

THE GSM EMBEDDED MODEM USER'S GUIDE ME40+

Contents



1 Introduction

- 1.1 Scope of this manual
- 1.2 Electrical characteristics
- 1.3 Mechanical characteristics
- 1.4 Features
 - 1.4.1 Telephony
 - 1.4.2 Short Message Service
 - 1.4.3 Data
 - 1.4.4 GSM Supplementary Service
 - 1.4.5 Others
- 1.5 Interfaces

2 Hardware Description

- 2.1 Overview
- 2.2 The 20 pin connector
- 2.3 Signal descriptions
 - 2.3.1 Power supply
 - 2.3.2 Serial link
 - 2.3.3 LED
 - 2.3.4 Audio

2.3.5 Control signals

3 The Optional RS232 Interface

3.1 Overview

3.2 Functional description

3.2.1 The serial port connector

1 Introduction

The ME40+ is designed to provide a quick and easy solution to systems that need to access GSM/GPRS network/functionality. The modem is full type approved and ready to use. It employs the proven GSM WISMO™ technology from WAVECOM, or module form SIEMENS.

1.1 Scope of this manual

This document describes the hardware interface and the technical specification of the ME40+. For information about controlling the modem via the AT commands, refer to the 'AT command manual'.

1.2 Electrical characteristics

- Dual band GSM modem E-GSM 900/1800
- Class 4: 2W for GSM 900
- Class 1: 1W for GSM 1800/1900
- Voice, SMS, Fax and data
- Tricodec: Full Rate, Enhanced Full Rate and Half Rate
- 3V SIM interface
- Power supply: 5V @ 1A
- 300mA average current consumption
- 9mA in idle mode
- Operating temperature: -20°C to + 50°C
- Storage temperature: -35°C to +85°C

1.3 Mechanical characteristics

- **Small size: 68mm(L) x 40mm(W) x 10mm(H)**
- Mounting: 4 screw holes

1.4 Features

1.4.1 Telephony

- Telephony (TCH/FS) and Emergency calls
- Full Rate, Enhanced Full Rate and Half Rate
- DTMF functions

1.4.2 Short Message Service

- Point to Point MT and MO
- SMS Cell Broadcast

1.4.3 Data

- Data circuit asynchronous, transparent and non-transparent up to 14.4kbps
- Automatic fax group 3 (Class 1 and 2)
- Alternate speech and fax
- MNP2, V.42bis

1.4.4 GPRS packet data features

- GPRS class 2 / Class B for the Q2403A
- GPRS class 10 / Class B for the Q2406
- GPRS class 8 / Class B for the MC35i
- Coding schemes CS1 to CS4
- Compliant with SMG31bis

1.4.5 GSM Supplementary Service

- Call Forwarding
- Call Barring
- Multi Party
- Call Waiting and Call Hold
- Calling Line Identity
- Advice of Charge
- USSD
- Closed User Group
- Explicit Call Transfer

1.4.6 Others

- ME + SIM phone book management
- Fixed Dialling Number
- SIM Toolkit Class 2
- SIM, network and service provider locks
- Real Time Clock
- Alarm management
- Software upgrade through Xmodem protocol
- UCS2 character set management

1.5 Interfaces

- Single Antenna Interface
- 3V only internal SIM interface
- 20-pin general purpose connector

2 Hardware Description

2.1 Overview

The ME40 includes a Wavecom Wismo2D module, 20-pin header, a SIM card holder, a RF connector.

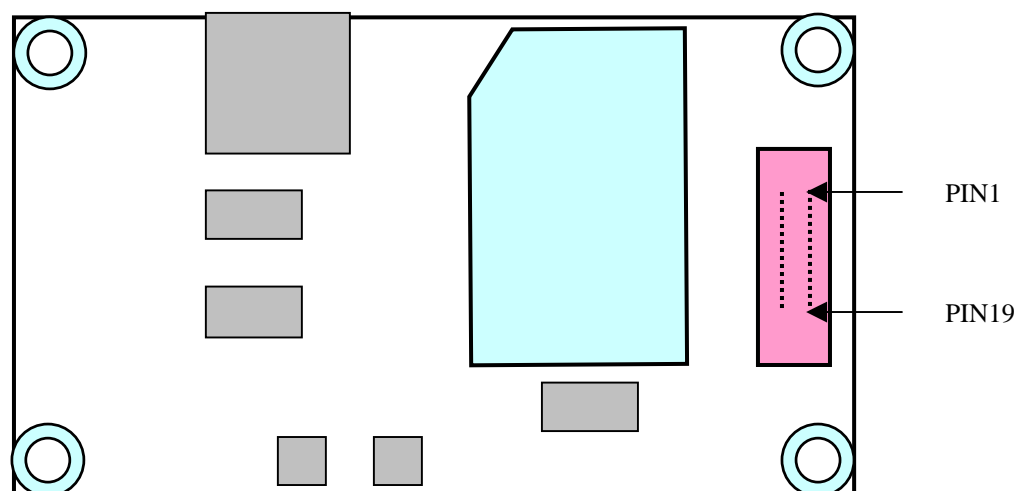


Figure : Top view



Figure : side view

- Connector : 20-pin 2.0mm pitch
- Antenna connector: MCX

2.2 The 20-pin connector

This connector consists of all signals, necessary for system integration. It consists of TXD and RXD signals, audio input/output, power supply and modem control signals.

Pin number	I/O type	Description
1	DCD	
2	RXD	Receive serial data, TTL level, output
3	TXD	Transmit serial data, TTL level, input
4	NC	
5	GND	Ground, high current
6	GND	Ground, high current
7	RTS	
8	CTS	
9	RI	
10	RESET	Input, modem reset control signal
11	SPEAKER -	Speaker2, positive output
12	GSM_ON	This signal switches the mobile ON
13	SPEAKER+	Speaker2, negative output
14	GSM_CHARGE	
15	MIC+	Microphone2, positive input
16	GSM_RTC	Input, the backup for the real time
17	MIC-	Microphone2 negative input
18	GSM_VCC	Output, about 4V
19	5V	Supply voltage
20	LED	Output, Working Indication

Signal description

2.2.1 Power supply:

Pin5 = Supply Ground.
Pin19 = Supply voltage 5VDC

Power supply design is an important factor. The GSM modem transmits in burst sequences, therefore the power supply must be able to deliver high current peaks in short period of time.

Supply voltage = 5V
Supply current = 1 amperes.

2.2.2 Serial link (TTL Level)

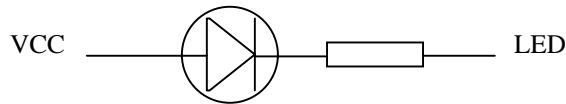
The 2 wire serial link due to 5V TTL level

- Pin 1 = DCD
- Pin 2 = RXD
- Pin 3 = TXD
- Pin 7 = RTS
- Pin 8 = CTS
- Pin 9 = RI

2.2.3 LED

Pin 20 = LED: The LED output can be used to drive a LED indicator via a transistor.

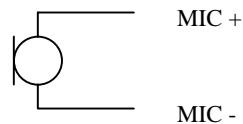
LED Status	Modem Status	
OFF	Modem in download mode or modem OFF	
ON	Permanent	Modem switched ON, not registered on the network
	Slow flash	Modem switched ON, registered on the network
	Quick flash	Modem switched ON, registered on the network, communication in progress



2.2.4 Audio

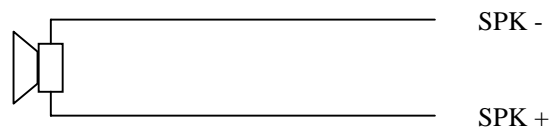
The Microphone-2 inputs are differential. They include the biasing for an electret microphone (0.5mA and 2V). The electret microphone's impedance has to be around 2KΩ and can be connected directly.

- Pin 15 = Microphone2 +
- Pin 17 = Microphone2 -



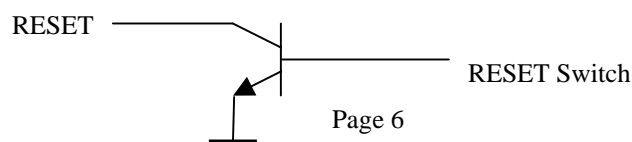
The Speaker2 outputs are push-pull amplifiers and can be loaded down to 150Ω and up to 1nF. These outputs are differential and the output power can be adjusted by 2dB steps.

- Pin 13 = Speaker2 +
- Pin 11 = Speaker2 -



2.2.5 Control signals

Pin 10 = RESET input: This input is used to force a cold reset. It has to be driven by an open collector or open drain.



Pin 12 = GSM_ON

- For the SIEMENS module: To switch on TC35i the /IGT (Ignition) signal needs to be driven to ground level for at least 100ms. This can be accomplished using an open drain/collector driver in order to avoid current flowing into this pin. In a battery operated TC35i application, the duration of the /IGT signal must be 1s minimum when the charger is connected and you may want to go from charging to Normal mode.
- For the WAVECOM module: Once the module supplied, the application must set the ON/OFF signal to high to start the module power ON sequence. The ON/OFF signal must be hold for 1000ms minimum. After this time, an internal mechanism keeps it on hold. The module for 240ms(typical). During this phase, any external reset should be avoided.

Pin 14 = GSM_CHARGE

Pin 16 = GSM_RTC

Pin 18 = GSM_VCC

