

User manual  
January

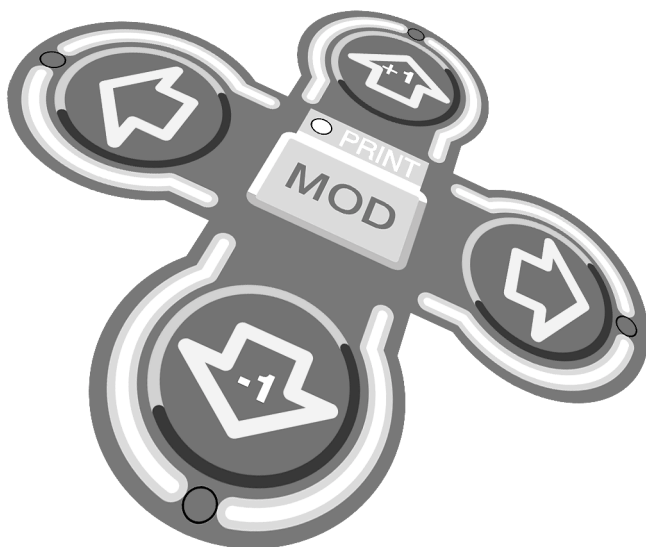
2002


Software  
XBT-L1000 ver 3.80

# Magelis range

## Alphanumeric and matrix

### XBT-H/P/E/HM/PM



**Schneider**  
 **Electric**



---

 **WARNING**

**UNINTENTIONAL EQUIPMENT OPERATION**

The application of this product requires expertise in the design and programming of control systems. Only persons with such expertise should be allowed to program, install, alter and apply this product.

**Failure to follow this instruction can result in death, serious injury, or equipment damage.**

For a minimum size dialog  
application, refer to  
Chapters A and B.

---

---

---

# General Contents

---

If you are not familiar with man/machine dialog using a Magelis terminal

**Introduction**

**A**

If you are an XBT expert and you want to learn about the Magelis functions

**Magelis functions**

**B**

If you are a PLC programmer and you want to become acquainted with PLC/Magelis dialog

**PLC and Terminal communications Dialog**

**C**

If you want information about your Magelis terminal

**Operating the terminal**

**D**

If you want to set up a Magelis application as an example

**Application development example**

**E**

XBT technical sheets  
Glossary  
Error messages

**Appendices**

**F**

If you want to find a specific piece of information

**Index**

**I**

---

---

**Chapter A**  
**Introduction**





# Contents

---

## Contents

*This chapter includes the following topics :*

1. Man/machine dialog with Magelis	5
Production monitoring	6
Preventive maintenance	6
Corrective maintenance	6
Process control	6
2. Structure of Magelis applications	7
Terminals with 2 or 4 lines (H, P, E)	8
Matrix screen terminals (HM, PM)	11
3. Application pages	14
4. Alarm pages	16
5. Form pages	18
6. Terminal operating modes	19
7. Controlling the control system	20
Momentary contact command	20
Push-on/push-off toggle command	20
8. Dialog between the PLC and the terminal	21
Data associated with the fields	21
Principle of terminal "command and status" exchanges	22
9. Control system production file	23
10. General specifications	24

A

# Contents

---

# 1. Man/machine dialog with Magelis

## 1. Man/machine dialog with Magelis

The main functions of Magelis terminals are to :

- **Display** data from the control system,
- **Modify** the control system parameters,
- **Control** the process using discrete commands.

A

Display data from the control system  
Signal control system faults

Programming the terminal with XBT-L1000



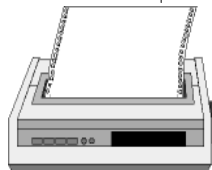
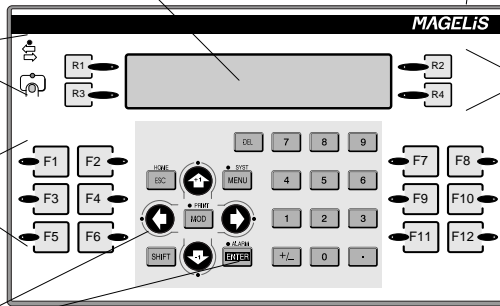
Indicator lamps  
- communication status  
- Key strokes enabled

- Control the control system  
- Change the page

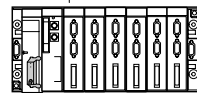
Modify the control system parameters

Record and time-stamp the occurrence of control system alarm

- Control the control system  
- Change the page (Only XBT-PM)



- Print fault log
- Print production data



Communicate with the control system :  
Telemecanique, April, Modicon, Siemens, etc, PLCs.

# 1. Man/machine dialog with Magelis

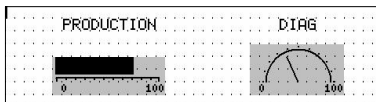
---

The applications associated with Magelis can be :

## Production monitoring

Display process status messages :

Automatic operation  
Start hydraulic unit  
End of lift of manipulator  
Rotation of grip to right



## Preventive maintenance

Counting parts for production monitoring :

Type 1 housing : 7555  
Base unit : 1200

Counting with indication if threshold exceeded :

Number of drillings 3137  
Change tool at 4000

## Corrective maintenance

Indication of process faults :

Oil level too low  
Door open

## Process control

Process control via configurable function keys :

Pressurizing P  
Start Cycle SC



Modification of the process parameters :

Level 1: 556  
Limit n12 : 725



Part of the page displayed on the terminal by scrolling; 2 lines or 4 lines depending on the terminal.

## 2. Structure of Magelis applications

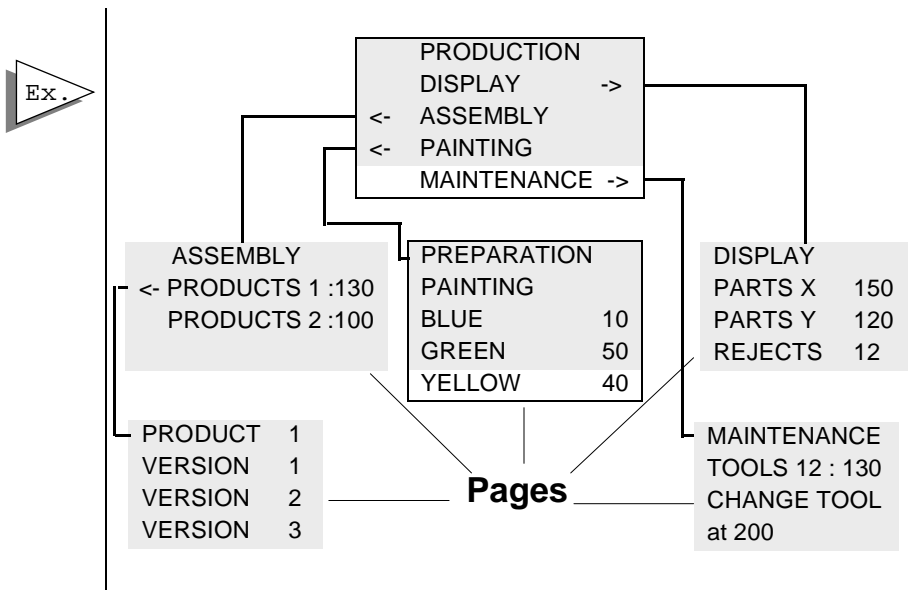
## 2. Structure of Magelis applications


A Magelis application is the entire dialog between the user and the automated process. This consists of :

- criteria linked to the control system :
  - production monitoring,
  - preventive maintenance,
  - corrective maintenance,
  - process control.
- criteria concerning the user :
  - user interface,
  - level of involvement.
- criteria concerning setting up the dialog application itself
  - programming,
  - debugging,
  - updating.



These characteristics mean that **your application must be structured. An application will consist of a series of pages, which can form a tree structure**, as in the diagram below :



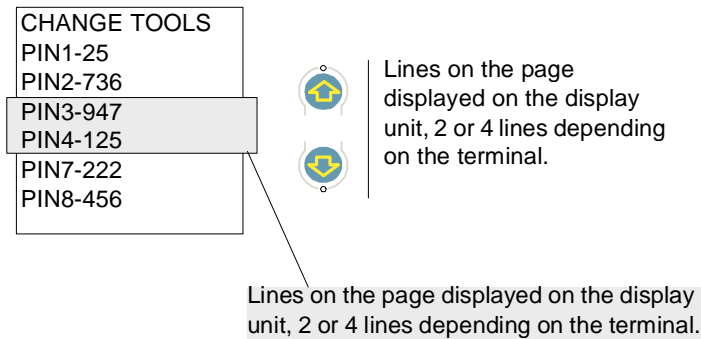
 Part of the page displayed on the terminal by scrolling; 2 lines or 4 lines depending on the terminal.

## 2. Structure of Magelis applications

### Terminals with 2 or 4 lines (H, P, E)

#### Page

- A page can contain a **maximum of 25 lines**.
- The length of the lines on each page depends on the capacity of the MAGELIS terminal. The number of lines on each page, displayed during operation, depends on the capacity of the Magelis terminal :
  - 2\*20 characters
  - 2\*40 characters
  - 4\*40 characters
- A page is displayed as follows :



- A page is identified by a **number** and a **name** (optional).  
The page can then be displayed on the terminal by commands from the terminal or the PLC.
- Access to pages can be protected by a password.
- [See chapter F, § 1. XBT technical sheets, Page 5](#), for informations of the technical characteristics of the various Magelis terminals.
- The PC software, **XBT- L1000**, is used to create dialog pages.
- Two types of page can be used :
  - **application pages**
  - **alarm pages**

## 2. Structure of Magelis applications

### Line

Each line consists of **alphanumeric text** and can include :

- **variable fields**, that is zones for :
  - either the display of values reflecting the status of the control system : status of a bit, of a single or double word, of a floating point word, or an ASCII string.
  - or the entry of parameters for operating the control system :
  - modification of bits, single or double words, floating point words, or an ASCII string.

A line can contain several fields.

The display format can be binary, decimal, hexadecimal, floating point or alphanumeric.

- **links** enabling access to other dialog pages via the keys (depending on the type of terminal)



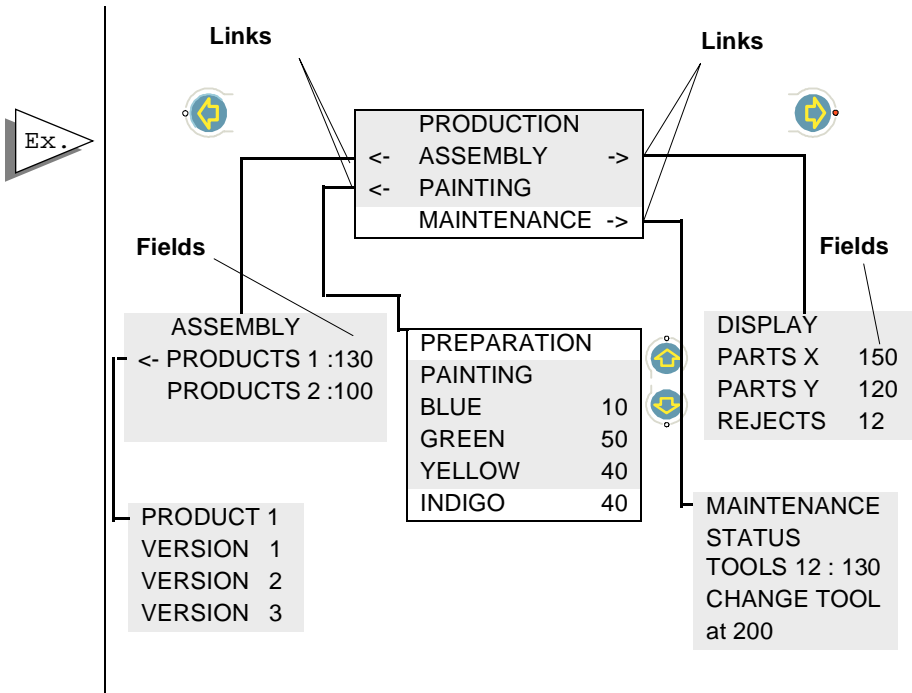
Dialog lines to indicate a repair procedure :

```
REPAIR
LOCK THE AXIS AT ZERO POSITION
CHANGE TO MANUAL
CHANGE THE PART
```

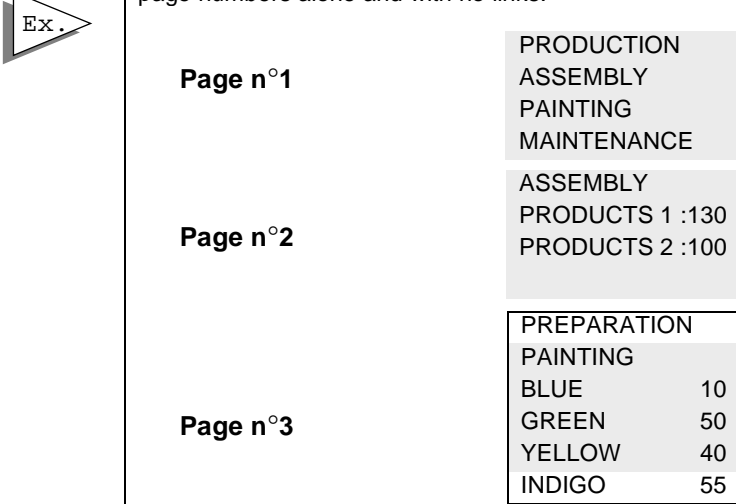
Dialog lines with variable fields :

```
LEVEL 1 556
LIMIT 12 725
```

## 2. Structure of Magelis applications



Ex. You can manage your own man/machine dialog application with the page numbers alone and with no links.





## 2. Structure of Magelis applications

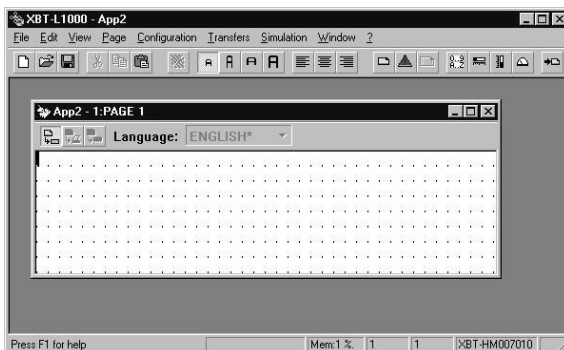
### Matrix screen terminals (HM, PM)

#### Page

The display equipping the XBT-HM or XBT-PM terminals is an LCD mono-chrome screen with a display capacity of 8 x 40 characters.

With double height, double width and double size character facility, the respective capacities are :

- 8 x 40 characters
- 4 x 40 characters
- 8 x 20 characters
- 4 x 20 characters



Each page can include the following features :

- a **background image** with the same size as the screen and associated to each application page.

For the XBT-PM, this background picture can also integrate the dynamic function keys "labels".

- **alphanumeric text** with the following properties and sizes :

- Single size
- Double width
- Double height
- Double size



It is possible to have different size characters on the same line of text.




## 2. Structure of Magelis applications

- **variable fields** used :

- either to display values reflecting the status of the control system: status of a bit, of a single or double word, of a floating point word, or an ASCII string.
- or to enter parameters for operating the control system : modification of bits, single or double words, floating point words, or an ASCII string.

The display format can be binary, decimal, hexadecimal, floating point or alphanumeric.

- **links** giving the operator the possibility of directly displaying other pages using the arrow keys (direct link ; only for XBT-HM).

For more informations about   arrows utilization, see "Page", Page 8 (  arrow only on XBT-HM)

- **dynamic graphic objects** of the "indicator" type enabling graphic representation of the control system data.



### Bar graph object

Used to provide a graphic representation of the control system data (e.g. level in a tank).

### Parameters to be defined

Reference of the variable associated with the object.

Format: 16 bit signed or unsigned word.

Type of bar graph:

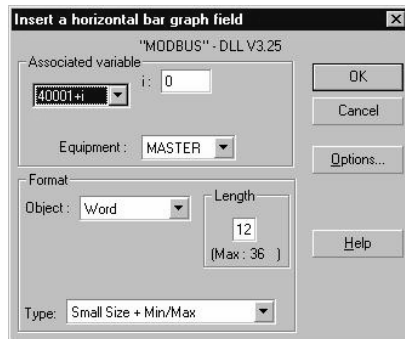
- Vertical (single size or double size)
- Horizontal (single size or double size)

Min/max limit exceeded, indicated by flashing display.

The min/max values are those seen by the operator, in other words after conversion.

Conversion factor

For further information, refer to the XBT L1000 software on-line help.



## 2. Structure of Magelis applications



### Meter object

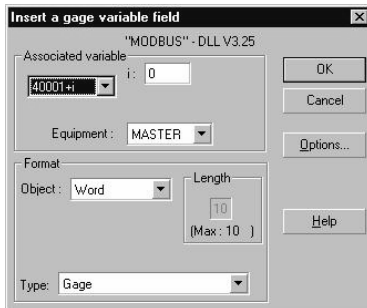
Used to provide a graphic representation of the control system data (e.g. supply voltage monitoring)

### Parameters to be defined

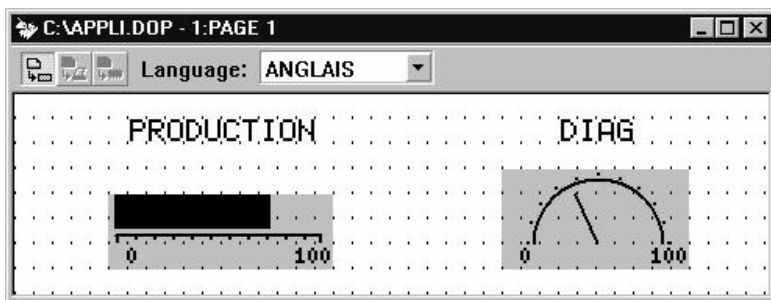
Reference of the variable associated with the object.

Format: 16 bit signed or unsigned word.

Minimum, maximum limits.  
Min/max limit exceeded, indicated by flashing display.



For further information, refer to the XBT L1000 software on-line help.



- A page is identified by a **number, a name** (optional),
- The pages are called up by pressing the function keys (static and dynamic function keys for the XBT-PM), by the PLC,
- The keys or the arrow keys are used to navigate within a page,
- The pages are defined using the XBT-L1000 programming software, and saved in the terminal.

## 3. Application pages

---

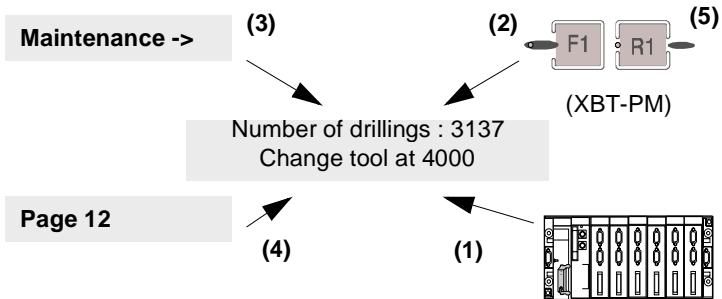
### 3. Application pages

Application pages are for :

- Monitoring the control system.
- Performing operations on the control system.
- Maintaining the control system.

Application pages can be displayed (depending on the type of terminal) either :

- initiated by the control system (1),
- by configurable static (2) or dynamic (5) function keys,
- from a menu (3),
- from their name or number (4).



Application pages form the basic architecture of the dialog.

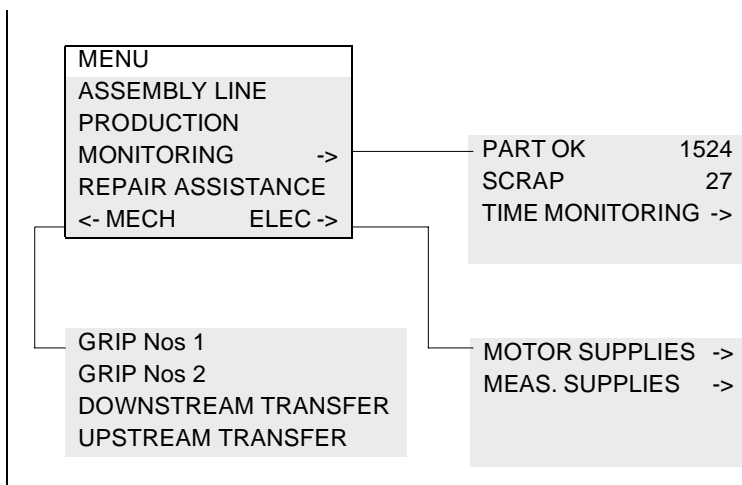
#### Structuring the series of pages

It is advisable to organize the application pages into a menu format to reflect the stages in the **machine cycle**.

On every line of an application page, it is possible to create a link towards the right (->) and a link towards the left(<-). Each link gives access to another application page via the arrow keys.



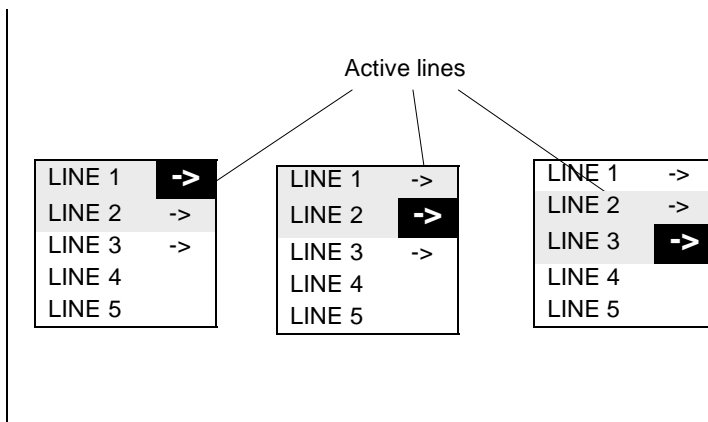
### 3. Application pages



A

The indicator lamps for the and keys, managed by the terminal, show the operator whether a page can be displayed by pressing the corresponding key.

An active line (line on which the cursor is located) signals the access to another page by displaying the -> and/or <- characters in reverse video.



## 4. Alarm pages

---

### 4. Alarm pages

An alarm page has the same characteristics as an application page with regard to :

- the text,
- the fields.

**The additional feature of an alarm page is its event-triggered display. The control system's word bit is assigned to each alarm page. If the word bit is at state 1, the page is displayed.**



A sensor fault occurs. The bit associated with the sensor fault changes to 1 in the control system.

Sensor fault



**ATTENTION PRESSURE SENSOR FAULT  
CHANGE TO MANUAL**

Entry in a variable field is not possible on an alarm page.

On the XBT-HM and XBT-PM, the background picture and the first line are flashing during alarm.

On the XBT-PM, the dynamic function keys can't be used in an alarm page.

## 4. Alarm pages



### Advantages of alarm pages

- Display of an alarm page takes priority over an application page.
- It is possible to assign priority to an alarm page (0 to 16).
- It is possible to record (log) alarm pages to help with trouble shooting in the control system.
- The alarms are time-stamped.
- It is possible to force the operator to acknowledge alarms before continuing process operation ; this is useful when an alarm is transient.
- Magelis XBT-E terminals have a relay output whose contact is closed when an alarm page appears. This function can be configured by the user for each alarm page.
- It is possible to continuous print alarms for products with output printer.

A

### **WARNING**

#### **UNINTENTIONAL EQUIPMENT OPERATION**

The XBT does not support any type of processor nor machine control in association with alarms. It is designer's responsibility to consider programming PLC logic to account for programmed alarms.

**Failure to follow this instruction can result in death, serious injury, or equipment damage.**

## 5. Form pages

---

### 5. Form pages

The form pages are used for printing only. They are used for creating measurement and production follow-up reports, labels, etc.

A form page can include:

- texts,
- alphanumeric variables,
- frames for designing tables,
- control codes specific to the printer used

For more informations, [see chapter B, § 13. Forms, Page 49.](#)



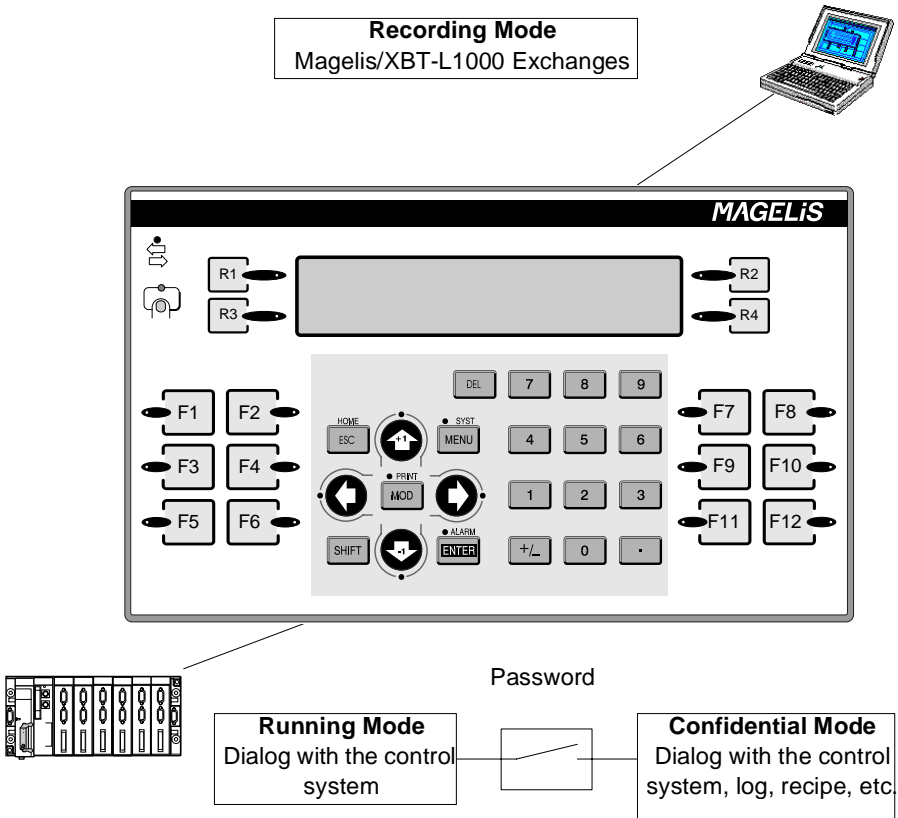
# 6. Terminal operating modes

## 6. Terminal operating modes

Magelis terminals have 3 operating modes :

- **Recording mode** enabling Magelis terminal and XBT-L1000 exchanges.
- **Running mode** enabling the terminal connected to the control system in order to control it.
- **Confidential mode** (except XBT-H and XBT-HM) enabling, in addition to the functions of running mode, access by password to privileged functions (log, recipe, etc).

A



## 7. Controlling the control system

---

### 7. Controlling the control system

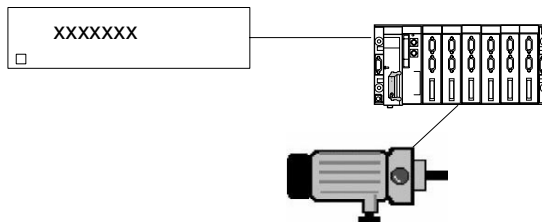
Magelis terminals allow the control system to be commanded by function keys. Two types of command are possible :

#### Momentary contact command

By pressing a function key (static or dynamic function keys for XBT-PM), the control system's bit is activated ; the action stops when the key is released.



Controlling a motor

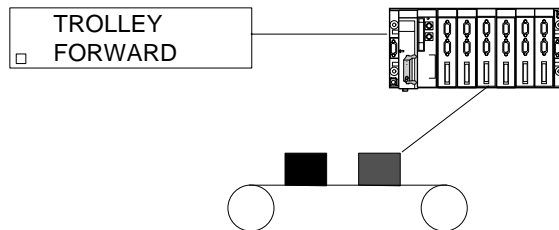


#### Push-on/push-off toggle command

The control system is activated by pressing the function key (static or dynamic function keys for XBT-PM). The action is halted by pressing the function key again.



Command to advance a conveyor belt.

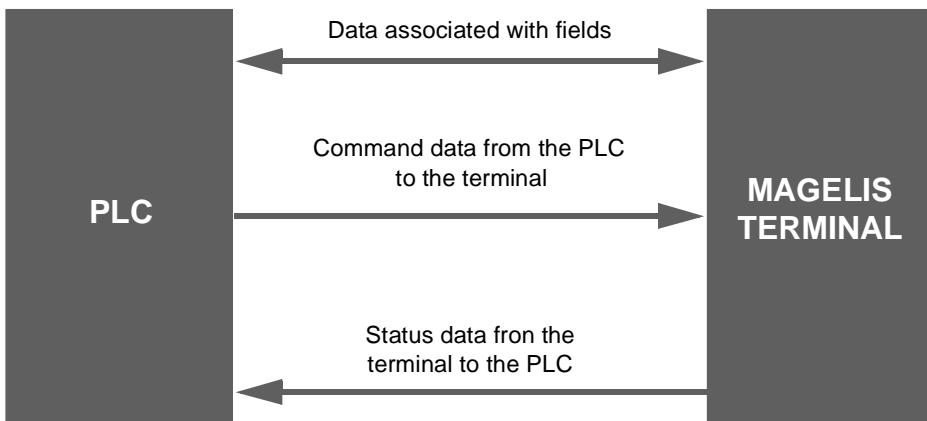


XBT-L1000 software can be used to assign the desired command to each function key.

## 8. Dialog between the PLC and the terminal

### 8. Dialog between the PLC and the terminal

The man/machine dialog between the Magelis terminal and the PLC consists of an exchange of data between the two devices. Different types of data can be exchanged.



#### Data associated with the fields

The principle of the data exchanges associated with the fields depends on the protocol chosen which in turn depends on the type of PLC.

Whether the terminal is master or client of the dialog, it takes charge of the exchanges :

- updating the fields (reading the values in the PLC)
- entry and modification of fields (writing the values to the PLC)

No PLC communication program needs to be written.

### **! WARNING**

#### **UNINTENTIONAL EQUIPMENT OPERATION**

If communication between XBT and PLC is lost, operator's control over machine may be lost completely or partially. It is designer's responsibility to consider programming PLC logic to account for this situation. One of the good ways to do that is to monitor "Communication control word" of the dialog table from the PLC program.

**Failure to follow this instruction can result in death, serious injury, or equipment damage.**

## 8. Dialog between the PLC and the terminal

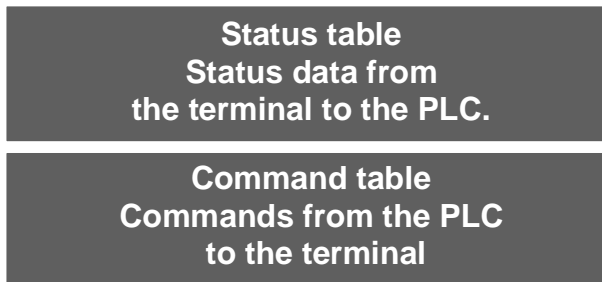
---

### Principle of terminal "command and status" exchanges


To simplify the dialog the data are grouped together in a table : **the dialog table located in the PLC.**

- Commands from the PLC and to the terminal
- Status data from the terminal and to the PLC

Consisting of n consecutive words (words of 16 bits), this table has two parts.



The number of words in the table depends on the choice of status data and the commands the user wishes to process via the dialog. The XBT-L1000 software is used to make this choice.

 <b>WARNING</b>
<b>UNINTENTIONAL EQUIPMENT OPERATION</b>
PLC memory zone allocated for the XBT dialog table must NOT be used for anything else. It is designer's responsibility to program PLC logic properly.
<b>Failure to follow this instruction can result in death, serious injury, or equipment damage.</b>

## 9. Control system production file

### 9. Control system production file

Some Magelis terminals enable a "production file" to be printed based on the data from :

- application pages,
- alarm pages (log).

The application and alarm pages are printed and time-stamped, and the contents of the fields indicated.

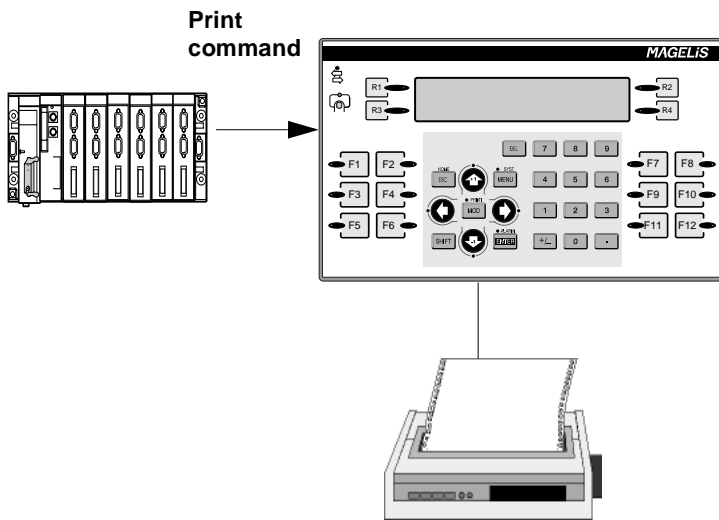
The alarm log pages are printed and the occurrence of faults is time-stamped, but there is no indication of the content of the fields

The print command can be initiated by :

- pressing the PRINT button on the terminal,
- the PLC.



Production data printed each evening.



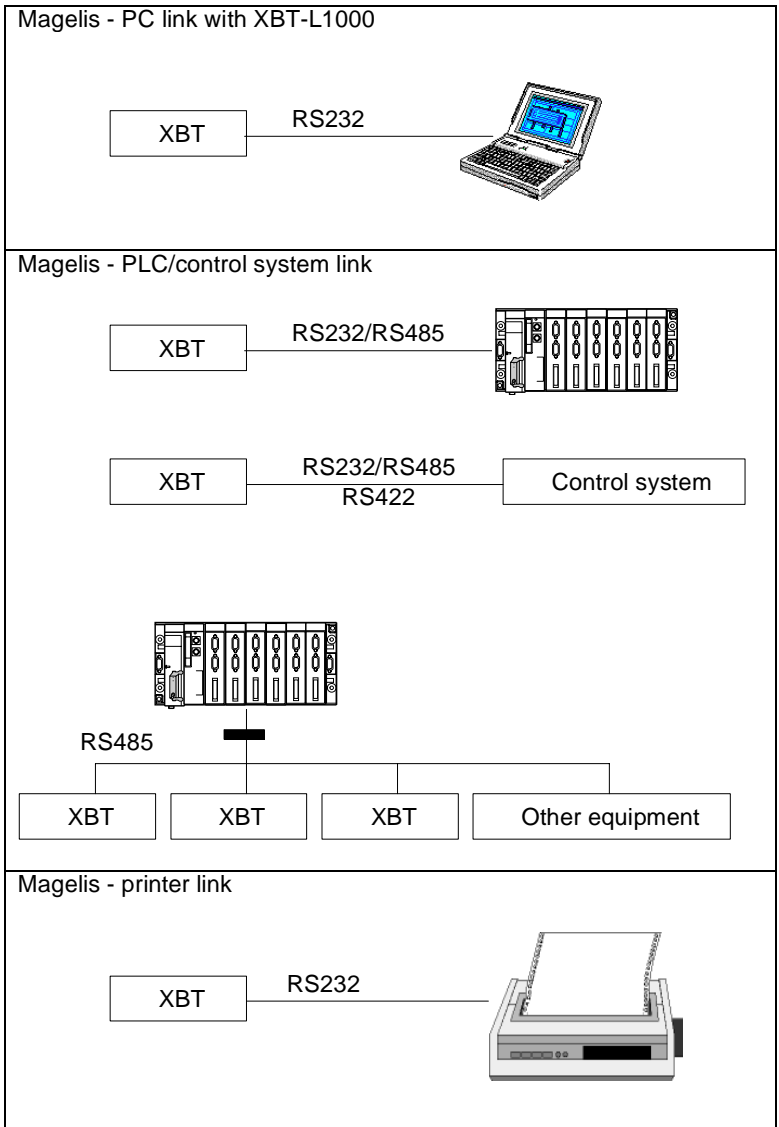
## 10. General specifications

### 10. General specifications

This section gives the general characteristics of Magelis terminals. For informations of characteristics of each terminal, [see chapter F, § 1. XBT technical sheets, Page 5.](#)

Power supply	24V DC Voltage limits : 18 to 30 V DC Ripple : 5 % maximum <b>XBT-H811050 is supplied by TSX07 ( use XBT-Z968 - 03 cable).</b>
Memories	Application : FLASH EEPROM Fault log : battery backed RAM
Communication protocols	Multi-protocol, protocol can be downloaded by diskette using XBT-L1000 software
Number of application pages (*1)	For 2 lines per page and 2 variables per page: <b>XBT-H8: 100</b> XBT-H : 200            XBT-HM:300 XBT-P : 400           XBT-PM:400 XBT-E : 800
Number of alarm pages (*1)	256 (for 2 lines per page) <b>XBT-H8: 128 pages</b> XBT-HM   XBT-PM
Display	- LCD or fluorescent - 2 to 4 lines, 20 to 40 characters per line - Matrix LCD monochrome
Keypad	Customizable membrane keypad
Signalling	1 communication status indicator lamp 1 indicator lamp per function key, the display of which is controlled by the PLC program 1 indicator lamp per service key : this indicator lamp is lit up if the key is accessible 1 keypad use indicator lamp <b>XBT-H8: no indicator lamp.</b>
Real-time clock, relay, buzzer	XBT-E
Temperature	Operation : 0 to 50° C (32,0 to 122,0°F) Storage : - 40°+70°C (-40° +158°F) for a fluorescent display - 20°+ 60°C (-4°+140°F) for an LCD display

# 10. General specifications



A

(\*1) The XBT-L1000 software shows, as a percentage, when the application is created, the level of occupation of the application depending on the type of terminal. For more information on the number of pages, [see chapter F, § 1. XBT technical sheets, Page 5.](#)

# 10. General specifications

---



---

**Chapter B**  
**Magelis functions**



# Contents

---

## Contents

*This chapter includes the following topics :*

1. Organization of Magelis functions	5
2. Starting up the Magelis terminal	6
3. Operating principle	7
Basic principle	7
Recording mode	9
Running mode	10
Configuration for operation	12
4. Page display	14
Display when powered up	14
Displaying a page via a function key	14
Page display initiated by the PLC	15
5. Entry and modification of variables	16
Entry request	16
Entry principle	16
6. Alarms	18
Structure of alarm pages	18
Alarm page parameters	20
Display priority	22
Acknowledgement of alarms	24
Control of alarm relay : XBT-E	25
Alarm display	26
7. Alarm log	28
Principles	28
Log display	30
Clear log	32
Print log	33
8. Process control via function keys	35
9. Locking function keys via the PLC	37
10. Printing	39
General	39
Stop printing	41
Continuous printing of an alarm page	41
Display Hard Copy	42

# Contents

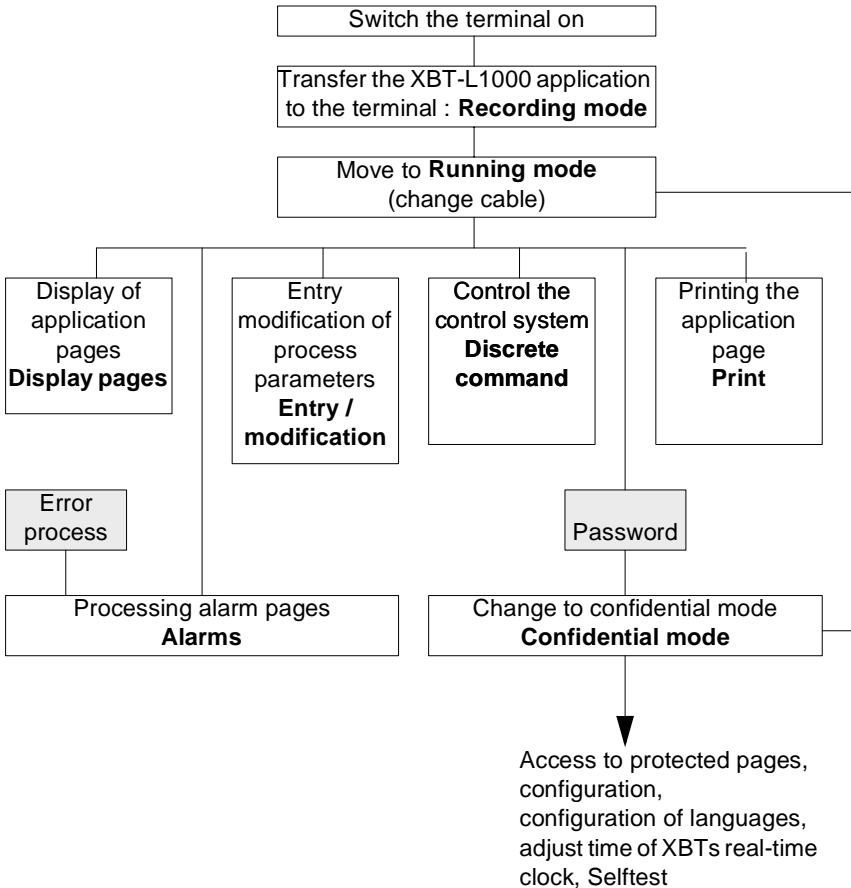
---

Log printing	42
Form printing	42
Free format printing	42
11. Configuration	43
12. Product selftest	47
13. Forms	49
Purposes	49
Definition	49
Utilization	51
14. Controlling the brightness by the PLC	52

# 1. Organization of Magelis functions

## 1. Organization of Magelis functions

Magelis terminals (or XBTs) offer a number of functions.  
The flow charts below show the links between these functions. The table at the bottom of each page shows whether your terminal has access to the function.




## 2. Starting up the Magelis terminal

---

## 2. Starting up the Magelis terminal

Please refer to the service instructions.

 <b>WARNING</b>
<b>UNINTENTIONAL EQUIPMENT OPERATION</b>
Connect the serial link and printer link to the XBT with the power OFF.
<b>Failure to follow this instruction can result in death, serious injury, or equipment damage.</b>

Magelis	XBT-H, XBT-HM	XBT-P	XBT-PM	XBT-E

# 3. Operating principle

## 3. Operating principle

### Basic principle

#### 1 - MAGELIS terminals have 3 operating modes :

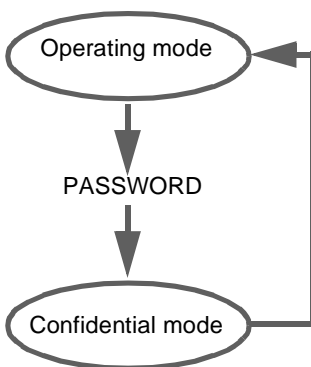
- **Recording mode** enables XBT-L1000 <-> MAGELIS exchanges.



- **Running mode** enables, when connected with the process, the control system to be controlled.



- **Confidential mode** enables, in addition to the functions of the running mode, access by password to privileged functions (log, etc).



Magelis	XBT-H, XBT-HM	XBT-P	XBT-PM	XBT-E
	No confidential mode			

# 3. Operating principle

---

## 2 - When the terminal is powered up

the operating mode is selected automatically, according to the connection of the XBT :

- if the XBT is connected to the PC with XBT-L1000 software : save mode.
- if the XBT is connected to the control system : running mode (with the possibility of changing to confidential mode).

Magelis	XBT-H, XBT-HM	XBT-P	XBT-PM	XBT-E
	No confidential mode			

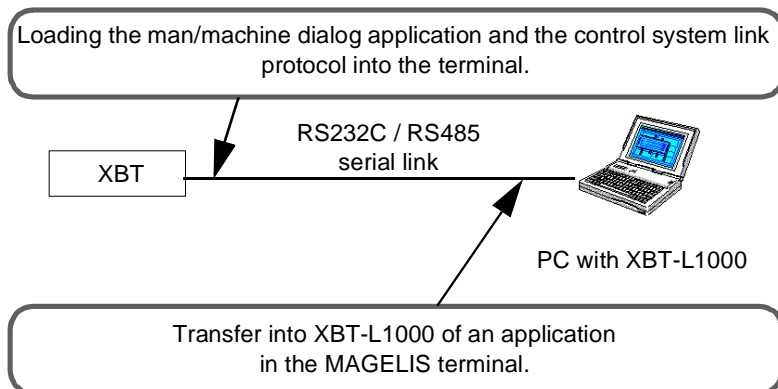


### 3. Operating principle

#### Recording mode

##### Exchanges between the MAGELIS terminal and XBT-L1000

2 types of exchange are possible :



**B**

The **SYST** indicator lamp blinks during the transfer \*.

##### Communication indicator lamp \*



- indicator lamp on : no cable or incorrect wiring,
- indicator lamp off : correct cable, no exchange with the PC:XBT-L1000
- indicator lamp blinking : exchanges with the PC:XBT-L1000.

##### Procedure with XBT-L1000

Select the Transfer/Export menu.

##### PC<-> Magelis terminal cables. Connection port to the PC

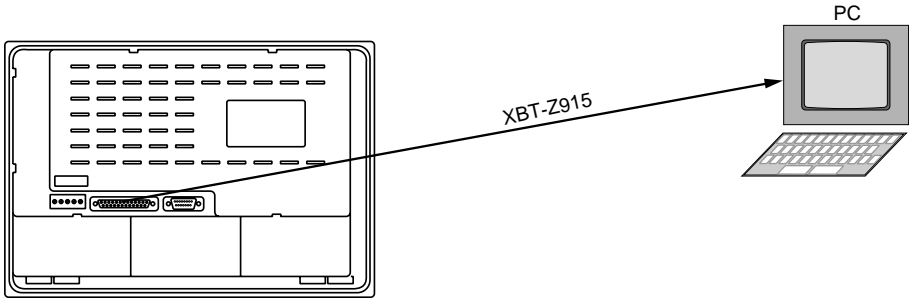


- 9-pin male serial port : XBT-Z915.
- 25-pin female serial port : XBT-Z905.
- 9-pin female serial port : XBT-Z9152.

Magelis	XBT-H, XBT-HM	XBT-P	XBT-PM	XBT-E
	*No indicator lamp on XBT-H811050			

### 3. Operating principle

WIRING :



### Running mode

The running mode is used to control the control system :

- Page display.
- Entry/modification of process parameter values.
- Process control (discrete).
- Printing.
- Viewing and acknowledgement of an alarm.



If the terminal has a MENU key, you can access the following additional functions :

- display of application pages (indirectly),
- consult the alarm log,
- access to the terminal configuration (printer link, real-time clock, link with the control system, languages)
- access to the product references,
- access to the terminal selftest functions (keyboard, display...)

Magelis	XBT-H, XBT-HM	XBT-P	XBT-PM	XBT-E
	No function menu			

### 3. Operating principle

## ! WARNING

### UNINTENTIONAL EQUIPMENT OPERATION


Pressing the MENU key allows the inexperienced or untrained operator to accidentally display the wrong page, modify the terminal configuration or lose the messages and alarms on the screen. This can lead to confusion, panicking, and, as a consequence, to loss of control over the machine. It is strongly recommended that the PLC be programmed to lock the MENU key as well as the other currently unused keys in order to prevent this from happening.

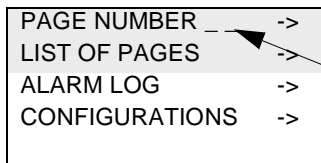
**Failure to follow this instruction can result in death, serious injury, or equipment damage.**

B



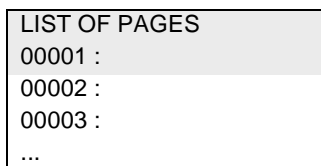
*Example : Display of an application page*

Solution 1 : once the Menu screen is displayed, press the  key and the 4 arrow key indicator lamps blink.



Enter the page number and press ENTER (see § 5)

Solution 2



Select the required page

access the page.

In this mode the SYS indicator lamp is off.

Magelis	XBT-H, XBT-HM	XBT-P	XBT-PM	XBT-E

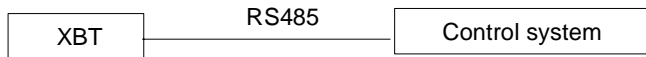
### 3. Operating principle

---

#### Configuration for operation

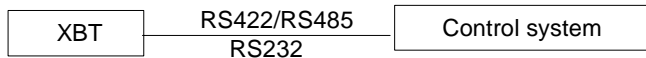
##### Operation via the terminal port RS485 type of a PLC

- Terminals concerned: XBT-H / XBT-HM / XBT-P / XBT-PM / XBT-E with UNITELWAY protocol.
- PLC : TELEMECANIQUE PLC with an RS485 type terminal port interface (type TSX07, TSX17 etc.).
- Type of link : RS485 point-to-point.
- Protocol : UNITELWAY



##### Operation with point-to-point direct link to the control system

- In this case the control system designates a system other than a PLC.
- Terminals concerned: all, except terminals using UNITELWAY protocol \*.
- Type of link :
  - RS422 or RS485.
  - RS232.
- Protocol: control system function.

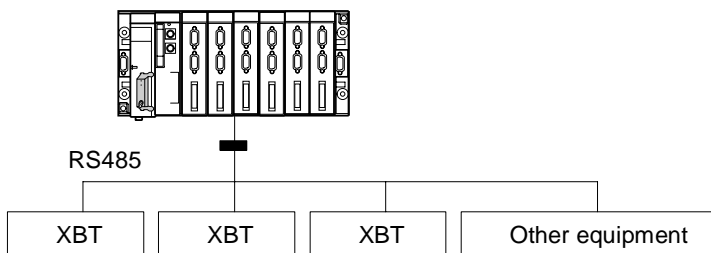


Magelis	XBT-H, XBT-HM	XBT-P	XBT-PM	XBT-E
	*XBT-H811050 UNITELWAY protocol only			

### 3. Operating principle

#### Operation on a PLC communication network

- Terminals concerned: XBTH / XBTP / XBTE with UNITELWAY protocol.
- PLC : TELEMECANIQUE PLC with an RS485 type terminal port interface (type TSX07, TSX17 etc.).
- Type of link : RS485 point-to-point.
- Protocol :UNITELWAY



**B**

#### Communication indicator lamp \*



- indicator lamp on : no cable or incorrect wiring,
- indicator lamp off : correct cable, no exchange with the PLC
- indicator lamp blinking : exchanges with the PLC.

Magelis	XBT-H, XBT-HM	XBT-P	XBT-PM	XBT-E
	*No indicator lamp on XBT-H811050			

# 4. Page display

---

## 4. Page display

### Display when powered up

#### Design using XBT L1000:

The procedure for displaying a default page is as follows:

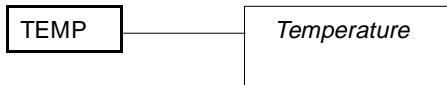
- Select the Configuration/Terminal Parameters menu.
- Select the default page to be displayed.

### Displaying a page via a function key

It is possible to display a page directly by pressing a function key. (Static or dynamic for XBT-PM).



Example :



#### Procedure for assigning a function key to a page with XBT-L1000

- Select the Configuration / Function keys menu.
- Select the group of keys, then the required function key. Confirm with OK.
- Select the type of action : direct access.
- If necessary, associate a label in the case of dynamic function keys (XBT-PM).
- Select the page
- Confirm with OK.

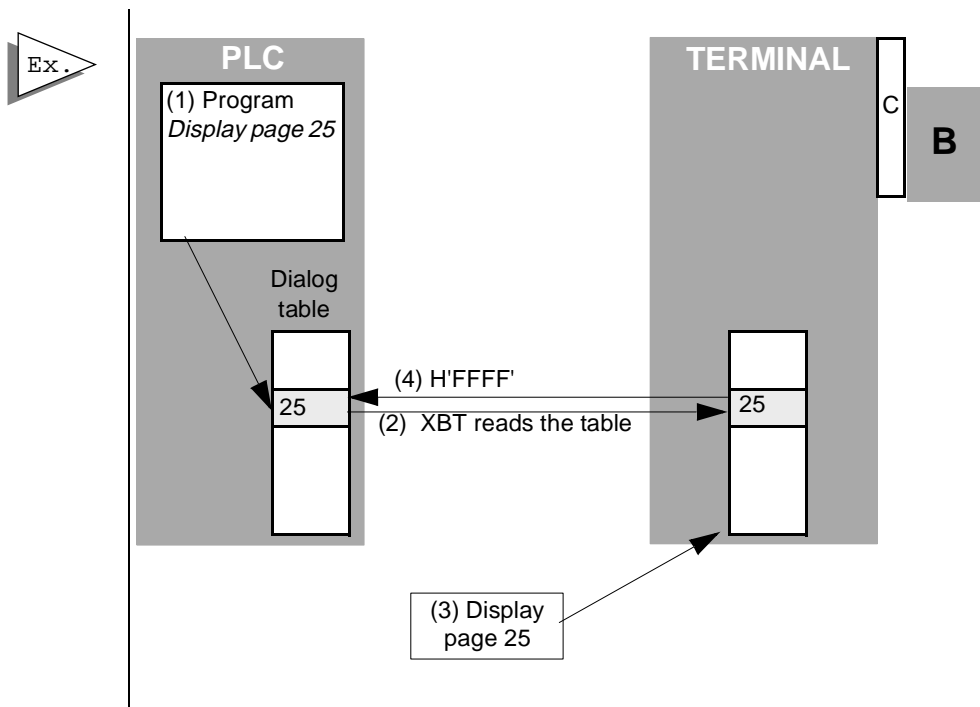
For XBT-PM, it is possible to choose between static and dynamic function keys by the Configuration menu.

Magelis	XBT-H, XBT-HM	XBT-P	XBT-PM	XBT-E
	Except for XBT-H011010 XBT-H012010, XBT-H811050			

## 4. Page display

### Page display initiated by the PLC

The dialog table (See chapter C, § 4. Principle of the dialog table, Page 9) is used for dialog between the PLC and the terminal. In this table a word is reserved into which the program writes the number of the page to be processed.



The terminal reads the dialog table in the PLC (2) and displays the required page (3). It is not necessary to write a program in the PLC to control the communication.

(4) Once the command is processed, the terminal writes H'FFFF' in the page word to be processed.

Magelis	XBT-H, XBT-HM	XBT-P	XBT-PM	XBT-E

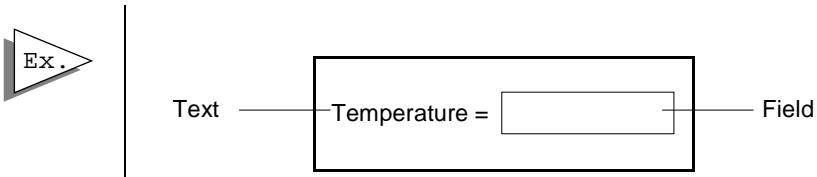
# 5. Entry and modification of variables

---

## 5. Entry and modification of variables

### Reminder

A page consists of text and fields. A field may correspond to values which have to be filled in (write) or modified (read/write) by the user or to values written by the PLC.



### Entry request

#### By the operator



Entry mode is accessed with the MOD key.

#### By the PLC

The PLC writes the number of the field in the word "Field to enter" in the dialog table.

### Entry principle

- If the field contains more than 1 digit, the digit to be entered is displayed in steady mode, whilst the other digits blink.
- If the field contains 1 digit, the digit to enter blinks.
- The LEDs of the arrow keys blink. Note : when the LEDs are off, the corresponding keys are inactive.

#### Entry via numeric keypad

Keys 0 to 9 and +/- (toggle function, + is the default sign) are used to enter data.

- Select the digit to be entered using the arrow keys.
- Enter this digit, the following digit (to the right) stops blinking.

Magelis	XBT-H, XBT-HM	XBT-P	XBT-PM	XBT-E
	Except XBT-H001010, 002010, 021010, 022010 and XBT-HM007010, 027010			



## 5. Entry and modification of variables

---

**Type of data** : bits, single words, double words, floating point words, character strings.

**Display format** : binary, decimal (maximum of 5 decimal places), hexadecimal, numbered list.

**Limits** : If the entry limits of a value have been defined with XBT-L1000 software, any entry outside these limits produces a warning message and a return to entry mode.

**Access type** : Read, Write, Read/Write, Immediate Write, Immediate Read/Write.

B

**Numbered list** : XBT-L1000 software enables a text to be assigned to each value of the variable associated with the field.

- Programming with XBT-L1000 : Access the window defining the characteristics of the field, select Format/Type, click on List and assign a text to each value.

- Operation with the terminal : use the arrow keys.



For more information, [See chapter D, "Numbered list", Page 19.](#)

Magelis	XBT-H, XBT-HM	XBT-P	XBT-PM	XBT-E
Except XBT-H001010, 002010, 021010, 022010 and XBT-HM007010, 027010				

# 6. Alarms

## 6. Alarms

### Structure of alarm pages

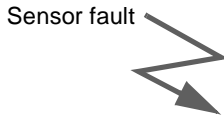
An alarm page has the same characteristics as an application page for :

- the text,
- the field (read only).

The additional feature of an alarm page is its event-triggered display. A word bit from the dialog table is assigned to each alarm page. If the bit is at state 1, the page is processed.



A sensor fault occurs. The bit associated with the sensor fault changes to 1.



**ATTENTION PRESSURE SENSOR FAULT  
CHANGE TO MANUAL**

### Advantages in running mode

- When a fault appears, it is often as a result of other faults. The **priority system** of MAGELIS products, enables the most important fault to be displayed. In other words, the one which is most hazardous for the process.
- The occurrence of each fault is **time-stamped**.  
For the XBT-PM, the background picture and the first line blink during an alarm.

**! WARNING**

**UNINTENTIONAL EQUIPMENT OPERATION**

The XBT does not support any type of processor nor machine control in association with alarms. It is designer's responsibility to consider programming PLC logic to account for programmed alarms.

**Failure to follow this instruction can result in death, serious injury, or equipment damage.**

Magelis	XBT-H, XBT-HM	XBT-P	XBT-PM	XBT-E
		No time stamp for XBT-PM 027010		

## 6. Alarms

---

### Maintenance advantages

- MAGELIS terminals store the occurrence of faults sequentially (log), thereby enabling an investigation into the origin of the fault.
- Several alarms may therefore appear simultaneously in the process. These are recorded by the XBT in a special memory called the "alarm list".  
The actual display of an alarm depends on the priority which it has been allocated (see "Display priority", Page 22).



- Alarms appearing in the process are stored in the "Alarm list".
- The "Alarm" indicator lamp continuously informs the operator about the state of the alarm list \* :
  - Off: the alarm list is empty.
  - Blinking: the alarm list contains alarms which have appeared since the alarm list was last viewed.
  - On: the alarm list contains alarms which occurred before the alarm list was last viewed.

### Design using the XBT L1000

The XBT-L1000 software is used to enter the parameters of the following 3 functions for each alarm page :

- Display : the page will be displayed.
- Printing : the page will be printed.(1)
- Storage : the page will be stored.(1)

Magelis	XBT-H, XBT-HM	XBT-P	XBT-PM	XBT-E
	(1) except for .XBT-H/ P/E/HM/PM ***0**			

# 6. Alarms

## Alarm page parameters

Alarm pages comprise :

- text, the object of which is to indicate :
  - the fault,
  - actions to correct the fault.




Conveyor faults  
 Turn power off  
 Remove the part  
 Restart conveyor

- variable fields,
- a priority,
- request for acknowledgement,
- an alarm relay command (XBT-E).

### Design with XBT- L1000



Select the Page menu or the icon  New/Alarms and the window "Create alarm page" is displayed.

**Go to Alarm page** ✕

Number :       Name

Word Bit Number

Word	F	E	D	C	B	A	9	8	7	6	5	4	3	2	1	0
n+0							△									
n+1																
n+2																
n+3																
n+4																
n+5																
n+6																
n+7																
n+8																
n+9																
n+10																

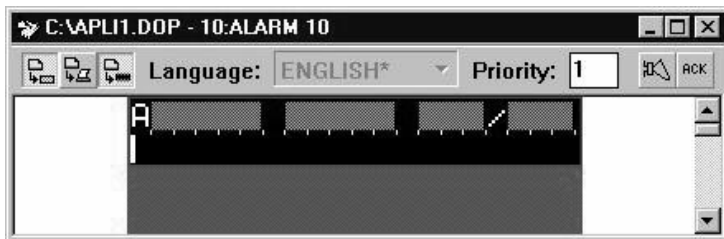
Magelis	XBT-H, XBT-HM	XBT-P	XBT-PM	XBT-E

## 6. Alarms

Assign a bit to the alarm page.

It is possible to change the name.

Confirm with OK.



B

Open the alarm page.

Assign the priority (see "Display priority", Page 22)

Enter the alarm page text.



Authorize or not to display the alarm page.



Authorize or not to print the alarm page.



Authorize or not to memorize the alarm page.



Authorize or not the acknowledgement.



Authorize or not the alarm relay.(1)

Magelis	XBT-H, XBT-HM	XBT-P	XBT-PM	XBT-E
	(1) except for .XBT-H/ P/HM/PM			

## 6. Alarms

---

### Display priority

With XBT-L1000 a priority can be assigned to each alarm page. An alarm generally has a higher priority than the display of operating pages. It is lower than the display of an entry which is in progress.

Different alarm pages can have different priorities. 16 levels of priority are possible (the lowest display priority being priority N° 16).

### Special case of priority 0

If priority 0 is assigned to an alarm page, when the alarm appears on the process,

- the alarm page will not be displayed but will be stored in the alarm lists to avoid disturbing the current display.
- the alarm indicator lamp will blink to indicate the alarm.

When an alarm is activated, it is stored by the XBT in the alarm list.

### Storage principle :

If of equal priority, alarms are stored in a such a way that

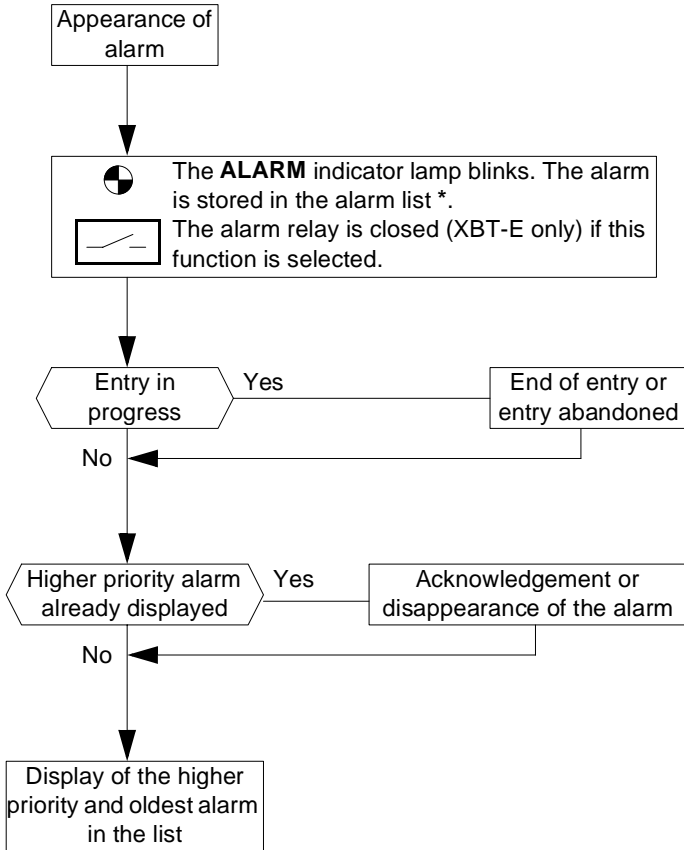
- the oldest is displayed first
  - the others are stored one after another in their order of appearance (FIFO stack).
- If the display is available (in other words not occupied by a higher priority display), the first alarm which occurs is displayed.

If higher priority alarms appear,

- They are stored at the top of the list.
- If the display is available (in other words not occupied by a higher priority display), the highest priority new alarm is displayed.

Magelis	XBT-H, XBT-HM	XBT-P	XBT-PM	XBT-E

# 6. Alarms



**B**

Magelis	XBT-H, XBT-HM	XBT-P	XBT-PM	XBT-E
	* except for .XBT-H811050			

# 6. Alarms

---

## Acknowledgement of alarms

When pages are designed, it is possible to define whether the alarm page should be systematically acknowledged or not (acknowledgment). The management of these two types of alarm is as follows :

### 1 - Alarms which must be acknowledged

An alarm which must be acknowledged remains in the list of alarms until it is accepted, even if the cause of the fault has disappeared.

Advantage : Picks up transient faults (instability of a discrete sensor for example)

### Acknowledgement of alarms




Alarms are accepted on the terminal with the ENTER key. The alarm message changes to fixed display.

### 2 - Alarms which can optionally be acknowledged

An alarm which is optionally accepted disappears from the list of alarms as soon as the cause of the fault has disappeared, whether the alarm has been accepted or not.

Advantage : Does not monopolize the display unit with the display of faults considered of minor importance to the application.

### Design using XBT-L1000

Once the alarm page is displayed, select the "Page/Acknowledgment" menu or the  icon.

Magelis	XBT-H, XBT-HM	XBT-P	XBT-PM	XBT-E
	* except for .XBT-H021010 .XBT-H022010 and .XBT-HM027010			



## 6. Alarms

---

### Control of alarm relay : XBT-E

The alarm relay is closed as soon as an alarm, defined with the "alarm relay" option, is active.

The relay is open as soon as all active alarms, defined with the "alarm relay" option, have been accepted by the operator or have disappeared.

#### Design using XBT-L1000

Once the alarm page is displayed, select the Page/Alarm relay menu or

the icon  .

**B**

Magelis	XBT-H, XBT-HM	XBT-P	XBT-PM	XBT-E
	except XBT-H and XBT-HM	except XBT-P	except XBT-PM	

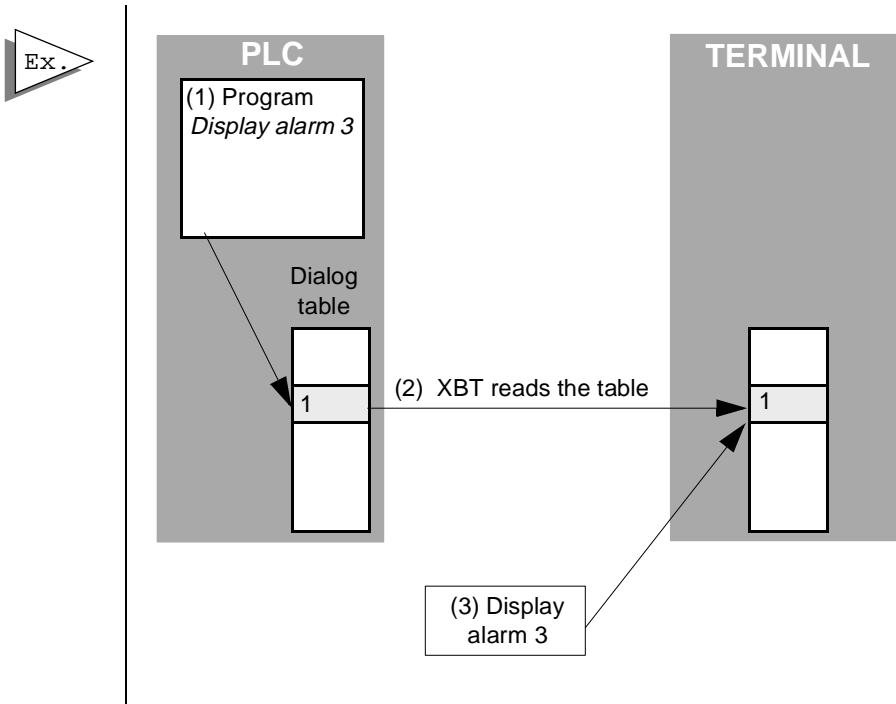
## 6. Alarms

### Alarm display

The dialog table (see chapter C, "5. Contents of the dialog table", Page 11) is used for dialog between the PLC and the terminal. In this table, words are reserved for alarm display.

The display is controlled by the PLC by setting a word bit to 1.

The XBT-L1000 software is used to assign a word bit to each alarm page.



The terminal reads the dialog table in the PLC (2) and displays the required page (3). It is not necessary to write a program in the PLC to control the communication.

Magelis	XBT-H, XBT-HM	XBT-P	XBT-PM	XBT-E

## 6. Alarms

When an alarm is displayed, the XBT reserves the first line of the display unit to display :

- the date and time of appearance and acceptance of the alarm,
- the position of the alarm in the alarm list,
- the total number of alarms in the list.

The alarm is displayed in blinking mode.



A 31/01 17:35 3/7
CONVEYOR FAULT
Turn power off.
Remove jammed part.
Restart.

Line time-stamped by the XBT ("A" for Alarm) the alarm text, in blinking mode, becomes steady once the alarm is acknowledged.

### Ability to ignore alarms

If an alarm is displayed during operation (for example during debugging), the ESC key can be used to return to running mode, the alarm still remains in the list and the ALARM indicator lamp becomes steady.



### Viewing alarms

If there are alarms in the stack, the ALARM indicator lamp lights up. To access the alarm list, press the SHIFT+ENTER key : the highest priority alarm is displayed.



Exit viewing of the alarm pages.



Scrolling the alarm page. (except XBT-PM)



Move in the list of alarm pages.



Acceptance.



A 31/01 17:35 1/7
CONVEYOR FAULT
Turn power off.
Remove jammed part.
Restart.

A 31/01 17:35 2/7
CONVEYOR DEF1
Change to N°2.

A 31/01 17:35 3/7
MOTOR FAULT
Cut power supply N°5

Magelis	XBT-H, XBT-HM	XBT-P	XBT-PM	XBT-E
	except XBT-HM XBT-H021010/022010/H00x/ H012x neither ESC, nor view.			

# 7. Alarm log

---

## 7. Alarm log

### Principles

The XBT may control a log of alarm pages.  
They store the alarm pages with the text but without the variable values.  
The alarms are stored one after another. Once the log is full, the more recent alarms overwrite the older ones.

Each event:

- appearance,
- acknowledgement,
- disappearance,

of an alarm is thus recorded and time-stamped.

The following functions may be performed :

- Initiated by the PLC:
  - print log,
  - clear log ;
- Initiated by the operator:
  - display log,
  - print log ;
- Initiated by the PLC and the operator in confidential mode :
  - clear log.

Magelis	XBT-H, XBT-HM	XBT-P	XBT-PM	XBT-E
	Printing only XBT-H012110 and XBT-HM017110	only XBT-P021110 and XBT-P022110	only XBT-PM027110	only XBT-E01x110

# 7. Alarm log

## Design using the XBT-L1000




**B**

For each alarm page, the XBT-L1000 software sets these 3 functions:



- Display: the page will be displayed
- Printing: the page will be printed
- Storing: the page will be stored.

The Alarm page is stored only if the  button has been selected in the log.

Magelis	XBT-H, XBT-HM	XBT-P	XBT-PM	XBT-E
	only XBT-H012110 and XBT-HM017110	only XBT-P021110 and XBT-P022110	only XBT-PM027110	only XBT-E01x110

# 7. Alarm log

## Log display



Press "MENU".

Select "ALARM LOG" option in the menu then choose type of display : sequential or statistical.

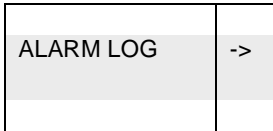


Change from one alarm to another in the log.

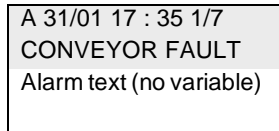
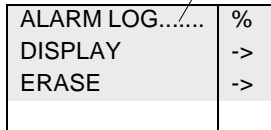


Scrolling to display complete information on an alarm in the log (except XBT-PM).

### Display



Occupancy rate.



Magelis	XBT-H, XBT-HM	XBT-P	XBT-PM	XBT-E
	only XBT-H012110 and XBT-HM017110	only XBT-P021110 and XBT-P022110	only XBT-PM 027110	only XBT-E01x110

# 7. Alarm log

## Display principle:

Events for each alarm if any (appearance, acknowledgement, disappearance) are displayed sequentially, grouped according to the status, with the first alarm shown at the first position.



Example:

The log contains 4 events 3 of which are related to the same alarm.

Appearance

V 31/01/95 17:35 1/4  
CONVEYOR1 FAULT  
Alarm text



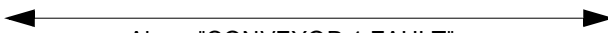
Acknowledgement

K 31/01/95 17:36 2/4  
CONVEYOR1 FAULT  
Alarm text



Disappearance

31/01/95 17:55 3/4  
CONVEYOR1 FAULT  
Alarm text



Alarm "CONVEYOR 1 FAULT"

New fault

V 31/01/95 17:38 4/4  
VALVE2 FAULT  
Alarm text

Alarm "VALVE 2 FAULT"

B

Magelis	XBT-H, XBT-HM	XBT-P	XBT-PM	XBT-E
	only XBT-H012110 and XBT-HM017110	only XBT-P021110 and XBT-P022110	only XBT-PM 027110	only XBT-E01x110

# 7. Alarm log

## Clear log

### Clearing initiated by the operator (in confidential mode)



Press MENU key.

Choose the "ALARM LOG" menu.

Choose "Clear log" (only in "CONFIDENTIAL MODE").



ALARM LOG	->
-----------	----



ALARM LOG.	50 %
DISPLAY LOG	->
CLEAR LOG	->



ALARM LOG.	0 %
------------	-----

### Clearing initiated by the PLC

The log is cleared using the command word in the dialog table to reset the log (see chapter C, "Wn+18 : Reset log", Page 16).

Magelis	XBT-H, XBT-HM	XBT-P	XBT-PM	XBT-E
	only XBT-H012110 and XBT-HM017110	only XBT-P021110 and XBT-P022110	only XBT-PM027110	only XBT-E01x110



# 7. Alarm log

## Print log

### Printing initiated by the operator



Press the PRINT key and select the "Alarm log" option.  
The following is displayed:



PRINTING	
HARD COPY	->
ALARM LOG	->
FORMS	->
STOP PRINTING	->

**B**

### Selecting "Alarm log" option:

The log is printed in sequential mode, the most recent alarm is displayed first.

For each alarm, the following items will be printed on the same line:

- the page name,
- date and time of appearance
- date and time of acknowledgement,
- date and time of disappearance.

### Printing initiated by the PLC:

The log is printed using the print word command in the dialog table ([see chapter C, "Wn+16 : Print command", Page 16](#)).

The log is printed in sequential mode (by status), the most recent alarm will be printed first.

For each alarm, these items are printed first and on the same line: name, date of time of appearance (Valid), acknowledgement (ACK), disappearance (Invalid).

Magelis	XBT-H, XBT-HM	XBT-P	XBT-PM	XBT-E
	only XBT-H012110 and XBT-HM017110	only XBT-P021110 and XBT-P022110	only XBT-PM 027110	only XBT-E01x110

## 7. Alarm log

---

Its text cannot be printed in a compact format. The recommended print format is 80 character width. The printed header shows the date and time of the alarm log printing.

*Example:*



ALARM LOG	Valid	Ack	Invalid
05/09/95 11:26			
00013: VAT 3 HOT	05/09/95 10:10:05		
00011: VAT 1 HOT	05/09/95 09:15:02		
00012: VAT 2 HOT	05/09/95 08:58:48	05/09/95 09:02:03	
00013: VAT 3 HOT	05/09/95 08:10:05	05/09/95 08:11:02	05/09/95 08:16:75

Alarm 11 is present but not acknowledged.

Alarm 12 is present and acknowledged.

Alarm 13 occurred (twice), was acknowledged and disappeared (once).

Magelis	XBT-H, XBT-HM	XBT-P	XBT-PM	XBT-E
	only XBT-H012110 and XBT-HM017110	only XBT- P021110 and XBT-P022110	only XBT-PM 027110	only XBT- E01x110

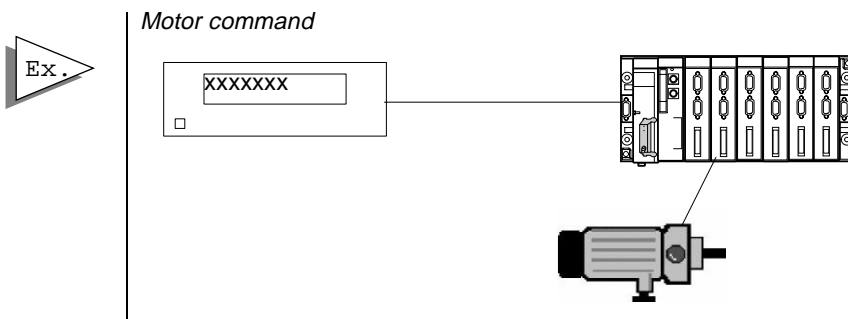
## 8. Process control via function keys

### 8. Process control via function keys

MAGELIS terminals can control the control system via the function keys (Static or dynamic for the XBT-PM). Two types of control are possible :

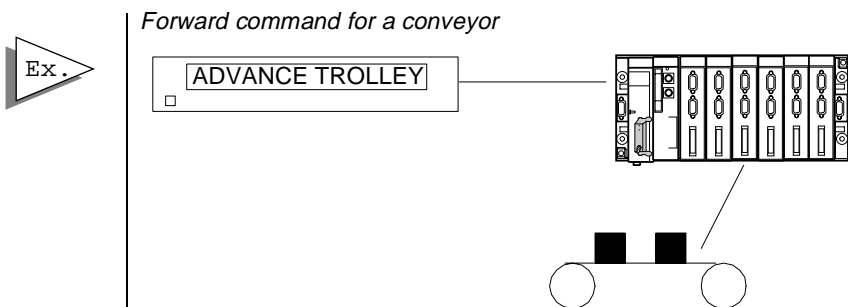
#### Momentary contact command

By pressing a function key, the system is activated. The action stops when the key is released.



#### Push on/push off toggle command

The control system is activated by pressing a function key. The action is halted by pressing the function key again.



XBT-L1000 software can be used to assign a bit to each function key, as well as to determine the type of control.

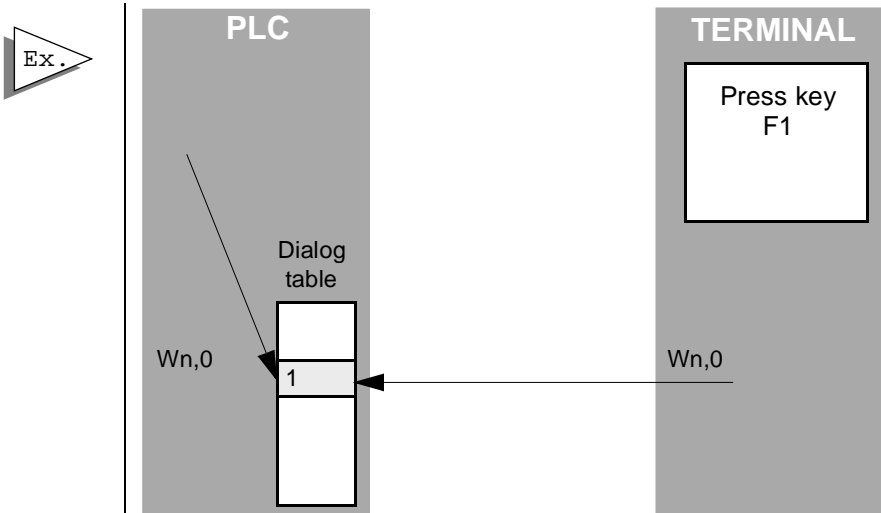
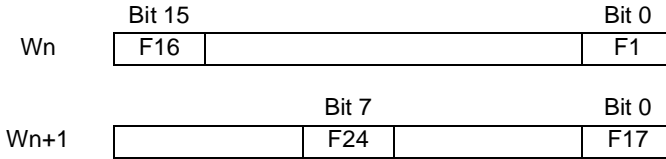
Magelis	XBT-H, XBT-HM	XBT-P	XBT-PM	XBT-E
	except XBT-H00xxxx, XBT-H01xxxx, XBT- H811050, XBT- HM007010 and 017xxxx			

# 8. Process control via function keys

## Assigning function keys using XBT-L1000

The dialog table (see chapter C, "5. Contents of the dialog table", Page 11) is used for dialog between the PLC and the terminal. In this table, words are reserved for the indication of the state of the function keys in the form of a word bit :

bit at 1 = key pressed



The terminal writes to the PLC dialog table. It is not necessary to write a program in the PLC to control the communication.

There is no reserved word for dynamic function keys (XBT-PM). So, a word out of the dialog table must be used.

For more informations, see chapter D, "Displaying a page via a function key", Page 14.

Magelis	XBT-H, XBT-HM	XBT-P	XBT-PM	XBT-E
	except XBT-H00xxxx, XBT-H01xxxx, XBT-H811050, XBT-HM007010 and 017xxxx			

## 9. Locking function keys via the PLC

### 9. Locking function keys via the PLC

Each of the terminal's keys may be locked by the PLC (except dynamic function keys of XBT-PM). The dialog table (see [chapter C](#)) is used for dialog between the PLC and the terminal. In this table, words are reserved for locking the various function keys in the form of a word bit : bit at 1= key locked.

#### Function keys

	Bit 15		Bit 0
Wn-22	F16		F1

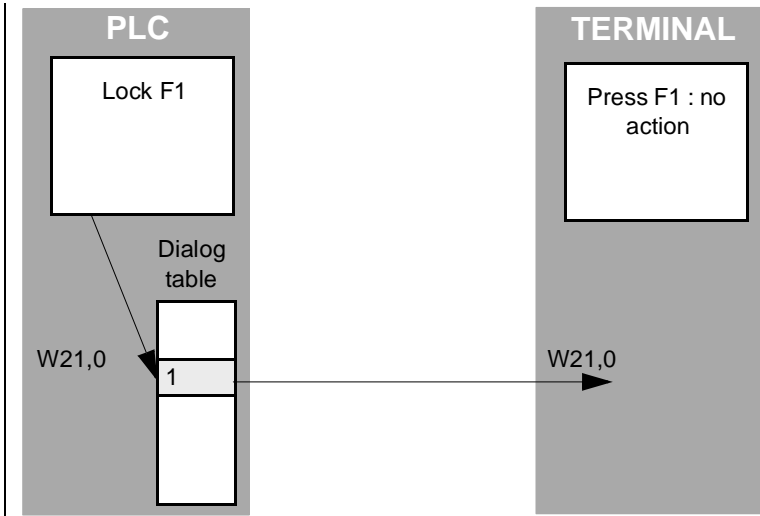
		Bit 7		Bit 0
Wn+23		F24		F17

#### Other keys:

Wn+24	Wn+25
Bit 0: Up arrow	Bit 0: 0
Bit 1: Down arrow	Bit 1: 1
Bit 2: Right arrow	Bit 2: 2
Bit 3: Left arrow	Bit 3: 3
Bit 4: MOD	Bit 4: 4
Bit 5: PRINT	Bit 5: 5
Bit 6: MENU	Bit 6: 6
Bit 7: SYST	Bit 7: 7
Bit 8: ALARM	Bit 8: 8
Bit 9: EXIT	Bit 9: 9
Bit 10: HOME	Bit 10: .
Bit 11: +1	Bit 11: +/-Bit
Bit 12: -1	Bit 12: DEL
Bit 13: ENTER	

Magelis	XBT-H, XBT-HM	XBT-P	XBT-PM	XBT-E

## 9. Locking function keys via the PLC



### WARNING

#### UNINTENTIONAL EQUIPMENT OPERATION

Pressing the MENU key allows the inexperienced or untrained operator to accidentally display the wrong page, modify the terminal configuration or lose the messages and alarms on the screen. This can lead to confusion, panicking, and, as a consequence, to loss of control over the machine. It is strongly recommended that the PLC be programmed to lock the MENU key as well as the other currently unused keys in order to prevent this from happening.

**Failure to follow this instruction can result in death, serious injury, or equipment damage.**

The terminal reads the PLC dialog table and locks those keys whose word bit is at 1. It is not necessary to write a program in the PLC to control the communication.

The dynamic function keys (XBT-PM) cannot be locked.

Magelis	XBT-H, XBT-HM	XBT-P	XBT-PM	XBT-E

# 10. Printing

## 10. Printing

### General

The printing of the following information may be :

#### Initiated by the operator:

- Hard copy of the displayed page,
- Alarm log,
- Forms,
- Stop printing.



In all cases the command is executed using the PRINT key.

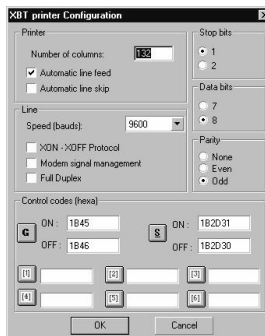
B

#### Initiated by the PLC :

- Alarm log,
- Free format printing,
- Forms,
- Printing "Application page".

#### General principles (initiated by the operator):

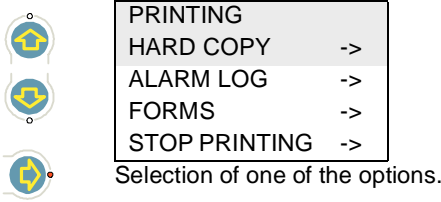
The print process is executed by the PRINT key.  
 Formatting is performed according to the printing configuration selected using XBT-L1000: "Configuration/Terminal parameters/Printer".



Magelis	XBT-H, XBT-HM	XBT-P	XBT-PM	XBT-E
	only XBT-H012110 and XBT-HM017110	only XBT-P021110 and XBT-P022110	only XBT-PM027110	only XBT-E01x110

# 10. Printing

After pressing the PRINT key, the following is displayed:



After selecting one of the options:

- If printing is enabled, transient display of :



- If printing is in progress, transient display of:



- If the printer is faulty, transient display of:



- If the fault disappears and printing was on progress at the time the fault occurred, printing resumes where it stopped (unless a STOP PRINTING command has been executed).

**Note:**

If the printer has been configured with a number of characters less than the requested print format, the printout will be truncated. Characters >125 and <32 are replaced by '!' on the printout. Except for free format and form printing.

Magelis	XBT-H, XBT-HM	XBT-P	XBT-PM	XBT-E
	only XBT-H012110 and XBT-HM017110	only XBT-P021110 and XBT-P022110	only XBT-PM027110	only XBT-E01x110




# 10. Printing

## Stop printing

This function is accessible by pressing the "PRINT" key. Any printing in progress (Log, continuous...) even though the printer is faulty, will stop without request for confirmation; i.e. the print buffer is cleared as well as any waiting command.

## Continuous printing of an alarm page

This option must be chosen at the time the page was created using the XBT-L1000:

The Alarm page must show  icon selected.

This function is initiated via the dialog table when the alarm occurs. At each read cycle of the dialog table, "printable" alarms ("IMP" selected on XBT-L1000), are printed with the page text (25 lines at maximum) and the values for variables.

The printed header shows: the page number, name, date and time of the printing.



```
PRINT
05/09/05 10:26
00015: STOP MOTOR

( Page text)
```

**Note:**

Up to 16 "printable" alarms that appear simultaneously are printed.

Magelis	XBT-H, XBT-HM	XBT-P	XBT-PM	XBT-E
	only XBT-H012110 and XBT-HM017110	only XBT-P021110 and XBT-P022110	only XBT-PM027110	only XBT-E01x110

# 10. Printing

---

## Display Hard Copy

This function is accessible by pressing the "PRINT" key. If the printer is busy, display will be refused and a transient message will be prompted.

The whole page is printed (up to 25 lines) with the variables.  
The printed header shows: the page number, name, date and time of the printing.



```
HARD COPY
05/09/05 10:30
00425: STOP MOTOR 2

( Page text with variables)
```

## Log printing

For informations, [see § 7. Alarm log, Page 28.](#)

## Form printing

For informations, [see § 13. Forms, Page 49.](#)

## Free format printing

### Only initiated by the operator;

Accessible via the dialog table using the print command word and via the free format printing table (see [chapter C](#)).

Magelis	XBT-H, XBT-HM	XBT-P	XBT-PM	XBT-E
	only XBT-H012110 and XBT-HM017110	only XBT- P021110 and XBT-P022110	only XBT-PM 027110	only XBT- E01x110

# 11. Configuration

## 11. Configuration

This function, only available in confidential mode, enables the following parameters to be viewed.

- the system language,
- the application language,
- the parameters of the PLC <-> XBT line,
- the terminal date and time,
- the parameters of the Printer <-> XBT line.



Switching to the confidential mode



Press the "MENU" key to display the menu.  
Position the cursor on "CONFIGURATION".



PAGE NUMBER _ _	->
LIST OF PAGES	->
ALARM LOG	->
CONFIGURATIONS	->
PRODUCT REFERENCES	->
SELFTEST	->



Access configuration. The configuration menu is displayed.

SYSTEM LANGUAGE	->
APPLICATION LANGUAGE	->
LINE PARAMETERS	->
PRINTER PARAMETERS	->
DATE/TIME	->

### System language

The language is that in which information messages and terminal menus are expressed. The operator can find out and modify the system language. Position the cursor on the corresponding line using the up and down arrow keys and then access the content using the right arrow key. To change the language press MOD, choose the language using the up and down arrow keys and confirm with ENTER.

Magelis	XBT-H, XBT-HM	XBT-P	XBT-PM	XBT-E
	Except XBT-H and XBT-HM			

# 11. Configuration

## Application language

In the XBT-L1000 software, application can be entered in 3 different languages. To find out application language, position the cursor on the corresponding line using the up and down arrow keys and access the content using the right arrow key to change the language, press MOD, select the language using the up and down arrow keys and confirm pressing ENTER.


## Parameters of the PLC <-> XBT line

To ascertain the parameters of the PLC <-> XBT line, position the cursor on the corresponding line using the up and down arrow keys while in confidential mode and then access the content using the right arrow key. According to the protocol, some parameters may or may not be modified. The parameters displayed depend on the protocol :



UNITE protocol:  
Speed in bauds,  
Parity,  
Slave number,  
Error counter n°1,  
Error counter n°2,  
Error counter n°3,  
Error counter n°4,  
Reset the counters (Y/N)



To RESET the counters, Press  Use up and down arrow keys to indicate choice yes (Y) or no (N) to erase counter and confirm with ENTER.

## Terminal date and time

To know and modify the terminal date and time, position the cursor on the corresponding line using the up and down arrow keys whilst in confidential mode and then access the content with the right arrow key.

Entry is the same as for the modification of parameters (see § 4. Page display, Page 14). The separators / and : may be replaced by full stops.

Magelis	XBT-H, XBT-HM	XBT-P	XBT-PM	XBT-E
	Except XBT-H and XBT-HM			

# 11. Configuration

## Access to terminal internal timer:

The DATE and TIME (DD/MM and HH:MM) can be displayed in an application page using XBT internal words.



*Example:*

DATE: DD/MM/YY TIME: HH:MM:SS

Field No. 1 (DD/MM) defines as follows:

Associated variable: Wi with i = 50000  
 Equipment: XBT  
 Format: String  
 Type: ASCII  
 Length: 5 (8 max. for full display)  
 Access: Read only

Field No. 2 (HH:MM) defines as follows:

Associated variable: Wi with i = 50001  
 Equipment: XBT  
 Format: String  
 Type: ASCII  
 Length: 5 (8 max. for full display)  
 Access: Read only

It is advisable to select a read only access or to use the CONFIDENTIAL mode to change the date and time.


When the timer variables are to be changed, you must use a separator such as "." or the right arrow to insert a SPACE between DD and MM or HH and MM.

When you change internal words 50000 and 50001, you also change the contents of two words out of the four "Terminal Date and Time words for the controller" (if they have been selected in the dialogue table).

Magelis	XBT-H, XBT-HM	XBT-P	XBT-PM	XBT-E
	Except XBT-H and XBT-HM			


# 11. Configuration

When you change one of the four "Time Setting" words (if they have been selected in the dialogue table), you also change the contents of internal words 50000 and 50001.

 <b style="font-size: 1.2em;">WARNING</b>
<b>UNINTENTIONAL EQUIPMENT OPERATION</b>
<p>Since all alarms are always time/date stamped and the control program may rely on the XBT's real-time clock, it is important to set or verify the XBT's date and time after every new installation, repair, disassembly, shipping or battery change.</p> <p><b>Failure to follow this instruction can result in death, serious injury, or equipment damage.</b></p>

### Parameters of the printer <-> XBT line

#### Parameters displayed by default:



<b>PRINTER PARAMETERS</b>	->
SPEED :	9600 BDS
PARITY :	ODD
FORMAT:	8 BITS
BITSTOP:	1 BIT
LINK:	RS 232
DUPLEX:	FULL
CHARACTERS	80
FORM FEED:	NO
AUTO LF:	CR LF

#### Adjusting the parameters:

- position the cursor on the corresponding line using the up and down arrow keys, then access the content using the right arrow key.

Magelis	XBT-H, XBT-HM	XBT-P	XBT-PM	XBT-E
	Except XBT-H and XBT-HM			

# 12. Product selftest

## 12. Product selftest

### Permanent selftest:

- Selftest is permanently performed on the program and application memories.
- If a malfunction is detected which prevents the product operation, the terminal switches all its indicator lamps and stops running.

### Manual selftest\*:

- In "Confidential mode" (see chapter D, "Confidential mode", Page 10), the user may request, via the "system menu" the manual test of the terminal parts not covered by the permanent test.

### Available functions:

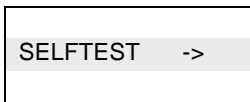
- Display test,
- Keyboard test,
- Buzzer test (XBT-E),
- Relay test (XBT-E),
- Serial link test.



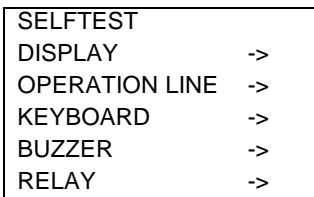
Change to confidential mode  
Press the "Menu" key to display the menu.



Position the cursor on "Selftests".



Accessing the selftests, the menu is displayed



Magelis	XBT-H, XBT-HM	XBT-P	XBT-PM	XBT-E
	Except XBT-H and XBT-HM			


# 12. Product selftest

---

## Display test:

Test process,

- the display switches off,
- a horizontal line of pixels scrolls up down,
- a vertical line of pixels scrolls from left to right.


To stop the test, press the key. 

## Serial link tests:


**Carefully plug in the test connector on the link to be tested before initiating the test.**

**Test connectors:**

- **Operation link type RS 232, connect pins 2-3.**
- **Operation line type RS 422, connect pins 4-6 and 5-18.**
- **Printer link type RS 232, connect pins 2-3.**

Then, test the link with the test connectors by pressing the key. 

If the displayed result is "OK", the link is correct.

Remove the test connector and start the test (pressing the key). 

The result must be "NOK".

The link is correct if both tests have had the results shown above.

Magelis	XBT-H, XBT-HM	XBT-P	XBT-PM	XBT-E
	Except XBT-H and XBT-HM			



# 13. Forms

---

## 13. Forms

### Purposes

The user may want to print measurement/production monitoring reports, product labels, ... Forms that are printed show various widths and lengths.

The example below shows a label whose size, reference, warranty date are variables of the PLC program read by the terminal before printing.

**B**

#### Creation using XBT-L1000

#### Result on printer

EEPROM BOARD [99] KBYTES REF. [AAAAAAAAAAAA] WARRANTY: [99-99]
--

EEPROM BOARD [56] KBYTES REF. XBT-Z800056 WARRANTY: [09-96]
---

### Definition

- The quantity of forms is limited to 255 (N°1 to N°255).
- One form contains up to 132 characters X 60 lines.
- Forms are created using the XBT-L1000 as application pages or as alarms.

The form takes all from the pages, i.e., as a reminder:

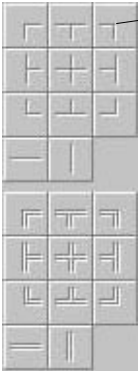
- name of the form on 12 characters,
  - number of the form,
  - number of variable fields limited to running pages,
  - multilanguage,
  - protection by a password.
- The forms cannot be viewed from the terminal but only from the printer (because of format differences between the display with 20 characters and the printer with up to 80 characters).

Magelis	XBT-H, XBT-HM	XBT-P	XBT-PM	XBT-E
	only XBT-H012110	only XBT-P021110 and XBT-P022110	only XBT-PM027110	only XBT-E01x110

# 13. Forms

Select "Page/New Page/Form" menu.  
 Indicate the name and/or the number of the new page.

The form pages can include the following elements:  
 - printer control codes:



- semi-graphic characters,  
 - text,

These elements are intended for printing only.

Semi-graphic characters are used to create simple or double frames for highlighting printed data (table of values, etc.).

There are introduced after the semigraphic character is then introduced by clicking on its icon.

The printer control codes {a} (ex : {1}, {2}, etc.) are used to define printer control sequences (printing of bar codes, bold characters, change of colors, etc.).

Selecting and place its position on the screen the printed control codes ({1}, {2}, etc) are then introduced by clicking on its icon.

To configure each control code the menu "configuration / terminal parameters / printers" has to be selected.  
 The control codes are introduced in hexadecimal format according to the printer manufacturer documentation.

Magelis	XBT-H, XBT-HM	XBT-P	XBT-PM	XBT-E
	only XBT-H012110	only XBT-P021110 and XBT-P022110	only XBT-PM027110	only XBT-E01x110

# 13. Forms

## Utilization

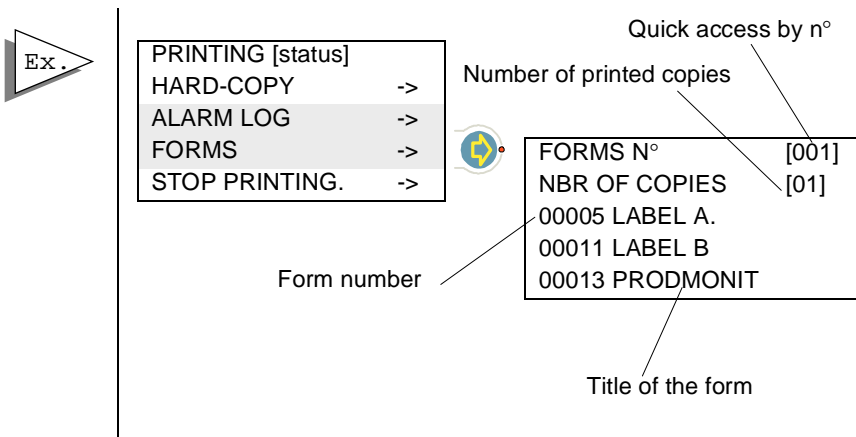
### Initiated by the PLC

See [chapter C](#).

### Initiated by the operator

This function is accessible:

- in running mode via function key,
- pressing the "PRINT" key via the selection of the "FORMS" sub-menu. Then, select the form as you'll do for the list of pages, by the name in the list of forms or by the number that you enter.



The operator chooses the form by scrolling the pages and using the arrow key .

Variables are read in the PLC then the printing is performed. Real-time setting is possible via the PLC internal variables: date and time. Moreover, the user can specify the number of printouts via the "NBR OF COPIES" field which has been previously selected at 1.

Magelis	XBT-H, XBT-HM	XBT-P	XBT-PM	XBT-E
	only XBT-H012110	only XBT-P021110 and XBT-P022110	only XBT-PM027110	only XBT-E01x110

# 14. Controlling the brightness by the PLC

---

## 14. Controlling the brightness by the PLC

The brightness of the terminal can be adjusted from the PLC.

The principle is to display a virtual page :

Page value	65521 normal brightness
Page value	65522 low Brightness

by way of the word page to be processed.

There is no occurrence on the displayed page.

At the power-up, the PLC has always a normal brightness.

The operator can control the PLC's brightness by using a PLC's variable (changing state of a word bit controlled by a function key and used by the PLC)

Magelis	XBT-H, XBT-HM	XBT-P	XBT-PM	XBT-E

---

**Chapter C**  
**PLC and Terminal**  
**communications**  
**Dialog**



# Contents

---

## Contents

*This chapter includes the following topics:*

1. Introduction	5
2. Data exchanged	6
Data associated with fields	7
Command data from the PLC to the terminal	7
Status data from the terminal to the PLC	7
3. Principle of exchanging data associated with fields	8
4. Principle of the dialog table	9
5. Contents of the dialog table	11
Notation convention for describing the table	11
Detailed description	13

C

# Contents

---



# 1. Introduction

---

## 1. Introduction

Man/machine dialog between the Magelis terminal and the PLC consists of an exchange of data between the 2 devices.

In every communication problem, it is advisable to define :

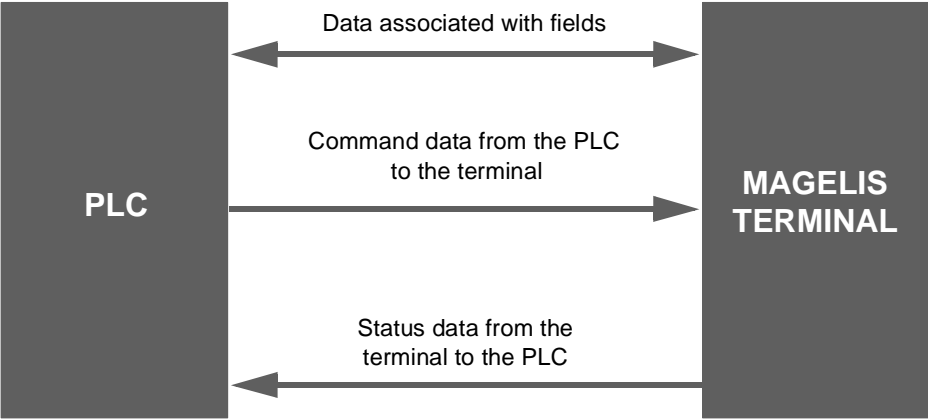
- the data to be exchanged
- the protocol
- etc.

## 2. Data exchanged

---

## 2. Data exchanged

Various types of data may be exchanged



## 2. Data exchanged

---

### Data associated with fields

These are variables which may be :

- displayed on the terminal,
- entered or modified via the terminal.

### Command data from the PLC to the terminal

Concerns the following commands :

- Display an application page,
- Display alarm pages,
- Lock keys,
- Enter request for a variable field,
- Print command,
- Control of indicator lamps associated with function keys,
- Clear log command,
- Set real-time clock command.

### Status data from the terminal to the PLC

Concerns the following states :

- The terminal status
  - confidential mode,
  - terminal configuration mode,
  - confirmation of entries via ENTER key,
  - abandon entry via ESC key,
  - abandon entry after a time-out,
  - printing fault
- Number of displayed page,
- Number of last field entered,
- Image of keypad keys,
- Real-time clock status (date and time),
- Occupancy rate of log as a percentage,
- Communication monitoring,
- Number of last alarm acknowledged.

C

### 3. Principle of exchanging data associated with fields

### 3. Principle of exchanging data associated with fields


The exchange principle depends on the protocol chosen according to the type of PLC.

The terminal may be master or slave, client or server of the dialog.

The terminal is most commonly the client, and is responsible for the following exchanges :

- updating of fields (reading values in the PLC)
- entry and modification of fields (writing of values to the PLC)

No communication program needs to be written.

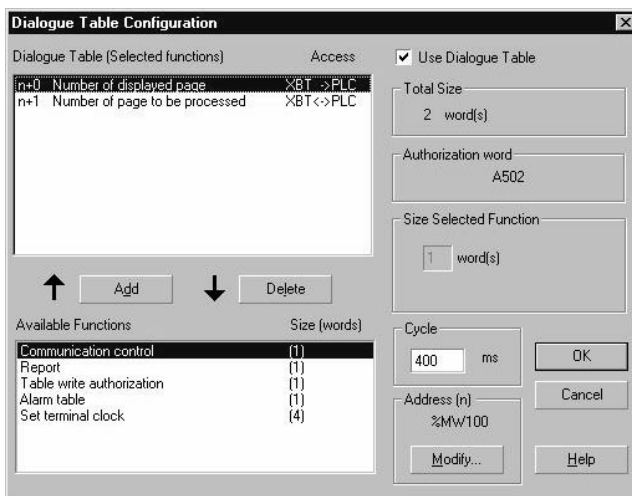
 **WARNING**

---

**UNINTENTIONAL EQUIPMENT OPERATION**

PLC memory zone allocated for the XBT dialog table must NOT be used for anything else. It is designer's responsibility to program PLC logic properly.

**Failure to follow this instruction can result in death, serious injury, or equipment damage.**



## 4. Principle of the dialog table

---

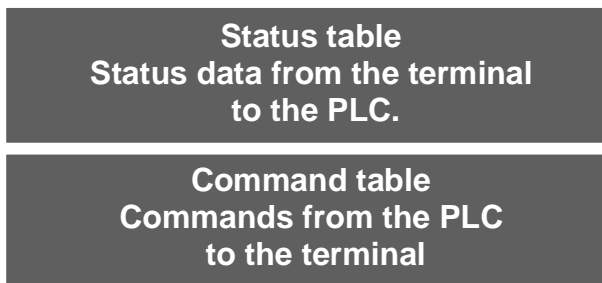
### 4. Principle of the dialog table

To simplify the dialog, all data :

- Commands from the PLC to the terminal
- Status data from the terminal to the PLC

are grouped together in a table : **the dialog table**

Composed of n consecutive words (words of 16 bits), this table has 2 parts:



C

The number of words in the table depends on the choice of status data and commands that are to be processed via the dialog.  
The XBT-L1000 software is used to make this choice.



Using the "Authorization" word is a safety check for the PLC.

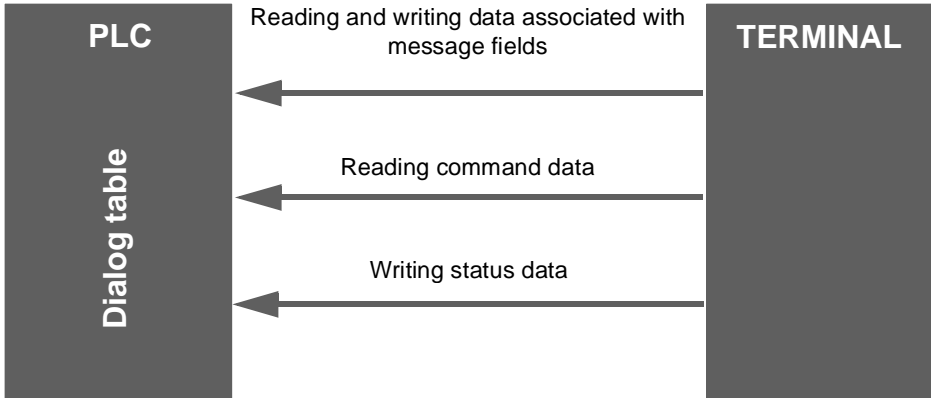
If this word is not at the correct value, the terminal cannot write any word to the PLC.

- The authorization word is not compulsory.
- It is systematically present in the dialog table offered by XBT-L1000.
- It is strongly advisable to retain the authorization word in the dialog table as long as the table contains at least one word to be written by the XBT.

## 4. Principle of the dialog table

---

The dialog table is in the PLC (n consecutive words).  
The terminal reads and writes the table to the PLC.  
There is no PLC program to write for the communication part.



When the terminal is switched on or communication restarted, it reads the command table and writes the status table. In the event of a problem the terminal informs the user via a message.

## 5. Contents of the dialog table

---

### 5. Contents of the dialog table

The number of words in the table depends on the choice of states and commands that are to be processed via the dialog.

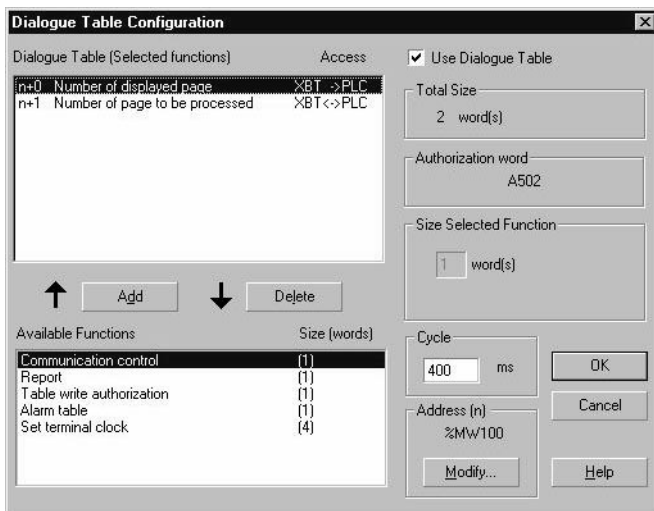
So, the number of available words depends on the PLC type (For example : presence or not of function keys).

#### Notation convention for describing the table

Wn word of 16 bits

Wn, i : bit i of word n

The address n is taken as the start of table address.



The description below gives the content of the various dialog table words. Refer to the XBT-L1000 software on-line help for more information on the words.

Word	Functions	Exchange	Page
Wn+0 to Wn+1	Static function keys	PLC <- XBT	C13
Wn+2	System keys	PLC <- XBT	C13

## 5. Contents of the dialog table

Word	Functions	Exchange	Page
Wn+3	Numeric keys	PLC <- XBT	<a href="#">C13</a>
Wn+4	Communication control	PLC <- XBT	<a href="#">C14</a>
Wn+5 to Wn+8	Set PLC clock	PLC <- XBT	<a href="#">C14</a>
Wn+9	Number of displayed page	PLC <- XBT	<a href="#">C14</a>
Wn+10	Number of last field entered	PLC <- XBT	<a href="#">C14</a>
Wn+11	Last alarm acknowledged	PLC <- XBT	<a href="#">C14</a>
Wn+12	Confirmation report	PLC <- XBT	<a href="#">C15</a>
Wn+13	Log occupancy rate	PLC <- XBT	<a href="#">C15</a>
Wn+14	Number of page to be processed	PLC <->XBT	<a href="#">C15</a>
Wn+15	Field number to be entered	PLC <->XBT	<a href="#">C15</a>
Wn+16	Print command	PLC<->XBT	<a href="#">C16</a>
Wn+17	Writing table authorization	PLC -> XBT	<a href="#">C16</a>
Wn+18	Reset log	PLC -> XBT	<a href="#">C16</a>
Wn+19 to Wn+20	Static function key LED's command	PLC -> XBT	<a href="#">C17</a>
Wn+21	Dynamic function key LED's command	PLC -> XBT	<a href="#">C17</a>
Wn+22 to Wn+23	Lock static function keys	PLC -> XBT	<a href="#">C17</a>
Wn+24	Lock system keys	PLC -> XBT	<a href="#">C17</a>
Wn+25	Lock numeric keys	PLC -> XBT	<a href="#">C18</a>
Wn+26 to Wn+41	Alarm table	PLC -> XBT	<a href="#">C18</a>
Wn+42 to Wn+46	Set XBT clock	PLC -> XBT	<a href="#">C19</a>
Wn+47	Printout table in free format (maximum of 40 words on one line of printout)	PLC -> XBT	<a href="#">C19</a>



## 5. Contents of the dialog table

### Detailed description

**Wn+0 to Wn+3: Images of terminal keypad keys to PLC.**

Bit at 1= key pressed.

	Bit 15	Bit 0
Wn	F16	F1

	Bit 7	Bit 0
Wn+1	F24	F17

Wn+2	Wn+3
Bit 0: Up arrow	Bit 0: 0
Bit 1: Down arrow	Bit 1: 1
Bit 2: Right arrow	Bit 2: 2
Bit 3: Left arrow	Bit 3: 3
Bit 4: MOD	Bit 4: 4
Bit 5: PRINT	Bit 5: 5
Bit 6: MENU	Bit 6: 6
Bit 7: SYST	Bit 7: 7
Bit 8: ALARM	Bit 8: 8
Bit 9: EXIT	Bit 9: 9
Bit 10: HOME	Bit 10: .
Bit 11: +1	Bit 11: +/-Bit
Bit 12: -14	12: LED
13: ENTER	Bit 13:Reserved
Bit 14:Reserved	Bit 14:Reserved
Bit 15:Reserved	Bit 15:Reserved

Some bit value are not usable in this range of product.

C

## 5. Contents of the dialog table

---

### **Wn+4 : Communication control**

Word incremented by 1 at each communication request by the terminal. It is sent to the PLC. This monitors the communication between the terminal and PLC.

### **Wn+5 to Wn+8: Set PLC clock.**

Wn+5	Seconds	Reserved
Wn+6	Hours	Minutes
Wn+7	Month	Day of the month
Wn+8	Century	Year

Only XBT-E possesses a protected real-time clock. The XBT writes the time and date periodically to the PLC (approximately every second).

2 coding formats are possible:

Hexadecimal or BCD (option selected with XBT-L1000).

## **WARNING**

### **UNINTENTIONAL EQUIPMENT OPERATION**

If communications between XBT and PLC are lost, operator's control over machine may be lost completely or partially. It is designer's responsibility to program PLC logic to account for this situation. One of the good ways to do that is to monitor Wn+4 of the dialog table from the PLC program.

**Failure to follow this instruction can result in death, serious injury, or equipment damage.**

### **Wn+9 : Number of page to be displayed**

N° of the page displayed on the terminal and to be sent to the PLC. It contains H'FFFF' if it is a system page or a displayed alarm.

### **Wn+10 : Number of last field entered**

N° of last field entered on the terminal to be sent to the PLC.

### **Wn+11 : Last alarm accepted**

This information is only present on one PLC scan, it then returns to H'FFFF'.

## 5. Contents of the dialog table

---

### Wn+12 : Confirmation report

<b>Wn+12</b>
Bit 0: Confidential mode
Bit 1: Configuration mode
Bit 2: ENTER on entry
Bit 3: ESC on entry
Bit 4: End of entry on TIME-OUT (1mn)
Bit 5: Reserved
Bit 6: Reserved
Bit 7: Reserved
Bit 8: Reserved
Bit 9: Reserved
Bit 10: Reserved
Bit 11: Current language
Bit 12: Current language
Bit 13: Set terminal clock realised
Bit 14: Reserved
Bit 15: Reserved

### Wn+13 : Log occupancy rate

The occupancy rate of the alarm log as a % on the terminal and to be sent to the PLC.

### Wn+14 : Page number to be processed

To process page 22 insert 22 -> Wn+14

When Wn+9 = 22 and Wn+14 = H'FFFF' the command is OK

When Wn+9 < > 22 and Wn+14 = H'FFFF' the command is not OK

Special commands:

Page N°: 65521 normal Brightness

Page N°: 65522 low Brightness

### Wn+15 : Field number to enter

If the field 20 is to be entered on page 10 :

\* confirm that Wn+9 = 10

\* then 20 -> Wn+15

When Wn+10 = 20 and Wn+15 = H'FFFF' the command is OK.

Wn+12 then gives more detail : "ENTER on entry".

When Wn+10 < > 20 and Wn+15 = H'FFFF' the command is not OK

Wn+12 then gives more detail : " ESC Time-out".

## 5. Contents of the dialog table

---

### Wn+16 : Print command

MSB : Print code	LSB : Long Tab
------------------	----------------

A code is assigned to each possible print type.

- free format print : 01 (nb octets)
- print sheet : 04 (n° page 0 to 127)
- print log : 02 (00)
- "Hard-copy" Display: 05 (n° page 0 to 127)

For free format printing, the PLC gives the **length in bytes** of the information to be printed (maximum 40 words) in the LSB. The terminal reads the length given in word table to the end of dialog table address + 1. For sheet print, the LSB represents the N° of sheets.

The word "Print command" is written by the PLC.

This same word is written to H'FFFF' by the XBT, to acknowledge the end of the command.

### Wn+17 : Writing table authorization

MSB	LSB
-----	-----



For a 20 words long table, the PLC can write to the authorization word H'A514'. (A5= authorization, 14= Nbr of words in dialog table Hexadecimal value)

### Wn+18 : Reset log

The PLC writes H'00FF' in this word.

- the XBT clears the log and resets the "log occupancy rate" (Wn+13).
- the PLC must writes H'0000' in the word Wn+18 to accept a new Reset Log command .

## 5. Contents of the dialog table

### Wn+19 to Wn+20: Static function key LED's command

	Bit 15		Bit 0
Wn+19	F16		F1

		Bit 7	Bit 0
Wn+20		F24	F17

### Wn+21 : Dynamic function key LED's command

		Bit 3	Bit 0
Wn+21		R4	R1

### Wn+22 to Wn+23 : Lock function keys

	Bit 15		Bit 0
Wn+22	F16		F1

		Bit 7	Bit 0
Wn+23		F24	F17

### Wn+24 : Lock system keys

<b>WN+24</b>
Bit 0: Up arrow
Bit 1: Down arrow
Bit 2: Right arrow
Bit 3: Left arrow
Bit 4: MOD
Bit 5: PRINT
Bit 6: MENU
Bit 7: SYST
Bit 8: ALARM
Bit 9: ESC
Bit 10: HOME
Bit 11: +1
Bit 12: -1
Bit 13: ENTER
Bit 14: Reserved
Bit 15: Reserved

Some bit value are not usable in this range of product.

# 5. Contents of the dialog table

---

## Wn+25 : Lock numeric keys

<b>Wn+25</b>
Bit 0: 0
Bit 1: 1
Bit 2: 2
Bit 3: 3
Bit 4: 4
Bit 5: 5
Bit 6: 6
Bit 7: 7
Bit 8: 8
Bit 9: 9
Bit 10: .
Bit 11: +/-Bit
12: LED
Bit 13: Reserved
Bit 14: Reserved
Bit 15: Reserved

## Wn+26 to Wn+41 : Alarm table

Command to display alarm pages

	Bit 15		Bit 0
Wn+26	AL16		AL0
Wn+27			AL17
Wn+41	AL255		

## 5. Contents of the dialog table

---

### **Wn+42 to Wn+46 : Set XBT clock.**

Wn+41	Seconds	Reserved
Wn+42	Hours	Minutes
Wn+43	Month	Day of the month
Wn+44	Century	Year

Only the XBT-E has a protected real-time clock.  
Each time one of these words is modified, the XBT sets itself to the date and time given in this table.

2 coding formats are possible:  
Hexadecimal or BCD (option selected with XBT-L1000).

### **Wn+47 : Free format printing table (up to 40 words)**

See print command.

C

# 5. Contents of the dialog table

---



---

# Chapter D

---

## Operating the terminal

D



# Contents

---

## Contents

*This chapter includes the following topics:*

1. Keys and indicator lamps	5
2. Operating principle	8
Running mode	8
Confidential mode	10
3. Page display	12
Display when powered up	12
Page display via links	12
Displaying a page via its number	13
Displaying a page via its name	13
Displaying a page via a function key	14
4. Entry and modification of variables	15
Entry request	15
Entry principle	15
5. Alarms	20
Structure of alarm pages	20
6. Product references	21

D







# Contents

---

# 1. Keys and indicator lamps







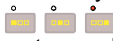


## 1. Keys and indicator lamps

Various terminals have a number of keys and indicator lamps. [chapter F](#) gives specific information about the keys and associated indicator lamps for each type of terminal. The table below summarizes the functions of all the keys and indicator lamps.

Key/indicator	lamp Function key/indicator lamp
	Confirm a choice or entry, acknowledge an alarm page.
	Move to page entry, password or variable field. Move to next field each time MOD is pressed, right to left and top to bottom.
	Delete an entry or suspend or stop an action in progress. Move up one level in a menu, exit display alarm.
	Accesses the dual function on the keys.
	<ul style="list-style-type: none"> <li>- Change page in a menu.</li> <li>- Change display (concept of "turning a page" to display the list of alarms, for example).</li> <li>- Change digits in a variable field :</li> </ul> <b>INDICATOR LAMP STATUS * :</b> <ul style="list-style-type: none"> <li>- Off : key inactive.</li> <li>- On : shows that it is possible to change page in a menu (active link) or change display.</li> <li>- Blinking : shows that it is possible to move into the selected variable field.</li> </ul>
	Combined with the SHIFT key enable: - Change the display luminosity. <b>(only Fluorescent or matrix Display)</b> (invers video PM)











Magelis	XBT-H, XBT-HM	XBT-P	XBT-PM	XBT-E
	*No indicator lamp on XBT-H811050			

# 1. Keys and indicator lamps

	<ul style="list-style-type: none"> <li>- Move around a page (activate the page links).</li> <li>- Select the value of a digit.</li> <li>- Select a value from a list.</li> </ul> <p>INDICATOR LAMP STATUS :</p> <ul style="list-style-type: none"> <li>- Off : key inactive.</li> <li>- On : shows that moving around a page is possible</li> <li>- Blinking : shows that it is possible to modify the value of each digit.</li> </ul>
	<p>Combined with the SHIFT key enable:</p> <ul style="list-style-type: none"> <li>- the value of a variable field to be incremented or decremented,</li> <li>- Access at the top or the bottom page.</li> </ul> <p>INDICATOR LAMP STATUS :</p> <ul style="list-style-type: none"> <li>- Off : key inactive.</li> <li>- On : shows that moving around a page is possible</li> <li>- Blinking : shows that it is possible to modify the value of each digit.</li> </ul>
	<p>Deletes the character to the left of the steady digit.</p>
	<p>Inverts the sign of the variable field being entered.</p>
	<p>Decimal point.</p>
	<p>These keys which are accessible with the keys  give access to the character to the left, the centre, and the right respectively of the alphabetical marking.</p>
<p>HOME</p> 	<p>SHIFT+ ESC : Return to the point of entry into the current menu. <i>Example : return to the first application page.</i></p>
	<p>Accesses a menu containing the operating functions which are not directly accessible via keys:</p> <ul style="list-style-type: none"> <li>- selection of application pages,</li> <li>- "secondary" operating functions.</li> </ul>

Magelis	XBT-H, XBT-HM	XBT-P	XBT-PM	XBT-E
	*No indicator lamp on XBT-H811050			

# 1. Keys and indicator lamps

<p>SYST</p>  	<p>SHIFT + MENU : Accesses confidential mode which contains the setup functions (protected by a password) :</p> <ul style="list-style-type: none"> <li>- installation and maintenance functions,</li> <li>- change from running mode to confidential mode.</li> </ul> <p>INDICATOR LAMP STATUS :</p> <ul style="list-style-type: none"> <li>- Off : the terminal is in running mode.</li> <li>- On : the terminal is in confidential mode.</li> <li>- Blinking : PC&lt;-&gt; XBT transfer is in progress or no application in the terminal.</li> </ul>
 	<p>INDICATOR LAMP STATUS :</p> <ul style="list-style-type: none"> <li>- indicator lamp on : no cable or incorrect wiring,</li> <li>- indicator lamp off : correct cable, no exchange with the PLC,</li> <li>- indicator lamp blinking : exchanges with the PLC.</li> </ul>
 	<p>INDICATOR LAMP STATUS * :</p> <ul style="list-style-type: none"> <li>- Off : no key pressed.</li> <li>- On : when any key is pressed.</li> </ul>
<p>ALARM</p>  	<p>SHIFT+ ENTER: consult alarms</p> <p>INDICATOR LAMP STATUS * :</p> <ul style="list-style-type: none"> <li>- Off : the current alarm list is empty.</li> <li>- On : the list contains some alarms which have already been displayed (ignored).</li> <li>- Blinking : the alarm list contains some new alarms.</li> </ul>
<p>PRINT</p>  	<p>SHIFT+ MOD: print command</p> <p>INDICATOR LAMP STATUS :</p> <ul style="list-style-type: none"> <li>- Off : no printing in progress,</li> <li>- On : printing in progress.</li> <li>- Blinking : printing fault.</li> </ul>

D

Magelis	XBT-H, XBT-HM	XBT-P	XBT-E
	*No indicator lamp on XBT-H811050		

## 2. Operating principle

---

## 2. Operating principle

### Running mode

The running mode is used to control the control system :

- Page display.
- Entry/modification of process parameter values.
- Process control (discrete).
- Printing.
- Viewing and acknowledgement of an alarm.



If the terminal has a MENU key, you can access the following additional functions :

- display of application pages (indirectly),
- consult the alarm log,
- access to the terminal configuration (printer link, real-time clock, link with the control system, languages)
- access to the product references,
- access to the terminal selftest functions (keyboard, display...)

### WARNING

#### UNINTENTIONAL EQUIPMENT OPERATION

Pressing the MENU key allows the inexperienced or untrained operator to accidentally display the wrong page, modify the terminal configuration or lose the messages and alarms on the screen. This can lead to confusion, panicking, and, as a consequence, to loss of control over the machine. It is strongly recommended that the PLC be programmed to lock the MENU key as well as the other currently unused keys in order to prevent this from happening.


**Failure to follow this instruction can result in death, serious injury, or equipment damage.**

Magelis	XBT-H, XBT-HM	XBT-P	XBT-PM	XBT-E
	No function menu			



## 2. Operating principle

*Example : Display of an application page*

Solution 1 : once the Menu screen is displayed, press the  key and the 4 arrow key indicator lamps blink.



```

PAGE NUMBER _ ->
LIST OF PAGES ->
ALARM LOG ->
CONFIGURATIONS ->
    
```

Enter the page number and press ENTER (see § 3. Page display, Page 12)

Solution 2

```

LIST OF PAGES
00001 :
00002 :
00003 :
...
    
```



Select the required page

access the page.

In this mode the SYS indicator lamp is off.

Magelis	XBT-H, XBT-HM	XBT-P	XBT-PM	XBT-E

## 2. Operating principle

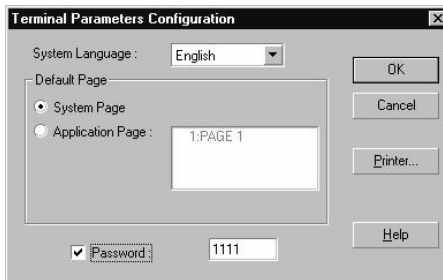
---

### Confidential mode

Confidential mode enables the running mode functions to be performed and, in addition, the following functions :

- Access to pages protected in running mode,
- Clearing the log,
- Configuration of the MAGELIS terminal and peripherals,
- Terminal selftests.

A password to protect the access to the confidential mode is created using XBT-L1000 : use "Configuration/Terminal parameters" menu.



### WARNING

#### UNINTENTIONAL EQUIPMENT OPERATION

The XBT should only be installed and used by the authorized personnel that has been assigned the appropriate confidential mode PASSWORDS by the project manager.

**Failure to follow this instruction can result in death, serious injury, or equipment damage.**

Magelis	XBT-H, XBT-HM	XBT-P	XBT-PM	XBT-E
	No confidential mode			

## 2. Operating principle

---

### Changing to confidential mode

Press the SYST key.



Enter the password using the arrow keys or the numeric keypad, and confirm the entry with ENTER.



The SYST indicator lamp lights.

### Exiting confidential mode



Press the SYST key.



Select running mode.

The SYST indicator lamp goes off.

D

Magelis	XBT-H, XBT-HM	XBT-P	XBT-PM	XBT-E
	No confidential mode			

### 3. Page display

---

### 3. Page display

#### Display when powered up

When it is switched on, the terminal automatically displays the system pages (duration 2 secs) :

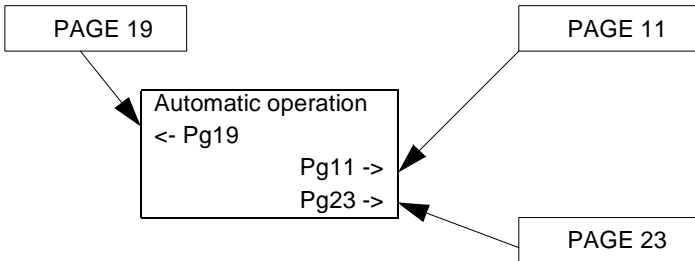
- Display of the reference and the software version loaded
- Display of the product reference of the terminal
- Display of the reference and the version of software downloaded by XBT-L1000.
- Display of the reference and the version of the protocol
- Display of the application name.

The terminal then continuously displays the date and time or the default page.

#### Page display via links



A link between pages is indicated by the -> and <- arrows.



If a page is accessible, the -> or <- arrow is displayed blinking in reverse video. Otherwise the display is steady, indicating that the page is protected and therefore accessible only in confidential mode.

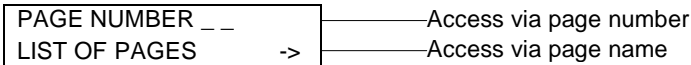
Magelis	XBT-H, XBT-HM	XBT-P	XBT-PM	XBT-E

### 3. Page display

#### Displaying a page via its number



1 - Press the MENU key and the XBT displays the following menu :



2 - Press the "MOD" key.

3 - Enter the page number to be displayed (see § 3. Page display, Page 12)



4 - Press "ENTER" to confirm and the page is displayed.

Only non-protected pages can be displayed in this way in running mode. Change to confidential mode to display protected pages.

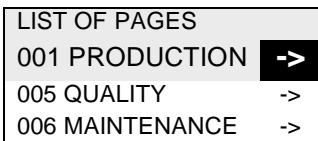
#### Displaying a page via its name



Press the MENU key and the XBT displays the following menu :



Display of list of pages



- If in running mode, only non-protected pages are displayed.

- If in confidential mode, both protected and non-protected pages are displayed.



Select the page.



Access the page.

Magelis	XBT-H, XBT-HM	XBT-P	XBT-PM	XBT-E
	No menu function			

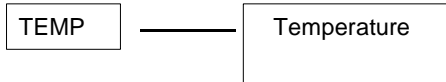
### 3. Page display

#### Displaying a page via a function key

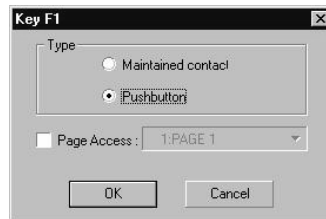
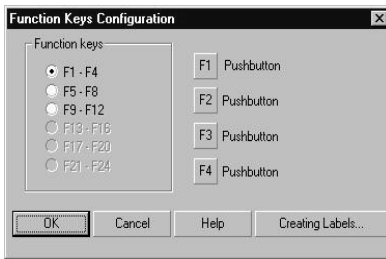
It is possible to display a page directly by pressing a function key. (Static or dynamic for XBT-PM).



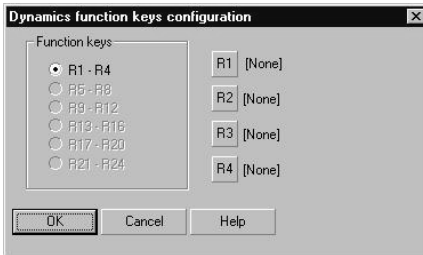
Example :



To configure a function key, use "Configuration/Function key" menu :  
 Static function keys :



Dynamic function keys :



Magelis	XBT-H, XBT-HM	XBT-P	XBT-PM	XBT-E
	Except XBT-H001010, 002010, 021010, 022010 and XBT-HM007010, 027010			

## 4. Entry and modification of variables

---

### 4. Entry and modification of variables

#### Entry request

By the operator



Entry mode is accessed with the MOD key.

#### Entry principle

- If the field contains more than 1 digit, the digit to be entered is displayed in steady mode, while the other digits blink.
- If the field contains 1 digit, the digit to enter blinks.
- The LEDs of the arrow keys blink. Note : when the LEDs are off, the corresponding keys are inactive.

#### Entry via numeric keypad

Keys 0 to 9 and +/- (toggle function, + is the default sign) are used to enter data.

- Select the digit to be entered using the arrow keys.
- Enter this digit, the following digit (to the right) stops blinking.
- Enter the next digit.
- Enter the other digits and confirm the whole entry with **ENTER**.
- Entering the first digit of a field without having used the keys causes the rest of the field to be deleted.



Magelis	XBT-H, XBT-HM	XBT-P	XBT-PM	XBT-E
	Except XBT-H001010, 002010, 021010, 022010 and XBT-HM007010, 027010			

## 4. Entry and modification of variables

### Entry via the arrow keys



- Select the digit to be entered using the arrow keys.



- Choose the value of the digit using the arrow keys.



- Move to the following digit using the arrow keys.

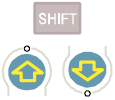


- Confirm the whole entry with **ENTER**.

### Incrementing/decrementing a value

If you want to adjust a value

(example : adjust around the value 5556)



- Press the SHIFT + up arrow keys to increment the value by 1 point.

- Press the SHIFT + down arrow keys to decrement the value by 1 point.

- Confirm the whole entry with **ENTER**.

### Deleting characters

When an immediate write access or immediate read/write access type is concerned. On each step, the value is sent to the controller.

The **DEL** key deletes the character to the left of the steady digit.

To delete the last steady digit :

- Move the cursor using the right arrow key until all the digits blink.

- Press the DEL key.

Magelis	XBT-H, XBT-HM	XBT-P	XBT-PM	XBT-E



# 4. Entry and modification of variables

## Entry rule



This key is used to move between the various fields of a displayed window and to select the required field.

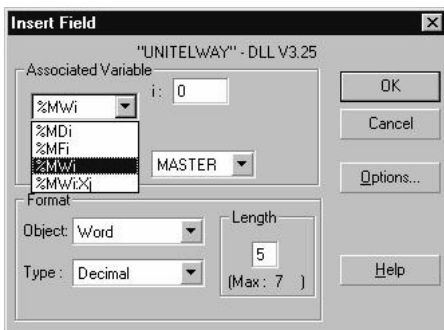


This key abandons the current entry ; no modification is made.

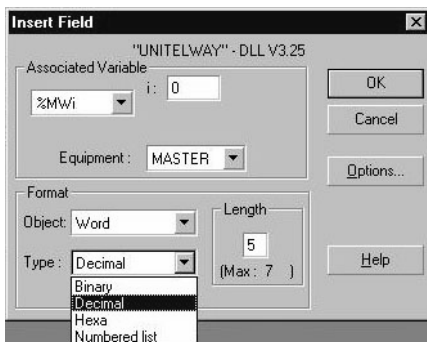
## Rule regarding display of variables

A value which cannot be displayed is represented by ' ' characters (overflow value, unknown value in a list).

Data type:



Display type:

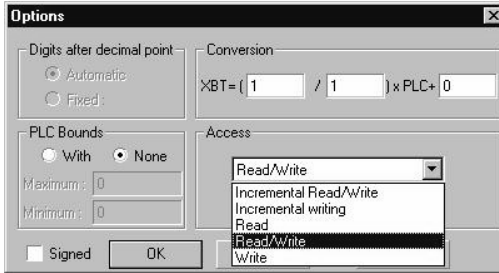


Magelis	XBT-H, XBT-HM	XBT-P	XBT-PM	XBT-E
Except XBT-H001010, 002010, 021010, 022010 and XBT-HM007010, 027010				

## 4. Entry and modification of variables

Limits and access type:

Pushing on the "Option" button open the windows where can be configure limits and acces type of the variable.



**A variable which is outside the limits but can be displayed blinks** (alphanumeric field, bar graph or meter).

A value which is not filled in by the PLC is represented by ? characters.

A write-only variable is represented by \* characters (example : password).

If the numbered list has no text, the XBT displays ' ' throughout the field.  
' ' = SPACE character.

Magelis	XBT-H, XBT-HM	XBT-P	XBT-PM	XBT-E
Except XBT-H001010, 002010, 021010, 022010 and XBT-HM007010, 027010				

## 4. Entry and modification of variables

### Numbered list

XBT-L1000 software enables a text to be assigned to each value of the variable associated with the field.

- Programming with XBT-L1000 : Access the window defining the characteristics of the field, select Format/Type, click on List and assign a text to each value.

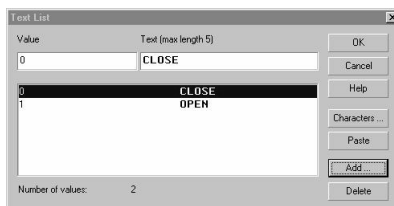
- Operation with the terminal : use the arrow keys.



1. Select the length of the string (number of characters) and click on "LIST" button.
2. Introduce each string and its value associated. A maximum of 255 strings can be associated to the variable field.

*A field (%MW10) that accepts two values with two associated strings of text (0: CLOSE 1: OPEN). If you select OPEN using the arrow keys, and confirm by pressing ENTER, the %MW10 word will take the value 1 in the PLC.*

*Inversely, if the PLC writes the value 1 on %MW10 the OPEN text will be displayed.*



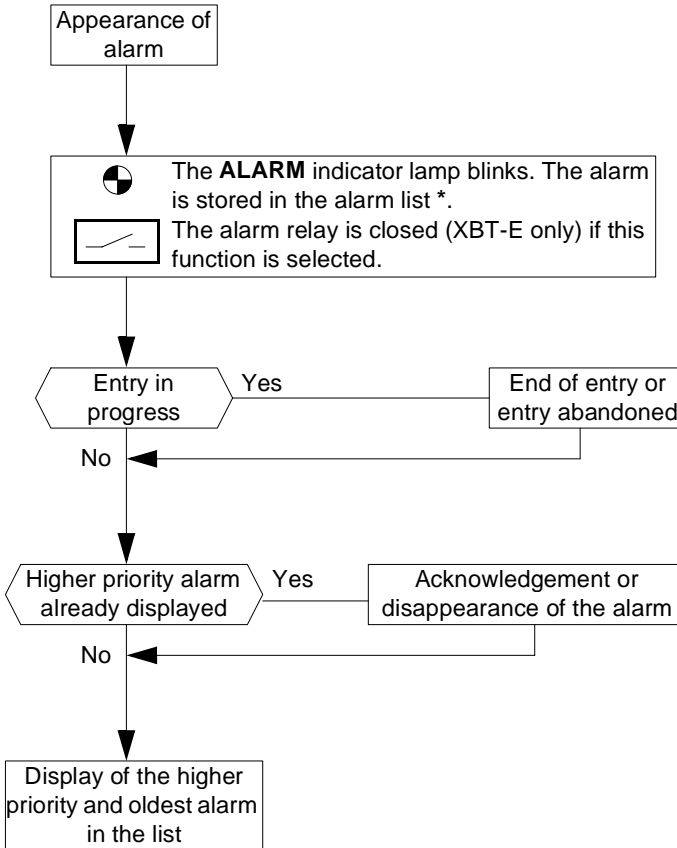
If the word %MW10 value is neither 0 nor 1, not any text will be displayed. The field became invisible.

Magelis	XBT-H, XBT-HM	XBT-P	XBT-PM	XBT-E
Except XBT-H001010, 002010, 021010, 022010 and XBT-HM007010, 027010				

# 5. Alarms

## 5. Alarms

### Structure of alarm pages



For more informations, [see chapter B, § 6. Alarms, Page 18.](#)

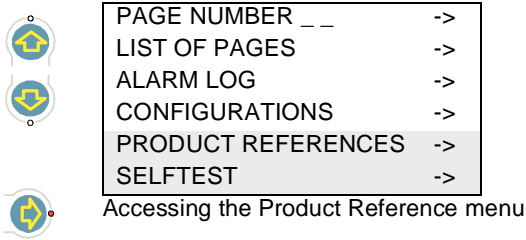
Magelis	XBT-H, XBT-HM	XBT-P	XBT-PM	XBT-E
	(1) except for .XBT-H/ P/E/HM/PM ***0**	No time-stamp for XBT- PM027010		

# 6. Product references

## 6. Product references

Push on key  to display the menu,

Select "PRODUCT REFERENCES"



### Displayed data:

- Name of the downloaded application, date and time of creation of the application.
- Software reference and release.
- Commercial reference of the product.
- Name of the downloaded exe. file.

D

Magelis	XBT-H, XBT-HM	XBT-P	XBT-PM	XBT-E

# 6. Product references

---

---

**Chapter E**

---

**Application development  
Example**

**E**

---

The objective of the example is to guide you quickly through your first application.  
chapter B will give you all the information about the various operations performed.

 **WARNING**

**UNINTENTIONAL EQUIPMENT OPERATION**

This example application will change register contents in remote devices. This may cause unanticipated change in device status. If this example is used in a functioning system, make sure all effects of any register change are fully understood before running this example.

**Failure to follow this instruction can result in death, serious injury, or equipment damage.**



# Contents

---

## Contents

*This chapter includes the following topics :*

1. Contents of the application	5
2. Creation of an application using XBT-L1000	6
3. Loading the application into the terminal	9
4. PLC application	10
5. Entry and modification of parameters	11
Reminder	11
Entry principle	11
Entry via numeric keypad	11
Entry using arrow keys	12
Deleting characters	12

# Contents

---

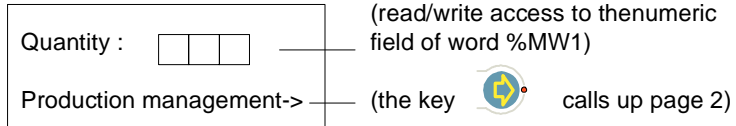
# 1. Contents of the application

---

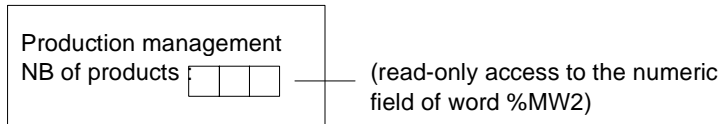
## 1. Contents of the application

This application is suitable for any XBT Magelis with a display which has 20 characters per line, and an entry keypad.  
It consists of : 2 application pages and 1 alarm page.

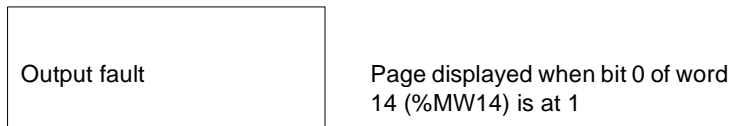
### Page 1



### Page 2



### Alarm 1



For this application, the designer wants the PLC to request the display of an application page, light the function key LEDs and use the function key states (if the Magelis terminal used has them).

**Composition of the dialog table (see chapter A, § Principle of terminal "command and status" exchanges, Page 22) between the terminal and the PLC**

**Word10** : Static Function keys

**Word11** : Page number to process

**Word12** : Writing table authorization

**Word13** : Static function keys LED's command

**Word14** : Alarm table

The word syntax depends on the protocol used (example : UNITE V2.0 protocol -> word 10=%MW10). The terminal will be able to write these words if the value of word 12 (authorization) is equal in hexa-decimal to H'A505' (05 = length of the table).

## 2. Creation of an application using XBT-L1000


---

### 2. Creation of an application using XBT-L1000


1. Start up XBL-L1000 software.
2. Open new application by clicking on the icon
3. Select the **XBT type** (example : XBT-P022010).
4. Select the **protocol** (example : UNITELWAY) and confirm with OK
5. When the page editor displays page 1, enter the text of this page :

**Quantity :**

To enter the accented characters :

- select **Edit/Insert characters**,
- double click on the character to be inserted,
- click on copy (the character is placed onto the clipboard),
- close the dialog box then click on the  **Paste** icon (or CTRL+V), the character is inserted where the cursor is located.

To create a variable field :

- click on the  (0..9, A..Z) icon.
- modify the word number by entering 1 in the "i" field for the word %MW1,
- modify the field length (example : 3),
- confirm with OK.

Enter the following line

**Production management->**

To create a link with page 2 :

- select "edition/insert link" menu (links to the right by default),
- confirm the dialog box "Create link" with OK
- confirm with OK, the default page number in the window "New application page".

A link with Page 2 can also be create by a funtion key (Static or dynamic with the XBT-PM).

6. Click on "Page 2" in the "Page tree" window in order to enter the contents of page 2.


## 2. Creation of an application using XBT-L1000


---

### Production management

No of products :

- To create the variable field :

- click on the (0..9, A..Z)  icon.
- modify the word number by entering 2 in the "i" field for word %MW2,
- modify the field length (example : 3),
- click on **Options**,
- select **Read** in the "access" zone and confirm with OK
- confirm the insertion of the field with OK.

7. Click on the  icon to make the "New alarm page" window appear, click on OK to associate the page to bit 0 (selected by default) of the first alarm word n+0 (the word number will be assigned subsequently during configuration of the dialog page).

The window "Appli1-1:ALARM 1" is displayed.

Once the first line of this page has been created and reserved for time-stamping the alarms, enter the alarm text from line 2.

#### Output fault

8. Select the **Configuration/Terminal parameters** menu.

To display page 1 when the terminal is started up :

- Deselect **system page**, select **Application Page**
- Click on **1: page1**. to select page 1
- Check that the language selected is correct and confirm with OK.

9. **Configuration of the dialog table.**

- Select the **Configuration/Dialog table** menu
- Click on **Number of displayed page** in the "Dialog table" zone, then **Delete**.
- To declare the start address of the PLC dialog table, click on **Modify** in the address zone, enter 10 in the " i" field (start of the dialog table in %MW10) and confirm with OK.

E

## 2. Creation of an application using XBT-L1000

---

10. Confirm with OK.

To assign a word to the display of the alarm page, click on **Alarm table** in the "Dialog table" zone, then enter 1 in the "Selected function size" zone and confirm with OK.

11. Save the application with the **File/Save** menu (default name : appli1.dop).

### 3. Loading the application into the terminal

---

### 3. Loading the application into the terminal

1. Power up the terminal
2. Connect the PC to the terminal (XBT Z915 cable) then select the Transfer/Export command to transfer the application to the terminal.

## 4. PLC application

---

### 4. PLC application

The dialog table (%MW10 to %MW14) can be used if the authorization word (%MW12) is equal to A505 in hexadecimal.

The designer can use various words from the dialog table.

Word %MW10 contains the image of the function keys (F1 key pressed : bit %MW10,0=1).

Word %MW11 contains the number of the page to be displayed (1 or 2 in the example).

Word %MW13 controls the display of the function key LEDs (F1 key bit %MW13,0).

Setting bit %MW14,0 to 1 makes the alarm page appear blinking, press ENTER to steady the display.

After transferring the application into the terminal, connect the latter to the PLC (see service instructions for wiring : example cable XBT-Z968 for TSX07 with UNITELWAY).



## 5. Entry and modification of parameters

---

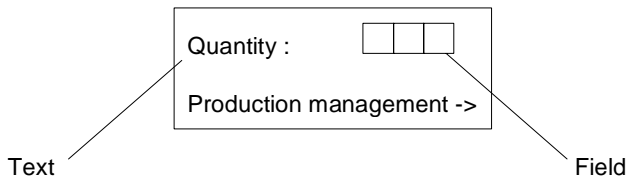
### 5. Entry and modification of parameters

#### Reminder

A page is composed of texts and fields. A field may correspond to values which have to be filled in (write) or modified (read/write) by the user or to values written by the PLC.



Example :



#### Entry principle



Entry mode is accessed using the MOD key.

- If the field contains more than 1 digit, the digit to be entered is displayed in steady mode, while other digits blink.
- If the field contains 1 digit, the digit to be entered blinks.

#### Entry via numeric keypad

Keys 0 to 9 and +/- (toggle function, + is the default sign) are used to enter data.

- Enter the first digit, the following digit (to the right) stops blinking.
- Enter the second digit.
- Enter the other digits and confirm the whole entry with **ENTER**.

E

## 5. Entry and modification of parameters

---

### Entry using arrow keys



- Select position on the digit to be entered using the arrow keys.



- Increment or decrement the value of the digit with the arrow keys.



- Go to the next digit with the arrow keys.



- Confirm the whole entry with **ENTER**.

### Deleting characters



The **DEL** key deletes the character to the left of the steady digit.

To delete the last steady digit :

- Move the cursor using the right arrow key.
- Press the DEL key.

---

## Chapter F

### Appendices

---

F



# Contents

---

## Contents

*This chapter includes the following topics :*

1. XBT technical sheets	5
XBT-H	5
XBT-HM	8
XBT-P	11
XBT-PM	14
XBT-E	17
2. Glossary	20
Alarm page	20
Application page	20
Command table	20
Confidential mode	20
Dialog table	20
JBUS master	20
JBUS slave	20
Links	20
Recording mode	20
Status table	21
UTW client	21
UTW server	21
Variable field	21
XBT application	21
XBT-L1000	21
3. Error messages	22

# Contents

---

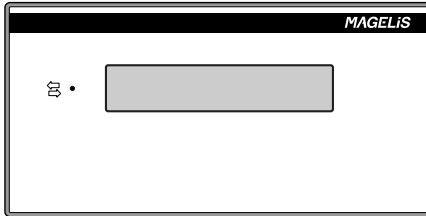
# 1. XBT technical sheets

---

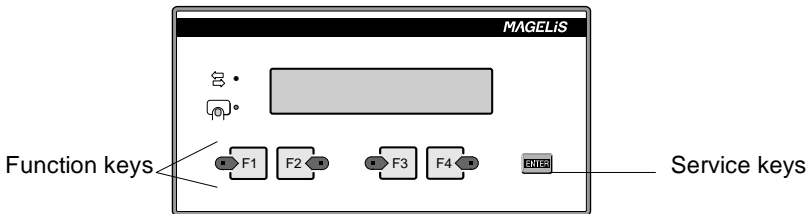
## 1. XBT technical sheets

### XBT-H

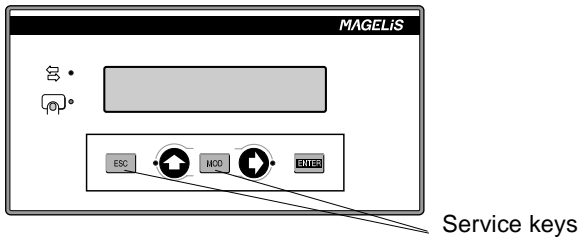
XBT-H002010, XBT-H001010 front panel.



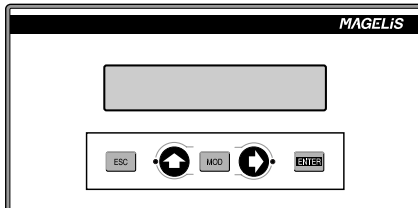
XBT-H021010, XBT-H020010 front panel.



XBT-H011010, XBT-H012010, XBT-H012110 front panel.



XBT-H811050 front panel.



# 1. XBT technical sheets

<b>Display unit types</b>	<b>*XBT-H811050</b> : no back-lit LCD (5*7 pixels), XBT-H0.1010 : back-lit LCD (5*7 pixels), height 9 mm. XBT-H0.2.10 Fluorescent green matrix for each character (5*7 pixels), height 5 mm.
<b>Serial link</b>	RS232/RS485/RS422 asynchronous serial link.
<b>Data exchange protocol</b>	Can be remotely loaded from diskette protocol using XBTL-1000 software. Protocol : UNI-TE, MODBUS, JBUS, Siemens, Allen Bradley, Omron, KS Modicon... <b>*XBT-H811050: UNI-TE protocol only.</b>
<b>Memory</b>	128 kb Flash EEPROM, capacity of approximately 200 application pages. Up to 256 alarm pages, depending on page distribution. 256 kb Flash EEPROM on XBT-H01XXXX <b>*XBT-H811050</b> : 100 application pages, 128 alarm pages.
<b>Language version</b>	English, French, Spanish, Italian, German
<b>Weight</b>	0.600 Kg / 1,323 lbs
<b>Temperature</b>	Operation : 0 to 50°C (32,0° to 122,0° F) Humidity 85% Storage : - 40° + 70°C (-40+158°F) for a fluorescent display - 20° + 60°C (-4,0° +140°F) for an LCD display
<b>Power supply</b>	<b>*XBT-H811050</b> : supplied by TSX07 (use <b>XBT-Z968-03 cable</b> ),XBT-H0XXXXX: 24VDC Limits : 18 to 30 VDC Ripple : 5% max Consumption : 10W ( <b>XBT-H811050: 1,5 W</b> ).
<b>Degree of protection</b>	IP65 according to IEC529 and degree 1 as per NFC20-010 UL Type 4,4x, Nema 4
<b>Mounting and fixing</b>	Flush mounted, fixed by 4 pressure mounted bolts supplied on a 1 to 6 mm thick panel.



# 1. XBT technical sheets

## Specific characteristics

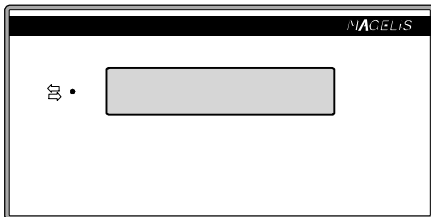
Terminal	XBT-H002010 XBT-H001010	XBT-H021010 XBT-H022010	XBT-H011010 XBT-H012010 XBT-H012110	<b>*XBT- H811050</b>
<b>Display</b>	2 lines of 20 characters			
<b>Function Keys</b>	0	4	0	0
<b>Service Keys</b>	0	1	5	5
<b>Numeric Keys</b>	0	0	0	0
<b>Alphanumeric Keys</b>	0	0	0	0
<b>Signalling DEL</b>	Communication	- Communication - Return key - Function key : 4 - Service key : 0	- Communication - Return key - Function key : 0 - Service key : 2	None
<b>Printer Link</b>	No	No	RS232 asynchronous serial link for XBT-H012110	No
<b>Real-time clock</b>	Acces to PLC real time clock			

# 1. XBT technical sheets

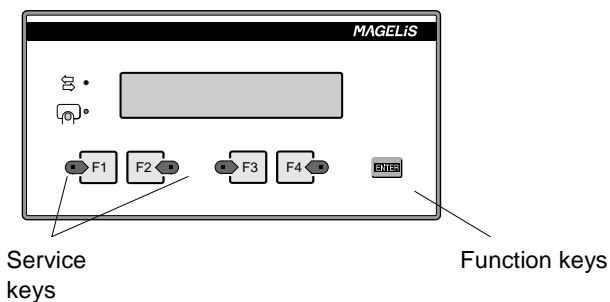
---

## XBT-HM

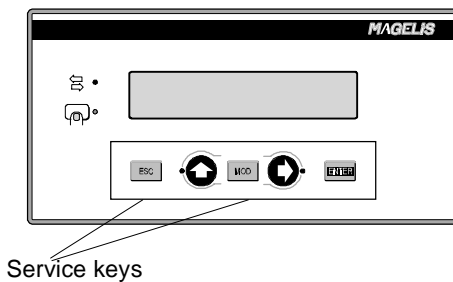
### XBT-HM007010 front panel



### XBT-HM027010 front panel



### XBT-HM017010 and XBT-HM 017110 front panel



# 1. XBT technical sheets

---

<b>Display unit types</b>	Matrix LCD monochrome (240*64 pixels), 8*40 characters with possibility of: - 4*40 characters (double height) - 8*20 characters (double width) - 4*20 characters (double size)
<b>Serial link</b>	RS232/RS485/RS422 asynchronous serial link
<b>Data exchange protocol</b>	Can be downloaded from protocol diskette using XBT-L1000 software. Protocols : Uni-Telway, Modbus, Jbus, Siemens, Allen Bradley, Omron, Modicon KS....
<b>Memory</b>	384 kb Flash EPROM, giving a capacity of approximately 300 application pages. The maximum number of alarm pages is 256 depending on page distribution.
<b>Language version</b>	French, English, Spanish, Italian, German
<b>Weight</b>	0.600 Kg / 1.1 lbs
<b>Temperature</b>	Operation : 0 to 50°C (32 to 122°F), humidity 0 to 85% Storage : - 20° to + 60° C (-40 to +140 °F)
<b>Power supply</b>	24 VDC Limits : 18 to 30 VDC Ripple : 5% max Consumption : 15 W
<b>Degree of protection</b>	IP65 to IEC529 and degree 1 to NFC20-010 UL Type 4,4x, Nema 4
<b>Mounting and fixing</b>	Flush mounted, attached by 6 spring clips to a 1 to 6 mm thick panel.

# 1. XBT technical sheets

---

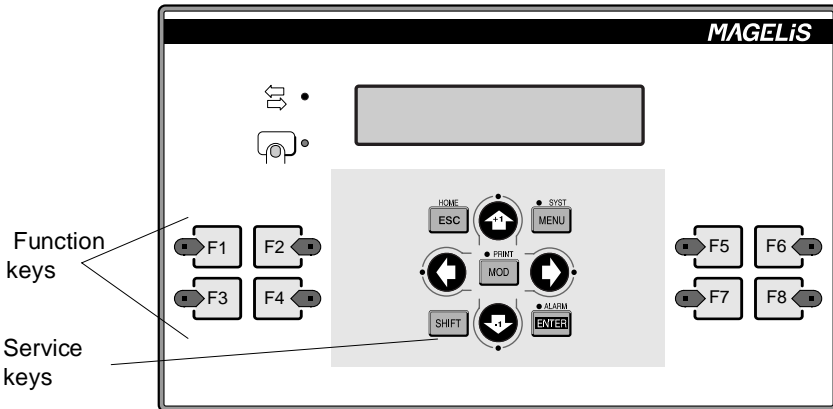
## Specific characteristics

<b>Terminal</b>	XBT-HM007010	XBT-H027010	XBT-HM017010 XBT-HM017110
<b>Function Keys</b>	0	4	0
<b>Service Keys</b>	0	1	5
<b>Signalling DEL</b>	- communication	- communication - return key - function key: 4 - service key: 0	- communication - return key - function key: 0 - service key: 2
<b>Printer Link</b>	No	No	RS232 asynchronous serial link for XBT-H017110
<b>Real Time Clock</b>	Acces to PLC real time clock		

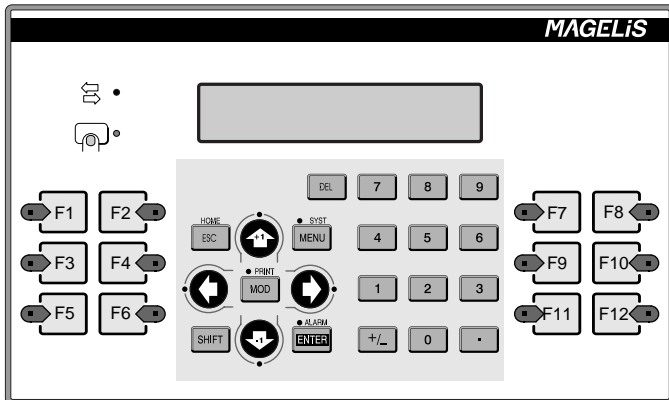
# 1. XBT technical sheets

## XBT-P

XBT-P011010, XBT-P012010 front panel.



XBT-P021010, XBT-P022010, XBT-P022110, XBT-P021110 front panel.



# 1. XBT technical sheets

---

<b>Display unit types</b>	XBT-P0.1.10 back lit LCD (5*7 pixels), height 9 mm. XBT-P0.2.10 : Fluorescent green matrix for each character (5*7 pixels), height 5 mm.
<b>Serial link</b>	RS232/RS485/RS422 asynchronous serial link
<b>Data exchange protocol</b>	Can be remotely loaded from the diskette protocol using XBTL-1000 software. Protocol : UNI-TE, MODBUS, JBUS, Siemens, Allen Bradley, Omron... .
<b>Memory</b>	256 kb Flash EEPROM, capacity of approximately 400 application pages. Up to 256 alarm pages, depending on page distribution.
<b>Language version</b>	English, French, Spanish, Italian, German
<b>Weight</b>	0,800 kg / 1,985 lbs
<b>Temperature</b>	Operation : 0 to 50°C (32,0° to 122,0° F) Humidity 85% Storage : -40° + 70°C (-40+158°F) for a fluorescent display -20° + 60° C (-4° + 140°F) for a LCD display
<b>Power supply</b>	24VDC Limits : 18 to 30 VDC Ripple : 5% max Consumption : 10W
<b>Degree of protection</b>	IP65 according to IEC529 and degree 1 as per NFC20-010 UL Type 4,4x, Nema 4
<b>Mounting and fixing</b>	Flush mounted, fixed by 8 pressure mounted bolts on a 1 to 6 mm panel.

# 1. XBT technical sheets

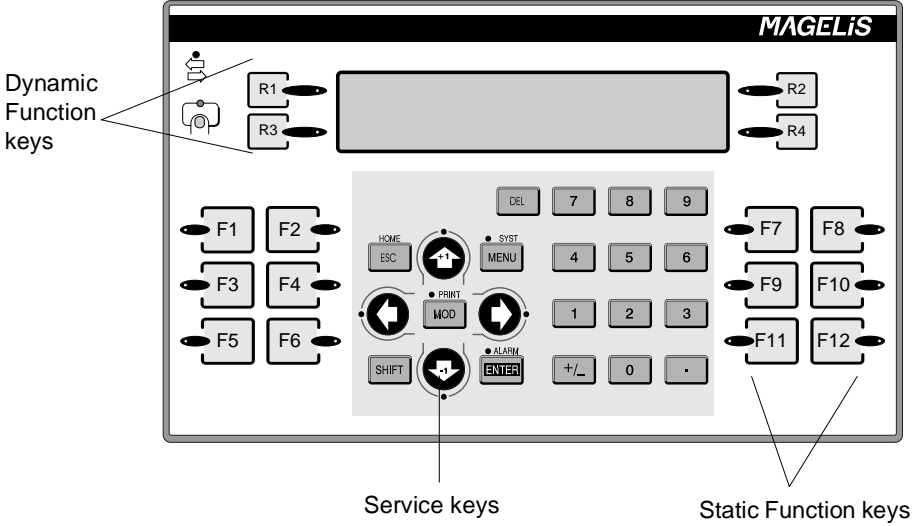
## Specific characteristics

<b>Terminal</b>	XBT-P011010 XBT-P012010	XBT-P021010 XBT-P022010	XBT-P021110 XBT-P022110
<b>Display</b>	2 lines of 20 characters	2 lines of 20 characters	2 lines of 20 characters
<b>Function Keys</b>	8	12	12
<b>Service Keys</b>	9	10	10
<b>Numeric Keys</b>	0	12	12
<b>Alphanumeric Keys</b>	0	0	0
<b>Signalling DEL</b>	Communication LED Return key LED Function key : 8 LED Service key : 7 LED	Communication LED Return key LED Function key : 12 LED Service key : 7 LED	Communication LED Return key LED Function key : 12 LED Service key : 7 LED
<b>Printer Link</b>	No	No	RS232 asynchronous serial link
<b>Real-time clock</b>	Access to PLC real-time clock	Access to PLC real-time clock	Access to PLC real-time clock

# 1. XBT technical sheets

## XBT-PM

XBT-PM027010 and XBT-PM027110 front panel





# 1. XBT technical sheets

---

<b>Display unit types</b>	Matrix LCD monochrome (240*64 pixels), 8*40 characters with possibility of: <ul style="list-style-type: none"><li>- 4*40 characters (double height)</li><li>- 8*20 characters (double width)</li><li>- 4*20 characters (double size)</li></ul>
<b>Serial link</b>	RS232/RS485/RS422 asynchronous serial link
<b>Data exchange protocol</b>	Can be downloaded from protocol diskette using XBT-L1000 software. Protocols : Uni-Telway, Modbus, Jbus, Siemens, Allen Bradley, Omron, Modicon KS....
<b>Memory</b>	512 kb Flash EPROM, giving a capacity of approximately 400 application pages. The maximum number of alarm pages is 256 depending on page distribution.
<b>Language version</b>	French, English, Spanish, Italian, German
<b>Weight</b>	0.800 Kg / 1,985 Lbs
<b>Temperature</b>	Operation : 0 to 50°C (32 to 122°F), humidity 0 to 85% Storage : - 20° to + 60° C (-40 to +140 °F)
<b>Power supply</b>	24 VDC Limits : 18 to 30 VDC Ripple : 5% max Consumption : 15 W
<b>Degree of protection</b>	IP65 to IEC529 and degree 1 to NFC20-010 UL Type 4,4x, Nema 4
<b>Mounting and fixing</b>	Flush mounted, attached by 6 spring clips to a 1 to 6 mm thick panel.

# 1. XBT technical sheets

---

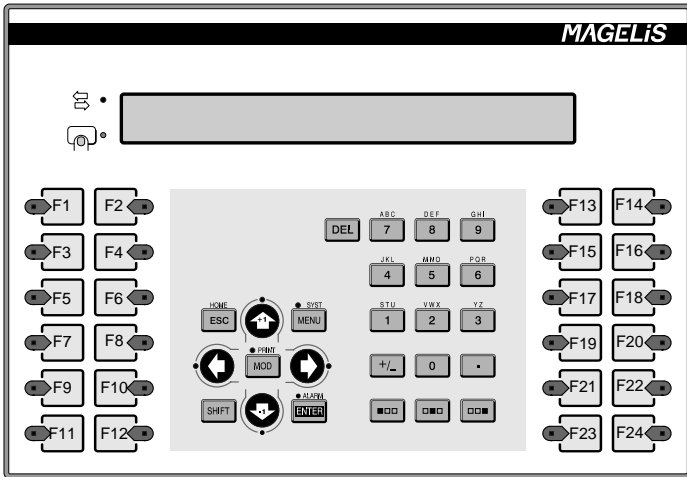
## Specific characteristics

Terminal	XBT-PM027010	XBT-PM027110
<b>Function Keys</b>	12 Static 4 Dynamic	12 Static 4 Dynamic
<b>Service Keys</b>	10	10
<b>Numeric Keys</b>	12	12
<b>Alphanumeric Keys</b>	0	0
<b>Signalling DEL</b>	<ul style="list-style-type: none"><li>- Communication LED</li><li>- Return key LED</li><li>- Dynamic Function key : 4 LED</li><li>- Static Function key : 12 LED</li><li>- Service key : 7 LED</li></ul>	<ul style="list-style-type: none"><li>- Communication LED</li><li>- Return key LED</li><li>- Dynamic Function key : 4 LED</li><li>- Static Function key : 12 LED</li><li>- Service key : 7 LED</li></ul>
<b>Printer Link</b>	No	RS232 asynchronous serial link
<b>Real-time clock</b>	Access to PLC real-time clock	Access to PLC real-time clock

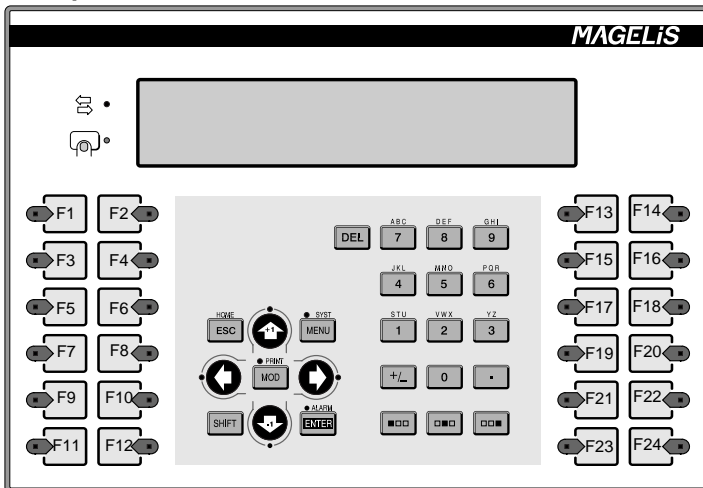
# 1. XBT technical sheets

## XBT-E

XBT-E013010, XBT-E014010, XBT-E013110, XBT-E014110  
front panel.l



XBT-E015010, XBT-E016010, XBT-E015110, XBT-E016110  
front panel.l



F

# 1. XBT technical sheets

---

<b>Display unit types</b>	XBT-E013.10, XBT-E015.10 : back lit LCD (5*7 pixels), height 9 mm. XBT-E014.10, XBT-E016.10 : Fluorescent green matrix for each character (5*7 pixels), height 5 mm.
<b>Serial link</b>	RS232/RS485/RS422 asynchronous serial link
<b>Data exchange protocol</b>	Can be remotely loaded from the diskette protocol using XBTL-1000 software. Protocols : UNITE, MODBUS, JBUS, Siemens, Allen Bradley, Omron...
<b>Memory</b>	384 kb Flash EEPROM -for 2 lines per page, approximately 800 application pages. Up to 256 alarm pages, depending on page distribution. -for 4 lines per page, approximately 400 application pages. Up to 128 alarm pages, depending on page distribution.
<b>Language version</b>	English, French, Spanish, Italian, German
<b>Weight</b>	1,3 kg / 2,866 lbs
<b>Temperature</b>	Operation : 0 to 50°C (32,0° to 122,0°F) Humidity 85%. Storage : -40° + 70°C (-40+158°F) for a fluorescent display -20° + 60°C (-4° +140°F) for an LCD display
<b>Power supply</b>	24VDC Limits : 18 to 30VDC Ripple : 5% max Consumption : -10 W (LCD display) -20 W (fluorescent display)
<b>Degree of protection</b>	IP65 according to IEC529 and NFC20-010 UL Type 4,4x, Nema 4
<b>Mounting and fixing</b>	Flush mounted, fixed by 10 pressure mounted bolts on a 1 to 6 mm panel.

# 1. XBT technical sheets

---

## Specific characteristics

<b>Terminal</b>	XBT-E013010 XBT-E014010 XBT-E013110 XBT-E014110	XBT-E015010 XBT-E016010 XBT-E015110 XBT-E016110
<b>Display</b>	2 lines of 40 characters	2 lines of 40 characters
<b>Function Keys</b>	24	
<b>Service Keys</b>	10	
<b>Numeric Keys</b>	12	
<b>Alphanumeric Keys</b>	15	
<b>Signalling DEL</b>	Communication LED, return key LED Function key : 24 LED, service key : 7 LED	
<b>Printer Link</b>	XBT-E013110, XBT-E015110 XBT-E014110, XBT-E016110 RS232 asynchronous serial link	
<b>Real-time clock</b>	Yes	
<b>Alarm relay</b>	Mini 1mA/ 5V AC/DC Maxi 0.5A/24V AC/DC (see chapter B, "Control of alarm relay : XBT-E", Page 25)	

## 2. Glossary

---

## 2. Glossary

### **Alarm page**

Page displayed after a control system fault.

### **Application page**

Page displayed to monitor and control the control system.

### **Command table**

Part of the dialogue table filled in by the PLC (orders passed to the terminal).

### **Confidential mode**

Mode allowing access to all operation functions of the terminal and connected functions.

### **Dialog table**

Table of words containing all the information necessary for control and operation of Magelis terminal.

### **JBUS master**

Device which requests J-BUS functions (write or read).

### **JBUS slave**

Device responding to the requests of a J-BUS master.

### **Links**

Association between application pages.

### **Recording mode**

Mode used for XBT-L1000<-> MAGELIS exchanges.

## 2. Glossary

---

### **Status table**

Part of the dialog table filled in by the terminal (terminal status).

### **UTW client**

Device which requests UNITE services, i.e. is capable of sending UNITE requests.

### **UTW server**

Device responding to requests for UNI-TE services from client devices.

### **Variable field**

Zone of an XBT display unit configured to display and/or modify a piece of information depending on the value of an object in the connected control system.

### **XBT application**

Set of data describing the man/machine dialog with a Magelis terminal.

### **XBT-L1000**

Software for creating man/machine dialog applications.

## 3. Error messages

---

### 3. Error messages

System messages generated by the XBT (system messages in English only), which cannot be configured.

**WIRING FAULT**

**SWITCH POWER OFF** : Incorrect wiring.

**WAITING FOR TRANSFER** : Awaiting remote loading.

**NO PROGRAM** : Product has no application (Version 1.1).

**NO APPLICATION** : Product has no application (Version 2.1).

**DOWNLOAD IN PROGRESS** : Download to the XBT in progress.

**DOWNLOAD ABORTED** : Download to the XBT cancelled by the Op.

**DOWNLOAD FAILED** : Download to the XBT failed.

**DOWNLOAD COMPLETED** : Download to the XBT finished.

**UPLOAD IN PROGRESS** : Upload to the PC in progress.

**UPLOAD ABORTED** : Upload to the PC cancelled by the operator.

**UPLOAD FAILED** : Upload to the PC failed.

**UPLOAD COMPLETED** : Upload to the PC finished.

**CONNECTING** : Reading the cable and searching for the communication configuration in progress.

**APPLICATION FAULT** : Application error (incoherence).

**OUT OF MEMORY** : No more RAM memory available

**STACK OVERFLOW N** : stack capacity overflow of task n

**CONNECTING FAULT** : Configuration error of protocol software

**SWITCH POWER OFF** : Fatal error of terminal's Run Time  
CS : x      IP : x



### 3. Error messages

---

System messages generated by the XBT in 5 languages (language selected during configuration).

**WRONG PASSWORD** : Entry of an incorrect password.

**PAGE DOES NOT EXIST**: Call-up of a non existent page.

**PROTECTED ACCESS PAGE** : Call-up of a protected page.

**IMPOSSIBLE TO WRITE VARIABLE IN PLC** : A variable is written to a protected zone.

**OVERFLOW MIN <= VALUE <= MAX** : Entry of a value which is outside the limits.

**DIALOG TABLE AUTHORIZ.** : Authorization word is incorrect.

**DIALOG TABLE READING IMPOSSIBLE** : Connection problems between XBT <-> PLC.

**DIALOG TABLE WRITING IMPOSSIBLE** : Writing to a protected zone or XBT <-> PLC connection problems.

**PRINTING ACNOWLEDGED** : Transient message if after one of the options has been selected, printing is possible.

**PRINTING IMPOSSIBLE** : Transient message if printing is in progress.

**PRINTER FAULT** : Transient message if printer is faulty.

**LOG EMPTY** : Transient message if the log is empty when display or printing log is requested by the operator.

**ACCESS PROHIBITED** : Fleeting display if the action is prohibited after one of the options has been selected.

**DATA NOT ACCESSIBLE** : Fleeting display after a non authorized variable has been entered.

**PAGE NOT ACCESSIBLE** : Fleeting display after a non existent page has been called.

**MASTER FAULT** : Special case of a server protocol when the client is in fault condition.

### 3. Error messages

---

---

# INDEX

---



# INDEX

---

## A

- Alarm display [B - 26](#)
- Alarm log [B - 28](#)
- Alarm pages [A - 16](#)
- Alarm relay [B - 25](#)
- Alarms [B - 18](#), [D - 20](#)
- Application [A - 7](#)
- Application pages [A - 14](#)
- Assigning function keys [B - 36](#)

## C

- Clear log [B - 32](#)
- Confidential mode [D - 10](#)
- Configuration [B - 43](#)
- Contents of the dialog table [C - 11](#)
- Control of alarm relay [B - 25](#)

## D

- Dialog table [C - 9](#)
- Display priority [B - 22](#)
- Display when powered up [B - 14](#), [D - 12](#)
- Displaying a page via a function key [B - 14](#), [D - 14](#)
- Displaying a page via its name [D - 13](#)
- Displaying a page via its number [D - 13](#)

## F

- Form pages [A - 18](#)
- Forms [B - 49](#)
- Function keys [B - 35](#)

## G

- General characteristics [A - 24](#)

## I

- Indicator lamps [D - 5](#)

# INDEX

---

## K

Keys [D - 5](#)

## L

Language [B - 44](#)

Links [A - 9](#)

Locking function keys via the PLC [B - 37](#)

Log display [B - 30](#)

## M

Magelis - PC link [A - 25](#)

Magelis - PLC/control system link [A - 25](#)

Magelis - printer link [A - 25](#)

Modification of variables [B - 16](#)

Momentary contact command [B - 35](#)

## N

Numbered list [B - 17](#), [D - 19](#)

## P

Page display initiated by the PLC [B - 15](#)

Page display via links [D - 12](#)

Parameters entry [B - 16](#), [D - 15](#)

Password [D - 10](#)

Print log [B - 33](#)

Process control [B - 35](#)

Product references [D - 21](#)

Push on/push off toggle command [B - 35](#)

## R

Recording mode [B - 9](#)

Running mode [B - 10](#)

## S

Selftest [B - 47](#)

Starting up [B - 6](#)

# INDEX

---

## T

Terminal operating modes [A - 19](#)

Timer [B - 45](#)

## V

Variable fields [A - 9](#)

## X

XBT-E [F - 17](#)

XBT-H [F - 5](#)

XBT-HM [F - 8](#)

XBT-P [F - 11](#)

XBT-PM [F - 14](#)

# INDEX

---





Telemecanique reserves the right to change the characteristics (presentation, function or utilization) of its products, materials and services at any time in order to incorporate the latest developments. The information in this document is therefore subject to change without notice and cannot be construed as containing any form of contractual obligation.

© Copyright Telemecanique 2001. All reproduction of this document is prohibited. Copying or reproduction, even partial, by whatever means, photographic, magnetic or other, as well as any other partial or total transcription able to be read by electronic device is strictly forbidden.