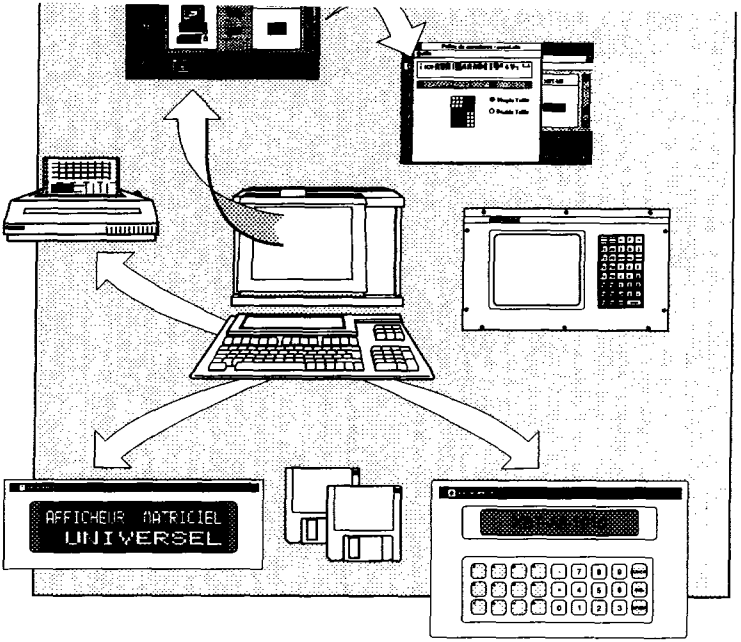

XBTL900 software

u s e r ' s g u i d e

V ≥ 1.3 s u p p l e m e n t

Telemecanique

GROUPE SCHNEIDER

WARNING

This guide describes the changes in the functions of XBT-L900 V1.3 software with respect to version V1.2. It is a supplement to the user guide "Printing messages with XBT-L900".

Used by itself, it does not contain sufficient information for complete installation of all terminals in the XBT range.

The reader should refer to the user manual for the selected terminal where he will find details of its functions and all necessary information for setting it up.

Contents

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Section **Page**

1.1 XBT-L900 V 1.3 supplement

This guide is a supplement to the user guide "Printing messages with XBT-L900" which describes the use of version V 1.2 software. The numerous changes and improvements in version V 1.3 of the software package are described in this supplement.

The latest version of XBT-L900 V 1.3 software enables the user to program the new XBT terminals, as well as the new functions on existing terminals.

There have also been improvements in user friendliness and PC <-> XBT transfers.

The user who already has XBT-L900 V 1.2 software on FTX 507, FTX 417 programming terminals or on a compatible PC will be interested in updating it as the new software package is completely compatible with the old version, enabling all developed applications to be retrieved and, at the same time, offering additional functions.

The user should follow the procedure described in this manual to install or update the software.

- **Structure of the guide**

This supplement to the XBT-L900 software user guide comprises 6 sections, arranged as follows :

1. **Introduction**

   This section describes the V 1.3 supplement, structure of the guide, software installation and updating procedures and how to use the guides for XBT terminals.

2. **Updates from V 1.2 -> V 1.3**

   This section describes improvements to the software, the updates and programming of the new terminals in version V 1.3.

3. **Programming the XBT-BB terminal**

   This section describes how to create an application for the XBT-BB and all the corresponding operating modes.

4. **XBT-VM terminal support**

   This section describes the changes and how to import XBT-VA applications to the new XBT-VM terminals.

5. Advanced programming of the XBT-M terminal

This section outlines the programming of the XBT-M terminal already described in the previous guide and presents all the new functions available.

6. Appendices

The appendix contains various information concerning the use of XBT-L900 V 1.3 software and problems which may arise for the user.

1.2 XBT-L900 installation

Configuration required

XBT-L900 V 1.3 software runs on Telemecanique FTX 507 and FTX 417 PC-compatible programming terminals.
XBT-L900 V 1.3 will also run on a PC-type microcomputer or compatible or on a PS/2 equipped with at least :

- MS-DOS or PC-DOS version 3.0 or later,
- a 5"1/4 or 3"1/2 format disk drive
- 10 Megabyte hard disk,
- 2 Megabyte RAM memory,
- a serial port (RS 232 C asynchronous link) for communication with the XBT,
- an additional serial port or a dedicated mouse port,
- WINDOWS 3.1 or 3.0 (standard or advanced mode).

There are two different situations :

- To install a new version refer to the user guide "Printing messages with the XBT-L900" which describes the software installation procedure (Section 2, pages 7 to 13).

- To update a previous version of XBT-L900 software to the new V 1.3 version, the following procedure should be used :

• **Stage 1 : copying the XBT-L900 V 1.3 files to hard disk**

- Using DOS
- Select the drive where you wish XBT-L900 to be copied (eg c:)

  type `c:` then press ↵

- Create a sub-directory for XBT-L900 V 1.3 :

  type `md xbtl913` then press ↵

XBT-L900 installation

- Change to the new directory :

  type [cd xbtl913] then press ⏎

- Place the XBT-L900 disk in the disk drive (a: for example)
- Copy the disk files :

  type [copy a : *.*] then press ⏎

- Remove the disk from the drive and put it in a safe place.

- **Stage 2 : Installing the XBT-L900 application under WINDOWS 3**

- Start WINDOWS

  - Activate the "WINDOWS SET UP" icon in the main group (this icon may be located in another group, depending on how WINDOWS has been installed).

  - Select OPTIONS
    SET UP APPLICATIONS
    click [OK] without making any modifications.

  - In the list of applications : select XBT-L900

    click on [ADD] then [OK].

  - Close the "WINDOWS SET UP" window.

XBT-L900 VERSION V 1.3 CAN BE IDENTIFIED BY THE NEW ICON

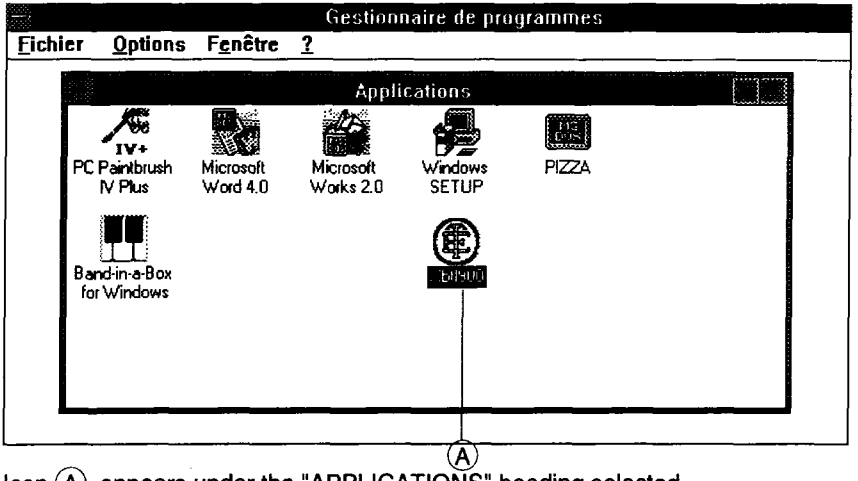
Version V 1.2

Version V 1.3

- **Stage 3 : Checking installation**
- **If WINDOWS is not already open, start as follows :**

  Type Win then press ↵.
- **Open the group "APPLICATIONS " by double clicking on its icon**

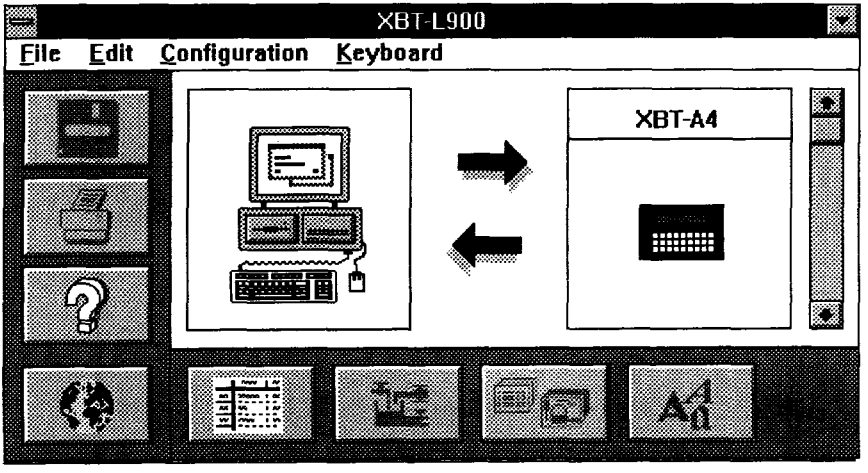
Note: You should get the following screen in English from you Windows software.



Icon Ⓐ appears under the "APPLICATIONS" heading selected.

- **Launch XBT-L900 by double clicking on icon Ⓐ**

  The main XBT-L900 application window appears :



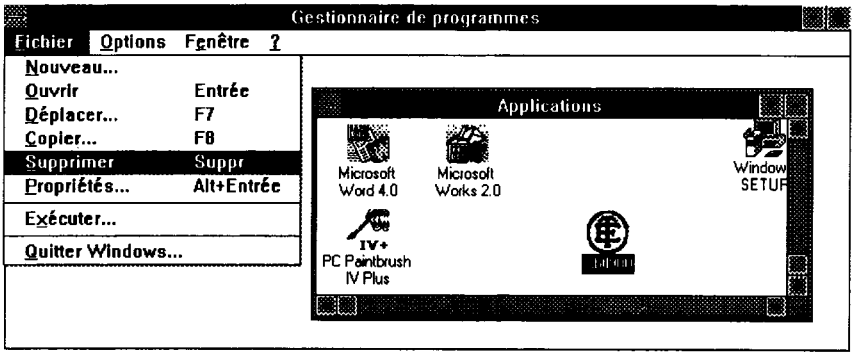
XBT-L900 installation

- **Stage 4 : Deleting the old version**

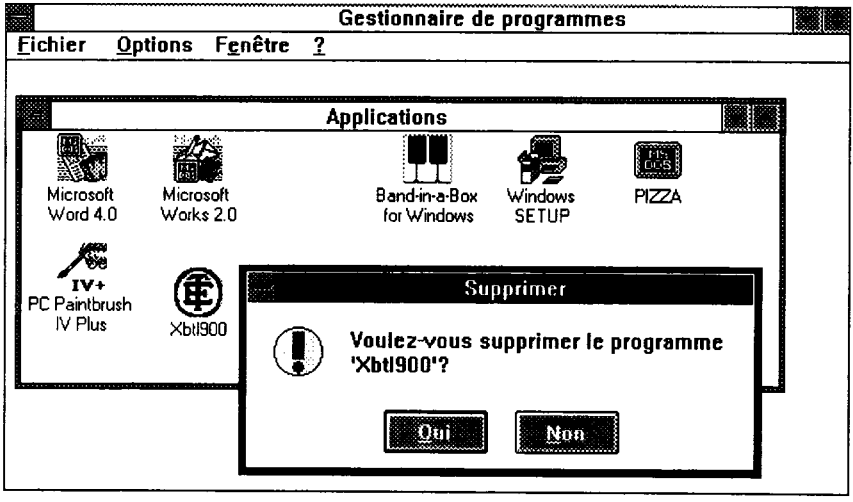
  - After testing the new version of the XBT-L900 V 1.3 software and importing the applications, the old version can be deleted by the following procedure :

    Deleting the application under WINDOWS

    After choosing the program icon to delete, go to the "File" menu and select delete. This operation does not delete the program files, but cancels launching the program from WINDOWS using the icon.



The deletion is confirmed by answering the following request :



Note: You should get the above screens in English from you Windows software.

Deleting program files :

Warning :
Deleting program files should not cause deletion of application files (extension .xtx, .xfn, .xap, .xts, .xgr, .fon). These files should not normally be in the same directory as the program files. If they are, they should be saved before any of the files in the directory are deleted.

To delete old version XBT-L900 files use WINDOWS File Manager (see the next page and the WINDOWS documentation) or the following procedure can be used under DOS :

- Using DOS,
- Select the drive of the old version XBT-L900 (eg. c:)

  type *c :* press ↵

- Select the directory of the old version :

  type *cd xbtl900* press ↵

- Request the list of files in the directory :

  type *dir* press ↵

- Check there are no files with the following extensions : (application files)

  .XTX .XFN .XAP .XTS .XGR .FON

- Delete all the files in this directory

  type *del *.** press ↵

- Confirm deletion

  type *Y* press ↵

- Quit the directory

  type *cd ..* press ↵

- Delete the directory

  type *rd xbtl900* press ↵

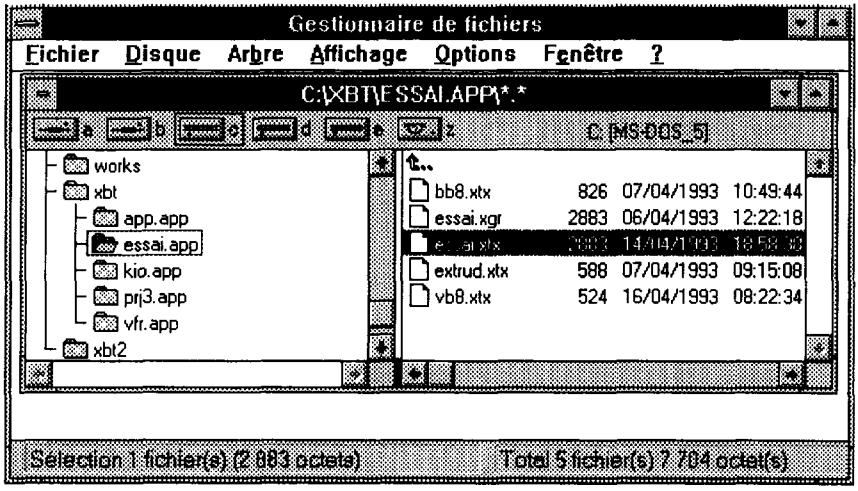
- **Deleting an application file under WINDOWS**

  Use the "File Manager" in the main WINDOWS group.

  - Start File Manager by double clicking on its icon
  - Select the folder containing the file to be deleted (click on its icon).

The File Manager displays the file storage tree of the directories in this folder :

Note: You should get the following screen in English from you Windows software.



- Select the directory containing the file to be deleted (double click on the name of the directory)
- Repeat this operation as many times as necessary if there is a sub-directory
- Click on the file name (eg. : ESSAI.XTX),
- Select the command "File" then "Delete"
- Confirm deletion.

- **Deleting a directory**

  Use the same method but select a directory name rather than a file name.

  For further information concerning these operations, refer to the WINDOWS user guide.

1.3 Using the guides for the terminal selected

The new models of XBT terminal can be programmed with the new version of XBT-L900 V 1.3 software. New functions are also available to the users of existing models.

As V 1.3 software is completely compatible with its predecessors it is very easy for users to convert to the new version.

For new users the information found in the user guide "Printing messages with XBT-L900" is very useful to ensure correct use of the software and operating modes.

The following tables illustrate the manuals and sections the user should refer to for optimum use of the software.

User guide : "Printing messages with XBT-L900"

XBT TYPE	SECTION ON USING THE PROGRAM					
	Terminals with keyboard/display		Multifunction Display unit	Screen terminals		
	4.1	4.2	4.3	4.3	4.4	4.5
XBT-A4	X	X				
XBT-A7	X	X				
XBT-A8	X	X				
XBT-B4	X	X				
XBT-B7	X	X				
XBT-B8	X	X				
XBT-C4	X	X				
XBT-C7	X	X				
XBT-C8	X	X				
XBT-C87	X	X				
XBT-K7	X	X				
XBT-K8	X	X				
XBT-VA8				X	X	X
XBT-VB4				X	X	
XBT-VB8				X	X	

Using the guides for the terminal selected

For new terminals and new functions on existing terminals, refer to the following sections of the supplement.

User guide : "Printing messages with XBT-L900"
Version V 1.3 supplement June 1993

XBT TYPE	SECTION ON USING THE PROGRAM		
	Terminals with keyboard/display	Multifunction Display unit	Screen terminals
XBT-A4	2.2		
XBT-BB	3		
XBT-VM			4
XBT-M	5	5	

2.1 Improvements to existing functions

- **Version identification**

When several versions of XBT-L900 software are installed (which is pointless due to the upward compatibility of the versions) it is useful to be able to check quickly which version is being used.

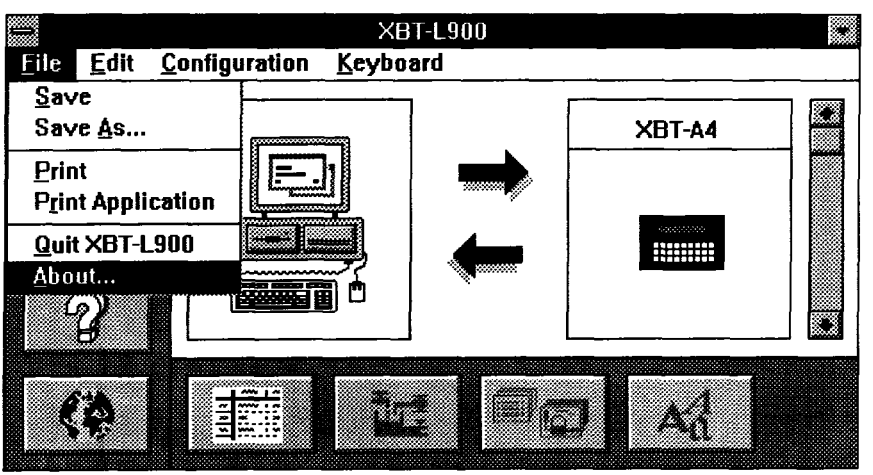
If the software has not yet been launched, the V 1.3 version can be distinguished by its new icon.

Version V 1.2

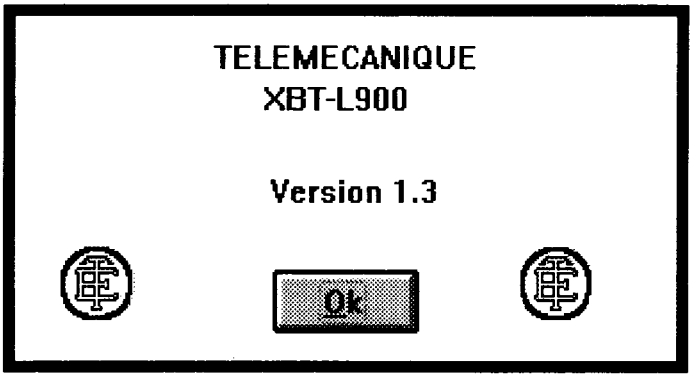
Version V 1.3

There is no point in using the old version as the two versions are compatible.

If the software has been launched, use the "About " function in the File menu to access the correct version :



The selected software version is thus displayed :

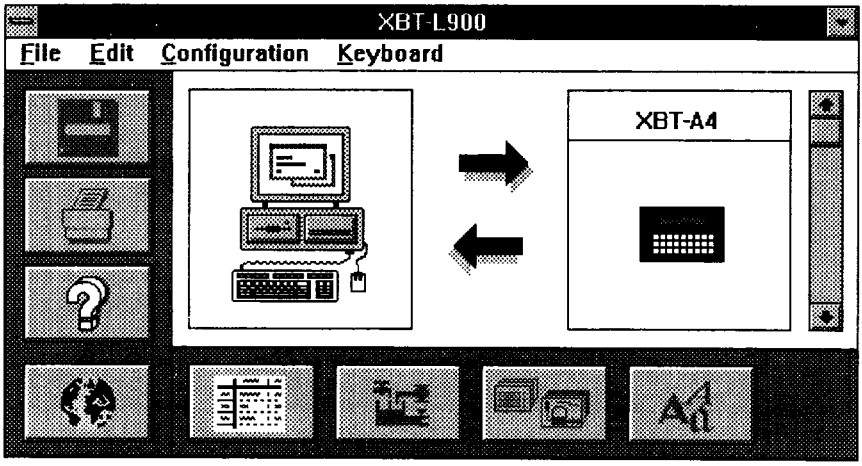


- **Enhancements to user friendliness**

The integration of new functions and new terminals has improved the user friendliness of certain commands.

Main window :

The icons in the main window allow the language of the menu display to be selected, the current back-up disk and the printer are now greyed out as these functions are not available.



Improvements to existing functions

Help from the application script in the XBT-V terminal :

In the programming of the XBT-V terminal the order of appearance of key words in the application window has been modified to take into account the frequency of these commands. The action of different commands has not been changed.

Application loading to an XBT-V terminal

During the transfer of an application from a PC to an XBT-V terminal the progression of the transfer is indicated by the percentage achieved.
The user is thus aware of the progression of the transfer and of the time necessary to complete it.

- **Acceleration of PC <-> XBT transfers**

Being able to store large numbers of messages, particularly in XBT-M terminals, has considerably increased the time it takes to transfer applications from PC -> XBT and XBT -> PC.
The new version of XBT-L900 V 1.3 software significantly reduces the transfer time, particularly when part of the memory is not used (default message).

Both types of transfer times will be halved in normal configuration.

2.2 Enhancements to programming the terminal

- **Improvements to programming of XBT-V terminals**

  - Terminal selection

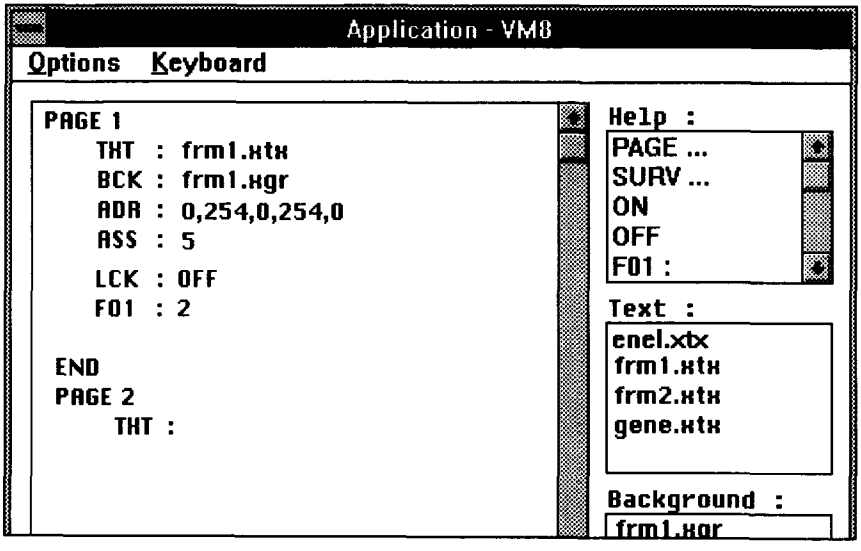
The selection of screen terminals has been improved to take account of changes in the range.
XBT-L900 version V 1.2 software supported the following XBT-V terminals :

- XBT-VA8 (compact monochrome terminal)
- XBT-VB4 (terminal + colour monitor)
- XBT-VB8 (terminal + colour monitor)

To keep up with changes in the range of screen terminals XBT-L900 version V 1.3 can be used for programming the following terminals :

- XBT-VA8
  the colour of the icon in the main window of the software has been changed so monochrome screens can be used (blue -> green)
- XBT-VB4 no change
- XBT-VB8 no change
- **XBT-VM8 (compact colour terminal)**

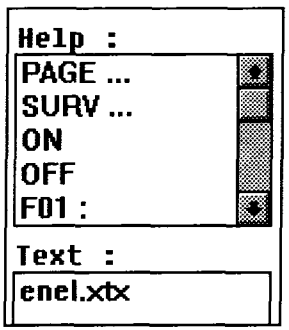
- Help during the creation of the application script
  The "Help" window of the application menu has been modified :



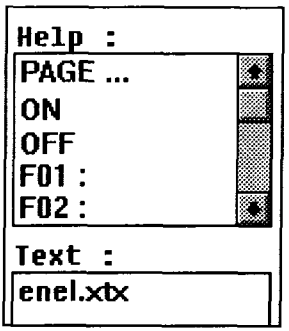
Enhancements to programming the terminal

The pull-down menu which appears during the creation of application scripts is as follows :

XBT-VA8
XBT-VM8



XBT-VB4
XBT-VB8



This requirement is more user friendly and takes into account the frequent use of these commands

- **Advanced programming of the XBT-M terminal**

The XBT-M terminal is a multifunctional matrix display unit with a wide range of functions.
The creation of a special character font set, the macro-message option and the operator guide are among the functions of the XBT-M terminal which contribute to its high performance.

The new version of XBT-L900 V 1.3 simplifies the development of applications for XBT-M terminals and provides greater functionality.

In particular, the number of messages which can be programmed as a function of the size of cartridge used and the management of memory space available under WINDOWS for XBT-L900 V 1.3 are now managed.

The possible structure of the operator guide has been considerably increased from 29 x 12 messages to 93 x 12 messages.

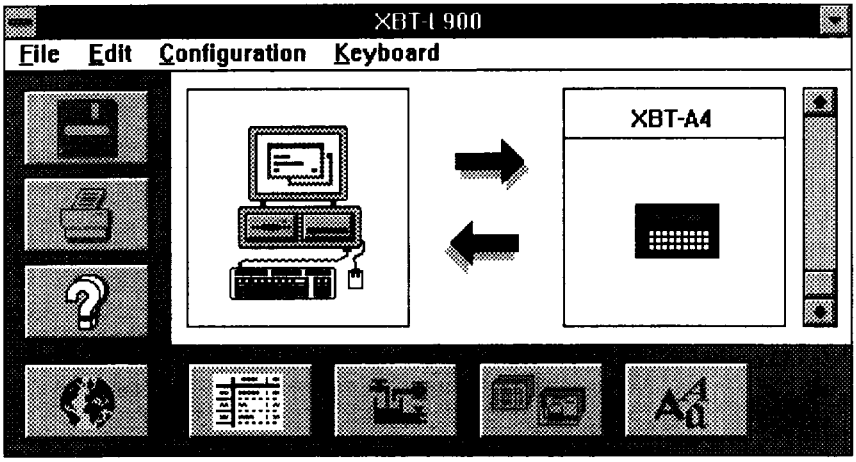
All the functions of the XBT-M terminal are described in the XBT-M guide: Multifunction display unit ref. XBT XM800E. This guide describes in detail the various uses of the XBT-M terminal.

2.3 Integrating the new terminals

- **Programming the XBT-A4 terminal**

In version V 1.2 it was possible to program the XBT-A4 terminal by selecting an XBT-B4 type terminal and the use of the message list had to be limited to message N° 100, which is the memory limit of the XBT-A4, whereas the XBT-B4 can have up to 150 messages.

The main window of the XBT-A4 terminal can be selected with the new version of XBT-L900 V 1.3 software.



The message list which appears enables messages 000 to 100, ie 101 messages to be configured.
All the functions are identical and the message list appears in the same way with identical message fields.

Applications for XBT-A4 terminals which have been developed using XBT-L900 V 1.2 software (selecting an XBT-B4 terminal) can be retrieved using XBT-L900 V 1.3 software.

The following method should be used for this operation :

- select an XBT-A4 terminal
- open a new message list
- transfer from the XBT-A4 terminal to the PC (Import)
- save the application to disk

Integrating the new terminals

- **Programming the XBT-BB terminal**

The XBT-BB keyboards with function keys (11 or 23 depending on the model) can be programmed using XBT-L900 V 1.3 software.

These terminals have the following functions :

- assignment of the keys to PLC variables
- serial link configuration
- parameter table configuration

Programming the XBT-BB terminals is described in further detail in section 3 of this guide.

- **Programming the XBT-M terminal**

The new version of XBT-L900 V 1.3 offers all the functions of the XBT-M terminal.

- Creating a user character font set with special symbols and macro-symbols
- Creating a message list with a choice of character font set and display of messages
- Creating macro-messages
- Creating an operator guide (size increased from 29 x 12 to 93 x 12)
- Saving displayed default messages
- Configuring operational parameters
- Managing the log memory and the printer link
- Transferring the configuration, the message list and the user character font set
- Totally or partially deleting the message list stored in the XBT-M terminal
- Initializing a memory cartridge
- Modifying the size of the message list

The ability to modify the size of the message list enables better management of the XBT-M terminal and PC memories.

XBT-L900 V 1.3 is compatible with applications developed under the XBT-L900 V 1.2 version of the software and all message list files and character font sets can be read in local mode.

All these functions are described in further detail in section 5 of this guide.

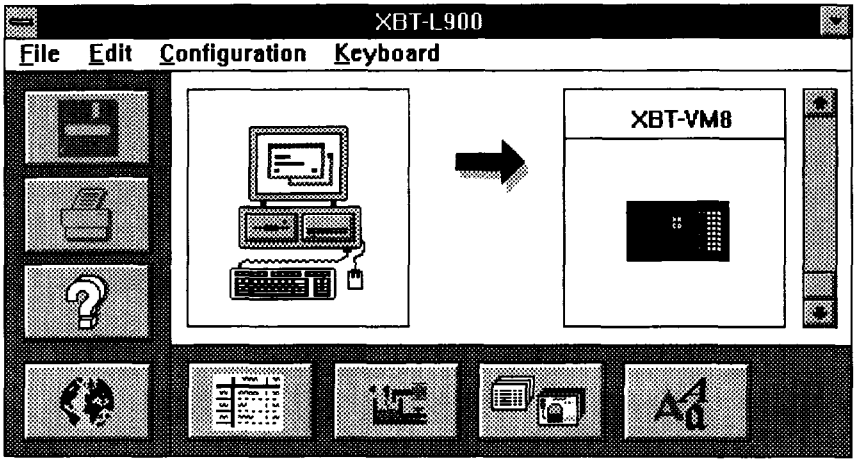
Integrating the new terminals

- **XBT-VM terminal support**

In version V 1.2 it was possible to program the XBT-VM terminal by selecting an XBT-VA type terminal.

The XBT-VM terminal can be selected using the main window of the new version of XBT-L900 V1.3 software. Thus the programming of two types of terminal can be managed independently :

- XBT-VA compact monochrome terminal
- XBT-VM compact colour terminal



All applications developed for XBT-VA terminals eg text pages, surveillance pages, graphic pages and the application script are compatible for XBT-VA and XBT-VM terminals. The new functions of XBT-VM terminals are screen colour and the ability to configure the size of requests in Uni-Telway or Adjust protocol.

When connected to a Telemecanique TSX 7 programmable controller, the XBT-VM terminal is able to use requests of 128 bytes (32 for XBT-VA terminals).

This, in conjunction with the use of contiguous variables, allows a considerable improvement in the update time of on-screen variables.

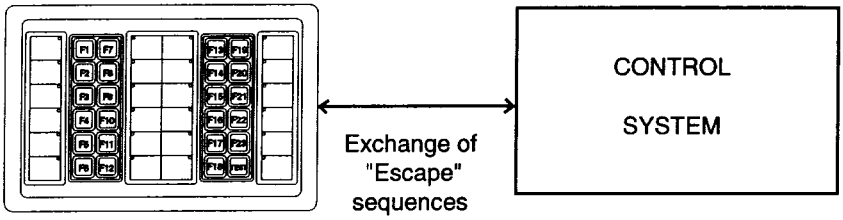
3.1 Summary of operation

The XBT-BB terminal can send orders to a control system via keys. It can receive orders to lock or unlock these keys, as well as orders to control the indicator lamps (lit, on with a steady display, blinking, off).
There are two ways of communicating between the XBT-BB terminal and the control system :

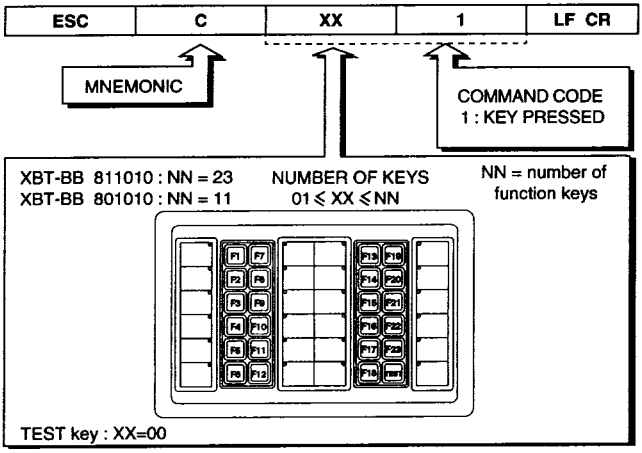
- ASCII protocol
- UNI-TE or ADJUST protocol

• ASCII protocol

In ASCII protocol data exchanges between the terminal and the control system are made over a standard serial link using "Escape" sequences.



These sequences enable control of all the XBT-BB terminal functions and dialogue from the control system to the XBT-BB and from the XBT-BB to the control system.



Summary of operation

• UNI-TE or ADJUST protocol

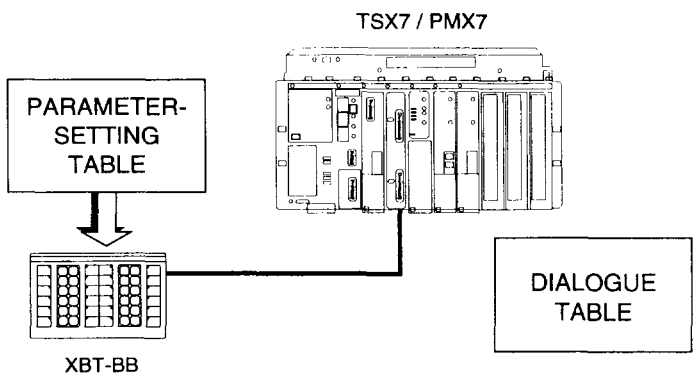
Operation of the XBT-BB involves the management in the PLC of a word table (dialogue table) which represents the status of the terminal indicator lamps and keys. This table is made up of PLC words containing bits mostly associated either with a key or with an indicator lamp.

- They inform the control system of key status (pressed down or released).
- They tell the XBT-BB which lamps should be blinking.
- They tell the XBT-BB which lamps should be on with a steady display.
- They tell the XBT-BB which function keys should be locked.

The XBT-BB accesses the PLC on a cyclical basis to read **the dialogue table** containing the commands to be executed, executes them and then writes the status data to the PLC.

However, for it to be able to update and consult the **dialogue table**, it needs to be told where the table is located and its scan period. This is the reason for setting parameters in the XBT-BB. All this information constitutes **the parameter-setting table.**

Programming the XBT-BB terminal using XBT-L900 software means creating this table and sending it to the XBT-BB terminal.



The parameter-setting table contains the address on the UNI-TELWAY bus of the device containing the dialogue table scanned by the XBT-BB terminal, the address of the 1st Wi word in the word table of the device and the scan period for this table.

Summary of operation

The principle of generating the **parameter-setting table** remains the same if a different protocol is used.

For further details on operation of the XBT-BB, refer to the XBT-BB terminal user manual.

- **Parameter-setting table**

The parameter-setting table is located in the working memory of the XBT-BB terminal, and is made up of 7 words which indicate to the terminal :

- the address of the PLC which contains the dialogue table
- the address of the first word in the dialogue table
- the scan period for the dialogue table by the terminal

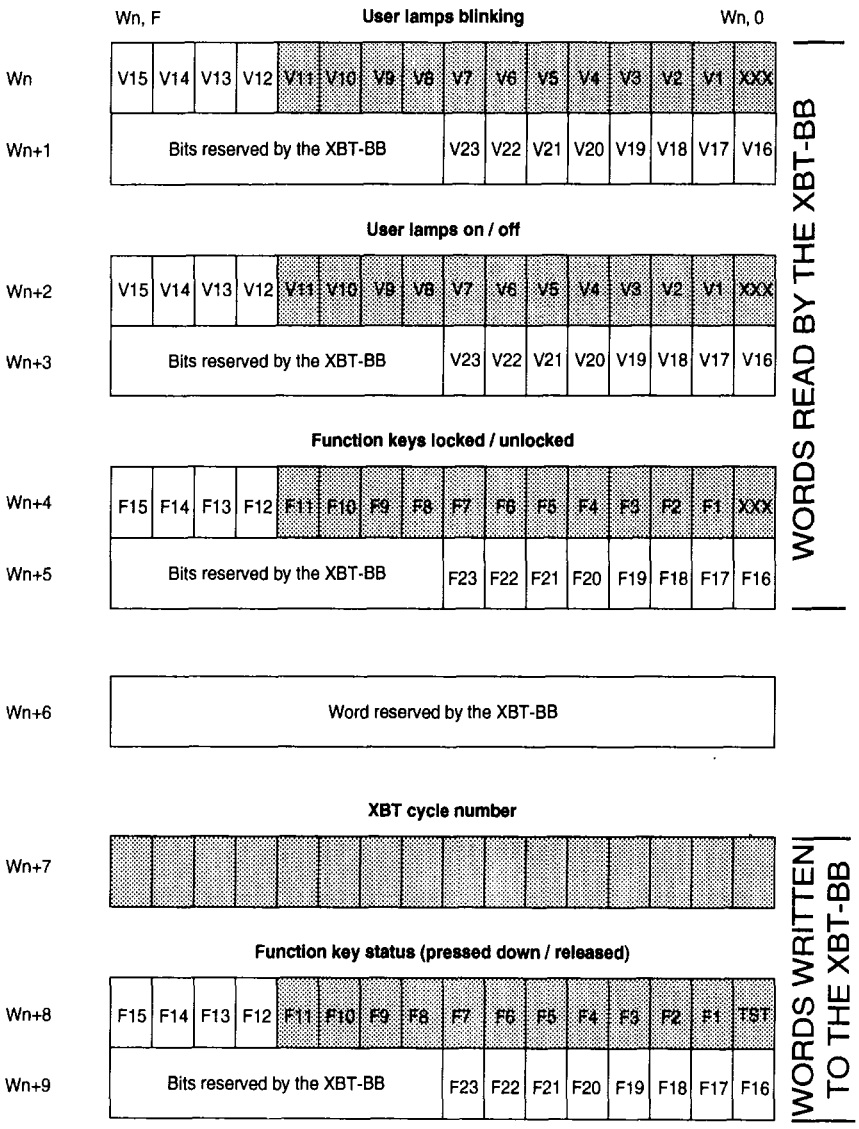
Parameter address	Details		Possible values	Default value
20000	Network n°	Address on the UNI-TELWAY bus of the device containing the dialogue table scanned by the XBT-BB	0 to 255	0
20001	Station n°		0 to 255	254
20002	Gate n°		0 to 255	0
20003	Module n°		0 to 255	254
20004	Channel n°		0 to 255	0
20005	Address of the first word in the dialogue table in the PLC		0 to 65525 and 65535	65535
20006	Expressed in ms Minimum period for the XBT-BB to scan the dialogue table		0 to 65535	320

This parameter-setting table is created using XBT-L900 software and is transmitted to the XBT-BB terminal.

Summary of operation

- **Dialogue table**

The dialogue table is located in the PLC memory and is made up of 10 words of 16 bits containing the images of the indicator lamps and keys. It is arranged as follows :



note : the shaded parts indicate the bits used by the 12 keys of the XBT-BB.

Summary of operation

- **Message list**

When an XBT-BB terminal is connected to an existing installation or is used in an installation where the variables controlled by the function keys are divided among several devices, it may be helpful to assign each function key to a different variable.

In this case, if the dialogue table is configured in the device connected to the XBT-BB terminal, two operating modes will be available simultaneously :

- message list
- dialogue table

Example :

XBT-BB terminal connected to a TSX 7 PLC with a dialogue table configured at W30.

Key F5 on the terminal is represented by bit W38,5 in the PLC, and this key can be assigned to a different variable in the message list, which can be accessed via the Uni-Telway bus (eg. bit B14 of station 3).

Possible message list :

Type of message	Details	Associated variable
F	Momentary contact command : the bit corresponding to the key is set to 1 while the key is pressed down	bit or extract word bit Bi or Wi,j
P	Push-on/push-off command: the corresponding bit changes status each time the key is pressed	bit or extract word bit Bi or Wi,j
S	Selective command : pressing the key sets Wi,j to 1 and the other bits of word Wi are set to 0	extract word bit Wi,j

3.2 How to create an application using XBT-L900

XBT-L900 software simplifies the creation of an application for an XBT-BB terminal. It must first be decided if the creation of a message list would be useful.

• Selection of the method

To create an application for an XBT-BB terminal one or two tables must be created, depending on the situation :

- parameter-setting table
- message list

The decision to create a message list should be made in conjunction with the selection of the operating type (refer to section 3.1 Operating summary or the XBT-BB terminal user guide).

• Stages of creating an application

The following method should be used to create an application for an XBT-BB terminal using XBT-L900 software :

- Configure the parameter-setting table
- Create the message list
- Configure the operating link

- Save the application
- Print the documentation

- Transfer the application

The various stages are essential in order to ensure that the application development cycle includes all steps for correct operation, file saving and maintenance of the application.

The user interface of the XBT-L900 allows the various stages to be moved through easily and with low risk of error. Checking all parameters and error messages enables rapid application development for XBT-BB terminals.

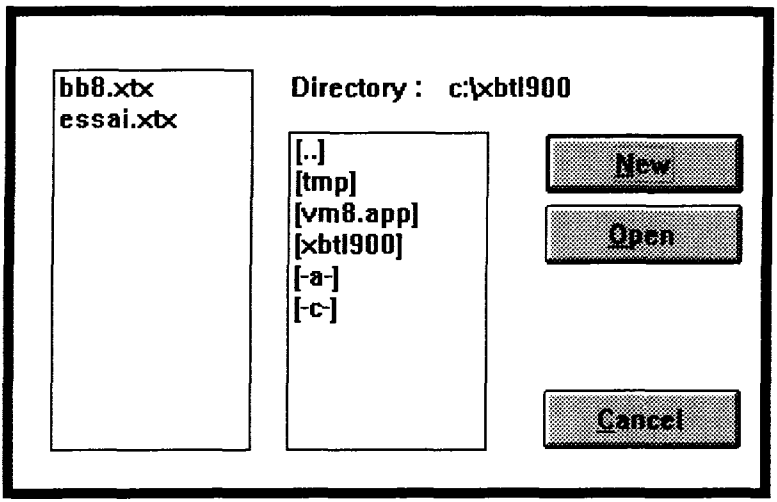
Sections 3.3 to 3.8 describe in further detail the various operations to be performed at each stage.

3.3 Configuring the parameter-setting table

The parameter-setting table contains the address of the connected device (Uni-Telway 5-level addressing system), the dialogue table address, when a TSX 7 programmable controller is being used, and the update period for the table.

- **Access to the parameter-setting table**

After launching XBT-L900 and selecting the XBT-BB terminal, click on the "Message list" icon.
The directory of the applications can thus be accessed and an existing application can be opened by selecting its name or a new one created by clicking on "New".

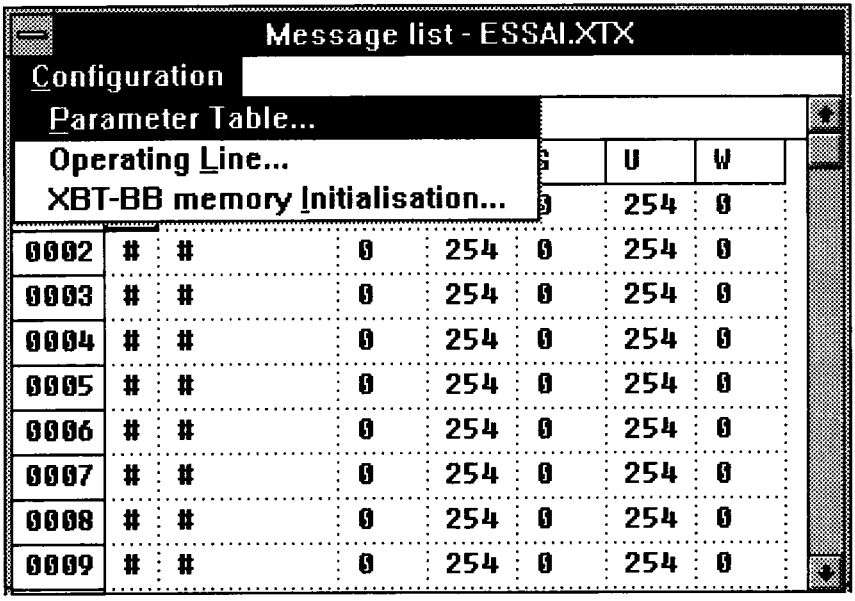


After clicking on "New" the file name is defined when the application is saved (click on the diskette icon).
This application file is called "ESSAI.XTX" by default.

The "Message list" window appears with a single "Configuration" menu which accesses the configuration of the various tables and is used to initialize the XBT-BB terminal memory.

Select "Parameter-setting table" in the pull-down menu to access parameter-setting.

Configuring the parameter-setting table



Selection of parameters

Details		Possible values	Default value
Network n°	Address on the UNI-TELWAY bus of the device containing the dialogue table scanned by the XBT-BB	0 to 255	0
Station n°		0 to 255	254
Gate n°		0 to 255	0
Module n°		0 to 255	254
Channel n°		0 to 255	0
Word W n°	Address of word table	# to 65527	#
Cycle time	update	0 to 65535	320

The parameter-setting table appears in a window and contains information on the 5 Uni-Telway address fields, the PLC address for the table of 10 words and the update period for this table.

All values entered by the operator are checked and if there is an error a help message appears defining the cause.

Configuring the parameter-setting table

• Selection of word table address

This address must be located in the W words (CW words must not be used as the XBT-BB terminal would write the data to this table). The table is 10 words long and if an address is selected at the top of the memory space then the existence of the 10 words must be checked.

Example :

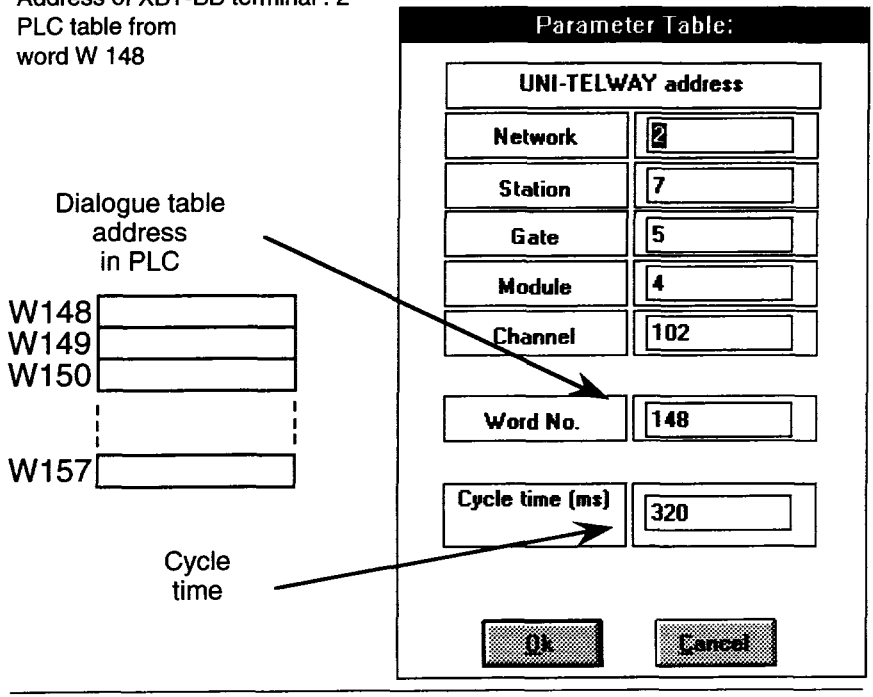
Address selected W3850 => number of words configured ≥ 3860

• Selection of cycle time in ms

This is the value of the period in which the XBT-BB terminal updates the states of the function keys in the PLC memory.
The default value is 320 ms, which corresponds to 3 updates per second.

Implementing too short a cycle time is pointless, as this would increase the traffic on the line without significantly improving the response time.

Example :
Network 2 PLC, station 7
SCM 2116 at slot 4
Address of XBT-BB terminal : 2
PLC table from
word W 148



3.4 Creating the message list

To create the message list complete the information in the field for each message (11 or 23) according to the number of function keys on the selected XBT-BB.

Presentation of message list :

Message list - ESSAI.XTX

Configuration

Num	T	Var.	R	S	G	U	W
0001	F	B12	2	7	0	254	0
0002	F	W10,3	2	7	0	254	0
0003	P	B13	2	7	0	254	0
0004	P	W10,4	2	7	0	254	0
0005	S	W8,0	2	7	0	254	0
0006	S	W8,1	2	7	0	254	0
0007	#	#	0	254	0	254	0
0008	#	#	0	254	0	254	0
0009	#	#	0	254	0	254	0

During data entry use the "ENTER" key to move between fields. If an error occurs a message describing the type of error is displayed in red in the error message zone.

Example : Variable error in an S type message
(word extract bit Wi,j required)

error message -> zone

Message list - ESSAI.XTX

Configuration

Cond. reject : (T = 'S') & (U = 'Bxx')

Num	T	Var.	R	S	G	U	W
0001	S	B12	2	7	0	254	0
0002	F	W10,3	2	7	0	254	0
0003	P	B13	2	7	0	254	0

Creating the message list

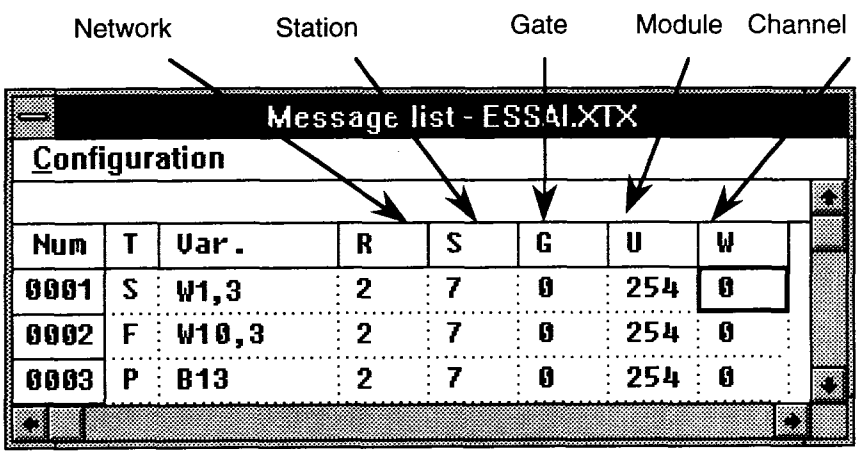
• Associated variables

Variables should preferably be selected with contiguous elements, to simplify and speed up the dialogue with the PLC or connected device (eg : F1 to F7 on bits B0 to B6, or W3,0 to W3,6).
Separate elements can, of course, be selected which is the case when accessing different devices connected to the Uni-Telway bus (eg : F1 on bit B5 of station 3, F2 on bit B5 of station 4, etc).
Type S messages require a variable which is a word extract bit Wi,j.
This particular type only allows execution of one of a number of commands with automatic locking on the others.

• Addresses of variables

Details			Possible values	Default values
R	Network n°	Address on the UNI-TELWAY bus of the variable assigned to the key which corresponds to the number of the message on the list	0 to 255	0
S	Station n°		0 to 255	254
G	Gate n°		0 to 255	0
U	Module n°		0 to 255	254
W	Channel n°		0 to 255	0

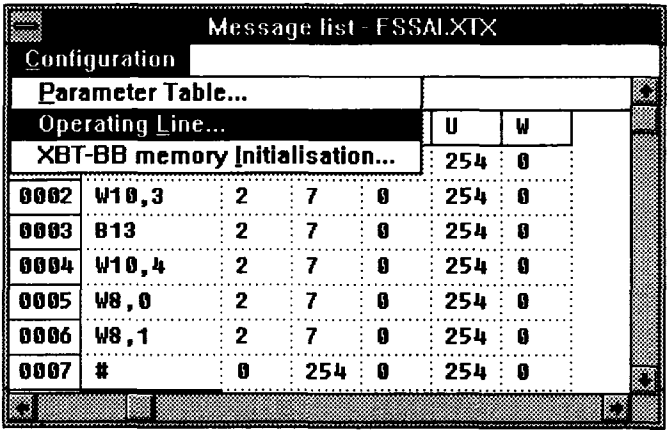
The associated address is assigned to each variable by filling in the various fields in the message list. If an error occurs a message is displayed in red on the entry line to warn the user.



3.5 Configuring the operating link

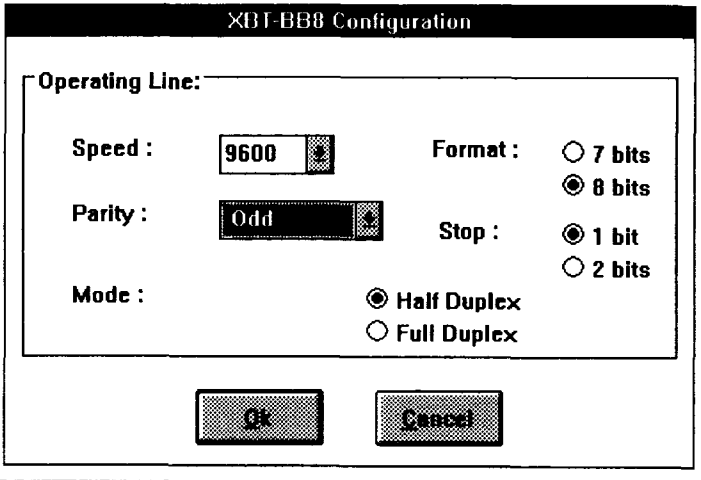
The configuration of the operating link can be accessed in the "Configuration" menu and enables the operating parameters of the serial link between the XBT-BB terminal and the control system to be defined.

Accessing the link configuration window



When the link configuration window appears the following information should be entered in the fields : speed, data format, number of stop bits, parity bit and transmission mode.

The choice of communication protocol is defined by the cable connecting the XBT-BB terminal and the control system.



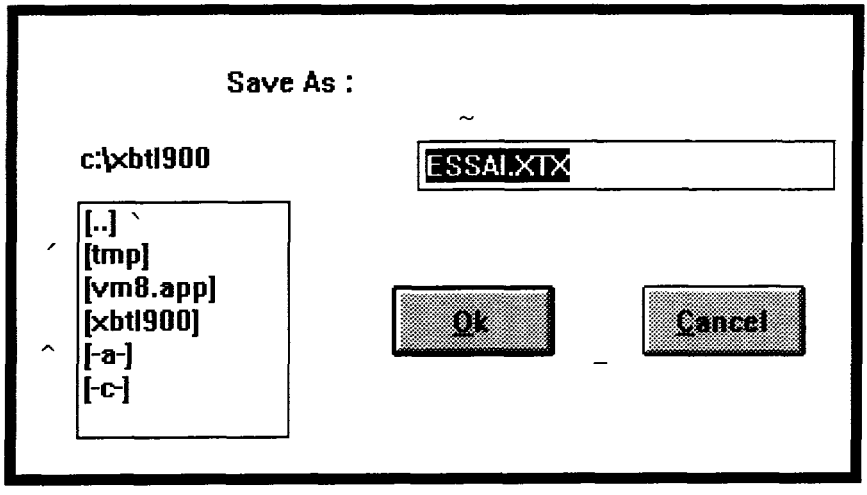
3.6 Saving the application

The application generated by the user should be saved in a file on a disk or diskette for subsequent use.
All data concerning the dialogue table, the parameter-setting table and the message list are saved in a file with the extension (.XTX).
The save function is accessed either by clicking on the diskette icon (blue) of the main XBT-L900 screen, or by selecting "Save as" in the "File" menu. The "Save" command in the file menu directly saves the application under the file name which appears in the window entry line.

• Selection of directory to save to

By default the XBT-L900 saves this file to the current directory. It is up to the user to create an XBT-BB application directory, if required.
This directory can be created under DOS using the *md* command (Make Directory, for further details refer to the DOS reference manual) or using the WINDOWS File Manager (refer to the WINDOWS documentation).
The directory where the application is to be saved can then be selected using XBT-L900.

• Saving



` Current directory
, Return to previous directories
' Select directory
^ Select volume
~ File name
_ Confirm / cancel

3.7 Printing the documentation

In order to print out an application a message list must be open. The printing functions are accessed either by clicking on the printer icon (yellow) of the main XBT-L900 screen, or by selecting "Print" in the "File" menu.

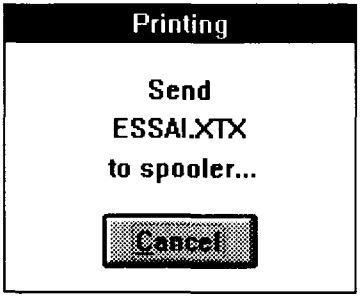
The application is printed in the following format by default :

- Configuration of communication link
- Configuration of dialogue table
- Message list

It is possible to print only part of the message list by selecting the zone to be printed. Use the mouse to select as follows :

- select the first message (click on the message number)
- drag down using the left hand mouse button until reaching the last message required

The following message appears during printing :

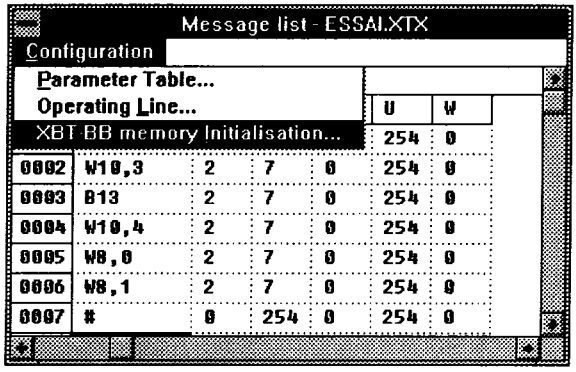


If a problem occurs during printing, check the printer configuration in the configuration WINDOWS control panel (Main Group).

3.8 Transferring the application

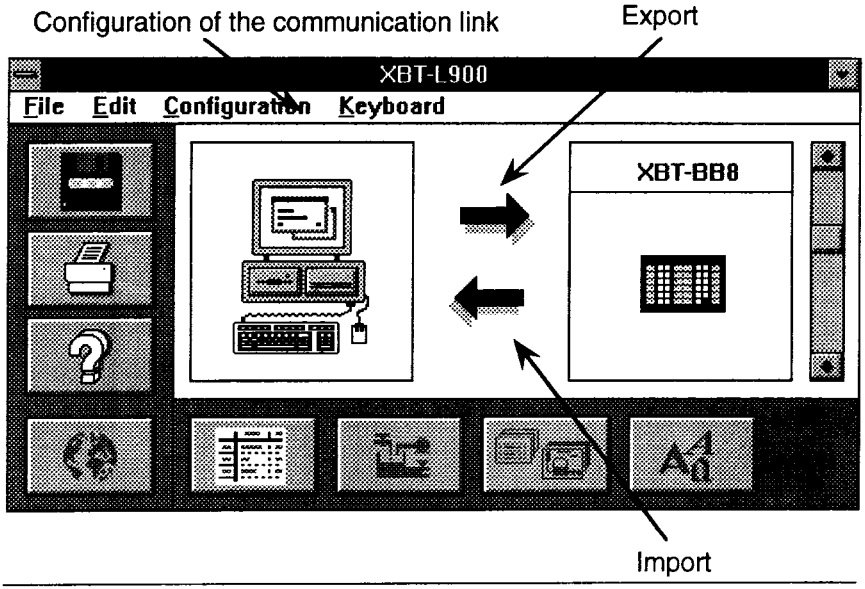
To transfer data to or from an XBT-BB terminal the communication link between the PC and the XBT-BB terminal must be operating correctly. This link is configured in "Communication" mode in the "Configuration" menu of the main XBT-L900 screen.

It is possible to initialize the memory of the XBT-BB terminal before transferring the application.



A message list must be open in order to activate the Transfer mode.

The transfer is launched from the main XBT-L900 window using the arrows to determine the transfer direction.



Transferring the application

Two types of transfer are possible, global or partial.
During a global transfer all data is sent to the XBT-BB terminal or to the PC.
During a partial transfer the data to be transferred is selected by clicking on the corresponding boxes. The message list, dialogue table and configuration of the operating link can be selected.

• Exporting (Transferring from PC -> XBT-BB)

After opening the message list corresponding to the application to be transferred (even if it is empty), select the transfer direction (PC to XBT-BB) by clicking on the "Export" arrow. The window with the choice of data to transfer appears and the transfer can be launched.

Thus a global or partial transfer can be selected. For a partial transfer select the data to be transferred by clicking on the corresponding boxes and confirm by clicking "OK".

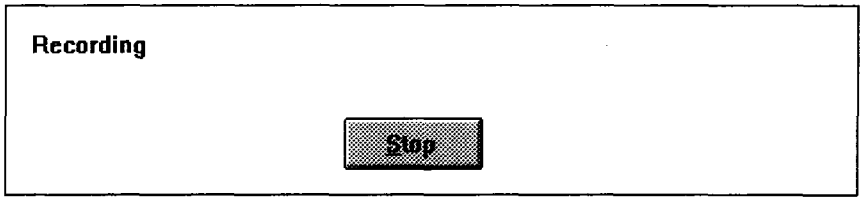
Partial transfer of message list

It is possible to transfer only part of the message list. To do this, open the message list and select the zone to be sent using the mouse (click on the message number, drag down as for partial printing) and then select the transfer direction.
The window illustrated above does not appear for a partial transfer of the message list, the XBT-BB terminal window appears immediately.

Transferring the application

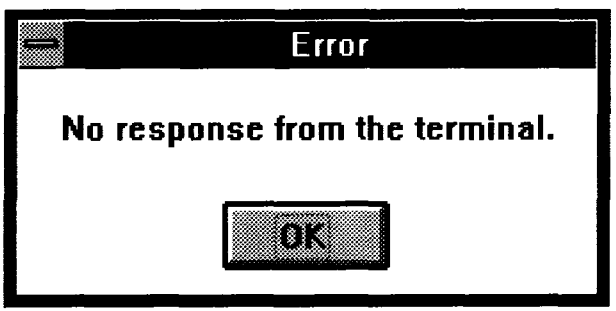
This transfer does not alter configuration of the dialogue table and the operating link in the XBT-BB terminal.

After confirmation of the transfer the transfer window appears and indicates the various phases of the transfer.



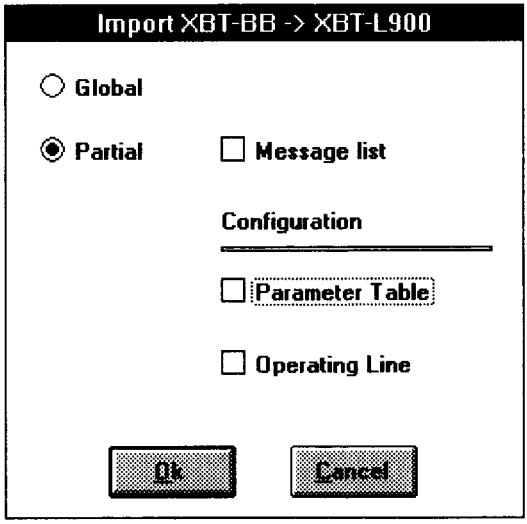
If the transfer from the PC to the XBT-BB is interrupted by clicking on the "STOP" key, the messages already sent to the terminal are confirmed. This would implement a partial transfer of the message list up to the message number displayed on the transfer window.

If a problem occurs in communicating with the XBT-BB 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-BB 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.



• **Importing (XBT-BB -> PC)**

The same method is used to transfer from the XBT-BB to the PC. A message list must be open and the transfer window which appears is used to select the type of transfer.



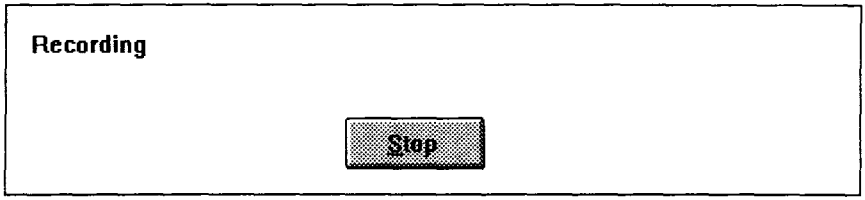
A global or partial transfer is thus selected. For a partial transfer the data to be transferred must be selected by clicking on the corresponding boxes and confirming by clicking "OK".

Partial transfer of a message list

Part of the message list can be read in the memory of the XBT-BB terminal so they can be re-used in another application. To do this, open the message list and select the zone to be sent using the mouse (click on the message number, drag down as for partial printing) and then select the transfer direction.
The window illustrated above does not appear for a partial transfer of the message list, the transfer to the PC window appears immediately.

Transferring the application

After confirmation of the transfer, the transfer window appears and indicates the various phases of the transfer.



There are two different methods of interrupting transfer from the XBT-BB to the PC, and these methods have different results.

"Cancel" stops the transfer. The data already transmitted is not saved, and the application and the message list are not modified. The transfer is completely cancelled.

"Stop" interrupts the transfer. The data already transmitted is confirmed, and the message list open is modified up to the message number displayed on the transfer window at the time of the "Stop" command.

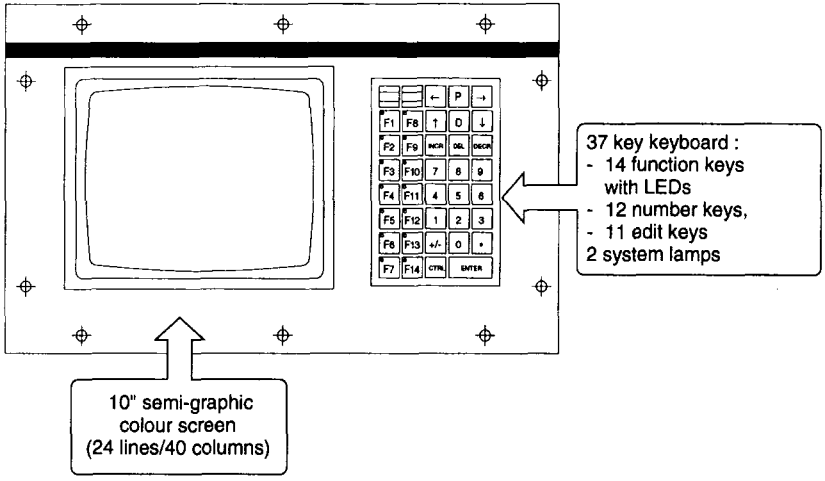
If a problem occurs in communicating with the XBT-BB terminal a window is displayed indicating the cause of the problem. If this happens, the configuration of the communication link ("Configuration" then "Communication" menu of the main XBT-L900 screen) and the connection of the XBT-BB and PC using an 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.

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.



• 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

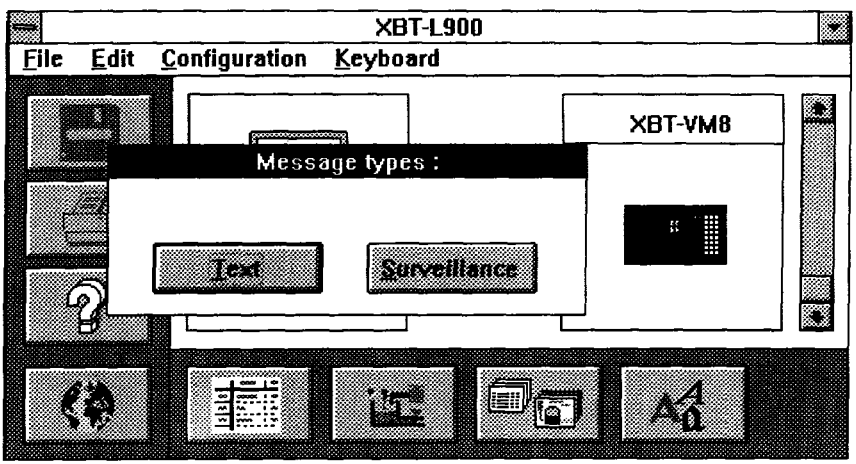
The application and these three functions are accessed from the screen pages. Application development consists of defining the necessary pages during their creation or retrieving them from another application and defining the links between the pages.

• 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.



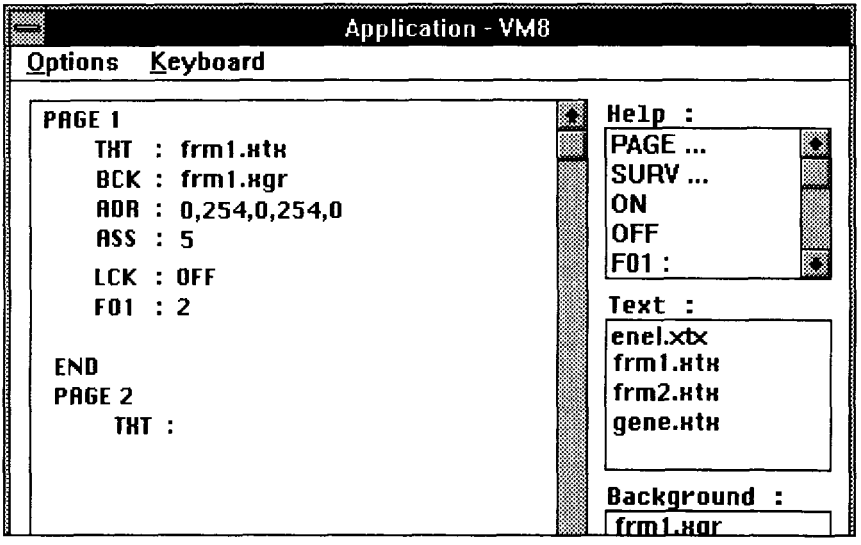
These pages are created by completing the associated message list and assigning the various message variables.

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.



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 :

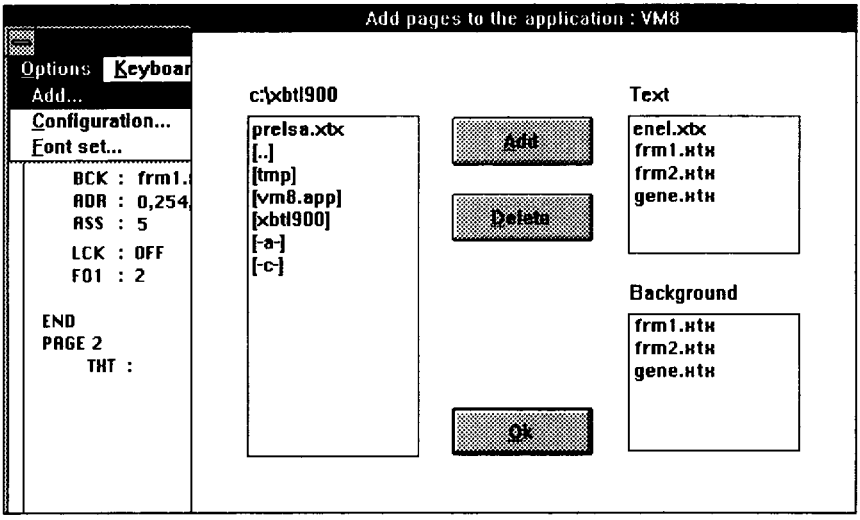
- retrieving application elements, ie semi-graphic or text pages and using them in a new application using XBT-L900 V 1.3 software.

- 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.



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.

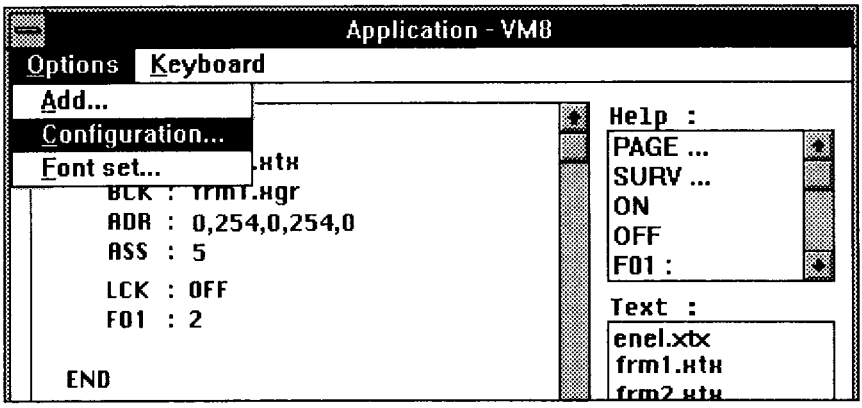
		CONFIGURATION MODE	
MAIN MENU			
F1	LANGUAGES	F8	CONFIG. APPLICATION
F2	PASSWORD	F9	TRANSFER APPLIC.
F3	OPERATING MODE	F10	DISPLAY APPLICATION
F4	STATUS TABLE	F11	SELF TESTS
F5	PRINTER	F12	ADJUST MENU
F6	CLOCK	F13	EVENTS DISPLAY
F7	EXTERNAL MONITOR	F14	

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.

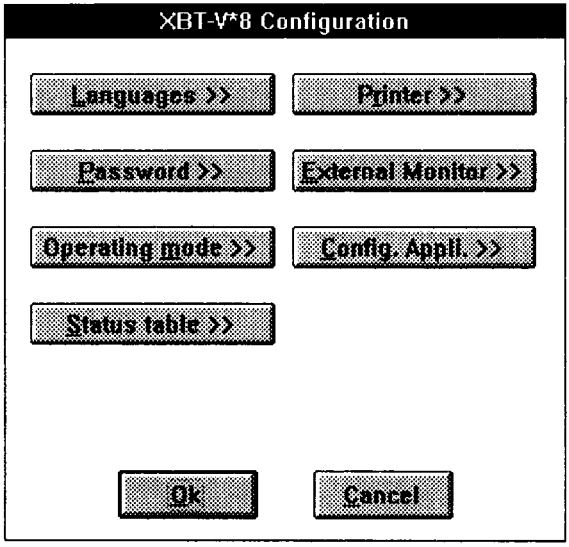
Configuring the XBT-VM terminal

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.



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

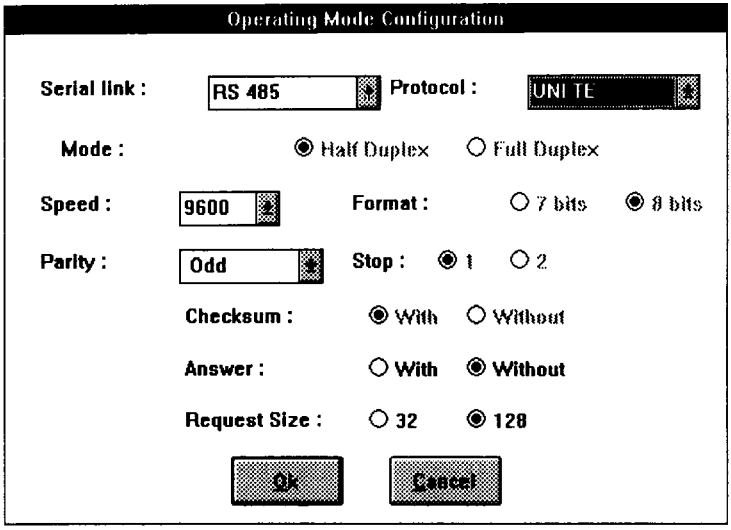
In example 1 the variables are separated, in example 2 they are contiguous.

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

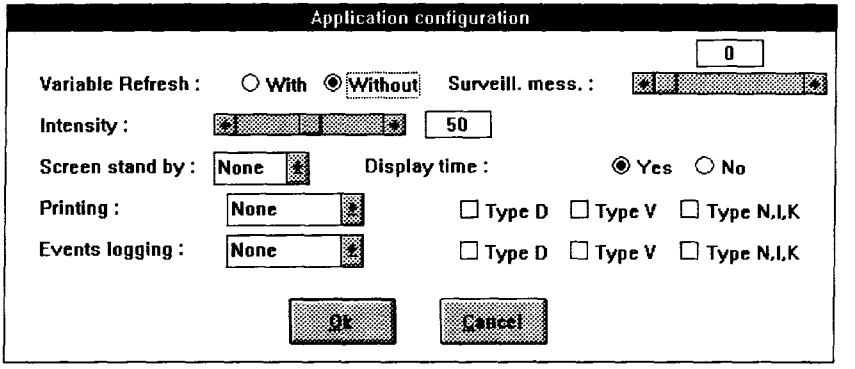
The default value is 32 bytes and if 128 bytes are configured, check that this value is consistent with the communication architecture.

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.



"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)

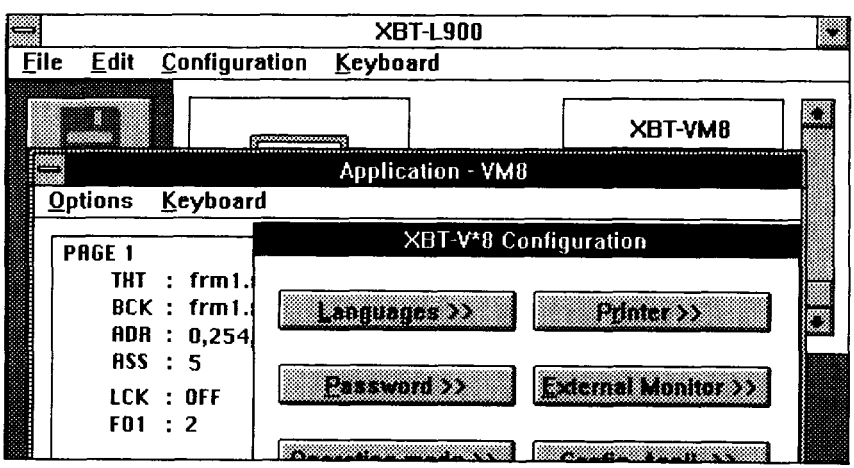
• Changes to XBT-L900 software from V 1.2 to V 1.3

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)

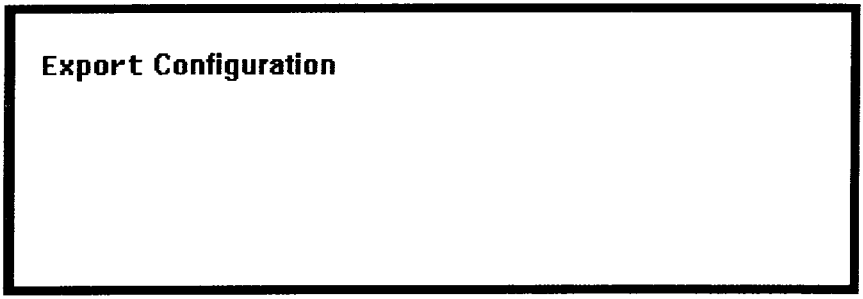
• Operating modes

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

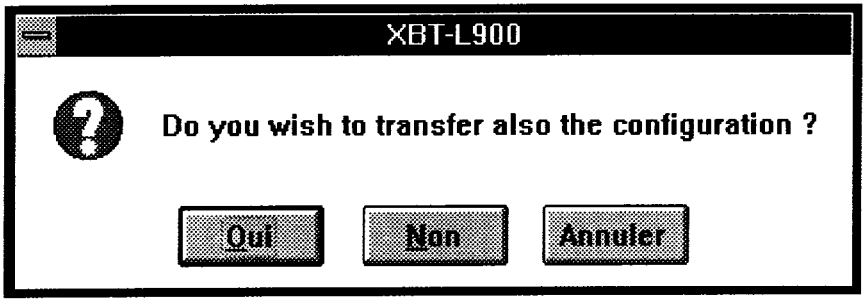
During the transfer the "Export configuration" window appears to indicate the transfer. A help message if displayed if there is a fault or an error.



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.



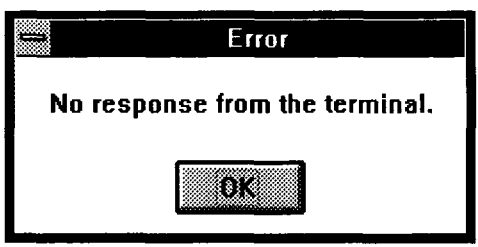
Transferring the application from PC -> XBT-VM

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

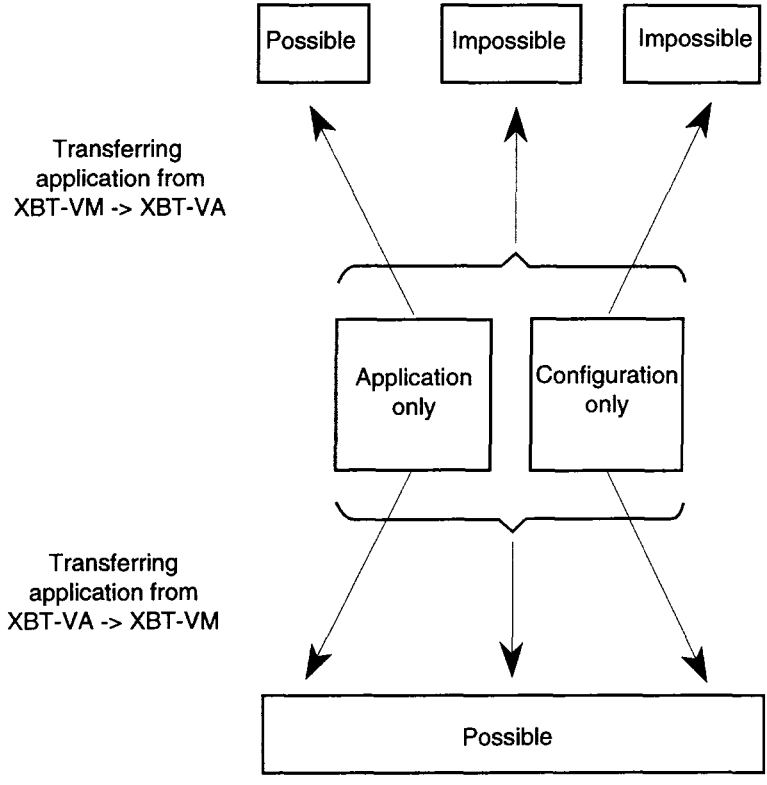
Compatibility problems during transfers.

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.

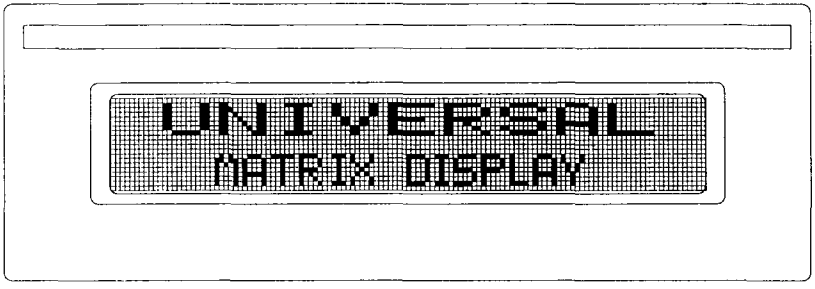
All applications created for XBT-VA terminals can be easily transferred to an XBT-VM terminal.

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

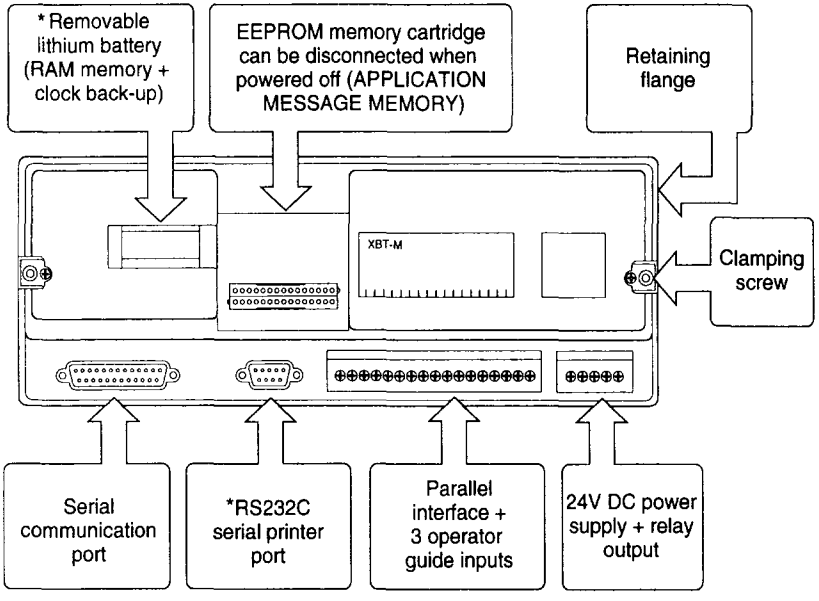


5.1 Summary of operation

The XBT-M is a message box type terminal fitted with a fluorescent matrix display with 128 x 20 pixel resolution.



This terminal has a protected integral clock and a serial printer link. It can control the display of messages by discrete inputs and has an operator guide function controlled by three pushbuttons.



* XBT-M80411X only

Summary of operation

Many types of display are possible and various sizes can be used. It is possible to scroll the message and use symbols set by the operator.
The XBT-M terminal can also display the value of variables in the form of histograms.

CHARACTER SIZE	DISPLAY	DISPLAY CAPACITY
DOUBLE SIZE		1 line of : • 10 characters (h = 20 mm) • scrolling of 42 characters
DOUBLE HEIGHT		1 line of : • 21 characters (h = 20 mm) • scrolling of 84 characters
DOUBLE WIDTH		*2 lines of* : • 10 characters (h = 10 mm) • scrolling of 42 characters/line
SINGLE SIZE		2 independant lines of : • 21 characters/line (h = 10 mm) • scrolling of 84 characters/line
DOUBLE WIDTH SINGLE SIZE		2 lines : Display combination of double width and single size characters

In addition to these functions the XBT-M terminal has an internal memory for storing the displayed messages. The contents of this log memory can be printed at a command from the operator or the control system.

The displayed messages may come directly from the control system linked to the terminal or can be called up from the terminal memory cartridge.

Its functions can be summarized as follows :

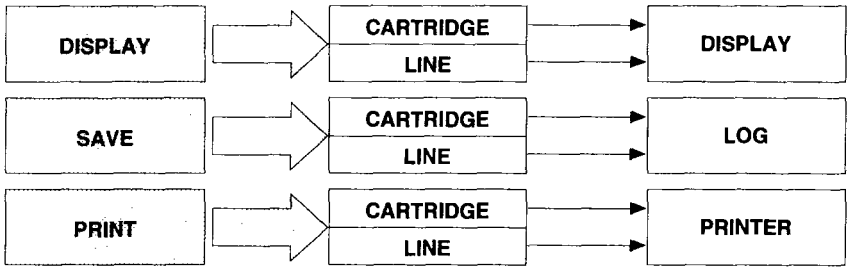
- data sources (integral memory or control system)

- destinations (display unit, log memory, printer)

Summary of operation

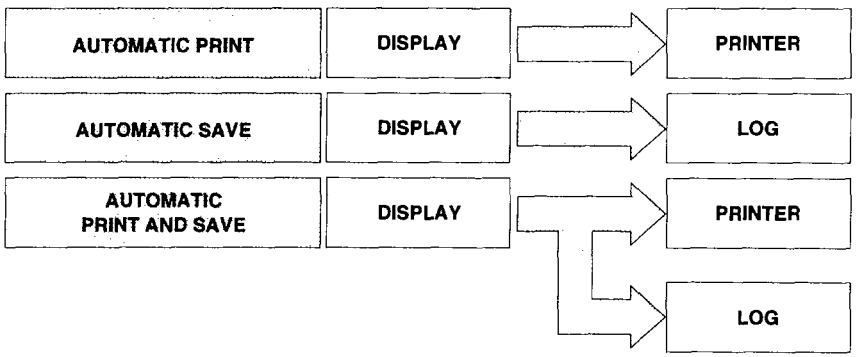
• Using simple functions :

A command initiates an action.



• Using compound functions :

A command initiates several actions.



• Control system command

XBT-M terminals support three types of serial communication (RS 232 C, RS 422/485, current loop) and can communicate using ASCII, ADJUST (Telemecanique) or Uni-TE (Telemecanique) communication protocols.

A 12 input parallel link is available for connecting to the discrete outputs of a control system and commands for the serial and parallel ports can be used simultaneously.

For further details on the functions of XBT-M terminals, refer to the guide "XBT-M : Multifunction matrix display" (ref. XBT XM800E).

5.2 Application development using XBT-L900

- **Developing a new application**

The XBT-M message box has a large number of functions and provides sophisticated operator dialogue. The complexity of developing an application for an XBT-M terminal using XBT-L900 software is dependent on the functions required by the application.

The entire method using all the terminal functions is described here.
Analysis of the application must enable a certain number of parameters to be defined, for example :

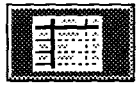
- communication protocol used
- creation of a special character font set
- use of macro-messages
- use of the operator guide
- number of application messages

The number of messages used determines the size of the memory cartridge required for the application, taking account of the fact that XBT-L900 V 1.3 allows the size of the message list and therefore the associated memory cartridge to be modified during development.

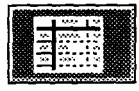
The application development method consists of performing the following steps :

Creating a special character font set

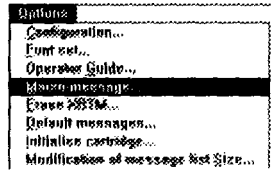
Creating a message list



Creating macro-messages

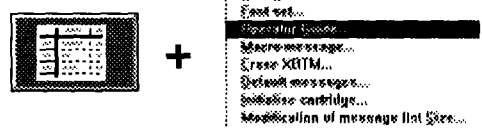


+



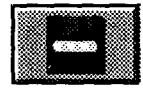
Application development using XBT-L900

Creating an operator guide



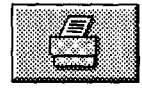
Configuring the terminal

Saving the application



Transferring the application

Printing the application dossier



Naturally, the user should ignore any step corresponding to functions not used (special character font set, macro-messages, operator guide).

- **Retrieving applications created using XBT-L900 V 1.2**

Application files created using XBT-L900 V 1.2 can quite easily be retrieved in local mode. The work directory for the old application should be selected and the old files worked on. Changing the work directory in the "Character font set" function is also valid for lists of messages and enables an old version to be modified transparently.

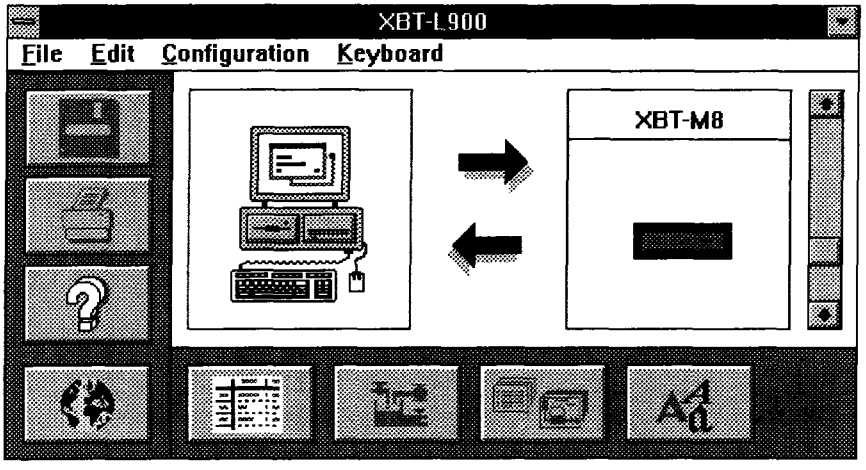
5.3 Creating the user's own font

The font set supplied with XBT-L900 V 1.3 for XBT-M terminals has 224 characters and is entitled defaut .xfn. If the user does not find the graphic or special characters he requires, it is possible to modify one or more characters in this font set or to create a new set using the default character font set as a basis.

The method of creation is very simple. The operator uses a grid of dots representing the character to be drawn and can draw the character pixel by pixel.

The creation procedure is as follows :

Select the XBT-M terminal from the main XBT-L900 window.



- Access the font set window : click on the font set icon : 

- Open a font set :

  for a new font set : click on "New"
  for an existing font set : select the font set then click on "Open".

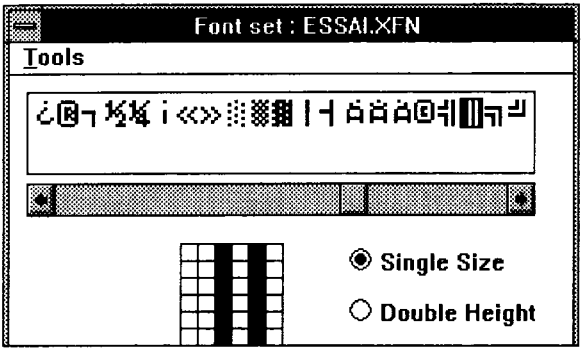
This accesses the character editor. First select the character to be modified using the scroll bar and the mouse.

Creating the user's own font

Characters can be drawn in single size or in double height, but they can be used in four authorized modes :

- single size
- double width
- double height
- double size

When creating a symbol needing more pixels it is possible to place several basic symbols side by side to create a macro-symbol (see example).



Single size : 6 x 8

Double height : 6 x 20

- Entering / modifying a character
  To modify a character, proceed as follows :

  - Select the character **resolution** : Single size or Double height.
  - Bring the character into the window by using the **scroll bar**.
  - Select the character you wish to modify by clicking higher up, in the window located above the scroll bar. It then appears in reverse video.

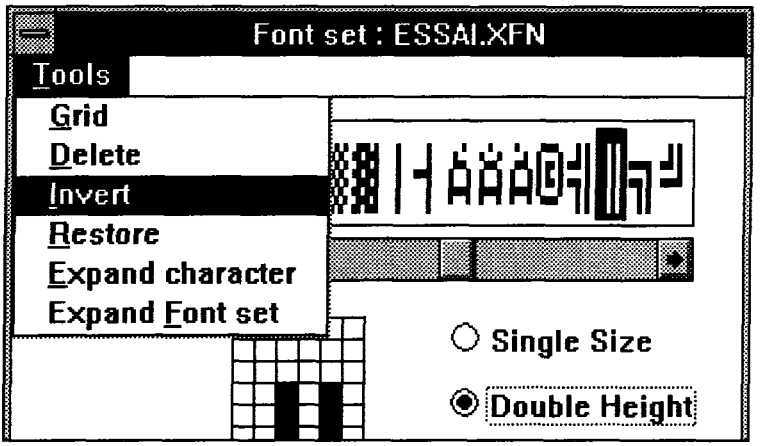
Using the grid, it is possible to modify each of the **pixels** which make up the character. To modify a pixel, click on it. To make the same modification to several pixels, click on the first pixel, then drag the mouse over all the other pixels you wish to modify, holding the mouse button down. Release the button once all these pixels have been modified.

It is also possible to use the **tools** (available in the window) to perform certain operations on the selected character, or on the complete font set.

Creating the user's own font

- **Tools available**

These commands are available in the "Tools" menu in the window.



- **Grid :** toggles the appearance of the grid in the character modification window
- **Delete :** the selected character is replaced by a blank character (all its pixels are white)
- **Invert :** the selected character is changed to reverse video (each black pixel is replaced by a white pixel and vice-versa).
- **Restore :** cancel the last modification made to the selected character.

The next two tools are only available in Double Height resolution on the XBT-M :

- **Expand character :** automatically draws the selected character, based on the same character previously created in Single Size resolution.

  Use to :
  - Change to single size,
  - Create or modify a character,
  - Change to double height,
  - Select the Expand character command.

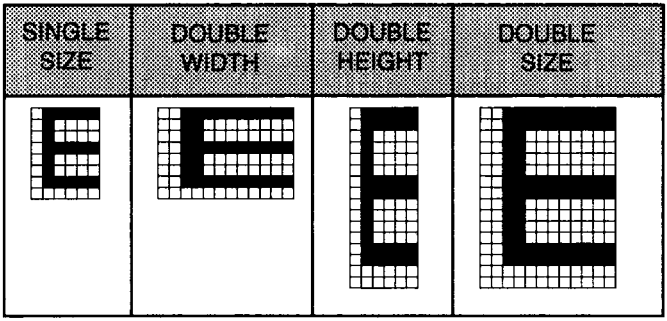
- **Expand font set :** automatically draws each character in the font set from the same character previously created in Single Size resolution.

  Use to :
  - Change to single size,
  - Create or modify any characters in the font set which you wish to change,
  - Change to double height,
  - Select the Expand font set command.

Creating the user's own font

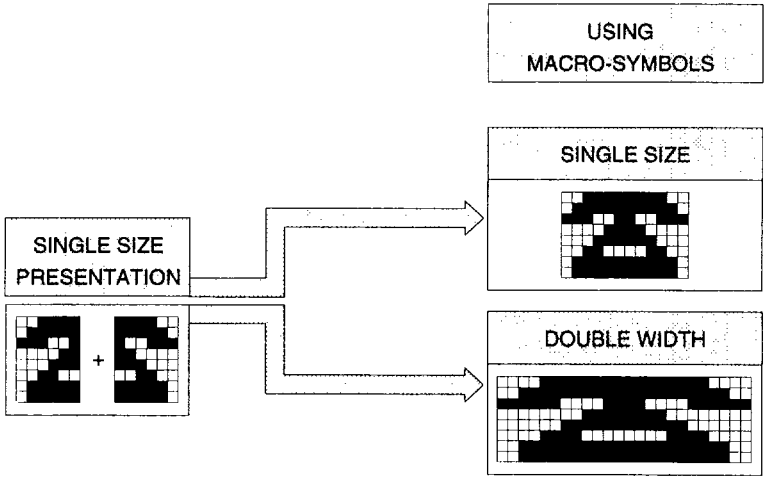
When a symbol is created, it can be displayed in the four display modes and can therefore be used in messages of various sizes.

Example of the display of a symbol created in single size and expanded to double height.



• Macro-symbols

As there are no inter character spaces, "macro-symbols" can be created in any display mode by placing characters side by side.



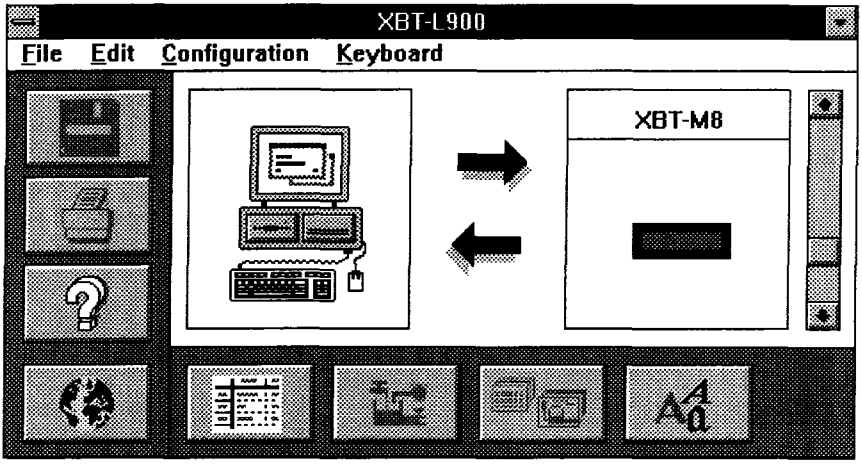
• Saving the font set

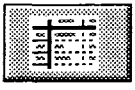
The font set is saved either by clicking on the diskette icon of the main XBT-L900 window, or by closing the font set window.

5.4 Creating the message list

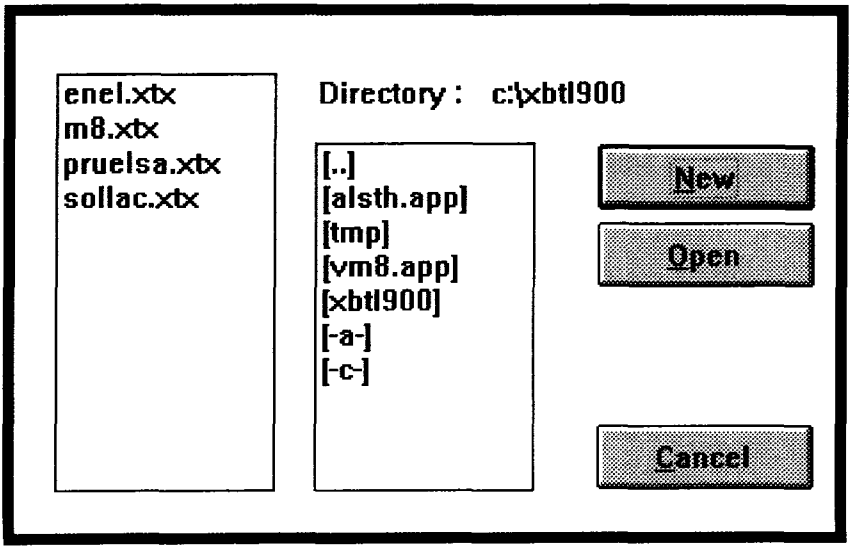
To create a message list, start at the main XBT-L900 window (XBT-M terminal selected).

- Main window with XBT-M terminal selected



- Create a message list : click on icon 

The window for opening a document appears.

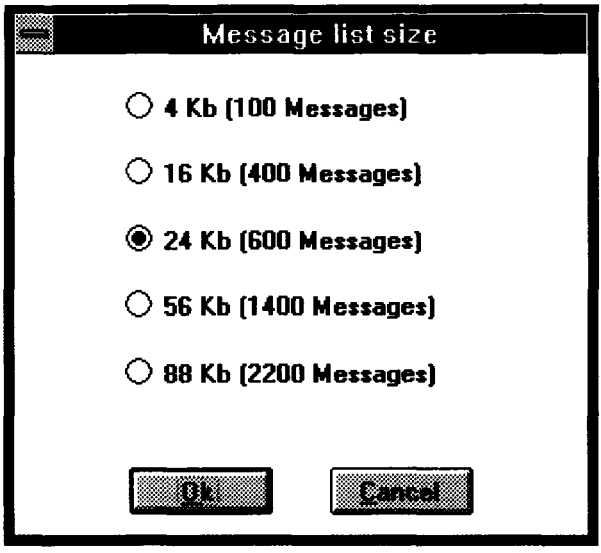


Creating the message list

• New message list

In the window for opening a document :
Click on "New" to create a new application or to open an existing file.

After clicking on "New", a window called "Message list size" appears :



A 24 K cartridge is selected by default. This cartridge corresponds to a list of 600 messages. When there is sufficient information about the application, a different cartridge size can be defined. The command "Modification of message list size" is used to change the size of the cartridge.

Warning:

The size of the message list may be limited by the memory available for Windows in the PC. If there is insufficient memory an error message appears and a smaller size must be selected, or more memory freed for Windows.

If there is insufficient memory to open an existing message list (file . xtx), the same error message appears and more memory must be freed for Windows.

If the size options in the "Message list size" window are greyed out, the size of the message list cannot be selected due to lack of memory available in Windows.

Creating the message list

After clicking on "Ok" or opening an existing file, the "message list" grid appears :

Example : Sollac.xtx

Message list - ALSTH.XTX

Options

Num	Texte	T	X	Y	Coeff	Var.	A	F	R
0000	Speed :	U	0	1	1	#	#	0	0
0001	Right Translation	U	0	1	1	#	#	0	0
0002	Left Translation	U	0	1	1	#	#	0	0
0003	Weight : ____ Kg	U	0	1	1	#	#	0	0
0004	ON	U	0	1	1	#	#	0	0

This list comprises the following parameters :

NUM	allows a number to be associated with the message, and the number to be called up by a command from the control system
TEXT	message text (21 single size alphanumeric characters) or length of the histogram
TYPE	message type (V = fixed display, D = blinking display, H = histogram display)
X	position of first character of message in the display unit (0≥X≥84), X + message length ≤ 84
Y	Select the display line (Y = 1 or 2 according to the size of characters (Y = A,B,C,D or E for histograms)
A	Confirm parameters for updating the variables (A = 1 with updating, A = 2 without updating)
C	variable conversion coefficient (0.001 ≤ C ≤ 1)
V	Associated TSX 7 variable, in Uni-Te or ADJUST protocol
F	size of message and histogram display (F = 1 double height display, F = 2 double width display, F = 3 double size display)
R	Number of network to which the PLC is connected
S	Station number (PLC address)
G	Gate number (Uni-Telway addressing)
U	Module address (slot in the I/O rack)
W	Channel number (Uni-Telway device address)

For further details on using message parameters in an XBT-M terminal, refer to the user guide "XBT-M : Multifunction display" ref. XBT XM800E.

Creating the message list

- **Entering data**

  - The various parameters can be entered using the mouse and the keyboard
  - The parameter to be entered is shown in bold
  - To move around the grid, click once on the selected parameter
  - To move around using the keyboard use the arrow keys, →, ↑, ↓. Confirm selection of a message parameter by pressing ⏎.

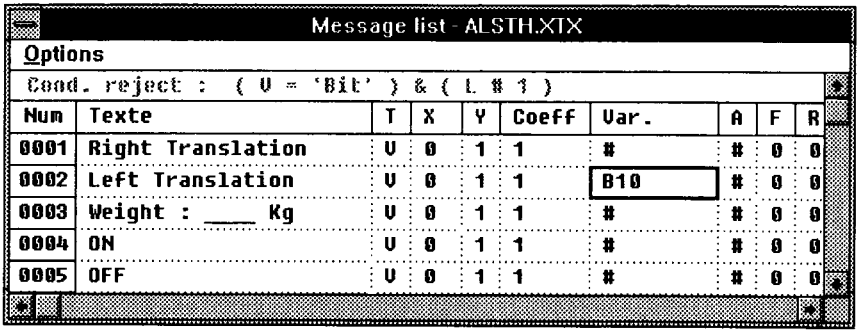
Important :
Once a message parameter has been selected, entering a single character will delete the whole of any message field and allow a new message to be defined.

To modify an existing message, the cursor must be placed at the end of the message by pressing F2 or the ⏎ key (deletes the preceding character).

Any message definition or movement is then performed from the cursor position.

A syntax check is performed on each parameter, and it is not possible to proceed to the next parameter until the current parameter has been correctly constructed.

Moving from one line to another can only take place if the defined message is coherent. If not, a message is displayed which tells the operator the source of the error.



When using the keyboard, confirming the final message parameter automatically brings up the next message.

Notes :

- The operator can call up the "Help Menu" (on-line system help) at any time for details concerning the window in use.
- For information about the significance, the limits and the use of any parameters associated with a message, refer to the user guide "XBT-M : Multifunction matrix display" ref. XBT XM800E.

- **Selection of the font set** (only possible with the mouse)

One of the main advantages of the XBT-M terminal is that the matrix display can display ASCII messages and symbols at the same time. These symbols must be created using a special font set which has been saved.

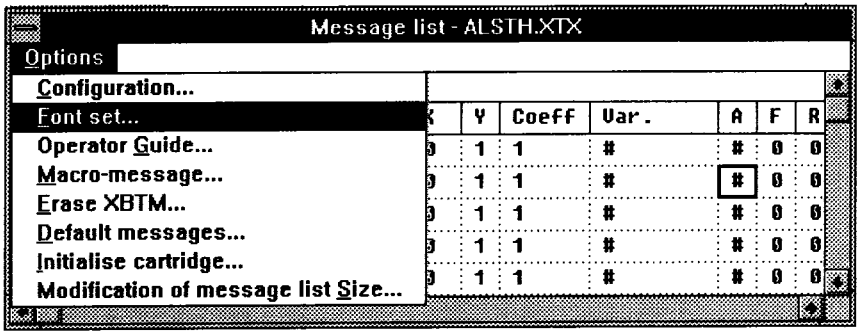
In the message text field, it is possible to use characters which cannot be accessed from the keyboard, or to use characters in a font set which has previously been created (see Section 5.3).

The XBT-M supports a default font set of 224 single size characters and a default font set of 224 double height characters (both these font sets are stored in the same file).

- When parameter F of the selected message is 0 or 2, the single size font set is displayed.
- When parameter F of the selected message is 1 or 3, the double height font set is displayed.

When a font set or special character is used in a message, the font set used to display the message can be selected.

The "Options" menu in the message list window accesses selection of the font set.

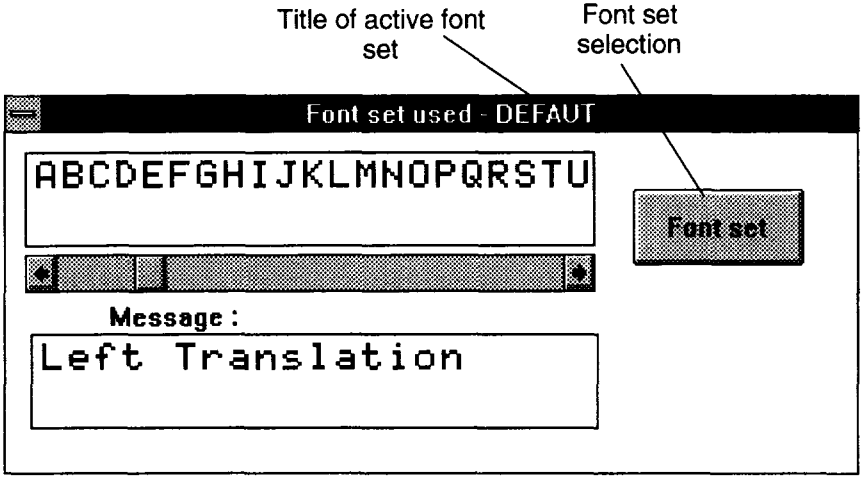


This function enables special user-defined characters to be used in a message. The defined font set is the same for the whole message list.

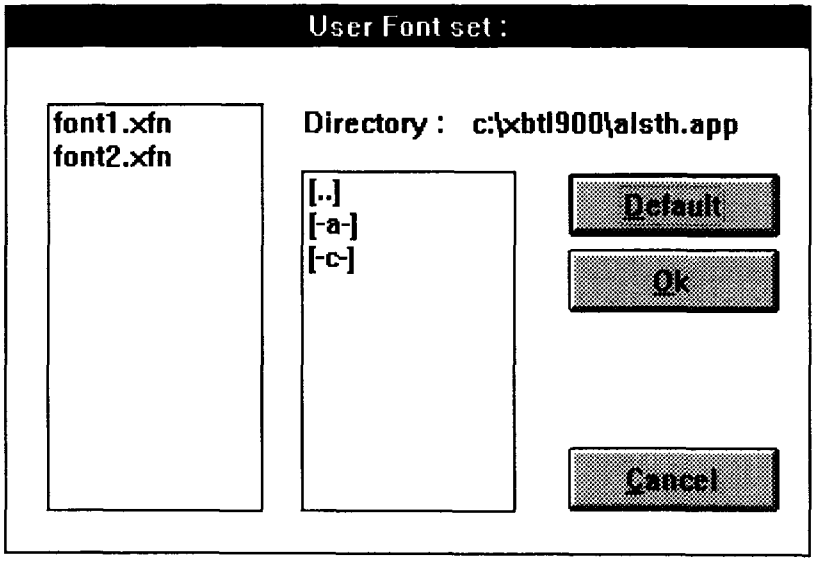
Creating the message list

Selecting the font set :

Click on the FONT SET button in the active "Font set" window, then select the required font set.

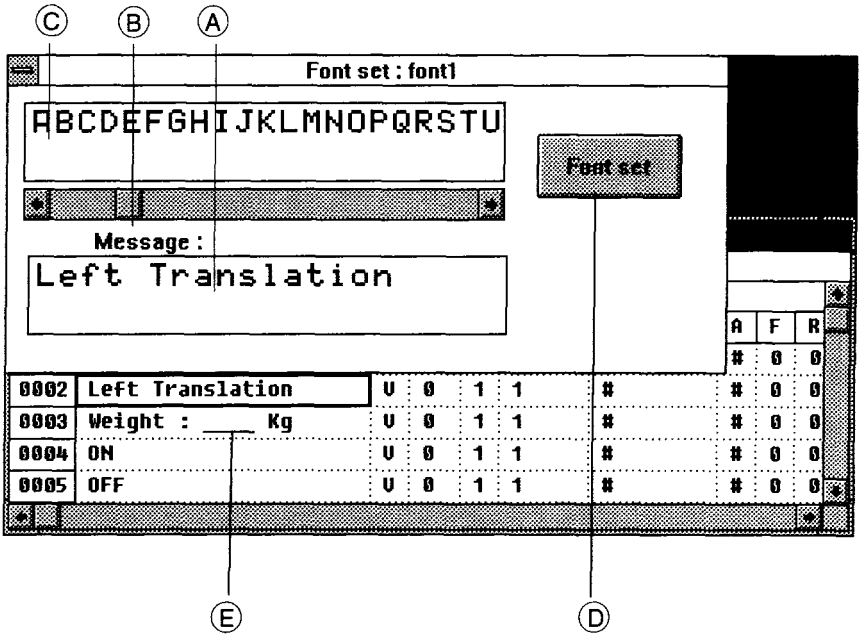


Select the .xfn file containing the font set to be used for display of messages



Creating the message list

The font set window appears :



Ⓐ Zoom of message currently being edited.

Ⓑ Scroll bar for the selected font set.

Ⓒ Window displaying characters for selection/entry.

Ⓓ Selection of font set.

Ⓔ Current message.

Entering characters in the displayed font set :

With the Message list and active Font set windows both open :

- Click on message field F and select the format in which you wish it to be displayed.
- Click on the message text field.
- Type in the characters which can be accessed from the keyboard (these appear in the zoom of the active Font set window).
- Click in the active Font set window.
- Use the scroll bar to bring the required character into view.
- Click on the required character, which then appears both in the zoom, and in the text field of the message list.
- Click again in the message text field.
- **TYPE F2 BEFORE CONTINUING TO ENTER FROM THE KEYBOARD.**

Comment :

Characters which cannot be displayed by the microcomputer show up as black squares in the message text field. To see how it will actually look, leave the active Font set window open, and click on the message text field. The message appears in the zoom window exactly as it will be displayed.

Confirming the active font set

When a special font set is selected in the message list to be used for one or more messages, the last font set that has been used is confirmed.
The XBT-M only manages one 224 character user-defined font set. This means that all the active symbols in an application must be located in the same font set.

This font set is transferred to the XBT-M when the message list is transferred.

Saving the message list

The message list is saved on closing, or by clicking on the diskette icon of the main XBT-L900 screen.

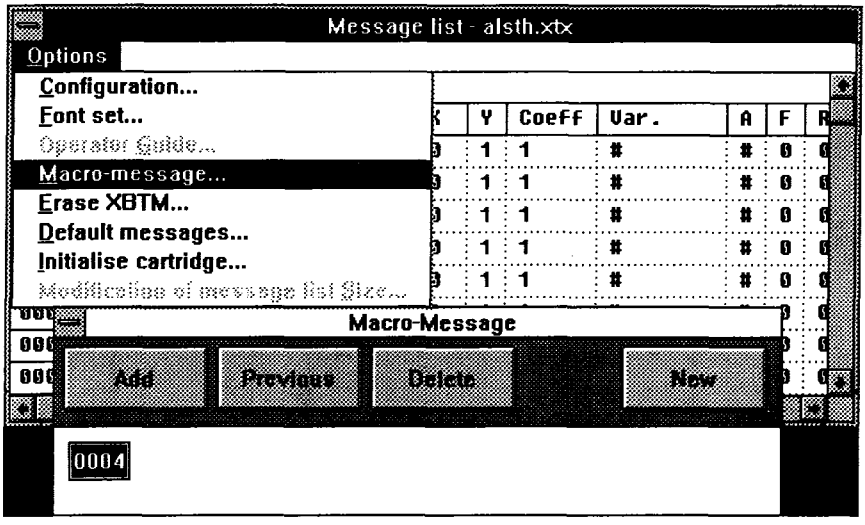
5.5 Creating macro-messages

A simple message in the message list has a display field of 21 single size characters. Sometimes data or operator instructions above this size have to be displayed.
In this case, the XBT-M terminal can use an 84 character display buffer to manage a function for scrolling the messages, which can link the messages together to make up a macro-message.

Creating a macro-message :

The message list should be open and completed with the messages which are to be displayed. A macro-message is made up of a string of messages (8 maximum) linked together by their numbers.

To create a macro-message, select the first message in the macro-message in the message list (eg : message N°4). Open the macro-messages window using the "Options" menu in the message list and the "Macro-message" command.



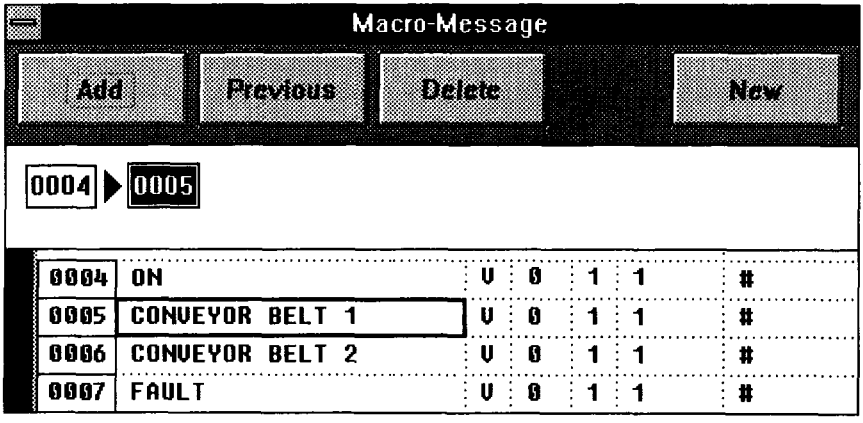
Creating macro-messages

The "Macro-message" window appears with the number of the selected message. This window has 4 commands which are used to create the macro-message.

Add

Select from the message list the next message to be added and click on "Add".

This selection is made using the mouse on one of the fields in the message.



The macro-message is constructed in this way, with up to 8 messages (size of the macro-messages window). The "Add" command enables a message to be inserted into a macro-message using the following procedure :

- select the message to be inserted from the message list
- select the number of the message in the macro-message window after which the additional message is to be inserted
- click on "Add"

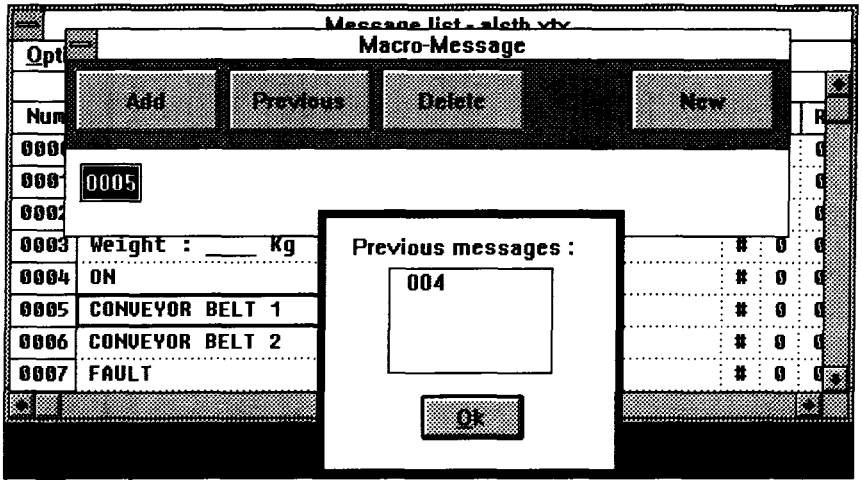
Creating macro-messages

Previous

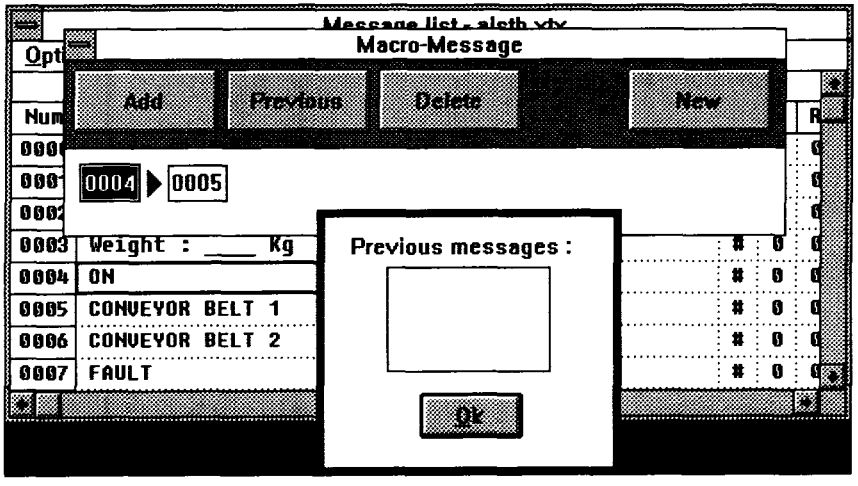
This command checks that the first message in a macro-message has been selected, while the macro-message is being displayed.

Example :

- message 5 in the message list is selected, the "Macro-message" window is open, the "Previous" command shows that the macro-message does not start at 5.



- Close the "Macro-message" window, select message N°4 in the message list, open the "Macro-message" window, click on "Previous" and see that the macro-message starts at 4.

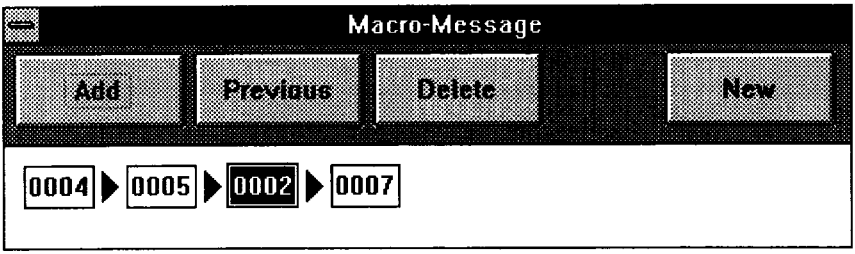


Creating macro-messages

Delete

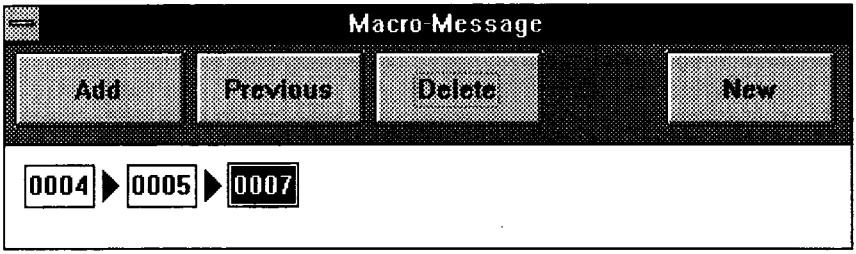
To delete a message from a macro-message, select it in the "Macro-message" window, and click on "Delete". If this message is not the last one in the macro-message, a link with the following message is created.

Example : Deleting message N° 2



Select the message to be deleted

The selected message is deleted.



The new macro-message starts at message N°4, contains message N°5 and ends at message N°7.

Warning :

Deletion cannot be undone. If a mistake is made, the "Add" command must be used to insert the deleted message.

Creating macro-messages

New

This command enables a new macro-message to be created using the following procedure :

- select the first message of the macro-message to be created from the list of messages
- click on "New" and create the associations using the "Add" command

The "New" command also enables existing macro-messages to be displayed. When a message number in the message list has been selected and "New" has been clicked on, the message will appear in the "Macro-message" window if it is already a macro-message.

If this happens, check that it is the first message in the macro-message by using the "Previous" command.

- **Saving macro-messages**

The macro-messages are linked to the open message list.

MACRO-MESSAGES MUST BE DEFINED BEFORE SAVING THE MESSAGE LIST

THEY WILL BE SAVED AT THE SAME TIME AS THE MESSAGE LIST

5.6 Creating the operator guide

The operator guide is a structured set of messages defined during the creation of the application. It is intended to help the operator. Special keys are used to move around the message tree structure, or to implement necessary actions under the control of the control system depending on how far advanced the process is.

Operator guide structure

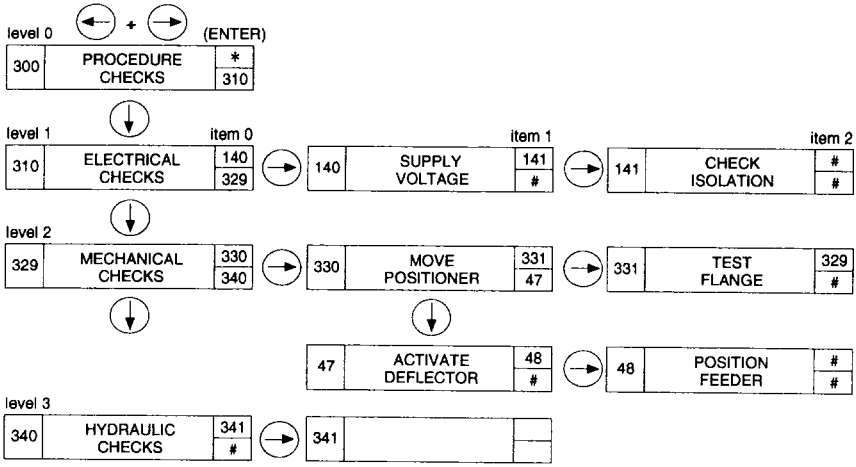
The operator guide comprises messages or standard macro-messages from the message list with two additional parameters (Item and Level). These create the links between the messages which make up the operator guide.
When creating the operator guide, it is useful to display these links to create the structure of the operator guide.

N°	TEXT + PARAMETERS	ITEM
		LEVEL

When creating the operator guide using XBT-L900, the Item and Level parameters are automatically calculated by the software as a function of the structure defined for the operator guide. The links between messages are automatically created by the software.

Three pushbuttons, or commands transmitted by the control system, are used to enter or move around the operator guide. For clarity in the following examples, the pushbuttons are used. The result is identical to the commands transmitted by the control system.

Example of operator guide structure :



Creating the operator guide

The operator moves around the operator guide either horizontally on one level item by item or vertically level by level.

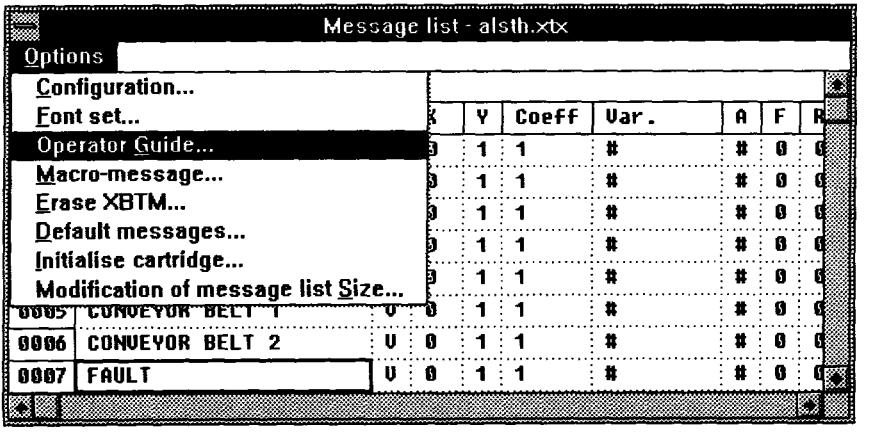
The following commands are used to move around:

GUIDE ACTIONS	OPERATOR ACTIONS	COMMENT
ENTER	← + →	At the ITEM or LEVEL message which = *
CANCEL	←	Cancels last operation
NEXT ITEM	→	Move to last possible item
NEXT LEVEL	↓	Move to last level of guide
PREVIOUS LEVEL	← + → ⇔ ↑	Can return to level 0
EXIT	← + → = ↑	From level 0

For further details on using the operator guide, refer to the user guide "XBT-M : Multifunction Matrix Display" (ref. XBT XM800E) Section 1.7.

• Entry of operator guide

Entry of the operator guide comes after entry of messages and macro-messages. The operator guide editor is accessed by the "Options" menu in the "Message list" window.



Creating the operator guide

• Creating the operator guide

The first message in the operator guide should be selected from the message list using the mouse, then the structure of the guide is created using the "Add H" or "Add V" commands.
The next message is then selected from the message list, and it is entered in the operator guide in the same way.
The same procedure is used for all messages in the operator guide.

The first message in an operator guide can only have one link.
Messages are represented in the guide by a box containing the number of the corresponding message. Messages are selected by clicking on them with the mouse. The selected message appears in reverse video and it is at this point that the commands "Add H", "Add V" and "Delete" are available.

When a branch of the operator guide cannot be represented on screen (overlapping with another branch), the access arrow is greyed out. To make the missing branch appear, double-click on the box containing a greyed out arrow.

A message that is already used in the operator guide or is part of a macro-message is represented by a shaded box. The "Add H" and "Add V" commands do not work on this type of message.

These three commands are used to create the structure of the operator guide :

Add H -> ITEM
This command enables the operator guide to be extended horizontally. It adds horizontally (Item) the message selected from the message list to the operator guide which is being set up.

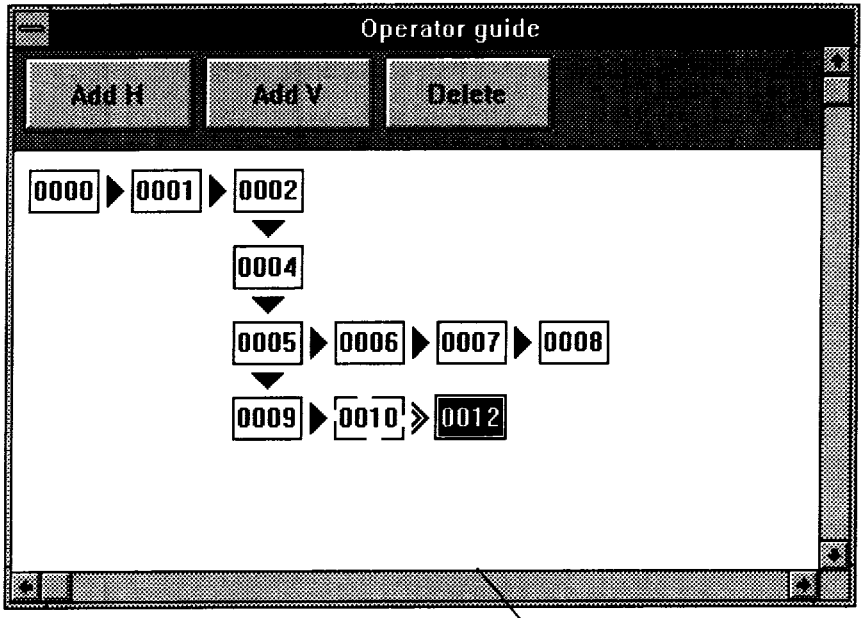
Add V -> LEVEL
This command enables the operator guide to be extended vertically. It adds vertically (Level) the message selected from the message list to the operator guide which is being set up.

Delete
This command deletes the selected message from the operator guide which is being set up. Warning : this operation can wipe out an entire branch of the operator guide and cannot be cancelled.

Creating the operator guide

Using macro-messages in the operator guide

Macro-messages can be used in the user guide. A macro-message is represented by its first and its last message, linked by a double arrow.



The macro-message is selected from the message list by the number of its first message. The commands used are the same as those used for messages.

A macro-message in the operator guide is selected by the number of its last message.

example : 0010 » 0012 for the macro-message from 10 to 12.

To delete a message from a macro-message :
- Select it by clicking on its box
- Click on Delete.

Warning : this operation can wipe out an entire branch of the operator guide which is directly linked to the deleted message.

Creating the operator guide

Displaying the operator guide

- Open the operator guide window.
- Double-click on the boxes containing a greyed out arrow. To view the whole of the operator guide window, it may be necessary to use the scroll bars.

Saving the operator guide

Only one operator guide is linked to the message list.

THE OPERATOR GUIDE MUST BE DEFINED BEFORE SAVING THE MESSAGE LIST

IT WILL BE SAVED AT THE SAME TIME AS THE MESSAGE LIST

Operator guide characteristics

The operator guide is available on XBT-M 80411X terminals. Its maximum size is 12 levels and 93 items. Control system commands or pushbuttons linked directly to the XBT-M terminal, and activated by the operator, are used to move through the items and levels.

5.7 Configuration - Messages displayed by default

• Configuration

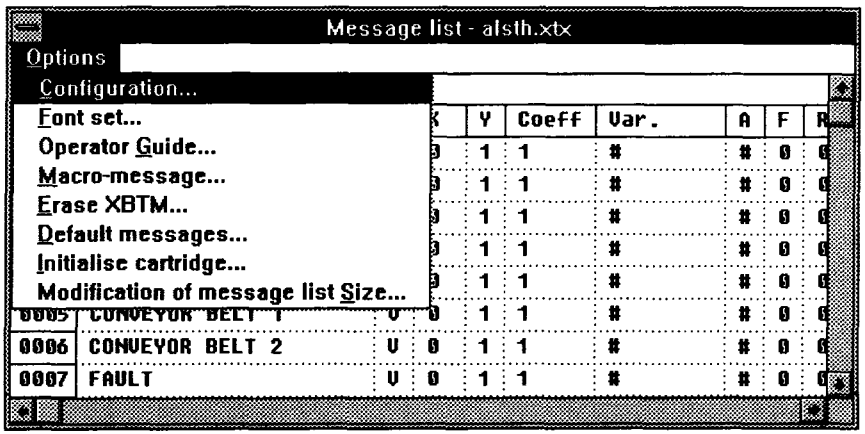
Configuring the XBT-M terminal enables the operating parameters to be set. For certain parameters this configuration can be performed in local mode. Connection to the XBT-M terminal is necessary to test the other adjustment parameters, such as screen brightness.

Parameters configured in local mode

- Communication protocol used
- Configuration of the serial operating link (link with the control system)
- Selection of the printing operation
- Configuration of the serial printer link
- Display language for the XBT-M terminal system messages
- Selection of messages displayed by default
- Configuration of the display unit
- Clock update

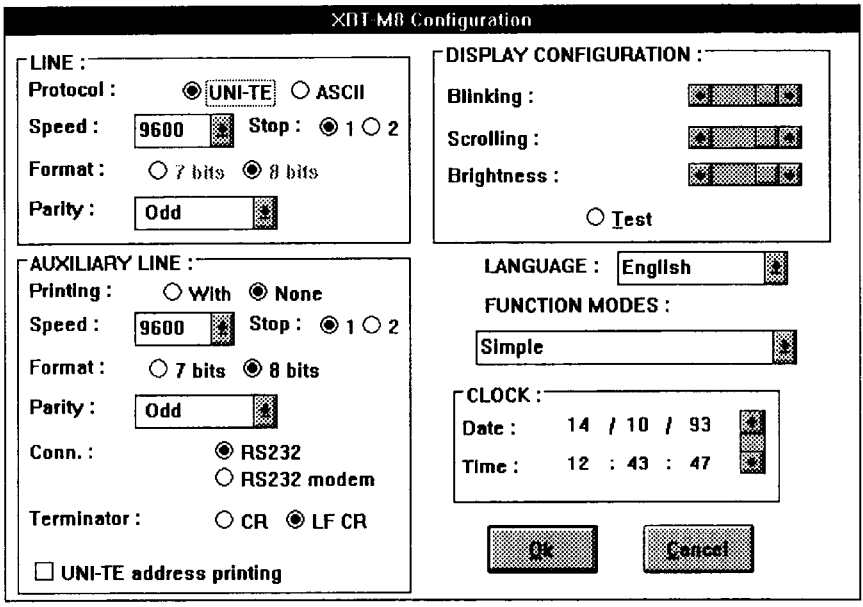
• Accessing the configuration

The configuration is accessed from the "Message list" window. Select "Configuration" in the pull-down "Options" menu.



Configuration - Messages displayed by default

The "XBT-M8 configuration" window appears :



This window has 6 information blocks to be filled in.

Serial operating link configuration menu

- select the protocol (Uni-Te or ASCII)
- serial operating link parameters

Auxiliary line configuration menu (printer on XBT-M80411X)

- printing operation

"With" printing authorizes the copying of messages and transparent printing (refer to the XBT-M installation guide : Multifunction display unit ref. XBT XM800E section 5.4, 6.4 or 7.4 depending on the protocol selected).

Select the "CR" terminator if the printer is configured for auto-LF, if not select CR LF (line feed generated by the XBT-M terminal).

To print the UNI-TE address (Uni-Te protocol only) : click in the box to select or deselect printing of the UNI-TE client address (station connected to the XBT-M terminal where the terminal looks for the value of the variable).

- serial printer link parameters

speed (from 110 to 9600 bauds)
number of stop bits (1 or 2)
number of data bits (1 or 2)
parity bit (even, odd or without)
RS 232 (No management of service signals, pins 2-3-7 only)
RS 232 Modem (Management of service signals for the RTS, CTS, DSR, DTR data flow control, complete version of the RS 232 C cable)

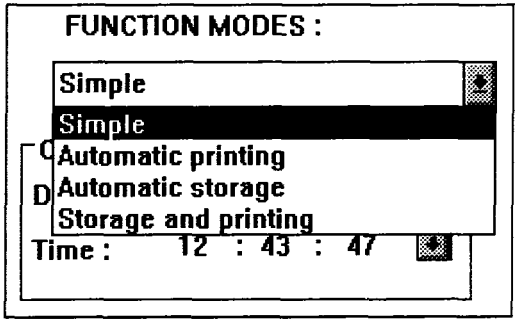
To ensure correct printing these parameters must be identical in the configuration of the printer used and in the XBT-M terminal.

Language selection menu

Select the language in which the XBT-M system messages will be displayed (8 languages available : English, French, Spanish, Italian, Russian, German).

Compound function (XBT-M80411X only)

The operating modes menu is used to select the type of printing and saving.



- Simple

No message is printed systematically, all orders to print come from the control system.

- Automatic printing

All messages displayed on the XBT-M terminal are systematically sent to the printer ("With" printing in the configuration).

- Automatic saving

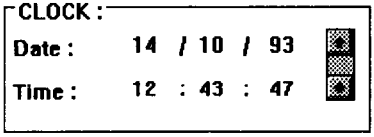
All displayed messages are saved to the log, and there is no systematic printing.

- Saving and printing

All displayed messages are saved to the log and systematically printed. This mode corresponds to automatic saving and automatic printing.

Window for adjusting the date and the time of the clock

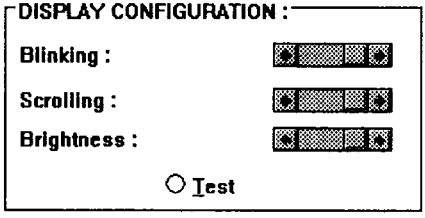
This function is used to adjust the date and time of the internal clock in the XBT-M terminal. The date and time are initialized by the integral clock in the PC when the window is opened.



Select the item to be modified and use the arrows to alter its value. The clock in the XBT-M terminal is initialized to this value when the configuration is transferred.

Window for adjusting the display parameters

This function is used to adjust the legibility of the display according to the conditions of use.



This window is used to adjust how quickly the lamps blink, message scrolling speed and the brightness of the display. If the XBT-M terminal is connected to a PC, pressing "Test" will immediately show the result of the modifications.

Configuration - Messages displayed by default

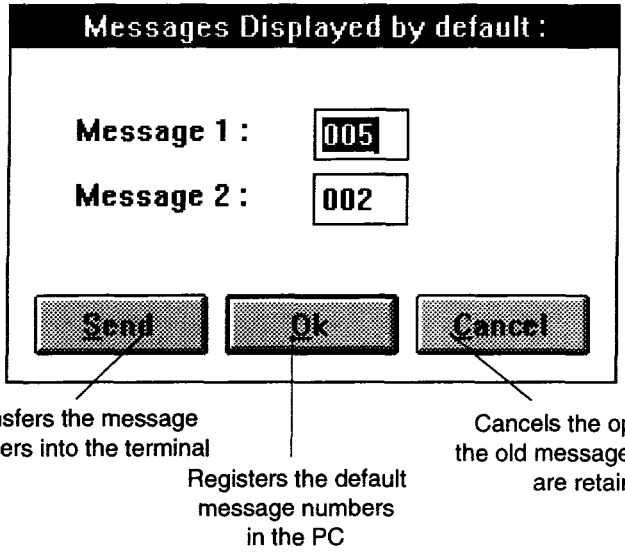
• Messages displayed by default

The user can define one or two messages to be displayed by default on power-up (if these two messages are not defined, the XBT-M displays "RUNNING" mode on the first line and the time on the second line for XBT-M80411X).

Selection is accessed from the "Message list" window.

Select "Default Messages" in the Options menu.

The "Messages Displayed by Default" window appears :



To define the messages :

Click on the "Message 1" or "Message 2" entry zones, then enter the message number using the keyboard.

The display parameters defined in the selected message (s) are implemented, in particular the display format.

Warning :

When a message list or a configuration is transferred, this data is not sent to the XBT-M terminal. To display the default messages when the terminal is powered up, the default messages displayed must be "Exported" after the application has been transferred.

5.8 Saving the application

Saving an application consists of saving the two files containing the application developed for the XBT-M to the PC disk (hard disk or diskette).

- the message list and configuration data
- the special font set defined by the user

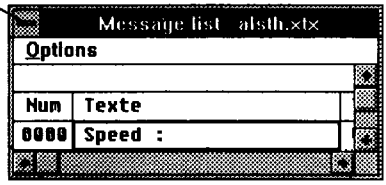
Saving these files is always done in the same way, using one of three methods.

- select the "Save" or "Save as" commands in the "File" menu of the main XBT-L900 window

- click on the diskette icon in the main XBT-L900 window

- close the window by double-clicking on the system menu box

This method does not allow the file name to be changed.



A document can be **saved** using its current name or it can be **saved as** a different name.

The current name is the name of the document being worked on.
This name appears in the title bar of the window, after "Message list".

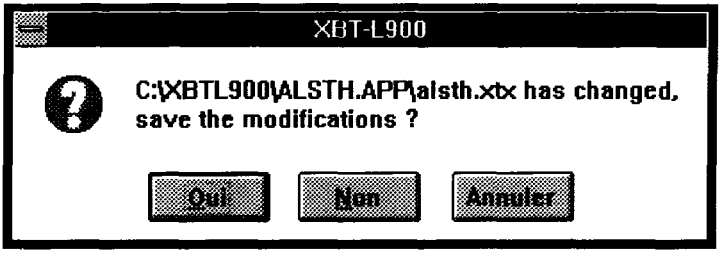
Above example : sollac.xtx

The "Save" command in the "File" menu of the main XBT-L900 window saves the file under its current name, without asking for confirmation. The old file is overwritten by the new one.

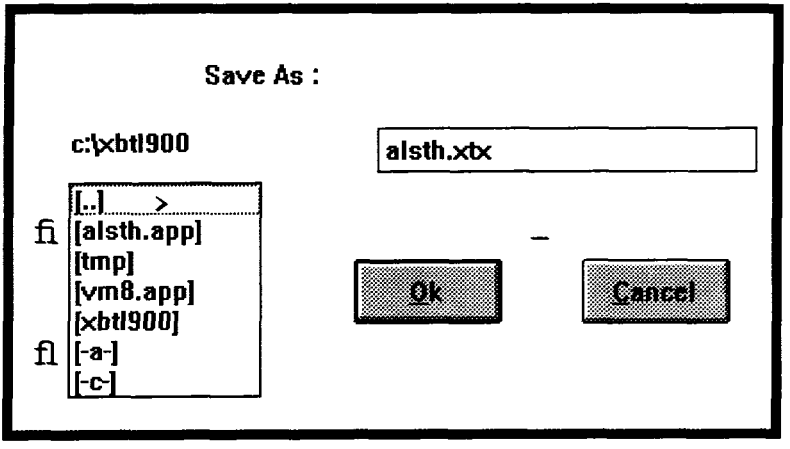
Double-clicking on the system menu box enables the user (after confirmation) to close the window and save the modifications, to cancel the operation and leave the window open, or to close the window without saving the modifications.

Saving the application

Confirmation window :



The directory and the name under which the file is saved can be changed by using the "Save as" command in the "File" menu, or by clicking on the diskette icon of the main XBT-L900 window.



`	Current directory
,	Return to c: directories
^	Select directory
~	Select volume
_	File name
	Confirm/cancel

5.9 Printing and transferring the application

• Printing

In order to print out an application a message list must be open. The printing functions are accessed either by clicking on the printer icon (yellow) of the main XBT-L900 screen, or by selecting "Print" in the "File" menu.

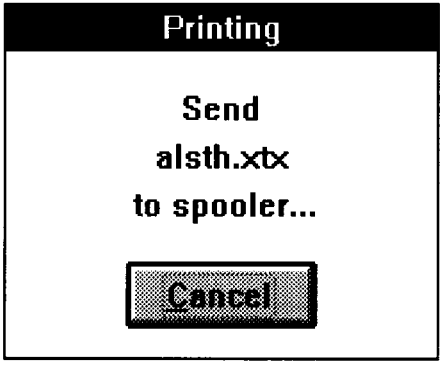
The application is printed in the following format by default :

- Configuration of communication link
- Message list
- Macro-messages and operator guide

It is possible to print only part of the message list by selecting the zone to be printed. Use the mouse to select as follows :

- select the first message (click on the message number)
- drag down using the left hand mouse button until reaching the last message required.

The following message appears during printing :



If a problem occurs during printing, check the printer configuration in the WINDOWS configuration control panel (Main Group).

Printing and transferring the application

• Transferring from PC -> XBT-M (Export)

The XBT-M terminal must be in "Running" mode and connected to the PC via the serial link for all transfer operations. The configuration parameters of the PC <-> XBT-M serial link are defined in the "Configuration" menu of the main XBT-L900 window.

To transfer an application created using XBT-L900 to an XBT-M terminal proceed as follows :

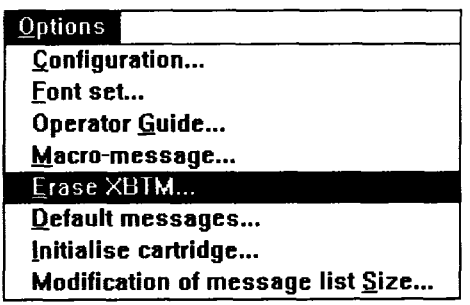
- initialize the cartridge (optional)
- delete the messages (optional)
- transfer the message list
- transfer the special font set
- transfer the configuration
- transfer the default messages

- Initializing the cartridge

New cartridges must be initialized. Otherwise this operation is to initialize the memory and ensure that the application only contains the elements transferred after initialization.
The operation is executed by the "Initialise Cartridge" command in the "Options" menu in the message list.

- Deleting messages

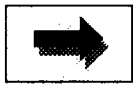
This operation deletes the contents of the stored message list from the XBT-M terminal memory. If the open message list is smaller then the XBT-M terminal cartridge, there is a partial deletion limited to the message list. The messages to be deleted can be selected from the message list using the mouse.
This operation is implemented by the "Erase XBT-M" command in the "Options" menu in the message list.



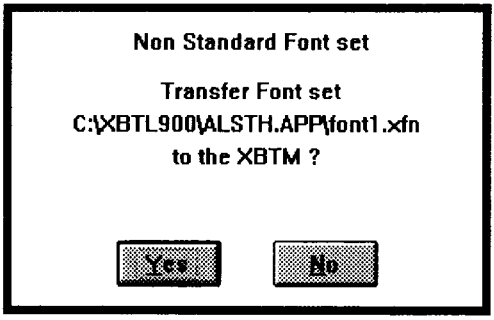
Printing and transferring the application

- Transferring the message list

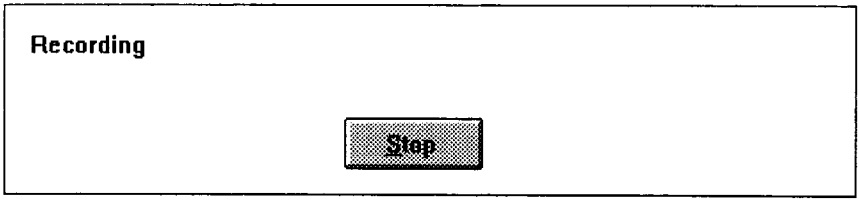
This transfer is only possible if the message list is open and if its size corresponds to the size of the XBT-M memory cartridge. A partial transfer is possible by selecting the messages to be transferred.

Transfer is accessed by clicking on the arrow : 

There are two possible situations : if the message list uses the default font set, the messages are sent to and saved by the terminal.
If the message list uses a font set other than the default set, the software suggests transferring the relevant font set automatically.



A window showing the various stages of the transfer is displayed. This enables the user to follow the progress of the transfer and warns him of any problems.



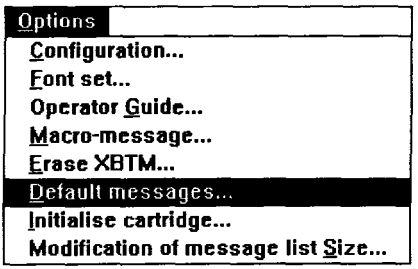
Printing and transferring the application

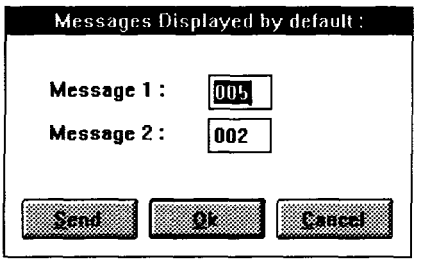
- Transferring the configuration

To transfer the configuration the message list and the configuration window should be open. The transfer is initiated by clicking on the arrow.

- Transferring the default messages

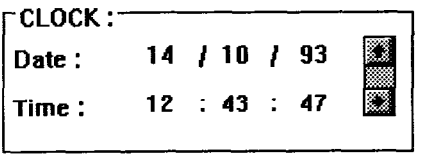
If the message numbers are defined in the "Messages displayed by default" window, these numbers must be transferred to the XBT-M terminal. On the next power-up these two messages will then be displayed instead of "RUNNING" appearing on the first line and the time on the second line.
This operation is performed by selecting "Default Messages" in the "Options" menu in the message list, and by clicking on the "Export" button.



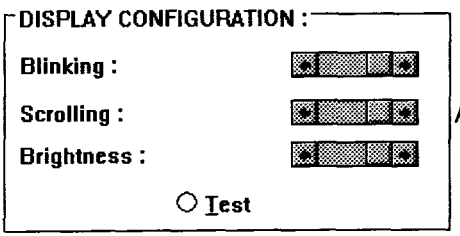


- Adjusting the display unit and the clock

The display unit and the date and time of the clock can be adjusted when the XBT-M terminal is connected to a PC. These adjustments can be made from the "Configuration" window **and are transferred to the XBT-M terminal at the same time as the configuration.**



Changing the clock



Adjusting and testing the display unit

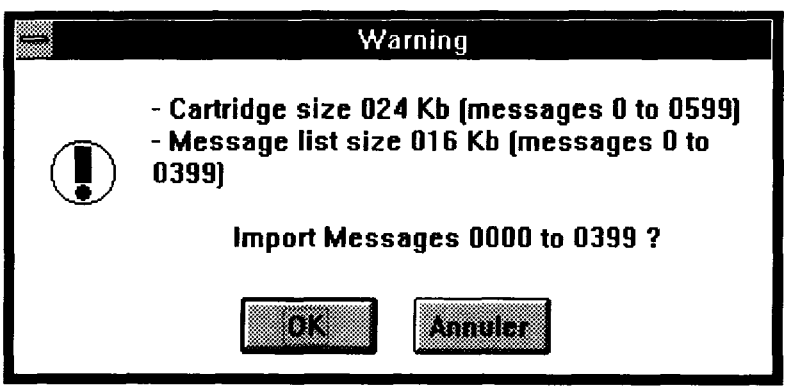
• Transferring from XBT-M -> PC (Import)

Transfers can be made from an XBT-M terminal to a PC. A special font set (import implemented in font set mode) or a message list can be imported.
The message list must be empty and must be the same size or larger than the list located in the XBT-M terminal.
If the open list is smaller than the message list in the terminal, only a partial transfer is implemented.

Example :

Size of cartridge in XBT-M terminal : 24 Kb, 600 messages
Size of message list open on PC : 400 messages on a 16 Kb cartridge.

The operator is then warned that only messages 0 to 399 will be transferred.



Is also possible for the user to transfer only selected messages. Use the mouse to select the block of messages to be transferred from the message list, then initiate the transfer.

Communication error

If there is a problem in communicating with the XBT-M 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-M and PC using an XBT-Z915, 905 or 9052 cable should be checked.

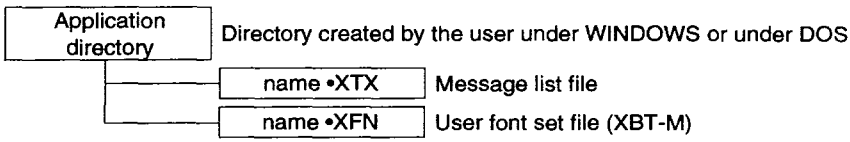
The "COM 1:" or "COM 2:" communication ports should also be checked to make sure they correspond to those in use.

6.1 File organization

XBT-L900 V 1.3 organizes its files as follows :

- **Terminals with keyboard / display and display units**

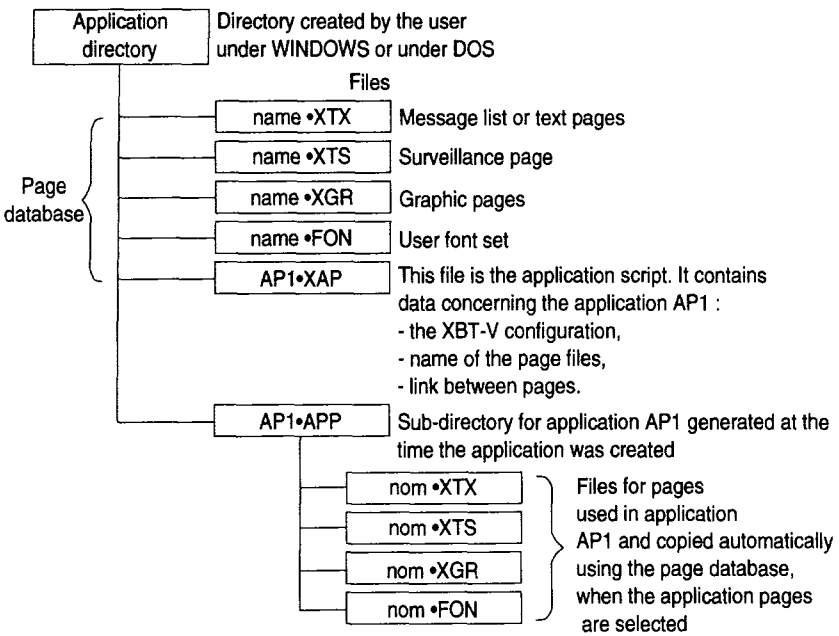
  The application directory contains :



  - the term "application" defines a message list,
  - in the case of the XBT-M display unit, an "application" groups together a message list, a configuration and a font set in two files.

- **Screen terminals**

  The application directory contains :



The term "application" defines a set of pages as well as the links between the pages.

The name of a file can comprise up to 8 characters followed by an extension of 3 characters. The extension is added by the program and serves to identify the type of file.

6.2 Erasing

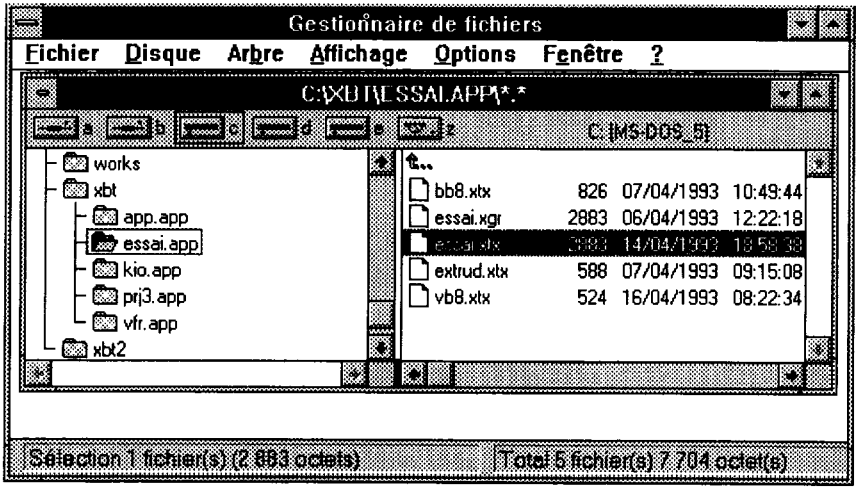
- **Erasing an application file**

Use the "file manager" which is in the WINDOWS main group.

- Launch the file manager by double-clicking on its icon,
- Select the storage drive where the file you wish to erase is located (click on its icon).

The program manager displays the tree structure of the directories in this drive :

Note: You should get the following screen in English from you Windows software.



- Select the directory where the file you wish to erase is stored (double-click on the directory name),
- Repeat this operation as many times as necessary if the file is located in a sub-directory,
- Click on the file name (eg : ESSAI.XTX),
- Select the command "File" then "Delete",
- Confirm deletion.

- **Erasing a directory**

The procedure is the same as for erasing a file, but instead of selecting a file name, select a directory name.

For further information about these operations, refer to the WINDOWS user guide.

6.3 Compatibility

- **Communication protocols**

XBT terminals support the following communication protocols :

- **ASCII mode** : allows the XBT to be connected to any system equipped with a serial link communication module.

- **ADJUST protocol** : allows the XBT to be connected to the terminal port of any Telemecanique TSX 7 series PLC.

- **UNI-TE protocol** (communication protocol for the Telemecanique UNI-TELWAY multidrop industrial bus) : allows the XBT to be connected to any module which supports this protocol.
  - SCI port on CPUs of TSX 7 series 40 PLCs
  - SCM type modules (series 30 or 40 modular PLCs)
  - SCG type modules (TSX 17 PLCs).

- **JBUS protocol** (industrial communication protocol specified by APRIL) : allows the XBT to be connected to any module supporting this protocol, in particular JBUS modules on APRIL series 1000 PLCs.

- **MODBUS protocol** (industrial communication protocol specified by MODICON : allows the XBT to be connected to any module supporting this protocol.

The protocols supported by the XBT terminal can be identified by the letter in their product reference.

Protocols supported :

- Series XBT-_4____ JBUS/MODBUS protocols
- Series XBT-_7____ ASCII/ADJUST protocols
- Series XBT-_8____ ASCII/ADJUST/UNI-TE protocols

Compatibility

- **Software compatibility**

  It is generally possible to retrieve existing applications developed using XBT-L100 and XBT-L400 software by direct connection to the terminal loaded with the application to be retrieved.

  All that is needed is to perform an XBT to PC transfer.

  Where message lists have been created using XBT-L100 or XBT-L400, it is possible to retrieve any stored files by using the following method :

  - **Transfer the whole of the saved list to the XBT terminal (PC → XBT transfer) using the original program (XBT-L100 or XBT-L400),**
  - **Retrieve the contents of the XBT memory using XBT-L900 (XBT → PC transfer),**

  It is then possible to make and save modifications under XBT-L900.

- **Possibility of retrieving programs created using XBT-L400 and XBT-L100 via XBT-L900**

XBT Terminal TYPE	PROGRAM CREATED USING :	
	XBT-L400	XBT-L100
XBT-A4	YES (XBT-L400 1.2)	
XBT-A7 / A8		YES
XBT-B4 / C4	YES	
XBT-B7 / C7		
XBT-B8 / C8		YES
XBT-C87		YES
XBT-K7 / K8		YES *
XBT-M8		

* XBT-M8 functions are reduced to XBT-K functions if they have been saved using XBT-L100 (see XBT-M guide section 3.3).

Compatibility

Programming the range of XBT terminals

- **Compatibility between XBT-L900 V 1.3 / XBT terminals**

XBT-L900 can be used to program terminals whose commercial reference begins with one of the following prefixes:

Terminals with keyboard / display unit :

XBT-A4	XBT-B4	XBT-C4	
XBT-A7	XBT-B7	XBT-C7	
XBT-A8	XBT-B8	XBT-C8	XBT-C87

Display units :

XBT-K7	
XBT-K8	XBT-M8

Terminals with keyboard / CRT screen :

XBT-VA8	XBT-VB4	XBT-VM8
	XBT-VB8	

Terminals with keyboard :

XBT-BB8

XBT XL901 EN W914083180311 A01

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