LAN Socket Modem

AL6000S, AL6000S-3V Series

Designer's Guide

Version 102

Released 3. January 2008

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1. INTRODUCTION

1.1 Overview

This Designer's Guide describes the hardware for the following LAN socket modems of xmodus swiss GmbH.

AL6000S	LAN Socket Modem (5V Version)
AL6000S-3V	LAN Socket Modem (3V Version)

The description apply to all these LAN-modems with any differences between product families noted. Refer to Modem Firmware Release notes for commands applicable to modem firmware. AT commands and S registers are defined in the AT Command Reference Manual.

1.2 Product description

The xmodus AL6000S and AL6000S-3V Socket Modem Family provides the OEM with a complete LAN modem in a compact socket-mountable module. This modules enables any serial devices to send and receive data over the LAN / Ethernet network. The Ethernet IEEE 802.3u interface with 10/100base-T, auto-crossover and auto-negotiation is supported. The module is fully approved and homologated and conforms to the CE regulations. This gives fastest time-to-market to LAN-enable any devices.

The compact size and high level of integration of the Socket Modem minimizes real estate and cost for motherboard and box modem applications. Its low power consumption makes it ideal for a wide variety of embedded control applications. The pin compatibility between the full range of Analog Series Socket Modems, ISDN, LAN and GSM Socket Modems allows upgrading and production configurability without hardware changes.

As a data modem, the AL6000S Socket Modem can send and receive data at speeds up to 115200kbps. The complete protocol stack with TCP/IP, UDP, ARP, ICMP and DHCP is supported.

For Telnet applications, a configurable Telnet client and a Telnet server with Auto-dial is supported.

For configuration, a HTTP server with web pages allows monitoring and configuration with the web browser.

1.3 Features

- Protocol stack:
  - TCP/IP
  - UDP
  - ARP
  - ICMP
  - DHCP
  - HTTP

- Configuration / Monitoring:
  - web pages (with browser)
  - command line interface

- Interface:
  - IEEE 802.3u Ethernet
  - 10/100base-T
  - Auto-negotiation
  - Auto-crossover

- Several Dial Procedures:
  - Command line interface
  - Auto Connect

- Trace Log Buffers.
- Transmit block size up to 4kB.
- Trusted IP address for Telnet dial-in.
- Firmware updateable
- Optional SPI, CAN or USB interfaces
- Programmable static IP
- Hardware-based LAN modem controller.
- Built-in host / DTE interface with speeds up to 230.4 kbps
  - Serial ITU-T V.24 (EIA/TIA-232-E) logical interface.
- Flow control (RTS/CTS) and speed buffering
- +3.3V / +5V DC Operation.
- Typical power use: 130 mW (Normal Mode)
- Compact size (64.5 x 26.5 mm)
- EMC approved according EN50081, EN55082, EN55022, EN55024
- Safety approved according EN60950 :2001
- Network approved according IEEE 802.3u
- 2 Years warranty.

1.4 Command Sets and S-Registers

Modem operation is controlled by AT and S-Register Commands issued by the DTE. Refer to the AT commands for the AL6000S Reference Manual

2. TECHNICAL OVERVIEW

2.1 Dialing procedures

The following dial procedures are supported:

- Command line interface
- Auto-dial
- Telnet dial-in / dial-out

2.2 Command line interface

Via the command line interface you may control the LAN connections and change the configuration of the AL6000S. LAN specific configuration commands are supported.

2.3 Web page interface

Via the internal web page interface you may control the LAN connections and change the configuration of the AL6000S. LAN specific configuration commands are supported.

2.4 Configuration

A range of parameters can be controlled by the configuration commands and/or web page of the AL6000S as listed below:

- Setting own IP address
- Recommended channel protocols
- Serial Interface Parameters (baud rate, flow control, etc.)
- Auto-connect operation modes
- I/O ports and interfaces
- Firmware download
- Administration and security

2.5 Connection Commands

Command	Function	Response
ATD xx.xx.xx.xx	Establishes a connection	CONNECT
ATH	Disconnects a connection	OK

Whenever the LAN connection with a communication partner is established, a transparent channel for serial data is provided.

A detailed description of the AT-Commands is found in the AT-Command manual for the socket modem AL6000S.

2.6 Firmware Updates

Firmware updates can always be affected via the local serial interface.

2.7 Supported Interfaces

The major hardware signal interfaces of the AL6000S Series Socket Modem are illustrated in Figure 1-1.

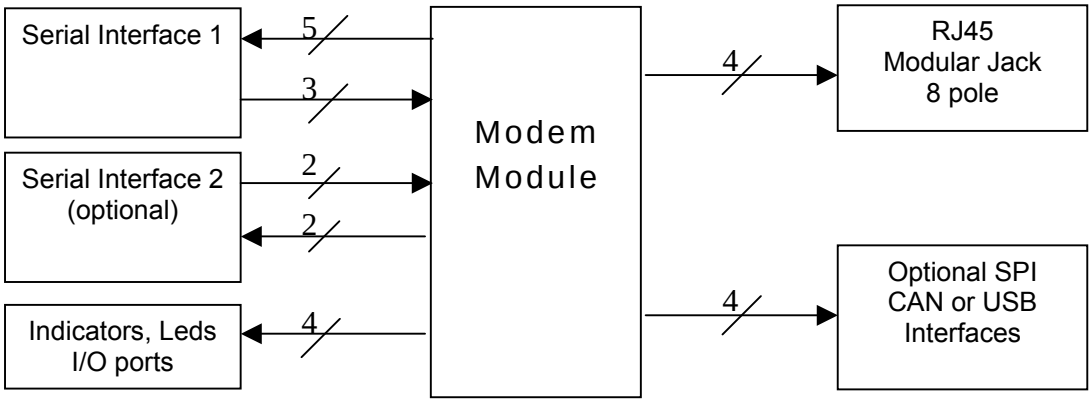


Figure 1-1. Typical Serial Block Diagrams

Serial / Indicator Interface:

DTE serial interface and indicator outputs are supported.

Serial Interface: 8-line TTL logic serial interface to the DTE is supported.

LED Interface: Two direct connect LED indicator outputs are supported

The terminal (DTE) baudrate is pre-configured to 115200 bps automatically by the MCU firmware. It provides baudrates from 9600bps to 115200bps.

The terminal (DTE) character format is configured to 8 bits, no parity and 1 stop bit by default. The character format is configurable to any common format.

LAN Interface:

The AL6000S Socket Modem family connects to the Ethernet network Interface (spec. IEEE 802.3u). It supports the auto-crossover and auto-negotiation protocols.

2.7 Power consumption and power down modes

To reduce power consumption of the AL6000S, a power down mode can be activated by the AL6000S. The following values are approximate power consumption values in the different states:

Condition	**Power usage**
Power down	~ TBD
Ethernet active	~ 200 mA

2.8 Command Sets and S-Registers

Modem operation is controlled by AT and S-Register Commands issued by the DTE. Refer to the AT commands for the AL6000S Modem Reference Manual

3. HARDWARE INTERFACE

3.1 Interface Signals

The LAN Socket Modem pin assignments with DTE serial TTL interface are shown in Figure 3-1 and are listed in Table 3-1.

3.2 Signal Descriptions

The Socket Modem interface signals are described in Table 3.2, 3.3 and 3.4.

The digital electrical characteristics are listed in Table 3.5

The absolut maximum ratings are listed in Table 3-6.

Figure 3.1 – SERIAL TTL PINOUT AL6000S

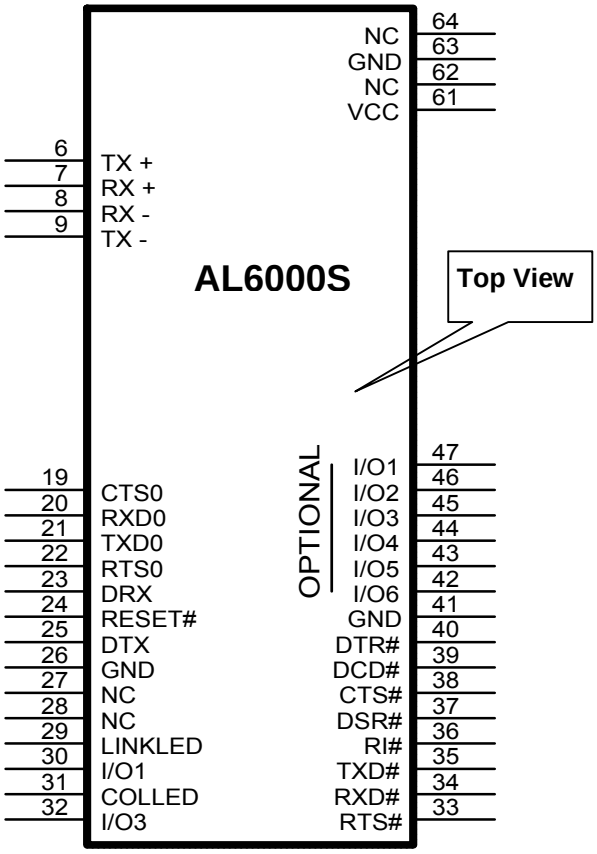


Table 3.1. Serial TTL Signals AL6000S

PIN	NAME	I/O TYPE
1	No pin	
2	No pin	
3	No pin	
4	No pin	
5	No pin	
6	TX +	Ethernet
7	RX +	Ethernet
8	RX -	Ethernet
9	TX -	Ethernet
10	No pin	
11	No pin	
12	No pin	
13	No pin	
14	No pin	
15	No pin	
16	No pin	
17	No pin	
18	No pin	
19	CTS0	Serial 2 (option)
20	RXD0	Serial 2 (option)
21	TXD0	Serial 2 (option)
22	RTS0	Serial 2 (option)
23	TEST IF	Leave unconnected
24	~RESET	Input
25	TEST IF	Leave unconnected
26	DGND	GND
27	NC	NC
28	NC	NC
29	LINK LED	LED Driver Output
30		
31	COLL. LED	LED Driver Output
32		

PIN	NAME	I/O TYPE
33	~RTSTTL	Input
34	~RXDTTL	Output
35	~TXDTTL	Input
36	~RITTL	Output
37	~DSRTTL	Output
38	~CTSTTL	Output
39	~DCDTTL	Output
40	~DTRTTL	Input
41	DGND	GND
42	I/O	Bus Options
43	I/O	Bus Options
44	I/O	Bus Options
45	I/O	Bus Options
46	I/O	Bus Options
47	I/O	Bus Options
48	No pin	
49	No pin	
50	No pin	
51	No pin	
52	No pin	
53	No pin	
54	No pin	
55	No pin	
56	No pin	
57	No pin	
58	No pin	
59	No pin	
60	No pin	
61	VCC	POWER
62	NC	NC
63	DGND	GND
64	NC	NC

Figure 3.2 – SERIAL TTL PINOUT AL6000S2

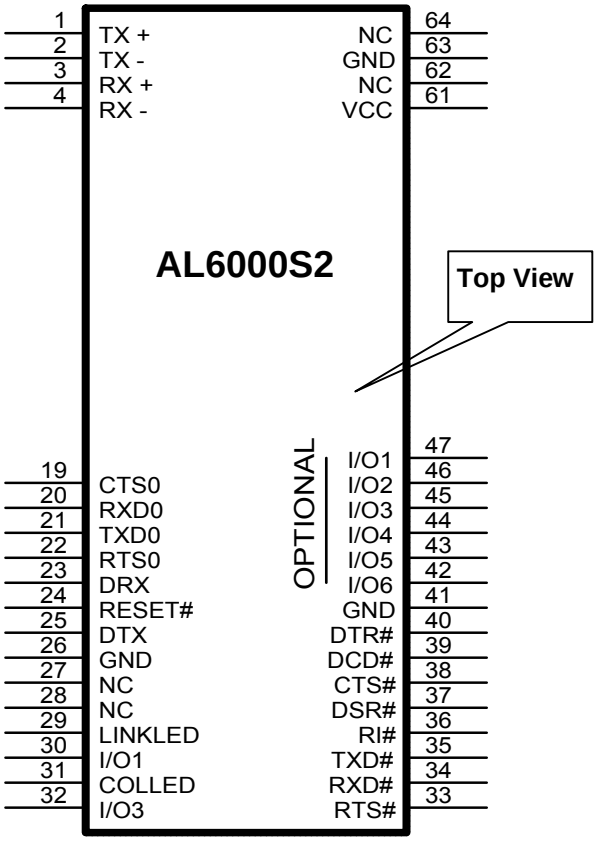


Table 3.2. Serial TTL Signals AL6000S2

PIN	NAME	I/O TYPE
1	TX +	Ethernet
2	TX -	Ethernet
3	RX +	Ethernet
4	RX -	Ethernet
5	No pin	
6	No pin	
7	No pin	
8	No pin	
9	No pin	
10	No pin	
11	No pin	
12	No pin	
13	No pin	
14	No pin	
15	No pin	
16	No pin	
17	No pin	
18	No pin	
19	CTS2	Serial 2 (option)
20	RXD2	Serial 2 (option)
21	TXD2	Serial 2 (option)
22	RTS2	Serial 2 (option)
23	TEST IF	Leave unconnected
24	~RESET	Input
25	TEST IF	Leave unconnected
26	DGND	GND
27	NC	NC
28	NC	NC
29	LINK LED	LED Driver Output
30		
31	COLL. LED	LED Driver Output
32		

PIN	NAME	I/O TYPE
33	~RTSTTL	Input
34	~RXDTTL	Output
35	~TXDTTL	Input
36	~RITTL	Output
37	~DSRTTL	Output
38	~CTSTTL	Output
39	~DCDTTL	Output
40	~DTRTTL	Input
41	DGND	GND
42	I/O	Bus Options
43	I/O	Bus Options
44	I/O	Bus Options
45	I/O	Bus Options
46	I/O	Bus Options
47	I/O	Bus Options
48	No pin	
49	No pin	
50	No pin	
51	No pin	
52	No pin	
53	No pin	
54	No pin	
55	No pin	
56	No pin	
57	No pin	
58	No pin	
59	No pin	
60	No pin	
61	VCC	POWER
62	NC	NC
63	DGND	GND
64	NC	NC

Table 3.3 / Signal Descriptions

Label	I/O Type	Signal Name Description
VCC	PWR	+5 VDC / 3.3 VDC
GND	GND	**Ground.** Connect to Digital Ground on the interface circuit.
~RESET	IC	**Modem Reset.** The Active Low ~RESET input resets the Socket Modems logic and returns the command set to the original factory default values and to "stored values" in NVRAM. ~RESET is connected to a built-in reset circuit on the Socket Modem.
TX+	802.3 Bus	**Transmit Positive from Ethernet Interface.**
TX -	802.3 Bus	**Transmit Negative from Ethernet Interface**
RX +	802.3 Bus	**Receive Positive from Ethernet Interface**
RX -	802.3 Bus	**Receive Negative from Ethernet Interface**

Table 3.4 / LED Interface Signal Descriptions

Label	I/O Type	Signal Name/Description
LED driver lines are open-drain inverter-driven (74HCT05) lines with 1.5 KΩ, 1/10W pull-up resistors.		
LINK LED	OG	**Active High Link Status**
COLL. LED	OG	**Active High Collision Status**

Table 3.5 / Serial 2 Interface Signal Descriptions

Label	I/O Type	Signal Name Description
CTS2	OA	**Clear To Send (TTL Active Low) Serial Interface 2**
RXD2	OA	**Received Data (TTL Active Low) Serial Interface 2**
TXD2	IA	**Transmitted Data (Active Low) Serial Interface 2**
RTS2	IA	**Request To Send (TTL Active Low) Serial Interface 2**

Table 3.6 / Main Serial Interface Signal Descriptions

~RTSTTL	IA	**Request To Send (TTL Active Low).** ~RTS is used to condition the local modem for data transmission and, during half-duplex operation, to control the direction of data transmission. On a full-duplex channel, RTS-OFF maintains the modem in a non-transmit mode. A non-transmit mode does not imply that the ISDN link have been terminated. RTS input ON causes the modem to transmit data on TXD when ~CTS becomes active.
~RXDTTL	OA	**Received Data (TTL Active Low).** The modem uses the ~RXD line to send data received from the ISDN line to the DTE and to send modem responses to the DTE. During command mode, ~RXD data represents the modem responses to the DTE. Modem responses take priority over incoming data when the two signals are in competition for ~RXD.
~TXDTTL	IA	**Transmitted Data (Active Low).** The DTE uses the ~TXD line to send data to the modem for transmission over the ISDN network or to transmit commands to the modem. The DTE should hold this circuit in the mark state when no data is being transmitted or during intervals between characters.
~CTSTTL	OA	**Clear To Send (TTL Active Low).** ~CTS is controlled by the modem to indicate whether or not the modem is ready to transmit data. ~CTS ON, together with the ~RTS ON, ~DSR ON, and ~DTR ON (where implemented), indicates to the DTE that signals presented on TXD will be transmitted to the ISDN network. ~CTS OFF indicates to the DTE that it should not transfer data across the interface on TXD. ~CTS ON is a response to ~DTR ON and ~RTS, delayed as may be appropriate for the modem to establish an ISDN connection.
~RITTL	OA	**Ring Indicate (TTL Active Low).** ~RI output ON (low) indicates the presence of ALERTING.
~DSRTTL	OA	**Data Set Ready (TTL Active Low).** ~DSR indicates modem status to the DTE. ~DSR OFF (high) indicates that the DTE is to disregard all signals appearing on the interchange circuits except Ring Indicator (~RI).
~DCDTTL	OA	**Data Carrier Detect (TTL Active Low).** ~DCD output is ON (low) when a link is established over the LAN network and is OFF (high) when no link is present.
~DTRTTL	IA	**Data Terminal Ready (TTL Active Low).** The ~DTR input is turned ON (low) by the DTE when the DTE is ready to transmit or receive data. ~DTR ON prepares the modem to be connected to the ISDN network, and maintains the connection established by the DTE (manual answering) or internally (automatic answering). ~DTR OFF places the modem in the disconnect state under control of the AT Command AT&Dx

Table 3.7 / Digital Electrical Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Units	Test Condition
Input High Voltage	V_{ICH}				Vdc	
Type IA		2.0	-	5.5		5V tolerant
Type IB		2.0	-	5.5		
Type IC		2.0	-	5.5		Reset Input
Input Low Voltage	V_{IL}				Vdc	
Type IA		-0.3	-	0.8		
Type IB		-0.5	-	0.8		
Type IC		-0.3	-	0.8		Reset Input
Input Current ~RESET	I_I				µADC	
V_I = < 5.5 VCC		-	-	+5		
V_I = 0.4V		-	-	-5		
Output High Voltage	V_{OH}				Vdc	
Type OA		V_{DD} – 0.4	-	-		I_{LOAD} = -4.0 mA
Type OB		2.4	-	-		I_{LOAD} = -1.0 mA
Type OG		-	-	VDD		
Output Low Voltage	V_{OL}				Vdc	
Type OA		-	-	0.4		I_{LOAD} = 4.0 mA
Type OB		-	-	0.4		I_{LOAD} = 1.0 mA
Type OG		0.5	-			
Three-State Leakage Current	I_{TSI}				µADC	
2.4 / 0.5V		-	-	20		V_{IN} = 2.4(0.5V
Circuit Types						
Type IA						TTL
Type IC						~RESET
Type OA						TTL with 3state

Notes:

1. Test Conditions: VCC = VDD = 3.3VDC (all versions) +/- 5%, TA = o° to 70°C

Table 3.8 / Absolute Maximum Ratings

Parameter	Symbol	Min.	Typ.	Max.	Units	Test Condition
Supply Voltage 5V Version 3V Version	V_{DD}	 -0.5 -0.5	 5.0 3.3	 +7.0 +3.6	Vdc	
Input Voltage	V_{IN}	-0.5	-	+6.0	Vdc	
Nominal Supply Voltage 5V Version 3V Version	V_{DD}	 4.75 3.10	 - -	 5.25 3.50	Vdc	
Static Discharge Voltage @ 25°C	V_{ESD}	-	+/- 2500		V	
Operating Temperature Range	T_A	0	-	70	°C	
Storage Temperature Range	T_{STG}	-40	-	+80	°C	
Supply Current Serial Version	I_D		150	200	mA	
Power Serial Version	W		500	660	mW	

Notes:

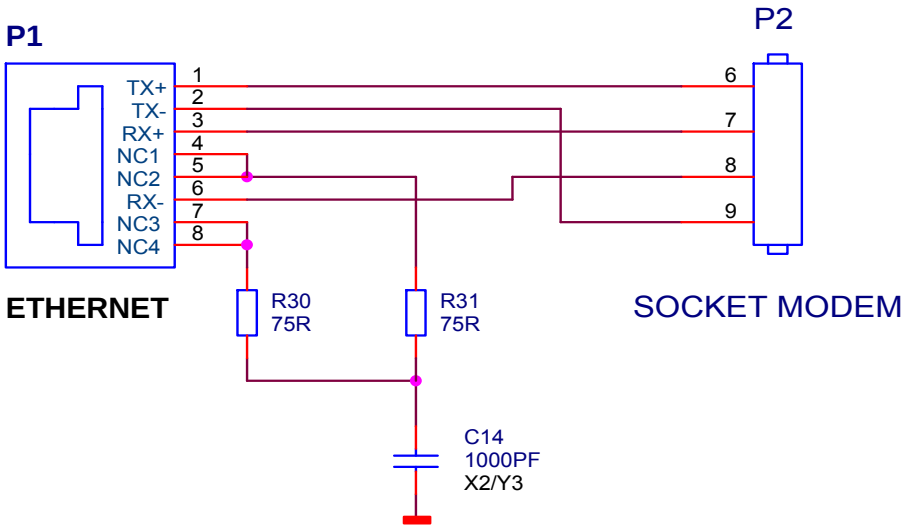
Test Conditions: VCC = 5VDC +/- 5%, TA = 25°C, 5V Version
VCC = 3.3VDC +/- 5%, TA = 25°C, 3V Version

3.3 ETHERNET INTERFACE

The LAN Socket Modem has all the necessary circuitry for the Ethernet interface on-board, and is designed to meet the IEEE 802.3u requirements of the European ETSI regulations .

The TX+/- and RX+/- signals must be provided from the RJ45 Telco jack to pins 6 to 9 of the Socket Modem.

The TX+/- and RX+/- signal traces are to be no closer than 2.5mm (0.1") from any other traces on the main board.



Pin	Signal	Dir.	Function
6	TX+	O	Eth. Transmit +, RJ45 jack Pin 1
7	RX+	I	Eth. Receive +, RJ45 jack Pin 3
8	RX-	I	Eth. Receive -, RJ45 jack Pin 6
9	TX-	O	Eth. Transmit -, RJ45 jack Pin 2

4. DESIGN CONSIDERATIONS

Good engineering practices must be adhered to when designing a printed circuit board (PCB) containing the AL6000S Socket Modem module. Suppression of noise is essential to the proper operation and performance of the modem itself and for surrounding equipment.

Two aspects of noise in an OEM board design containing the AL6000S Socket Modem module must be considered: on-board/off-board generated noise that can affect analog signal levels and analog-to-digital conversion (ADC) / digital-to-analog conversion (DAC), and on-board generated noise that can radiate off-board. Both on-board and off-board generated noise that is coupled on-board can affect interfacing signal levels and quality, especially in low level analog signals. Of particular concern is noise in frequency ranges affecting modem performance.

On-board generated electromagnetic interference (EMI) noise that can be radiated or conducted off-board is a separate, but equally important concern. This noise can affect the operation of surrounding equipment. Most local government agencies have stringent certification requirements that must be met for use in specific environments.

Proper PC board layout (component placement, signal routing, trace thickness and geometry, etc.) , component selection (composition, value, and tolerance), interface connections, and shielding are required for the board design to achieve desired modem performance and to attain certification.

The aspects of proper engineering practices are beyond the scope of this designer's guide. The designer should consult noise suppression techniques described in technical publications and journals, electronics and electrical engineering text books, and component supplier application notes. Technical and professional associations as well as component suppliers often offer seminars addressing noise suppression techniques.

4.1 PC Board Layout Guidelines

4.1.1 General

1. In a 4-layer design, provide an adequate ground plane covering the entire board. Socket Modem DGND and AGND pins are tied together on the Socket Modem.

2. As a general rule, route digital signals on the component side of the PCB and the analog signals on the solder side. The sides may be reversed to match particular OEM requirements. Route the digital traces perpendicular to the analog traces to minimize signal cross coupling.

3. Route the modem signals to provide maximum isolation between noise sources and noise sensitive inputs. When layout requirements necessitate routing these signals together, they should be separated by neutral signals.

4. All power and ground traces should be at least 0.05 in. wide.

5. Ethernet signal traces are to be no closer than 2.5mm (0.1") from any other traces for European applications.

6. If the Socket Modem is mounted flush with the host PCB, the host PCB should be clear of all traces directly underneath the Socket Modem oscillator section. It is strongly suggested that the Socket Modem is mounted at least 0.130 inch above the host board. (See section 4.4)

4.1.2 Electromagnetic Interference (EMI) Considerations

The following guidelines are offered to specifically help minimize EMI generation. Some of these guidelines are the same as, or similar to, the general guidelines but are mentioned again to reinforce their importance.

In order to minimize the contribution of the Socket Modem-based design to EMI, the designer must understand the major sources of EMI and how to reduce them to acceptable levels.

1. Keep traces carrying high frequency signals as short as possible.

2. Provide a good ground plane or grid. In some cases, a multilayer board may be required with full layers for ground and power distribution.

3. Decouple power from ground with decoupling capacitors as close to the Socket Modem module power pins as possible.

4. Eliminate ground loops, which are unexpected current return paths to the power source and ground.

5. Decouple the power cord at the power cord interface with decoupling capacitors. Methods to decouple power lines are similar to decoupling telephone lines.

7. Locate high frequency circuits in a separate area to minimize capacitive coupling to other circuits.

8. Locate cables and connectors so as to avoid coupling from high frequency circuits.

10. If a multilayer board design is used, make no cuts in the ground or power planes and be sure the ground plane covers all traces.

11. Minimize the number of through-hole connections on traces carrying high frequency signals.

12. Avoid right angle turns on high frequency traces. Forty-five degree corners are good, however, radius turns are better

13. On 2-layer boards with no ground grid, provide a shadow ground trace on the opposite side of the board to traces carrying high frequency signals. This will be effective as a high frequency ground return if it is three times the width of the signal traces.

14. Distribute high frequency signals continuously on a single trace rather than several traces radiating from one point.

4.1.3 Other Considerations

The pins of all Socket Modems are grouped according to function. The LAN interface, Host interface, and LED interface pins are all conveniently arranged, easing the host board layout design.

Xmodus has tested the AL6000S Socket Modems for compliance with R&TTE directive. The certificates apply only to designs that route the Ethernet signals (pins 6 to 9) directly to the RJ45 jack.

4.2 Manufacturing Considerations

The Socket Modem has been designed to be mounted onto the host board in one of two ways.

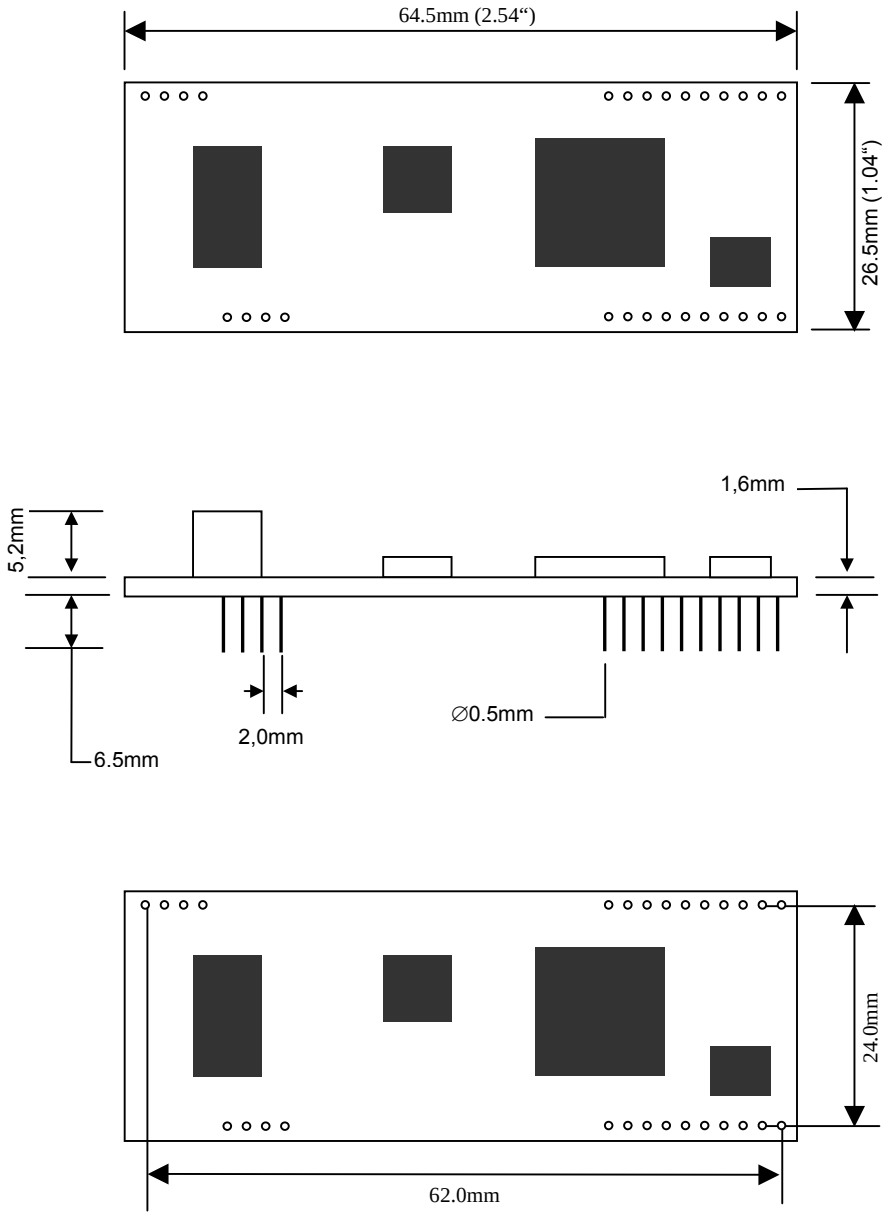
The first method consists of soldering two 32-pin strip sockets to the host board and inserting the Socket Modem into the sockets. A suggested part number for the 32-pin socket is Sam Tec SMM-132-01-F-S.

The second way is to solder the Socket Modem directly to the host board. The most efficient way to do this is through a wave solder process. The recommended hole size for the Socket Modem pins is 0.036 in. ±0.003 in. in diameter. Spacers can be used to hold the Socket Modem vertically in place during the wave solder process. A spacer should be placed on pin 32 and pin 64 of the Socket Modem. A suggested part number for the spacer is BIVAR 938-0.130 for P1(0.310in) option Socket Modems. The spacers can be left on permanently and will not effect operation.

Socket Modems can be put through a water wash process.

5. PACKAGE DIMENSIONS

Figure 4-1. AL6000S Socket Modem Physical Dimensions



AL6000S Dimensions	Europe	US
Width	26,5 mm	~1.05"
Height	14.1 mm	~0.55"
Length	64,5 mm	~2.55"
Weight	~ 14 g	~ 0.45 oz
Operating temperature	0...70 °C	32...160 °F
Storage temperature	–10...85 °C	14...185 °F
Humidity	90% non-condensing	90% non-condensing

6. SOCKET MODEM APPROVALS

The Socket Modem module is approved as a host-independent modem card. To maintain type approvals, permits and/or licenses valid, the guidelines described in this document must be followed.

6.1 Considerations for Telecom Approvals

The Socket Modem has been assessed and has been found to comply with the relevant harmonized standards as defined by the European ETSI Directive (ETSI TC-TE).

These standards are: **None**

6.1.1 LAN Connection

The Socket Modem can be connected to the Ethernet Network either

a) by using a 4-wire flying cable to connect pins 6 to 9 of the module to an RJ-45 connector which can be assembled in a suitable location of the host system enclosure,

OR

b) by providing traces on the host system motherboard for the LAN connection signals between the card and an RJ-45 connector

If connection option a) is used, the cable and its installation inside the host system must be in accordance with the guidelines in IEC950/EN60950 (e.g. the insulation material must withstand electric strength tests as described in section 3.4).

If connection option b) is used, NO additional components must be connected to the LAN Bus signals. Other components not intended for use with this design may affect the network access characteristics of the modem and may therefore invalidate the type approvals, permits and/or licences. In both cases, for the connection between the host and the wall connector, a cable with RJ-45 modular jack and an appropriate national plug must be used.

6.2 Considerations for Electrical Safety

6.2.1 Conditions for Maintaining Safety Compliance.

The Socket Modem has been assessed with respect to electrical safety and has been found to comply with relevant standards as defined by the European Low Voltage Directive (72/23EEC). The particular standard is **EN 60950-1:2001**.

The card is rated as Class III equipment and it is intended for use in Pollution Degree 2 environments only [see EN60950-1:2001, 2.10.4]. Material Group IIIa or IIIb (Comparative Tracking Index below 400 according o IEC 112, method A) is assumed for any host system PCB that has traces and/or circuitry with TNV potential.

It is assumed that the modem card will only be assembled in a host system unit that complies with IEC60950/EN60950. Some particular requirements are [see EN60950-1:2001, 2.1.1, 2.2, 2.3, 2.9, 2.10 and 4.7.3.2]:

6.2.2 Power Supply [EN60950-1:2001, 1.6]

Before installing the Socket Modem in a host system, the installer must ensure that the power drawn by the card, together with the host and any auxiliary cards drawing power from the host, is within the rating of the host power supply unit.
The Socket Modem's power consumption is typically 1.00 W (@ 5.0 Vdc).

6.3 Considerations for EMC

6.3.1 EMC Compliance (EU Countries)

The Socket Modem has been assessed with respect to emission of and immunity to electromagnetic disturbances and has been found to comply with the relevant harmonized standards as defined by the European EMC Directive (89/336/EEC).

These standards are:

- Generic emission standards which refers to

  EN 55022:1998 +A1:2000, Class B

- Generic immunity standards which refers to

  EN 55024:1999

6.3.2 Installation in Host Systems (European Countries)

It is assumed that the Socket Modem will only assembled in host systems that comply with the EMC Directive.

As per definition of the EMC Directive, the card and its host system will constitute an "installation" similar to e.g. a PC card modem installed in a personal computer. Therefore, if the host system complies with the EMC Directive, there should be no need for verifying continued compliance of the complete system.

However, note that it is the responsibility of the professional installer of Socket Modem to ensure that the complete system placed on the market complies with the Directive.