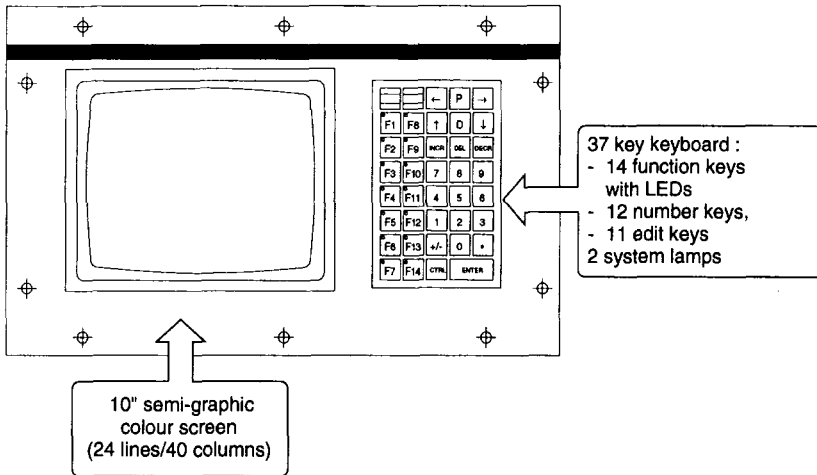## 4.1   Summary of operation

The XBT-VM is a compact screen terminal comprising a semi-graphic colour screen and a keyboard composed of function keys with LEDs, numerical keys and service keys.

As the XBT-VA terminal, it is intended to be used as an operator dialogue station and for the maintenance of a production control system. It can also be connected locally to a printer.

37 key keyboard :
- 14 function keys with LEDs
- 12 number keys,
- 11 edit keys
2 system lamps

10" semi-graphic colour screen (24 lines/40 columns)

• **General**

XBT-L900 is especially designed to speed the development of applications for XBT-VM terminals.

An XBT-VM application offers the operator three types of function :

        - a surveillance application
The variables are scanned automatically, independently of the displayed application pages (40 variables per station, a maximum of 10 stations). Indication of changes of state with hard copy to a printer enable this function to be used for centralising faults in the applications.
        - accessing the PLCs Adjust mode
With the XBT-VM terminal, a list of TSX 7 variables and their format can be saved. This enables the operator to modify or force their status with no risk of error for control system operation.
        - operator dialogue application
The tree structure of these text and graphic pages enables the operator to follow the progress of the manufacturing process and react to its status.

Summary of operation

The application and these three functions are accessed from the screen pages. Application development consists of defining the necessary pages during their creation or retrieving them from another application and defining the links between the pages.
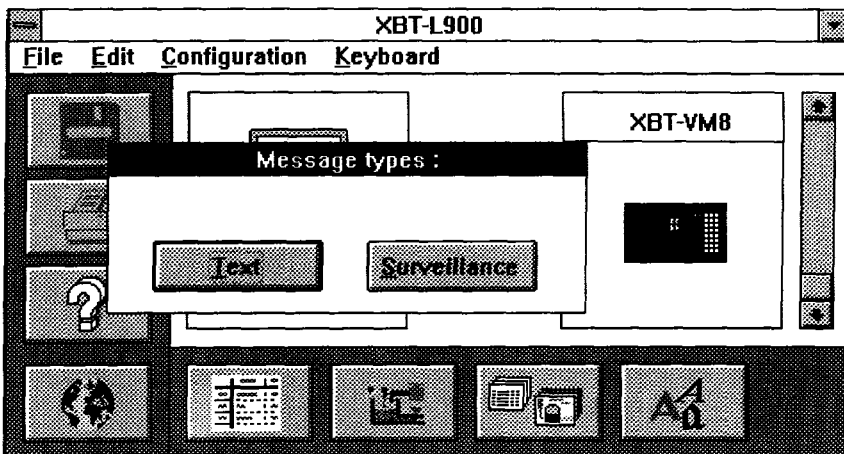
• Creating the pages

Creating the pages involves creating the files containing the different pages. These are associated during the creation of the application pages script.
The three types of pages used can be created :

- text page (message list)
- surveillance page (message list)
- semi-graphic page

After creating the applications directory, creation of the text or surveillance pages is accessed by clicking on the "message list" icon of the main XBT-L900 screen, and choosing between text or surveillance pages.

These pages are created by completing the associated message list and assigning the various message variables.

Semi-graphic pages are created using the software graphic editor.
The XBT-VM terminal also offers the user the possibility of creating a specia character font set so that he can create his own symbols
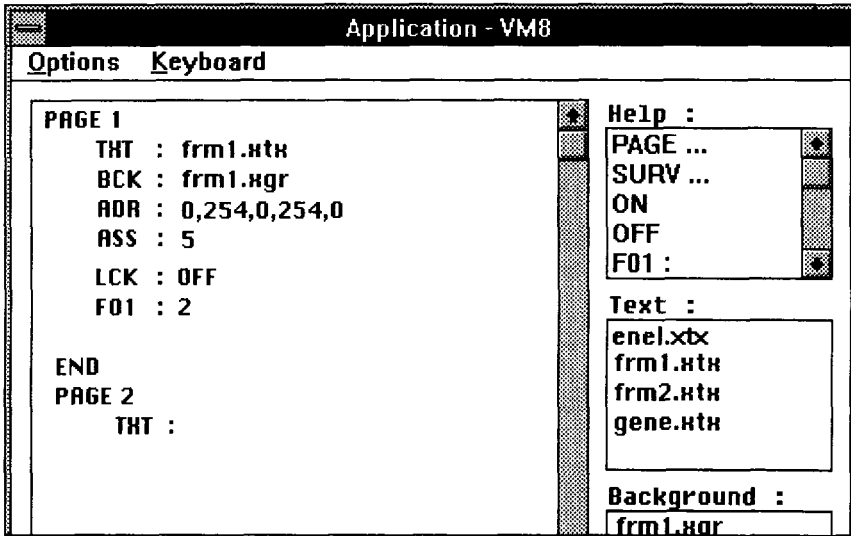All functions concerning the creation of text and graphic pages are described in th user guide "Printing messages with XBT-L900" (Section 4)

Summary of operation

• Application script

After the creation of the various text and graphic pages, these pages are associated to create the application. The association of pages is done in the application script. The first operation involves assigning the various text, surveillance and graphic pages to the application script.

```
┌──────────────────────────────────────────────────────────┐
│                    Application - VM8                     │
├──────────────────────────────────────────────────────────┤
│ Options   Keyboard                                       │
│ ┌──────────────────────┐  ┌──────────────────────────┐  │
│ │ PAGE 1               │  │ Help :                   │  │
│ │    THT : frm1.Htx    │  │ PAGE ...                 │  │
│ │    BCK : frm1.xgr    │  │ SURV ...                 │  │
│ │    ADR : 0,254,0,254,0│  │ ON                       │  │
│ │    ASS : 5           │  │ OFF                       │  │
│ │    LCK : OFF         │  │ F01 :                    │  │
│ │    F01 : 2           │  │ Text :                   │  │
│ │                      │  │ enel.xtx                 │  │
│ │ END                  │  │ frm1.Htx                 │  │
│ │ PAGE 2               │  │ frm2.Htx                 │  │
│ │    THT :             │  │ gene.Htx                 │  │
│ │                      │  │                          │  │
│ │                      │  │ Background :             │  │
│ │                      │  │ frm1.xgr                 │  │
│ └──────────────────────┘  └──────────────────────────┘  │
└──────────────────────────────────────────────────────────┘
```

This application window enables the user to create or modify an existing application. Follow the simple instructions in the "Help" window to select the application pages and to associate them to each other.
The four basic instructions are :

- PAGE (Application page n°)
- SURV (Surveillance page n°)
- ON / OFF (Controlled access to the page)
- F0i (association to F0i function key)

These operations are described in the user guide "Printing messages with XBT-L900", Section 4.5 on programming screen terminals (pages 82 to 97).

4.2   Development using XBT-L900 software

• Method

To develop an application for an XBT-VM terminal, the following steps are implemented :

- create a special character font set (optional)
- create text pages
- create surveillance pages
- create graphic pages
- create application directory
- application script configuration
- definition of terminal configuration
- save the application
- print application dossier
- transfer to the terminal

For further details on using XBT-L900 to develop an application for an XBT-VM terminal, refer to the user guide "Printing messages with XBT-L900", section 4.4 to 4.6 on programming screen terminals.

• New application

Developing an application for an XBT-VM terminal using XBT-L900 V 1.3 is done in the same way as for an XBT-VA terminal using XBT-L900 V1.2.
The only differences are in operating mode configuration and the transfer mode and are explained in sections 4.3 and 4.4 of this manual.

• Retrieving an existing application created for an XBT-VA terminal
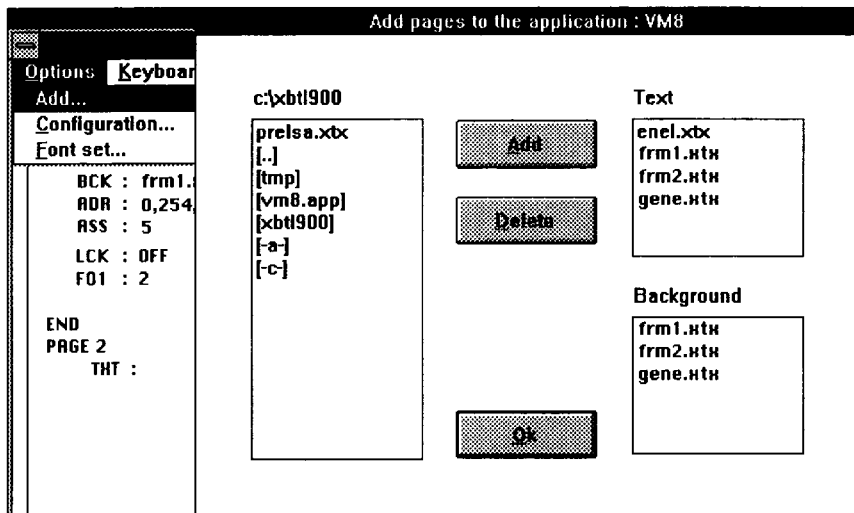
There are two different situations :

- retrieving application elements, ie semi-graphic or text pages and using them in a new application using XBT-L900 V 1.3 software.

- retrieving a complete application including the text and graphic pages, the application script and terminal configuration.

In the first situation the operation is simplified as XBT-L900 V 1.3 enables the pages selected to be copied to the new directory.

Development using XBT-L900 software

From within the application script window for the script being created, call up the "Add pages" window.

```
                    Add pages to the application : VM8

  Options  Keyboar
    Add...           c:\xbtl900              Text
    Configuration...  prelsa.xtx             enel.xtx
    Font set...       [..]         Add       frm1.xtx
                      [tmp]                   frm2.xtx
     BCK : frm1.      [vm8.app]               gene.xtx
     ADR : 0,254      [xbtl900]    Delete
     ASS : 5          [-a-]
                      [-c-]
     LCK : OFF
     F01 : 2                               Background
                                           frm1.xtx
    END                                    frm2.xtx
    PAGE 2                                 gene.xtx
       THT :
                                 Ok
```

The directory manager is used to find files corresponding to the text and graphic pages required.

Select disk	[-c-]
Select directory	[XBT2]
Move back one level on the directories	[..]

Select the required file and click on "Add". XBT-L900 then copies the file to the new application directory.

To import an entire application including text and graphic pages, application script and terminal configuration, use the directory manager to work on the relevant application directly.
The modifications are automatically saved by clicking on the diskette icon of the main XBT-L900 screen.

To create a new application with another name, while in an existing application, use the WINDOWS file to duplicate the directory containing the text and graphic page files and the application files (file _____.xap).

Warning : the directory containing the page files should have the same name as the application file with extension .APP.

4.3   Configuring the XBT-VM terminal

• **General**

The configuration enables the operating parameters of the terminal to be set for the operating phase. It can be implemented in two different ways :

- directly on the XBT-VM terminal
- using XBT-L900

When configuration is directly implemented on the XBT-VM terminal in "Configuration" mode, 13 sub-menus can be accessed.

		CONFIGURATION MODE	
		MAIN MENU	
F1	LANGUAGES	F8	CONFIG. APPLICATION
F2	PASSWORD	F9	TRANSFER APPLIC.
F3	OPERATING MODE	F10	DISPLAY APPLICATION
F4	STATUS TABLE	F11	SELF TESTS
F5	PRINTER	F12	ADJUST MENU
F6	CLOCK	F13	EVENTS DISPLAY
F7	EXTERNAL MONITOR	F14	

For further details on the direct configuration of the XBT-VM terminal, refer to the XBT-VM user guide "Compact colour terminal screen", ref. XBT XVM800E, Section 2.5, pages 29 to 37.
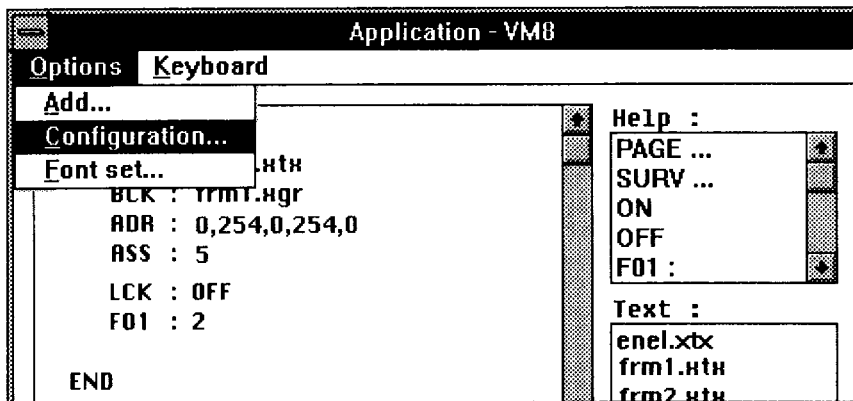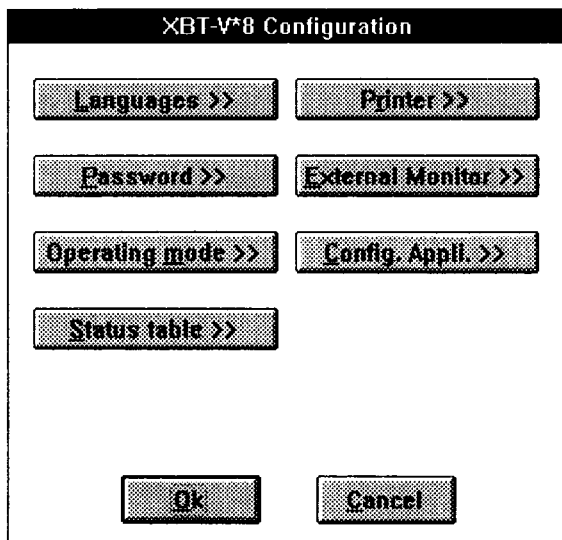
Configuring the XBT-VM terminal

Seven of these sub-menus can be configured with XBT-L900. They can be archived to disk and exported to the XBT-VM terminal.

The configuration window is accessed from the application window using the "Options" menu.

The configuration window has 7 sub-menus. Click on the name to access the corresponding window and enter information into the various fields of the active window in order to define the parameters.

The use of each parameter is described in further detail in the XBT-VM user guide "Compact colour screen terminal", ref. XBT XVM800E, Section 2.5, pages 29 to 37.

4   XBT-VM terminal support

Configuring the XBT-VM terminal

- **Size of requests**

One of the main updates in the XBT-VM terminal is the possibility of using of 128 byte object list requests.

This considerably improves the update time for variables during the display of an operator dialogue page.

Conditions of use :

- the XBT-VM terminal is linked to a PLC in Adjust or Uni-Telway mode
- the PLC selected to read or write the variables to is a TSX 7 series 40 or series 30 V 3.9.
- for communication between several PLCs they are linked by the Uni-Telway bus or the MAPWAY and TELWAY network
- all variables in the message list are contiguous

If these conditions are respected the update response time of the pages can be significantly improved

Example of the choice of variables

MESSAGE TEXT	TYPE	Variables Example 1	Variables Example 2
PRESSURE FAULT	D	B78	W17,0
PRESSURE = --	V	W10	W18
FAULT IN PUMP N°: -	V	W200	W19
PUMP SPEED = ----- TR/MN	V	W11	W20
CLOSE VALVE	D	B101	W17,1
OPEN DRAIN	D	B84	W17,2
CURRENT PHASE = -----	V	C4,V	W21
OPEN VALVE	V	B103	W17,3
DECREASE LEVEL	D	B117	W17,4
INCREASE LEVEL	V	W11,3	W17,5
TIME PASSED = ------- MN	V	T17,V	W22
NO OF PASSAGES = ---	V	C14,V	W23
REMAINING TIME = ------ MN	V	T8,V	W24
TEMPERATURE = --- °C.	V	W201	W25

In example 1 the variables are separated, in example 2 they are contiguous.
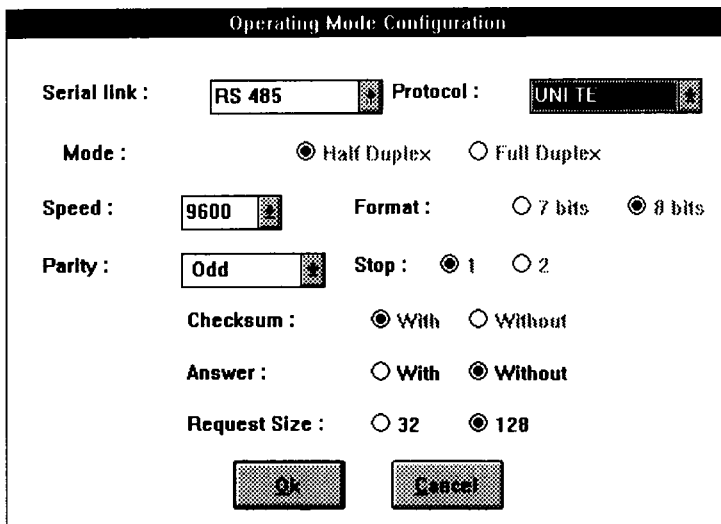
Configuring the XBT-VM terminal

In example 1 the terminal transmits 14 read requests to obtain all the variable values. In example 2 the XBT-VM terminal only sends one request to read objects to the PLC as all the values are contiguous.
(Request to read object, segment W, address of the first word 17, number of objects 9).
Thus the time gained is considerable and demand for the PLC communication kernel is reduced.

Configuration of the size of requests

After clicking on "Operating mode", the operating mode configuration window appears.

Selecting the size of requests is only possible in Uni-Telway or Adjust protocol. Two values can be chosen :

- 32 bytes (for TSX17 PLCs or Telway 7 network)
- 128 bytes (for TSX 7 series 40 PLCs, Uni-Telway bus or Mapway network

The default value is 32 bytes and if 128 bytes are configured, check that this value is consistent with the communication architecture.

The maximum number of consecutive words is limited to 15 or 60 when list of objects requests are used.

Configuring the XBT-VM terminal

• Application Configuration

The values of the two parameters are displayed in the "Application Configuration" window close to their respective horizontal scroll bars, used for adjusting their values.

```
┌─────────────────────────────────────────────────────────┐
│               Application configuration                  │
│                                               ┌───────┐  │
│                                               │   0   │  │
│  Variable Refresh :   ○ With  ⦿ Without   Surveill. mess. : ▓▓▓▓▓▓▓  │
│  Intensity :        ▓▓▓▓▓▓▓▓▓▓▓▓   ┌────┐                │
│                                    │ 50 │                │
│  Screen stand by : │None  ▓│    Display time :    ⦿ Yes  ○ No   │
│  Printing :        │None      ▓│     □ Type D  □ Type V  □ Type N,I,K │
│  Events logging :  │None      ▓│     □ Type D  □ Type V  □ Type N,I,K │
│                                                          │
│              ▓▓▓▓▓▓       ▓▓▓▓▓▓▓                        │
│              ▓ Ok ▓       ▓ Cancel ▓                     │
└─────────────────────────────────────────────────────────┘
```

"Intensity" is a parameter which controls the brightness of the screen. It varies from 0 to 100 % and its default value is 50.

"Surveillance of messages" is a parameter which enables the scan report of surveillance of messages (N) to be set.

Example :

If N = 10, the XBT-VM terminal implements an update of the surveillance page for every 10 updates of the application page. The value varies between 0 and 255, and the default value is set at 0 (there is no exchange unless the surveillance pages are programmed and the value is other than 0).

4.4   Transferring the application from PC -> XBT-VM (Export)

• Changes to XBT-L900 software from V 1.2 to V 1.3

In version V 1.2 of XBT-L900 the application and configuration had to be transferred separately, which meant two separate transfer operations.
Version V 1.3 enables XBT-VA and XBT-VM terminals to transfer the configuration only, or the configuration and application simultaneously, which means only one transfer operation. The application transfer also includes the configuration and this is implemented immediately.

	VERSION V 1.2	VERSION V 1.3
CONFIGURATION TRANSFER	CONFIGURATION ONLY	CONFIGURATION ONLY
APPLICATION TRANSFER	APPLICATION ONLY	APPLICATION AND CONFIGURATION (configuration, if selected by operator)

• Operating modes

To implement a configuration transfer only, perform the following operations :
- open the application window
- open the configuration window
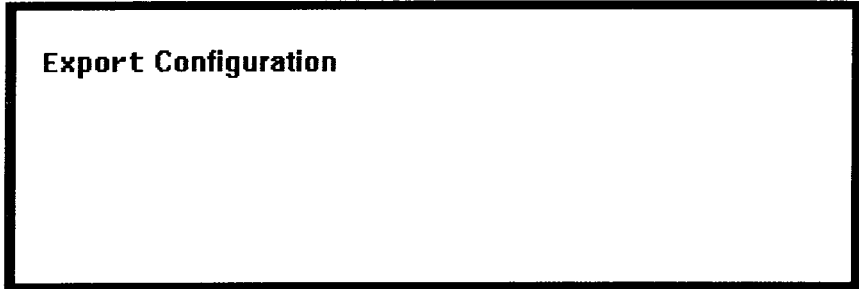- click on the transfer arrow or on Export in the keyboard menu
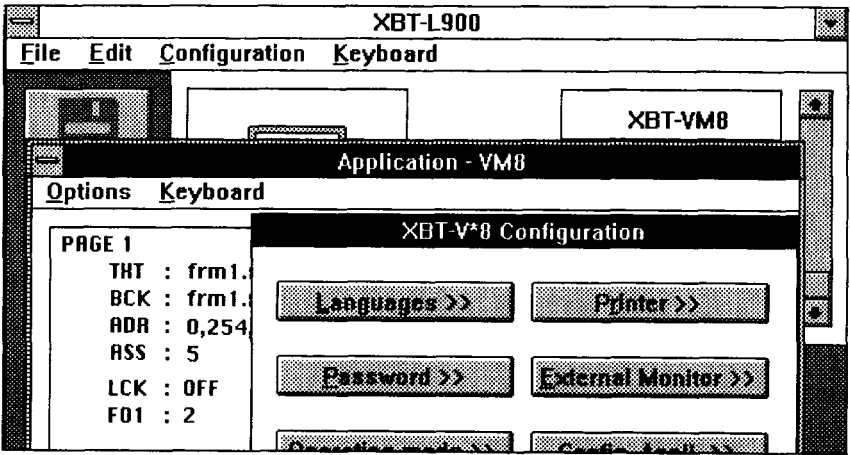
Transferring the application from PC -> XBT-VM

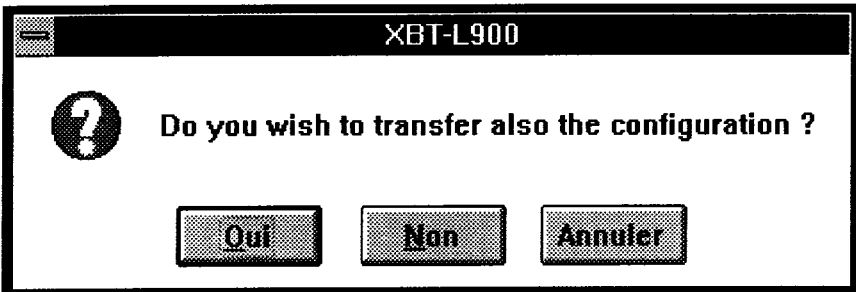During the transfer the "Export configuration" window appears to indicate the transfer. A help message if displayed if there is a fault or an error.

```
Export Configuration
```

Transferring the application

During transfer of the application the consistency of the script is checked before the application is transferred. The time this operation takes depends on the length of the script and enables simple errors to be avoided (forgetting the page number, association errors, file name errors, etc).

The application transfer is implemented simply by opening the "Application" window, and clicking on the "Export" arrow. A dialogue window then appears and enables the configuration to be transferred before the application or not at all.

```
XBT-L900

(?)  Do you wish to transfer also the configuration ?

     [ Oui ]   [ Non ]   [ Annuler ]
```

Transferring the application from PC -> XBT-VM

Responding "Yes" implements configuration transfer, then application transfer.
Responding "Cancel" implements a return to the script window with no transfer.
Responding "No" implements transfer of the application only, the former configuration
is still valid.

During the transfer data messages are displayed in the window to enable progression
of the operation to be followed.

The transfer can only be implemented correctly when communication between the
PC and the terminal is operating properly.

If a problem occurs in communicating with the XBT-VM terminal a window is
displayed indicating the cause of the problem.
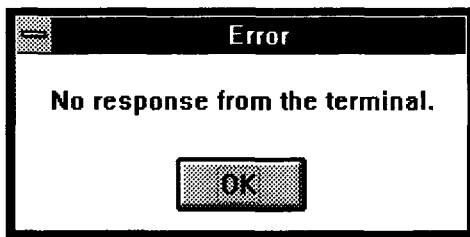
If this happens, the configuration of the communication link ("Configuration" then
"Communication" menu of the main XBT-L900 screen) and the connection of the
XBT-VM and PC using an XBT-Z915, 905 or 9052 cable should be checked.
The "COM 1:" or "COM 2:" communication ports should also be checked to make
sure they correspond to those in use.

Transferring the application from PC -> XBT-VM

Compatibility problems during transfers.

Upwards compatibility of applications is totally guaranteed. However, the new operation concerning selection of the size of requests for XBT-VM terminals, means that the configuration of an XBT-VM terminal is different to that of an XBT-VA terminal.

Loading the configuration of an XBT-VM terminal into an XBT-VA terminal would thus not be possible.
The entire application, script, surveillance pages, dialogue pages are always compatible between XBT-VM and XBT-VA terminals.

All applications created for XBT-VA terminals can be easily transferred to an XBT-VM terminal.

The table illustrates whether or not transfers are possible, in different situations.

```
   ┌──────────┐   ┌───────────┐   ┌───────────┐
   │ Possible │   │Impossible │   │Impossible │
   └──────────┘   └───────────┘   └───────────┘
        ↑              ↑               ↗

Transferring
application from
XBT-VM -> XBT-VA

                ⌒‾‾‾‾‾‾‾‾⌒‾‾‾‾‾‾‾‾⌒
        ┌─────────────┐ ┌─────────────┐
        │ Application │ │Configuration│
        │    only     │ │    only     │
        └─────────────┘ └─────────────┘
                ⌣_____⌣_____⌣

Transferring
application from
XBT-VA -> XBT-VM
        ↓              ↓               ↓
   ┌──────────────────────────────────────┐
   │               Possible               │
   └──────────────────────────────────────┘
```