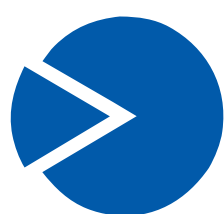


User's Manual

*PALLADIO
TWIN
ISDN*



digicom

<http://www.digicom.it>

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PREFACE

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ENVIRONMENTAL CONDITIONS

**ENVIRONMENTAL
TEMPERATURE**
from 0 to + 45°C

**RELATIVE
HUMIDITY**
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 electromagnetic 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

FUSES

only those indicated on the equipment label

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 person 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.

1. GENERALITY

1

This operating manual describes the installation procedures and the main features of the Palladio Twin ISDN PC Card family.

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

1.1. ISDN

ISDN is the acronym of Integrated Services Digital Network, it's the evolution of the switched analog network even called Plain Old Telephone system (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 (also 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

The Palladio Twin ISDN PC Card is an high performances modem for mobile applications that require reliable connection over GSM network (up to 9600bps) or ISDN (up to 128.000bps): the perfect solution for data and fax, communication for professional, office or home users.

Your GSM phone must support fax and data capabilities and your agreement with the GSM Telecom provider must allow data and fax sending/receiving. In this case you should normally receive two additional GSM telephone numbers: one for fax reception and the other for data reception. For each supported GSM phone brand and model there is a different cable. See the supported GSM phone listed in the Technical feature section of this document.

For data transmission and Internet/Intranet access the maximum speed over ISDN lines is 128.000 bps, over GSM network it is 9600 bps.

Palladio Twin ISDN has been designed to operate easily and immediately with existing applications by providing modem like control and interface facilities.

Palladio Twin ISDN is composed by two indipendent sections: ISDN and GSM.

Each of them has different setting procedure through specific AT command set.

ATTENTION

Everytime the connection is moved from ISDN to GSM or viceversa, the PCCrds must be removed from the PCMCIA slot to load the correct driver.

Versions available:

Palladio Twin ISDN Active ISDN PC-Card up to 64/128Kbps (for Windows® any version)

Palladio Twin ISDN MAC Active ISDN PC-Card up to 64/128Kbps (for Macintosh® OS8.X)



2. INSTALLATION

2

2.1. HARDWARE INSTALLATION

Connection to ISDN Line

The Palladio PC Card is compliant with any PCMCIA 2.0 socket.

- Insert the card in the PCMCIA slot of your computer in the correct way up. The way up sign is on the modem sticker. We suggest to insert the card when the computer is powered off.
- Connect the external line adaptor to the PC card previously inserted in the Computer.
- Connect the ISDN line (BRI) to the RJ45 connector of the external line adaptor. For more details see the picture.



2.2. SOFTWARE INSTALLATION

2.2.1. WINDOWS® 98

Before starting with the software installation, please read the file Readme.txt present on the Floppy Disk or the CD ROM included with the modem package.

In this file you can read more details about the driver installation for the different versions of Windows® and also the latest release notes or driver upgrades not available at the time of printing this manual.

The following procedure describes the typical steps for the driver installation under Windows®.

1. Run Windows®.
2. If the Palladio Twin ISDN is inserted in the PCMCIA slot before the power on, Windows® automatically detect the presence of a new device.



3. Click **NEXT**.



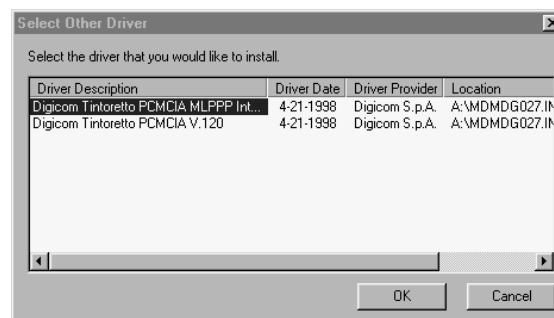
4. Select "Search for the best driver for your device" and click **Next**.



5. Select "Floppy disk driver" and the directory (if any) where the driver is, and then click **Next**.



6. Select the more appropriate driver for your application (eg. Palladio Twin ISDN PPP Internet 64k).



7. Proceed the installation click **OK**.



8. Proceed the installation click **Next**.



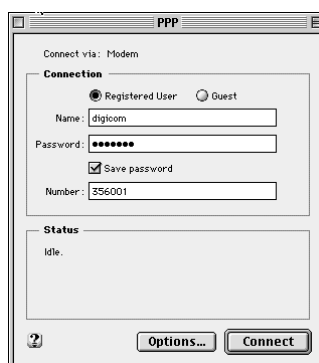
9. Click **Finish**.

Your Palladio Twin ISDN is now installed for ISDN operation.

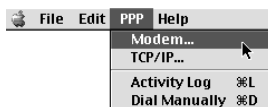
2.2.2. MACINTOSH®

INSTALLATION WITH ARA/OPEN TRASPORT DRIVER

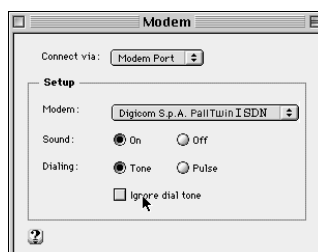
- 1) Copy the files from the diskette to the hardisk folder: "**System:Extension:Script Modem**"
- 2) From the Control Pannel select PPP (or Remote ACCESS in accordance with your Operating System)
- 3) Select Registered User and type User ID, Password and the Phone Number to call



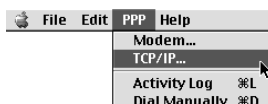
- 4) From the Menu Bar select **PPP** and then Modem.



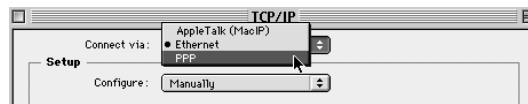
- 5) Select the serial port used and the modem type from the list available.



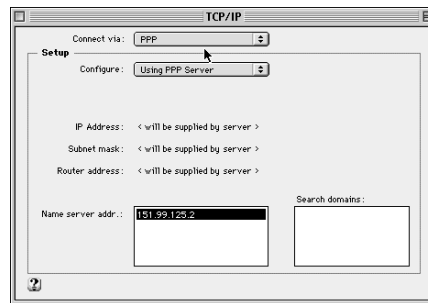
- 6) From the Menu Bar select **PPP** and then **TCP/IP**



- 7) From the next window select **PPP** in the field Connect via:



Type the protocol details of your PPP connection (IP address, DNS etc).



The drivers available for Palladio Twin ISDN are the following:



- Palladio Twin ISDN PPP (Driver for Internet access in PPP 64Kbps)
- Palladio Twin ISDN GSM (Driver for connection via GSM)
- Palladio Twin ISDN MLPPP (Driver for Internet access in MLPPP 128Kbps)
- Palladio Twin ISDN V.120 (Driver for ISDN up to 64Kbps in V.120)
- Palladio Twin ISDN V.110 (Driver for ISDN up to 19.2Kbps in V.110)

2.3. GSM ACTIVATION KIT INSTALLATION

Palladio Twin ISDN can operate on the mobile GSM network using the appropriate Activation Kit sold separately.

Your GSM phone must be enabled for fax and data service and your agreement with the GSM Telecom provider must allow for the sending/receiving of data and fax messages. In this case you should have 2 additional GSM telephone numbers: one for the reception of data and one for fax reception.

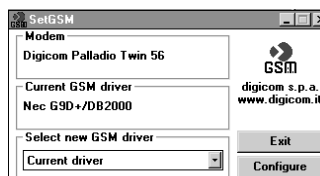
2.3.1. WINDOWS®

- 1) Remove the ISDN adaptor (if installed) from the PC Card.
- 2) Insert the PC Card in the PCMCIA slot of your Computer.
- 3) Windows detects automatically the GSM adaptor and will use the appropriate GSM drive.

ATTENTION

The selection between ISDN to GSM and viceversa is made from the different cable insertion. Each time a new cable is inserted, the PC Card must be removed from the PCMCIA slot or the Computer must be powered Off.

- 4) From the Digicom CD-ROM or diskette, run the utility **SETGSM**. This tool help the installation of the appropriate GSM phone driver.
- 5) The SETGSM, detect automatically the PC Card and which phone driver is active:



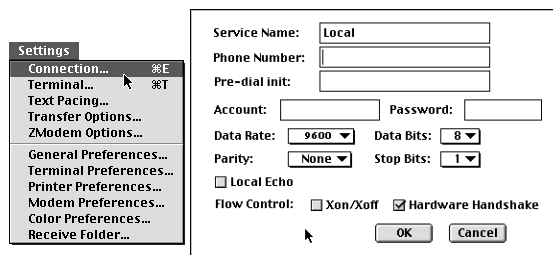
- 6) Select the driver requested.
- 7) Click Configure to load the driver.

In case of problem during the activation, please update the code of your PC Card from the diskette present in the Activation KIT package.

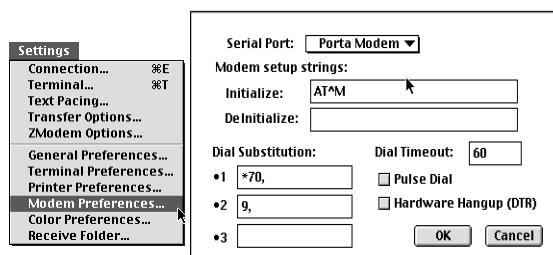
- 8) Palladio Twin ISDN use different communication drivers for ISDN and GSM: for this reason is necessary to prepare almost 2 different Remote Access procedure: one for ISDN the other for GSM access.

2.3.2. MACINTOSH®

- 1) Run any generic Terminal Emulator present in your Operating System or the application Zterm present in the Digicom CD-ROM (folder \utilities\zterm).
- 2) From the Menu Setting select Connection.

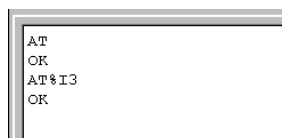


- 3) Define the speed at 9600bps, hardware flow-control, Data Bits 8, Stop Bits 1, Parity None.
- 4) Select Modem Preferences menu.



- 5) Select the serial port used by Palladio Twin PC Card. Modify the Initialize Modem Setp strings with: AT^M (AT ctrl M).
- 6) Click **OK**.

At this step, you are able to type AT commands to the Palladio PC Card and receive response.



Typing AT (ENTER) the Pccard will response **OK**.

Palladio Twin ISDN has 7 different drivers inside its firmware: it's just enough to load the appropriate driver in accordance with your cable and GSM Phone.

The AT command to activate the GSM drivers is: AT%i

The drivers available from AT%i command are:

AT%i0 for NEC DB500/DB2000 and G)D+
 AT%i1 for NOKIA 2110
 AT%i2 for NOKIA 3110/8110
 AT%i3 for Ericsson 6xx/7xx
 AT%i4 for Siemens S10
 AT%i5 for Siemens S4
 AT%i6 for Nokia 6150/5110/6150

After the driver selection type the command AT&W to store the new configuration. To check which driver is active, type the command ATi5.

2.4. TECHNICAL SECTION

This section is dedicated to give all the technical informations, performances, commands, response and references rules for the Palladio Twin ISDN PC Card.

2.5. PRODUCT FEATURES

- Computer speed: up to 230.400 bit/s
- Enhanced AT commands set with autobaud for the data mode up to 230.400 bit/s.
- Support V.110, V.120 and V.42bis
- 64Kbps PPP and 128Kbps MLPPP for Internet or Intranet Remote Access
- Autologon and Call-back security features
- Up to 4 factory configuration
- 1 user configuration
- Internal phone book with 4 numbers
- Support the optional ISDN service

2.5.1. AUTOBAUD

The modem detects AT command an ASCII code with any of the following format combinations:

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

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

2.5.2. ADAPTATION STANDARD V.110 & V.120

Using the protocols adaptation V.110 and V.120 the Computer speed can achieve 230.400 bps.

2.5.3. INTERNET & INTRANET OVER ISDN

Internet and Intranet access is performed using a powerful integrated protocol conversion from asynchronous to synchronous PPP/MLPPP.

Palladio Twin ISDN can directly connect to remote ISDN access devices using a single B channel at 64000 bps (PPP) or both B channels achieving 128000 bps (MLPPP).

In MLPPP mode the second B channel can be configured to be issued statically or dynamically on a traffic level basis.

2.5.4. DATA COMPRESSION V.42BIS

Palladio Twin ISDN support ITU V.42bis data compression. Two Digicom ISDN modem running V.120 protocol and V.42bis data compression can achieve up to 100.000 bps over a single B channel (64000 bps) connection, depending on file the compression ratio. This means higher performances at a lower cost.

2.5.5. FACTORY CONFIGURATION

Tintoretto Twin ISDN has 4 preloaded factory configurations suitable for the most common applications. The activation is through AT command.

2.5.6. CONFORMITY RULES

Tintoretto Twin ISDN is compliant with the following technical reference:

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

2.5.7. TECHNICAL CHARACTERISTIC

Power Consumption:	800mW
Power requirements:	+5V from the Computer 's PCMCIA socket
Card size:	PCMCIA type 2.0 The Palladio Twin ISDN is detected from the Operating System as a serial port (COMx)
PCMCIA Connection:	68pins PCMCIA connector

Computer speed:	max. 230.400bps
Speed accepted in V.110:	1200, 2400, 4800, 9600, 12000, 19200, 38400, 57600, 115.200 and 230.400bps
Speed accepted in V.120:	64.000bps

ISDN Interface

Type:	S Bus 2B+D Basic Rate Interface
Connector:	RJ45
Protocol:	Euro-ISDN

Environmental Condition

Operative mode:	from 0°C to +45°C
Storage mode:	from -20°C to +80°C
Umidity:	from 5% to 92% non condensing

3. AT COMMAND SET

3

The modem supports 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 character 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

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

3.1. AT COMMAND SET DESCRIPTION ISDN SECTION

AT Attention

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

Store: n/a

Default: n/a

A Answer incoming data call

Cause Palladio Twin ISDN 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=0-3 Dial the dial string associated to the memory location (from 0 to 3) 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 Palladio Twin ISDN .

E0 Command echo disabled

E1 Command echo enabled

Store: S14 (bit 1)

Default: E1

H Hang up

Hang up the Palladio Twin ISDN from the ISDN network.

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

Store: n/a

Default: n/a

I Product Information

0 Model.

1 Checksum calculation, the result is displayed in Hexadecimal digit.

2 Compare the checksum calculation with the stored value, the response will be OK or ERROR.

3 Revision level.

4 Display Central office

Store: n/a

Default: n/a

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

N0 In Originate mode: Palladio Twin ISDN makes the connection in V.110 at the speed fixed from register S37

In Answer mode: Palladio Twin ISDN accepts incoming call only V.110 in accordance with the register S37.

N1 In Originate mode: Palladio Twin ISDN 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 connection will be established at the detected speed.

In Answer mode: Palladio Twin ISDN handshake the standard and the speed in accordance with the Bearer Capability information sent from the remote user and/or the low layer compatibility information.

Store: S24 (bit 4)

Default: N1

O Go On-line from Escape

Palladio Twin ISDN 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 Palladio Twin ISDN to the Computer.

Q0 Messages transmission enabled

Q1 Messages transmission disabled

Store: S14 (bit 0,2,4) S52 (bit 0)

Default= Q0

S S Registers

Show and change the context 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 Palladio Twin ISDN to the Computer. Can be selected the numeric mode to manage Palladio Twin ISDN by a PC and the verbose mode to manage Palladio Twin ISDN 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

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:

NUMERIC	VERBOSE	NUMERIC	VERBOSE
0	OK	56	CARRIER 38400
1	CONNECT	39	CARRIER 48000
2	RING	59	CARRIER 64000
3	NO CARRIER	60	CARRIER 128000
4	ERROR	83	PROTOCOL: V120
6	NO DIALTONE	84	PROTOCOL: V110
7	BUSY	85	PROTOCOL: V120 COMPRESSION
04	CONNECT 600	86	PROTOCOL: PPP
05	CONNECT 1200	87	PROTOCOL: MLPPP
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
71	CONNECT 57600	52 84	CONNECT 14400/V110
72	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	59 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

W Protocol result code

Enable protocol result code (see ATX command)

W0 Partial result code. When the connection is established, Palladio Twin ISDN send the connection message CONNECT followed the interface speed.

W1 Complete result code. When the connection is established, Palladio Twin ISDN send these connection messages:
CARRIER xxxx
PROTOCOL xxxx
CONNECT xxxx

W2 Complete result code. When the connection is established, Palladio Twin ISDN 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

Z Load user configuration

Reset Palladio Twin ISDN and load the user configuration stored in non volatile memory.

Z0 Load user configuration n. 0

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 Palladio Twin ISDN.

&D0 C108 is ignored.

&D1 If DTR drops while Palladio Twin ISDN is on-line, the effect is the same as if the escape sequence is received, forcing Palladio Twin ISDN into command mode without dropping the connection. When Palladio Twin ISDN is in off-line status DTR drops are ignored.

&D2 DTR comply with ITU-T C108.2; while DTR is Off Palladio Twin ISDN will not answer a call. If DTR drops while Palladio Twin ISDN is on-line, the call is immediately terminated.

&D3 As for AT&D2 except that the transition of the DTR from ON to OFF loads the user configuration.

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 refer to "FACTORY CONFIGURATIONS" chapter.

Store: n/a

Default= n/a

&K Flow control

Define the flow control options

&K0 NO flow control.

&K3 Hardware RTS/CTS flow control

&K4 Bi-directional software XON/XOFF (Palladio Twin ISDN -> Computer and Computer -> Palladio Twin ISDN) flow control. The Palladio Twin ISDN doesn't transmit to the remote the XON/XOFF chars received from the Computer.

&K8 Unidirectional software XON/XOFF (Palladio Twin ISDN -> Computer) flow control. The Palladio Twin ISDN doesn't recognize the XON/XOFF chars received from the Computer

&K12 Bi-directional software XON/XOFF (Palladio Twin ISDN -> Computer and Computer -> Palladio Twin ISDN) flow control. The Palladio Twin ISDN transmit to the remote the XON/XOFF chars received from the Computer.

&K16 Software XON/XOFF Palladio Twin ISDN <-> Palladio Twin ISDN flow control. (V.110 only). In this mode there is flow control between local and remote Palladio Twin ISDN .There is no flow control on the Computer interface.

&K20 Software XON/XOFF Computer <-> Palladio Twin ISDN and Palladio Twin ISDN <-> Palladio Twin ISDN 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 Palladio Twin ISDN 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 analog 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 Palladio Twin ISDN

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

- Send the AT&T3 loop test

- All the data trasmitted from the remote Palladio Twin ISDN, are resended on the line to the local Palladio Twin ISDN

Store: n/a

Default= n/a

&U Data compression

Select the data compression mode.

&U0 Disable data compression.

&U1 Enable proprietary V42bis data compression. This command is only meaningful when Palladio Twin ISDN 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 4 stored phone number.	
&V1	Not available.	
&V2	Display stored phone numbers.	
&V3	Display the supplementary services profile (MSN, Subaddress ecc..)	
Store: n/a		Default=n/a
&W	Store user configuration	
Store the active user configuration.		
&W0	Store active user configuration	
		Default= n/a
&Z	Store a phone number	
Store a phone number (max lenght 35 chars) into a memory location from 0 to 3.		
&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
*E	Call-Back and Short Message Transfer	
This command allows, using the D channel, two special features:the Call-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 command must be setted in the 2 devices (originate and answer).		
*E0	Call-Back and Short Message Transfer disabled	
*E1	Call-Back enabled	
*E3	Short Message Transfer enabled	
*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 Palladio Twin ISDN must have their CALLER ID feature enables.		
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: nnnnwhere "nnnn" is the caller's telephone number		
*I0	CALLER ID function disabled	
*I1	CALLER ID function enabled	
To insert the CALLER ID number into Palladio Twin ISDN, please make reference to the AT!N1 command.		
ATTENTION		
The caller ID number is stored with the !N1 command.		
Store: S68 (bit 0)		Default= *I0
*M	MultiSubscriber Number function (MSN)	
The MultiSubscriber Number allows the management of maximum 8 consecutive numbers associated to a BRI access. The called Palladio Twin ISDN checks the incoming called party number with the number stored in its memory with the AT!N2 command; if the two numbers match then it answers the call, otherwise it does not.		
The answering Palladio Twin ISDN must have the MSN feature enabled.		
*M0	MultiSubscriber number function disabled	
*M1	MultiSubscriber number function enabled	
To store the MultiSubscriber number into Palladio Twin ISDN, please refer 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 an additional identification way for the 8 Palladio Twin ISDN connected to the same BRI interface.		
This feature is managed by the local and remote Palladio Twin ISDN. Palladio Twin ISDN dials the telephone number followed by 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 answering Palladio Twin ISDN compares the received Subaddress with the stored (AT!N3).		
If there's a match then it answers the call, otherwise it does not.		
The answering Palladio Twin ISDN must have their Subaddres feature enable.		
*S0	Subaddress function disabled	
*S1	Subaddress function enabled	
To store the Subaddress field into Palladio Twin ISDN, please refer 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, Palladio Twin ISDN try to use the B2 channel
%A3=3	Forced B1 channel. If busy, Palladio Twin ISDN hangs-up the communication
%A3=4	Preferred B2 channel. If busy, Palladio Twin ISDN try to use the B1 channel
%A3=5	Forced B2 channel. If busy, Palladio Twin ISDN hangs-up the communication

Store: S57**Default=%A3=2****%F Flash Eprom code Up grade**

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

The file transfer must use a simple ASCII protocol at 115.200bit/s, 8 bit, no parity, 1 stop bit and hardware flow controll. Using the 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 instructions coming from the modem.

%K Key Abort

%K0	Key abort enabled: typing a character, the outgoing call is interrupted.
%K1	Key abort disabled.

%Z1 Master reset

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

Default=n/a**/T TEI defination**

This command defines if the TEI is fixed (point to point) or automatically assigned (multipoint).

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

/T=99 TEI is automatically assigned by the network.

After this command Palladio Twin ISDN must be powered off.

/Z Delete EEPROM

This command delete the Palladio Twin ISDN EEPROM and load the factory configuration 0. Any other user configurations and telephone number will be erased. After this command Palladio Twin ISDN must be powered Off.

/Z=0000 Erase the EEPROM

Default=n/a**!B0 MLPPP Authentication for Client Side**

!B0=0	CHAP is nacked, PAP is suggested to the ISDN link.
!B0=1	Palladio Twin ISDN does not manage the authentication procedure. It is the suggest option of Windows® 98 Client.
!B0=2	Palladio Twin ISDN acknowledges the CHAP request on the ISDN PPP link and it requests PAP on the Async link (to the Computer). It' s the suggested option for Windows® 95 Client, as this OS is not able to manage CHAP over the 2nd B channel in MLPPP.

!B1 MLPPP Authentication for Server Side

!B1=0	Default value: the authentication is make for the 2 channels
!B1=1	The authentication is made only for the 1st channel. This setting is suggested when there is a Windows® 95 Client using CHAP authentication 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 be modified.

Store: yes**Default=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 Exchange 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 displayed without any modification for Incoming call defined "national".

!D1 Only for National incoming Call, the Caller ID number is displayed adding a 0 in front of the area code.

Store: yes**Default=!D1****!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 enabled

!I1 Intermediate Rate disabled

Store: yes**Default=!I0**

!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="xxxxxxx" 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="xxxxxxx" where x are up to 35 numeric characters

!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="xxxxxxx" where x are up to 130 alpha numeric carachters

3.2. S REGISTER FOR ISDN SECTION

I registri S sono delle locazioni di un byte nella memoria del dispositivo che contengono informazioni sulla configurazione dell'apparato. Tutti i valori sono in formato decimale.

3.2.1. S REGISTER FOR ISDN SECTION

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	•	

3.2.2. S REGISTERS DESCRIPTION**S0 Number of ring to answer on**

Value	Unit	Function
0	RING	No auto answer
1-5	RING	Yes auto answer; Palladio Twin ISDN 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

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 Type: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 synchronous mode, defines the RTS/CTS delay (refer also &R command).

Default =1 Type: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 - 3		phonebook location for Autologon or Call-Back procedure.
255		function disable

Default =255 Type: Storable

S37 V.110 speed selection

Select the speed connection through 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
 17 = 9600 bps
 18 = 12000 bps
 19 = 14400 bps
 27 = 19200 bps
 50 = 38400 bps

Default =0 Type: Storable

S49 Palladio to Computer flow control

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

0 No 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

3.3. AT COMMAND SET DESCRIPTION FOR GSM SECTION

AT Attention

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

ATA Answer incoming data call

Causes the modem to go off hook and attempt a handshake in answer mode.

A/ Repeat last command

Causes the modem to repeat the last AT command. This command is neither preceded by AT and is not followed by CR.

ATD Dial Command

0:9	Dial number.
*	DTMF digits.
#	DTMF digits.
A-D	DTMF digits.
L	recall the last number dialed.

ATE Commands Echo

E0	Commands echo disabled.
E1	Commands echo enabled.

ATH DISCONNECTION

H0	Modem disconnects.
H1	Modem connects to the line and remains in command mode for the time defined in S7.

ATI IDENTIFICATION

I0	Maximum line speed.
I1	Product code.
I3	Product name.
I4	Firmware release.
I5	GSM phone driver.

ATO RETURN ON LINE

O0	On line state when during connection the modem is in command mode.
O1	Like previous plus retrain.

ATQ QUIET RESULT CODES

Q0	Display result codes.
Q1	No result code (quiet).

ATS READ/WRITE A REGISTER

Sn=x	Write value x to S Register n.
Sn?	Read value at S Register n.

ATV VERBOS RESULT CODE

V0	Result code displayed as digit (short form).
V1	Result code displayed as words (extension form).

SHORT	VERBOUS
0	OK
1	CONNECT
2	RING
3	NO CARRIER
4	ERROR
5	CONNECT 1200
6	NO DIALTONE
7	BUSY
8	NO ANSWER NO
10	CONNECT 2400
11	CONNECT 4800
12	CONNECT 9600
13	CONNECT 7200
14	CONNECT 12000
15	CONNECT 14400

SHORT	VERBOUS
16	CONNECT 19200
17	CONNECT 38400
19	CONNECT 115200
40	CARRIER 300
46	CARRIER 1200
47	CARRIER 2400
48	CARRIER 4800
49	CARRIER 7200
50	CARRIER 9600
66	COMPRESSION:CLASS5
67	COMPRESSION: V42 bis
69	COMPRESSION: NONE
70	PROTOCOL: NONE
77	PROTOCOL: LAP-M
80	PROTOCOL: ALT

ATW REPORT AT CONNECTION

W0	When connected the modem displays: CONNECT and the digital rate.
W1	When connected the modem displays: Line Speed, Error Correction Protocol (if any), Digital rate.
W2	When connected the modem displays: CONNECT and line speed.

ATX DIAL TONE MESSAGE

X4	Message enabled.
----	------------------

ATZ RESET AND LOAD USER PROFILE

Z0	Reset and load user profile.
----	------------------------------

AT&C DCD Control (C.109)

Determine how the state of the DCD (C.109) relates to the data call status.

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

AT&D DTR Control (C.108)

Determine how the DTR is interpreted by Palladio Twin ISDN.

&D0	C108 is ignored.
&D1	If DTR drops while Palladio Twin ISDN is on-line, the effect is the same as if the escape sequence is received, forcing Palladio Twin ISDN into command mode without dropping the connection. When Palladio Twin ISDN is in off-line status DTR drops are ignored.
&D2	DTR complies with ITU-T C108.2; while DTR is Off Palladio Twin ISDN will not answer a call. If DTR drops while Palladio Twin ISDN is on-line, the call is immediately terminated.
&D3	DTR drop is equivalent to ATZ.

&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

&K Flow control

Define the flow control options

&K0	NO flow control.
&K3	Hardware RTS/CTS flow control

&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 Palladio Twin ISDN hangs-up.

&V Display active profile**AT+CBST Select Bearer Service Type**

Format: AT+CBST= <speed> , <name> , <ce> <speed>

<speed>

0 =	autobauding
1 =	300 bps (V.21)
2 =	1200 bps (V.22)
3 =	1200/75 bps (V.23)
4 =	2400 bps (V.22 bis)
5 =	2400 bps (V.26ter)
6 =	4800 bps (V.32)
7 =	9600 bps (V.32)
8 =	unknown or network specific
65 =	300 bps (V.110)
66 =	1200 bps (V.110)

68 = 2400 bps (V.110)
70 = 4800 bps (V.110)
71 = 9600 bps (V.110)
<name>
0 = asynchronous modem
<ce>
0 = transparent
1 = non transparent

The command:

AT+CBST?

display the current values of bearer service and data rate.

The default value is:

+CBST: 7,0,1

AT\N Error correction mode select

\N0	Error correction disabled, data Transparent
\N1	Error correction disabled, data Transparent
\N2	Error correction enabled in RLP or MNP. Data can in in Transparent or Non transparent
\N3	Error correction enabled in RLP or MNP or Transparent. Data can in in Transparent or Non transparent
\N4	Error correction in RLP mode, data in Non Transparent
\N5	Error correction in MNP mode data Transparent

The value of \N enforces the <ce> element in the +CBST command.

4. DIAGNOSTIC

4

4.1. ISDN LINE TEST

&T120

Enable the test of the ISDN line.

After this command if you make a call with ATD, on the monitor of your Computer will appear the status of the line.

&T122

Disable the testing mode.

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

or you will not see any answer to the call request.

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 installed by your Telecom provider has a simple LED to indicate the ISDN physical level status.
- Verify the S/T bus cable from the NT1 to your device.
- Verify that the TEI value on your device is compliant with the Network requirements (see AT/T command).

Usual value are: TEI=00 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 connections are available in the same time.

5.2. PROBLEMS DURING DATA TRANSFER

Check list:

- Verify the speed of the Computer in accordance with the type of your connection
I.e.: 115,2Kbps in PPP, V.120 o Buffer Mode to reach the maximum performances
- Verify the flow control setting.

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 found one of the following status.
B1 or B2 blinking and never on. It indicates the availability of the ISDN line but the fault of the dialing.
B1 or B2 on, but after few seconds hungup. The problem is during the synchronization phase in data mode. Verify the selected protocol (V.110, V.120, PPP).
B1 or B2 off or blinking for a very short time. Incompatibility between the ISDN line and the setting of the device.

DECLARATION OF CONFORMITY

This product satisfies the basic requirements of Electromagnetic Compatibility and Safety of the below indicated Directive:
I 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.

