circuit ID  Connection TS12

  1)  Connection Status Display
  2)  Error Correction Status Display
  3)  Leased Line Statistics Display
  4)  Dial Line Statistics Display

  E)  Change Shelf / Extender
  S)  Change Slot
  P)  Previous menu page
  ─────────────────────────────────────────────────────
     Enter [ 1 - 4, S, E, P ] and press RETURN
```

Connection status:

Menu option 1 displays the connection status of the device located in the selected slot.
The screen is divided into six areas.
The PRODUCT TYP window indicates the type of modem and its location in the bay.
The MODEM STATUS window indicates the state of the modem's connections. The
ONLINE STATUS window lists the connection parameters of the modem. (Note: that an idle
modem has a null signal quality and a minimum received level (Receive level = -60)).

```
   15 Sep 1997       ALARM    AJ SmartRack              17:59
M.3.1
 ┌─────────────┐  ┌───────────────────┐  ┌─────────────────┐
 │ MODEM STATUS│  │   ONLINE STATUS   │  │     ALARMS      │
 │             │  │                   │  │                 │
 │On hook      │  │Signal Quality  0  │  │                 │
 │MI/MIC off   │  │Receive level - 60 │  │                 │
 │A/A1 open    │  │Connect time  00:00:00│                │
 │V42 inactive │  │Last dialed        │  │                 │
 │Off line     │  │                   │  │                 │
 │Originate    │  ├────────────┬──────┤  │                 │
 │UADBU inactive│ │EIA INPUTS  │EIA OUTPUTS│            │
 │SCM disabled │  │            │       │  │                 │
 │             │  │DTR    OFF  │DSR    ON │ │               │
 ├─────────────┤  │RTS    OFF  │CD     OFF│ │               │
 │ PRODUCT TYPE│  │Dial   OFF  │CTS    ON │ │               │
 │             │  │Speed  OFF  │Dial   OFF│ │               │
 │Type: 1445 STR│ │LAL    OFF  │Speed  ON │ │               │
 │Version : 5  │  │RDL    OFF  │SQ     OFF│ │               │
 │Shlf:Slot.Prt│  │            │TEST   OFF│ │               │
 │   01:01.1   │  │            │RI     OFF│ └───────────────┘
 └─────────────┘  └────────────┴──────┘

      Enter  A  (send 'AT' command) or  P  (Previous menu page)  _
```

When the modem is connected, these indicators provide the last levels and received signal quality as well as the connection duration and the last dialled number.

The EIA INPUT/OUTPUT windows indicate the DTE interface signal status. Examination of these signals help to provide correct connections between the selected device and the attached terminal equipment (DTE).

The ALARM window shows alarms associated with the selected device. These alarms are automatically included as events in the alarm log.

V42 statistics:

In the same way, this menu displays V42 protocol statistics, including the number of characters, data frames and protocol frames, and actual throughput for transmission in each direction.

Connection statistics:

Menus 3 (Leased Line) and 4 (Dial-up) display the connection statistics on telephone lines. They show the duration of connections and idle states, the numbers of renegotiations, and of training and connection time percentages.

Cluster connection status

A master controller card can manage up to 256 devices, which correspond to a maximum of 16 chassis's each fully equipped with 16 single device cards. The cluster connection status menu provides, on a single screen, the status of all cards under control of the management system. Device status is updated in real time.

The screen displays the device status in clear, easy to understand messages:

```
 22 Sep 1997                 Data-Link Rack                10:14
M.5---------------------- Cluster Connection Status --------------------------------+
|  slots ->  01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16      |
| Shelf 01    .   .   .   I   .   .   .   .   .   .   .   .   .   .   I   .        |
| Shelf 02    .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .        |
| Shelf 03    .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .        |
| Shelf 04    .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .        |
| Shelf 05    .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .        |
| Shelf 06    .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .        |
| Shelf 07    .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .        |
| Shelf 08    .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .        |
| Shelf 09    .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .        |
| Shelf 10    .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .        |
| Shelf 11    .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .        |
| Shelf 12    .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .        |
| Shelf 13    .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .        |
| Shelf 14    .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .        |
| Shelf 15    .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .        |
| Shelf 16    .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .        |
| LEGEND: I = Idle, L = LL active, # = UADBU active, F = LL failed   |
----- D = Dial active, B = Busied, T = testing, X = bad, . = not reporting ---+


        Choices: B) make Busy,  U) Unbusy,  P) Previous Menu
         Type your choice [ B, U, P ] and press RETURN
```

Busy Out:

This function only applies to modem versions MDU903C, MDU903, MDU904.

This option requires the presence of an extra relay (Optional) on the modem board. Refer to the installation manual of the modem.

The modem holds the line in the following cases:
♦ Modem is not under power,
♦ Bad self-test at power up,
♦ Impossible to answer 5 successive rings,
♦ N successive unsuccessful synchronisation attempts in answer mode (N is set by the S20 register).

The last 3 cases are controlled by commands: AT*H1 (activation of busy out) and ATS20=n (n=0 by default)
.
The Menu's B option forces a modem (or group of modems) to hold the line – busy out. Incoming calls will be directed to other available modems as the busy-out modems will appear to be engaged.

The cursor can be moved by using the arrow keys, to see the modem location and it's identification string.

Remote access

The master controller card has an integral modem, which allows remote alarm reporting and remote access to the management system. To enable this feature, simply connect the modem line port on the controller card to a standard telephone socket (PSTN).

Remote alarm report

To activate this function, the telephone number of the remote site must be entered in the system configuration menu (parameter 4) and the function must be validated (parameter 5). See page 10.

At the remote site a V22bis compatible modem should be installed, ready to answer the alarm call. A screen or printer should be connected to the modem ready to display/print the alarm message transmitted from the master controller card.

Error correction, data compression (V42/V42bis) and flow control protocols may be used to support terminal/printer speeds greater than 2400bps.

Any alarm will cause the master controller modem to dial the stored number. Alarm messages are transmitted in a plain ASCII text format (compatible with all terminals and printers). The alarm message contains:
- The name of the calling site
- Every alarm since the last call. Each alarm is displayed/printed on a new line.

The controller card will disconnect the call after transmitting the alarm message.

Remote control

This function is always active. The modem built into the master controller card is always ready to answer an incoming call.
A VT100 compatible terminal (or PC emulation) and V22bis modem is used to make the remote management call. V42 error compression and V42bis data compression must be active on the calling modem.

The terminal/PC must be set to operate at 9600 bps or 19200 bps with flow control ON.

The telephone number, to which the master controller card is connected, must be dialled (usually by an ATDTxx command.). The master controller's menus are displayed as if the terminal was directly attached. At the end the remote management session, the operator must log off and disconnect the call by entering <ESC> <ESC> (log out and hang on). During a remote management session, local management access is inhibited.

Appendix A: Diagram of wiring

Wiring diagram - Controller card front panel DB 25 connector (ADMIN)

Pinouts as follows:

Pin	Name	Function
1	GND	Mechanical ground
2	TXD	Transmit data
3	RXD	Receive data
4-20	RTS	Ready to send
6	DSR	Data set ready
7	S.GND	Signal Ground
15	TXDLAN2	SERVER PROXI
24	RXDLAN2	SERVER PROXI

A cable with pins 2, 3 and 7 will operate where control signalling is not required.

SALES: 0118 965 5100