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.

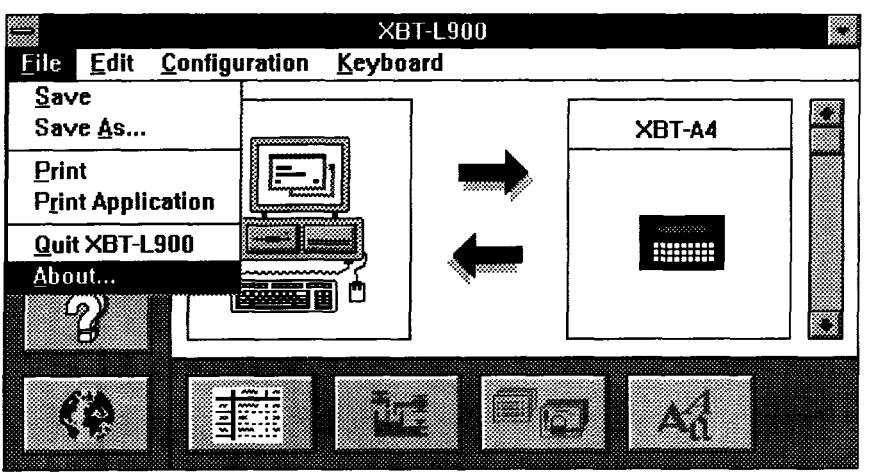
If the software has not yet been launched, the V 1.3 version can be distinguished by its new icon.

Version V 1.2

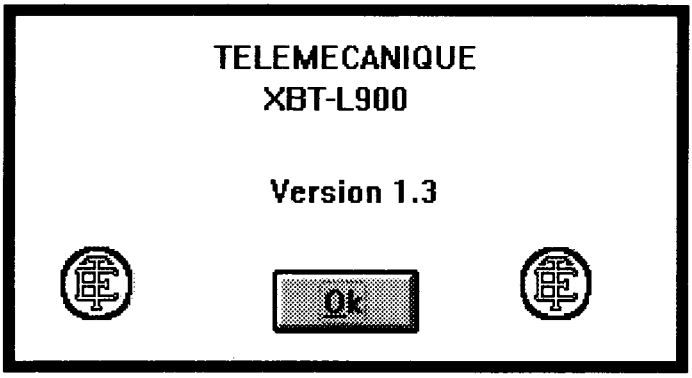
Version V 1.3

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 :

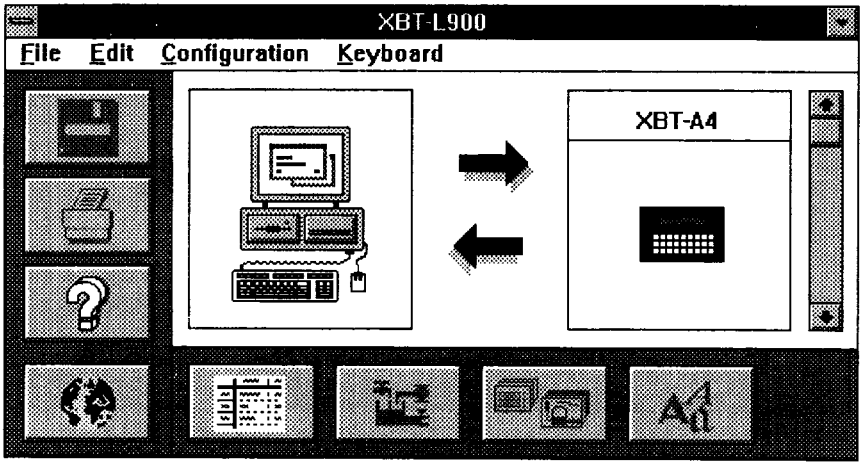


- **Enhancements to user friendliness**

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

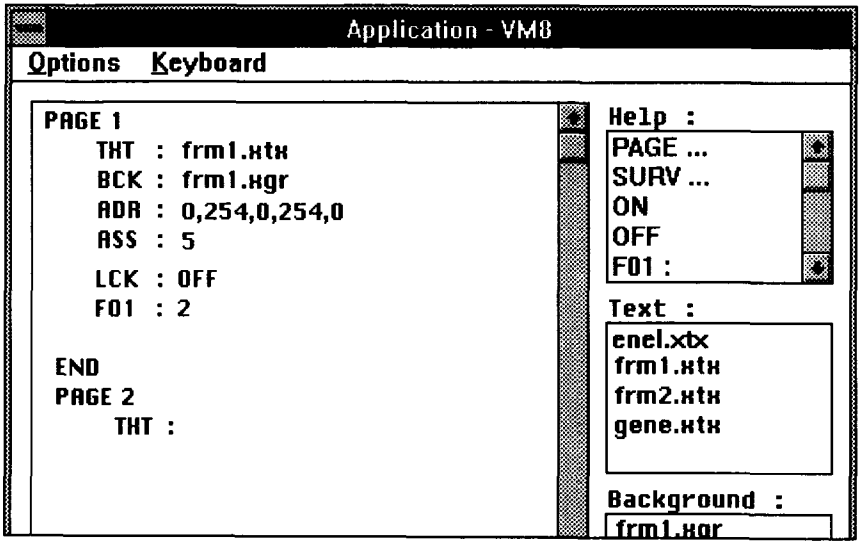
The selection of screen terminals has been improved to take account of changes in the range.
XBT-L900 version V 1.2 software supported the following XBT-V terminals :

- 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)**

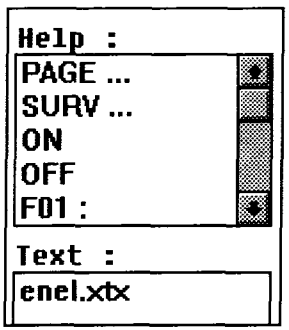
- Help during the creation of the application script
  The "Help" window of the application menu has been modified :



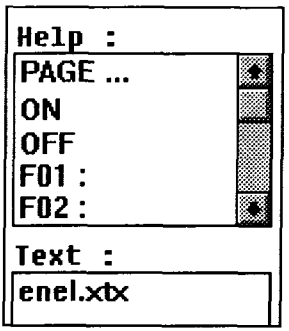
Enhancements to programming the terminal

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.

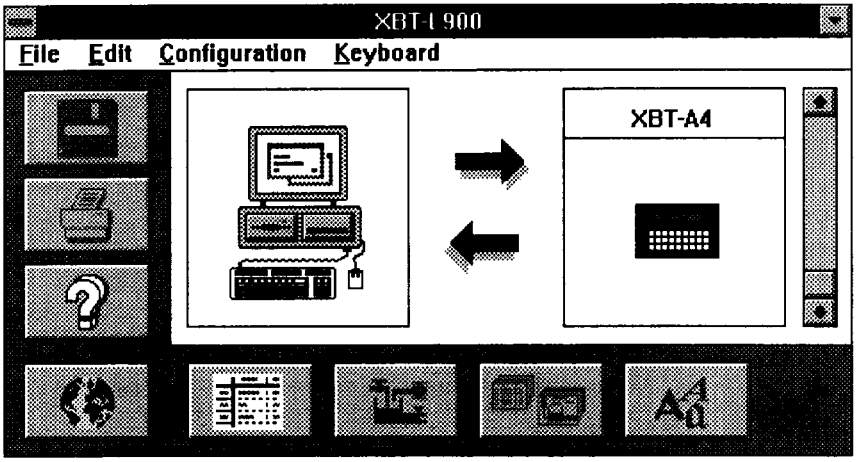
All the functions of the XBT-M terminal are described in the XBT-M guide: Multifunction display unit ref. XBT XM800E. This guide describes in detail the various uses of the XBT-M terminal.

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.

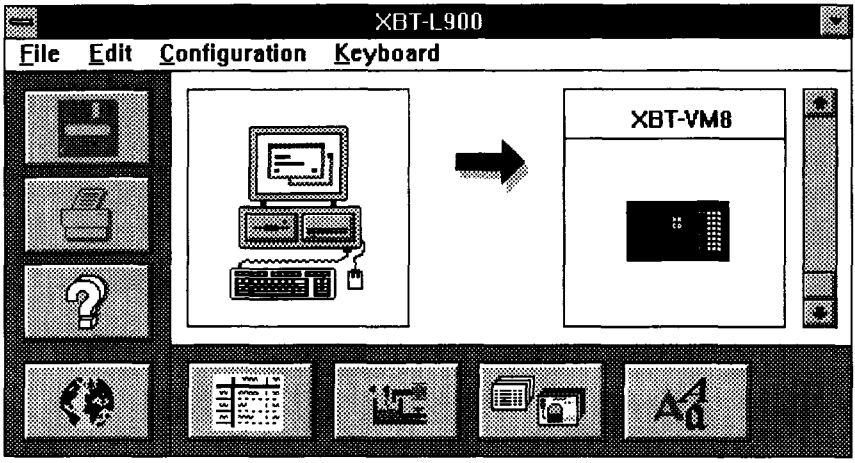
Integrating the new terminals

- **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.

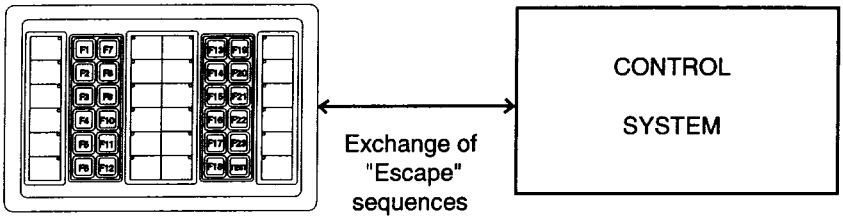
3.1 Summary of operation

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 :

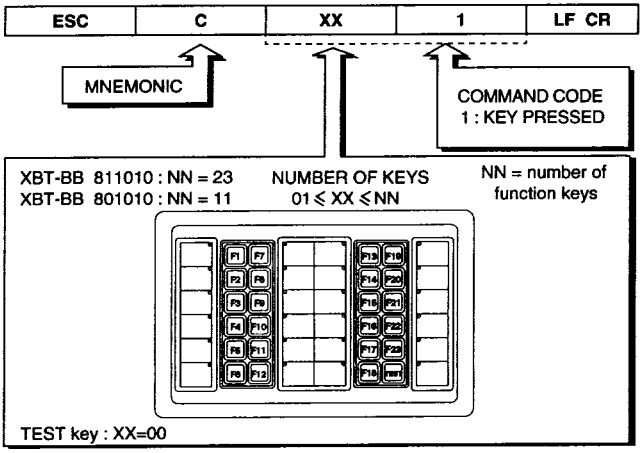
- ASCII protocol
- UNI-TE or ADJUST protocol

• 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

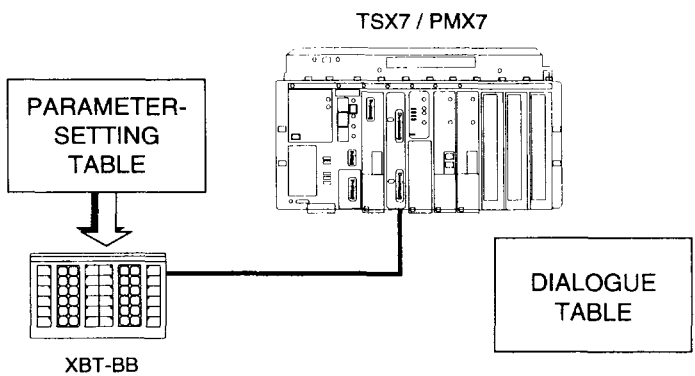
Operation of the XBT-BB involves the management in the PLC of a word table (dialogue table) which represents the status of the terminal indicator lamps and keys. This table is made up of PLC words containing bits mostly associated either with a key or with an indicator lamp.

- 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

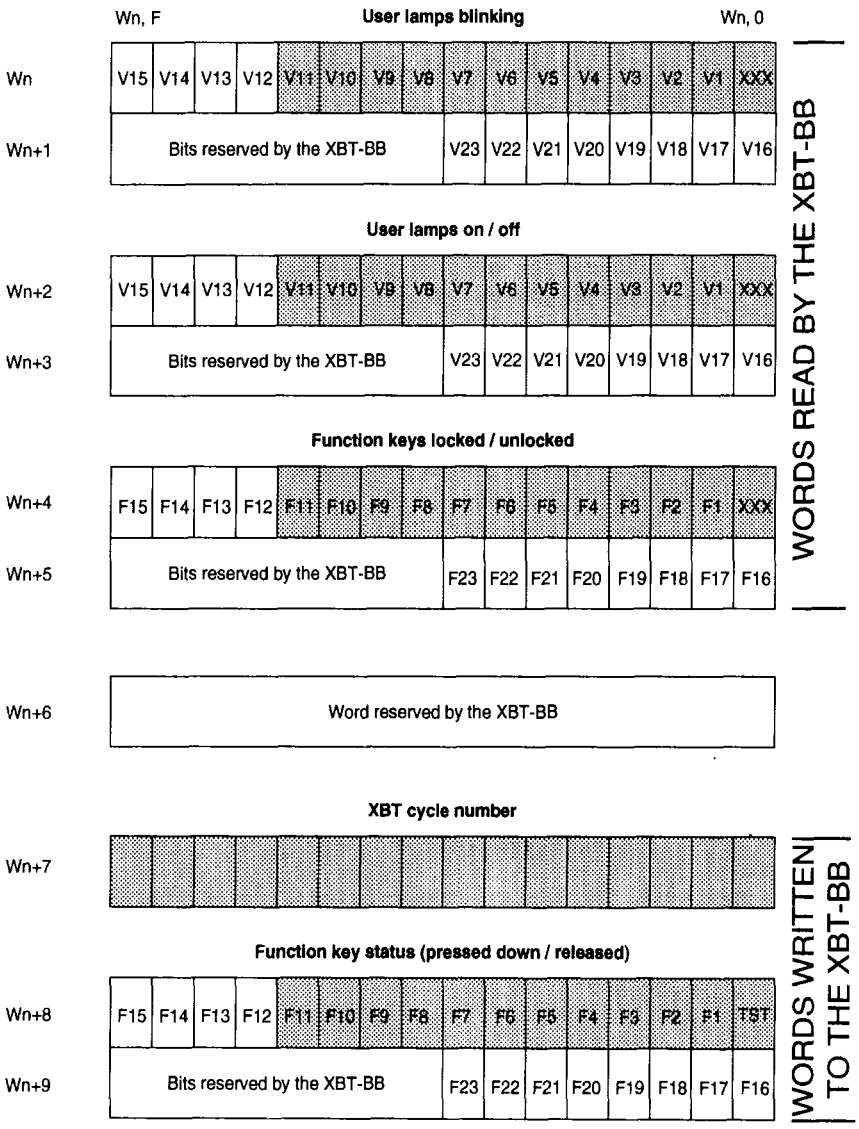
Parameter address	Details		Possible values	Default value
20000	Network n°	Address on the UNI-TELWAY bus of the device containing the dialogue table scanned by the XBT-BB	0 to 255	0
20001	Station n°		0 to 255	254
20002	Gate n°		0 to 255	0
20003	Module n°		0 to 255	254
20004	Channel n°		0 to 255	0
20005	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.

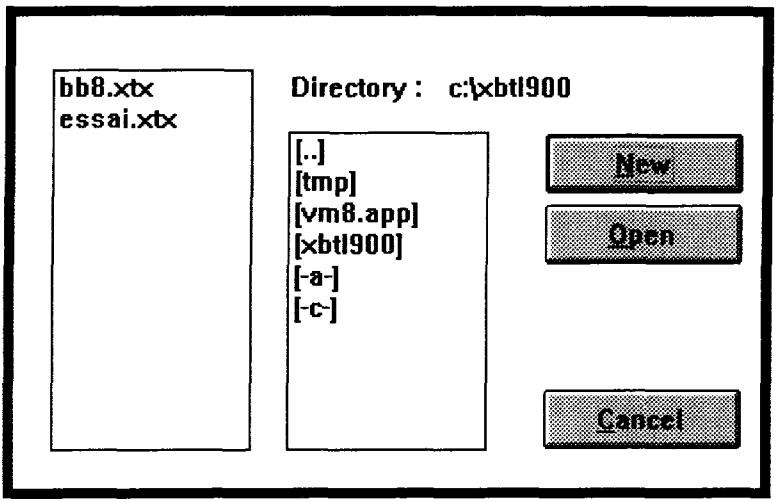
Sections 3.3 to 3.8 describe in further detail the various operations to be performed at each stage.

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".

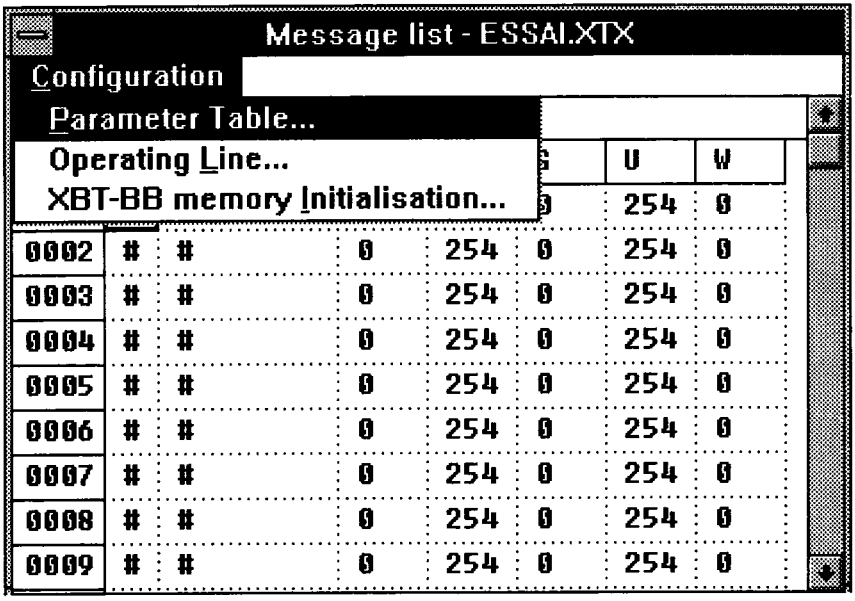


After clicking on "New" the file name is defined when the application is saved (click on the diskette icon).
This application file is called "ESSAI.XTX" by default.

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 :

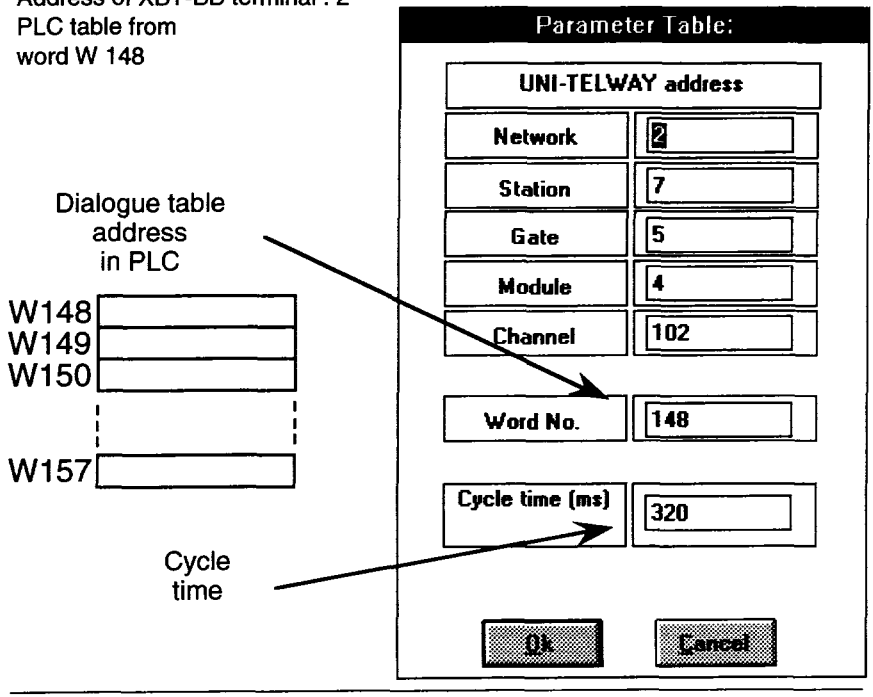
Address selected W3850 => number of words configured ≥ 3860

• 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

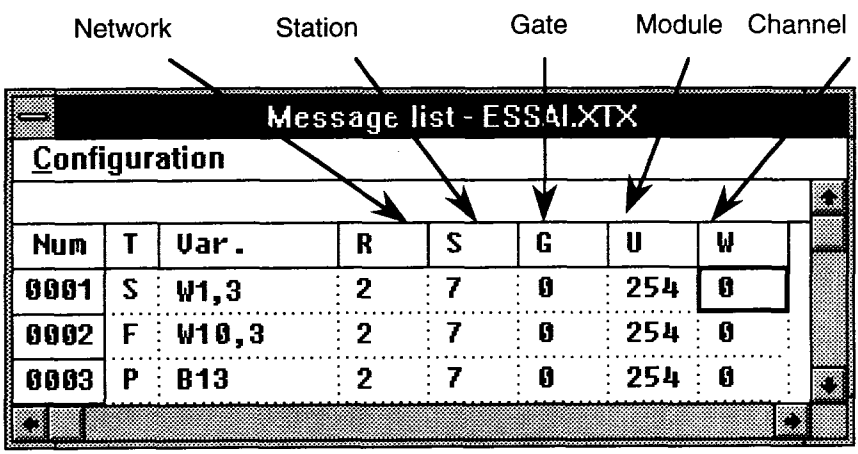
• Associated variables

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

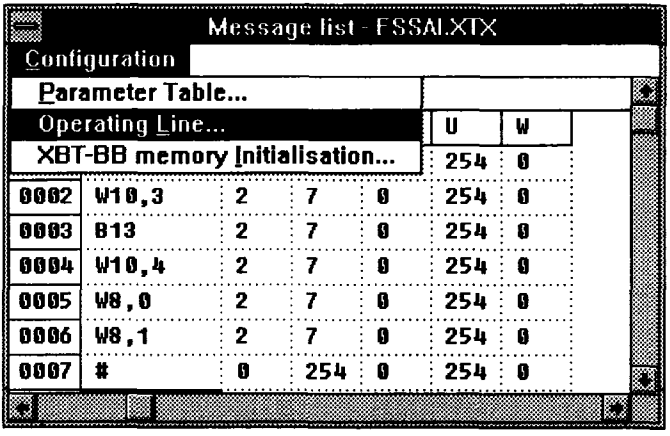
The associated address is assigned to each variable by filling in the various fields in the message list. If an error occurs a message is displayed in red on the entry line to warn the user.



3.5 Configuring the operating link

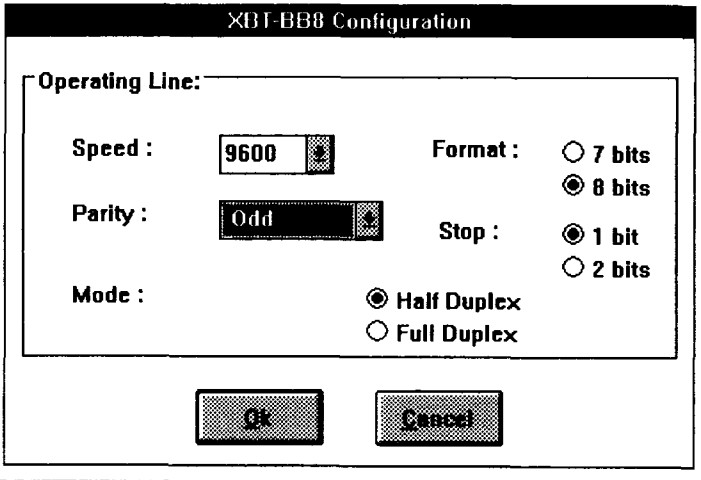
The configuration of the operating link can be accessed in the "Configuration" menu and enables the operating parameters of the serial link between the XBT-BB terminal and the control system to be defined.

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.



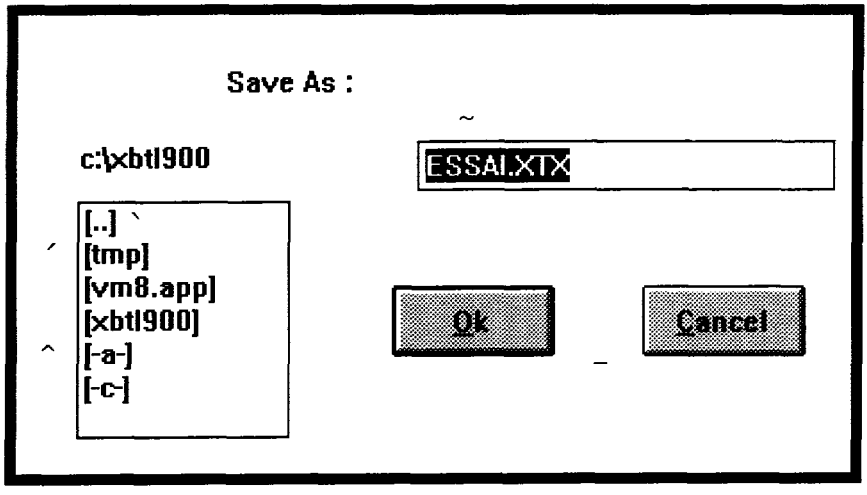
3.6 Saving the application

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.

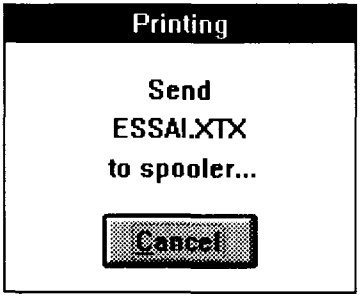
The application is printed in the following format by default :

- 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 :

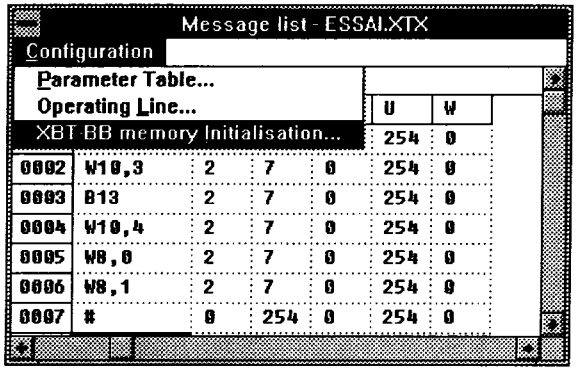


If a problem occurs during printing, check the printer configuration in the configuration WINDOWS control panel (Main Group).

3.8 Transferring the application

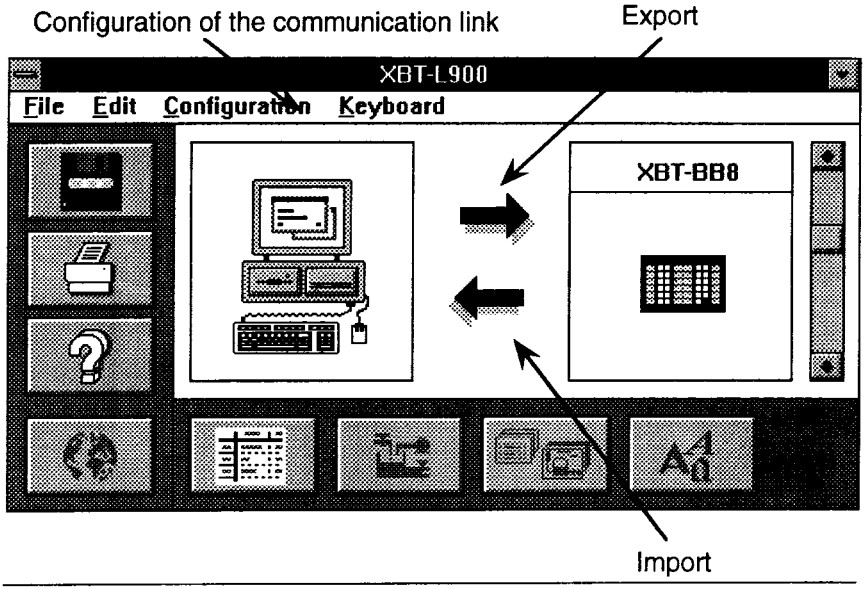
To transfer data to or from an XBT-BB terminal the communication link between the PC and the XBT-BB terminal must be operating correctly. This link is configured in "Communication" mode in the "Configuration" menu of the main XBT-L900 screen.

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".

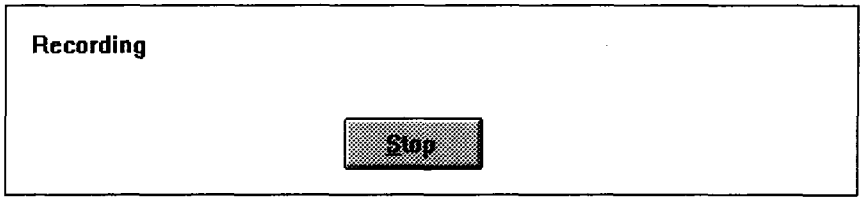
Partial transfer of message list

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

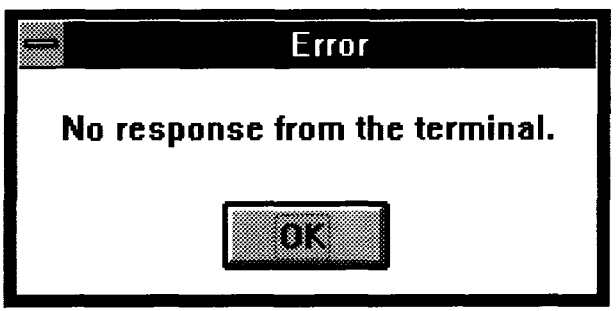
This transfer does not alter configuration of the dialogue table and the operating link in the XBT-BB terminal.

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



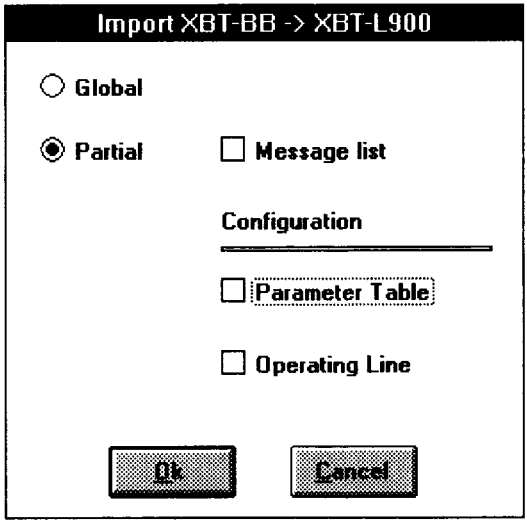
If the transfer from the PC to the XBT-BB is interrupted by clicking on the "STOP" key, the messages already sent to the terminal are confirmed. This would implement a partial transfer of the message list up to the message number displayed on the transfer window.

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.



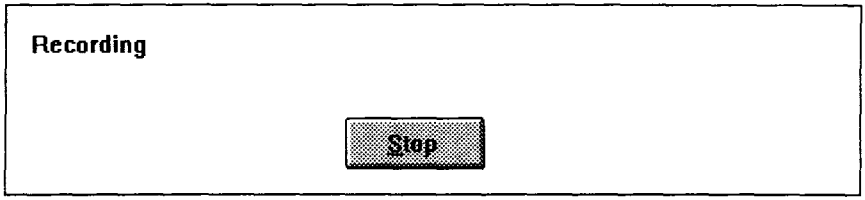
A global or partial transfer is thus selected. For a partial transfer the data to be transferred must be selected by clicking on the corresponding boxes and confirming by clicking "OK".

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.