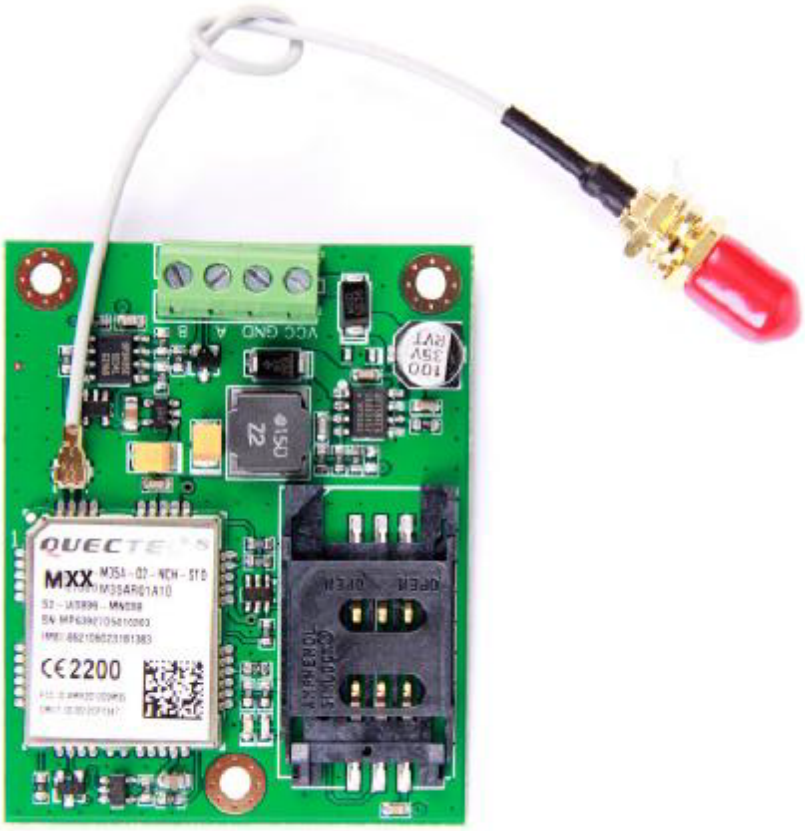
EDW-ML8013 GSM GPRS Modem User's Manual



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1. Introduction

This document defines the EDW-ML8013 module series and describes the hardware interface of the EDW-ML8013 module that connects to the customer application.

This document can help customer quickly understand module interface specifications, electrical and mechanical details. With the help of this document, associated application notes and user guide, customer can use EDW-ML8013 module to design and set up mobile applications quickly.

2. Product concept

The EDW-ML8013 is a Quad-band GSM/GPRS engine that works at frequencies GSM850MHz, GSM900MHz, DCS1800MHz and PCS1900MHz. The EDW-ML8013 features GPRS multi-slot class 12 and supports the GPRS coding schemes CS-1, CS-2, CS-3 and CS-4.

The EDW-ML8013 is integrated with Internet service protocols, which are TCP/UDP, FTP and HTTP.

Extended AT commands have been developed for customer to use these Internet service protocols easily.

Table 1 Module key features

Feature	**Implementation**
Power supply	Single supply voltage 6.0V – 24.0V (5.0V Customize)
Frequency bands	● Quad-band: GSM850, GSM900, DCS1800, PCS1900. ● The module can search these frequency bands automatically ● The frequency bands can be set by AT command. ● Compliant to GSM Phase 2/2+
Transmitting power	●Class 4 (2W) at GSM850 and GSM900 ●Class 1 (1W) at DCS1800 and PCS1900
GPRS connectivity	● GPRS multi-slot class 12 (default) ● GPRS multi-slot class 1~12 (configurable) ● GPRS mobile station class B
Temperature range	● Normal operation: -35°C ~ +80°C ● Restricted operation: -45°C ~ -35°C and +80°C ~ +85°C [1)] ● Storage temperature: -45°C ~ +90°C
DATA GPRS:	● GPRS data downlink transfer: max. 85.6 kbps ● GPRS data uplink transfer: max. 85.6 kbps ● Coding scheme: CS-1, CS-2, CS-3 and CS-4 ● Support the protocols PAP (Password Authentication Protocol)

CSD:	usually used for PPP connections ● Internet service protocols TCP/UDP/FTP/HTTP ● Support Packet Switched Broadcast Control Channel (PBCCH) ● CSD transmission rates: 2.4, 4.8, 9.6, 14.4 kbps non-transparent ● Unstructured Supplementary Services Data (USSD) support
SMS	● MT, MO, CB, Text and PDU mode ● SMS storage: SIM card
FAX	Group 3 Class 1 and Class 2
SIM interface	Port SIM card: 1.8V, 3V, Protected against ESD with a TVS diode array.
RS485 interface	● Support from 4800 bps to 115200 bps, default auto baud rate ● Embed standard AT command（GSM07.05 and 07.07）
Phonebook management	Support phonebook types: SM, FD, LD, RC, ON, MC
SIM Application Toolkit	Support SAT class 3, GSM 11.14 Release 99
Physical characteristics	58*46*12mm

1) When the module works in this temperature range, the deviations from the GSM specification might occur. For example, the frequency error or the phase error could increase.

Table 2 Coding schemes and maximum net data rates over air interface

Coding scheme	**1 Timeslot**	**2 Timeslot**	**4 Timeslot**
CS-1:	9.05kbps	18.1kbps	36.2kbps
CS-2:	13.4kbps	26.8kbps	53.6kbps
CS-3:	15.6kbps	31.2kbps	62.4kbps
CS-4:	21.4kbps	42.8kbps	85.6kbps

3. Application interface

3.1 Pin Description

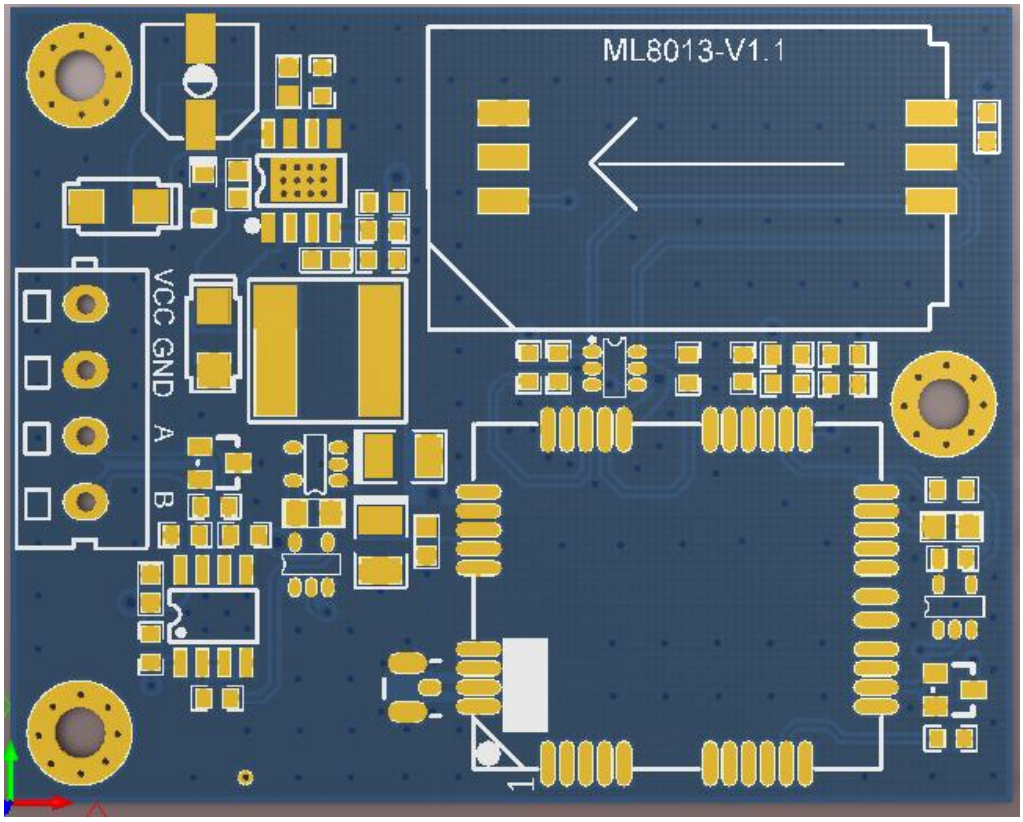


Figure 1 Pin distribution

Table 3 Pin description

PIN	I/O	DESCRIPTION	DC HARATERISTICS
VCC	P	Power	6.0V – 24.0V (5.0V Customize)
GND	P	Power and signal ground	
A	I/O	Noninverting Receiver Input and Noninverting Driver Output	Differential signal
B	I/O	Inverting Receiver Input and Inverting Driver Output	

3.2 Operating modes

The table below briefly summarizes the various operating modes referred to in the following chapters.

Table 4 Overview of operating modes

Mode	**Function**	
Normal operation	GSM/GPRS SLEEP	The module will automatically go into SLEEP mode if DTR is set to high level and there is no interrupt (such as GPIO interrupt or data on serial port). In this case, the current consumption of module will reduce to the minimal level. During SLEEP mode, the module can still receive paging message and SMS from the system normally.
	GSM IDLE	Software is active. The module has registered to the GSM network, and the module is ready to send and receive.
	GSM TALK	GSM connection is going. In this mode, the power consumption is decided by the configuration of Power Control Level (PCL), dynamic DTX control and the working RF band.
	GPRS IDLE	The module is not registered to GPRS network. The module is not reachable through GPRS channel.
	GPRS STANDBY	The module is registered to GPRS network, but no GPRS PDP context is active. The SGSN knows the Routing Area where the module is located at.
	GPRS READY	The PDP context is active, but no data transfer is going on. The module is ready to receive or send GPRS data. The SGSN knows the cell where the module is located at.
	GPRS DATA	There is GPRS data in transfer. In this mode, power consumption is decided by the PCL, working RF band and GPRS multi-slot configuration.
Minimum functionality mode (without removing power supply)	Use the "AT+CFUN" command can set the module to a minimum functionality mode without removing the power supply. In this case, the RF part of the module will not work or the SIM card will not be accessible, or both RF part and SIM card will be closed all, but the serial port is still accessible. The power consumption in this case is very low.	

3.3 LED indication

3.3.1 Red Led is the power indication.

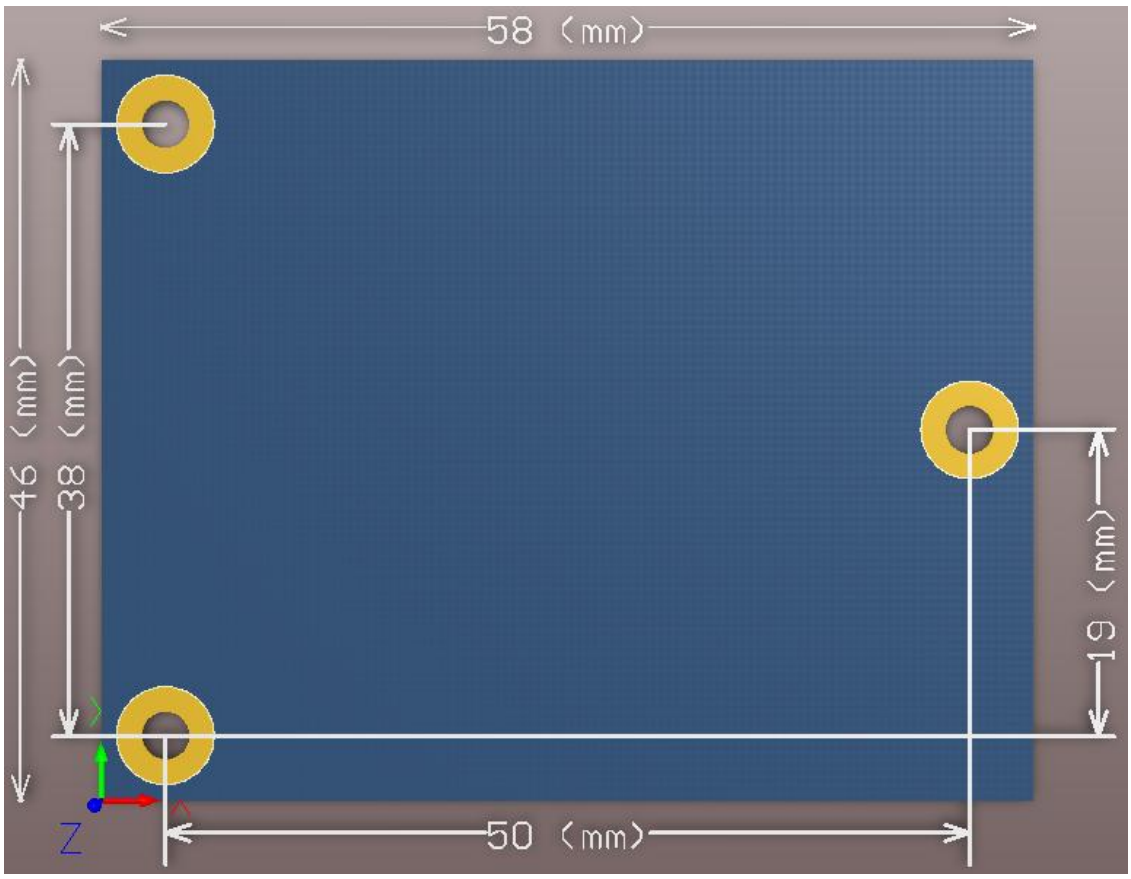
3.3.2 Green Led is the Working state indication.

The Working state of this LED is list in the table 5.

Table 5 Working state indication

state	Module Function
Off	The module is not running(Power Off)
64ms On/800ms Off	The module is not synchronized with network
64ms On/2000ms Off	The module is synchronized with network
64ms On/600ms Off	GPRS data transfer is ongoing.

4. Mechanical dimension



5. Product List

Name	Unit	Quantity	Describe	Picture
EDW-ML8013	Item	1	Module	
Antenna	Item	1	Standard Supply	