User's Manual

T I N T O R E T T O
U S B / U S B +

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http://www.digicom.it

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PREFACE

ENVIROMENTAL CONDITIONS

ENVIRONMENTAL TEMPERATURE	RELATIVE HUMIDITY
from 0 to + 45°C	from 5 to 92% n.c..

Rapid changes of temperature or humidity should be avoided (0,03°C/min).
This equipment, including cables, should be installed in an area free from:

- Dust, humidity, heat from direct sun light.
- Objects which irradiate heat. These could cause damage to the container or other problems.
- Objects which produce a strong electtromagnetic field (loudspeakers, etc.)
- Liquids or chemical corrosive substances.

GENERAL WARNINGS for all equipment powered directly from mains power

POWER SUPPLY	207-253 Volt single phase 50 Hz
ISOLATION CLASSIFICATION	only those indicated on the equipment label
NOMINAL CURRENTS	only those indicated on the equipment label

To avoid electric shock, the equipment should never be opened. Ask qualified personnel help.

Disconnect the power cable from the wall outlet when the equipment is not to be used for a long period. To disconnect the cable pull it by the plug, never pull it by the cable itself.

If there should be liquid or object penetration in the equipment, disconnect the power cable and call a qualified personl for testing.

CLEANING THE TERMINAL
Use a clean and soft cloth. Wet the cloth with water or natural detergent if it is necessary to remove any stains.
Never use chemical products such as petrol or solvents.

VIBRATIONS OR DROPPING
Caution against vibrations and dropping

WARNING

This is a class A product.

In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

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1.   GENERALITY

This operating manual descibes the installation procedures and the main features of the **Tintoretto USB** ISDN modem family.

Commands and registers are usually common for all the models, in case of specific defferences a write note is present.

1.1.   ISDN

ISDN is the acronym of Integrated Services Digital Network, it's the evolution of the swtiched analog network even called Plain Old Telephone sistem (POTs).

ISDN can deliver fast, reliable, switched digital communications to the user. A practically error free up to 128Kbps throughput and a minimal call connect time make ISDN the medium of choice for data communications.

The ISDN devices available in the market are: phone, fax, videotelephony, and terminal adaptor. The Terminal Adaptor (aslo called ISDN modem) is the equivalent of the analog modem, instead of make a modemodulation process, an ISDN Terminal Adaptor makes a digital codification and adaptation.

1.2.   PRODUCT DESCRIPTION

Tintoretto USB has been designed to operate easily and immediately with existing applications by providing modem like control and interface facilities while still allowing all of the additional benefits of ISDN to be utilised.

Tintoretto USB provides an affordable solution for high speed digital data transfer, Internet access, telecommuting and remote access applications.

It is a high performance communications product for compatibility, performance, functionality and ease of use: just connect it to the USB port of your PC or Macintosh and install the appropriate driver.

Versions available:

Tintoretto USB   Active ISDN modem up to 64/128Kbps (for Windows any version)

Tintoretto USB MAC Active ISDN modem up to 64/128Kbps (for Macindosh OS8.X)

Tintoretto USB +   Active ISDN modem up to 64/128Kbps with1 AB port

Note for Tintoretto USB+

Any analog device (as phone, answering machine, fax) can be connected to the AB port of Tintoretto +.

Do not connect in serie or parallel more than 1 device to the AB port.

Please take note that the AB port does not work when the Computer is powered Off.

Tintoretto is able to make ISDN connections using a single B channel (64Kbps) or the two B channel simultaneusly (128Kbps). In this case the cost of the connection is usually double than the single channel application.

Tintoretto provides, for Internet or intranet access, PPP and MLPPP protocol with an internal high performaces syncronous conversion.

2. INSTALLATION

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2.1. HARDWARE INSTALLATION

See the following picture to connect your modem to the USB port of your PC (or Macintosh®) and the ISDN cable to the ISDN line.

The power is supply by the USB port, no external power supply needed.

For the next step see the section Software Installation.

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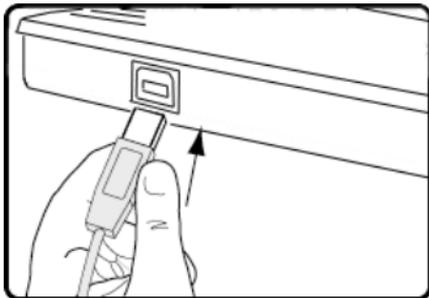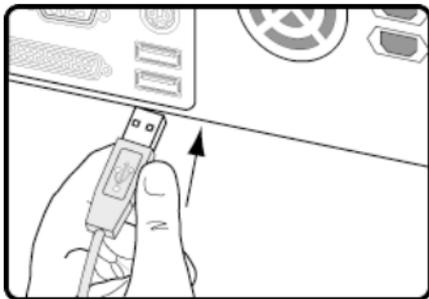
2.2.   **WINDOWS® 98 SOFTWARE INSTALLATION**

Before starting with the software installation, please read the file Readme.txt on the Floppy Disk or the CD ROM included with the product package.
This file contains the complete installation procedure and more details about the different versions of Windows® 98.
The following sections describe the standard installation of the software driver for your modem using Windows® 98.

1. After the hardware installation, Windows® 98 detects automatically the presence of the new USB hardware.

2. Click **Next**.

3. Select **Search for the best driver** for your device and click **Next**.

4. Select Floppy disk drivers.

Note: in case the floppy disk is not available, select Specify a location click Browse and look for the directory Driver/USB/Win98/Tintoretto USB in the CD-ROM included in the package.

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5. Click **Next**.

6. Click **Finish**.

7. Click **Next**.

8. Select **Display a list of all the......**

9. Click **Next**.

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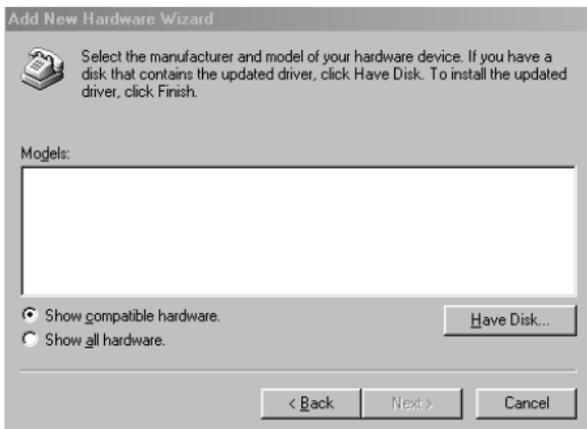
10. Select **Show compatible hardware**.

11. Select the driver.
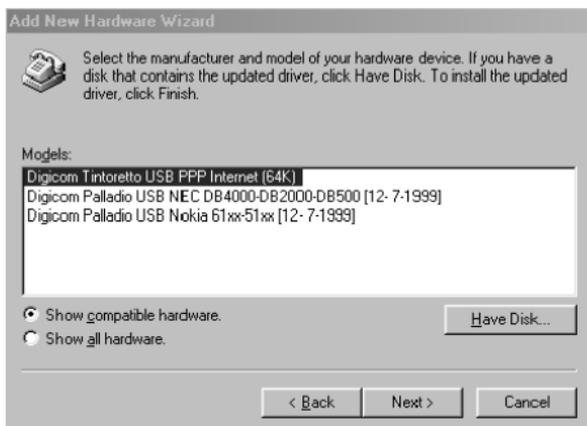
The basic configuration - **Tintoretto USB PPP Internet (64K)** - is to be used for the 64 Kbps Internet connection. (suggested).

Other drivers are available for the following applications:
- **Tintoretto USB MLPPP Internet (128-64K)** - for the 128 Kbps Internet connection. This driver is to be used only if your Internet account is enabled for 128 Kbps connection.

Check your Internet account before installing this driver.
- **Tintoretto USB V.120** for point to point connections of ISDN modems at 64 Kbps. Use this driver for the direct connection of two ISDN modems only.

12. Select the driver and click **Next**.

13. Select **Next**.

14. Select **Next**.

15. Click **Finish** to complete the installation.

16. You can check the installation of your Tintoretto USB from the **Control Panel icon Modem**.
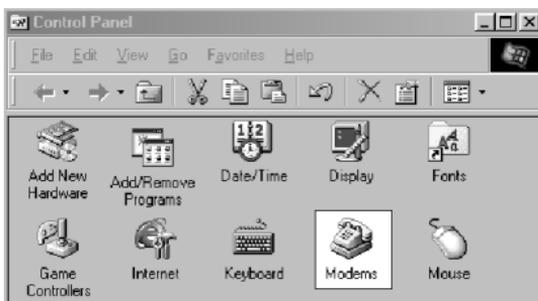
17. Select
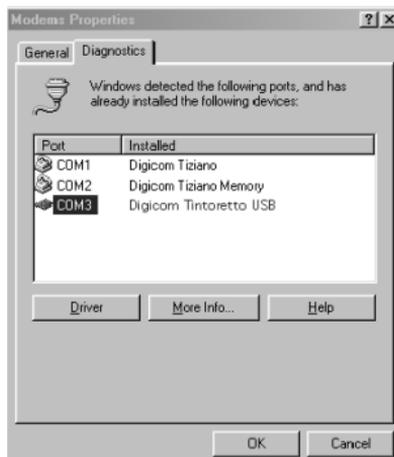
the label Diagnostic and click More Info.

```
More Info...
─ Port Information ──────────────────────────
  Port:           COM3
  Interrupt:      0
  Address:        3E8
  UART:           NS 16550AN
  Highest Speed : 115K Baud

─ Digicom Tintoretto USB ────────────────────
  Identifier:   USB\CONEXANT_ACF_USB_GSM

  Command | Response
  ATI1    | Prodotto: Tintoretto USB Digicom S.p.A.
  ATI2    | Checksum:   3740
  ATI3    | Prodotto:   Palladio Digicom S.p.A.
  ATI4    | Rel:      V1.415-D1.7   30/11/99
  ATI5    | Gsm Driver:  Ericsson 688/788/T18s
  ATI6    | OK
  ATI7    | Sw ver:     V1.415-GSM_MULTI
  AT+FCLA...| 0,1,2

                      ┌──────────┐
                      │    OK    │
                      └──────────┘
```

Note: The response to the command ATI5 could be different from the example

18. Close the Control Panel: you are ready to use your Tintoretto USB.

2.2.1. HOW REMOVE TINTORETTO USB SOFTWARE

1. From the Start Menu select **Setting Control Panel**,
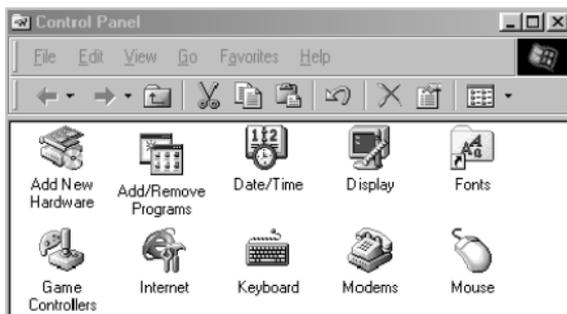
2. Select **Digicom Tintoretto USB** select **Add/Remove**.

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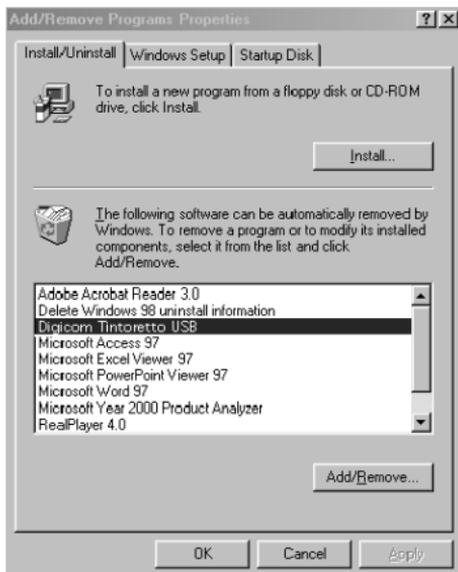
3. Clic **OK** to confirm.
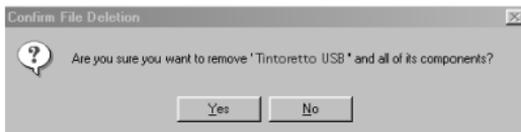
4. Click **Yes** to finish the removal.

2.3.   DRIVER INSTALLATION IN OS8.X (MACINTOSH®)

The following procedure describes the typical steps for the driver installation under OS8.X:

- Connect your Tintoretto USB to the USB port of your Macintosh®
- The LED Ready will light on and the monitor displays:

> The software needed to use the USB device
> "Tintoretto USB   " cannot be found. Please
> refer to the device documentation to install the
> necessary software.
>
> OK
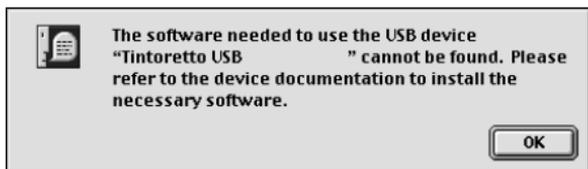
1. Click **OK**
2. Unplug the modem from the USB port
3. Click on the CD icon
4. Select the directory **USB driver**
5. Open the **"DRIVER","USB","Installer"** folder

> **Installers**
> 2 items, 4 GB available
>
> Installa Modem Digicom
>
> Digicom Modem Installer

At this step, the Installer load automatically the appropriate driver for the Digicom USB device.

6. Select your modem related folder, Run the Installer and follow the given instructions
7. Reconnect the modem to the USB port

The LED Ready will light on again. No error messages must appear.

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Your Tintoretto USB is now correctly installed.

8. At this step in the Modem pannel is present the section Tintoretto USB in the choice **Connect via**:
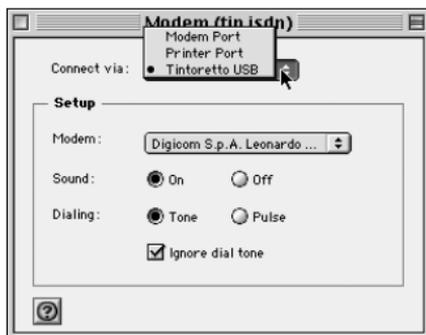
9. From the **Setup menu** select the appropriate driver specific for your application (example: Digicom Tintoretto USB PPP).
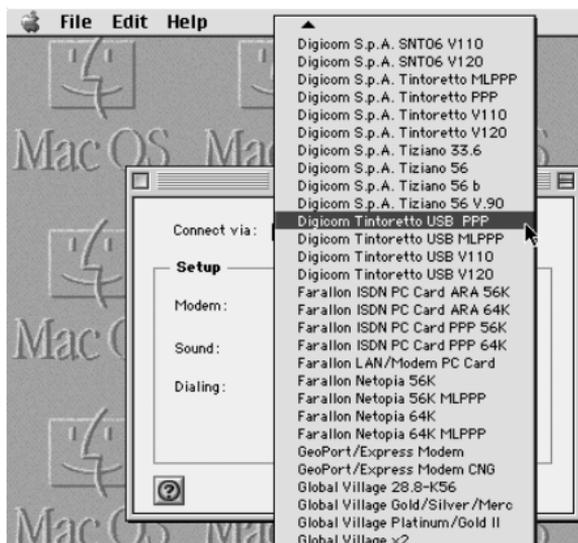
2.4.   TECHNICAL FEATURES

- Enchanced AT commands set
- Autobaud up to 230400 bit/s.
- Support V.110 , V.120 adaptive protocol
- 64Kbps PPP and 128Kbps MLPPP for Internet or Intranet Remote Access
- Data compression V.42bis
- Up to 4 factory configuration
- Up to 4 user configuration
- Internal phone book with 4 numbers
- Local and remote loopback facilities
- Auxiliary ISDN services supported

Data Port Interface
Type:	USB
Connector:	compliance with the USB specification revision 1.0

ISDN Interface (S/T)
Type:	2B+D Basic Rate Interface compliance EURO ISDN
Connector:	RJ45

Analog Interface
Type:	A/B
Connector:	RJ11

Enviromental Condition
Operating Temperature:	0 to + 45°C
Storage Temperature:	-20C° to +80C°
Umidity:	5 to 92% n.c.

2.4.1. AUTOBAUD

The device is able to detect automatically speed and data format up to 230400 bit/s.
The data format accepted are:

START	DATA	PARITY	STOP	TOT
1	7	1	1	10
1	8	0	1	10

The device accepts even, odd, mark, or space parity.

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2.4.2. V.110 & V.120 RATE ADAPTION

Dual standards ensure compatibility rate adaption across a wide range of products. These ITU standards only allow a port speed of 19.200 bps so the Tintoretto USB has enhanced operation to allow speeds of up to 230.400 bps for asynchronous data.

2.4.3. PPP & MLPPP FOR INTERNET AND INTRANET

Internet/Intranet access with a standard Computer is supported through the PPP ASYNC to SYNC conversion. Aggregation of the two B channels is provided allowing the full 128Kbps to be utilised (MLPPP).

Ask to your ISP for the MLPPP availability.

2.4.4. DATA COMPRESSION V.42BIS

Tintoretto USB, in asyncronous mode V.120, supports the V.42bis data compression for the maximum performances also using a single B channel.

2.4.5. FACTORY CONFIGURATION

Four different and more common factory configurations are pre loaded in the Tintoretto USB. The selection of the appropriate configuration is through AT command.

2.4.6. DIAGNOSTIC

The Tintoretto USB has an self diagnostic feature at the power on and offers an easy on line diagnostic set through AT commands.

2.4.7. INTERNATIONAL STANDARDS

Tintoretto USB is full compliance with the following International standards.

ISDN

ETS 300 012 / I430	level 1
ETS 300 125 / Q920 - Q921	level 2
ETS 300 102 / Q930 - Q931	level 3

SAFETY

EN 41003
EN 60950
ETS 300 047-1
ETS 300 047-2
ETS 300 047-3

EMC

EN 50082-1
EN 55022

2.4.8. MECHANICAL DIMENSION

Width:	190mm (7,48")
Height:	44mm (1,73")
Depth:	150mm (5,9")
Weight:	500gr

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3. DESCRIPTION

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3.1. FRONT PANEL

On the front panel are present LED that indicate the most important interface circuit in use.
In the following table, is present the complete description and function of each LED:

NAME	STATUS	FUNCTION
RDY (Ready)	**On**	Tintoretto is powered ON and the USB port is enable.
CD (Carrier Detector)	**On**	Tintoretto is on line with a remote modem.
DATA	**Flash**	Trasmit or receive data in progress
B1 - B1	**On**	B1 or B2 channel in use
	Off	B1 or B2 channel inactive

```
TINTORETTO USB                          ISDN MODEM

RDY   CD   DATA   B1   B2
 ○     ○     ○     ○     ○               ◗ digicom
```
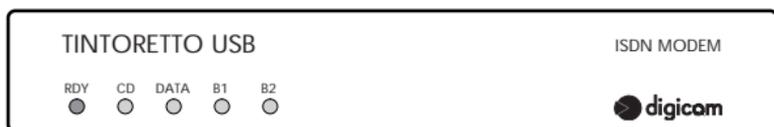
Fig.3.1. Tintoretto USB front view

3.2. REAR PANEL

On the rear panel are present, the USB interface connector and the RJ45 ISDN network connectors. Only for Tintoretto USB+ is present the RJ11 for the AB port.

```
                 USB              A/B1   A/B2   LINE

                [■]              [ ]    [ ]    [▦]
```

Fig.3.2. Tintoretto USB Rear Panel

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3.1

3.3. AT COMMAND SET

The modem support AT commands set to define the configuration, initiate or terminate modem communication, test the modem and the communication link. The modem will work in two basic operations: command mode and data mode.

Command mode is when the modem is not connected to another modem, therefore "Off Line" or in a idle condition. In this mode the modem will accept commands beginning with AT prefix.

Data mode is when the modem is connected to another modem, that is an "On Line" condition or functioning. In this mode all the characters sent from computer are interpreted as data and they are sent to the remote modem. You may switch from data to command mode by entering an escape sequence. The default escape sequence is +++ this must have at least one second before and after being keyed. To go back into data mode simply type ATO.

Data Length
Each caracter of the AT command must be an ASCII code with any of the following format combinations:

START	DATA	PARITY	STOP	TOT
1	7	1	1	10
1	8	0	1	10
1	7	0	2	10
1	8	1	1	11

The modem will accept even, odd, mark, or space.

3.3.1. AT COMMAND SET DESCRIPTION

AT   Attention

All the characters following the letters 'AT' are commands. In AT command mode Tintoretto USB automatically detects the Computer speed and parity format. The Tintoretto USB will response using the same speed and parity format of AT command.

Store: n/a   **Default= n/a**

A/   Repeat last command

Cause Tintoretto USB to repeat the last AT command. This command is neither preceded by AT nor followed by CR

Store: n/a   **Default= n/a**

A   Answer incoming data call

Cause Tintoretto USB to go off hook and attempt a handshake in answer mode

Store: n/a   **Default= n/a**

D   Dial

Instruct to go off-hook and execute the phone number.

D 0-9   Dial the dial string.

DS=0-7   Dial the dial string associated to the memory location (from 0 to 7) stored using &Z command

Dn1*n2   Dial two number (n1 and n2) for MLPPP at 128Kbps. If the service access at 128Kbps is over a single telephone number the n1 is equal to n2.

Example: ATD702611*702611

See also the command A%A2 for MLPPP activation

Store: n/a   **Default= n/a**

E   Echo commands ON/OFF

Enable or disable echo of commands from the Computer to Tintoretto USB.

E0   Command echo disabled

E1   Command echo enabled

Store: S14 (bit 1)   **Default= E1**

H   Hang up

Hang up the Tintoretto USB from the ISDN network.

H0   Hang up Tintoretto USB from the ISDN network (off-line). This command is accepted only in Escape mode.

Store: n/a   **Default= n/a**

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I   Product Information

I0	Model.	
I1	Checksum calculation, the result is displayed in Hexadecimal digit.	
I2	Compare the checksum calculation with the stored value, the response will be OK or ERROR.	
I3	Revision level.	
I4	Display Central office	

Store:= n/a   *Default= n/a*

N   Select the speed adaptation   (V.110 or V120)

N0   **In Originate mode**: Tintoretto USB makes the connection at the speed fixed from register S37

In Answer mode: Tintoretto USB accepts incoming call in accordance with the set-up of the command   AT%A2 and the register S37.

N1   **In Originate mode**:Tintoretto USB makes the connection at the speed detected at the last autobaud.

If this value is greater than 19200bit/s, the connection will be established at 19.200bit/s.

For speed detection below 19.200bit/s, the connectionwill be established at the line speed.

In Answer mode:Tintoretto USB handshake the standard and the speed in accordance with the Bearer Capability information sent from the remote user

Store: S24 (bit 4)   *Default= N1*

O   Go On-line from Escape

Tintoretto USB returns in On-line from the Escape status

O   Go On-line.

Store: n/a   *Default= n/a*

Q   Returns code

Enable or disable the return codes from Tintoretto USB to the Computer.

Q0	Messages transmission enabled
Q1	Messages transmission disabled
Q3	Reserved
Q4	Reserved
Q5	Reserved

Store: S14 (bit 0,2,4) S52 (bit 0)   *Default= Q0*

S   S Registers

Show and change the contect of "r" register

    Sr=xxx   Store the number xxx, in hexadecimal digit, in the "r" register
                     (from 0 to 255).

    Sr?   Display the value of "r" register (from 0 to 255)

Store: n/a   ***Default= n/a***

V   Numeric and Verbose Messages

Select the type of the return code from Tintoretto USB to the Computer. Can be selected the numeric mode to manage Tintoretto USB by a PC and the verbose mode to manage Tintoretto USB by an operator.

Using the numeric mode the return codes are followed by the <CR> char.

Using the verbose mode the return code are preceded and followed by the <CR> and <LF> character.

    V0   Return codes displayed in numeric mode
    V1   Return codes displayed in verbose mode

Store: S14 (bit 3)   ***Default= V1***

X   Select Return Codes

    X   Select the return code types
    X0   Enable return codes from 0 to 4
    X1   Enable all return codes
    X2   For compatibility only
    X3   For compatibility only
    X4   For compatibility only

Store: S24 (bit 3) S22 (bit 4, 5, 6)   ***Default=X1***

Following the table including all the result messages in numeric and verbose mode:

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NUMERIC	VERBOSE		NUMERIC	VERBOSE
0	OK		39	CARRIER 48000
1	CONNECT		59	CARRIER 64000
2	RING		60	CARRIER 128000
3	NO CARRIER		83	PROTOCOL: V120
4	ERROR		84	PROTOCOL: V110
6	NO DIALTONE		85	PROTOCOL:V120 COMPRESSION
7	BUSY		86	PROTOCOL:PPP
5	CONNECT 1200		87	PROTOCOL:MLPP
10	CONNECT 2400		46 84	CONNECT 1200/V110
11	CONNECT 4800		47 84	CONNECT 2400/V110
12	CONNECT 9600		48 84	CONNECT 4800/V110
14	CONNECT 19200		49 84	CONNECT 7200/V110
28	CONNECT 38400		50 84	CONNECT 9600/V110
32	CONNECT 48000		51 84	CONNECT 12000/V110
18	CONNECT 57600		52 84	CONNECT 14400/V110
19	CONNECT 64000		54 84	CONNECT 19200/V110
20	CONNECT 115200		56 84	CONNECT 38400/V110
46	CARRIER 1200		39 84	CONNECT 48000/V110
47	CARRIER 2400		58 84	CONNECT 64000/V110
48	CARRIER 4800		59 83	CONNECT 64000/V120
49	CARRIER 7200		59 85	CONNECT 64000/V120COMP
50	CARRIER 9600		59 86	CONNECT 64000/PPP
54	CARRIER 19200		60 87	CONNECT 128000/MLPPP
56	CARRIER 38400			

W   Protocol result code

Enable protocol result code (see ATX command)

W0   Partial result code. When the connection is established, Tintoretto USB send the connection message CONNECT followed the interface speed.

W1   Complete result code. When the connection is established, Tintoretto USB send these connection messages:
CARRIER xxxx
PROTOCOL xxxx
CONNECT xxxx

W2   Complete result code. When the connection is established, Tintoretto USB send these connection messages:
CONNECT "Line Speed"/"Protocol"
like   CONNECT 64000/V120

This command is connected with the ATV (Verbose Mode) command.

Store: S24 (bit 5, 6)   **Default= W1**

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Z   Load user configuration

Reset Tintoretto USB and load a user configuration stored in non volatile memory.

Z0	Load user configuration n. 0
Z1	Load user configuration n. 1
Z2	Load user configuration n. 2
Z3	Load user configuration n. 3

Store: n/a   ***Default= n/a***

&C   C109 (DCD) Control

Determine how the state of the C109 relates to the data call status.

&C0	C109 is always ON.
&C1	C109 goes ON only when a call is established.

Store: S21 (bit 5)   ***Default=&C0***

&D   C108 (DTR) Control

Determine how the DTR is interpreted by Tintoretto USB.

&D0	C108 is ignored.
&D1	If DTR drops while Tintoretto USB is on-line, the effect is the same as if the escape sequence is received, forcing Tintoretto USB into command mode without dropping the connection. When Tintoretto USB is in off-line status DTR drops are ignored.
&D2	DTR comply with ITU-T C108.2; while DTR is Off Tintoretto USB will not answer a call. If DTR drops while Tintoretto USB is on-line, the call is immediately terminated. In syncronous mode (&Q2/&M2), when the DTR goes ON, the Tintoretto USB call the telephone number present in the 0 location of the internal phonebook.
&D3	As for AT&D2 except that the transition of the DTR from ON to OFF loads the user configuration improved with AT&Y command.

Store: S21 (bit 3, 4)   ***Default= &D0***

&F   Load factory profile

Load as active profile the factory profile.

&F0	Load as active profile the factory profile 0
&F1	Load as active profile the factory profile 1
&F2	Load as active profile the factory profile 2
&F3	Load as active profile the factory profile 3

To have more details regarding the different configurations, please referring to "FACTORY CONFIGURATIONS" chapter.

Store: n/a   ***Default= n/a***

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&K   Flow control

Define the flow control options

&K0	NO flow control.
&K3	Hardware RTS/CTS flow control
&K4	Bi-directional software XON/XOFF (Tintoretto USB —> Computer and Computer —> Tintoretto USB) flow control. The Tintoretto USB doesn't transmit to the remote the XON/XOFF chars received from the Computer.
&K8	Unidirectional software XON/XOFF (Tintoretto USB —> Computer) flow control. The Tintoretto USB doesn't recognize the XON/XOFF chars received from the Computer
&K12	Bi-directional software XON/XOFF (Tintoretto USB —> Computer and Computer —> Tintoretto USB) flow control. The Tintoretto USB transmit to the remote the XON/XOFF chars received from the Computer.
&K16	Software XON/XOFF Tintoretto USB <—> Tintoretto USB flow control. (V.110 only). In this mode there is flow control between local and remote Tintoretto USB. There is no flow control on the Computer interface.
&K20	Software XON/XOFF Computer <—> Tintoretto USB and Tintoretto USB <—> Tintoretto USB flow control. (V.110 only).

Store: S49 (bit 0, 1, 2, 3, 4)   ***Default= &K3***

&S   C107 (DSR) control

Establish how the C107 (DSR) will operate.

&S0	C107 (DSR) is always ON.
&S1	C107 (DSR) function as standard; DSR is ON when the connection is established and will be OFF when Tintoretto USB hangs-up.

Store: S21   ***Default=&S0***

&T   Enable or disable Loop test

Allow to select the of loop test.

&T0	Terminates test modes
&T1	Enable local anolog loopback (loop 3).
&T3	Enable on the B1 channel the local digital loopback (V.110 only). To activate this test, follow these steps:

                - Make a connection with a remote Tintoretto USB

                - Go in Escape mode with "+++" command

                - Send the AT&T3 loop test

                - All the data trasmitted from the remote Tintoretto USB, are resended on the line to the local Tintoretto USB

Store: n/a   **3.8**   ***Default= n/a***

&U   Data compression

Select the data compression mode.

&U0   Disable data compression.
&U1   Enable propietary V42bis data compression. This command is
         only meaningful when Tintoretto USB is set in V.120 mode.

Store: S24 (bit 2)   *Default= &U0*

&V   Display active profile

&V0   Display the active profile, the 0 and 1th user configuration and
         the first 4 stored phone number.
&V1   Display the second and third user configuration.
&V2   Display every stored phone number.
&V3   Display the supplementary services profile (MSN, Subaddress
         ecc..)

Store: n/a   *Default=n/a*

&W   Store user configuration

Store the active configuration to the user memory from 0 to 3.

&W0   Store active configuration to user memory 0.
&W1   Store active configuration to user memory 1.
&W2   Store active configuration to user memory 2.
&W3   Store active configuration to user memory 3.

Default= n/a

&Z   Store a phone number

Store a phone number (max lenght 35 chars) into a memory location from 0
to 19.

&Zn=xxx Store the phone number "xxx" into the "n" memory location.
&Zn?   Display the phone number stored into the "n" memory location.

Store: n/a   *Default= n/a*

ONLY FOR TINTORETTO USB +
*B   Speech/Audio Call

This command defines 2 different types of analog call: Speech and Audio
3.1Khz.

*B0   Speech Call. Select this value when an analog phone is
         connected at the AB port
*B1   Audio 3,1Khz Call. Select this value when a fax or analog
         modem is connected at the AB port

*E   Call-Back and Short Message Transfer

This command allows, using the D channel, two special features:the Call-

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Back and the Short Message Transfer. The D channel utilization is normally free of charge.

For security reasons, the Call-Back can be with password authorization.
The password is loaded in the 2 devices (originate and answer) through the command: AT!N5="my password".
The Call back number is loaded in the Originate device with the command: AT!N6="0123456789"
The Short Message Transfer allows to send a string of characters (up to 130) without establish a real connection.
This commmand must be setted in the 2 devices (originate and answer).

*E0	Call-Back and Short Message Transfer desable
*E1	Call-Back enable
*E3	Short Message Transfer enable

*I   Caller Identification function (CALLER ID)

The CALLER ID function is used to identify the originate of an incoming call. In order for this feature to work, both the originate and the answer Tintoretto USB must have their CALLER ID feature enable. Enabling the CALLER ID at the originate, allows the transmission of the originator's telephone number. Enabling the CALLER ID at the answer, allows the caller's telephone number to be displayed on the receiver terminal.
The message CALLER ID appears on the screen as follows:

RING: nnnn where "nnnn" is the caller's telephone number

*I0	CALLER ID function disable
*I1	CALLER ID function enable

To insert the CALLER ID number into Tintoretto USB, please make reference to the AT!N1 command.

ATTENTION

The memorized telephone number in the called Tintoretto USB, is imputed directly by the customer with the !N1 command.

Therefore this number can also in varous occasion, not match with the true called Tintoretto USB number; examples when the user wants to keep his/her number reserved or if the number has not been memorized correctly.

Store: S68 (bit 0)   *Default= *I0*

*M   MultiSubscriber Number function (MSN)

The MultiSubscriber Number permits the association of maximum 8 consecutive numbers to a BRI access of the national plan number. There's a principal number with the last digit always equal to "0" and associated with it is an auxiliary number that may vary between "1" and "7".

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The called Tintoretto USB checks the incomming called party number with the number stored in its memory with the AT!N2 command; if the two numbers matched then it answer the call, otherwise it does not.

In order for this feature to work, the receiver Tintoretto USB must have the MSN feature enable.

    *M0   MultiSubscriber number function disable
    *M1   MultiSubscriber number function enable

To insert the MultiSubscriber number into Tintoretto USB, please make reference to the AT!N2 command.

ATTENTION

The MultiSubscriber is an option feature: verify with your Telecom operator to enable it.
    Store: S69 (bit 1)   ***Default=*M0***

*S   Subaddress function

The Subaddressing mode allows the identification of the 8 Tintoretto USB connected to the same BRI interface for the multinumber. This feature is managed only by the local and remote Tintoretto USB. The ISDN network only allows for the delivery of the subaddress field.

The called Tintoretto USB send telephone number followed the Subaddress field (ATDnnn+sss where "nnn" is the telephone number and "sss" is the Subaddress field with a maximum of 4 alphanumeric characters); the calling Tintoretto USB compares the received Subaddress to the stored Subaddress. If there's a match then it answer the call, otherwise it does not.

In order for this feature to work, both the originator and the receiver Tintoretto USB must have their Subaddres feature enable.

    *S0   Subaddress function disable
    *S1   Subaddress function enable

To insert the Subaddress field into Tintoretto USB, please make reference to the AT!N3 command.
    Store: S70   ***Default=*S0***

%A2 Define the CSD call type

Define the rate adaption protocol to be used on the B channel
    %A2=1   V.110 protocol.
    %A2=2   V.120 protocol.
    %A2=5   PPP protocol at 64Kbps
    %A2=6   MLPPP protocol at 128Kbps
    Store: S15   ***Default=%A2=1***

%A3 Select Data Channel

    %A3=2   Preferred B1 channel. If busy, Tintoretto USB try to use the B2 channel

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     %A3=3   Forced B1 channel. If busy, Tintoretto USB hangs-up the communication

     %A3=4   Preferred B2 channel. If busy, Tintoretto USB try to use the B1 channel

     %A3=5   Forced B2 channel. If busy, Tintoretto USB hangs-up the communication

Store: S57   ***Default=%A3=2***

%F   Flash Eprom code Up grade

This command enable the up grade of the internal Flash Eprom code.

The up grade is similar to a file transfer from a new code file in your Computer to the Flash Eprom.

This special file transfer use a simple ASCII protocol at 115.200bit/s, 8 bit, no parity, 1 stop bit and hardware flow controll. Using an ASCII file tranfer check the following parameters value:

    Pace character=0

    Line pacing=0

    Character pacing=0

    %F   Up grade starts. After this command, follow the simple instruction coming from the modem.

%K   C105 (RTS) follow C106 (CTS) in Off Line

%Z1   Master reset

Master reset and load the configuration specified by the &Y command.

                                                      Deault=n/a

/T   TEI defination

This command defines if the TEI is fix (point to point) or variable (multipoint).

    /T=xx   TEI is fix and the variable xx is a number between 00 to 63. This value ,defined by the Telecom operator, normaly is 00

    /T=99   TEI is variable.

After this command Tintoretto USB must be powered on.

/Z   Delete RAM

This command delete the Tintoretto USB RAM and load the factory configuration 0. Any other user configurations and telephone number will be erased.

After this command the Tintoretto USB must be powered ON.

    /Z=0000 Erase the RAM

                                                     Deault=n/a

!B0   MLPPP Authentification for Client Side

!B0=0	CHAP is nacked, PAP is suggested
	It' s the suggested option for Windows 98 Client
!B0=1	Tintoretto ack the CHAP requestes on the ISDN PPP link and it requests PAP on the Async link (to the Computer). It' s the suggested option for Windows 98 Client, becouse this OS is not able to manage CHAP over the 2nd B channel in MLPPP

!B1   MLPPP Authentification for Server Side

!B1=0	Default value: the authentification is make for the 2 channels
!B1=1	The authentification is make only for the 1st channel. This setting is suggested for Windows 95 Client in CHAP authentification procedure.

!C0   ISDN type of Network

This command display the type of ISDN used. The value for an Euro ISDN network is 4. This value must not modified.

Store: yes   ***Deault=4***

!D   Caller ID Display Format

This command adapts the Caller ID display format in case of National incoming call.

The ISDN PABX or Publich Excange can erase or leave the digit 0 in front of the area code of the Caller ID. This command allows to maintain a display format in accordance with the user's application.

The Incoming call defined "International" are always displayed adding 00 in front of the country code.

!D0	The Caller ID number is dispalyed without any modification for Incoming call defined "International".
!D1	Only for National incoming Call, the Caller ID number is dispalyed adding a 0 in front of the area code.

!E   Type of number used in the Calling Party Number field

!E0	Type of number defined "Unknown"
!E1	Type of number defined "National"

!I   V.110 Intermediate Rate

This command enable or desable the V.110 Intermediate Rate information in Setup message. In case of Outgoing call to GSM we suggest to enable this feature.

!I0	Intermediate Rate for enable
!I0	Intermediate Rate for desable

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!N1= Store Caller Identification number (CALLER ID)

This command enable to store the telephone number for the CALLER ID function.

    !N1="nnnn" where "nnnn" is the telephone number without prefix

    !N1?   show the stored telephone number

To enable the CALLER ID function, please also make reference to the AT*I command.

   Store: yes   ***Default= n/a***

!N2= Store MultiSubscriber number (MSN)

This command enable to store the own telephone number for the MultiSubscriber Number function.

    !N2="nnnn" where "nnnn" is composed of prefix + number (p.e. 331263122)

    !N2?   show the stored MultiSubscriber number

To enable the MultiSubscriber Number function, please also make reference to the AT*M command.

   Store: yes   ***Default= n/a***

!N3= Store Subaddress number

This command enable to store the Subbaddres field for the Subaddress function.

    !N3=   "ssss"   where "ssss" is the Subaddress field with a maximum of 4 alphanumeric characters (0, 1, 2, 3, 4, 5, 6, 7, 8, 9, A, B, C, D, *, #).

    !N3?   show the stored Subaddres field

To enable the Subaddress function, please also make reference to the AT*S command.

   Store: yes   ***Default= n/a***

!N5 Call-Back Password

This command is used to load the Call-back password in the Originate and Answer devices (see also AT*E)

!N5="xxxxxxxx"

where x are up to 8 alpha numeric characters

!N6 Call-back Phone number

This command is used to load the Call-back Phone number in the Originate device (see also AT*E)

!N6="xxxxxxxx"

where x are up to 35 numeric characters

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!N7   Short Message Transfer

This command is used to load a Short Message (up to 130 characters) to send using the Short Message Transfer feature (see also AT*E)

!N5="xxxxxxxx"

where x are up to 130 alpha numeric carachters

3.4.   S REGISTER OF TINTORETTO USB

REG.	DESCRIPTION	STORED	NOT STORED
S0	Number of ring to answer on	●	
S1	Ring count		●
S2	Escape sequence character	●	
S3	Carriage return character		●
S4	Line feed character		●
S5	Back-space character		●
S7	Wait time for connection	●	
S12	Escape prompt delay	●	
S13	Call Waiting time	●	
S25	DTR control	●	
S26	C105/C106 delay	●	
S31	V25bis command mode selector		●
S34	Pointer for Autologon and Call-Back services	●	
S37	DCE speed	●	
S49	DCE-DTE flow control		●
S80	Double call character		

3.4.1. S REGISTERS DESCRIPTION

S0   Number of ring to answer on

Value	Unit	Function
0	RING	No auto answer
1-5	RING	Yes auto answer; Tintoretto USB answers after the number of ring selected

Default=0   ***Type:Storable***

S1   RING count

Number of ring in a period of 8 seconds.

Value	Unit	Function
0	RING	No ring in a period of 8 seconds
1-5	RING	RING count

Default=0   ***Type:Non Storable***

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S2   ESCAPE sequence character

Value	Unit	Function
0-127	ASCII	Contain the ESCAPE sequence character. If the value is greater then 127, escape sequence is disabled.

Default=43   *Type:Storable*

S3   CARRIAGE RETURN character

Value	Unit	Function
0-127	ASCII	Contain the CARRIAGE RETURN character

Default=13   *Type:Non-storable*

S4   LINE FEED character

Value	Unit	Function
127	ASCII	Contain the LINE FEED character

Default=10   *Type:Non-storable*

S5   BACKSPACE character

Value	Unit	Function
0-127	ASCII	Contain the BACK SPACE character

Default=8   *Type:Non-storable*

S7   Wait time for connection

Value	Unit	Function
0-255	sec.	In originate maximum amount of time to wait between end of dialing and the connection.

Default=25   *Typr:Storable*

S12   Escape prompt delay

Value	Unit	Function
0	ms	No escape prompt delay
0-255	20ms	Define escape prompt delay before, during, and after the ESCAPE sequence, so that the escape sequence can be valid.

Default=50   *Type:Storable*

S13   Call Waiting time

Value	Unit	Function
0	sec.	Call Waiting time disable
0-255	1 sec.	Defines the duration of buzzer/TEST led flash when arrives a new call.

Default=30   *Type:Storable*

S25   DTR control

Value	Unit	Function
0-255	sec/100	Sets the length of time that the modem will ignore DTR for before hanging up.

Default =5   *Type:Storable*

S26   RTS/CTS (C105/C106) delay

Value	Unit	Function
0-255	10 msec.	In syncronous mode, defines the RTS/CTS delay (refer also &R command).

Default =1   *Type:Storable*

S31   V25bis command mode selector

Bit-mapped register.
Select either the AT command mode or of the supported V25bis command modes.

All bits   = 0 AT command mode
Bit 1-0 = 00 V25bis Async
            = 01 Non available
            = 10 Non available
            = 11 Non available
Bit 7   = 0 V25bis disabled
            = 1 V25bis enabled

Default=0   *Type: Non-storable*

S34   Pointer for Autologon and Call-Back services

Establishes selection of the memory location the modem uses to initiate Autologon or Call-Back procedure.

- 0 - 19   phonebook location for Autologon or Call-Back procedure.
- 20   phonebook scroll
- 255   function disable

Default =255   *Type: Storable*

S37   DCE speed

Select the speed connection throug the selected V.110 rate adaption protocol (see ATN command).

- 0, 255   Last AT command speed
- 4   = 600 bps
- 5   = 1200 bps
- 6   = 2400 bps
- 15   = 4800 bps
- 16   = 7200 bps

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17	= 9600 bps
18	= 12000 bps
19	= 14400 bps
27	= 19200 bps
50	= 38400 bps (asyncronous only)
51	= 48000 bps (syncronous only)
53	= 64000 bps (syncronous only)

Default =0   *Type: Storable*

S49   Tintoretto USB-DTE flow control

Display the value of the &K command, which specifies DTE flow control setting.

0	No DTE flow control
3	RTS/CTS flow control enabled
4	Bi-directional XON/XOFF flow control enabled
5	Transparent bi-directional XON/XOFF flow control enabled

Default =n/a   *Type: Read only*

S80   Double call character

Value	Unit	Function
0-255	ASCII	Contain the character used in a double call (MLPPP)

Default=42   *Type:Storable*

4. DIAGNOSTIC

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4.1. TEST ON LINE

&T120
Enable the test of the ISDN line for the call set-up phase in data mode.
After this command if you make a call with ATD, on the monitor of your Computer will appear the status of the line.
The &T120 is desable in the new call.

&T121
Enable the test of the ISDN line for the call set-up phase in voice mode.
After this command if you make a call with ATD, on the monitor of your Computer will appear the status of the line.
The &T121 is desable in new call.

&T122
Exit from the test without make any call.

Example:
AT&T120
OK
ATD1234

If the ISDN line works fine, on the Computer monitor will appear:
>DIGITAL CALL: DIGITAL CALL REQUEST
>DIGITAL CALL:ISDN CALL OK (SETUP_C)

If the ISDN line does not work fine, on the Computer monitor will appear:
>DIGITAL CALL: DIGITAL CALL REQUEST
>DIGITAL CALL:CONNECTION PROBLEM(SETUP_I)
>NO CARRIER

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5. TROUBLESHOOTING

5

Here some suggestions in case of problems.

5.1. DEVICE DOES NOT MAKE O RECEIVE CALL

Check list:
- Check the Telecom NT1. Normally the NT1 istalled by your Telecom provvider has a simple LED to indicate the ISDN 1st level status.
- Verify the S/T bus cable from the NT1 to your device.
- Verify if the TEI value setted on your device is compliance with the Telecom requested
  Usual value are: TEI99 or Automatic.
- Verify the Multinumber setting and make your modification with the commands !N2 and *M
- Check the configuration of your device in accordance with the remote.
- In case more devices are connected on your S/T Bus, verify that the bus is available for a new connection. No more than 2 connection are available in the same time.

5.2. PROBLEMS DURING DATA TRANSFER

Check list:
- Verify the speed of the Computer in accordance with the characteristic of your connection
  Ex: 115,2Kbps in PPP, V.120 o Buffer Mode to reach the maximum performances
- Verify the UARTs in your Computer support the maximum speed requested
- Verify the setting of your ISDN device

5.3. HANG UP AFTER DIAL

Check list:
- Check the configuration of your device in accordance with the remote.
- Verify the status of the LEDs B1 and B2. You can faund one of the following status.
  B1 or B2 blinking and never on. It indicates the availability of the ISDN line but the faul of the dialing.
  B1 or B2 on, but after few seconds hungup. The problem is during the syncronization phase of the device setted in data mode.
  B1 or B2 off or blinking for a very short time. Incompatibiy between the ISDN line and the setting of the device.

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5.1

DECLARATION $C\epsilon$ OF CONFORMITY

This product satisfies the basic requirements of
Electromagnetic Compatibility and Safety of the below indicated Directive:
- **91/263/EEC** of 29 april 1991 (Directive 93/68/CEE of july 22,1993 and Directive 93/97/CEE of 29 october 1993).

CHECK REPORT

The equipment has been successfully tested according to the check procedure indicated on the inside back cover of the user's manual. It is in conformity with the technical characteristics described in the users' manual supplied with the equipment.

WARRANTY

WARRANTY CLAUSES
- The equipment has a warranty which covers manufacturing and operating faults for the period indicated on the inside back cover of the user's manual.
- Warranty means the substitution or repairing of fault products. Working hours used for repairing included in the warranty.
- The estetic and the separable parts are not included in the warranty.
- The warranty is not extended to equipments which have been subject to misuse, improper installation, electric discharge or repaired by unauthorized staff.

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