DELTA DESIGN
MODEM MODULE IM336S

USER MANUAL

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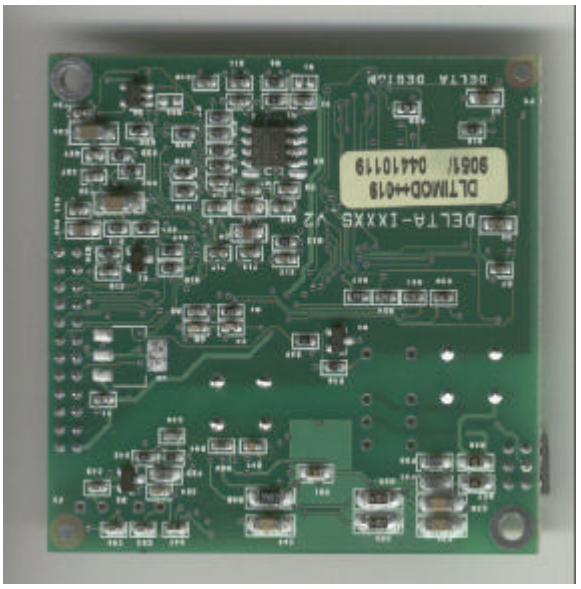


DOCUMENT HISTORY

Date	Version	Status	Author	Change
17/02/2003	1.0		Marc Decré	Creation
02/04/2003	1.1		Marc Decré	Changes 4 SIA protocol support 110 bps will not be supported Listen-in mode description
03/11/2004	2		Marc Decré	Cleanup, pictures

TABLE OF CONTENTS

1 INTRODUCTION

1.1 PURPOSE

This document describes the MI336S MODEM MODULE .

1.2 REFERENCES

(1)ETSI	ETSI TBR21 Edition Januari 1998
(2)ETSI	ETS 300.001 1998-10
(3)SIA	Digital Communications Standard – 'SIA Format' Protocol – for Alarm System Communications SIA DC-03-1990.01 (R2000.11) Publication Order Number : 14083
(4)Conexant	**Doc. No. 102184B** AT Commands for CX81801 SmartV.XX, CX06833 SMXXD, CX81300 SmartACF, and CX06827 SCXXD Modems Reference Manual
(5)ETSI	Access and Terminals (AT); Harmonized basic attachment requirements for Terminals for connection to analogue interfaces of the Telephone Networks; Update of the technical contents of TBR 021, EN 301 437, TBR 15, TBR 17; Part 1, 2 and 3

1.3 GENERAL MODEM FEATURES

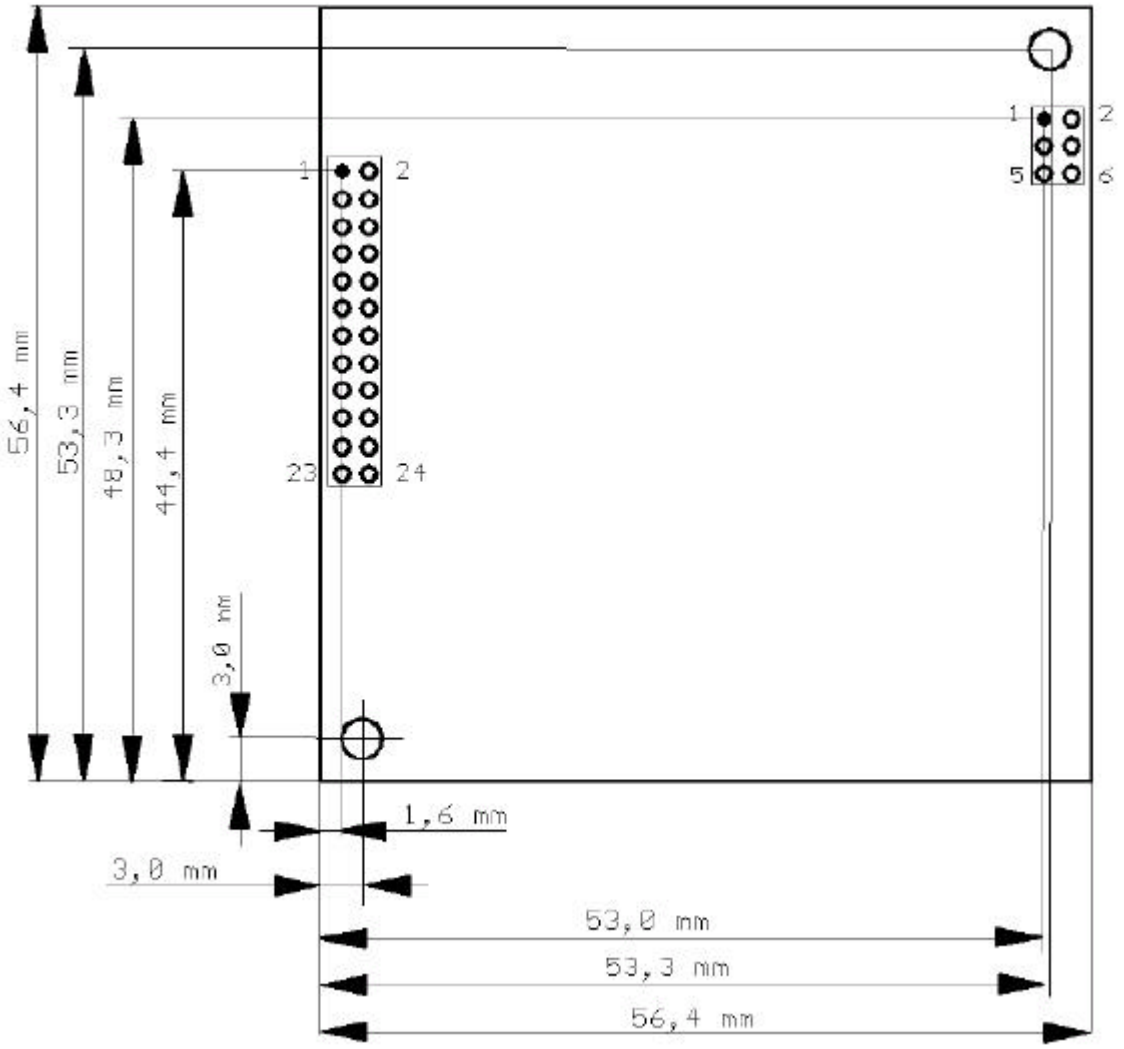
Dimensions : 56mm x 56 mm
Heigth : max 20 mm
Modem Protocol :V.34 / V.32bis / V.32 / V.22bis / V.22/ V.21 / V.23 / Bell212A / Bell103/
Error Correction : : V.42 / MNP4
Data Compression : V.42bis /MNP5
Alarm protocols : SIA support / DTMF (receive /transmit)
DTE interface : V.24/V.28
Data Format : Serial Asynchronous, 7 or 8 data bits, o,e or no parity, one or two stop bits
Command set : Hayes, subset of V.250 / V253
Power Supply : 3.3 Vdc 5% : max 170 mA (measured 158 mA)
: optional 5Vdc
Line Interface : PSTN
Watchdog function
Line-In-Use detection
Digital Protection
Parallel Pickup detection
Line Voltage monitoring

Compliance : TBR21 januari 1998 , TS103021 (2003-2004)

2 PHYSICAL DIMENSIONS

Length 56 ± 0.2 mm
Width 56 ± 0.2 mm
Max component height (above pcb) : TOP 6 mm Bottom : 2mm
Mounting holes D 2.8 mm

TOP VIEW



3 INTERFACE

3.1 DTE CONNECTOR

TTL 3V3 Connector - 24 pin connector

Pin	Type	Signal	Description
1		GND	Ground
2	Supply	VCC	3V3 DC supply (5V optional)
3		GND	Ground
4	Input	/TXD	Transmit Data
5		GND	Ground
6	Output	/RXD	Receive Data
7	Output	ID-PIN2	GND
8	Input	/RTS	Request To Send
9	Output	ID-PIN1	GND
10	Output	/CTS	Clear To Send
11	Input	/RESET	Reset Input
12	Input	/DTR	Data Terminal Ready
13	Output	/OH	Off Hook
14	Output	/DCD	Data Carrier Detect
15	Output	/RI	Ring Indicator
16	Output	/DSR	Data Set Ready
17	Output	UA	Output
18	Input	UE	Input
19	Output	UA2	Output 2
20	Input	UE2	Input 2
21		GND	Ground
22	Output	SPK	Speaker
23	Input	MIC	Microphone
24		GND	Ground

3.2 POWER SUPPLY

Voltage : 3V3 5%
Current : Max 170mA

3.3 PHONE CONNECTORS

Pin	Signal	Description	RJ11 Pin
1	LA	Telephone signal	3
2	LA’	Telephone signal	2
3	LB	Telephone signal	4
4	LB’	Telephone signal	5
5	NC		
6	NC		

4 MODEM OPERATION

4.1 AT COMMAND SET

For a complete command description , see ref(4) .

Following extra commands are implemented

4.1.1 Kn Keyabort

When enabled, the modem will disconnect when it receives a character from the host during call progress.

ATK0 disable keyabort
ATK1 enable keyabort (default)

4.1.2 ATRn RINGBACK REPORTING

ATR0 disable ringback report (default)
ATR1 enable ringback reporting

When enabled, the modem will report ringback signals with the RINGING message (code 14)

4.1.3 ATUn SHORT CONNECT MESSAGE

ATU0 disable short connect message
ATU1 enable short connect message (default)

When enabled only the CONNECT message is given on connection established.

4.1.4 AT%Mn Hardware speaker Mute

AT%M0The speaker output will be muted
AT%M1The speaker output is not muted (default)

4.1.5 AT%Sn SIA mode

AT%S0 Non SIA mode, standard modem operation
AT%S1 SIA mode

4.2 SIA PROTOCOL SUPPORT

The modem will allow the host alarm exchange + modem to act as a SIA transmitter.
The modem will implement the low level requirements of the SIA protocol. The higher level features will be implemented in the host alarm exchange.
The SIA support features in the modem are configurable via AT commands and/or Sregisters. A programmed SIA configuration can be stored in non volatile memory and automatically loaded after power-up or reset.

The SIA listen-in feature will be supported.

Following features of the SIA protocol are supported :

-Handshake tone detection
-Speed Synchronization Signal generation (300 baud)
-Incoming Tonal Positive Acknowdledge (ACK) from the SIA receiver will be translated into an “Eight Block – Data Acknowledgment and send to the host.
- Incoming Tonal Negative Acknowledge(NACK) from the SIA receiver will be translated into an “Zero Block” and sent to the host.
-Communication with the host will be by default 9600bps , 1start bit,8 databits , 1 stopbit.
-Communication to the SIA receiver is 1 start bit, 8 databits , odd parity bit and 2 stop bits BELL 103 (300 Baud). The modem will insert / delete the necessary parity and stop bits.
-To switch the modem to listen-in mode, the host will give the escape sequence and switch the modem to speakerphone mode
-In listen –in mode , speech signal from the modem speech input will be transmitted to the phone line and incoming speech from the phone line will be transmitted on the modem speech output.
-The speech output can be muted.

4.2.1 Modem initialisation

The following initialization needs to be sent to the modem to initialize it for SIA operation :

```
AT&F            ;reset factory defaults
AT%S1           ;init SIA
```

After a call is made to the SIA receiver, the modem will wait for the handshake tone.
When the handshake tone is received, the modem will report the CONNECT message and activate DCD signal.
Host needs to send the first packet immediately following connect message.

4.2.2 ACK – NACK response frames

ACK : when the modem receives a tonal positive acknowledgement from the host, it will send an “eight block” to the host. Byte Sequence (hex): 40 38 87

NACK : when the modem receives a tonal negative acknowledgement from the host, it will send a “zero block” to the host . Byte sequence (hex): 40 30 8F

4.2.3 Listen in operation

The modem supports listen in operation by means of the Conexant Speakerphone feature.
The modem can switch from SIA communication mode to full duplex speakerphone operation as follows:

Go to online command mode bye means of the escape sequence (+++)

```
AT%S0           ;disable SIA mode
AT+FCLASS=8     ;enable voice mode
ATO             ;go on line
 (wait now for OK , not for CONNECT !!)
AT+VSP=1        ;enable full duplexspeakerphone mode
```

The modem accepts the speech input via the microphone input .
The speech output is via the speaker output.
Speech output can be muted with the at%m1 command.

The modem can also transmit and receive DTMF in this mode.

4.3 DTMF

The modem supports the generation and detection of DTMF tones via AT command/response according to DLE encapsulation. See ref (4)

5 COMPLIANCE

Modem is designed to comply with TBR21 01/1998 and TS103021.
A compliance testreport is available.
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