User's Manual

T I Z I A N O   5 6
M E M O R Y

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PREFACE

The following installation rules should be respected in order to have the best working order of the equipment and for the user's safety.

ENVIROMENTAL CONDITIONS

For <u>all</u> devices:

ENVIROMENTAL TEMPERATURE	RELATIVE HUMIDITY
from 0 to + 45°C	from 20 to 80% 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 220-240 Volt single phase 50 Hz
ISOLATION CLASSIFICATIONS 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.

1. GENERALITY

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This operating manual describes the installation procedures and the main features of **Tiziano 56 Memory**.

Tiziano 56 Memory is a multistandard fax/modem suitable for applications requiring ultra high speed over the PSTN line.

It complies with ETS 300-001 European regulation and it is homologated by the P.T. Ministery to be connected to the national telephone line (RTN).

The homologation number is shown on the label under the modem.

DEAR CUSTOMER,

Your Tiziano 56 Memory complies with the 56Kbps standard according to the **ITU-TV.90** regulation for data communication up to 56000 bps.

The V.90 standard, like the K56Flex, has an unbalanced connection speed. It means that you have a connection where data are received at the maximum speed of 56000 bps and sent at the maximum speed of 33.600 bps.

The unbalance, due to the technical limitations of the analog telephone lines, allows to carry out connections with top performances in applications of Internet access or remote access.

In order to reach the connection speed of 56000 bps, according to the 56K technology, one of the two modems must be connected to a digital network (usually ISDN or *64 in G703/G7047). In fact, the modems of the Services Provider (Internet POP or access servers) are special ones, like "Central Site Modem"(CSM).

The maximum speed, when receiving data, in users connections over analog line is 33.600 bps.

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1.1. PRODUCT PACKAGE CONTENTS

- Tiziano 56 Memory
- Serial cable
- Drivers for Windows® 98/95, NT4 (Windows® version only)
- Drivers for Mac OS (Macintosh® version only)
- Voice/Data/Fax software for Windows® 98/95, NT4(Windows® version only)
- Voice/Data/Fax software for Macintosh® (Macintosh® version only)
- Installation guide

1.2. PRODUCT FEATURES

- Asynchronous Tx: from 300 to 115200 bps.
- Standard modulations for modem section: V.90, K56flex™,V.34 annex 12, V.34, V.32bis, V.32, V.22bis, V.22, V.21, V.23 (1200/75).
- Standard modulations for fax section: V.27ter, V.29 Group 3 Class 1 for fax Tx/Rx up to 14.400 bps (optional fax emulation software is required).
- AT command set with autobaud for the data mode up to 115.200 bps.
- Non volatile memory directory for user profiles.
- Auto dial and autoanswer.
- Tone and pulse dialing.
- Internal telephone book
- MNP10-EC Enhanced Cellular (available on request)
- Error Correction: MNP 4/10 and V.42
- Data Compression: MNP 5 and V.42bis
- Fax emulation
- Digital answering machine
- Speakerphone

2. INSTALLATION

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2.1. HARDWARE INSTALLATION

Check the modem is OK after you removed it from the package.

Use the universal cable in the package to connect the modem to anyone of the computer serial ports.
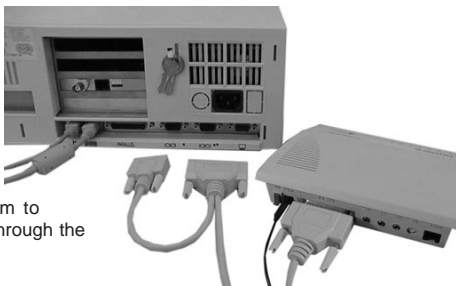
Connect the modem to the telephone line through the cable supplied.

If you work with a **Macintosh®** connect the serial cable to the "Modem port" or to the "Printer port".

After you carried out the serial ports and the telephone line connections connect the modem to the external power supply and switch ON the power switch on the rear panel.
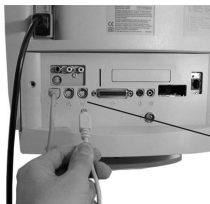
Check that the LED PWR indicator is on.

Go on with the installation reading the SOFTWARE INSTALLATION section.

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2.1
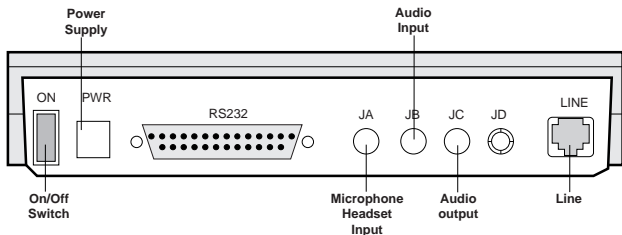
Picture 2.1. Desktop version rear panel

2.2.   SOFTWARE INSTALLATION

● **WINDOWS® 95/98/NT4.0 Drivers**

Before starting with the software installation, please read the file Readme.txt on the Floppy Disk or the CD ROM included with the modem package.
This file contains the complete installation procedure and more details about the different versions of Windows® 95/98.

The following sections describe the **standard installation** of the software driver for your modem using Windows® 98/95/NT4.0

● **MACINTOSH® ARA/Open Transport Drivers**

Copy your modem driver from the Floppy Disk or the CD ROM folder into the "**System Folder**"-> **Extensions** ->**Modem Script**.

Your modem driver is now listed and available for any application that uses ARA/Open Transport.
Remember to select the correct communication port in the application in accordance with the hardware installation and disconnect the AppleTalk protocol on the busy port.

Follow this procedure to correctly disconnect the protocol:
1. Open the **AppleTalk** from the Control panel
2. Select "**User Mode**" from Edit Menu (or command-U)
3. Select "**Advanced**" and then click OK
4. Click "**Options**"
5. Select "**Inactive**" and then click OK
6. Close the AppleTalk
7. **Save** the new settings

Initialization string for FreePPP
If you are using FreePPP for connections to the Internet or to other access systems, the initialization string is the following: **AT&FX3&C1&D2&K3\N3%C3**

● **OTHER DRIVERS**

For other Operating Systems, see the installation procedures on the Floppy Disk or the CD ROM included in the modem package.

2.2.1. WINDOWS® 95/98/NT4.0

1. Run Windows®95/98/NT4.0
2. Select from the START icon : **Settings-Control Pannel- Modem- Add**

2.3
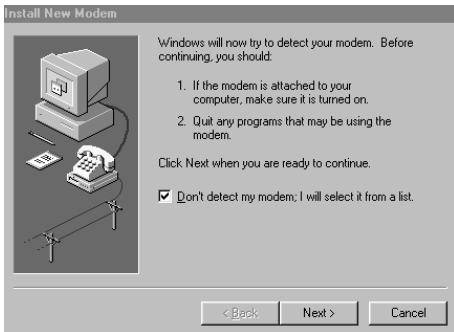
3. From the window "**Install New Modem**" put a tick in the box "**Don't detect my modem**" and click Next.
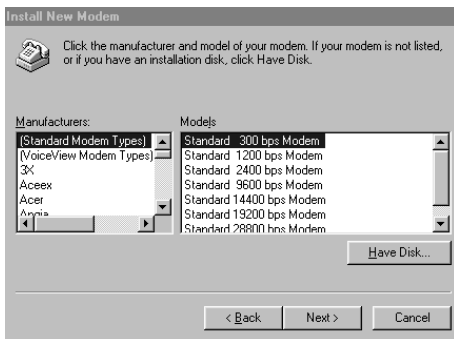
4. Click on Disk.
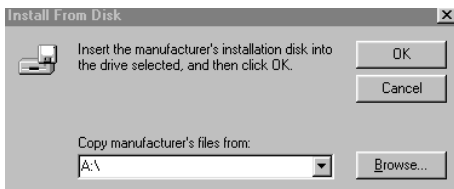
5. In the window "**Install from disk**": Insert the Floppy disk or the CD ROM in the appropriate drive(A: or CD-Rom reader) and select the unit "**Copy manufacturer's files from:**" then press **OK**.
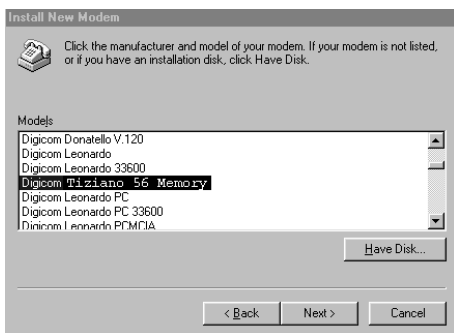
6. From the list select the driver to use (e.g. Digicom Tiziano 56 Memory) and click **Next**.
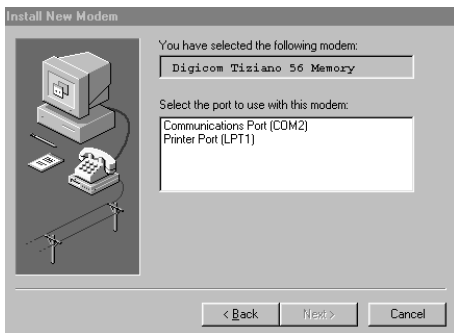
7. Select the COM port where your modem is connected, then clik **Next** and then **Finish**.

Your modem is now installed among the modems Windows® will use for the connections. It will be possible to select it from the list in the Windows® setup menus (Hyperterminal, Remote Access, etc.).

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2.2.2. MACINTOSH® - MODEM INSTALLATION FOR ARA OPEN TRANSPORT

Be sure you have on your Mac the Open Transport drivers for your modem. Install them by copying the files from the ARA/OT folder (they are on the driver supplied with the modem) into the **"System Folder -> Extensions -> Script Modem"**.

From Control Panel select **PPP**.

Select Registered User, insert user ID and password and the number to be dialed.
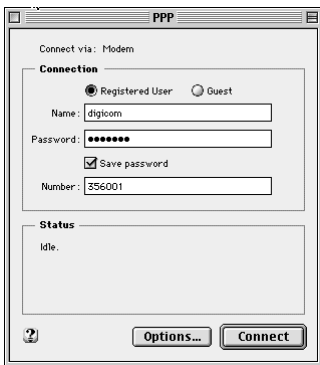
From the bar menu select **PPP** and then **Modem**...
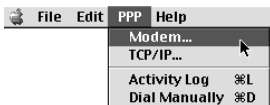
Select the serial port to be used and your modem from the list.

2.6
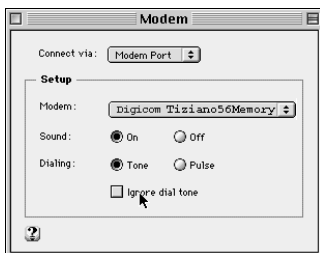
From the bar menu select **PPP** and then **TCP/IP**...
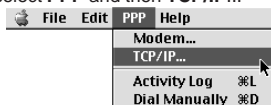
In the next window select the **PPP** protocol in the field "**Connect via**"
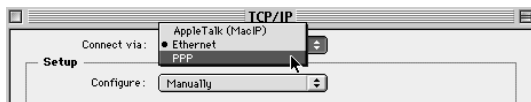
The fields concerning the parameters used for the connection in PPP will appear.
Eventually insert the parameters supplied by your provider (DNS etc.)

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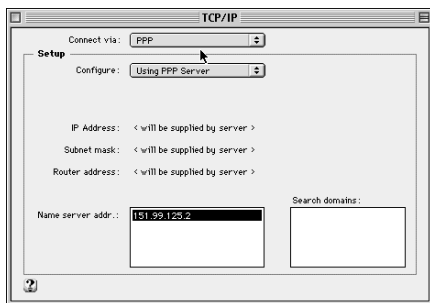
3. MODEM AT COMMAND SET

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The modem supports a complete 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 +++. To be valid, the sequence must be followed by an AT command, i.e. "+++AT<CR>".

Data Length

Digicom's modems can manage the following ASCII code formats:

CASE	START BIT	DATA BIT	PARITY	STOP BIT	TOT
1	1	7	1	1	10
2	1	8	0	1	10
3	1	7	0	2	10
4	1	8	1	1	11

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

3.1. AT COMMAND SET DESCRIPTION

NOTE: "●" *default factory commands*

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

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

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A/   Repeat last command

Cause the modem to repeat the last AT command. This command must not be preceded by AT and followed by CR.

ATD   Dial Command

0:9	Dial numbers
*	DTMF digits
#	DTMF digits
A..D*	DTMF digits
P	Pulse dial
T	Tone dial
S=n	Select a number stored in the modem internal book (see AT&Z command)
!	Flash
W	Wait for dial tone
@	Wait for five seconds of silence
,	Pause
L	Recall the last number dialed
;	Return to Command state. Added to the end of the dial string, this causes the modem to return to the command state after it processes the portion of the dial string preceding the ";". The modem will enter call progress only after an additional dial command is issued without the ";" terminator.
^	Toggle calling tone

ATE   Commands Echo

	E0	Commands echo disabled.
●	E1	Commands echo enabled.

ATH   DISCONNECTION

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

ATI   IDENTIFICATION

I0	Maximum line speed
I1	Product type
I3	Product name
I4	Software release
I5	Active Country Code

ATL   SPEAKER VOLUME

	L1	Low speaker volume.
	L2	Medium speaker volume.
●	L3	High speaker volume.

ATM   SPEAKER CONTROL

	M0	Speaker disabled.
●	M1	Speaker on until carrier is detected.
	M2	Speaker always on.
	M3	Speaker off during dialing and on until carrier is detected.

ATO   RETURN ON LINE

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

ATP   SET PULSE DIAL DEFAULT

This command forces pulse dialling.

ATQ   QUIET RESULT CODES

●	Q0	Answer codes enabled.
	Q1	Answer codes disabled.

ATS   READ/WRITE REGISTER

Sn=vvv	Write the vvv value in the n Register.
Sn?	Display the value stored in the n Register.

ATT   SET TONE DIAL DEFAULT

This command forces tone DTMF dialling.

ATV   RESULT CODE FORMAT

	V0	Result code display as digit (short form).
●	V1	Result code display as words (extened form).

RESULT CODE SHORT & EXTENDED FORM SUMMARY

SHORT	EXTENDED		SHORT	EXTENDED
0	OK		4	ERROR
1	CONNECT		5	CONNECT 1200
2	RING0		6	NO DIALTONE
3	NO CARRIER		7	BUSY

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Modem AT Command Set

SHORT	EXTENDED		SHORT	EXTENDED
8	NO ANSWER		58	CARRIER 28800
10	CONNECT 2400		78	CARRIER 31200
11	CONNECT 4800		79	CARRIER 33600
12	CONNECT 9600		66	COMPRESSION: CLASS 5
13	CONNECT 7200		67	COMPRESSION: V42 bis
14	CONNECT 12000		69	COMPRESSION: NONE
15	CONNECT 14400		76	PROTOCOL: NONE
59	CONNECT 16800		77	PROTOCOL: LAP
16	CONNECT 19200		80	PROTOCOL: ALT
61	CONNECT 21600		150	CARRIER 32000
62	CONNECT 24000		151	CARRIER 32000
63	CONNECT 26400		152	CARRIER 36000
64	CONNECT 28800		153	CARRIER 38000
91	CONNECT 31200		154	CARRIER 40000
84	CONNECT 33600		155	CARRIER 42000
17	CONNECT 38400		156	CARRIER 44000
19	CONNECT 115200		157	CARRIER 46000
22	CONNECT 1200TX/75RX		158	CARRIER 48000
23	CONNECT 75TX/1200RX		159	CARRIER 50000
40	CARRIER 300		160	CARRIER 52000
44	CARRIER 1200/75		161	CARRIER 54000
45	CARRIER 75/1200		162	CARRIER 56000
46	CARRIER 1200		165	CONNECT 32000
47	CARRIER 2400		166	CONNECT 34000
48	CARRIER 4800		167	CONNECT 36000
49	CARRIER 7200		168	CONNECT 38000
50	CARRIER 9600		169	CONNECT 40000
51	CARRIER 12000		170	CONNECT 42000
52	CARRIER 14400		171	CONNECT 44000
53	CARRIER 16800		172	CONNECT 46000
54	CARRIER 19200		173	CONNECT 48000
55	CARRIER 21600		174	CONNECT 50000
56	CARRIER 24000		175	CONNECT 52000
57	CARRIER 26400		176	CONNECT 54000
			177	CONNECT 56000

Note: The commands in the above list can be followed by \ARQ message

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 DETECTION

	X0	No control on dial tone.
●	X1	Busy and dial tone are ignored.
	X2	Dial tone detected.
	X3	Busy tone detected.
	X4	All messages enabled.

ATZ   RESET AND LOAD USER PROFILE

Z0	Reset and load user profile 0.
Z1	Reset and load user profile 1.

AT+MS= MODULATION FORMAT

This extended-format command selects the modulation, optionally enables or disable automode, and optionally specifies the lowest and highest rates using one to four subparameters. the command format is:

> **AT+MS=[mod],[automode],[min_rate],[max_rate]**

# [mod]	= modulation type
# [automode]	= automode enable or disable
# [min_rate]	= min. line speed
# [max_rate]	= max.line speed

● **Modulation type** (see the table below)

MOD	MODULATION	POSSIBLE RATE bps
0	V.21	300
1	V.22	1200
2	V.22bis	2400 or 1200
3	V.23	1200
9	V.32	9600 or 4800
10	V.32bis	from 14400 to 4800
11	V.34	from 33600 to 2400
12	V.90	from 56000 to 28800
56	K56Flex	from 56000 to 32000
64	Bell 103	300
69	Bell 212	1200

● **Automode**: see the ATN command
● **Line speed min/max**: These parameters permit to define, within a modulation standard, the minimum and maximum connection rate.
The AT+MS? command shows the currently modem configuration, the default value is: 12,1,300,56000

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Some configuration examples

- Modem set up with automode enabled and connection speed between 300 bps and 56000 bps:

  AT+MS=12,1,300,56000

  The modem will connect at the maximum speed available if the interface speed is equal or higher than the max rate (56.000bps).

  If the computer speed is less than the max rate, the modem will connect at the computer speed.
- Modem set up in V.34 with automode disabled and speed fixed at 33.600

  AT+MS=11,0,33600,33600

  In this case the modem will connect only if the computer speed is equal or higher than the speed setup in the AT+MS command.

  AT+MS=9,1,300,9600

  The modem can handshake from V.32 (9600 bps) to V.21 (300 bps).

Standard	Available speeds
V.90	56000, 54667, 53333, 52000, 50667, 49333, 48000, 46667, 45333, 44000, 42667, 41333, 40000, 38667, 37333, 36000, 34667, 33333, 32000, 30667, 29333, 28000
K56Flex	56000, 54000, 52000, 50000, 48000, 46000, 44000, 42000, 40000, 38000, 36000, 34000, 32000
V.34	33600, 31200, 28800, 26400, 24000, 21600, 19200, 16800, 14400, 12000, 9600, 7200, 4800, 2400
V.32bis	14400, 12000, 9600, 7200, 4800
V.32	9600, 4800
V.22bis	2400, 1200
V.22	1200
V.21	300
Bell 103	300
Bell 212	1200

AT%C   DATA COMPRESSION CONTROL

%C0	Compression disabled.
%C1	MNP5 enabled only.
%C2	V42bis enabled only.
● %C3	MNP% and V42bis enabled.

AT%E   AUTORETRAIN CONTROL

%E0	Autoretrain disabled.
%E1	Autoretrain enabled.

- %E2   Fallback/fallforward enabled. Enabled only in error corrector or buffer mode.

AT%L   DISPLAY RECEIVE LEVEL IN DBM

Returns a value which indicates the received signal level.
Example *009 = -9 dBm,   043 = -43 dBm.*

AT%Q   LINE SIGNAL QUALITY

From 000 (good quality) to 127 (poor quality, troubled signal).

AT&C   CARRIER DETECT OPTION

        &C0   Carrier detect always ON. When modem disconnect DCD (C109) goes OFF for 1 sec.; function 109 wink.
- &C1   Carrier detect is ON when remote carrier is present.

AT&D   DATA TERMINAL READY OPTION

        &D0   DTR signal is ignored.
        &D1   Modem return to Command Mode upon detecting ON to OFF transition on DTR.
- &D2   Modem hangs up and disables auto-answer upon detecting ON to OFF transition on DTR.
        &D3   Modem reset upon detecting ON to OFF transition on DTR.

AT&F   FACTORY CONFIGURATION

        &F0   Load factory configuration 0.
        &F1   Load factory configuration 1.AT&G   GUARD TONE

AT&K   DATA FLOW CONTROL

        &K0   Flow control disable.
- &K3   Hardware flow control (RTS/CTS) enabled (Default for data modem modes).
        &K4   Software flow control (Xon/Xoff) enabled.
        &K5   Software flow control (Xon/Xoff) in trasparent mode enabled.
        &K6   Hardware and software flow control enabled (default for fax modem modes).

AT&P   MAKE/BREAK RATIO

- &P0   39%-61% make/break ratio with 10 pulses per second.
        &P1   33%-67% make/break ratio with 10 pulses per second.

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AT&Q OPERATING MODE SELECTION

&Q0   Asyncronous direct mode.
- &Q5   Operations with error corrector. It is automatically selected with \N command (different from 0 and 1).
&Q6   Asynchronous with buffer enabled (AT/N0).

AT&R C106

&R0   In asynchronous mode, C106 is controlled according to V25 handshake reccomandation.
- &R1   In synchronous mode, C106 follows the flow control.

AT&S C107 (DATA SET READY OPTION)

- &S0   DSR will remain ON all the time.
&S1   DSR will become active after answer tone has been detected and inactive after the carrier has been lost.

AT&V VIEW ACTIVE AND STORED PROFILES

AT&W STORE ACTIVE PROFILE

&W0   Store active profile as Profile 0.
&W1   Store active profile as Profile 1.

AT&Y   DEFINE DEFAULT PROFILE AFTER POWER ON

- &Y0   Use profile 0 after power on.
&Y1   Use profile 1 after power on.

AT&Z   STORE THE X TELEPHONE NUMBER IN A N LOCATION

AT&Zn =X (n = from 0 to 3; X = dialing string from 0 to 35 numbers).

AT\N   ERROR CORRECTION AND BUFFER CONTROL (MNP AND V42)

\N0   Selects normal speed buffered mode (disables error correction mode). Forces &Q6.
\N1   Serial interface selected. Selects direct mode and is equivalent to &M0, &Q0 mode operation. Forces &Q0.
\N2   Selects reliable (error correction) mode. The modem will first attempt a LAPM connection and then an MNP connection. Failure to make a reliable connection results in the modem hanging up. Forces &Q5.
- \N3   Selects auto reliable mode. This operates the same as \N2 except failure to make a reliable connection results in the modem falling back to the speed buffered normal mode.

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\N4 Selects LAPM error corrector mode. Failure to make an LAPM error-correction connection results in the modem hanging up. Forces &Q5.

\N5 Selects MNP error corrector mode. Failure to make an MNP error-correction connection results in the modem hanging up. Forces &Q5.

Note: Error correction starting from V22 standard

AT\V   MESSAGE COMPOSITION

\V0 Messages are managed over several lines, according to X, W and S95 commands.

\V0 Messages are managed over a single line, according to V and Q commands.

3.1.1. MNP10 COMMAND

AT-K   MNP10 SERVICE MANAGEMENT

-K0 Disable MNP10 service. The modem negotiates V42bis only.
● -K1 Enable MNP10 service using detection phase
-K2 Enable MNP10 service without using detection phase

3.1.2. CELLULAR MODE COMMAND

AT-SEC Select MNP10EC

Enable or disable automatic adjustment of the trasmit power level to accomodate the signalling requirements of cellular telephone equipment.

AT-SEC=0 Disable MNP 10EC. Transmission level is the one set in S91 register.

NOTE: The default is 1 in case the modem detects the cellular

AT-SEC=1,[tx_lev]   Enable MNP10EC and set trasmit level [tx_lev] 0 to 30 (0dBm to-30dBm)

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3.2. VOICE AT COMMANDS

AT#BDR Select Baud Rate (No Speed Sensing)

- Select baud rate specified by n parameter
  n=0..48 baud rate=n*2400 bps

AT#CLS Select DATA-FAX/VOICE/AUDIO

- #CLS=0   Select Data mode
- #CLS=1   Select Fax mode
- #CLS=8   Select VOICE/AUDIOMODE

AT#VBT Beep Tone Timer

Defines the beep tone timer
n=0..40 (0..4 seconds)
- n=10

AT#VLS Select VOICE LINE

Selects Microphone (MIC), Speakerphone (SPK) and Headset for the
    voice functions
- #VLS=0   Data-Fax mode, no device enabled
- #VLS=2   Speakers enabled (messages listening)
- #VLS=3   Microphone enabled (messages recording)
- #VLS=6   Speaker/Microphone enabled in Speakerphone mode
- #VLS=7   MUTE mode (microphone disabled in Speakerphone mode)

AT#VRX VOICE receive

Enables the messages recording (This command is valid only when
    modem is in voice command mode)

AT#VSP Silence detection period

Defines the silence detection timer. After that time the DTE stops the
    recording
n=0..255 (0..25.5 seconds)
- n=55

AT#VSR Select the SAMPLING RATE

Selects the ADPCM/PCM sampling rate
- #VSR=7200   Selects 7200Hz
  #VSR=11025   Selects 11025KHz

AT#VSS   Enables the SILENCE detection

- #VSS=0   Disables the silence detection
- #VSS=1   Enables the silence detection (minimum sensitivity)
- #VSS=2   Enables the silence detection (medium sensitivity)
- #VSS=3   Enables the silence detection (maximum sensitivity)

AT#VTS   Tones generation

- {x,y,z} Generates single or dual tone (only when in online voice command mode and #VSR=7200)
  - x   is the first frequence (0 or 200:3000Hz)
  - y   is the second frequence (0 or 200:3000Hz)
  - z   is the tone timer (100ms)
- {x,y}   Generates variable DTMF tones
  - x   is the DTMF tone (0-9, A-D, *, #)
  - y   is the timer (100ms)
- {x}   Generates fixed DTMF tones (from #VBT)
  - x   is the DTMF tone (0-9, A-D, *, #)

AT#VTX VOICE transmit

Enables the messages listening. This command is valid only when modem is in voice command mode.

3.3. SPEAKERPHONE AT COMMANDS

Tiziano 56 Memory can work also in full-duplex speakerphone mode. To modify the values setting in Speakerphone mode, use the following command:

AT#SPK

at#SPK =mute, spkr, mic
- at#spK =1,10, 1
   mute Mute parameters
   - 0   mute microphone
   - 1   microphone ON
   - 2   room monitor
   spkr Speaker attenuation (2dB steps)
   - 0   0dB attenuation
   - 15 30dB attenuation
   - 16 speaker mute
   mic microphone gain
   - 0   0dB
   - 1   10dB
   - 2   15dB
   - 3   20dB

To enable the Speakerphone mode, see the following examples:

Call in speakerphone mode

AT#CLS=8
AT#VRN=0
AT#VLS=6
ATD (number)
modem answers with a message
VCON
(modem is connected in speakerphone mode)
+++ to terminate the call

Answer in Speakerphone mode

AT#CLS=8
AT#VRN=0
AT#VLS=6
ATA
modem answers with a message
VCON
(modem connected in Speakerphone mode)
+++ATH to terminate the call

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3.4.   S REGISTERS

REG.	RANGE	UNIT	DEF.	DESCRIPTION	SAVED
S0	0,2-5	Ring	0	Ring to answer on	●
S1	0-255	Ring	0	Ring count	
S2	0-255	ASCII	43	Escape character	●
S3	0-127	ASCII	13	Carriage return character	
S4	0-127	ASCII	10	Line Feed character	
S5	0-127	ASCII	8	Back Space character	
S6	3-10	1 sec.	4	Wait for dial tone	●
S7	0-90	1 sec.	60	Wait for data carrier	●
S8	0-255	1 sec.	2	Pause time for "," character	●
S9	0-255	100ms	6	Answer tone detection time	●
S10	0-255	100ms	14	Lost carrier to hang up delay	●
S12	0-255	20ms	50	Escape sequence code guard	●
S18	0-255	1 sec.	0	Test timer	●
S29	0-255	10ms	10	Flash time	
S30	0-255	1 min	0	Inactivity timer on data (cannot be stored)	
S32	0-255	ASCII	17	Xon character	
S33	0-255	ASCII	19	Xoff character	
S91	10-15	dB	15	Adjust transmission level	
S92	10-15	dB	15	Adjust transmission level in fax mode	
S95	0-255	ASCII	2	Connection messages management	●

3.4.1. SPECIAL S REGISTER DESCRIPTION

ATS9   DETECTION TIME FOR ANWER TONE

0 - 255 100ms	Answer tone detection before handshake

Default = 6

ATS10   CARRIER DETECT RESPONSE TIME

0-255 100ms	Sets the length of time, in thenths of a seconds, that the modem waits before hanging up after a loss of carrier.
255 10ms	The modem doesn't disconnect for a loss of carrier

Default = 14

ATS30   INACTIVITY DISCONNECT TIMER

0	The modem doesn't disconnect as no data is sent or received.
0-255	Sets the length of time, in tens of seconds, that the modem will stay online before disconnectiong when no data is sent or received. The timer is inoperative in synchronous mode.

Default = 0 (cannot be stored)

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ATS91   ADJUST TRANSMISSION LEVEL IN SWITCHED LINE

| 10-15 dB | This register checks the modem transmission level in switched line |

Default=15

ATS92   ADJUST TRANSMISSION LEVEL IN FAX MODE

| 10-15 dB | This register checks the modem transmission level in fax mode. |

Default=15

Note: Each change of S91 and S92 is automatically stored into the modem non volatile memory.

3.5.   CONNECTION MESSAGES

S95	ATW0	ATW1	ATW2
0	CONNECT Dte	CARRIER Dce PROTOCOL: Prot. CONNECT Dte	CONNECT Dce
1	CONNECT Dce	CARRIER Dce PROTOCOL: Prot. CONNECT Dce	CONNECT Dce
2	CONNECT Dte/ARQ	CARRIER Dce PROTOCOL: Prot. CONNECT Dte/Arq	CONNECT Dce/ARQ
4	CARRIER Dce CONNECT Dte	CARRIER Dce PROTOCOL: Prot. CONNECT Dte	CARRIER Dce CONNECT Dte
8	PROTOCOL: Prot. CONNECT Dte	CARRIER Dce PROTOCOL: Prot. CONNECT Dte	PROTOCOL: Prot. CONNECT Dce
32	COMPRESSION: Comp. CONNECT Dte	CARRIER Dce PROTOCOL: Prot. COMPRESSION:Comp CONNECT Dte	COMPRESSION: Comp. CONNECT Dce

Dce	= Line Speed
Dte	= Interface Speed
Comp.	= V.42bis - MNP5 - NONE
Prot.	= V.42 - LAPM - NONE

COMMAND	DESCRIPTION
ATX	List of available messages
ATW	Answer message Format
ATS95	Connection message management

3.14

4. PERFORMANCES WHEN COMPUTER IS OFF

4

4.1. MAIN FEATURES

Tiziano 56 Memory is able to store voice messages and faxes also when the PC is turned off.

Thanks to the memory function, Tiziano 56 Memory is really a complete device that can be used for any application. It is not only an ISDN voice/fax/modem but also an answering machine and a fax working when your PC is off.

As the memory function is carried out by the digital section of the device, be sure you are correctly interfaced by sending the AT$M0 before you send any other AT command.

Tiziano 56 Memory can also connect at 64 Kbps over the ISDN line and at the same time it can use the second channel for the answering machine. You can surf the Internet via ISDN and simultaneously receive faxes and voice messages by using the memory section of the second ISDN channel.

Tiziano 56 Memory is able to recognize, when the computer is off, if the incoming call is a fax or a voice call.

Thanks to its 4 MB of memory it is possible to store up to 20 minutes messages or 50 pages faxes. Every single message can be max. 45" long.

If the memory mode is enabled the modem automatically answers to a phone call or to a fax after 4 rings.

To download the voice messages and the faxes stored into Tiziano 56 Memory, simply activate the fax/voice program supplied.

It is possible to customize the management of the memory function by using the AT commands sent to the modem with a terminal emulator.

Tiziano 56 Memory has a welcome message like: "*This is an answering machine, please leave a message after the tone, thank you*". After this welcome message (Message type "Answer and Record") the caller can leave a message. With this configuration it is possible to receive and store voice messages and faxes.

Anyway, the user can modify and customize the welcome message with a second one.

By following the procedure for the recording of the welcome message, you can:

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1) Modify the exhisting message (Message type "Answer and Record") and substitute it with a custom message. The message will always end with a bip and the caller can leave a message.
2) Add another welcome message (Message type "Answer only"). With this message, the caller can only send faxes. This type of message automatically activates when the modem memory is full.

4.2.   DESCRIPTION OF PWR LED FOR THE MEMORY FUNCTION

On the front panel there are some leds that indicate the status of the interface criteria of Tiziano 56 Memory. The PWR led indicates the status of the memory function. This led can change color (green, red, orange) and lighten in different ways.

Green continuous		Modem powered on, standard working
Red continuous		Voice messages or fax in memory
Red slow lightening	(1s ON; 1s OFF)	Reception of voice message or faxes
Red medium lightening	(0.5s ON; 0.5s OFF)	Download of voice messages or fax on the PC
Red quick lightening	(0.2s ON; 0.2s OFF)	Memory Full
Orange continuous		Donatello Memory is ready to record the welcome message
Orange slow lightening	(1s ON; 1s OFF)	Recording of the welcome message

4.3.   RECORD THE WELCOME MESSAGE

Tiziano 56 Memory has a default welcome message only (Answer and Record). You can modify it and add another message "Answer Only".

To record the welcome message go on as follows:

1) Connect Tiziano 56 Memory to your computer through the serial port.
2) - Prepare the welcome message you want to use.
   - Activate the fax/voice software supplied with the modem.
   - Record the welcome message (max. 15") directly on your computer using the microphone connected to the Tiziano 56 Memory or a microphone connected to the audio card.

If you decide to use the microphone connected to the modem, check, in the window of voice message recording, that the recording option is selected on modem.

If you decide to use the microphone connected to the audio card, check, in the window of voice message recording, that the recording option is selected on audio card.

3) By using the terminal emulation program, send the AT$M0 command and then AT%G1 or AT%G2. This allows to select the storage of the welcome message "Answer and Record" or "Answer Only".

4) Newly activate the fax/voice application and select the welcome message previously stored. Check the voice message listening is enabled on modem and not on audio card.

5) Wait until the PWR led turns orange continuous and then activate the listening of the message with Play. The recording of the welcome message starts. During the recording the PWR led must turn orange lightening.

6) Once the recording is over, the PWR led will turn green.

7) By using a terminal emulation program send the AT$M0 command and then the AT%R0 and AT%R1 to activate one of the two welcome messages.

8) In order to check if the recording of the message has been correctly carried out, send from a terminal emulation the commands AT$M0 and AT%Px of the activated message and listen to the message.

9) Tiziano 56 Memory is now ready to be used with the Memory function and the customized message.

NOTE: This procedure allows you to record one welcome message at a time. If you want to record the second welcome message, you have to repeat the procedure. This procedure can be activated only when the memory is free from voice messages and faxes.

The command AT%Rx allows to choose the welcome message to be used. In any case, when modem memory is full, the "Answer Only" message is activated.

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4.3

4.4. DOWNLOAD OF VOICE MESSAGES AND FAX

When some voice messages or faxes are in the memory, the PWR led is red continuous.

You can download the messages stored by connecting Tiziano 56 Memory to the computer and activating the voice/fax application supplied with the modem.

Before downloading, check the following:

1) the answering machine and the recorder function must be enabled;
2) the maximum time for the messages recording is more than 45".

After the application program has been enabled, Tiziano 56 Memory starts the download of the messages first and then of the faxes. During the download the PWR led turns red with a medium lightening.

Any voice message or fax is singularly downloaded and saved into the computer application.Once the download is over, the messages or faxes are cancelled from the modem memory; it means that if there is no power, no voice message or fax is lost.

4.5. AT COMMANDS FOR MEMORY FUNCTION

By using a terminal emulation program you can send the following AT commands to the digital section of Tiziano 56 Memory. These commands manage the memory functioning.

Before sending these AT commands, check that the computer is interfaced with the digital section of Tiziano 56 Memory.

Activate the terminal emulation program, send the AT$M0 command and then the commands for the management of the memory function.

AT%D   Download Management

Enables and disables the download of voice messages and faxes stored into Tiziano 56 Memory.

    AT%D0 Voice messages and faxes download disabled
- AT%D1 Voice messages and faxes download enabled

AT%G   Welcome Message Storage

This command stores the desired welcome message.

    AT%G1 Stores the welcome message "Answer and Record"
    AT%G2 Stores the welcome message "Answer Only"

AT%M Memory Option

It allows to select different functionings of the memory mode.

    AT%M0 Answering machine and fax disabled

    AT%M1 Fax enabled

    AT%M2 Answering machine enabled

• AT%M3 Answering machine and fax enabled

AT%P Message Listening

You can directly listen to the welcome message and the voice messages without downloading them. You can listen to them through the modem audio output. The messages you listen to are not cancelled.

    AT%P1 Direct listening of voice messages without downloading them on the computer

    AT%P2 Direct listening of the welcome message "Answer and Record"

    AT%P3 Direct listening of the welcome message "Answer only"

AT%R   Use of Welcome Message

It selects the welcome message to be used as answering machine. When the memory is full the "Answer Only" message is automatically activated.

    AT%R0 Uses the welcome message "Answer and Record". The caller can leave the message after the tone or send a fax.

    AT%R1 Uses the "Answer Only" message. No tone and fax reception only.

AT%W   Delete voice messages and faxes

It deletes the voice messages, the faxex or both.

    AT%W1 Delete voice messages

    AT%W2 Delete faxes

    AT%W3 Delete voice messages and faxes

AT%?   Display of voice messages and faxes

    AT%?   Display a list of voice messages and faxes stored into the modem. The size of each message is displayed.

An S register contains the number of rings to be detected in order to activate the answer in memory mode.

ATS90   Number of rings detected to answer in memory mode

    1-5   define the number of rings to be detected in order to activate the answer in memory mode.

    default+4

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4.5

DECLARATION C€ OF CONFORMITY

Digicom S.p.A. via Alessandro Volta 39 21010 Cardano al Campo -Varese-
declares that this product satisfies the basic requirements of
Electromagnetic Compatibility and Safety of the below indicated Directive:

- **89/336/CEE** of 3 may 1989 with subsequent modifications (Directive 92/31/CEE of april 28, 1992, Directive 93/68/CEE of july 22,1993 and Directive 93/97/CEE of 29 october 1993).
- **73/23/CEE** of february 19, 1973 with subsequent modifications (Directive 93/68 ECC of july 22, 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.
- The warranty is to be considered freight forward and the goods must reach the address indicated below at customer's expences.
- 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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