

## 5.6 Requests to access the XBT-A8 message segment

### THE XBT-A8 MESSAGE SEGMENT CAN ONLY BE ACCESSED IN READ MODE

The XBT-A8 message zone is composed of structured objects. Each message is a structured object consisting of a list of words which can be accessed in read mode by the "Read structured objects" request. In UNI-TE protocol, the XBT-A8 message zone is treated like a segment.

- **Segmentation of the message resource**

TYPE OF SEGMENT	MESSAGES
SEGMENT NUMBER	H'83 131 (decimal)
TYPE OF OBJECT	STORED MESSAGE
NUMBER OF OBJECTS	101
STRUCTURE OF MESSAGE OBJECT	TEXT TYPE COLUMN CONVERSION COEFFICIENT ASSOCIATED TSX7 VARIABLE VARIABLE UPDATE NETWORK NUMBER STATION NUMBER GATE NUMBER MODULE NUMBER CHANNEL NUMBER

# 5 Communication

## Requests to access the XBT-A8 message segment

### • Message structure

A message consists of text and parameters.

Each message object consists of a fixed format table of 28 words :

DESIGNATION	WORDS	MOST SIGNIF. BYTES	LEAST SIGNIF. BYTES	COMMENTS
MESSAGE TEXT (stored in the XBT-A8 terminal)	0	H'45' (E)	H'54' (T)	TEMP. EVAC. = ---
	1	H'50' (P)	H'4D' (M)	
	2	H'20' (SP)	H'2E' (•)	
	3	H'56' (V)	H'45' (E)	
	4	H'43' (C)	H'41' (A)	
	5	H'3D' (=)	H'2E' (•)	
	6	H'5F' (-)	H'5F' (-)	
7	H'20' (SP)	H'5F' (-)		
TYPE	8	H'20'	H'56'	Display
COLUMN	9	H'20'	H'32'	X = 2
CONVERSION COEFFICIENT	10	H'20'	H'01'	C = 1
	11	H'20'	H'20'	
	12	H'20'	H'20'	
ASSOCIATED VARIABLE ADDRESS	13	H'31'	H'57'	Word variable : W 00182
	14	H'32'	H'38'	
	15	H'20'	H'20'	
	16	H'20'	H'20'	
UPDATE	17	H'20'	H'33'	A=3 (period = 1 second)
NETWORK NUMBER	18	H'30'	H'30'	Network 000
	19	H'20'	H'30'	
STATION NUMBER	20	H'35'	H'32'	Station 254
	21	H'20'	H'34'	
GATE NUMBER	22	H'30'	H'30'	Gate 005
	23	H'20'	H'35'	
MODULE NUMBER	24	H'30'	H'30'	Module 004
	25	H'20'	H'34'	
CHANNEL NUMBER	26	H'30'	H'30'	Channel 002
	27	H'20'	H'32'	

The data is coded, starting with the least significant byte. Unused most significant bytes are filled with "SPACE" characters (H'20').

## 5 Communication

### Requests to access the XBT-A8 message segment

#### • Reading a stored message

The "**Read structured objects**" request is used to access the text and parameters of stored messages.

#### Request format :

Designation	Request code	Sender category	Segment	Object address	Address of first element	Number of words to read
Format	1 byte	1 byte	1 byte	1 word	1 word	1 word
Code	H'34'	H'07'	H'83'	H'0000' to H'0064'	H'001B'	H'001C'
Comments	Read structured objects	-	Message area	Message number	Number of first word to read in the designated message	Number of words to read in the designated message (starting with the address of the 1 <sup>st</sup> message)

#### Confirmation report format : Positive response

Designation	Response code	Reserved	Data
Format	1 byte	1 byte	56 bytes max
Code	H'64'	H'00'	H'..'H'..' .....
Comments	-	-	Message object table requested H'1C' = 28 words => 56 bytes

#### Format for negative response :

Response code	H'FD'
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Reasons for a negative response :

- incorrect question syntax ,
- no right of access,
- unknown segment or object,
- address out of limits.

# 5 Communication

## Requests to access the XBT-A8 message segment

Example : Reading stored message N° 83 (H'56).

CLIENT TEXT BLOCK																										
CONFIGURATION	TRANSMISSION TABLE	RECEPTION TABLE																								
<p>TSX7 MASTER                      Type : LOCAL EXCHG                      TxTi, C = H'0734'                      TxTi, M = H'0069'                      (E.g. station 5)                      XBT-A8 SERVER                      TxTi, L = 6 (bytes)</p>	<table border="1"> <tr> <td>H'56'</td> <td>H'83'</td> </tr> <tr> <td>H'00'</td> <td>H'00'</td> </tr> <tr> <td>H'00'</td> <td>H'08'</td> </tr> </table> <p>Segment message n°                      n° of 1<sup>st</sup> word                      Number of words : 8</p>	H'56'	H'83'	H'00'	H'00'	H'00'	H'08'	<p>TxTi, V = H'0064' or                      TxTi, R = H'64' (TSX17)</p> <table border="1"> <tr> <td>H'54'</td> <td>H'00'</td> </tr> <tr> <td>H'4D'</td> <td>H'45'</td> </tr> <tr> <td>H'2E'</td> <td>H'50'</td> </tr> <tr> <td>H'45'</td> <td>H'20'</td> </tr> <tr> <td>H'41'</td> <td>H'56'</td> </tr> <tr> <td>H'2E'</td> <td>H'43'</td> </tr> <tr> <td>H'5F'</td> <td>H'3D'</td> </tr> <tr> <td>H'5F'</td> <td>H'5F'</td> </tr> <tr> <td>H'00'</td> <td>H'20'</td> </tr> </table> <p>First 8 words in message table n° 83</p>	H'54'	H'00'	H'4D'	H'45'	H'2E'	H'50'	H'45'	H'20'	H'41'	H'56'	H'2E'	H'43'	H'5F'	H'3D'	H'5F'	H'5F'	H'00'	H'20'
H'56'	H'83'																									
H'00'	H'00'																									
H'00'	H'08'																									
H'54'	H'00'																									
H'4D'	H'45'																									
H'2E'	H'50'																									
H'45'	H'20'																									
H'41'	H'56'																									
H'2E'	H'43'																									
H'5F'	H'3D'																									
H'5F'	H'5F'																									
H'00'	H'20'																									

## 5.7 Handling operator acknowledgments

Operator acknowledgments (e.g. pressing a function key) are handled by the **master** device (e.g. TSX) on the UNI-TELWAY bus provided that the XBT-A8 operation serial line is configured WITH STATUS BLOCK (see section 4.3 Configuring the operation line).

**Note** : Reserve a "status block" in the master device using an **XBT-A8 terminal** connected to the UNI-TELWAY bus

- **Structure**

A "status block" consists of a table of 4 consecutive 16-bit words ( $W_{xxxx}$ ) in the master device.

<b>Address of 1st word in status block <math>W_n</math></b>
<p>Contains the number of the function key pressed by operator (direct or indirect access), associated with a message without a variable.</p> <p>Direct access : The number of the function key is loaded into <math>W_n</math> when the operator presses the key. <math>H'0001' \leq W_n \leq H'000C'</math> (<math>1 \leq W_n \leq 12</math>)</p> <p>Indirect access : The function number is loaded when <b>(ENTER)</b> is pressed <math>H'000D' \leq W_n \leq H'0063'</math> (<math>13 \leq W_n \leq 99</math>)</p>
<b>Address of 2nd word in status block <math>W_n + 1</math></b>
<p>Use of function key :</p> <p>Press : <math>W_n + 1 = H'FFFF'</math> (<math>W_n + 1 = - 1</math>)</p> <p>Release : <math>W_n + 1 = H'0000'</math> (<math>W_n + 1 = 0</math>)</p> <p>(indirect access, action on <b>(ENTER)</b> key taken into account).</p>
<b>Address of 3rd word in status block <math>W_n + 2</math></b>
<p>Contains the number of the type D message (blinking) present on the display acknowledged by the operator (by pressing <b>(ENTER)</b>).</p> <p><math>H'0000' \leq W_n + 2 \leq H'0064'</math> (<math>0 \leq W_n + 2 \leq 100</math>)</p>
<b>Address of 4th word in status block <math>W_n + 3</math></b>
<p>Use <b>(ENTER)</b> to confirm end of numeric value displayed</p> <p><math>W_n + 3 = H'00xx'</math> xx = number of message associated with the numeric value (<math>H'00 \leq xx \leq H'64'</math>) or <math>xx = H'FF'</math> if error</p>

THE STATUS BLOCK IS INITIALIZED BY THE PROGRAM  
IN THE PLC CONTAINING THE TABLE

### 5.8 Remote uploading and downloading of XBT-A8 memory area

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- **Principle**

The uploading sequence allows a CLIENT to load all or part of the message zone in an XBT-A8 SERVER and conversely. The downloading sequence allows an XBT-A8 SERVER to download all or part of its message zone to a CLIENT device.

The transfer is carried out using a complete message (text + attributes), representing 32 bytes per transmission.

THE CLIENT MUST BE ABLE TO HANDLE  
TABLES OF AT LEAST 32 BYTES

#### Remote uploading

IT IS IMPORTANT THAT THE MESSAGE FILES INTENDED FOR  
UPLOADING TO AN XBT-A8 SERVER BE IN  
THE FORMAT OF THE XBT-A8 MESSAGE MEMORY

In order to obtain a message file in XBT-A8 format, first of all perform a remote downloading of the application file contained in the XBT-A8.

**WARNING** : REMOTE DOWNLOADING MAY ONLY BE CARRIED  
OUT IF THE XBT-A8 TERMINAL IS FREE :  
NO OPERATOR RESPONSE EXPECTED  
(CONFIRMATION OF THE NUMERIC COMPOSITION OF A TYPE N  
MESSAGE OR OF AN INDIRECT ACCESS FUNCTION NUMBER,  
ACKNOWLEDGMENT OF A TYPE D BLINKING MESSAGE)  
TO CANCEL ALL CURRENT OPERATIONS :  
SEND THE INIT REQUEST (H'33) TO THE XBT-A8.

#### Remote downloading

A message file in an XBT-A8 may be downloaded from a client UNI-TELWAY station.

BEFORE REMOTE UPLOADING OR DOWNLOADING,  
IT IS RECOMMENDED THAT THE XBT-A8 IS FIRST IDENTIFIED  
BY SENDING THE " DEVICE IDENTIFICATION " REQUEST

## 5 Communication

### Remote uploading and downloading of XBT-A8 memory area

#### • Procedure for REMOTE UPLOADING

The dialogue between the XBT-A8 SERVER and the CLIENT device during remote uploading is broken down into the following sequences :

	XBT-A8 ... SERVER	EXCHANGES (REQUESTS)	CLIENT DEVICE	COMMENTS
RESERVATION		← RESERVATION (H'1D')		Terminal reserved and 60 second "time envelope" starts
			→ CONFIRMATION REPORT (H'FE')	Confirmation report : terminal ready to serve requesting CLIENT
INITIALIZATION		← INITIALIZE UPLOADING (H'3A')		Open uploading sequence
			→ CONFIRMATION REPORT (H'6A')	Terminal ready to accept upload
UPLOAD		← UPLOAD A SEGMENT (H'3B' + segment N° + length + message text + attributes)		Write a message in the XBT-A8 server (32 bytes in XBT memory format)
			→ CONFIRMATION REPORT (H'6B' + Segment N° received)	The XBT-A8 sends the number of the message received
RENEW RESERVATION (IF NECESSARY)		← RENEW RESERVATION (H'2D')		Reset "time envelope" to 60 seconds if necessary (automatically frees the SERVER at the end of the time envelope if no request received)
			→ CONFIRMATION REPORT (H'FE')	Restart 60 second "time envelope"
CONTINUE UPLOADING (IF NECESSARY)		← UPLOADING A SEGMENT (H'3B' + Segment N° + length + message text + attributes)		Write another message to the XBT-A8 server if necessary (32 bytes in XBT memory format)
			→ CONFIRMATION REPORT (H'6B' + Segment N° received)	The XBT-A8 sends the number of the message received
END OF UPLOADING		← END OF UPLOADING (H'3C')		Close of uploading sequence
			→ CONFIRMATION REPORT (H'FE')	Terminal responds with OK after calculating and saving checksum to terminal message memory
FREE TERMINAL		← DERESERVATION (H'1E')		XBT-A8 terminal is freed
			→ CONFIRMATION REPORT (H'FE')	Once freed, the terminal goes to RUNNING MODE ready to receive new requests

## Remote uploading and downloading of XBT-A8 memory area

### • Procedure for REMOTE DOWNLOADING

The dialogue between the XBT-A8 SERVER and the CLIENT device during remote downloading is broken down into the following sequences :

	XBT-A8 ... SERVER	EXCHANGES (REQUESTS)	CLIENT DEVICE	COMMENTS
RESERVATION		RESERVATION (H'1D')		Terminal reserved and 60 second "time envelope" starts
		CONFIRMATION REPORT (H'FE')		Confirmation report : terminal ready to serve requesting CLIENT
INITIALIZATION		INITIALIZE DOWNLOADING (H'3D')		Open downloading sequence
		CONFIRMATION REPORT (H'6D')		Terminal ready to accept download
DOWNLOAD		DOWNLOAD A SEGMENT (H'3E' + segment N°)		CLIENT request to read a message from the XBT-A8 server
		CONFIRMATION REPORT (H'6E' + Segment N° + length + message text + attributes)		The XBT-A8 sends the message requested (32 bytes in XBT memory format)
RENEW RESERVATION (IF NECESSARY)		RENEW RESERVATION (H'2D')		Reset "time envelope" to 60 seconds if necessary (automatically frees the SERVER at the end of the time envelope if no request received)
		CONFIRMATION REPORT (H'FE')		Restart 60 second "time envelope"
CONTINUE DOWNLOADING (IF NECESSARY)		DOWNLOAD A SEGMENT (H'3E' + Segment N°)		CLIENT request to read a new message from the XBT-A8 server
		CONFIRMATION REPORT (H'6E' + Segment N° + length + message text + attributes)		The XBT-A8 sends the message requested (32 bytes in XBT memory format)
END OF DOWNLOADING		END OF DOWNLOADING (H'3F')		Close of downloading sequence
		CONFIRMATION REPORT (H'6F')		Terminal responds with OK
FREE TERMINAL		DERESERVATION (H'1E')		XBT-A8 terminal server is freed
		CONFIRMATION REPORT (H'FE')		Once freed, the terminal goes to RUNNING MODE ready to receive new requests

## 5 Communication

### Remote uploading and downloading of XBT-A8 memory area

#### • Specific requests

##### - Reservation :

This service allows a CLIENT device to reserve an XBT-A8 SERVER with which it wants to dialogue when making use of critical requests (uploading, downloading, displaying a message, displaying a text, etc.). It simultaneously starts a 60 second "time envelope". If there are no requests from the reserver to the server within this period of time, the server is automatically freed and displays 

* RUNNING *
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 while waiting for a request.

#### Request format :

Designation	Request code	Sender category
Format	1 byte	1 byte
Code	H'1D'	H'07'
Comments	Reservation	-

#### Confirmation report format : Positive response

Response code	H'FE'
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#### Example :

CLIENT TEXT BLOCK		
CONFIGURATION	TRANSMISSION TABLE	RECEPTION TABLE
Type : LOCAL EXCHG TxTi, C = H'071D' TxTi, M = H'0069' (E.g. station 5) XBT-A8 SERVER TxTi, L = 0 (bytes)	/	TxTi, V = H'00FE' or TxTi, R = H'FE' (TSX17) Positive response: terminal is reserved. If TxTi, R = H'FD' Negative response : - incorrect question syntax, - terminal already reserved by another CLIENT

**WARNING : WHEN THE XBT-A8 IS RESERVED,  
ONLY THE RESERVER MAY CARRY OUT CRITICAL ACTIONS  
(UPLOADING, DOWNLOADING, DISPLAYING, ETC.),  
OTHER DEVICES MAY ONLY CARRY OUT NON-CRITICAL  
REQUESTS (IDENTIFICATION, READING  
THE COUNTERS, STATE OF THE TERMINAL, ETC.)**

## 5 Communication

### Remote uploading and downloading of XBT-A8 memory area

#### • De-reservation :

On receipt of this request, the XBT-A8 server is freed and passes into  
 \* RUNNING \* ready to receive new requests.

#### Request format :

Designation	Request code	Sender category
Format	1 bytes	1 bytes
Code	H'1E'	H'07'
Comments	De-reservation	-

#### Confirmation report format : Positive response

Response code	H'FE'

#### Example :

CLIENT TEXT BLOCK		
CONFIGURATION	TRANSMISSION TABLE	RECEPTION TABLE
TSX7 MASTER Type : LOCAL EXCHG TxTi, C = H'071E' TxTi, M = H'0069' (E.g. station 5) XBT-A8 SERVER TxTi, L = 0 (bytes)	/	TxTi, V = H'00FE' TxTi, R = H'FE' (TSX17) Positive response : the terminal is freed. If TxTi, R = H'FD' Negative response : - terminal not reserved - terminal already reserved by another CLIENT.

## 5 Communication

### Remote uploading and downloading of XBT-A8 memory area

- **Renewing the reservation :**

This request allows a CLIENT device which has reserved the server to retain and restart the 60 second "time envelope".

**Request format :**

Designation	Request code	Sender category code	Reserved word
Format	1 byte	1 byte	1 word
Code	H'2D'	H'07'	H'FFFF'
Comments	Renew the reservation	-	The contents of this word are not used by the XBT

**Confirmation report format : Positive response**

<b>Response code</b>	H'FE'
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**Example :**

CLIENT TEXT BLOCK				
CONFIGURATION	TRANSMISSION TABLE	RECEPTION TABLE		
TSX7 MASTER Type : LOCAL EXCHG TxTi, C = H'072D' TxTi, M = H'0069' (E.g. station 5)  TxTi, L = 2 (bytes)	<table border="1"> <tr> <td>H'FF</td> <td>H'FF'</td> </tr> </table>	H'FF	H'FF'	TxTi, V = H'00FE' or TxTi, R = H'FE' (TSX17) Positive response : 60 second time envelope is restarted. If TxTi, R = H'FD' Negative response : - terminal not reserved - terminal already reserved by another CLIENT
H'FF	H'FF'			

## 5 Communication

### Remote uploading and downloading of XBT-A8 memory area

#### • Initialize loading

This request opens the loading sequence. It identifies the data which is going to be transmitted to the SERVER (determination of area, location, format, etc.).

**Note :** For this to take place, the SERVER must first of all be reserved.

#### Request format :

Designation	Request code	Sender category code	File name
Format	1 byte	1 byte	8 bytes
Code	H'3A'	H'07'	E _ M S A _ _ _
Comments	Open uploading sequence	-	File : EEPROM message memory (8 bytes coded in ASCII) Used to select the area for storing the messages

#### Confirmation report format : Positive response

Designation	Response code	Status
Format	1 byte	1 byte
Code	H'6A'	H'00'
Comments	Uploading sequence open	

#### Negative response :

Response code
H'FD'

- incorrect question syntax,
- terminal is not reserved by the requesting CLIENT,
- File Name Field bytes syntax not in the XBT-A8 memory format,
- uploading or downloading sequence is already open,
- segment number is not supported by the XBT-A8,
- terminal waiting for an operator response.

**Remote uploading and downloading of XBT-A8 memory area**

**Example :** Opening loading into the EEPROM message memory.

CLIENT TEXT BLOCK												
CONFIGURATION	TRANSMISSION TABLE	RECEPTION TABLE										
<p>TSX7 MASTER                      Type : LOCAL EXCHG                      TxTi, C = H'073A'                      TxTi, M = H'0069'                      (E.g. station 5)                      XBT-A8 SERVER                      TxTi, L = 8 (bytes)</p>	<table border="1"> <tr> <td>H'5F'</td> <td>H'45'</td> </tr> <tr> <td>H'53'</td> <td>H'4D'</td> </tr> <tr> <td>H'20'</td> <td>H'41'</td> </tr> <tr> <td>H'20'</td> <td>H'20'</td> </tr> </table> <p>File name (8 bytes)</p> <p>E _ M S A _ _ _</p> <p>Uploading area : message EEPROM</p>	H'5F'	H'45'	H'53'	H'4D'	H'20'	H'41'	H'20'	H'20'	<p>TxTi, V = H'006A' or                      TxTi, R = H'6A' (TSX17)</p> <table border="1"> <tr> <td></td> <td>H'00'</td> </tr> </table> <p>Positive response (uploading sequence open)</p>		H'00'
H'5F'	H'45'											
H'53'	H'4D'											
H'20'	H'41'											
H'20'	H'20'											
	H'00'											

## 5 Communication

### Remote uploading and downloading of XBT-A8 memory area

#### • Loading a segment

This request allows the CLIENT to transfer a message (segment) into the SERVER terminal. Any number of segments can be transmitted in any order. This allows all or part of the XBT-A8 message memory zone to be uploaded.

**Note :** The terminal must be reserved and loading initialized, possibly followed by renewing the reservation, before transferring the first message.

#### Request format :

Designation	Response code	Sender category code	Segment number	Segment length	Data
Format	1 byte	1 byte	1 word	1 word	32 bytes
Code	H'3B'	H'07'	H'0000' à H'0064'	H'0020'	
Comments	Up-loading	-	Message number (000 to 100 decimal)	Segment message length 32 bytes	32 bytes XBT-A8 terminal memory format

#### Confirmation report format : Positive response

Designation	Response code	Status	Segment number
Format	1 byte	1 byte	1 word
Code	H'6B'	H'00'	H'0000' to H'0064'
Comments	-	Segment received	Number of segment received

## 5 Communication

### Remote uploading and downloading of XBT-A8 memory area

**Example :** Uploading message number 083 (H'53') into the XBT-A8 memory.

CLIENT TEXT BLOCK																		
CONFIGURATION	TRANSMISSION TABLE	RECEPTION TABLE																
Type : LOCAL EXCHG TxTi, C = H'073B' TxTi, M = H'0069' (E.g. station 5) XBT-A8 SERVER TxTi, L = 36 (bytes)	<table border="1"> <tr> <td>H'00'</td> <td>53'</td> </tr> <tr> <td>H'00'</td> <td>20'</td> </tr> <tr> <td></td> <td></td> </tr> <tr> <td></td> <td></td> </tr> <tr> <td></td> <td></td> </tr> <tr> <td></td> <td></td> </tr> </table> Message N° 083  Segment length 32 bytes XBT-A8 memory format	H'00'	53'	H'00'	20'									TxTi, V = H'006B' or TxTi, R = H'6B' (TSX17)  <table border="1"> <tr> <td>H'00'</td> <td>H'00'</td> </tr> <tr> <td>H'00'</td> <td>53'</td> </tr> </table> 1 status byte Number of seg. received  (message N° 83) (H'53') TxTi, V = H'00FD' or TxTi, R = H'FD' negative response	H'00'	H'00'	H'00'	53'
H'00'	53'																	
H'00'	20'																	
H'00'	H'00'																	
H'00'	53'																	

**Negative response :**

<b>Response code</b>	H'FD'
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- if the uploading sequence is not opened by the requester,
- if the syntax of the data is not in the XBT-A8 terminal memory format,
- if the number of the segment is not supported by the XBT-A8.

**THE DATA TO BE LOADED INTO THE XBT-A8 MUST BE IN THE TERMINAL MEMORY FORMAT**

# 5 Communication

## Remote uploading and downloading of XBT-A8 memory area

### • End of loading

This request closes the uploading sequence. After receipt of this request, the XBT-A8 SERVER calculates the checksum for the message memory and stores it.

**Note :** This request is only accepted if reservation and initialization of uploading has been previously carried out.

### Request format :

Designation	Request code	Sender category
Format	1 byte	1 byte
Code	H'3C'	H'07'
Comments	End of uploading sequence	-

### Confirmation report format : Positive response

Designation	Response code	Status
Format	1 byte	1 byte
Code	H'6C'	H'00'
Comments	-	Sequence close

### Negative response :

Response code	H'FD'
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- if the request syntax is incorrect,
- if the uploading sequence was not opened by the requesting CLIENT.

### Example :

CLIENT TEXT BLOCK		
CONFIGURATION	TRANSMISSION TABLE	RECEPTION TABLE
TSX7 MASTER Type : LOCAL EXCHG TxTi, C = H'073C' TxTi, M = H'0069' (E.g. station 5) XBT-A8 SERVER TxTi, L = 0 (bytes)	/	TxTi, V = H'006C' or TxTi, R = H'6C' (TSX17) <div style="border: 1px solid black; display: inline-block; padding: 2px;">H'00'</div> 1 status byte (uploading sequence close)

## 5 Communication

### Remote uploading and downloading of XBT-A8 memory area

#### • Initializing downloading

This request opens the downloading sequence and identifies the data which is to be downloaded to the requesting CLIENT (determination of location, format, etc.).

**Note :** For this to take place the XBT-A8 SERVER must be reserved.

#### Request format :

Designation	Request code	Sender category code	File name
Format	1 byte	1 byte	8 bytes
Code	H'3D'	H'07'	E _ M S A _ _ _
Comments	Open downloading sequence	-	File : EEPROM message memory (8 bytes coded in ASCII) Used to select the memory area for downloading the messages

#### Confirmation report format : Positive response

Designation	Response code	Status
Format	1 byte	1 byte
Code	H'6D'	H'00'
Comments	-	Sequence open

#### Negative response :

Response code	H'FD'

- if the terminal is not reserved by the requesting CLIENT,
- if the terminal is reserved by another requester,
- if an uploading or downloading sequence is already open.

# 5 Communication

## Remote uploading and downloading of XBT-A8 memory area

**Example :** Opening the downloading sequence for the EEPROM message memory.

CLIENT TEXT BLOCK												
CONFIGURATION	TRANSMISSION TABLE	RECEPTION TABLE										
<b>TSX7 MASTER</b> Type : LOCAL EXCHG TxTi, C = H'073D' TxTi, M = H'0069' (E.g. station 5) <b>XBT-A8 SERVER</b> TxTi, L = 8 bytes	<table border="1"> <tr><td>H'5F'</td><td>H'45'</td></tr> <tr><td>H'53'</td><td>H'4D'</td></tr> <tr><td>H'20'</td><td>H'41'</td></tr> <tr><td>H'20'</td><td>H'20'</td></tr> </table> <p style="text-align: center;">File name (8 bytes)</p> <p style="text-align: center;">E _ M S A _ _ _</p>	H'5F'	H'45'	H'53'	H'4D'	H'20'	H'41'	H'20'	H'20'	TxTi, V = H'006D' or TxTi, R = H'6D' (TSX17) <table border="1" style="display: inline-table; vertical-align: middle;"> <tr><td> </td><td>H'00'</td></tr> </table> 1 status byte (remote downloading open)		H'00'
H'5F'	H'45'											
H'53'	H'4D'											
H'20'	H'41'											
H'20'	H'20'											
	H'00'											

## 5 Communication

### Remote uploading and downloading of XBT-A8 memory area

#### • Downloading a segment

This request allows a CLIENT to read a message (segment) in the XBT-A8 SERVER format. Any number of segments can be read and transferred in any order. This allows all or part of the XBT-A8 message memory zone to be downloaded.

THE MESSAGES DOWNLOADED TO THE REQUESTING CLIENT  
ARE IN THE FORMAT OF THE XBT-A8 SERVER MEMORY :  
THIS MUST BE TAKEN INTO ACCOUNT  
WHEN THE REQUESTING DEVICE PROCESSES THE DATA

**Note** : Reservation and initialization of downloading, followed by renewing the reservation if necessary, must be carried out before requesting that the first message be read.

#### Request format :

Designation	Request code	Sender category code	Segment number
Format	1 byte	1 byte	1 word
Code	H'3E'	H'07'	H'0000' to H'0064'
Comments	Downloading	-	Number of message requested

#### Confirmation report format : Positive response

Designation	Response code	Status	Segment number	Segment length	Data
Format	1 byte	1 byte	1 word	1 word	32 bytes
Code	H'6E'	H'00'	H'0000' to H'0064'	H'0020'	H'..' H'..'
Comments	-	-	Number of segment sent	Length 32 bytes	32 bytes in XBT RAM memory message format

#### Negative response :

Response code
H'FD'

- if the request syntax is incorrect,
- if the downloading sequence was not opened by the requester,
- if the address of the message segment number is non-existent or out of limits.

# 5 Communication

## Remote uploading and downloading of XBT-A8 memory area

Example : Downloading message number 016 (H'10).

CLIENT TEXT BLOCK																
CONFIGURATION	TRANSMISSION TABLE	RECEPTION TABLE														
<p>TSX7 MASTER                      Type : LOCAL EXCHG                      TxTi, C = H'073E'                      TxTi, M = H'0069'                      (E.g. station 5)                      XBT-A8 SERVER                      TxTi, L = 2 (bytes)</p>	<table border="1"> <tr> <td>H'00</td> <td>H'10'</td> </tr> </table> <p>message N° 16 requested</p>	H'00	H'10'	<p>TxTi, V = H'006E' ou                      TxTi, R = H'6E' (TSX17)</p> <table border="1"> <tr> <td>H'10</td> <td>H'00'</td> </tr> <tr> <td>H'20</td> <td>H'00'</td> </tr> <tr> <td>H'00</td> <td>H'00'</td> </tr> <tr> <td></td> <td></td> </tr> <tr> <td></td> <td></td> </tr> <tr> <td></td> <td></td> </tr> </table> <p>1 status byte                      N° of segment                      received : 16                      Segment                      length                      32 bytes</p> <p>32 bytes                      XBT-A8                      format</p>	H'10	H'00'	H'20	H'00'	H'00	H'00'						
H'00	H'10'															
H'10	H'00'															
H'20	H'00'															
H'00	H'00'															

## 5 Communication

### Remote uploading and downloading of XBT-A8 memory area

#### • End of downloading

This request closes the downloading sequence.

**Note :** Only accepted if reservation is carried out.

#### Request format :

Designation	Request code	Sender category
Format	1 byte	1 byte
Code	H'3F'	H'07'
Comments	End of downloading sequence	-

#### Confirmation report format : Positive response

Designation	Response code	Status
Format	1 byte	1 byte
Code	H'6F'	H'00'
Comments	-	Sequence close

#### Example : Closing the downloading sequence.

CLIENT TEXT BLOCK		
CONFIGURATION	TRANSMISSION TABLE	RECEPTION TABLE
TSX7 MASTER Type : LOCAL EXCHG TxTi, C = H'073F' TxTi, M = H'0069' (E.g. station 5) XBT-A8 SERVER TxTi, L = 0 bytes	/	If positive response : TxTi, V = H'006F' TxTi, R = H'6F' <div style="border: 1px solid black; display: inline-block; padding: 2px;">H'00'</div> (downloading sequence close)

Negative response TxTi, R = H'FD'  
 TxTi, V = H'00FD' if :

- the request syntax is incorrect,
- the downloading sequence was not opened by the requester.

### 5.9 Requests used by CLIENT XBT-A8s

In this type of operation, the SERVER is a station which can be accessed via UNI-TELWAY and TELWAY7.

A station variable may be associated with each message in the XBT-A8. On pressing a "direct access" function key (messages 1 to 12) or using "indirect access" (messages 13 to 99), the numeric value of the associated variable is automatically read by the XBT-A8 from the associated TSX station. The value of this variable is displayed in the numeric field of the message and updated periodically (as a function of parameter A).

If the message is N type (numeric), the operator may alter the value using the XBT-A8 numeric keypad. When the value entered is confirmed by pressing (ENTER), it is written by the terminal to the address of the associated variable indicated in the message (for example, see section 5.2 "XBT-A8 CLIENT").

While acting as a CLIENT, the XBT-A8 responds to UNI-TE standard requests (reading and writing bits and words), and to extended requests for TSX7 servers using ADJUST protocol.

REQUEST CODE	VARIABLE ADDRESSES	FUNCTION
H'00'	Bxxxx	Read internal bit
H'10'	Bxxxx	Write internal bit
H'04'	Wxxxxx	Read internal word
H'14'	Wxxxxx	Write internal word
H'02'	Ixxxx, xx	Read input bit image
	Oxxxx, xx	Read output bit image
H'05'	CWxxxxx	Read constant word
H'07'	COMxx, x	Read common word
H'09'	Txxx, V	Read current value of a timer
H'17'	Txxx, P	Write stored value of a timer
H'09'	Txxx, P	Read stored value of a timer
H'0B'	Cxxx, V	Read current value of a counter
H'19'	Cxxx, P	Write stored value of a counter
H'0B'	Cxxx, P	Read stored value of a counter
H'0A'	Mxxx, V	Read current value monostable
H'18'	Mxxx, P	Write stored value of a monostable
H'0A'	Mxxx, P	Read the stored value of a monostable
H'0C'	Dxxx, V	Read current step of a drum controller

- In order to determine the limits for addresses of accessible variables, the reader should refer to the user manuals for the TSX7 PLC being used.

- For additional information concerning the coding of requests and installing the UNI-TELWAY bus, please refer to the "UNI-TELWAY Bus Reference Manual" reference : TSX D24004E.

5.10 Summary of UNI-TE requests

XBT-A8 SERVER				
SERVICES	REQUESTS	QUESTIONS	POSITIVE RESPONSES	FUNCTIONS
GENERAL  USE	Status	H'31'	H'61'	Detailed information about state of devices
	Identification	H'0F'	H'3F'	Provides the type, version and commercial reference of the product
	Protocol version	H'30'	H'60'	Communication protocol version and parameters
	Mirror	H'FA'	H'FB'	Tests the system and the communication route
	Read error counters	H'A2'	H'D2'	Handles logging of communication faults of a device
	Reset error counters to zero	H'A4'	H'FE'	Resets error counter to zero
DATA  ACCESS	Write a bit	H'10'	H'FE'	- Controls keyboard LEDs - Locking/unlocking of keyboard keys - Buzzer control
	Write a word	H'14'	H'FE'	Global keyboard management Displays stored message
	Write objects	H'37'	H'FE'	- Controls keyboard LEDs - Locking/unlocking keyboard keys - Buzzer control - Displays messages (not stored)
	Read objects	H'36'	H'66'	Reads displayed message (display buffer)
	Read structured objects	H'34'	H'64'	Reads stored messages
MANAGEMENT  OF SEMAPHORES	Reservation	H'1D'	H'FE'	Reserves a device and starts 60 second time envelope
	De-reservation	H'1E'	H'FE'	Authorizes dereservation of a reserved XBT-A8
	Renew the reservation.	H'2D'	H'FE'	Enables the XBT-A8 reservation to be renewed and restarts 60 second time envelope

Summary of UNI-TE requests

XBT-A8 SERVER				
SERVICES	REQUESTS	QUESTIONS	POSITIVE RESPONSES	FUNCTIONS
WORKING MODE	INIT	H'33'	H'63'	Initialize the XBT-A8 * RUNNING *
FILE  TRANSFER	Initialize uploading	H'3A'	H'6A'	Establish sequence for remote uploading
	Upload a segment	H'3B'	H'6B'	Transfer a segment CLIENT -> SERVER
	End uploading	H'3C'	H'6C'	End of remote uploading sequence
	Initialize downloading	H'3D'	H'6D'	Establish sequence of remote downloading
	Download a segment	H'3E'	H'6E'	Transfer a segment SERVER -> CLIENT
	End downloading	H'3F'	H'6F'	End of remote downloading sequence

Summary of UNI-TE requests

XBT-A8 CLIENT				
SERVICES	REQUESTS	QUESTIONS	POSITIVE RESPONSES	FUNCTIONS
DATA  ACCESS	Read an internal bit	H'00'	H'30'	Read bit Bxxxx TSX7
	Write an internal bit	H'10'	H'FE'	Write bit Bxxxx TSX7
	Read word	H'04'	H'34'	Read word Wxxxxx TSX7
	Write word	H'14'	H'FE'	Write word Wxxxxx TSX7
	Read I/O bit image	H'02'	H'32'	Input bit Ixxxx, xx Output bit Oxxxx, xx
	Read constant word	H'05'	H'35'	Word CWxxxxx
	Read common word	H'07'	H'37'	Word COMxx, x
	Read timer	H'09'	H'39'	Current value Txxx, V Stored value Txxx, P
	Write timer	H'17'	H'FE'	Preset value Txxx, P
	Read counter	H'0B'	H'3B'	Current value Cxxx, V Preset value Cxxx, P
	Write counter	H'19'	H'FE'	Preset value Cxxx, P
	Read monostable	H'0A'	H'3A'	Current value Mxxx, V + preset Mxxx, P
	Write monostable	H'18'	H'FE'	Preset value Mxxx, P
	Read drum controller	H'0C'	H'3C'	Step being executed Dxxx, V depends on TSX implement.