



**User Manual:
GSM000PB001MAN**

**Enfora GSM/GPRS
Spider SA User Manual**

Revision 1.07

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Revision History

Revision Number	Release Date	Description of Changes
1.00	9/18/02	Initial release
1.01	11/15/02	<ul style="list-style-type: none"> • Changed all reference to power configuration • Updated all product images • Updated all references to input power requirements • Updated LED operation • Added Tables and Figures • Added regulatory information
1.02	12/05/02	<ul style="list-style-type: none"> • Added mounting bracket information
1.03	1/15/03	<ul style="list-style-type: none"> • Added serial interface pinout
1.04	2/28/03	<ul style="list-style-type: none"> • Modified REG LED function • Added references to new application notes • Added Integration website reference and access information
1.05	4/8/03	<ul style="list-style-type: none"> • Updated low-end voltage range in 3.2 Connecting the Power Supply. • Added mounting bracket dimensions.
1.06	8/25/03	<ul style="list-style-type: none"> • Added warranty information.
1.07	02/14/05	<ul style="list-style-type: none"> • Updated warranty and technical support information

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1 Introduction

1.1 About the GSM/GPRS Spider SA

The GSM/GPRS Spider SA is a compact, stand-alone wireless IP (GSM/GPRS) modem. The platform also includes an external interface that provides I/O, audio, and ground lines for easy access. The GSM/GPRS Spider SA is designed for computing devices operating Windows 98 SE, XP, NT 4.0 (Service Pack 6), 2000 Professional and ME. The platform can also be used as a stand-alone serial device with other vertical applications. Enfora's GSM/GPRS Spider SA provides maximum versatility in a single affordable device.

1.2 About this Manual

Contained in this manual are instructions on how to install and configure the GSM/GPRS Spider SA modem. Please follow the instructions herein closely to avoid damaging the GSM/GPRS Spider SA.

The GSM/GPRS Spider SA modem contains an Enfora Enabler-G OEM module. Detailed information pertaining to the specifications and operation of the module will pertain, in part, to the GSM/GPRS Spider SA platform.

*The information can be accessed at the Enfora website under Support/Integrator Downloads. The username is **developer** and the password is **enfora**.*

Refer to the following documentation for additional information, if required:

Enabler-G AT Command Set GSM0102PB001MAN
Enabler-G Integration Guide GSM0000PB001
Enfora GSM-GPRS Family UDP-API Reference GSM0102PB002MAN

GSM0000AN001 - Enabler-G PPP Configuration for Windows 98
GSM0000AN002 - Enabler-G PPP Configuration for Windows 2000
GSM0000AN003 - Enabler-G Data Circuit Switched Call Configuration and Use
GSM0000AN004 - Enabler-G SMS Configuration and Use
GSM0000AN005 - Enabler-G Automated Network Connection Configuration and Use
GSM0000AN006 - Enabler-G Module Status Query
GSM0000AN007 - Enabler-G Status Reporting
GSM0000AN008 - Enabler-G PPP Configuration for Windows XP
GSM0000AN009 - Dynamic IP Assignment Support
GSM0000AN010 - Enabler-G PPP Configuration for PocketPC 2002
GSM0000AN011 - PAD Configuration and Use
GSM0000AN012 - Network Transparency Configuration for PAD
GSM0000AN013 - Enabler-G Sleep Mode Configuration and Use
GSM0000AN014 - Anytime PPP API Access

1.3 System Requirements

- Windows 98 SE / XP / NT 4.0 (Service Pack 6)/2000 Professional / ME operating systems or other serial-enabled platform
- One standard RS-232 serial port for GSM/GPRS Spider SA configuration
- One standard plug for speaker and microphone*

*not required for stand alone operation

1.4 Spider SA Front and Back View



Figure 1: Front view of GSM/GPRS Spider SA modem.



Figure 2: Rear view of GSM/GPRS Spider SA modem.

2 Regulatory Compliance FCC

- The modem was tested and certified to meet FCC Parts 15 in a stand-alone configuration, which demonstrated that the GSM/GPRS Spider SA complies with Part 15 emission limits. FCC Part 24 is covered by the Enfora Enabler-G "modular approval" process for a transmitter. This approach, described by FCC Public Notice DA 00-131407 released June 26, 2000, is intended to afford relief to equipment manufacturers by eliminating the requirement for obtaining a new equipment authorization for the same transmitter when installed in a new device.
- In order to use the GSM/GPRS Spider SA without additional FCC certification approvals, the installation must meet the following conditions:
 - For the transmitter to meet the MPE categorical exclusion requirements of 2.1091, the ERP must be less than 1.5 watts for personnel separation distance of at least 20 cm (7.9 in). Therefore, the maximum antenna gain cannot exceed +3.3dBi. If greater than 1.5 watts exists, then additional testing and FCC approval is required.

2.1 Disclaimer

The information and instructions contained within this publication comply with all FCC, GCF, PTCRB, RTTE, IMEI and other applicable codes that are in effect at the time of publication. Enfora disclaims all responsibility for any act or omissions, or for breach of law, code or regulation, including local or state codes, performed by a third party.

Enfora strongly recommends that all installations, hookups, transmissions, etc., be performed by persons who are experienced in the fields of radio frequency technologies. Enfora acknowledges that the installation, setup and transmission guidelines contained within this publication are guidelines, and that each installation may have variables outside of the guidelines contained herein. Said variables must be taken into consideration when installing or using the product, and Enfora shall not be responsible for installations or transmissions that fall outside of the parameters set forth in this publication.

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3 Installation

3.1 Subscriber Identity Module (SIM) Card

The SIM, an integral part of any GSM terminal device, is a “smart card” that is programmed with subscriber information. The user information consists of an International Mobile Subscriber Identity (IMSI) number, which is registered with the GSM service provider, and an encryption Ki (pronounced “key”). This information consists of a microprocessor and memory installed on a plastic card. To install the SIM card into the modem, insert the SIM card in the modem as shown below in Figure 3.

Note: The SIM is *not* provided with the Spider SA modem. The SIM must be obtained from the GSM service provider and must be provisioned by the operator for data and/or voice. Always take care to protect the SIM: the GSM terminal will not operate without the SIM installed.



Figure 3: Inserting a SIM Card in a GSM/GPRS Spider SA Module

3.2 Connecting the Power Supply

The GSM/GPRS Spider SA modem can utilize input power ranging from 5 Vdc to 30 Vdc. If your unit did not include a power supply or if you wish to configure a separate power interface, the following connector parts can be used to mate with the existing modem power connector:

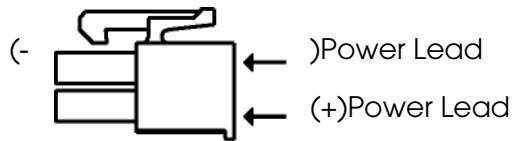
Connector Pins - Molex 39-00-0207 MINIFIT TERM CRP FEM CHN BS TIN 18-24

Plastic Housing - Molex 39-01-2020 4.20mm (.165") Pitch Mini-Fit, Jr.™ Receptacle, Dual Row (the Enfora GSM/GPRS Spider SA incorporates a 2-pin configuration)

WARNING:

When assembling the Molex connector, plug the Positive (+) power lead in the bottom of the Molex connector. Improper connections will render the unit inoperable and will void the product warranty.

Proper Molex Configuration



To supply power to the GSM/GPRS Spider SA modem, connect the power supply to the power connector (labeled “**Power**”) on the modem. Connect the other end of the power cable to a power source.

Note: Make sure the SIM card is inserted prior to connecting the power supply to the Spider SA.



Figure 4: Connecting The Power Supply To Spider SA

The following tables provide the power characteristics of the GSM/GPRS Spider SA modem.

Enfora Enabler-G (@ 12 Volts)			Average Current (mAmps)	Peak Current (Amps)
GSM 900	GSM	1 TX 1 RX	150 mA	.88 A @ 32.5 dBm
		1 RX	76 mA	
		Idle	21 mA	
		Sleep	20 mA	
DCS 1800 & PCS 1900	GSM	1 TX 1 RX	112 mA	.58 A @ 29.5 dBm
		1 RX	72 mA	
		Idle	21 mA	
		Sleep	20 mA	

Table 1: GSM Operating Power

Enfora Enabler-G (@ 12 Volts)			Average Current (mAmps)	Peak Current (Amps)
GSM 900	GPRS	1 TX /1RX	142 mA	.88 A @ 32.5 dBm .92 A @ 32.5 dBm
		2 TX/ 1RX	255 mA	
		1 TX/ 2RX	150 mA	
		1 TX/ 3RX	160 mA	
		1 TX/ 4RX	160 mA	
		1 RX	76 mA	
		Idle	27 mA	
		Sleep	20 mA	
		DCS 1800 & PCS 1900	GPRS	
2 TX/ 1RX	180 mA			
1 TX/ 2RX	115 mA			
1 TX/ 3RX	120 mA			
1 TX/ 4RX	120 mA			
1 RX	68 mA			
Idle	27 mA			
Sleep	20 mA			

Table 2: GPRS Operating Power

3.3 Connecting the Serial Cable

To connect the Spider SA with a local computing device, connect one end (male end) of the 9-wire RS232 Serial Cable to the Spider SA port labeled “Serial” and connect the other end to a computer.



Figure 5: Connecting the Serial Cable to Spider SA

The following figure provides the Spider SA serial pinout information.

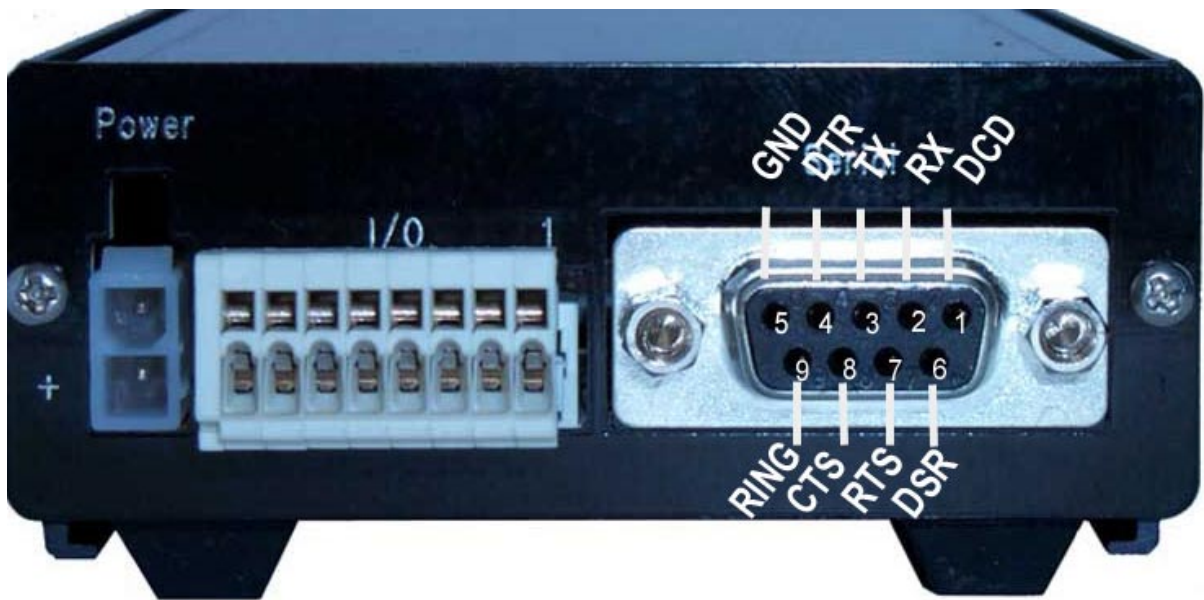


Figure 6: Serial Pinout

3.4 Connecting the GSM/GPRS Antenna

The antenna is supplied by the user. The antenna must have a nominal impedance of 50 Ohms. The VSWR must be less than 2.0:1. System antenna gain should be 0-2 dB for optimum performance. See section 2 Regulatory Compliance FCC.

There are two varieties of GSM/GPRS Spider SA modems. Model number GSM1202 operates at the 900/1800 MHz frequency band while model number GSM1203 operates in 1900 MHz frequency band. Care needs to be taken when connecting the antenna since the right type of antenna will be required for proper operation of the modem. The antenna connector on the GSM/GPRS Spider SA modem is SMA Female. The antenna has to be connected to the connector labeled “**Antenna**” as shown below in Figure 7.



Figure 7: GSM/GPRS Spider SA Connecting the Antenna

3.5 Attaching a Microphone/Speaker

To place a voice call, insert a microphone/speaker to the port labeled “**MIC AUDIO**” as shown below in Figure 8. The plug is a standard 2.5mm audio connector. Many existing mobile phone headsets can be used.



Figure 8: Attaching a Headset to the GSM/GPRS Spider SA Module

3.6 Using the GSM/GPRS Spider SA Modem I/O Interface

The GSM/GPRS Spider SA Modem provides an external I/O connector that can be used to interface with other devices. The mating I/O connector and operating tool part numbers are provided below:

Wago I/O Connector – 733-108 FEMALE CONNECTOR WITH CAGE-CLAMP - 8 POLE

Connector Tool – 233-332 OPERATING TOOL FOR FRONT-ENTRY WIRING OF SERIES 233

The Wago connector is attached to the SA as shown in Figure 9.



Figure 9: Wago I/O Connector Attachment

The insertion of a bare wire in the Wago I/O connector is shown in Figure 10.



Figure 10: Wago Connector Wire Insertion

The I/O pin configuration is provided in Figure 11.



Figure 11: GPIO Pin Configuration

Five general-purpose signals (GPIO1, GPIO3, GPIO5, GPIO6, and GPIO7) are provided. Each of these signals may be selected as inputs or outputs. The GPIO characteristics are provided in Table 3.

One audio input and one audio output line is provided along with a ground line.

I/O Lines	Parameter/Conditions	MIN	TYP	MAX	UNIT
V_{IL}	Input Voltage – Low	-0.5		0.9	Vdc
V_{IH}	Input Voltage – High	2.0		3.4	Vdc
V_{OL}	Output Voltage – Low			0.64	Vdc
V_{OH}	Output Voltage – High	2.4		3.0	Vdc
I_{IL} / I_{IH}	Input Leakage Current	-1		1	μ A
I_{oL} / I_{oH}	Rated Output Current			2	mA

Table 3: SA GPIO Characteristics

3.7 LED Functions

The GSM/GPRS Spider SA modem has two LED's on the front panel.

PWR: Indicates power to the modem. Solid when the modem is turned on.

REG: Indicates GSM network registration status. Flashing when attempting to register on a GSM network. Solid when the modem is registered with a GSM network.

3.8 Mounting the GSM/GPRS Spider SA

The GSM/GPRS Spider SA ships with a mounting bracket for remote installation

The bracket should be used as a template to mark screw holes for installation. See Figure 12: GSM/GPRS Spider SA Mounting Bracket (attached). The mounting holes are designed for a number 10 screw. Once mounting holes have been located for placement, the mounting plate can be easily broken into two parts as demonstrated in Figure 13: GSM/GPRS Spider SA Mounting Bracket (separated). Each piece of the bracket can now be inserted at the ends of the unit as demonstrated in Figure 14: GSM/GPRS Spider SA Bracket Installation and Figure 15: GSM/GPRS Spider SA Mounting Bracket (ready to mount).



Figure 12: GSM/GPRS Spider SA Mounting Bracket (attached)



Figure 13: GSM/GPRS Spider SA Mounting Bracket (separated)



Figure 14: GSM/GPRS Spider SA Bracket Installation



Figure 15: GSM/GPRS Spider SA Mounting Bracket (ready to mount)

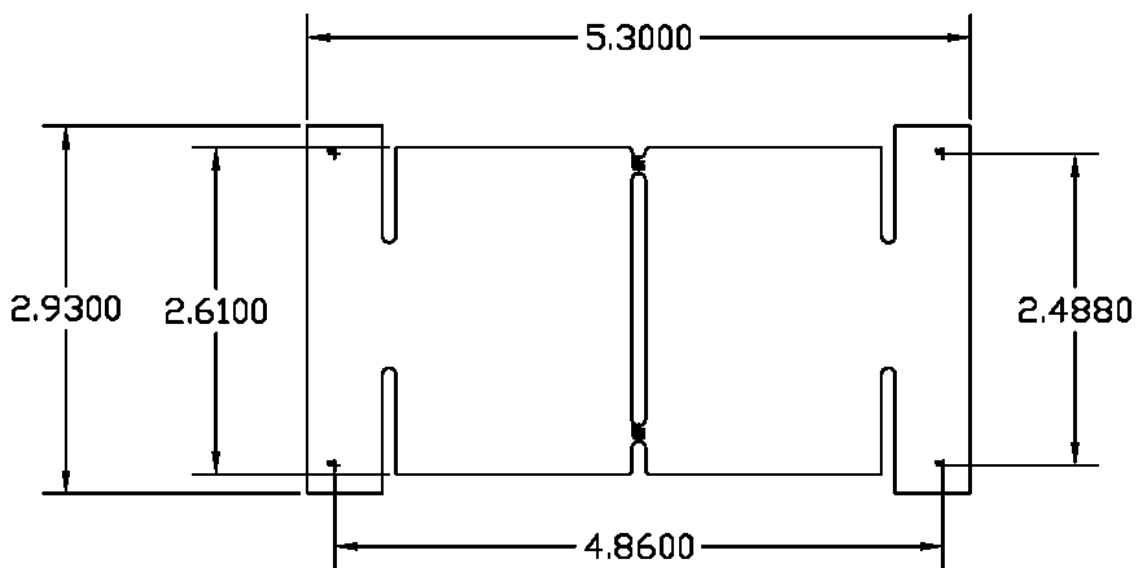


Figure 16: Mounting Bracket Dimensions

4 Frequently Asked Questions (FAQ)

Q. How do I configure a PPP connection for the Windows 98?

A. Refer to “*GSM0000AN001 - Enabler-G PPP Configuration for Windows 98*” application note for details.

Q. How do I configure a PPP connection for Windows 2000?

A. Refer to the “*GSM0000AN002 - Enabler-G PPP Configuration for Windows 2000*” application note for details.

Q. How do I send and receive data and voice calls to/from a remote host?

A. Refer to “*GSM0000AN003 - Enabler-G Data Circuit Switched Call Configuration and Use*” application note for details.

Q. How do I send and receive SMS messages?

A. Refer to “*GSM0000AN004 - Enabler-G SMS Configuration and Use*” application note for details.

Q. How do I automate GSM/GPRS network connectivity on the Spider SA?

A. Refer to the “*GSM0000AN005 - Enabler-G Automated Network Connection Configuration and Use*” application note for details.

Q. How do I query modem status parameters?

A. Refer to “*GSM0000AN006 - Enabler-G Module Status Query*” application note for details.

Q. How can I set detailed status reporting?

A. Refer to the “*GSM0000AN007 - Enabler-G Status Reporting*” application note for details.

Q. How do I configure a PPP connection for Windows XP?

A. Refer to the “*GSM0000AN008 - Enabler-G PPP Configuration for Windows XP*” application note for details.

- Q. How can I use the Dynamic IP reporting feature on the Spider SA?
A. Refer to the “*GSM0000AN009 - Dynamic IP Assignment Support*” application note for details.
- Q. How do I configure a PPP connection for PocketPC 2002?
A. Refer to the “*GSM0000AN0010 - Enabler-G PPP Configuration for PocketPC 2002*” application note for details.
- Q. How can I use the UDP Packet Assembler/Disassembler feature on the Spider SA?
A. Refer to the “*GSM0000AN011 - PAD Configuration and Use*” application note for details.
- Q. How do I configure transparent or non-transparent access using PAD on the Spider SA?
A. Refer to the “*GSM0000AN012 - Network Transparency Configuration for PAD*” application note for details.
- Q. How do I configure different sleep modes on the Spider SA?
A. Refer to the “*GSM0000AN013 - Enabler-G Sleep Mode Configuration and Use*” application note for details.
- Q. How do I configure the Spider SA for PPP API access without having network connectivity?
A. Refer to the “*GSM0000AN014 - Anytime PPP API Access*” application note for details.

5 Tech Support

For problems stemming from your network access, contact your GSM/GPRS carrier service. For technical support and customer service dealing with the modem itself, contact the company where you purchased the product. If you purchased the product directly from Enfora, visit the SUPPORT page on the Enfora website: <http://www.enfora.com>.