5.1 General

Storing messages in the EEPROM memory of the XBT-A terminal requires that the serial link be connected to a programming terminal that can be:
- a TSX T407 programming terminal,
- a CRT terminal,
- a PC/PS or compatible microcomputer.

The electrical connections to be made are described in sub-section 8, Connections, page 111.

The serial link parameters of the various programming terminals can be different from those of the automated system. They must therefore be defined seperately. This operation is performed in Configuration mode after selecting LOAD PARAMETERS (see sub-section 4.5.3, page 30).

THE SELECTED LINE PARAMETERS ARE SAVED WHEN THE XBT-A DISPLAYS:
AWAITING SYNC. (conversational)
AWAITING MESSAGE (non conversational)

Message storage is referred to as conversational (select CONVERSAT. YES: VIDEO TERMINAL) when the XBT-A terminal interactively displays the parameters of the messages to be stored.

Message storage is referred to as non conversational (CONVERSAT. NO: TERMINAL T407) when the user **makes one-way data inputs**.

CAUTION: DO NOT SWITCH OFF THE TERMINAL BEFORE QUITTING THE STORE MODE (DOING SO WILL CAUSE A CHECKSUM ERROR ON RESTART)

5.2 Compatibility Rules

When storing messages, it is necessary to:
- know how the exchange buffer is controlled,
- ensure coherence in message parameter selection.

DISPLAY BUFFER CONTROL:

The XBT-A terminal has a 32-character display memory. This means that messages that are longer than the 16 characters of the display unit can be displayed.
Parameter X defines the position of the first message character in the display buffer.

IF X = 0 (DEFAULT VALUE) IN A MESSAGE, THE DISPLAY IS AUTOMATICALLY CLEARED BEFORE DISPLAYING THE NEW MESSAGE

When storing messages, obey the rule:
X + TEXT LENGTH $\leq$ 32

A DISPLAY REQUEST FOR A MESSAGE OF MORE THAN 16 CHARACTERS WILL CAUSE SCROLLING AND CANCEL BLINKING WHEN SELECTED

IF A NUMBER OF MESSAGES WITH VARIABLES ARE PRESENT, ONLY THE LAST ONE IS REFRESHED

Example: stored message: 027 SPEED = - - - M/S TV X = 0
The display request for this message (14 characters) will display it without scrolling.
The same message stored with X = 17 will be displayed with scrolling (17 + 14 = 31 characters to be displayed) over the 14 characters of message 027.

MESSAGES COMPOSITION RULES:

- The length of the text and number fields must not exceed 16 characters.
- The digital field must be shown with dashes (- : ASCII character 5F).
- Only ASCII characters numbered between 20 and 5F are accepted (lower case letters are rejected)
- Commas (ASCII character 2C) are converted to a period (ASCII character 2E).

Compatibility Rules

SPECIFIC RULES FOR ADJUST MODE (IN ASSOCIATION WITH TSX 7 PLCs) ARE:

- The digital field assigned to a PLC variable has a maximum length of 6 characters, including the sign:
  . positive values: the + sign is not displayed (space)
  . negative values: the - sign is displayed
- The digital field has a maximum length of 5 characters when a conversion factor is used or when the TSX 7 variable is a counter or a timer.
- The digital field assigned to a TSX 7 PLC bit has a maximum length of 1 character.

TSX 7 VARIABLES		TYPE OF MESSAGE			
DESIGNATION	SYNTAX	F	V	N	D
INTERNAL BIT	B XXXX	X	X	X	X
INPUT BIT	I XXX,XX		X		X
OUTPUT BIT	O XXX,XX		X		X
WORD	W XXXXX	X	X	X	X
CONSTANT WORD	CW XXXXX		X		X
COMMON WORD	COM XX,X		X		X
TIMER	T XXXX, V or P		V	P	X
COUNTER	C XXXX, V or P		V	P	X
MONOSTABLE	M XXXX, V or P		V	P	X
DRUM	D XXXX, V		X		X

X = autorization

Note: - the syntax limits of TSX 7 variables must be adapted by the designer to the PLC used.
- the numbers of B, I and COM variables must be entered in decimal values (see Appendix, sub-section 11.4 Conversion Table, page 142)
example: bit I27,F is stored as I39,15

Compatibility Rules

The syntax limits of TSX 7 variables have to be adapted depending on the type of PLC used.

The digital fields shown correspond to maximum values.

TYPE	MESSAGE	COLUMN	ACCESS	COEFFICIENT	TSX7 VARIABLE		COMMENT
	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16	X	K	COEF.	VAR.	A	
FUNCTION (F)	R U N	0 to 32	1	1	BIT		ADJUST (write a bit)
			1	1	BIT		ADJUST (write a bit without display)
	C O L O R - -	0 to 32	1	1	WORD		ADJUST (write key code in word)
	C O L O R - -	0 to 32	1	1			ASCII
DISPLAY (V)	- - - - - - - - - - - - - - - -	0 to 32	1 or 2	1			ASCII
	V A L U E - - - - - -	0 to 32	1 or 2	0.001 to 1			ASCII
	V A L U E - - - - - - - - C	0 to 32	1 or 2	1	ALL OBJECTS (except bits)	1 or 2	ADJUST (signed value)
	V A L U E - - - - - - - - C	0 to 32	1 or 2	0.001 to 1	ALL OBJECTS (except bits)	1 or 2	ADJUST (signed value)
	S T A T U S - - -	0 to 32	1 or 2	1	BIT	1 or 2	ADJUST (display bit status)
	T R A N S F E R	0 to 32	1 or 2	1			ASCII / ADJUST
DIGITAL (N)	- - - - - - - - - - - - - - - -	0 to 32	1 or 2	1			ASCII
	N U M B E R - - - - - - - C	0 to 32	1 or 2	0.001 to 1			ASCII
	N U M B E R - - - - - - - - C	0 to 32	1 or 2	1	ALL OBJECTS (except bits)	1 or 2	ADJUST (signed value)
	N U M B E R - - - - - - - - C	0 to 32	1 or 2	0.001 to 1	ALL OBJECTS (except bits)	1 or 2	ADJUST (signed value)
	S E N S O R S T A T U S - -	0 to 32	1 or 2	1	BIT	1 or 2	ADJUST (display bit status)
BLINKING (D)	- - - - - - - - - - - - - - - -	0 to 32	1 or 2	1			ASCII
	O V E R S P E E D - - - - - -	0 to 32	1 or 2	0.001 to 1			ASCII
	O V E R S P E E D - - - - - - -	0 to 32	1 or 2	1	ALL OBJECTS (except bits)	1 or 2	ADJUST (signed value)
	O V E R S P E E D - - - - - - -	0 to 32	1 or 2	0.001 to 1	ALL OBJECTS (except bits)	1 or 2	ADJUST (signed value)
	S E N S O R S T A T U S - -	0 to 32	1 or 2	1	BIT	1 or 2	ADJUST (display bit status)
	P R E S S . F A U L T	0 to 32	1 or 2	1			ASCII / ADJUST

5.3 Storing Messages Using a TSX T407

A physical data link is established via the printer port on the TSX T407 terminal (refer to Section 8, Connections, page 113). To establish the dialog, the transmission parameters of both the XBT-A and the TSX T407 must have the same settings.

- **XBT-A terminal parameters** are selected in Configuration Mode (refer to sub-section 4.5.3, Memory Configuration, page 30). The following steps are performed in sequence:

. data link selection: RS 232 is required

. line parameter settings (speed, format, parity, stop bit)

. dialog mode selection: NONE (non conversational)

. select the confirm sent by the terminal: ACK. MESSAGE.

. pressing (ENTER) displays [AWAITING MESSAGE]: the XBT-A is ready to receive messages.

- **TSX T407 terminal** parameters are entered as follows:

Storing Messages Using a TSX T407

ACTION	TSX T407 DISPLAY	COMMENTS
ON	**TEST**	
	ADJ PRG DBG TRF HELP ./.	
./.	NET TER DGN HELP ./.	TSX T407 terminal mode selection
TER	CNX LIN TST TXT	
LIN	BAU PAR STO DAT	
BAU	BAUDS : 1200	Examples of selected parameters
PAR	PARITY EVEN	
STO	STOP BIT : 2	
DAT	DATA 7 BITS	
CLR		
T407 (connected)	TSX -T4071 (standalone)	
	CNX	requests connection (on-line)
TXT	TXT	
GO	GO	The TSX T407 terminal is ready to print
...	...	Message creation
PRT	PRT	Sends the message to the XBT-A

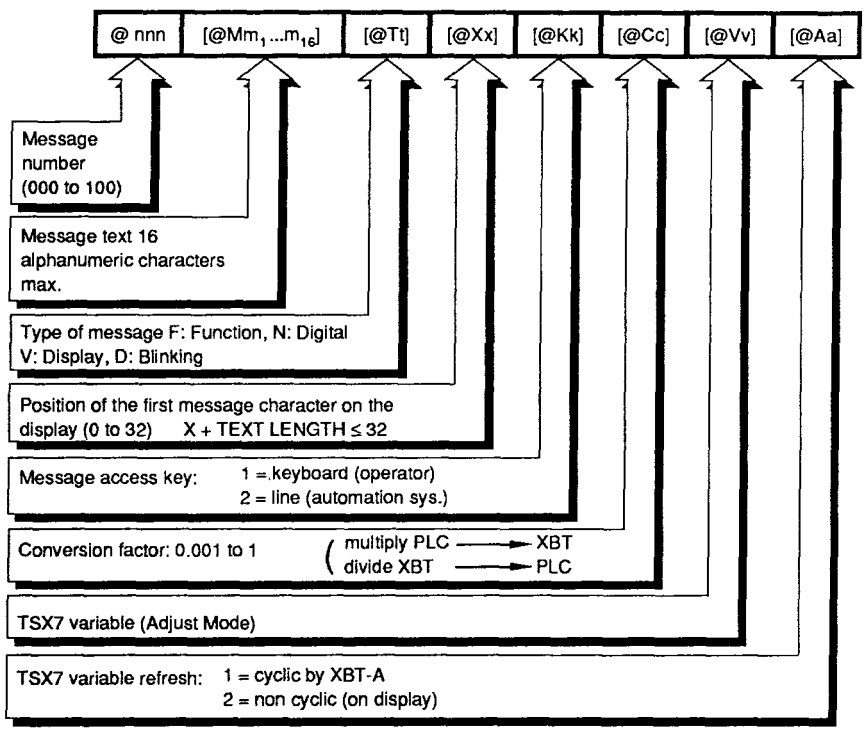
Storing Messages Using a TSX T407

The text of the message sent by the TSX T407 programming terminal is displayed by the XBT-A terminal.
From the XBT-A terminal, press the following keys to exit message storage mode:

FUNCT : access to stored messages for checking

ENTER + FUNCT : returns to Operation Mode.

- Storage syntax:



THE SYNTAX ORDER MUST BE RESPECTED WHEN MESSAGES ARE STORED

Storing Messages Using a TSX T407

- Specific points when storing messages with a TSX T407

. The storage capacity is 24 charaters on a TSX T407 terminal line.

. the (PRT) key generates LF CR characters

. the (CLR) key clears the display (required before sending a new command)

. the key combination:

(SH) + (S) generates an @ character

(SH) + (L) generates - - (digital field)

. terms in square brackets ([ ]) are optional when storing messages

. the ␣ symbols represent spaces ((SP) key)

All compatibility rules must be respected (refer to page 40).
If the message sent is incorrect the XBT-A terminal will display
> BAD RECORD <

THE DEFAULT PARAMETERS ARE:
TYPE = V X = ØØ K = 1 C = 1

WHEN A MESSAGE EXCEEDS 24 CHARACTERS, IT MUST BE SENT IN MORE THAN ONE PASS, REPEATING THE MESSAGE NUMBER EACH TIME.

- Storage examples:

Example 1: message with complete syntax
Message to store:
@009@M SPEED = - - - - - @TN @X20@K2@C 0,035@VW17@A2

The entry sequence is:

@009@M SPEED = - - - - - @TN (PRT) (CLR)

@009@X20@K2@C 0.035 (PRT) (CLR)

@009@VW17@A2 (PRT)

Note: in operation, this message will scroll accross the display (X=20)

Exemple 2 : using the message ending @
Message to store:
@037@M WAIT . . . . . (12 characters)

There are two ways of storing this message:

@037@M WAIT . . . . . (PRT)
- the 4 unused message characters are stored as spaces SP (H20): 16 characters taken in the buffer

@037@M WAIT . . . . . @ (PRT)
- only the 12 significant characters are stored: optimum display buffer usage

5.4 Storing Messages Using a CRT Terminal

A physical link must be established with the CRT terminal (refer to section 8, Connections, page 113).
Identical transmission parameters must be selected on both XBT-A terminal and the CRT terminal before dialog can commence.

- **XBT-A terminal parameters** are set in Configuration Mode (refer to sub-section 4.5.3, Memory Configuration, page 30). The following steps must be performed in sequence:

. select type of data link: RS 232C with XBT Z905 cable,

. select line parameters (speed, format, parity and stop bits),

. select dialog mode: WITH (conversational),

. pressing (ENTER) displays the message AWAITING SYNC.
The XBT-A awaits synchronization signal from the CRT terminal.

- **Transmission parameters** on the CRT terminal are set to ensure correspondence with those of the XBT-A or vice versa. Press ↵
on the CRT terminal.
. The XBT-A terminal displays RECORDING and programing can start from the CRT terminal.

Storing Messages Using a CRT Terminal

- Summary of CRT terminal function keys:

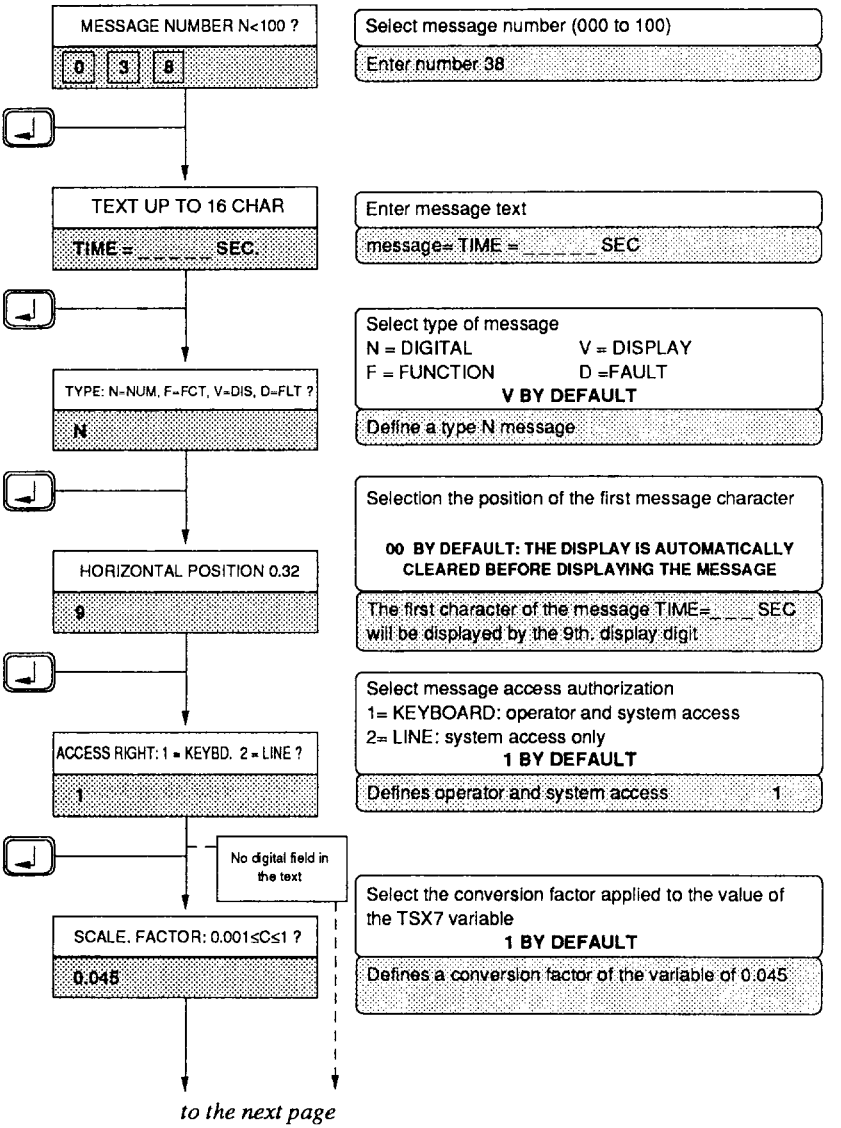
Erase a character	BS	BACKSPACE (HEX. 08) erases character by character
Delete a complete parameter	DEL	DELETE (HEX. 7F) deletes the entire parameter displayed
Message composition	ESC or @	ESCAPE AMPERSAND Record limits
Store spaces	SPACE	SPACE (HEXA 20) spaces for text parameters
Validation	↵	ENTER or CR (carriage return) validates the displayed parameter

Storing Messages Using a CRT Terminal

- Video display of the storage dialog

. if the text already exists, press DEL to clear

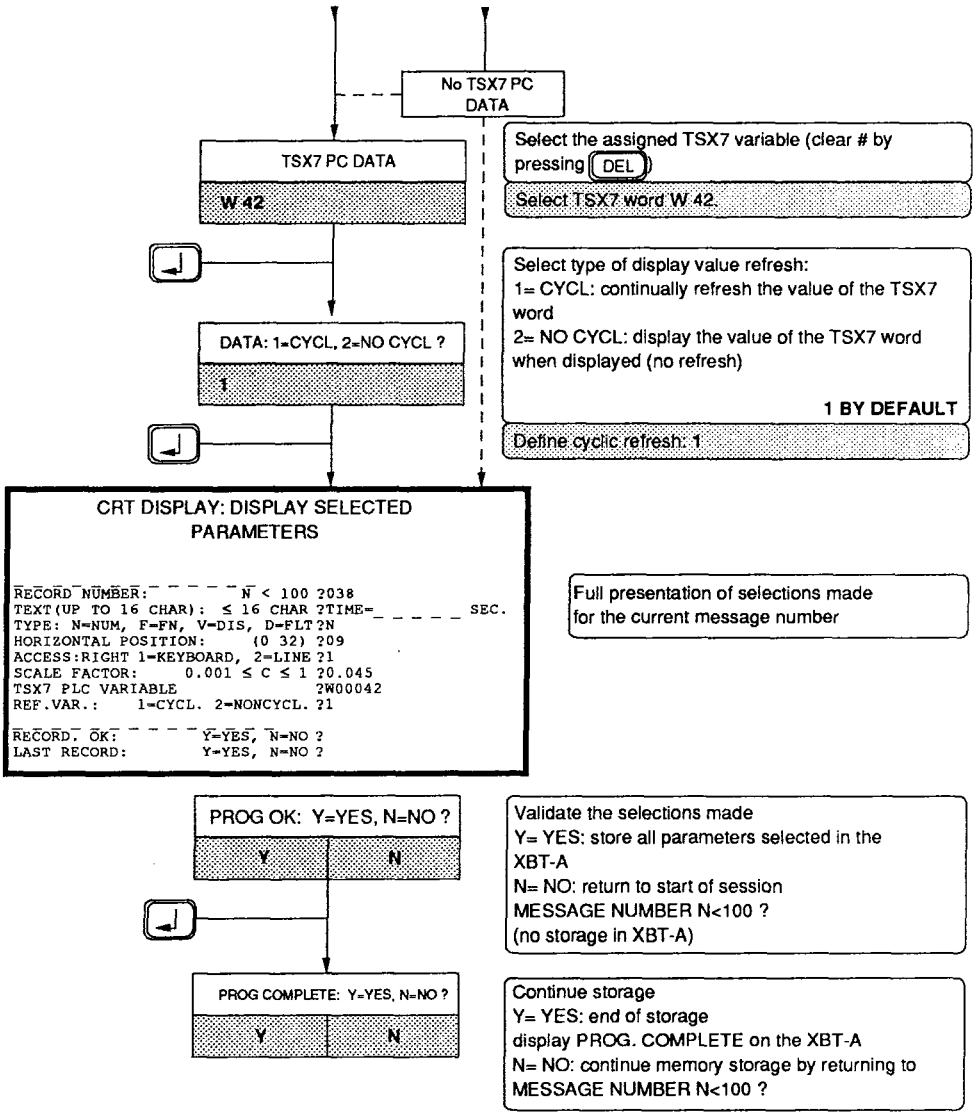
. [ ] : questions displayed, [ ] : operator entries



to the next page

Storing Messages Using a CRT Terminal

from previous page



5.5 Storing Messages Using a PC/PS and XBTL-100 Software

A physical link must be established with the PC/PS microcomputer (refer to section 8, Connections, page 115).
Identical transmission parameters must be selected on both XBT-A terminal and the microcomputer before dialog can commence.
All of the operations that can be performed in the terminal memory field of the XBT-A (create, modify, load, compare, etc.) are described in the XBTL-100 software documentation.

Storing messages

- **XBT-A terminal parameters** are set in Configuration Mode (refer to sub-section 4.5.3, Memory Configuration, page 30). The following steps must be performed in sequence:

. select the type of data link: RS 232C,

. select line parameters (speed, format, parity and stop bit),

ONLY EVEN, ODD, NO PARITY IS ACCEPTED BY THE XBTL-100

. select dialog mode: NONE (non conversational),

. select confirm: ACK is required,

. pressing (ENTER) will display the message [AWAITING MESSAGE -]
The XBT-A terminal is ready to accept messages for storage.

- **Transmission parameters** selected in the Services Menu (PC→XBT transfer) of the XBTL-100 program, are set to ensure correspondence with those of the XBT-A or vice versa.

DURING THE LOAD SEQUENCE, THE XBT-A DISPLAYS PROGRAMMING

Storing Messages Using a PC/PS and XBTL-100 Software

Message Transfers

To perform transfers:
- XBT → PC/PS and PC/PS → XBT
- XBT → Printer (via the PC/PS microcomputer)
- Comparison

The XBT-A terminal must be set for [✳ RUNNING ✳] and its parameters selected in Configuration Mode (refer to sub-section 4.5.2, Line Configuration, page 26).

The following sequence is used:

. select transmission mode: ASCII Mode is required,

. select type of data link: RS 232C is required,

. select line parameters (FDX/HDX, SPEED, FORMAT, PARITY and STOP BIT),

. select checksum mode: NONE is required,

. select confirm: WITH or NONE.