7. V.25bis COMMANDS

The SNM31 modem includes the V.25bis command protocol to allow auto-dialling from synchronous and asynchronous data terminal equipment. This is an international standard which makes it compatible with host software already written for dial-up modems. For synchronous applications, the User can select the HDLC format with NRZ or NRZI code and ASCII or EBCDIC through the front panel membrane keys.

*Using "**F**" command it is possible to indicate the modulation standard to be used at the end of the dialling.*
With this sole feature it is possible to define the speed for every connection in the host's "telephone book"; in this way it is not necessary to change the modem setting for each calling.

Speed conversion and MNP (Microcom Networking Protocol) are active during ASYNC mode. The DTE rate of 300 bps is not valid for HDLC. There is no auto-baud or parity training during commands. No V.25bis commands are echoed to the DTE.

7.1. ASYNCHRONOUS V.25BIS COMMANDS

The SNM31 provides auto-dialling according to V.25bis, using interface circuits series 100. Use front panel (5D menu) or **AT*Vxx** to activate Asynchronous V.25bis.

Use the following format:

COMMAND<CR><LF>

Within "COMMAND" consecutive 8-bit data units are formed by a 7-bit IA5 character and an odd parity bit.

EXAMPLE

A message sent from the modem in this form:

CFICB

shows the host that the dialled number is engaged.
For details about V.25bis commands see CCITT V.25bis recommendation.

7.2. ASYNCHRONOUS V.25BIS COMMAND SET

Attention:
Use AT&W before activating V.25bis.

COMMAND		DESCRIPTION
CRN		**CALL REQUEST WITH NUMBER PROVIDED** This command is used when the number to be dialled is issued directly from the terminal.
	CRN	<dial string> where the <dial string> is the same for the ATDn command in "AT"mode.
<	CRNX..<..X	Pause of 2 seconds. It is like character "," in AT commands.
=	CRNX..=..X	Pause of 5 seconds.
>	CRNX..>..X	Pause of 10 seconds.
:	CRNX..:..X	Wait 5 seconds for a dial tone before dialling the rest of the user string. Same as ATDW command.
CRNF	CRNFnP/TX..X	Call request with number and modulation standard provided. Same as CRNXX..X have the possability to insert the modulation standard to use. P or T must be inserted. "n": modulation standard (see ATF command). "P": pulse dialling. "T": tone dialling. X..X:number to call.

COMMAND		DESCRIPTION
CRS		**CALL REQUEST WITH STORED NUMBER** This command is used when the number to be dialled is stored in the modem's memory (see command PRN).
	CRSxx	where xx specifies the address (00 to 19) of the memory location. Locations 1 to 9 can be entered as single digits (for example CRS6).
PRN		**TELEPHONE NUMBER STORAGE** This command is used to store telephone numbers in the modem's memory. The modem can store up to 20 telephone numbers. Individual numbers may contain more than 30 characters but may limit the total number of the telephone numbers that can be stored.
	PRNxx;	T(orP)yy..yy where xx followed by a semicolon specifies the address of the memory location (0to 19), T (or P) = Tone or Pulse dialling, and yy specifies the number to be stored. Address locations 0 to 9 can be entered as single digits.
RLN		**REQUEST LIST OF NUMBERS IN MEMORY** This command lists the telephone numbers stored in the modem's nonvolatile memory. The user can request to have all the numbers displayed, or by identifying a location, the user can display the number stored in a specific location.
RLN		displays telephone numbers in all locations
RLNxx		displays the telephone number in location xx.

COMMAND	DESCRIPTION
RLF	**REQUEST LIST OF FORBIDDEN NUMBERS** This command displays the memory address, telephone number, and status of a forbidden number. If a telephone number has been called without success for a maximum of N times (as specified by the local regulatory agency) that number will not be accessable for 120 minutes after the first call attempt.
RLD	**REQUEST LIST OF DELAYED NUMBERS** This command displays all telephone numbers that have been placed on the delayed call list. If a telephone number has been dialled for N consecutive times (as specified by the local regulator agency) without success, any further request will be inhibited for a period of 2 minutes. The next attempt to use the number after it enters this state will be ignored by the modem and the message “DELAYED CALL” will be returned to the terminal.
DIC	**IGNORE INCOMING CALL** This command disables the auto-answer capability of the modem.
CIC	**ACCEPT INCOMING CALL** This command enables the auto-answer capability of the modem.

COMMAND		DESCRIPTION
CLA		**CLEAR ADDRESS** This command clears unrestricted telephone numbers from the memory of the modem. The user can request that all numbers are cleared, or by identifying a location, the user can clear the number stored in a specific location.
	CLAxx	clears the telephone number in location xx (only the numbers not in Black List).
DLN		**DIAL LAST NUMBER** This command forces the modem to redial the last telephone number dialled.
EON		**ECHO ON** This command enables local echo of any command sequence which is received by the modem from the connected DTE. The EON command is applicable in asynchronous mode only.
EOF		**ECHO OFF** EOF is the default condition of the modem. Command sequences received by the modem from the local DTE are not echoed. This command is applicable in asynchronous mode only.

COMMAND		DESCRIPTION
CSP		**RATE CHANGE**
	CSP300	RATE CHANGE 300 BPS
	CSP1200	RATE CHANGE 1200 BPS
	CSP2400	RATE CHANGE 2400 BPS
	CSP4800	RATE CHANGE 4800 BPS
	CSP9600	RATE CHANGE 9600 BPS
	CSP19200	RATE CHANGE 19200 BPS
	CSP38400	RATE CHANGE 38400 BPS
		The new rate is stored in the modem's nonvolatile configuration. The line rate is always equal to the interface rate of the DTE. For the rates 39400 and 19200 the DCE rate is forced to 9600.
HAY		**EXIT V.25BIS MODE** This command is used to exit the V.25bis mode and return the SNM31 to the "AT" command mode.

7.3. ASYNCHRONOUS V.25BIS INDICATIONS

MESSAGE	DESCRIPTION
EOL	**END OF LIST** This command's response is appended at the end of a stored number listing and notifies the user that the requested list is complete.
ONL	**ON-LINE INDICATION RESPONSE** This response is issued by the modem after a call connection has been established. The response is generated by both the originating and answering modems. The ONL response is issued only if the extended result code selection is enabled.

MESSAGE	DESCRIPTION
OFL	**OFF-LINE INDICATION RESPONSE** This response is issued by the modem after a call disconnection. This indication will always follow an ONL (ON-LINE) indication. The OFL command is active only if extended result code selection X5 or X6 is enabled.
DLC	**DELAYED CALL(s)** This response notifies the user that subsequent attempts to use a telephone number after it has been placed on the delayed call listing are ignored. The delay time is of 1 or 2 minutes.
INV	**INVALID COMMAND RESPONSE** This response is issued by the modem when an invalid command is received. The terminal is informed that the modem does not recognize the command sequence issued by the DTE. The INV response is issued in asynchronous mode only.
VAL	**VALID COMMAND RESPONSE** This response is issued by the modem when a valid V.25bis command is received. The terminal is informed that the latest command sequence has been accepted and executed.
INC	**INCOMING CALL RESPONSE** This response is issued by the answering modem to its locally attached DTE when a ring signal is detected. This code has priority over a dial command (CRN and CRS) sequence which has not yet been issued by the terminal unless the DIC command has been previously executed.

LSN **LIST OF STORED NUMBERS**

This response is generated in response to the RLN(xx) command.

LSNxx;y..y where xx specifies the memory location and y....y the telephone number.

LSF **LIST OF FORBIDDEN NUMBERS**

LSFxx;y..y where xx specifies the memory location and y....y the telephone number

LSD **LIST OF DELAYED CALLS**

This response is issued in a response to the RLD command (request of list of delayed numbers).

LSDxx;y..y where xx, followed by a semicolon, specifies the address of the location in modem memory and y..y represents the stored telephone number.

CFI **CALL FAILURE INDICATION**

The modem issues this response after a call failure. It is followed by a 2-character code that identifies the reason of the failure.

CFIxx where xx specifies a 2-character failure code as defined below:

BEFORE A CALL:

CB DCE is not ready for calling.

FC The number dialled is a forbidden number, and the call attempt is aborted.

ET The call is aborted because busy tone was detected during selection.

MF The call is aborted because the black list is full.

DURING A CALL:

NS The number requested is not stored in the modem's memory and the call cannot be executed (in response to a CRS command sequence).

AFTER A CALL:

AB The call is aborted because no carrier is detected (length of time-out 60+5s).
ET The call destination is busy, and the call is not completed.
NT The call is aborted for lack of answer tone from the remote modem.
RT The remote modem does not answer.

7.4. SYNCHRONOUS V.25BIS

Use the front panel (menu 5D) or **AT*Vxx** to select Synchronous V.25bis.

Commands are given in the following format:

F A C COMANDO FCS F

WHERE:

F = 7EH (flag)
A = FFH
C = 13H
FCS = CCITT - CRC

Within the "MESSAGE" 8-bit data units are made up of a 7-bit IA5 character and an odd parity bit.

Example:
A response message of the type:

F / A / C / "CFICB" / FCS / F

is an indication to the host that the number dialled is busy.
For more details on the V.25bis command structure, see the CCITT V.25bis.

Usually ASCII 7bit IA5 is used with odd parity. With SNM31 Modem you can select ASCII or EBCDIC with NRZ or NRZI codification.

7.5. SYNCHRONOUS V.25BIS COMMANDS

Synchronous V.25bis command set

COMMAND	DESCRIPTION
CRN	Call request with number provided
<;=;>	Dialling pauses
CRNFn	Call request with indication of the modulation standard to use (see Asynchronous V.25bis command set). T" or "P" must be inserted.
CRS	Call request with memory address provided
PRN	Normal program (number into memory)
DLN	Last number repetition
CLA	Clear address
HAY	Hayes modality

7.6. SYNCHRONOUS V.25BIS RESPONSES

MESSAGES	DESCRIPTION
INV	Invalid command
VAL	Valid command
CFI	Call failure indication
CFI NS	Number not stored
CFI CB	Busy
CFI AB	User or timer abort
CFI NT	No answer tone
ONL	Modem ON-LINE
OFL	Modem OFF-LINE

7.7. V.25BIS COMMAND AND RESPONSE SUMMARY

V.25bis	AT equivalent	Description
CRNy..y	ATDy...y	Call request with telephone number provided.
<;=;>	,	dialling pause.
CRNFnP/Ty..y	ATFnDP/Ty..y	Call request with modulation standard indication.
CRSxx	ATDNxx	Call request with stored telephone number.
PRNxx;y..y	ATNxx&Zy..y	Telephone number storage.
RLNxx	AT&Nxx	Request list of numbers in memory.
RLF	none	Request list of forbidden numbers.
RLD	AT*B	Request list of delayed numbers.
DIC	ATS0=0	Disregard incoming call.
CIC	ATS0=1	Connecting incoming call.
CLAxx	ATNxx&Z	Clear designated address.
DLN	A/	Last number redial.
EON	ATE1	Echo On.
EOF	ATE0	Echo Off.
CSP	AT	Change of speed.
HAY	none	Return AT mode.
EOL	none	End of list.
ONL	CONNECTxxxx	ON-LINE data mode.
OFL	NO CARRIER	OFF-LINE idle mode.
DLC	DELAYED	Delayed call.
INV	ERROR	Invalid command entered.
VAL	OK	Valid command entered.
INC	RING	Incoming call detected.
LSN	AT&N	List stored numbers.