Chapter 1. Introduction

The SML2400 IP is a complete spread spectrum transceiver module, that operates in the license-free, 2.4 GHz ISM band. The spread spectrum technology in combination with an intelligent protocol ensures safe, robust and reliable transmissions. Especially in difficult or hostile environments where interfering and reflective signals can occur, the SML2400 IP offers a solution where other products fail. The SML2400 IP is approved under ETSI and FCC and may be used worldwide. The SML2400 IP features the ability to change the system settings with AT-commands via RS-232 port communication. This makes it possible to change both system and communication protocols instantly.

Description

The SML2400 IP consists of a black metal case with one connector, four LED indicators, a fixed antenna and an on/off switch. The LEDs indicate the different status of the SML2400 IP. On the bottom of the SML2400 IP is a RS-232 DB9 female connector.

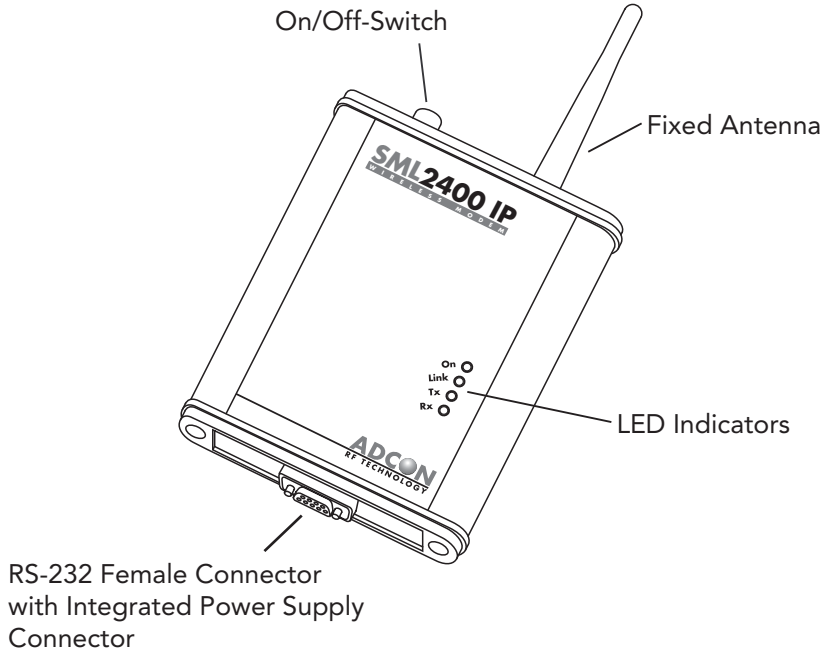

Figure 1. The SML2400 IP

The product also contains:

- a RS-232 male-female connector with an integrated power supply connector
- a 220V – 9V DC power adapter (110V – 9V for the U.S.)
- A CD-ROM containing the manual and the SML2400 IP Configuration Program

System Indicators

The SML2400 IP is equipped with four LEDs:

1. On: This LED turns off when the system powers down (Standby/Sleep).
2. Link: It indicates if a link is established in Secured Mode.
3. Tx: It indicates that data is being transmitted.
4. Rx: It indicates that data is being received.

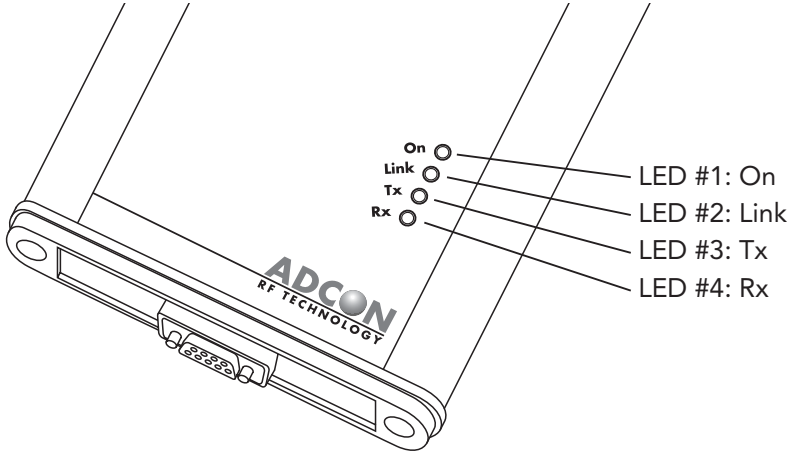

Figure 2. LED Indicators

Applications

In many cases the SML2400 IP is used to connect a fixed device (PC, sensor, modem) to a portable device (PDA, laptop, remote control unit). Some sample applications for the SML2400 IP are:

1. Point to Point configuration

2. Remote control

3. Telemetry applications for sensors and indicators

4. Wireless NULL modem connection

5. Wireless baud rate converter

The SML2400 IP is equipped with a number of factory templates. For connecting fixed devices to portable devices, you can use factory setting #2 (this is the default setting). This enables the portable device to communicate with the PC using either the SML2400 IP Configuration Program or HyperTerminal. It gives you the opportunity to become familiar with the SML2400 IP and permits, for instance, the measuring of the coverage field by the signal quality at different locations. This can be done simply by walking around with a laptop and testing the quality of the PC link from various points.

General Specifications

- Channel frequencies : 2410 – 2470 MHz
- Number of channels : 16
- RF bandwidth : 6 MHz (99% of power)
- Frequency selection : 4 MHz step
- Spread spectrum type : Direct Sequence Spread Spectrum
- Modulation : DBPSK
- Air data rate : 260 kbps
- Spread code length : 15 chips
- Chip rate : 3.8 Mcps
- Radio power output : 14 dBm (max.) EIRP
- Receiver sensitivity : –95 dBm
- Data interface : RS-232 DB9 female connector
- RS-232 data rate : 2400 … 57600 bps
- Range : 1000 m (line of sight)
- Unit is IP64-Compliant:
  - Dust tight
  - Water splashed on the unit from any direction will have no harmful effect.
- Conformity testing:
  - ETSI 300 328
  - ETSI 300 826
  - FCC part 15

Electrical Specifications

- External power supply : 8.5 V to 10 V
- Internal battery pack : 1600 mAh Rechargeable NiMH Batteries. Batteries need to be charged before first use.
- Power consumption
  - with external power supply (including battery charging current):
    - Transmission : < 360 mA
    - Reception : < 265 mA
    - Standby : < 160 mA
    - Sleep : < 140 mA
  - battery powered
    - Transmission : < 310 mA

- Reception : < 190 mA
- Standby : < 25 mA
- Sleep : < 210 µA

- Operating temperature: –20° C to +60° C [–4° F to 140° F]

Embedded Software Features

- Point to Point
  - Burst Mode
  - Secured Mode
- Sleep Mode (DTR down operated)
- Power-Saving Interval Mode
- ACK/NACK error correction with CRC error detection
- Hayes-compatible command set

Dimensions

- Weight : 380 g
- Length : 115 mm
- Width : 82 mm
- Height : 32 mm

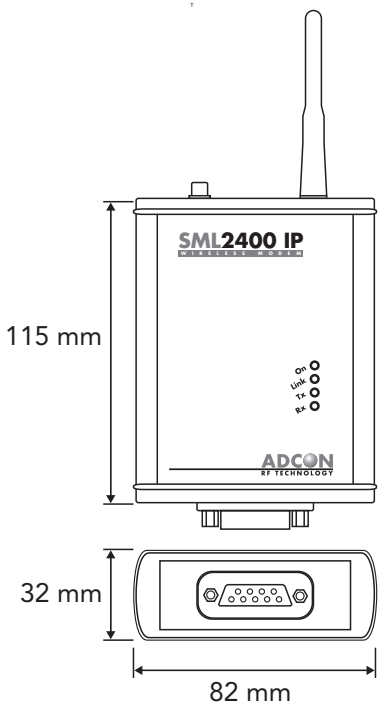

Figure 3. Dimensions

WARNING Do not use adapters other than the one(s) supplied with the product. These adapters are designed to supply 9 V. There are adapters in existence, which supply more than 9 V without a load.

This device complies with Part 15 of the FCC Rules. Operation is subject to the following conditions:

1. The device may not cause harmful interference.
2. The device must accept any interference received, including interference that may cause undesired operation.
3. The antennas used for the transmitter must be installed as to provide a separation distance of at least 20 cm from all persons and must not be co-located or operated in conjunction with any other antenna or transmitter. End-users and any person responsible for installation must be provided with antenna installation instructions and transmitter operating conditions for satisfying RF exposure compliance.