

## 6. AT COMMAND SET DESCRIPTION

### AT      Attention      Default=n/a

ATTENTION; in the AT command state the modem can automatically detect the terminal bit rate and character format, and adjust itself accordingly, as soon as a command is issued. The following DTE rates are permitted: 300, 600, 1200, 2400, 4800, 9600, 19200 and 38400.

### A/      Repeat last command      Default=n/a

This command causes the modem to repeat the last AT command. This command is neither preceded by the Attention Code (AT) nor followed by a carriage return.

#### COMMANDS WITH AT PREFIX

### ATA      Answer connection      Default=n/a

This command causes the modem to go off-hook immediately, answer an incoming telephone call and begin the answer sequence.

### ATB      Half/Full Duplex      Default=B0

Selects the working standard and the execution modes of the carrier, fixed or controlled; Accompanied by the F command selects the modulation standard which must be used.

B0      CCITT Modulation standard with fixed carrier. The principal functions implemented are: connection at Handshaking completion in the S7 time, transmission carrier always fixed, retrain in case of bad line quality, resynchronism in case of bad line quality, disconnection for C109 off for the time indicated by S10.

B2      CCITT modulation standard with controlled carrier. The principal functions implemented are: immediate connection even in absence of C109, transmission carrier controlled by C105, no retrain if there is a bad quality line, synchronism at the beginning of each polling sequence, disconnection for C109 off for the lapse of time indicated by S68, no SQ indication.

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**ATC      Carrier Sending      Default=C1**

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C0      carrier absent.  
C1      carrier present.  
Used for testing only.

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**ATD      Dial command      Default=n/a**

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This command causes the modem to go off-hook and automatically originate a telephone call.

“ATDnnnnnn”, executes a dialling sequence.  
“ATDN n”, calls a stored number n.

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**ATE      Echo ON/OFF      Default=E1**

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This command enables or disables echo characters.  
E0      echo disabled.  
E1      echo enabled.

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**ATF      Communication format      Default=F0**

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This command determines the communication format of data transmission when a call is to be originated or answered at a preselected rate. The commands #F and B must also be considered.

	bit/s	GROUP A		GROUP B	
		#F0	Bx	#F1	Bx
F0	Multistandard mode	(**)	B0	B0	
F1	300	V21	B0	V21	B0
F3	1200/75 Videotel	(*)	V23	B0	V23
B0					
F3	1200 Half Duplex	V23	B2	V23	B2
F4	1200	V22	B0	V22	B0
F5	2400	V22bis	B0	V22bis	B0
F6	4800	V32	B0	V32	B0
F7	7200	V32bis	B0	V32bis	B0
F8	9600	V32	B0	V32TCM	B0
F9	12000	V32bis	B0	V32bis	B0
F10	14400	V32bis	B0	V32bis	B0
...	...	...	...		
F16	1200	—	—	V26bis(*)	B2
F17	2400	V26(*)	B2/0	V26bis(*)	B2
F18	2400	V27bis(*)	B2/0	V27ter	B2
F19	4800	V27bis(*)	B2/0	V27ter	B2
F20	4800	V29	B2/0	V29	B2/0
F21	7200	V29	B2/0	V29	B2/0
F22	9600	V29	B2/0	V29	B2/0
F23	4800	V33P	B0	V33P	B0
F24	7200	V33P	B0	V33P	B0
F25	9600	V33P	B0	V33P	B0
F26	12000	V33	B0	V33	B0
F27	14400	V33	B0	V33	B0

(\*) See also command #V

(\*\*) See also command &A e \*A

Tab.:3. Modulation Standard Format

**ATH      ON-Hook      Default=n/a**

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This command controls the telephone switch hook, causing the modem to go immediately on-hook and terminate a call connection.

H0      disconnects the modem.

H1      connects the modem to the telephone line, but the modem is not in data mode (useful for testing).

**ATI      Inquiry      Default=n/a**

---

This command requests the product code of the modem and other information regarding its firmware.

I0      modem type.

I1      software revision level.

I2      checksum EPROM

I3      identification in S38

I4      product code

I8      revision level modules

**ATL      Speaker Volume      Default=L2**

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This command controls the volume of the modem's internal speaker.

L0      low speaker volume.

L1      low speaker volume.

L2      medium speaker volume.

L3      high speaker volume.

**ATM      Speaker Control      Default=M1**

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This command determines whether the modem's internal speaker is enabled.

M0      disables the speaker.

M1      disables the speaker when a remote carrier signal is present.

M2      speaker is always On.

M3      disables the speaker when a remote carrier signal is present and while the modem is dialling.

**Default=n/a**

For instance “**ATNn&Z0,123456**” stores the number 0,123456 in the “n” position of the dial directory.

n? **Display store number “n”**

This command displays a stored number “n” of the dial directory.

**Def=n/a**

O5 Goes back On-Line and, in V32Bis, activates if possible a **FALLFORWARD** procedure of line speed (increased) with retrain.

**ATQ      Quiet Mode      Default=Q0**


---

This command enables or disables result codes from DCE to DTE. The commands are always executed.

Q0      messages or result codes are sent.

Q1      messages or result codes are not sent.

**ATSr=    Set register “r”      Default=n/a**


---

This command allows the user to change modem configuration parameters stored in the S-Registers.

Sr=xxx    where r is between 0 and 99, and xxx is between 0 and a maximum number (typically 0 to 255) specified in each Register.

**ATSr?    Read register “r”      Default=n/a**


---

This command is used to test the value of the Register. Also see \*S command.

**ATV      Verbose result codes      Default=V1**


---

This command determines whether the modem sends the result codes to the DTE in English (Verbose Mode) or as digit codes (Terse Mode). If the results are not being returned to a program that requires digit responses, use of word codes is recommended. Digit codes are followed by <CR>; verbose codes are followed by <CR> and <LF>.

V0      selects digit codes; digit code is followed by a carriage return.

V1      selects word codes; word code is preceded and followed by a carriage return and line feed.

**ATX      Extended result codes      Default=X1**


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This command provides the user with an extended set of result codes. As result codes are enabled and disabled, the modem responds to or ignores conditions such as dial tone and busy signal.

X0      AT compatible.

X1      The modem does not recognize dial tone and busy signal.

X2      Looks for a dial tone.

X3      If a busy signal is received after dialling, the modem gives the “BUSY” signal to the DTE.

X4      The modem listens for a dial tone before dialling and recognizing a busy signal.

---

Digit code	Result code	X0	X1	X2	X3	X4
0	OK	*	*	*	*	*
1	CONNECT	*				
1	CONNECT 300		*	*	*	*
2	RING	*	*	*	*	*
3	NO CARRIER	*	*	*	*	*
4	ERROR	*	*	*	*	*
5	CONNECT 1200		*	*	*	*
6	NO DIALTONE			*		*
7	BUSY				*	*
8	NO ANSWER	*	*	*	*	*
9	... Non usato					
10	CONNECT 2400		*	*	*	*
11	CONNECT V23		*	*	*	*
12	RDL GRANTED		*	*	*	*
13	RDL DENIED	4	*	*	*	*
14	LDL GRANTED		*	*	*	*
15	(Aborted!)	3	*	*	*	*
16	... Non usato					
17	TPG GRANTED		*	*	*	*
18	TPG DENIED	4	*	*	*	*
19	/V42BIS		*	*	*	*
20	/REL5		*	*	*	*
21	/V42		*	*	*	*
22	/REL		*	*	*	*
23	/BUF		*	*	*	*
24	AUTOLOGON FAILED	3	*	*	*	*
25	CALLBACK PROGRESS		*	*	*	*
26	... Non usato					
27	DELAYED	4	*	*	*	*
28	FORBIDDEN	4	*	*	*	*
29	NO MEMORY	4	*	*	*	*
30	CONNECT 4800		*	*	*	*
31	CONNECT 9600		*	*	*	*
32	CONNECT 9600T		*	*	*	*
33	CONNECT 19200		*	*	*	*
34	CONNECT 38400		*	*	*	*
35	CONNECT 7200		*	*	*	*
36	CONNECT 12000		*	*	*	*
37	CONNECT 14400		*	*	*	*

Tab.:4. Extended result codes

Numbers 3 and 4 indicate that message sent, due to Hayes modems compatibility, which will be equivalent to the above table, when the modem is configured **X0**. (for example **RDL DENIED** will be replaced by **ERROR 4**).

**ATY      Long Space Disconnect      Default=Y0**

This command controls the long space disconnected feature. When enabled, the modem will disconnect itself from the telephone line (go on-hook) after receiving a continuous BREAK from the remote modem for 1.6 seconds. If Long Space Disconnect is enabled, the modem sends a continuous BREAK for 4 seconds after receiving the ATH0 command or when DTR is lowered if the AT&D2 (Data Terminal Ready) option is selected.

Y0      Long space disconnect disabled.

Y1      Long space disconnect enabled.

**ATZ      Recall User Configuration      Default=n/a**

This command resets the modem and loads the user defined configuration stored with &W command.

During remote configuration operation this command does not reset the modem but loads the user defined configuration in the temporary configuration.

*The user can store up to 10 configurations; they are stored in the memory locations from 0 to 9.*

Zn      Loads the user defined configuration stored with the command AT&Wn.



## COMMANDS WITH AT& PREFIX

### AT&A Autorate Control

Default=&A0

This command controls the autorate detection feature of the modem which allows the modem to fall forward and fallback if the signalling rate of the called modem does not match the local DTE. When enabled, a handshake is attempted at the highest rate possible in its multi-mode sequence; if unsuccessful, the lower speeds are tried until the call is established. When disabled, the modem will attempt to initially handshake at the DTE data rate set by the last AT command. Used when the modem is programmed for multistandard operation (command ATF0).

- &A0     autorate detection disabled; multistandard starting from the DTE speed.
- &A1     autorate detection enabled. The modem will start the handshake at the maximum speed available on the line following the sequence V.32bis/V.32/V.22bis/V.22/V.21 with long synchronization times.
- &A2     autorate detection enabled. The modem will start the handshake at the maximum speed available on the line following sequence in annex A of CCITT V.32bis recommendation: V.32bis/V.32/V.22bis/V.22/V.21 with short synchronization times.
- &A3     same as &A2, but with V.21 and V.23 standards also.

### AT&C C107-C109 Control

C107 and C109 control. (Also see \*P2 and \*P3 commands)

- &C0     C107 and C109 forced On.
- &C1     C107 and C109 follow normal RS232.
- &C2     C107 forced On.
- &C3     C109 forced On.
- &C4     C107 and C109 forced On; at the disconnection C109 goes Off for 2 seconds.
- &C5     C107 and C109 forced On; Off-Line condition: if C108 goes Off, C107 and C109 go Off for 500 ms; On-Line condition: if modem disconnects, C107 and C109 go Off for 500 ms.

**AT&D C108 Options****Default=&D0**


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This command determines how the modem responds to the presence or absence of DTR (Data Terminal Ready) from the terminal.

- &D0 The modem ignores the true status of V.24 DTR (C108) pin condition and always treats it as ON.
- &D1 The modem returns to the command state when detecting an ON to OFF transition on DTR.
- &D2 C108 handled as C108.2; the modem drops the line and goes to idle mode when an ON to OFF transition of DTR (C108) is detected. Automatic answering and calling are disabled until DTR goes to ON condition. If the modem is configured for a leased line, an OFF to ON transition of C108 brings the modem in handshake.
- &D3 Same as **AT&D2**, but the modem assumes initialization state if it detects an ON to OFF transition on DTR.

**AT&E Error Correction****Default=&E0**


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This command controls the integrated error detection and correction feature (MNP and/or V.42). When enabled, the received data is buffered and checked for errors. If errors are detected, the modem requests retransmission of the data from the sending modem. The &E command must be used when \*E (Data Compression) is enabled.

*See also \*E command*

- &E0 Error Correction disabled.
  - &E1 Same as &E6 with Autoreliable Buffer always active independent #A and #E commands. Autoreliable character active if S48 is different from 255.
  - &E2 LAPM sequence in Autoreliable mode; normal data mode if LAPM not detected.
  - &E3 LAPM sequence in reliable mode, disconnection if it fails.
  - &E4 MNP correction mode in Autoreliable; normal data mode if MNP is not detected.
  - &E5 MNP error correction in reliable mode; forced disconnection if MNP not detected.
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- &E6 LAPM and MNP in autoreliable mode; normal data mode if no error corrector detected.
- &E7 LAPM and MNP in reliable mode; disconnection if no error corrector is detected.

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**AT&F Recall Factory Configuration** **Default=n/a**

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This command causes the modem to overwrite the current command options with the factory standard options. This command may be used also for resetting the modem. During remote configuration operations this command does not reset the modem but loads the factory configuration in the temporary configuration.

&Fn loads as configuration options the factory configuration number “n”.

**Example:** To store the modem default configuration (and indirectly activate a reset of the active configuration) enter AT&F command (AT&F0 equivalent). Remember to store it entering AT&W command.

There are 10 Factory configurations (see appendix).

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**AT&G Guard Tone Selection** **Default=&G2**

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This command selects guard tones to be generated by the modem.

- &G0 no guard tones are generated.
- &G1 550Hz tone generated.
- &G2 1800Hz tone generated.

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**AT&H Auto Leased Line Handshake** **Default=&H1**

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This command enables or disables the automatic leased line handshake feature. When enabled the modem will automatically try to re-handshake after being disconnected. This also pertains to dial back-up. After the leased line becomes disconnected, the modems will try once to reconnect before switching to the dial line. This is the factory default. If this feature is disabled, then after each leased line disconnect, the handshake must be manually re-initiated.

- &H0 disables leased line auto-handshake.
- &H1 enables leased line auto-handshake.

When &H1 is selected, the modem automatically tries to reconnect immediately after it has been disconnected.

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**AT&I      Constant Speed Interface      Default=&I1**

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This command allows the data rate of the DTE to be set at a uniform rate, regardless of the rate determined by the communication format selected. This feature is useful for error correction and data compression features of the modem. See &K command (flow control).

- &I0      Constant speed interface to disabled DTE.
- &I1      Constant speed interface enabled; CONNECT message indicates the connect rate. Parity is transferred in transparent.
- &I2      Constant speed interface enabled; CONNECT message indicates the DTE rate. Parity is transferred in transparent mode.
- &I3      Constant speed interface enabled; CONNECT message indicates the connect rate. Parity is reconstructed by the modem.

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**AT&K      Modem Flow Control      Default=&K3**

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This command allows the user to select a method of flow control of information from the terminal to the modem. This command is used to set flow control with the error detection (&En) and/or the constant speed interface (&In) features; see S39 and S40. Using the #K command this feature can be extended also during the retrain phase.

- &K0      Flow control disabled.
- &K1      XON/XOFF flow control selected.
- &K2      C106 flow control selected.
- &K3      XON/XOFF (inband) and hardware (C106) flow control enabled.

---

**AT&L      Leased Line/Swtched Network Selection      Default=&L0**

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This command selects a leased line or switched Network telephone connection.

- &L0      switched line.
- &L1      2 wire leased line.
- &L2      4 wire leased line.

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**AT&M      Asynchronous/Synchronous Mode      Default=&M0**

---

This command selects asynchronous or synchronous terminal modes of operation. This command also provides manual, automatic dialling of a stored number under DTR control.

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- Instead of manual dialling you can dial via front panel. C108 must be ON.*

&N	Displays telephone directory.
&N99	Deletes entire telephone directory.

&P0	40 make; 60 break.
&P1	33 make; 67 break.

**AT&R C106 ON/Control in Synchronous Mode Default=&R0**

This command controls the interaction of C105/C106 signals in synchronous mode.

- &R0 C106 follows C105. A Register S26 value greater than 0 delays C106 reaction time by the value selected (0 to 2.55 seconds).
- &R1 Modem ignores C105; C106 is always On except when the modem goes on-hook and during retrain in V.22bis or V.32.
- &R2 C106 is always ON.
- &R3 C106 always follows C105 (off-line, on-line, retrain, test, ecc..)

***V.25bis HDLC C106 follows C108.***

*With the option &R it is possible to activate the standard CCITT C106 followed by C108 in OFF LINE and C105 in ON LINE.*

*To activate this feature, select &R0, store the configuration and activate V.25bis HDLC (\*V2 - \*V5).*

**AT&S Enable/Disable Front Panel Default=&S1**

This command enables or disables keyboard display. UP arrow at power On is equal to AT&F. DOWN arrow at power On is equal to ATZ with &S1 forced.

- &S0 keyboard display disabled.
- &S1 keyboard display enabled.
- &S2 simplified keyboard. The arrow keys select the first 4 numbers of the telephone directory (0 to 4). The ENTER key begins calling the number selected by pressing the arrow.
- &S3 Like &S1: the pression of the ENTER key brings the modem on-line in originate mode in what so ever position S0 is found. This is to be used for manual calls.

*See direct selection of the numbers 0 to 3 or simplified keyboard use.*

**AT&T Activates Test****Default=&T4**


---

Activates the modem's test.

&T0 Ends the test in execution.

&T1 Activates loop 3.

&T2 Not Used.

&T3 Activates local loop 2.

&T4 Abilitates the modem to carry out a request of loop 2 received from the line.

&T5 Disables the modem from carrying out a request of loop 2 received from the line.

&T6 Sends an activation request of remote loop 2.

&T7 Sends an activation request of remote loop 2 whit a self test.

&T8 Activates loop 3 with a self-test.

*Register S18 establishes a test period which can be used with an active test sequence to cause the modem to end the test after the time (indicated in the Register).*

**AT&U DTE Flow Control****Default=&U0**


---

Data from the modem to the DTE is immediately stopped when XOFF stored in the S50 register is sent by the terminal (for example, printer not ready to accept data). Flow is restored when the XON character stored in Register S49 is issued to the modem.

&U0 flow control disabled.

&U1 flow control enabled with XON/XOFF. XON starts a transmission from DCE.

&U2 flow control enabled with pass through remote terminal.

&U3 Not Used.

&U4 C105 flow control.

&U5 C105 and XON/XOFF flow control.

&U6 C105 and XON/XOFF flow control; XON/XOFF control pass through remote terminal.

&U7 Not Used.

**AT&V Dumb Mode Control****Default=&V0**

---

This command controls access to the command mode when the modem is on-line. Access to the command mode can be denied, or command mode can be disabled so that all commands are ignored.

&V0 Normal command mode access selected.

&V1 Command mode access via escape sequence disabled.

&V2 Dumb mode; all commands are ignored. This situation can be changed only through the front panel.

**AT&W Store User Configuration****Default=n/a**

---

This command stores a user-defined configuration in the modem's non volatile memory. During operations in remote configuration this command stores the temporary configuration as user-defined configuration.

*The last configuration saved using AT&W is automatically loaded when the modem is turned ON.*

&Wn Stores user-defined configuration in n location.

&W99 The 10 factory configurations are written in the 10 user-defined configurations.

**For example:** You sent the modem a series of parameters to create a configuration (user-defined). To store the new configuration in one of the 10 modem's nonvolatile memory locations (for example location 4) enter the command: **AT&W4**.

**AT&X Synchronous Clock Source****Default=&X0**

---

This command determines the synchronous clock source at the DTE interface when the modem is in data mode (Synchronous only).

&X0 Internal clock.

&X1 External clock.

&X2 Slave timing.



**AT&Y Command Port****Default=&Y0**

This command determines the source of control information to the modem. You can select Main port for command mode and synchronous/asynchronous data trasmission.

You can select Command port for command asynchronous data trasmission.

Modem Stand Alone	
	Comandi
Dati	
<b>&amp;Y0</b>	Equivalente &Y4
<b>&amp;Y1</b>	Equivalente &Y5
<b>&amp;Y2</b>	ERROR
<b>&amp;Y3</b>	ERROR
<b>&amp;Y4</b>	Main
<b>&amp;Y5</b>	Main
<b>&amp;Y6</b>	Command
<b>&amp;Y7</b>	Command

*V25bis asincrona è disponibile anche sulla Command Port.*

**COMMANDS WITH AT\* PREFIX****AT\*A Special Multistandard Mode****default=\*A0**

When modem programmed for a fixed modulation standard enables or disables the possibility of line connection at a apeed from the one setted enables.

In \*A0 the modem will try a handshake starting from the speed set by the ATF command and will slowly go down until it finds its corrisponding modem; according to Digicom's standard sequence (first V32BIS/V32/V22BIS/V22).

In \*A3 the modem will try a handshake starting from the speed set by the ATF command and will slowly go down until it finds the corrisponding other modem according to EIA/TIA PN2330, V32BIS/V32/V22BIS/V22/V23/V21 modulations.

- In \*A4 the modem will try a handshake starting from the speed indicated by the ATF command connecting at lower speed but only in the same modulation standard.
- \*A0 Fixed standard Fx
  - \*A1 Multistandard according to Digicom's sequence
  - \*A2 Not used
  - \*A3 Not used
  - \*A4 Multistandard within the standards

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**AT\*B Display Blacklist Numbers** **default=n/a**

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This command displays black list numbers.

- \*B0 Displays delayed and forbidden numbers.
- \*B1 Displays delayed numbers.
- \*B2 Displays forbidden numbers.

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**AT\*C Display Configuration** **Default=n/a**

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This command displays the active configuration of the modem. At the end of the list configuration is possible to display the error message relative to the connection state.

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**AT\*D Asynchronous C108/1 Mode** **Default=\*D0**

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This command enables C108/1 direct call in asynchronous mode. The selected number location of the telephone directory is defined in Register S63. The ON/OFF transition of C108 causes the disconnection of the modem. See also AT\*Z command.

- \*D0 C108/1 disabled.
- \*D1 C108/1 enabled with C106 ON in OFF-LINE.
- \*D2 C108/1 enabled with C106 OFF in OFF-LINE.

---

**AT\*E Data Compression** **Default=\*E1**

---

This command controls the integral data compression feature of the modem during error-corrected connection.

- \*E0 Data compression operation disabled.
  - \*E1 Data compression operation enabled (MNP5 or V.42bis).
  - \*E2 Data compression MNP5 or V.42bis enabled in Tx only.
  - \*E3 Data compression MNP5 or V.42bis enabled in Rx only.
-

**AT\*F      Analog Remote Flow Control      Default=\*F0**

---

This command controls the flow of data between local and remote modems in response to an XON/XOFF sequence between the local terminal and the modem (Asynchronous only) using characters defined in S39 and S40 registers.

- \*F0      Remote flow control disabled.  
\*F1      Remote flow control enabled.

**AT\*G      Calling Tone      Default=\*G0**

---

This command enables the CCITT recommendation V.25 calling tone; a pulsing intermittent 1300Hz tone generated by the originating modem during the connection phase of a call.

- \*G0      Calling tone disabled.  
\*G1      Calling tone enabled.

**AT\*I      Adaptive Rate Control      Default=\*I0**

---

This command controls the adaptive rate

- \*I0      Autospeed rate active from 300bps to 38400.  
\*I1      DTE speed 300 bps.  
\*I2      DTE speed 600 bps.  
\*I3      Not Used.  
\*I4      DTE speed 1200 bps.  
\*I5      DTE speed 2400 bps.  
\*I6      DTE speed 4800 bps.  
\*I7      DTE speed 7200 bps.  
\*I8      DTE speed 9600 bps.  
\*I9      Not Used.  
\*I10      DTE speed 14400 bps.  
\*I11      DTE speed 19200 bps.  
\*I12      Not Used.  
\*I13      DTE speed 38400 bps.

### **AT\*J      Execution Multipoint Functions      Default=\*J1**

---

Defines the mode to be used and the impedance control in reception for the multipoint function. This sort of command has a meaning only for the leased line operation (AT&L) and controlled carrier (ATB2).

- \*J0      Master fixed carrier in transmission, reception terminated on 600 Ohm.
- \*J1      Master controlled carrier in transmission, reception terminated on 600 Ohm.
- \*J2      Slave controlled carrier in transmission, reception terminated on 600 Ohm.
- \*J3      Slave controlled carrier in transmission, reception terminated on high impedance.

### **AT\*K      C106 and XON/XOFF Options      Default=\*K0**

---

This command selects the C106 and XON/XOFF options during handshaking, connection and disconnection phases; C106 can be forced OFF in OFF-LINE or go OFF during the handshake; after the connection the modem sends a XON to the DTE, and during the disconnection sends a XOFF. This command is not influenced by &K and #K commands and it is active only in asynchronous mode. XON/XOFF option is active only when buffer or error corrector are enabled; the decimal value for XON and XOFF is in S39 and S40 registers.

- \*K0      C106 fixed ON.
- \*K1      Only XON/XOFF during connection and disconnection.
- \*K2      Only C106 OFF during handshake.
- \*K3      C106 OFF during handshake and XON/XOFF during connection and disconnection.
- \*K4      Only C106 OFF in OFF-LINE (C106 follows C109).
- \*K5      C106 OFF in OFF-LINE (C106 follows C109) and XON/XOFF during connection and disconnection.

### **AT\*M      CConf Interface Signal      Default=\*M0**

---

This command enables the CCONF interface signal (Pin 19). It can load 2 different configurations: One with CCONF ON (S52 Register); the other with CCONF OFF (S51 Register).

- \*M0      CCONF disabled.
  - \*M1      CCONF enabled.
-

**AT\*N     Display C108/1 Stored Number     Default=n/a**

This command displays the stored telephone number for C108/1 direct call in V.25bis mode.

**AT\*O     Overspeed Selection     Default=O0**

This command selects the overspeed range.

\*O0     overspeed +1%:-2.5%.

\*O1     overspeed +2.3%:-2.5%.

**AT\*P     C107 Control     Default=\*P0**

Special handling of C107 (DSR); this command is active only with C107 controlled (&C1 or &C3).

\*P0     C107 standard.

\*P1     C107 Wink; after an aborted call C107 goes ON for 200.

\*P2     C107 follows C109 during handshaking.

\*P3     C107 follows C109 during handshaking + C107 Wink.

**AT\*Q     Signal quality Action Control     Default=\*Q1**

This command controls the Signal Quality Action. This action depends on #Q command setting.

*The modem is disconnected when \*Q is not equivalent to 0 and always after S61 Retrain or Fallback in S62 time.  
The command is valid in V.33, V.32bis, V.32 and V.22bis mode.*

\*Q0     Disabled

\*Q1     Retrain

\*Q2     Adaptive rate (V.32bis, V.32 or V.22bis mode)

\*Q3     Disconnects after the first aborted retrain.

**AT\*S     S-Register Status Display     Default=n/a**

This command displays the values stored in the modem's S- Registers.

**AT\*T      C140-C141 Control      Default=\*T0**

---

This command enables C140 and C141 signal interface.

- \*T0      C140 and C141 disabled.
- \*T1      only C140 enabled.
- \*T2      only C141 enabled.
- \*T3      C140 and C141 enabled.
- \*T4      C140 and C141 enabled. C141 to make a request of loop 3 with modem on-line.

**AT\*V      Enter V.25bis Mode      Default=n/a**

---

This command enables V.25bis mode.

See also AT&Y command.

- \*V0      V.25 bis in C108/2 ASYNC.
- \*V1      V.25bis in C108/1 SYNC/ASYNC according AT&M.
- \*V2      V.25bis in C108/2 HDLC (NRZ - ASCII).
- \*V3      V.25bis in C108/2 HDLC (NRZ - EBCDIC).
- \*V4      V.25bis in C108/2 HDLC (NRZI - ASCII).
- \*V5      V.25bis in C108/2 HDLC (NRZI - EBCDIC).
- \*V6      Not Used.
- \*V7      Returns in AT mode (useful in Remote Configuration).

**ATTENTION:**

*If the modem work in synchronous mode, the command between \*V1 and \*V5 must be send with speed rate less or equal than 9600 bps.*

**AT\*X      Sync.Clock Control      Default=\*X1**

---

This command will force the modem's transmit and receive clocks at the DTE interface and during BACK-UP LL/SW.

- \*X0      synchronous clocks are On in data mode only.
- \*X1      synchronous clocks are always On.

**AT\*Y Break Mode Control Default=\*Y0**


---

This command allows the user to specify how a transmit break is implemented with Buffer or Error Corrector active.

- \*Y0 Break issued by the terminal is immediately passed through the modem bypassing the buffers (Expedited, non-destructive).
- \*Y1 Break issued by the terminal is immediately passed through the modem and the buffers are emptied (expedited, destructive).
- \*Y2 Break issued by the terminal is passed through the modem in sequence with the data (non-expedited, non-destructive).
- \*Y3 Break signal is ignored.

**AT\*Z V.25bis C108/1 Store Number Default=n/a**


---

This command stores a number for C108/1 operation in V.25bis. The syntax is AT\*Zxxxx, where xxxx represents the telephone number inserted with V.25bis format.

The command:

**AT\*ZP0,123456<CR>**

The transition OFF/ON of C108 activates a selection of the following number 0,123456 with pulse mode.

*\*Z command must be the last one of the command string.*

**COMMANDS WITH AT# PREFIX****AT#A Autoreliable Buffer/Character Control Default=#A0**


---

This command controls the Autoreliable Buffer and Autoreliable character during MNP or V.42 negotiation. The Autoreliable Buffer stores the data (200 characters) in the originate modem during Error Correction negotiation. The Autoreliable buffer is a special “wake up” character (0DH, carriage return) that disables the negotiation of Error Corrector immediately.

- #A0 Autoreliable Buffer and character disabled.
- #A1 Only Autoreliable character enabled.
- #A2 Only Autoreliable Buffer enabled.
- #A3 Autoreliable Buffer and character enabled.

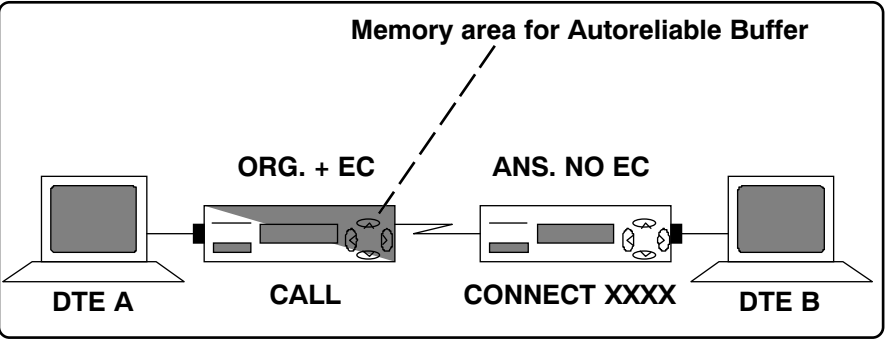
**AUTORELIABLE BUFFER**

It is a feature which allows to store user's data during the negotiation of the error corrector MNP or V.42.

Example: modem A ORIGINATE with MNP, modem B Answer senza MNP. Modem A makes the call, modem B answers the call and connects itself immediately after the handshake and the DTE hear connected starts sending data; modem A after the handshake tries to negotiate the error corrector for about 10 seconds; only after this will it go in data mode.

The function Autoreliable Buffer allows modem A to store the data arrived from the telephone line during the error corrector negotiation and send them to the connected DTE at the end of this operation.

If a receives more than 200 characters from the line ends immediately the error corrector negotiates and goes in data mode.



- |                     |   |   |                     |
|---------------------|---|---|---------------------|
| Negotiation polling | ⇒ | ⇐ | Data transmission 1 |
|                     |   | ⇐ | Data transmission 2 |
|                     |   | ⇐ | Data transmission 3 |
| Negotiation polling | ⇒ | ⇐ | Data transmission 4 |
|                     |   | ⇐ | Data transmission 5 |
|                     |   | ⇐ | Data transmission 6 |
| Negotiation polling | ⇒ | ⇐ | Data transmission 7 |

When the 10 seconds have expired, modem A connects in normal data mode sending all the characters stored in the memory to the DTE A.



**AUTORELIABLE CHARACTER**

When this feature is active it is possible to stop the error corrector negotiation if a particular character is received from the line (for default the character is Carriage Return: 13 Hex).

*The Autoreliable Buffer features and Autoreliable Character are active both on ORIGINATE and ANSWER modems, but only with MNP or V.42 with an active detection phase.*

**AT#B Dial Line Back-Up Control****Default=#B0**

This command enables/disables a Dial Line Back-up.

The modem can detect the down condition on the leased line passing automatically on the dial up one. The modem will call the telephone numbers stored in the non volatile memory so as to connect the remote modem. The modem can come back to the leased line after the expiration of the time stored in the S28 register or the detection of the on condition of the leased line.

*During the back-up operation, it is possible to stay on the switched line for one minute, after the look back; this feature is useful to avoid continuous switching between the switched and leased line if there is not synchronization between the modems (see S78 register).*

- #B0 Dial line back-up disabled.
- #B1 Dial line back-up enabled.
- #B2 Dial line back-up enabled with automatic Look Back (see S28 register).
- #B3 Dial line back-up enabled with automatic Look Back for positive monitoring (See S64 register).
- #B4 Dial Line back-up enabled C116 controlled.

**AT#E Enable Detection Phase****Default=#E1**

This command enables/disables the Detection Phase before the negotiation of LAPM protocol with commands AT&E1, AT&E2, AT&E6 and AT&E7.

- #E0 Detection Phase disabled.
- #E1 Detection Phase enabled.

---

**AT#F      Trellis Code and Proprietary Mode      Default=#F1**


---

This command enables/disables trellis Code and modulation standards.

#F0      Disables Trellis Code.

#F1      Enables Trellis Code.

#F3      VFast mode enable.

---

**AT#G      Echo selection tone protector      Default=#G0**


---

Selects the type of Tone Echo protector to use in the V27ter standard.

And also, in half duplex connection with two wires, Maintains the C109 off (clamp of C109) and data received at mark for  $150 \pm 25$  ms, after the descention of C105.

#G0      Disable tone echo protector

#G1      Brief tone echo protector

#G2      long tone echo protector + C109 clamp.

---

**AT#H      Half Duplex Simulation (V.13)      Default=#H0**


---

This command selects remote DCD controlled by local RTS (V.13 recommendation: half duplex simulation). It is possible to use this command with V.22, V.22bis, V.32, V.32bis and V.33 in synchronous mode.

#H0      Half-Duplex simulation disabled.

#H1      Half-Duplex simulation enabled.

---

**AT#J      Equaliser in V29, V23 or V21      Default=#J0**


---

Select the type of compromised equaliser in trasmission to be used in the V29, V23 or V21 standard. Select the type of compromised equaliser in reception and enable or disable scrambler in V26 and V26bis.

#J0      Compromised equaliser excluded

#J1      Compromised equaliser for the line M1040

#J2      Compromised equaliser for the line M1020

#J3      Not used

#J4      Enable equaliser and scrambler for V26 and V26bis

#J5      Enable equaliser and disable scrambler in V26 and V26bis

#J6      Enable scrambler in V26 and V26bis, disable equaliser

---

**AT#K XON/XOFF Control****Default=#K0**


---

Selects the modality for C106 handling and XON/XOFF (flow control) during the retraining phases. At the beginning of a retrain the modem forces C106 OFF and/or sends a XOFF; at the end of a retrain it forces C106 ON and/or sends a XON.

This command is influenced by the setting of &K and is active only in asynchronous mode with MNP, V.42 or active buffer (see &E and &I commands). The decimal value for XON and XOFF is in S39 and S40 registers. See command \*K for flow control during the connexion and disconnection phases.

#K0 No action.

#K1 Flow control option during retrain follows the one selected with &K command.

**AT#L Carrier Detect Threshold****Default=#L0**


---

This command specifies the limits within the signal processor for showing a carrier On/Off condition. The threshold selected is based on the application of the modem. For V.32, V.32bis and V.33 the #L1 setting is recommended.

#L0 Carrier Detect Threshold at -43 dBm.

#L1 Carrier Detect Threshold at -33 dBm.

#L2 Carrier Detect Threshold at -26 dBm.

#L3 Not used

**AT#M Adaptive Fast-Train in V32/V32bis****Default=#M0**


---

Enable or disable Fast-Train, proprietary Cornel, in V32/V32bis standard.

#M0 Standard timer for connection (handshake)

#M1 Adaptive Fast-Train, proprietary Cornel, reduce the timer necessary for handshake about 4 second.

**AT#P Handshake Break****Default=#P0**


---

This command turns ON or OFF the ability to have DTE data which aborts the handshaking process.

#P0 Abortion enabled.

#P1 Abortion disabled.

**AT#Q      B.E.R. Threshold      Default=#Q1**


---

This command defines the Bit Error Rate Threshold (EQM action) to initiate a Retrain of Fall Back/Forward.

#Q0      standard B.E.R. threshold.  
 #Q1      alternative B.E.R. threshold.

**AT#S      Acoustic Alarm      Default=#S0**


---

This command enables the acoustic alarm if the Antistreaming Timeout on C105 expires (modem programmed with controlled carrier). See register S67.

#S0      acoustic alarm disabled.  
 #S1      Acoustic alarm enabled.

**AT#T      Remote Control      Default#T5**


---

This command enables/disables the “down-load” or “remote access control”. The down-load sends automatically 2 user configurations indicated respectively in the registers S65 and S66. The default values are S65=9 and S66=255 (disabled). After a request for down-load the modem sends the configuration(s) to the remote one and then returns in data mode automatically. The remote access control is activated by AT#T6 and indicated with a new prompt TPG>OK. To end this procedure type AT#T0 from Escape mode. You can activate an autologon sequence stored in a memory location. The register S44 works as memory location pointer.

#T0      end the remote access control.  
 #T4      enables the modem to receive a remote access control or down-load request; it also enables the modem to execute a loop 2 remote apart from the &T5 command.  
 #T5      disables the modem to receive a remote access control or down load request.  
 #T6      sends a request for remote access control or down -load.  
 #T7      sends a request for a down-load of the configurations indicated by the registers S65 and S66. For default S65=9.

**AT#V      V.23 Mode      Default=#V0**

---

This command selects the functioning mode in V.23 and V22bis.

*Standard V.23 Full Duplex*

- #V0      V.23 Automatic Mode:Org.=TX 75bps - RX 1200bps.  
          Ans.=TX 1200bps - RX 75bps.  
#V1      TX 75bps -RX 1200bps fixed.  
#V2      TX 1200bps - RX 75bps fixed.

*Standard V.22bis*

- #V0      Disabled Fallback/Fallforward. The modem will never ask for a  
          fallback but will answer an eventual request sent from the remote  
          modem.  
#V1      Fallback/Fallforward according to A\*Q command.  
#V2      Disabled retrain; the modem is automatically disconnected.

*Standard V.26*

- #V0      Timer C105-C106 short  
#V1      Timer C105-C106 long  
#V2      Timer C105-C106 short  
#V3      Timer C105-C106 long

*Standard V.26bis*

- #V0      Timer C105-C106 short  
#V1      Timer C105-C106 long

*Standard V.27bis*

- #V0      Timer C105-C106 short  
#V1      Timer C105-C106 long  
#V2      Timer C105-C106 short  
#V3      Timer C105-C106 long

**AT#W     Dialling Prefix****Default=#W0**

---

This command enables the automatic dialling of a prefix before the number which one wishes to call. This prefix is stored in position 19 of the memory. This feature is useful for calling from PABX.

#W0     Function disabled

#W1     Function enabled

**Example.** You must call the number “263122” from a PABX where it is necessary to dial “0” to have access to the public telephone line.

The calling command must be: **ATD0,263122**.

You can avoid inserting the dial prefix “0” storing this number in the position 19 of the memory and activating this feature.

AT#W1     activation of the feature

ATN19&Z0   storing of the prefix

ATD263122   dialling command

**AT#X     Extended Code****Default=#X1**

---

This command enables/disables the extended code to CONNECT messages to indicate Buffer or Error Correction activation (see ATX command).

#X0     No /xxx message enabled.

#X1     Only /BUF and /REL messages enabled.

#X2     All /xxx messages enabled.

**+++     Escape Sequence****Default=n/a**

---

This command is used to get into the command mode while in a data connection. There must be a period equal to the time specified in S11 before and after character S2. The keystroke time period between any two of the “+” characters must be less than the time set in S11.

## 6.1. DIAL COMMANDS (ATD)

0-9	Digit to select.
*,#	DTMF used only.
N	Selects stored telephone number.
P	Pulse dial.
R	Reverse mode.
T	Touch dial tone.
W	Wait for dial tone.
@	Wait for quiet.
;	Return to Command mode.
,	Pause.
/	Wait for 1/8 sec.
!	Off Hook for 1/2 sec.

### ATD0..9 Digit to Select

Default=n/a

Represents digits of the telephone number. The P modifier instructs the modem to pulse dial a telephone number. The T modifier instructs the modem to dial subsequent digits of a T n in tone mode.

*To dial this nr: 06987654 the following string: ATD06987654<CR> must be sent to the modem.*

### ATD\*,# DTMF used only

Default=n/a

These digits are reserved for DTMF selection.

### ATDNn Select Stored Telephone Number

Default=n/a

The modem has been instructed to call the number in stored memory location n.

*"ATDNn" selects the telephone number linked to memory location n.*

### ATDP Pulse Dial

Default=P

Instructs the modem to pulse dial a telephone number.





## 6.2. ADDITIONAL COMMANDS USED WITH AT&Z

0-9,\*,# used with ATD commands

<Ctrl>T	Enters a TX string	Value Hex = 14
<Ctrl>R	Waits for RX string	Value Hex = 12
<Ctrl>P	Enters a 0.5 sec. pause	Value Hex = 10
<Ctrl>C	Enters a Call-Back number	Value Hex = 03
<Ctrl>N	Waits for Call-Back number	Value Hex = 0E
<Ctrl>Fn	Recalls Factory configuration	Value Hex = 06
<Ctrl>Zn	Recalls User's configuration	Value Hex = 1A
<....>	Secure Test	
:....:	Mnemonic Delimiters	

### <Ctrl>T Enters a TX string Hex = 14

---

This command inserts a string that will be sent during an autologon procedure or password exchange. If you wish to insert a control character (for example The Bell 07 Hex) digit “iG”.

### <Ctrl>R Wait for RX string Hex = 12

---

This command inserts a string. The line will wait 30 sec. for it during an autologon procedure or password exchange. If you wish to insert a control character (for example The bell 07 Hex) digit “iG”.

### <Ctrl>P Enters a 0.5 sec. pause Hex = 10

---

This command inserts a pause during an autologon procedure or a password exchange.

### <Ctrl>C Enters a Call-Back number Hex = 03

---

This command inserts a telephone number to use during a call-back procedure, usually after a password.

---

**<Ctrl>N Waits for Call-Back number Hex = 0E**

This command waits for 30 sec.in order to receive the telephone number from the line in order to use it for call-back.

---

**<Ctrl>Fn Recalls Factory configuration Hex = 06**

This command inserts a Factory configuration reference to use before the calling.

---

**<Ctrl>Zn Recalls User's configuration Hex = 1A**

This command inserts User's configuration reference to use before the calling.

---

**<....> Secure Test**

Another important feature that SNM31 has is it's hidden field storage of stored numbers. Secure numbers will not be shown when memory contents are displayed or when the number is dialled. To reserve a number when storing it, enclose the number in brackets.

---

**:....: Mnemonic Delimiters**

Text can be stored with a telephone number, allowing the user to reference numbers using mnemonics. Any text to be stored is enclosed in colons.