VISORNET 4C

Installation Manual

Doc. DM245-I Rev. 7.0
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Index

The manufacturer reserves the right to introduce changes and improvements to the appropriate features of both the hardware and the software of this product, modifying the specifications included in this manual without prior notice.

I - Chapter. Installation

I - 1. Introduction

Visor*Net* 4c is a digital transmission device for video signals over IP protocol for remote surveillance.

Visor*Net* 4c incorporates different alternatives for IP network connections through links that can be: Integrated Services Digital Network (ISDN), an Ethernet Local Area Network, a point-to-point Frame Relay Network or any other WAN type up to 2 Mbps, and even the Public Telephone Switch Network (PSTN) through an external modem.

This variety of networks combined with the universal use of the IP protocol permits the use of the device in a wide range of scenarios.

Visor*Net* 4c configuration is carried out through forms contained in various *web* pages that offer an integrated server in the device itself. The forms permit rapid introduction of all the device operation parameters.

Visor*Net* 4c permits you to access video images from up to four different cameras from a remote PC. Depending on the network bandwidth, the device selects the most adequate video quality.

Through the six inputs, the **Visor*Net* 4c** can detect alarm device activation (Volumetric, fire sensors, alarm switchboard etc) and capture a sequence of images from any of the four cameras. **Visor*Net* 4c** at this point uses the existing communications link in order to transmit an indication of an alarm situation to an Alarms Control Center or to the Telesurveillance Center. Together with the alarm situation indication, the device sends the sequence of the captured images from the appropriate camera, which aids early detection of false alarms.

Visor*Net* 4c has two relay outputs available through which you can activate or deactivate the external devices.

A key slot with four positions is situated on the front panel and permits **Visor*Net* 4c** programming. There are two pre-saved programs *("Day and Night")*, which identify with two key positions and permit you to establish two security levels or different performances. Choosing the *"Auto"* position key enables the **Visor*Net* 4c** to activate one of the two programmed timetables. The fourth key position deactivates the device.

The possible **Visor*Net* 4c** deployment scenarios are varied. Among those that stand out is the one that is displayed in the following figure:

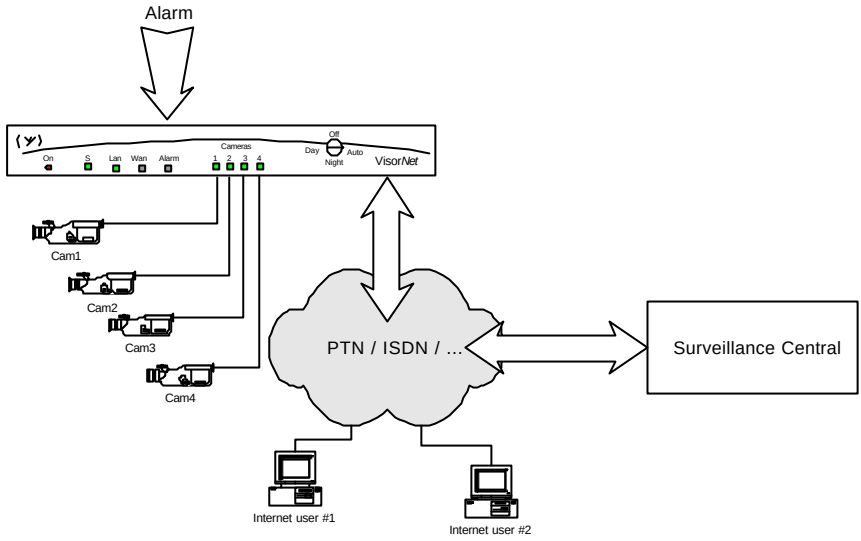


Figure 1.1. Typical VisorNet 4c work scenario

The main device characteristics are as follows:

- The device is equipped with four multi-standard video inputs, PAL or NTSC (cameras connected to the VisorNet 4c must be of one type only, i.e. all PALor all NTSC), with automatic standard detection.
- Digital video transmission in JPEG ISO 1092-2 format of up to 4 video signals. Digital video transmission in ITU H. 263 format from one of the video signals (optional). Video digital transmission in MPEG4 SP format (ISO/IEC 14496-2) for some video signals (optional).
- The device has six inputs that can be accessed through a plugable lead with screwed down contacts and can be independently configured as “Normally open”, “Normally closed”, supervised or not and with “Tension source” or “Power source”.
- There are two output relays available, accessible through a plugable lead with screwed down contacts.
- Two complete programmings up to 8 input and output zones with the possibility to associate these with the activation of each zone:
  - The sending of an alarm to the surveillance center together with a sequence of recorded images from a camera.

- Activation of the outputs from a zone.
- The freezing of inputs from a zone.
- Unfreezing of inputs from one zone.
- Initiation of a recording.

- The *"Day"* and *"Night"* programs activated in accordance with a schedule for each day of the week, together with the possibility of establishing a calendar with holidays when the system employs the *"Night"* program.
- Stores up to 10 ten-second video image sequences. The sequence capture is triggered by the activation of an input. The length of the sequences is programmed independently for each camera and you can chose values between one and ten seconds. You may also chose the pre-alarm percentage (earlier images prior to the input activation) that you wish between the values of 0% and 100%.
- Configuration and programming through the embedded WEB application. One *http* server integrated in the device offers *html* pages containing forms for quick configuration.
- LAN connection through an Ethernet port 10/100 baseT and RJ45 connector.
- WAN connection[1] through:

  - V.24/V.35 port from 300bps up to 2 Mbps.
  - ISDN port at speeds of 64/128 Kbps.
  - X.21 port up to 2 Mbps.

- Optional bi-directional audio channel over IP with transmission in G.723 or G. 729[a] formats.
- Remote awakening permitting automatic connection of the device to an Internet supplier (in PSTN through an external modem with ring pattern and the ISDN by call indication through the D channel).
- Dynamic assignation of the IP address in the link protocols, point-to-point (PPP) established over each of the basic access B channels or over Public Switch Telephone Network – PSTN using an external modem.
- Access control that limits access to the device configuration screens to users that have an administrator password.

[1] Availability depending on version.

- Master-slaves configuration in order to permit access to four devices with a single public IP address.
- Device discovery protocol that permits identification, from the master device, the remaining **Visor*Net* 4c** devices connected to a LAN.
- Continuous digital recording or through alarm to a "Recording Server"[2] located in the LAN.

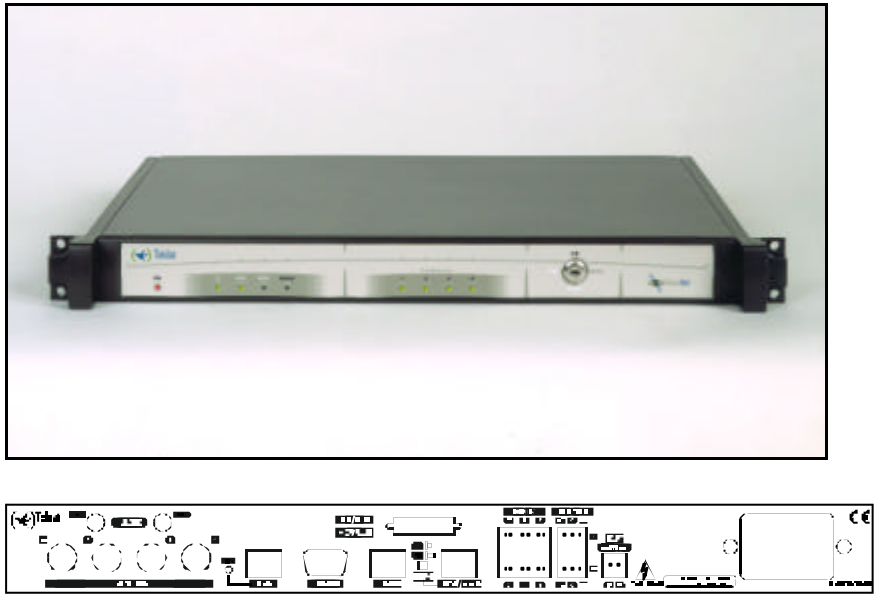
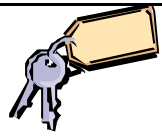


Figure 1.2. Visor*Net* 4c external aspect. Front and rear panels

I - 1.1. Unpacking

On unpacking the device, you should find the following elements inside the **Visor*Net* 4c** box:

[2] The recordings server is a compatible PC over Windows NT/2000 where a Teldat application has been installed.

	✖ CD containing manuals, reference documentation and updating utilities.
	✖ A pair of keys.
	✖ A power cable. ✖ Depending on the equipment and the order, one of the following cables: ◆ An RJ45-RJ45 cable for ISDN. ◆ An SCSI 26 Male -DB25 Male cable for connection to an external modem.

I - 1.2. Optional Equipment and versions

✖ **Visor*Net* 4c** LAN

This is the basic device that incorporates the LAN interface, RS-232 and RS-485.

✖ **Visor*Net* 4c** ISDN

This is the basic device with an ISDN expansion card (2B+D).

✖ **Visor*Net* 4c** WAN

This is the basic device with a WAN expansion card that permits the connection of the device to an external modem or another type of WAN.

✖ **H.263** expansion

An expansion card with a channel H.263 video encoder/ transmitter.

✖ **MPEG4** expansion

Expansion card with MPEG4 video encoder/transmitter for a channel.

✖ **Audio/H.263** expansion

An expansion card with H.263 video encoder/transmitter for one channel and a G.723.1- G.729A audio codec for one bi-directional channel.

✖ **Audio/MPEG4** expansion

Expansion card with MPEG4 video encoder/transmitter for a channel and audio codec G.723.1 – G729A for a bi-directional channel.

Positioning the tops accessing the configuration microswitches

On the underside of the device, there are two tops that are firmly fixed by screws and which cover the device's configuration microswitches.

In order to remove each top, unscrew the corresponding screw and lift it up towards the side where the screw has been removed.

To replace, insert the tab of the top in the slot situated in the device, position the top and firmly fix it with the original screw.

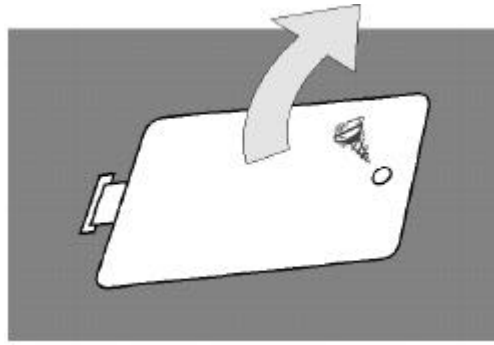


Figure 1.3. Removing the tops that cover the configuration microswitches in the Visor*Net* 4c

I - 2.1. Connecting the power source

The **Visor*Net* 4c** has two versions available for two power source options: option AC permits connection to an 110VAC or 220VAC outlet voltage indiscriminately. The DC option permits powering the device at –48VDC. The maximum current consumed at 220VAC is 0.5 A.

Connect the power cable to the device and subsequently plug the power cable into the network.

The **Visor*Net* 4c** communication devices do not require any special conditions as regards to establishing voltage or protection against power failures as it has already been protected.

To avoid electrical discharges, residual current circulation and other undesired effects that could affect even the data communication, the following is recommended:

- *It is highly recommended that all interconnected data devices be plugged to THE SAME GROUNDED POWER OUTLET, which should at the same time be of good quality (lower than 10 ohms).*
- *Whether the workplace is provided with an uninterrupted power supply system (UPS), regulated supply or it is independent from the rest (such as lighting, etc.); it is highly recommended that all data devices should be connected to the same power source. This will avoid operating and premature aging problems of drivers and other components.*
- *In order to connect to any type of cable device, you must first disconnect the power source.*

I - 2.2. Connecting Inputs / Outputs

The six **Visor*Net* 4c** inputs permit you to gather information coming from external devices that could be, **the opening or closing of a relay** (if it is normally opened or normally closed) **and the loss or presence of a voltage or current source**. In the same way, and for devices equipped for connection to a supervised input, **Visor*Net* 4c** is **able to detect sabotages** both in situations where a bridging has occurred in the input's two wires as well as if one of them has been cut. In this case the external device that is connected should be prepared to connect to a supervised input. **Visor*Net* 4c** is equipped to work with both normal inputs as well as supervised inputs.

The two **Visor*Net* 4c** outputs permit you to control the external devices through a relay open/close. Each output has three contacts: COMMON, NORMALLY OPENED and NORMALLY CLOSED. In this way, this is geared up for devices that activate on the closing of a relay or those that activate on opening them.

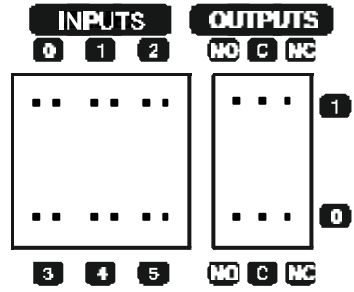


Figure 1.4. Rear connectors for the six inputs (INPUTS) and the two outputs (OUTPUTS)

NOTE: Please see the technical specifications for information on the voltage and currents limit.

I - 2.2.1. Input connections

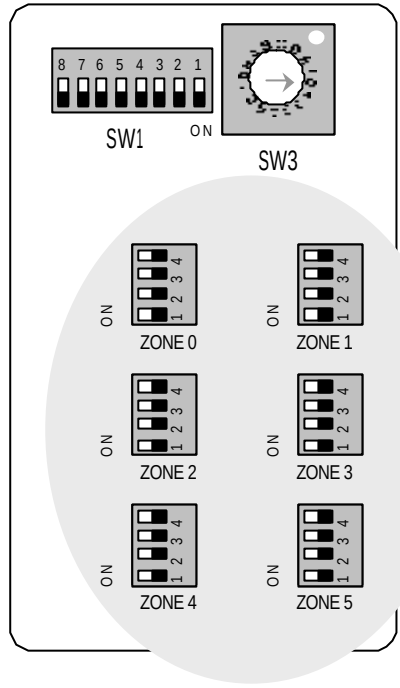


Figure 1.5. Configuration microswitches for the six zones in the underside cover of the device

In the inputs you can connect: a relay, a press button or an interrupter (whether these are normally opened or normally closed, supervised or not), a voltage source or current source.

To connect an input	
1	Extract the plugable lead corresponding to the input you wish to connect on the rear panel of the device.
2	Put the stripped cable into from the device relay into the lead screwing this in securely.
3	Configure the microswitch corresponding to the input.
4	Plug the lead into the device's rear panel connector.

To disconnect	
1	Disconnect the plugable lead from the connector located on the rear panel of the device.
2	Unscrew and pull out the lead cable.
3	Plug the lead into connector located on the rear panel of the device.

Each input has a microswitch in order to configure the type of input used. The possible combinations are:

Type of inputs	1 (AISL)	2 (AISL)	3 (RSER)	4 (RPAR)
RELAY N.O. [3] Not supervised	ON	ON	ON	ON
RELAY N.O. Supervised	ON	ON	ON	OFF
RELAY N.C.[4] Not supervised	ON	ON	OFF	OFF
RELAY N.C. Supervised	ON	ON	ON	OFF
VOLTAGE SOURCE	OFF	OFF	ON	OFF
POWER SUPPLY	OFF	OFF	ON	OFF

Table 1.1. Configuring the different types of inputs

Relay/button/switch normally opened, not supervised

This is the simplest case. The device detects activation when a contact is closed, when this would normally be open.

Relay/button/switch normally closed, not supervised

In a similar way to the above case, the difference being that the inactive level is when the contact is closed and this must open in order to pass to an active state.

Supervised input: Sabotage detection

The supervised input is applied in the cases of contacts normally being open as well as for those that are normally closed. This basically consists in detecting sabotages in the external device line. Such detection can be especially important in detection devices for presence or alarm. Possible sabotage could consist of bridging the cable (with normally closed contacts) or to cutting it (with normally opened contacts).

For line supervision, the external device must have a serial 1K termination resistor (for normally closed) or in parallel (normally open). 1K is the recommended resistance value, although this can vary slightly without affecting operations. Consult the device technical characteristics to verify if they are compatible with this operating mode.

Voltage source

In cases where the input is not passive, as in the previous sections, optic insulation is recommended between the external device the **Visor*Net* 4c** (this insulation is

[3] N.O. Normally open

[4] N.C. Normally closed

especially useful in avoiding potential difference problems between masses). This is applicable both for the input with current source as well as voltage source. In cases of connecting a voltage source, the device is able to detect the presence of voltage between 3 and 30 V. A priori the idle state of the device is unknown as this is selected as activation when the source disappears (V<2V), which also permits sabotage detection. You should not exceed 30 V in order to prevent damaging the device.

Current source

An optic insulation also exists in this case. The current ranges that are detected are between 2mA and 40mA inclusive. The standards to follow are the same as those given above.

I - 2.2.2. CLESA

CLESA, (Control de Líneas de Entrada/SAlida) the input/output lines control device, has two main functions. First, it collects information coming from external devices, i.e. **the opening or closing of a relay** (depending on whether it is usually open or closed), and the **absence or presence of voltage or power supply**. The device is **able to detect sabotage in the inputs**, whether it is carried out by connecting the two input wires or by cutting one of them. To achieve this, the connected external device must be prepared for supervised input. The inputs/outputs device is ready to work with normal inputs as well as supervised inputs. Secondly, the CLESA module is able to control external devices via the opening/closing of a relay. Each output has three contacts: COMMON, USUALLY OPEN and USUALLY CLOSED. Consequently the CLESA is ready for devices that activate when a relay closes or for those that activate when it opens.

The CLESA module has 6 inputs and 6 outputs. The information received from the inputs, or the one transmitted to the outputs, is exchanged with a remote center (**i.e. a PC** with a control program) through a twisted pair. The transmission is carried out through an interface in accordance with the RS-485 regulation (balanced data transmission). This permits you to transmit data at a longer distance than the RS-232 regulation.

Due to the transmission characteristics of the RS-485 interface, it is possible to place **several input/output boards over the same twisted pair, resulting in a modular system**. According to the user's needs, it can have 6 inputs and 6 outputs, 18 inputs and 18 outputs, etc. . In this case, the center controlling the device, distinguishes which of the modules it is dialoguing with via its identification number. This number is programmable in each device with a microswitch located inside. This number must be individual to each device connected to the same wire.

Functional blocks

The diagram of device blocks is as follows:

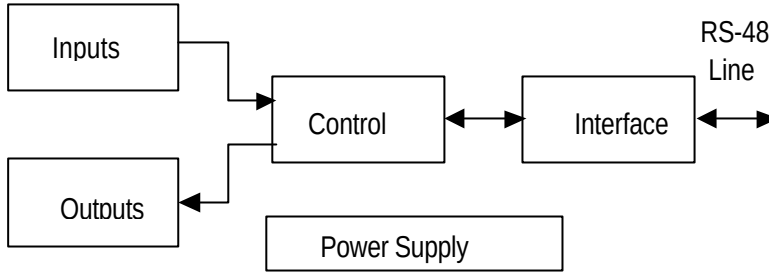


Figure 1.6. Block Diagram of CLESA modules

CLESA module connections

Figure 1.7 shows the location of different connectors and jumpers that appear when the CLESA module box is opened. The group of connectors Ent 0 to Ent 5 permits you to connect up to 6 input devices to the CLESA module. The group of connectors Sal 0 to Sal 5 permits you to connect up to 6 output devices. The SW2…SW7 microswitches configure each of the module device inputs. The SW1 microswitch permits you to configure the CLESA module identifier in a system with several modules. The CON15 connector is the power point intake.

The SW1 microswitch (see Figure 1.7) configures the CLESA module identifier in a system with several chained CLESA modules.

The values 0, 1, 2, …must be given to the CLESA module identifiers.

There are four stages when connecting the CLESA modules. The first is to connect the module number 0 to the VisorNET device of its Remote Center. The second is to interconnect the CLESA modules. The third and the fourth stages involve the connections of different input and output devices to the CLESA modules. The number and type of connections to be carried out in the last two stages depend on the characteristics of the installation devices. How to carry out the different connections of the CLESA module according to each type of device is described below.

1) Connection between the CLESA module and the VisorNET device

The CLESA module and the Remote Center PC VisorNET device are connected through a flat RJ-11 cable with RJ11 connectors attached. These in turn are connected to the RS-485 VisorNET device connectors and the CLESA module CON1 connector (see **Figure 1.7**) respectively.

From the six wires of the RJ11 cable only the two central wires are used. These two wires are distributed pin-to-pin. The signals transmitted through these wires comply with the RS-485 norm, which permits it to reach distances of up to 1.5 kilometers.

Go to section 3 if your device has a single CLESA module.

2) Chained CLESA modules connection

A flat cable ending in RJ-11 pin-to-pin connectors is used to connect chained CLESA modules. The connectors must be connected to the CON2 connector of the first chain module and to the CON1 connector of the next module, respectively.

3) Input devices connection

We can connect a relay, a button or a switch (usually open or usually close, supervised or unsupervised), a voltage source, or an electric current source to the inputs. Each input has a microswitch to configure the type of input to be used. **Table 1.2** shows the possible combinations.

Relay / button /switch usually open, unsupervised

This is the simplest case. The device detects activity when a contact, that is usually open, is closed.

Relay / button / switch usually closed, unsupervised

This is similar to the previous case, but here the inactive level is a closed contact and must be activated when the contact is open.

Input type	AISL	RSER	RPAR	AISL
INPUT NOT USED	ON	ON	ON	ON
RELAY U.O.[5] Unsupervised	ON	ON	ON	ON
RELAY U.O. Supervised	ON	ON	OFF	ON
RELAY U.C.[6] Unsupervised	ON	OFF	OFF	ON
RELAY U.C. Supervised	ON	ON	OFF	ON
VOLTAGE SUPPLY	OFF	ON	OFF	OFF
POWER SUPPLY	OFF	ON	OFF	OFF

Table 1.2. Configuration of different types of inputs through SW2, …, SW7

[5] U.O. Usually Open

[6] U.C. Usually Close

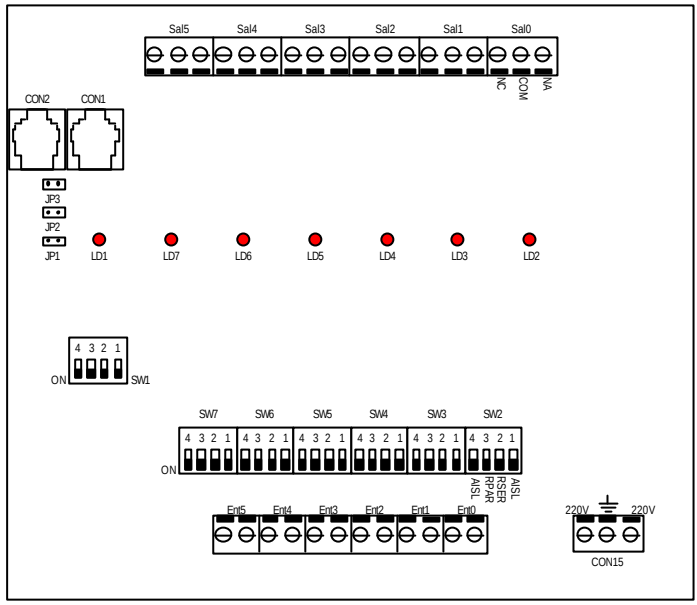


Figure 1.7. Distribution of connectors and jumpers in CLESA module

Supervised input: Sabotage detection

The supervised input is applicable in both usually open contacts and usually closed ones. It consists of sabotage detection in the external device line. This detection can be especially important in presence or alarm detection devices. A possible sabotage would be a bypass in the cable (with usually closed contacts) or a cut in it (with usually open contacts).

For line supervision, it is necessary for the external device to have serial termination resistance of 1K (for usually closed contacts) or in parallel (for usually open contacts). 1K is the recommended resistance value, although it can vary slightly without affecting the functionality.

Voltage supply

If the input is not passive, as it has been until now, an optical insulation between the external device and our circuit is recommended (this insulation is especially useful in order to avoid problems of potential differences between grounds). This is applicable for both input with power and voltage supply. When a voltage supply is connected, the device is able to detect the presence of voltages ranging from 3 to 30 V. As the device idle status is initially unknown, activation is chosen when the source (V<2V)

disappears, which will permit you to detect sabotages as well. This must not be set above 30 V to avoid device damage.

Electric current supply

There is also optical insulation in this case. The range of electrical currents detected is from 2 mA to 40 mA. The criterion to follow is the same as above.

4) Output device connection

The outputs consist of a contact (relay) that can be activated or deactivated. Each output has a connector with three contacts (Sal 0,..., Sal 5. See **Figure 1.7**). One is common, another is usually open and when activation is produced, this contact closes the common contact. The third contact is usually closed, and when the activation is carried out, it opens the contact with the common one. U.O. and common or U.C. and common are connected respectively depending on the type of device.

The LD2, ..., LD7 LEDS are switched on when the associated output is activated.

Control Block

The control block has programmable logic and a microchip. Its function consists of reading the status of all the inputs and writing the status of all the outputs. When the appropriate order is received from the remote center via the RS-485 interface, it reads the status of the inputs and transmits it. When the order from the remote control to write the outputs is received, it adds the value indicated to them. In all these exchanged messages, the device needs to check they are addressed to it. To do this, a character in the information header contains the identifying number of the device the message is addressed to or the device which it came from. This identification is vital, as one or several input/output devices can be connected to the same twisted pair.

The identification number is chosen in each device using a microswitch located on the inside.

RS-485 Interface

The interface used is the RS-485. Here several devices can be connected to the same transmission line. It is important to point out that only one of them can transmit at a time. To achieve this, the control center (PC), will poll the different devices, giving them instructions or examining them one by one. The communication will be carried out at a fixed speed of 4800 bps, N-8-2.

The CLESA module has a group of 3 *jumpers* (JP1, JP2 and JP3) and a set of switches (SW1), which are used to configure a series of boards over a single RS-485 bus.

The functions of these elements are:

JP1	*bus* termination *Jumper*
JP2, JP3	*bus* continuation *Jumpers*
SW1	configuration *Switch* for module identification in the *bus*

Table 1.3.Configuration elements of an RS-485 bus with various CLESA modules

The specific position of the *jumpers* and the switch for various practical cases are explained in the following tables (SW 1 is equivalent to ON and 0 to OFF. JP1, JP2 and JP3 ON means that the *jumper* is in position and OFF means it is not):

Module	SW1	JP1	JP2	JP3
0	1111	ON	OFF	OFF

Table 1.4. Configuration for a single CLESA module

Module	SW1	JP1	JP2	JP3
0	1111	OFF	ON	ON
1	0111	ON	OFF	OFF

Table 1.5. Configuration for two CLESA modules

Module	SW1	JP1	JP2	JP3
0	1111	OFF	ON	ON
1	0111	OFF	ON	ON
2	1011	ON	OFF	OFF

Table 1.6. Configuration for three CLESA modules

Module	SW1	JP1	JP2	JP3
0	1111	OFF	ON	ON
1	0111	OFF	ON	ON
2	1011	OFF	ON	ON
3	0011	ON	OFF	OFF

Table 1.7. Configuration for four CLESA modules

Power Supply

The CLESA module is powered by 220V from the mains.

I - 2.2.3. Output connections

The outputs are made up of a contact (relay) that is activated or deactivated. Each output has one connector with three contacts. The central one is common. One of the others is normally open and on activation being produced, closes contact with the common one. The third contact is normally closed and opens contact with the common one when activation is produced.

To connect an output	
1	Extract the plugable lead corresponding to the output that you wish to connect from the connector on the rear panel of the device.
2	Introduce the stripped cable from the device into the lead, screwing this in firmly. Select the connector identified as "NO" if the connection type is normally opened or "NC", if the selected connector is normally closed.
3	Plug the lead into the connector on the rear panel of the device.

To disconnect an output	
1	Disconnect the plugable lead from the connector located on the rear panel of the device.
2	Unscrew the lead cable and subsequently remove it.
3	Plug in the lead to the connector located on the rear panel of the device.

I - 2.2.4. Input / Output expansions

Visor*Net* 4c permits you to expand the number of inputs/outputs that are handled through the **Visor*IO*** expansion modules. Each module includes six inputs and six outputs with similar characteristics to the internal inputs/outputs of the device itself.

You can link various expansion modules together through an RS-485 bus. The first module in the link is connected to a **Visor*Net* 4c** through an RJ45 connector from the RS-485 port. The cable connecting the first module in the link with the **Visor*Net* 4c** is an RJ11-RJ11 crossed cable. Only the center two wires of the six wires available are used.

To connect the first module in the link to **Visor*Net* 4c** you connect one end of the cable to the **Visor*IO*** module CON1 connector. The other end is connected to the RJ45 connector labeled as RS-485.

You can find further information on how to connect and configure the **Visor*10*** modules link in the Dm251-I "VisorNet system reference guide".

I - 2.3. Connecting the RS-232 and RS-485 peripherals

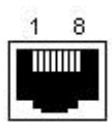
The RS-232 and RS-485 connectors permit you to connect security equipment such as mobile cameras and matrixes from other manufacturers to the **Visor*Net* 4c.**

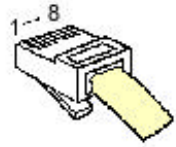
The RS-232 bus conector is a DB-9 with the following signal distribution:

DB9 MALE	RS-232
5, RACK	GND
2	RXD
3	TXD

Figure 1.8. Disposition of the signals in the RS-232 bus DB9 connector

The RS-485 bus RJ45 connector has the following signal distribution:





RJ45	RS-485
1	-
2	n.c.
3	n.c.
4	-
5	+
6	n.c.
7	n.c.
8	+

Figura 1.9. Disposition of the signals in the RS -485 bus RJ45 connector

In the manufacturer's configuration, pins 1 and 4 on one side and 5 and 8 on another, are joined through both jumpers in the interior of the device.

I - 2.4. External devices power supply

The **Visor*Net* 4c** has an output of 12 VDC and a maximum of 0.5A to power devices such as volumetric, sensors, etc., that do not have their own power source and operate at this voltage.

Figure 1.10. Rear panel connector to provide power for other devices

This connector is located on the rear panel of the device and the following steps for connection must be carried out:

To connect the device power source	
1	Extract the lead corresponding to the power connector.
2	Introduce the stripped cable from the device in the lead and screw down firmly. The polarity must be correct or this could cause irreparable damages in the device that is connected.
3	Plug the lead into the connector.

To disconnect it	
1	Disconnect the plugable lead from the connector located on the rear panel of the device.
2	Unscrew and detach the lead cable.
3	Plug the lead into the connector.

In cases of overload, there does exist a replaceable internal fuse (F1) with quick 0,5 A value. .

I - 2.5. Connecting TV cameras

Visor*Net* 4c, being a multistandard system, accepts both **NTSC** camera standards (525 lines per image, 60 images a second) and **PAL** camera standards (625 lines per image, 50 images a second), automatically detecting the signal type that is sent from the camera.

Cameras connected to the VisorNet 4c must be of one type only i.e. all PAL or all NTSC.

Figure 1.11. Female BNC connectors for camera connection

In order to connect or disconnect a camera, connect or disconnect the male BNC cable from the camera to the corresponding video input.

A row of four microswitches (SW2) located in the underside of the **Visor*Net* 4c** permits the connection or disconnection of a 75Ω termination resistor in each of the video inputs.

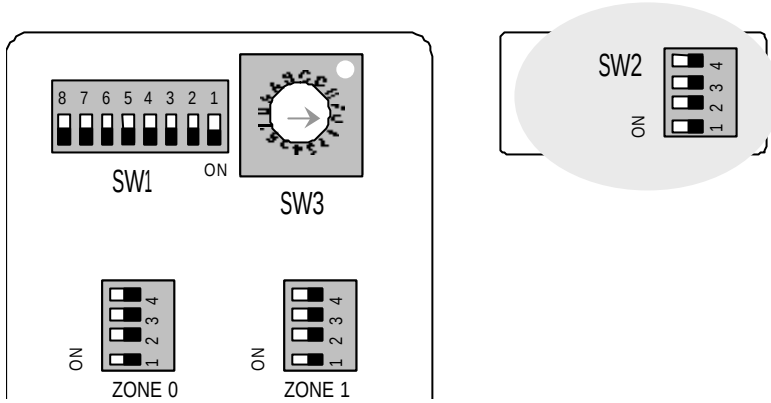


Figure 1.12. Configuration microswitches for the video input impedance

Micro.	ON	OFF
1	Video 1 input terminating in 75Ω	Video 1 input terminating in high impedance.
2	Video 2 input terminating in 75Ω	Video 2 input terminating in high impedance.
3	Video 3 input terminating in 75Ω	Video 3 input terminating in high impedance.
4	Video 4 input terminating in 75Ω	Video 4 input terminating in high impedance.

Important: The input impedance the video source should have is normalized and must be 75Ω. This is the impedance provided by the **Visor*Net* 4c** video inputs and are configured by the manufacturer.

I - 2.6. Audio Input and Output Connections

The **Visor*Net* 4c** has two stereo mini-jack connectors located at the rear in order to plug in a mono audio input and output

The input admits the connection of various types of devices:

- A normal line input.
- A passive microphone.
- A passive interphone.

The loudspeaker output is not powerful and can only be externally connected to amplifier devices.

Figure1.13. Mini-jack connectors for the microphone input (IN) and the loudspeaker output (OUT)

I - 2.7. Ethernet LAN Connection

The local network connection (LAN) is carried out through a braided pair cable terminating in the RJ45 connector.

Permits the ETHERNET 10/100 Base-T connection through a shielded or unshielded (UTP or STP) braided pair cable.

The local network connection (LAN) will be normally carried out, depending on the design, through a HUB.

Coaxial Connection

If the local network (LAN) is cabled with coaxial, the **Visor*Net* 4c** connection should be carried out through a braid pair adaptor to coaxial. This adaptation can be carried out, for example, directly through a HUB incorporating a BNC output or an AUI connector. In this case an AUI-BNC adaptor is required.

I - 2.8. ISDN Connection

In the ISDN **Visor*Net* 4c** equipment, the "**ISDN**" RJ45 connector is used to connect the ISDN basic access. This output is connected to the "S" bus (4 wires) that comes from the ISDN network terminator (NT1 or TR1).

Passive-Bus termination resistors

The **Visor*Net* 4c** has a pushbutton, located on the rear panel of the device, (identified as TERM) that permits you to connect the BUS-S termination resistors. The placement of these termination resistors is very important as this can give rise to data (or voice) errors, especially if the "S" bus line is long.

- **Single or last terminal on the ISDN "S" bus**

  The TERM pushbutton should be in the ON position, if the **Visor*Net* 4c** is the only element connected to the network terminal (NT1, TR1, etc.) or it is the last one on the ISDN "S" bus. This is the position that the device has been initially configured for by the manufacturer.

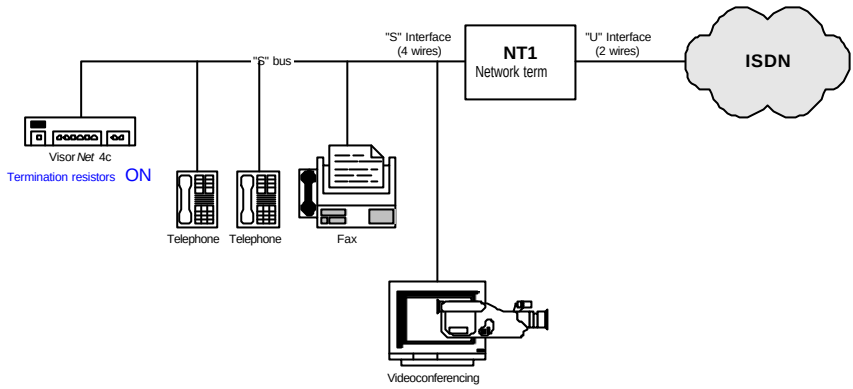


Figure 1.14. Single or last terminal

- **Intermediate position on the ISDN "S" bus**

  The TERM button must be in the OFF position, if the **Visor*Net* 4c** occupies an intermediate position on the ISDN "S" bus

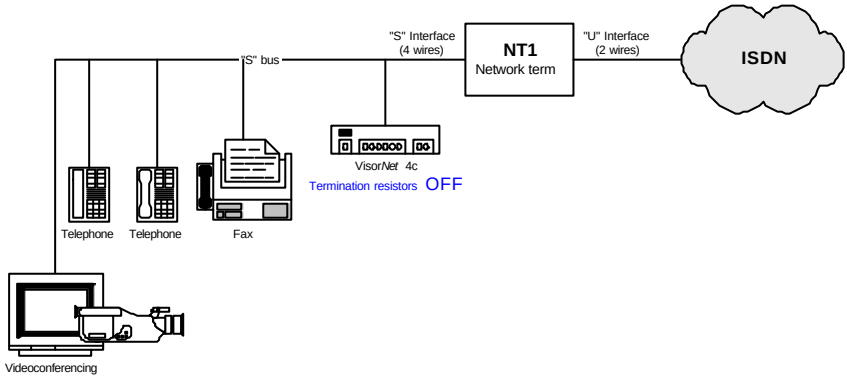


Figure 1.15. Intermediate position

I - 2.9. External MODEM connection

The **Visor*Net* 4c** has a female SCSI connector with 26 pins in order to connect to an external modem. It should be used with a specific cable (SCSI 26 pins Male-DB25 Male) provided by Teldat S.A. The following shows the correspondence between the signals at the two ends of the cable.

SCSI 26 MALE	V.24 DTE	DB25 MALE
1, RACK	GROUND	1, RACK
12	TXD	2
10	TXC	15
13	RXD	3
21	RXC	17
4	RTS	4
5	CTS	5
6	DSR	6
20	DTR	20
8	CD	8
22	RI	22
7, 26	GND	7

To connect the modem, follow the steps given below:

To connect an external modem	
	Plug the end of the SCSI cable into the connector identified as WAN DTE/DCE in the **Visor*Net* 4c**. You must make sure that the snap latches fit correctly.
	Plug the other end of the cable into the modem. If your modem has a DB9 connector, a standard DB25-DB9 adaptor may be needed.
	Connect the modem to the telephone network termination point through an RJ11-RJ11 cable.
	Plug the modem into the electricity supply mains.

I - 2.10. WAN Card SCSI connector description

VISORNET 4C V.35 WAN CARD FEMALE SCSI CONECTOR PINS				
PIN	***DTE***	***Comments***	***DCE***	***Comments***
1	GROUND		GROUND	
2	TXD	Negative polarity.	RXD	Negative polarity.
3	RXD	Negative polarity.	TXD	Negative polarity.
4	RTS	Activates at low level.	CD	Activates at low level.
5	CTS	Activates at low level.	CTS	Activates at low level.
6	DSR	Activates at low level.	DTR	Activates at low level.
7	GND		GND	
8	CD	Activates at low level.	RTS	Activates at low level.
9	--	Not connected.	--	Not connected.
10	--	Not connected.	--	Not connected.
11	--	Not connected.	--	Not connected.
12	--	Not connected.	--	Not connected.
13	--	Not connected.	--	Not connected.
14	TXD	Positive polarity.	RXD	Positive polarity.
15	TXC	Negative polarity.	TXC	Negative polarity.
16	RXD	Positive polarity.	TXD	Positive polarity.
17	RXC	Negative polarity.	RXC	Negative polarity.
18	TXC	Positive polarity.	TXC	Positive polarity.
19	RXC	Positive polarity.	RXC	Positive polarity.
20	DTR	Activates at low level.	DSR	Activates at low level.
21	--	Not connected.	--	Not connected.
22	RI	Activates at low level.	RI	Activates at low level.
23	--	Not connected.	--	Not connected.
24	--	Not connected.	--	Not connected.
25	--	Not connected.	GND	
26	--	Not connected.	--	Not connected.

VISORNET 4C V.24 WAN CARD FEMALE SCSI CONECTOR PINS				
PIN	***DTE***	***Comments***	***DCE***	***Comments***
1	GROUND		GROUND	
2	--	Not connected.	--	Not connected.
3	--	Not connected.	--	Not connected.
4	RTS	Activates at low level.	CD	Activates at low level.
5	CTS	Activates at low level.	CTS	Activates at low level.
6	DSR	Activates at low level.	DTR	Activates at low level.
7	GND		GND	
8	CD	Activates at low level.	RTS	Activates at low level.
9	--	Not connected.	--	Not connected.
10	TXC		TXC	
11	--	Not connected.	--	Not connected.
12	TXD		RXD	
13	RXD		TXD	
14	--	Not connected.	--	Not connected.
15	--	Not connected.	--	Not connected.
16	--	Not connected.	--	Not connected.
17	--	Not connected.	--	Not connected.
18	--	Not connected.	--	Not connected.
19	--	Not connected.	--	Not connected.
20	DTR	Activates at low level.	DSR	Activates at low level.
21	RXC		RXC	
22	RI	Activates at low level.	RI	Activates at low level.
23	--	Not connected.	--	Not connected.
24	--	Not connected.	--	Not connected.
25	--	Not connected.	GND	
26	GND		GND	

I - 3. Significance of the LEDs

Figure 1.16. Front Panel

ON	Device on switch. This lights up when connected to the power source.
S	Device Operation: **OFF:** System stopped. **RED**: ERROR: Incorrect operation of some component. **YELLOW**: Invalid configuration. **GREEN**: System initialized and operating.
LAN	Ethernet LAN Port: **OFF:** Interface is not available. **RED**: ERROR: Interface is unavailable due to not being enabled or failing test. **YELLOW**: In process of initializing the interface. **GREEN**: Interface available. Blinking: maintenance frame.
WAN	**WAN expansion** Serial interface (FR, PPP, SDLC) **OFF:** Port has not initialized. **RED**: Depends on the type of serial interface: ERROR: Errors at a physical level or call in progress. **YELLOW** Depends on the type of interface: interfaz in initialization process or link established, without sending data. **GREEN**: Communication established. **Expansion RDSI**: ISDN interface Channel B1: **OFF:** Physical level is not available, either due to ISDN switchboard cost savings or because the cable is not connected to the device. **RED**: ERROR: Errors in the line (physical level) or call in progress. **YELLOW**: Physical level established. **GREEN**: Call established through Channel **B1** (network B1 channel). Intermittent green off: Switch channel. Intermittent green yellow: Permanent channel.
Alarm	Security Alarms: **OFF:** There are no alarms pending transmission to the center. **RED**: ERROR: An error has occurred when trying to send an alarm to the center. **YELLOW**: In process of establishing communication with the center in order to transmit an alarm. **GREEN**: Transmitting an alarm to the center.
Cameras 1, 2, 3 and 4	Video inputs: **OFF:** Video input is inactive. **RED**: ERROR: Input is inactive but without camera signal or with a defective signal. **YELLOW**: In initializing process. **GREEN**: Input is active with video signal detected.

I - 4. Positioning the key

You insert the key in the key slot on the front panel of the **VisorNet 4c**. The key has four different positions. These positions are used to deactivate the device or to choose between the "Day", "Night" or "Automatic" mode programming. The position selected coincides with the key "teeth".

Figure 1.17. Key details on the device front panel

The four key positions permit the following:

- Off position. This position inhibits device programming i.e. this ignores activation in any of the zones.
- Day position. Activates the "Day" program, independently of the schedule.
- Night position. Activates the "Night" program independently of the schedule
- Auto position. The device automatically selects the "Day" program or the "Night" depending on the time and the scheduled time programmed. (Please for more information see Dm246-I VisorNet User Manual).

I - 5. Microswitch Programming

On the underside of the device there are two covers held in place with screws and conceal a total of nine microswitch configuration wires of the device. In **Figure 1.18** you can see the position of the microswitches. The group of six wires on the underside configure the inputs as can been seen in section I-2.2.1 "Input connections". The SW2 microswitch wires configure the video input impedance as can also be seen in section I-2.5 "Connecting TV cameras".

The SW1 wire microswitches have test and loading software functions etc. that should not normally be handled by the user except in cases where the user has to start the process in order to ignore the device configuration.

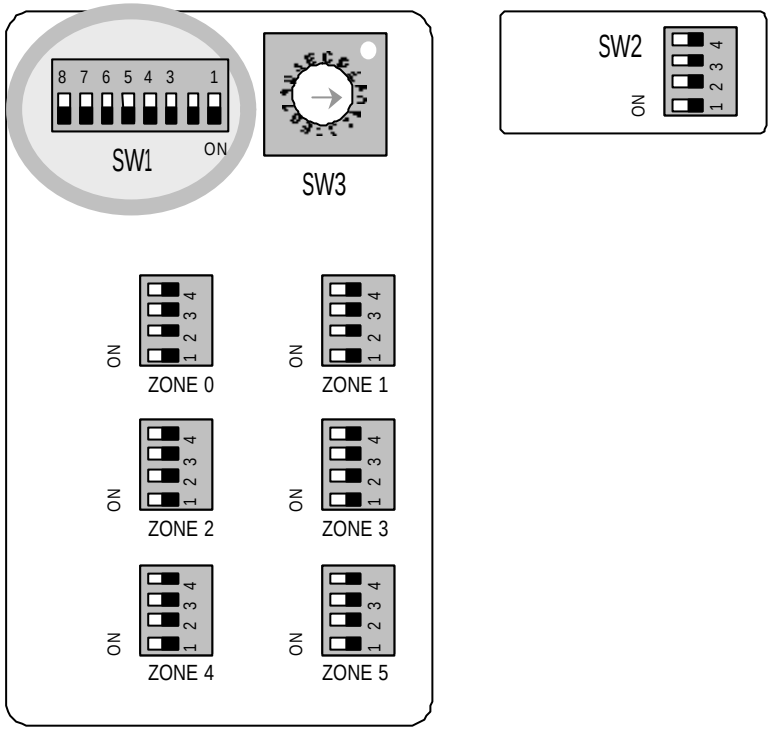


Figure 1.18. Configuration microswitches located on the underside of the device itself

Micro.	ON (down)	OFF (up)
1	Activates the device test	Deactivates the device test
2	Reserved	Reserved
3	Activates loading through the console	Deactivates loading through the console
4	Reserved	Reserved
5	Activates the start up program *prompt* and ignores the application configuration (the applications uses a manufacturer's configuration by default).	Deactivates the start up program *prompt*. The application uses the configuration previously stored in the disk or in flash by the administrator.
6	Reserved	Reserved
7	Reserved	Reserved
8	Ignores the EEPROM configuration	Does not ignore the EEPROM configuration

Position and use of the SW1 microswitches

For correct device operation, the microswitches need to be in the following position:

Micro.	State
1	OFF
2	OFF
3	OFF
4	OFF
5	OFF
6	OFF
7	OFF
8	OFF

For the correct operation, all the SW! Microswitches must be in the OFF position.

I - 5.1. Procedure to ignore the configuration

This procedure is applied if you have to discard the entire device configuration e.g. in situations where the user does not remember the device password. This procedure is based on acting over the SW1 microswitch number 5.

Figure 1.19. Activating microswitch number 5

The procedure in order to ignore the configuration is as follows:

To ignore the configuration	
1	Switch off the device.
2	Using a screwdriver, put microswitch number five in the ON position.
3	Switch on the device. The device will then discard the existing configuration and stores the manufacturer's configuration.
4	Switch off the device again.
5	Using a screwdriver, return microswitch number 5 to the OFF position.
6	Switch on the device and proceed to reconfigure the device again following the steps given in the User manual Dm246-I.

I - 5.2. Device stacking

The SW3 rotary switch is used to configure the device in installations where one **Visor*Net* 4c** takes over the role of master with a group of up to 3 **Visor*Net* 4c** act as slaves (Slaves 1, 2 or 3). In the User manual (Dm246-I) you will find detailed explanations on the implications that this configuration has over the operation of the devices.

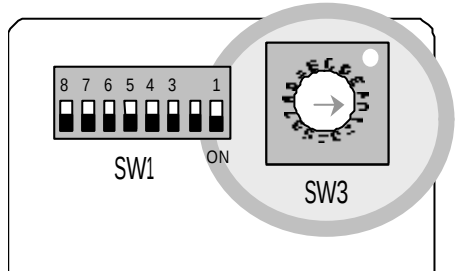


Figure 1.20. Master/slaves configuration rotary switch located on the underside of the device

The device leaves the factory configured as master with the rotary switch set on "**0**".

In order to configure a device as slave, carry out the following steps:

To configure the device as slave	
1	Switch off the device.
2	Using a screwdriver set microswitch number 5 in the ON position and select the slave number you wish in the rotary switch. The permitted values are 1, 2 and 3.
3	Switch on the device. Your device will then discard the existing configuration and stores the manufacturer's configuration for a slave device.
4	Switch off the device once more.
5	Using a screwdriver, set microswitch number five in the OFF position again.
6	Switch on the device. Proceed to configure the device again following the steps given in the next chapter for slave devices.

II - Chapter. Appendix

II - 1. Software Updating

II - 1.1. Updating throught FTP

The Teldat devices have an internal FTP server that permits loading BIOS code and application versions, as well as loading /unloading configuration files.

The FTP server is able to distinguish if a file that is loading is from BIOS, application or from another. Therefore, the server functionality is completely transparent.

By default, the FTP server is located in port 21; through the configuration, you can change the FTP port server. You must check to make sure you are accessing the correct port, if not you will not be able to receive an answer from the server.

In order to carry out a code transfer (assuming the server port has not been modified):

- Introduce the login and the password
  - If the password has not been configured, press "intro".
  - If you have the console password configured, introduce the same password in order to access the FTP server.
- Pass to binary mode through the "`binary`" command.
- Carry out the transfer through the "`put`" command.
- If there are slave devices available and a subsequent download is going to be carried out for them, you need to execute the following command "`quote site compatible off`"
- Permanently save the loaded file with "`quote site savebuffer`" command.
- If you have slave devices connected to the master and you wish to carry out the downloading for them, execute the command "`quote site saveslaves`"
- If you want the device to automatically restart and begin executing the new code, you can send the "`quote site reload on`" command;

on leaving the FTP session, the device will restart after approximately 30 seconds.

```
C:\> ftp 172.24.78.60
Connected to 172.24.78.60.
220 FTP server ready, 1 active clients of 1 simultaneous
clients allowed.
User (172.24.78.60:(none)): root
331 User name accepted, need password.
Password:
230 User login complete.
ftp> binary
200 TYPE is set to IMAGE.
ftp> hash
Hash mark printing On (2048 bytes/hash mark).
ftp> put vn860.bin
200 PORT is set to IP ADDR = 172.24.51.52  PORT = 1172
150 Data connection open, file transfer in process...
############################################################
############################################################
############################
226 STOR completed, 1078668 bytes processed, data
connection is closed.
1078668 bytes sent in 1,67 seconds (645,14 Kbytes/sec)
ftp> quote site savebuffer
200 SAVEBUFFER completed O.K.
ftp> quote site reload on
200 RELOAD mode is set to ON.
ftp> quit
221 Goodbye.
C:\>
```

II - 1.2. Updating throught Xmodem

This code updating mode is for those cases where you do not have an IP connection available with the device or in emergency cases.

To carry out updating:

- Set the microswitch 3 in the ON position and switch on the device. By default, the transfer speed is 115200 bps; if you wish to change the said speed you must access the device console and set a new speed.
- Wait until the B2 ISDN LED is green and the S LED is slowly flashing in yellow: the device is waiting to load the code.
- Through a program with Xmodem operation, you carry out loading from an application file; you will notice that the S LED is flashing rapidly, indicating the transfer process. If the S LED passes to red, the transfer has failed; repeat the process slowing down the speed.

- Once the transfer has successfully completed, you will see that the B1 ISDN LED activates in green and the S LED continues flashing in yellow, indicating that the recording process is in progress: if the S LED passes to red the recording process has failed; if this passes to green the recording process has finalized satisfactorily.
- Once the code has been successfully loaded, deactivate the microswitch 3 so the device will not pass to the wait mode once more to unload the code through the Xmodem.

By default, the application loaded through the Xmodem is saved with the name "VN860.BIN"; you can modify the name, following the instruction that appears on the console when carrying out a load.

Loading through the console can also be carried out by accessing the BIOS menus; in order to access the said menus you must press CTRL.-T when a series of dots appear after the ">>" symbols.

```
=========================================================
     ROUTER TELDAT VISORNET  4C
(c)Teldat
=========================================================
BIOS CODE VERSION: 01.01.12
CPU: MPC860   CLK=65536 KHz   BUSCLK=32768 KHz
Date: 06/06/02, Thursday        Time: 15:43:21

SDRAM size: 32 Megabytes
   BANK 0: 16 Megabytes (detected)
   BANK 1: 16 Megabytes (detected)
Caches: ON    Write-Back
FLASH: 4 Mb.
NVRAM: 512 Kb.
EEPROM: 2048 Bytes.
UART RS232
UART RS485
FAST ETHERNET
JPEG CODEC
EXP2: VCP CARD
Current production date: 00 39
Current software license: 41 0
Current serial number: 370/00151

Xmodem whith chk transfer. Default baud rate: 115200
```

```
Press any key to change the baud rate
.........

Set baud rate to 115200 and send the file with Xmodem
with chk protocol.
When the transfer finish, reset baud rate to 9600.
```

Example of the change in the transfer speed

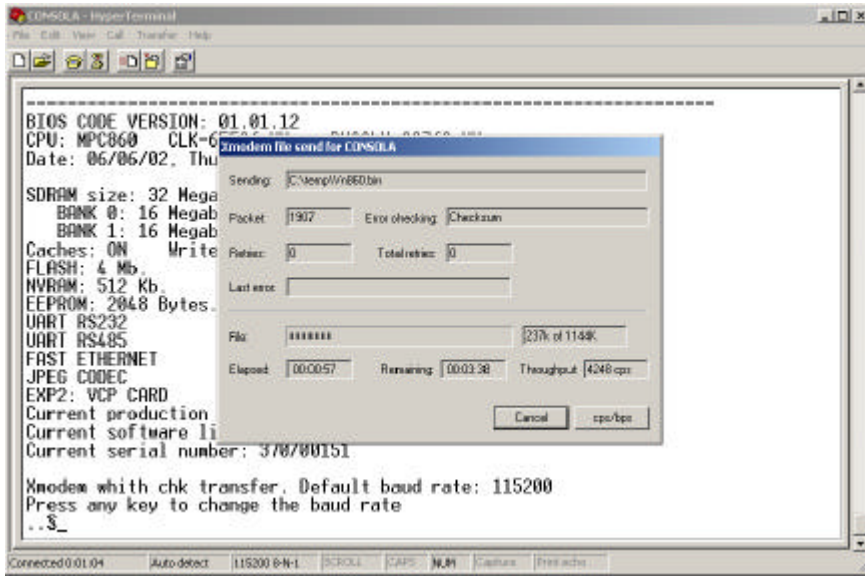


Figure 2.1: Loading code by XModem through Hyperterminal

II - 1.3. Updating in master-slave environments

For master-slave environments, you must teleload the master device through one of the previously described procedures. Once the master device has been teleloaded you can proceed as described below:

When a master device has slave devices, a new button entitled UPLOAD appears on the lower button bar. You can perform *BIOS software* and slave devices' application updating to the version possessed by the master device.

The configuration parameters described in the following paragraphs are the specific to each device. To access these parameter configuration forms, you need to previously select the device you wish by clicking on the icon representing the said device.

Figure 2.2. Aspect of the button bar where there is device stacking

On pressing the UPLOAD button, a "Scanning the equipments...", message will appear in the header field. This indicates that the master device is locating its slave devices in order to initiate the updating process. Once the search has been completed, the following message appears "Equipments to be uploaded" together with a form as shown in the following figure:

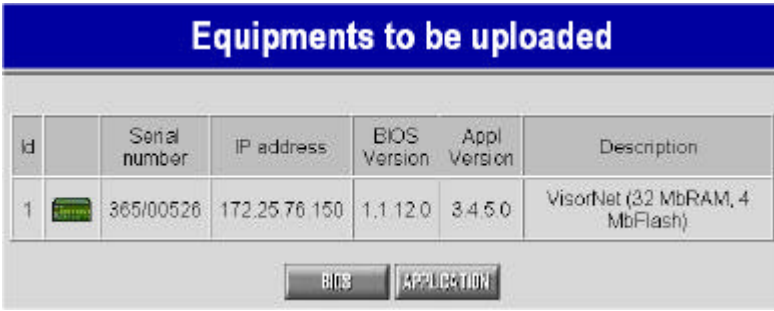


Figure 2.3. Software version updating formula

To update the *BIOS*, press the BIOS button. The message in the header field changes to "Uploading the BIOS..." indicating that the updating process is executing. Once this has ended, the aspect of the form changes. A list of the correctly updated devices appears (in green) together with those devices which could not be adequately processed.

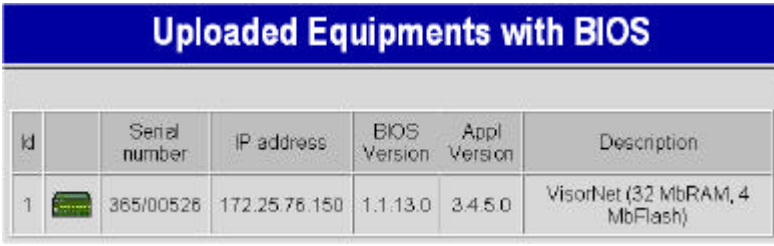


Figure 2.4. List of updated devices

After a few seconds, the updated devices will re-start in order to activate the new code version.

If you wish to update the application software, press the APPLICATION button (see figure 1.20). The process is identical to the BIOS procedure. The header field changes to "Uploading the APPLICATION..." indicating that the process is executing. This will change to "Uploaded equipments with Application" once the process has completed. In this case another screen will also appear summarizing the results of the uploading, displaying the devices which have correctly updated in green and those that have not in red.

Similarly, after a few seconds the updated devices will re-start in order to active the new application software version.

Important: Do not manually re-start the device during the interval between the uploading and the automatic device re-start. This may leave the device inoperable.

The configuration parameters described in the following paragraphs are the specific to each device. To access these parameter configuration forms, you need to previously select the device you wish by clicking on the icon representing the said device.

II - 2. Technical Specifications

Hardware Architecture

PROCESSORS	Motorola MPC 860T - 32 bits with CPM at 66 MHz.
MEMORY	32 Mbytes RAM, 512 Kbytes RAM non volatile
STORAGE UNIT	FLASH memory (4 Mbytes). Eeprom memory: 2 Kbytes.

Vídeo

Nº OF INPUTS	4, through BNC connectors, $1V_{pp}$ / 75 Ω
TYPE	NTSC (RS-170) or PAL (B and G) synchronous or non synchronous
DIGITALIZATION FORMATE	Maximum resolution of 320x240 *pixels* (NTSC) and 352x288 *pixels* (PAL)
MAXIMUM DIGITALIZATION RATE WITH ONE ACTIVE INPUT	25 images per second
AGGREGATED DIGITALIZATION RATE WITH FOUR ACTIVE INPUTS	12.5 images per second
COMPRESSION	JPEG ISO 1092-2 ITU H.263 optional MPEG4 SP ISO/IEC 14496-2

Inputs and outputs

Nº OF INPUTS	6, through a lead with screwed down contacts
TYPE	Normally open (NO), Not supervised Normally closed (NC), Not supervised Normally open (NA), Supervised Normally closed (NC), Supervised Voltage source Power source
CONFIGURATION OF INPUT TYPE	Through microswitches
DEVICE LOAD RESISTANCE FOR SABOTAGE DETECTION IN SUPERVISED INPUTS	Approximately 1 K Ω in series for inputs normally closed and 1 K Ω in parallel for inputs normally open
MINIMUM VOLTAGE DETECTABLE IN VOLTAGE SOURCE INPUTS	3 V
MAXIMUM VOLTAGE APPLICABLE IN VOLTAGE SOURCE INPUTS	30 V
MINIMUM POWER DETECTABLE IN POWER SOURCE INPUTS	2 mA
MINIMUM POWER APPLICABLE IN POWER SOURCE INPUTS	40 mA
Nº OF OUTPUTS	2, through plugable lead with screwed down contacts
TYPE	Normally open (NO) or closed (NC)
VOLTAGE AND POWER LIMITS	0.35 A 30 VDC 0.25 A, 42 VAC

LAN PORT

CONNECTOR	STP/UTP (RJ45).
SPEED RATE	10/100 Mbps (10/100 baseT).
PROTOCOLS	Ethernet (802.3), LLC (802.2), ARP.

WAN Port[7]

CONNECTOR	SCSI Male 26 pins
INTERFACES	V.24/V.28 (RS232-C) DCE/DTE. V.35 DCE/DTE. X.21 DCE/DTE.
SPEED RATE	Up to 2 Mbps.
PROTOCOLS	FRAME RELAY, PPP, SDLC, etc.

[7] This depends on the equipment.

ISDN Port[7]

ACCESS	Basic 2B+D.
CHANNEL	Configurable use for B and D channels software and their combination.
SPEED RATE	16 Kbps (Channel D), 64 Kbps (Channel B).
CONNECTOR	RJ45.

RS-485 Port

MAXIMUM REACH	1200 meters
SPEED RATE	300 bps a 115 kbps configurable
DATA FORM	Asynchronous, 6, 7 or 8 data bits, with or without parity, 1 or 2 stop bits.
CONNECTOR	RJ45

RS-232 Port

MAXIMUM REACH	15 meters
SPEED RATE	300 bps to 115 kbps configurable
DATA FORM	Asynchronous, 6, 7 or 8 data bits, with or without parity, 1 or 2 stop bits.
CONNECTOR	Standard DB9

Audio[7]

INPUT	1 mono mini-jack for microphone connection
OUTPUT	1 mono mini-jack connector mini-jack for loud-speaker connection
DATA FORM	G.723.1 – G.729A

Configuration

LOCAL TERMINAL	V.24 9.600 bps 8,n,1 (In the internal RJ45 connector).
WEB	Embedded WEB application accessible from a local or remote browser. Compatible with Microsoft Internet Explorer 4.0 or higher.

Power Supply

INPUT VOLTAGE	110-220 V AC. or 48 V DC with “on/off” switch Input frequency: 50 – 60Hz
INPUT CURRENT (220 VAC)	0.5 A Max
PLUG FOR PERIPHERAL POWER	12 VDC, 500 mA
INTERNAL FUSE	F1: quick acting 500 mA

Mechanical characteristics

KEY	Four positions, located on the front panel of the device.
BOX	Desktop with option rack assembly.
LENGTH x WIDTH x HEIGHT	305 x 415 x 44 mm.
WEIGHT	3,5 kg

Environmental Specifications

TEMPERATURE	ON: 5º to 45ºC.	OFF: -20º to 60ºC.
RELATIVE HUMIDITY	ON: 8% to 80%.	OFF: 5% to 90%.