1 - Installation of the protocol: start XBT-L1000

2 cases:

- There is no protocol installed:
  the dialogue window "Install protocol" opens automatically.
- If a protocol is already installed, you can either update the existing version
  or install another protocol.
  In this case: close all applications,
  select "File", then "Install protocol".

2 - Operating principle in SYSMAC-WAY

- The XBT has the status of MASTER .

- The operating prinicple of the XBT is based on a "dialogue table" that is
  situated in the PLC (Slave).
  The XBT as a MASTER carries out 3 kinds of action:
  • on initiative of the PLC,
  • on initiative of the operator,
  • on its own initiative.

3 - Content of the dialogue table

Depending on the selected XBT, the dialogue table will be different. Here below you will find a list of accessible functions as well as a table by default for each type.

Functions	XBT H 00x010	XBT H 02x010	XBT H 01x010	XBT H 01x110	XBT P 01x010	XBT P 02x010	XBT P 02x110	XBT E 01x010	XBT E 01x110
Situation function keys		■			■	■	■	■	■
Situation system keys		▦	▦	▦	▦	▦	▦	▦	▦
Situation numeric keys		▦	▦		▦	▦	▦	▦	▦
Communication control	▦	▦	▦	▦	▦	▦	▦	▦	▦
Set PLC clock		▦	▦	▦	▦	▦	▦	▦	▦
No. of displayed page	■	■	■	■	■	■	■	■	■
No. of last field filled		▦	▦	▦	▦	▦	▦	▦	▦
No. of last acknowledged alarm		▦	▦	▦	▦	▦	▦	▦	▦
Status - report	▦	▦	▦	▦	▦	▦	▦	▦	▦
Report occupancy percentage		▦	▦	▦	▦	▦	▦	▦	▦
No. of page to be processed	■	■	■	■	■	■	■	■	■
No. of field to be filled		▦	▦	▦	▦	▦	▦	▦	▦
Print command		▦	▦	▦	▦	▦	▦	▦	▦
Authorization "Write table"	■	■	■	■	■	■	■	■	■
Reset history		▦	▦		▦	▦	▦		▦
LED command		■			■	■	■	■	■
Function keys lock		▦	▦	▦	▦	▦	▦	▦	▦
System keys lock		▦	▦	▦	▦	▦	▦	▦	▦
Numeric keys lock		▦	▦	▦	▦	▦	▦	▦	▦
Alarm table		■	■	■	■	■	■	■	■
Set XBT clock	▦	▦	▦	▦	▦	▦	▦	▦	▦
Table free format printing		▦	▦	▦	▦	▦	▦	▦	▦

■ : Functions, that are selected by default in the XBT-L1000

▦ : Further available functions

4 - Configuration of the dialogue table

- Select Configuration / Dialogue table,
- indicate the start address of the table and the cycle time,
- create the table by adding or suppressing the functions that are required for your application.

  Note: You will find the details of the content of the dialogue table in chapter D5 of the operator's guide of the MAGELIS product range.

5 - Equipment symbol

- Select Configuration / Equipment symbol.
- Add the equipment addresses that are accessible by the XBT.

6 - Supported PLC objects / Syntax

Kind of supported object	Mnemonic (Syntax)
Bit	DMi.j
Word	DMi
Double word	= word
Floating	= word
String	= word

Mnemonic identifier i : 0…65535

j : 0…15

NOTE:

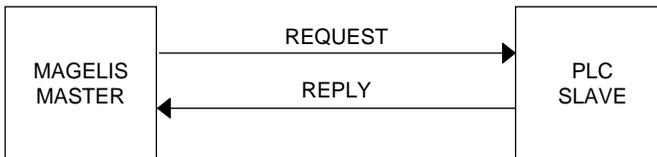The addresses of the objects must belong to the accessible memory zones that are specific to each type of PLC.

7 - Presentation

All OMRON process controllers use the SYSMAC-WAY protocol as communication protocol.

XBT can be connected to the process controller in point-to-point mode via the RS232 connector, or an RS422 network can be used on which you can connect up to 32 PLCs(*).

The dialog between the superior processing levels and the MAGELIS terminal consists in request / replies. The requester, XBT (master station) transmits the messages to be executed to the slave (PLC).

In the SYSMAC-WAY protocol the terminal communicates in ASCII mode.

```
 ┌──────────┐       REQUEST       ┌──────────┐
 │ MAGELIS  │ ──────────────────► │   PLC    │
 │ MASTER   │ ◄────────────────── │  SLAVE   │
 │          │        REPLY        │          │
 └──────────┘                     └──────────┘
```

Caution

If you connect an XBT requiring writing in memory in a process controller in RUN mode will cause the process controller to switch to MONITOR mode.

(*) PLC: Programmable Logic Controller

Coding principle of information according to the selected mode

Characteristics	
Coding system	7 / 8 bits ASCII code
Number of bits per character - start bit - significant bits - parity - stop bit - speed	1 **7** / 8 **even** / odd / none 2 1200/2400/4800/**9600**/19200 Bauds
Organisation of the message: - Begin of the frame - Message - Control - End of the frame	Begin of the frame character: @ SYSMAC-WAY frame FCS End of the frame characters: * CR
- Kind of interfaces	RS232C RS422

the default values are shown in bold

Refer to the operator manual of the data processing system (PLC or computer) to write the configuration tables.

Stages of installation:
- Configuration and connection of the terminal
- Management of exchanges

Configuration and connection of the terminal

• Configuration
- The speed, the format (parity, data bits) are configured by the XBT-L1000 after the installation of the SYSMAC-WAY protocol.
- The configuration of the slave, addressed by default by the XBT-L1000, is 0.
  - in SYSMAC-WAY, slave no.: 0 to 31.

Example of network configuration:
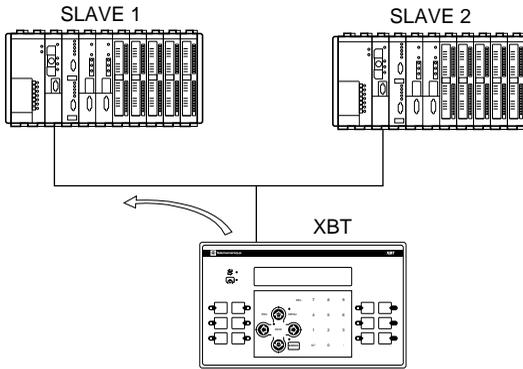
• **Behaviour at the occurence of errors:**

- Display: **"??????…"** on transmission error:

  speed/ format/ parity/ FCS/ no response.

- Display: **"??????…"** on invalid process controller address.

8 - Diagnostic counters

4 diagnostic counters can be displayed on the protocol's system page (line parameters):

- **CPT1**: number of responses received **without** any FCS* error.

- **CPT2**: number of responses received **with** FCS* error.

- **CPT3**: number of responses with incorrect length or control bytes.

- **CPT4**: number of requests that have not been answered.

*FCS: Frame Check Sequence

9 - Entering current date and time for the XBT/HP

- Date:

Insert Field

"SYSMAC-WAY" - DLL V1.1

Associated variable

i : 50000

DM: i

Equipment : XBT

OK

Cancel

Options...

Format

Object : String

Type : ASCII

Length

8

(Max : 16)

Help

- Time:

Insert Field

"SYSMAC-WAY" - DLL V1.1

Associated variable

i : 50001

DM: i

Equipment : XBT

OK

Cancel

Options...

Format

Object : String

Type : ASCII

Length

8

(Max : 16)

Help

10 - Connections

RS 232 C LINK

The maximum length of the link is 15 m.
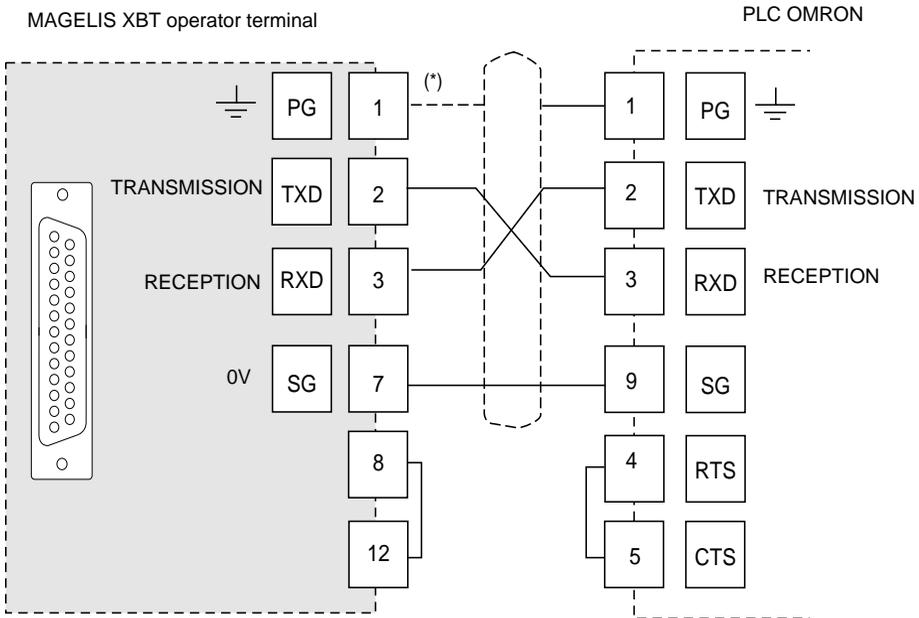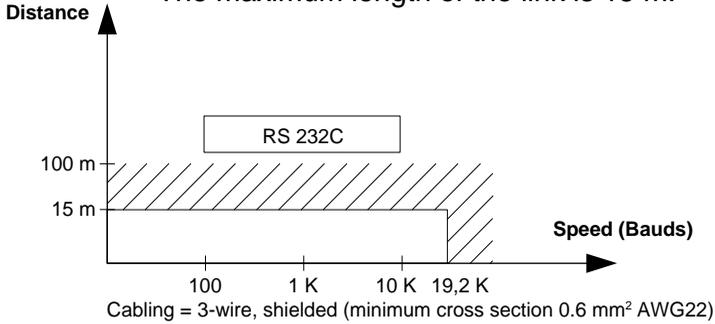
Distance

RS 232C

100 m

15 m

Speed (Bauds)

100   1 K   10 K   19,2 K

Cabling = 3-wire, shielded (minimum cross section 0.6 mm² AWG22)

MAGELIS XBT operator terminal   PLC OMRON

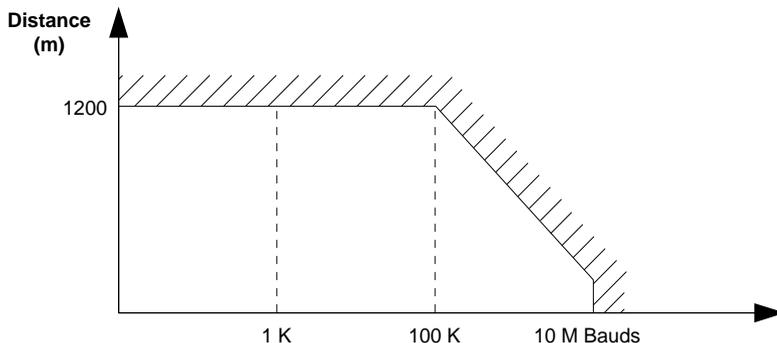|					
PG	1	(*)	1	PG	
TRANSMISSION TXD	2		2	TXD	TRANSMISSION
RECEPTION RXD	3		3	RXD	RECEPTION
0V SG	7		9	SG	
	8		4	RTS	
	12		5	CTS	

* The connection of the shielding to both cable ends depends on the electrical operating conditions.

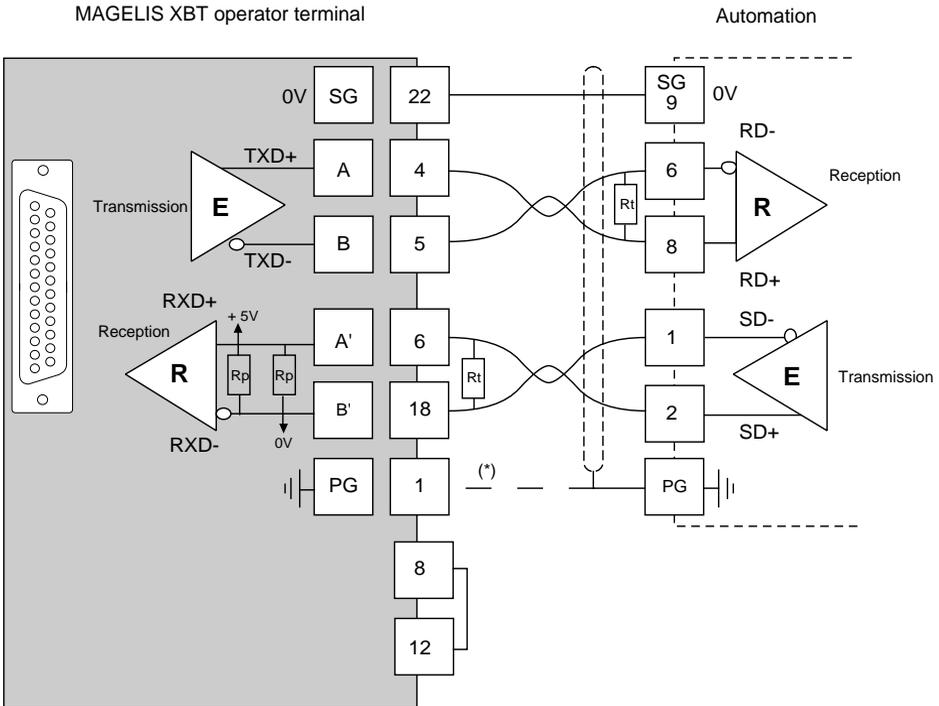* The Omron connector is of the DB9 type.

RS 422 LINK

The maximum length of the link is 1200 m.

Cabling = 4-wire twisted, shielded, minimum cross section 0.6 mm^2 AWG22 (plus OV)

THE MAXIMUM LENGTH OF THE RS 422 LINK

IS 1200 M UNDER THE CONDITION THAT THE EQUIPMENTS

CONNECTED TO THE XBT TERMINAL DO NOT REQUIRE

MORE SEVERE LIMITATIONS.

RS 422 LINK

MAGELIS XBT operator terminal

Automation

* The connection of the shielding to both cable ends depends on the electrical operating conditions.

R_T : Link termination resistors (normally 110 Ω)

NOT: The Rp resistors (4,7 kΩ) are integrated in the XBT.