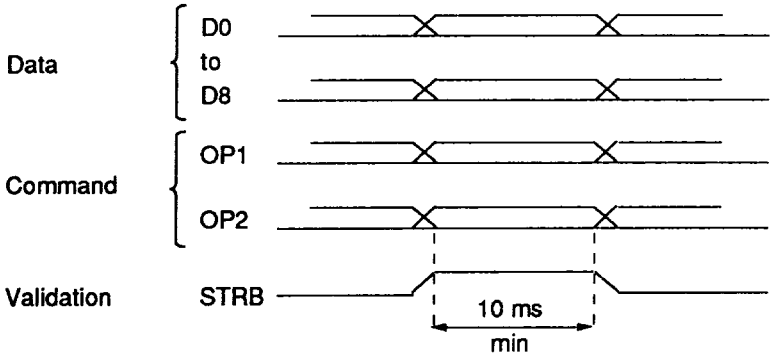
7.1 Structure

The XBT-K display is controlled via opto-coupled inputs. The link is unidirectional (from the logic system to the XBT-K).

The commands are sent to terminals COP1 and COP2.

VALIDATION OCCURS ON THE RISING EDGE OF THE VALIDATION SIGNAL (STRB) ACCORDING TO THE DIAGRAM BELOW :



The command code and the data should be maintained for the complete duration of the validation signal (STRB). The display is refreshed on each validation pulse.

The connections are made to a 17 terminal removable connector (see chapter 9 : CONNECTIONS).

USE OF THE POWER SUPPLY VOLTAGE FOR THE INPUTS CANCELS THE ISOLATION PROVIDED BY THE OPTO-COUPLERS

7.2 Commands

7.2.1 Displaying a stored message

The message number is coded in binary (000 to 179).

COP2	COP1
0	1

D8	D7	D6	D5	D4	D3	D2	D1	D0
X	0	1	0	1	1	1	1	1

Example : number 095 is displayed.

7.2.2 Embedding a numeric value

This command enables numeric values (or signs) to be embedded (for messages stored with a numeric field : _ ASCII character 5F) digit by digit.

		POSITION DIGIT				VALUE DIGIT			
		8	4	2	1	8	4	2	1
COP2	COP1	D8	D7	D6	D5	D4	D3	D2	D1	D0
1	0	X	0	1	1	0	1	1	1	0

Example : the VALUE (with > sign) is to be embedded in POSITION 6.

- The POSITION is defined as the position of the first dash (-) in the numeric field (from left to right).
- The VALUE is defined as being :
  - numeric : between 0 and 9
  - 6 signs : •, +, -, =, <, >

7.2.3 Clearing the display

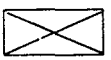
COP2	COP1
0	1

D8	D7	D6	D5	D4	D3	D2	D1	D0
X	1	1	1	1	1	1	1	1

Commands

The various possibilities for embedding data are summarised in the table below :

BINARY WEIGHTING			8	4	2	1	
DEC	HEX	POSN.	D7	D6	D5	D4	
			D3	D2	D1	D0	VALUE
0	0		0	0	0	0	0
1	1	1	0	0	0	1	1
2	2	2	0	0	1	0	2
3	3	3	0	0	1	1	3
4	4	4	0	1	0	0	4
5	5	5	0	1	0	1	5
6	6	6	0	1	1	0	6
7	7	7	0	1	1	1	7
8	8	8	1	0	0	0	8
9	9	9	1	0	0	1	9
10	A	10	1	0	1	0	•
11	B	11	1	0	1	1	+
12	C	12	1	1	0	0	-
13	D	13	1	1	0	1	=
14	E	14	1	1	1	0	>
15	F	15	1	1	1	1	<



If the position and the value are zero the numeric field is completely erased.

The decimal point (•) does not occupy a digit position.

Loading this decimal point (•) should always be preceded by embedding the character on which embedding is required.

Commands

Example : Display the message COLORING = + 3,5 KG, loaded at address 079.

ACTION	XBT-K DISPLAY	COMMENTS
OP2 OP1 D8 D7 D6 D5 D4 D3 D2 D1 D0 0 1 X 0 1 0 0 1 1 1 1	COLORING = _ _ _ _ KG.	presentation of the display for message 079
OP2 OP1 D8 D7 D6 D5 D4 D3 D2 D1 D0 1 0 X 0 0 0 1 1 0 1 1	COLORING = + _ _ KG.	embedding a plus sign (+) (first numeric field)
OP2 OP1 D8 D7 D6 D5 D4 D3 D2 D1 D0 1 0 X 0 0 1 0 0 0 1 1	COLORING = + 3 _KG.	embedding the figure 3 (second numeric field)
OP2 OP1 D8 D7 D6 D5 D4 D3 D2 D1 D0 1 0 X 0 0 1 0 1 0 1 0	COLORING = + 3 •_ KG.	embedding the decimal point (•) (second numeric field)
OP2 OP1 D8 D7 D6 D5 D4 D3 D2 D1 D0 1 0 X 0 0 1 1 0 1 0 1	COLORING = + 3 • 5 KG.	embedding the figure 5 (third numeric field)

Commands

7.2.4 Scanning the memory

All the message addresses are scanned automatically (stored or not).

OP2	OP1
1	1

D8	D7	D6	D5	D4	D3	D2	D1	D0
X								

scanning starts at the address presented to D0 to D7.

ACTION	XBT-K DISPLAY	
Scanning all the message memory space. OP2 OP1 = 1 1 D8 D7 D6 D5 D4 D3 D2 D1 D0 = 1 1 1 1 1 1 1 1 1		
OP2 OP1 = 1 1 D8 D7 D6 D5 D4 D3 D2 D1 D0 = X 0 1 1 0 1 0 1 1	MESSAGE NUMBER = 107	display memory starting at address 107
OP2 OP2 = 1 1 D8 D7 D6 D5 D4 D3 D2 D1 D0 = X 0 1 1 0 1 0 1 1	VALUE = ___C	display the text of message n° 107
OP2 OP2 = 1 1 D8 D7 D6 D5 D4 D3 D2 D1 D0 = X 0 1 1 0 1 0 1 1	T = V X = 05 C = 1	display the attributes of message n° 107
OP2 OP2 = 1 1 D8 D7 D6 D5 D4 D3 D2 D1 D0 = X 0 1 1 0 1 0 1 1	VAR = W 35	display the variable associated with message n° 107
OP2 OP2 = 1 1 D8 D7 D6 D5 D4 D3 D2 D1 D0 = X 0 1 1 0 1 0 1 1	MESSAGE ABSENT	no message at the address scanned

THE COMMAND SHOULD REMAIN PRESENT FOR THE DURATION OF THE SCAN

7.2.5 Hard copy of the display

The text displayed on the device can be printed on a printer connected to the serial connector.

The characteristics of the equipment should be adjusted :
1) transmission parameters of the XBT-K and the printer,
2) format on a line of 40 characters followed by LF CR.

The syntax of the command should be :

COP2	COP1
0	0

D8	D7	D6	D5	D4	D3	D2	D1	D0
1	0	0	0	0	0	0	0	0

The code presented at inputs COP2, COP1 and D0 to D8 should remain during the printing, otherwise printing will be interrupted.

The connection to the display can be made using cable XBT-Z905 (RS 232 C link) or another. See chapter 9.7 : CONNECTIONS.

7.2.6 Clearing the display

The syntax of the command should be :

COP2	COP1
0	1

D8	D7	D6	D5	D4	D3	D2	D1	D0
1	1	1	1	1	1	1	1	1

7.2.7 Clearing the numeric field

The syntax of the command should be :

COP2	COP1
1	0

D8	D7	D6	D5	D4	D3	D2	D1	D0
X	0	0	0	0	0	0	0	0

8.1 Programming the TSX 17 (PL7-1 language) parallel link

Tthe message: LENGTH = + 3 • 8 M. is to be displayed on the XBT-K terminal.The display takes place over several steps and it is necessary to follow the sequence of the commands generated by the application program:

1 - Display message text LENGTH = --- M stored at number 013 (see chapter 5 : STORING THE MESSAGES), the - - - field indicates the three positions where the numeric part is to be embedded.

2 - Display the first digit (+ sign),

3 - Display the second digit (number 3),

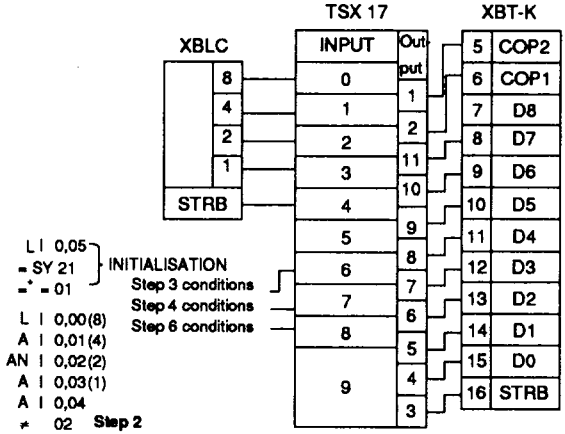
4 - Embed the decimal point (•) in the second digit,

5 - Display the third digit (number 8).

The data is to be entered via a coded keyboard, a 16 key XBL pad.

Programming the TSX 17 (PL7-1 language)
Parallel link

PL7-1 programming example to be written in the TSX 17-20 :




```
L I 0,05 ┐
= SY 21  ├ INITIALISATION
=* = 01  ┘
L I 0,00(8)   Step 3 conditions
A I 0,01(4)   Step 4 conditions
AN I 0,02(2)  Step 6 conditions
A I 0,03(1)
A I 0,04
≠  02   Step 2
—•— 02  Display message n° 13

L I 0,06
A I 0,04
≠  03   Step 3
—•— 03  Display + sign

L I 0,07
A I 0,04
≠  04   Step 4
—•— 04  Display first digit

L N 0,03
A I 0,02
AN I 0,01
A I 0,00
A I 0,04
≠  05   Step 5
—•— 05  Display the decimal point

L I 0,08
A I 0,04
≠  06   Step 6
—•— 06  Display the second digit

L I 0,09  Return to step 2
≠  02
```

Post processing :

```
=* = POST.
L   X 06
O   X 05
O   X 04
O   X 03
=   O 0,01  Operator selection EMBED (OP2)

L   X 02
=   O 0,02  Operator selection DISPLAY (OP1)

L   I 0,04
=   O 0,03  Operator selection VALIDATE (STRB)

L   I 0,03
=   O 0,04  HEX selection (weight 1)

L   I 0,02
=   O 0,05  HEX selection (weight 2)

L   I 0,01
=   O 0,06  HEX selection (weight 4)

L   I 0,00
=   O 0,07  HEX selection (weight 8)
```

8.2 Programming the TSX 7 (PL7-2 language) serial link

• Terminal port (Adjustment mode)

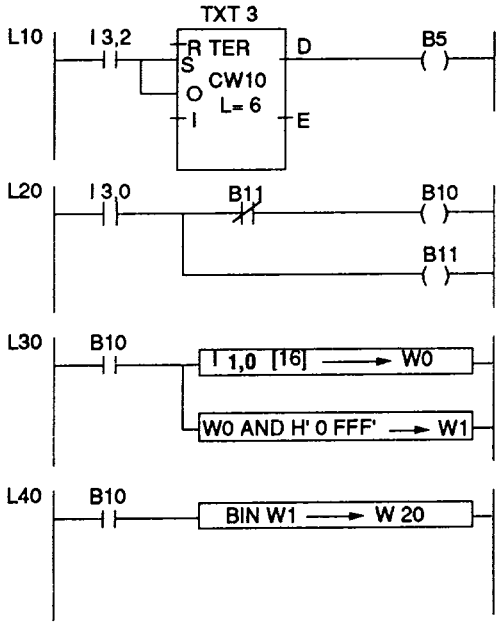
A 3 digit setpoint (selected value) is to be displayed on a XBT-K70101.

- The text of the message : VOLUME = _ _ _ DM 3 is to be stored at address 013 (associated with the TSX 7 word W20) using the procedure described in chapter 5 : STORING THE MESSAGES.
- The information is transmitted on connecting the TSX 7 terminal port (using cable XBT-Z902) to the XBT-K70101 serial link.
- The following constant words have been loaded :

C W 10 = H' 561 B' (V/ESC)
C W 11 = H' 31 30' (1/0)
C W 12 = H' 0D 33' (CR/3)

(I 3,2 ⇒ start the display).

- Programming example:



DISPLAY MESSAGE ESC V 013C

CW10	V	ESC
CW11	1	0
CW12	CR	3

VALIDATE PULSE

ENTER 3 DIGITS (BCD)

BCD → BINARY CONVERSION (in W 20)

Note : the contents of word W20 will be automatically updated by the XBT-K

Programming the TSX 7 (PL7-2 language)
Serial link

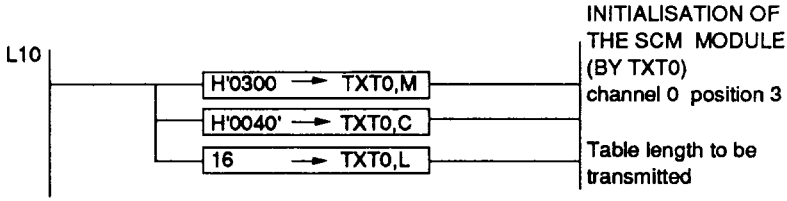
• Asynchronous module (ASCII)

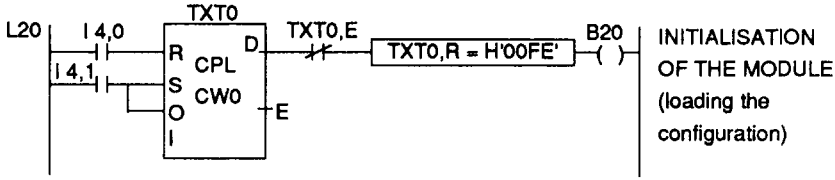
A three digit measurement is to be displayed on the XBT-K70101, (varying value).

- The message text : VOLUME _ _ _ DM 3 is stored at address 013 as described in chapter 4.2 : CONFIGURATION MODES.
- The transmission of information from the TSX 7 to the XBT is achieved by using the TSX SCM20 module. For details of usage consult the ASYNCHRONOUS LINK manual (programming and utilisation) reference TSX D41726.

Example program :

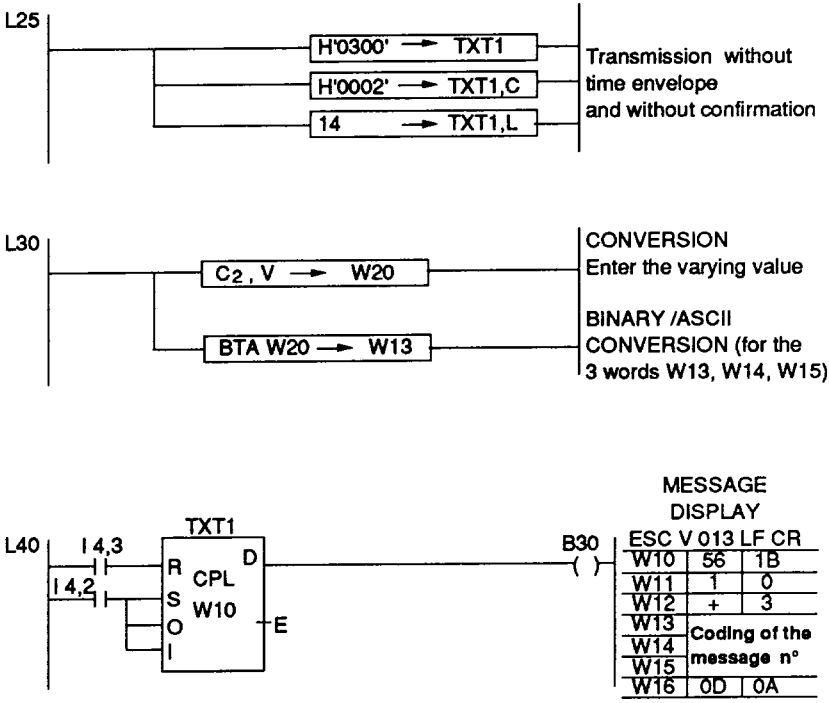
The configuration for the serial link to the XBT-K70101 is as follows :
ASC H 9600 8B 0D 1S.





The configuration of the module is organised into constant words as follows :
CW0 = H'0811' CW1 H' 9600' CW2 H' 0000' CW3 H' 0000'
CW4 = H' 0000 CW5 H' 0000' CW6 H' 0000' CW7 H' 0000'

Programming the TSX 7 (PL7-2 language)
Serial link



Note : New values are displayed during each transmission of text block TXT1.