WISMO Quik Q2400 series

Starter kit description
(With mother board WM9929-010-21)

Reference : **WM_PRJ_Q2400_PTS_007**
Revisionl : **001**
Date : **14th April 2003**

Document Information

Revision	Date	History of the evolution	
001	14 April 2003	Creation	

Contents

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Overview

This document is a description of the WISMO Quik Q2400 series Starter kit based on a mother board V2 Ref. WM9929-010-21.

This Starter kit is an equipment which can be used to start AT software and hardware development based on WISMO Quik Q2400 series modules.

This Starter kit can be used with the following WISMO Quik modules:

- **Q2403:** E-GSM 900 / DCS 1800 - GPRS Class 2,
- **Q2406:** E-GSM 900 / DCS 1800 - GPRS Class 10,
- **Q2426:** GSM 850 / PCS 1900 - GPRS Class 10,

Refer to the documentation of these modules for further information.

Reference documents

[1]   MOTHER BOARD Starter kit Schematics and PCB, Release 2.1
       Ref.: WM9929-010-21.

1 Equipment description
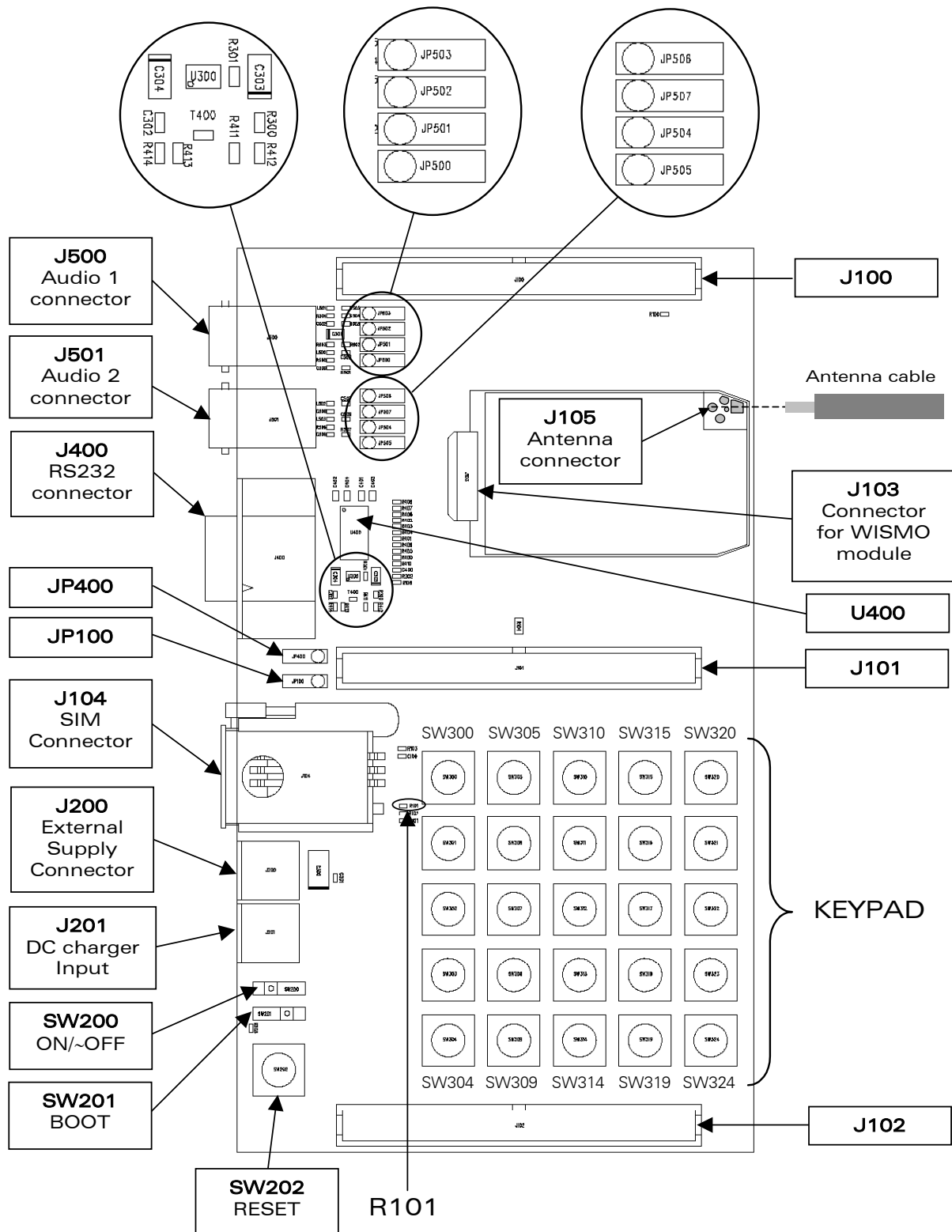
2 Connector description

The connector description bellow uses the signal names of the WISMO Quik Q24x6 modules.

The correspondence with the signal names of the WISMO Quik Q2403 modules, when different, is given in appendix.

2.1 Electrical information for digital I/O

All digital I/O comply with 3 Volts CMOS.

Operating conditions

Parameter	I/O type	Min	Max	Condition
V_{IL}	CMOS	-0.5 V	0.8 V	
V_{IH}	CMOS	2.1 V	3.0 V	
V_{OL}	1X		0.2 V	I_{OL} = -1 mA
	2X		0.2 V	I_{OL} = -2 mA
	3X		0.2 V	I_{OL} = -3 mA
V_{OH}	1X	2.6 V		I_{OH} = 1 mA
	2X	2.6 V		I_{OH} = 2 mA
	3X	2.6 V		I_{OH} = 3 mA

2.2 J100 connector

J100 is a HE10 50-pin male connector.

Pin number	Signal name	I/O	I/O type	Description	Comment
1, 2, 3	+VBATT	O		Battery voltage	High current.
4	+VDD	O			
5, 6, 7, 8	GND			Ground	.
9	BUZ	O	Open Collector	Buzzer output	80 mA peak max
10	BAT_TEMP	I	Analog	ADC input for battery temperature measurement	Tied to GND if not used
11	GND			Ground	
12	AUXV0	I	Analog	Auxiliary ADC input 0	Tied to GND if not used
13,14	GND			Ground	

Pin number	Signal name	I/O	I/O type	Description	Comment
15	SPK1P	O	Analog	Speaker 1 positive output	
16	SPK1N	O	Analog	Speaker 1 negative output	
17	SPK2N	O	Analog	Speaker 2 negative output	
18	SPK2P	O	Analog	Speaker 2 positive output	
19	MIC1P	I	Analog	Microphone 1 positive input	
20	MIC1N	I	Analog	Microphone 1 negative input	
21	MIC2N	I	Analog	Microphone 2 negative input	
22	MIC2P	I	Analog	Microphone 2 positive input	
23, 24, 25	GND			Ground	
26	VCC_RTC	I/O		RTC back-up supply	Iout = 2 mA max
27, 28	GND			Ground	
29	CT108_2/DTR1	I	CMOS	UART1 serial interface Data Terminal Ready	Pull up to VCC with 100 kΩ when not used
30	CT107/DSR1	O	1X	UART1 serial interface Data Set Ready	
31	CT105/RTS1	I	CMOS	UART1 serial interface Request To Send	Pull up to VCC with 100 kΩ when not used
32	CT103/TXD1	I	CMOS	UART1 serial interface Transmit	Pull up to VCC with 100 kΩ when not used
33	CT104/RXD1	O	1X	UART1 serial interface Receive	
34	CT106/CTS1	O	1X	UART1 serial interface Clear To Send	
35,36	GND			Ground	
37	~INTR	I	CMOS	External interrupt	Active low. 100 kΩ Pull-up inside

Pin number	Signal name	I/O	I/O type	Description	Comment
38	GPI or CT103/TXD2	I	CMOS	General Purpose Input or UART2 serial interface transmit	100 kΩ Pull-down inside
39	GPIO3 or CT109/DCD1	I/O	CMOS/2X	General Purpose I/O or UART1 serial interface Data Carrier Detect	
40	BOOT	I	CMOS	BOOT	Pull down through 1 kΩ for Flash downloading
41	GPIO2 or CT125 / RI1	I/O	CMOS/2X	General Purpose I/O or UART1 serial interface Ring Indicator	
42	GPIO5 or CT105/RTS2	I/O	CMOS/2X	General Purpose I/O or UART2 serial interface Request To Send	
43	GPIO4	I/O	CMOS/2X	General Purpose I/O	
44	GPO1	O	2X	General Purpose O	
45	GPO2 or CT104/RXD2	O	2X	General Purpose O or UART2 serial interface Receive	
46	GPIO1	I/O	CMOS/2X	General Purpose I/O	FLASH_LED in AT software
47	GPIO0 or CT106/CTS2	I/O	CMOS/2X	General Purpose I/O or UART2 serial interface Clear To Send	
48	GPO0 or SPI_AUX	O	3X	General Purpose Output	Also referenced as SPI_AUX in SPI Interface or 3V/5V in SIM interface
49	SIM_PRES	I	CMOS	SIM Card Detect	Tied to VCC if not used
50	GND			Ground	

2.3 J101 connector

J101 is a HE10 50-pin male connector.

Pin number	Signal name	I/O	I/O type	Description	Comment
1	ON/~OFF	I	CMOS	Power ON/OFF control	
2	GND			Ground	
3, 4	VCC	O		2.8 V digital supply output	10 mA max.
5, 6	GND			Ground	
7	NC_WR			Don't used (left floating)	
8, 9, 10	GND			Ground	
11	NC_D7			Don't used (left floating)	
12	NC_D6			Don't used (left floating)	
13	NC_D5			Don't used (left floating)	
14	NC_D4			Don't used (left floating)	
15	NC_D3			Don't used (left floating)	
16	NC_D2			Don't used (left floating)	
17	NC_D1			Don't used (left floating)	
18	NC_D0			Don't used (left floating)	
19, 20	GND			Ground	
21	NC_RD			Don't used (left floating)	
22	NC_A2			Don't used (left floating)	
23, 24	GND			Ground	
25, 26	CHG_IN	I	Supply	Supply for battery charging	High current (0.8 A max)
27, 28	GND			Ground	
29	~RST	I/O	SCHMITT	Reset	Active low

Pin number	Signal name	I/O	I/O type	Description	Comment
30, 31, 32	GND			Ground	
33	COL2	I/O	CMOS/1X	Keyboard Column	
34	COL1	I/O	CMOS/1X	Keyboard Column	
35	COL0	I/O	CMOS/1X	Keyboard Column	
36	COL4	I/O	CMOS/1X	Keyboard Column	
37	COL3	I/O	CMOS/1X	Keyboard Column	
38	ROW0	I/O	CMOS/1X	Keyboard Row	
39	ROW1	I/O	CMOS/1X	Keyboard Row	
40	ROW3	I/O	CMOS/1X	Keyboard Row	
41	ROW4	I/O	CMOS/1X	Keyboard Row	
42	ROW2	I/O	CMOS/1X	Keyboard Row	
43, 44	GND			Ground	
45	SDA/SPI_IO	I/O	CMOS/1X	GPSI Data or SPI Data	
46	SCL/SPI_CLK	O	1X	GPSI clock or SPI clock	
47	SPI_EN or GPO3	O	1X	SPI Enable or General purpose O	
48	SHD_MAX	I		Shut down of Max3237	Active low
49, 50	GND			Ground	

2.4 J102 connector

J102 is a HE10 50-pin male connector.

Pin number	Signal name	I/O	I/O type	Description
1 to 50	GND			Ground

2.5 J104 connector (SIM)

J104 is a standard 3 V SIM socket. The Table bellow gives the description of the signals of this connector.

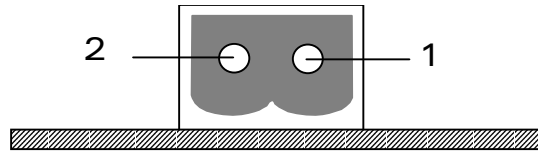| Pin number	Signal name	I/O	I/O type	Description
1	SIM_VCC	I	2.8 V digital supply	SIM card Power Supply
2	SIM_RST	I	CMOS	SIM card Reset
3	SIM_CLK	I	CMOS	SIM card Clock
4	SIM_PRES	O	2.8 V digital supply (VCC)	SIM Card presence
5	GND			Ground
6	VPP	I	Not connected	
7	SIM_DATA	I/O	CMOS	SIM card Data
8	CC8	I	2.8 V digital supply (VCC)	SIM_PRES power supply

2.6 J200 connector (external supply)
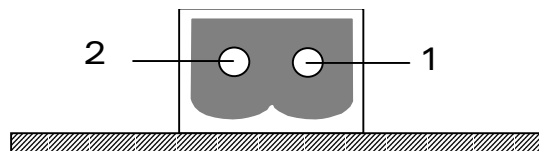
J200 is the external supply connector. It is a 2-pin male connector. The Table bellow gives the description of its signals.

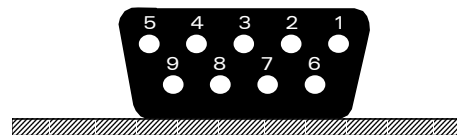| Pin number	Signal name	I/O	I/O type	Description
1	VBATT	I		External Power
2	GND	I		Ground

2.7 J201 connector (battery charger)

J201 is used to simulate a charger. It is a 2-pin male connector. The Table bellow gives the description of its signals.

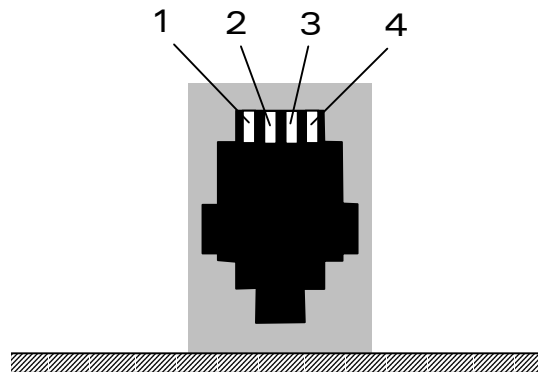| Pin number	Signal name	I/O	I/O type	Description
1	CHG_IN	I		External Charger
2	GND	I		Ground

2.8 J400 connector (RS232)

J400 is a SUB-D 9-pin female connector. The Table bellow gives the description of the signals of this connector (serial link UART1).

Pin number	Signal name	I/O	I/O type	Description
1	CT109 DCD	O	RS232 (V24/V28)	Data Carrier Detect
2	CT104 RXD	O	RS232 (V24/V28)	Receive serial data
3	CT103 TXD	I	RS232 (V24/V28)	Transmit serial data
4	CT108-2 DTR	I	RS232 (V24/V28)	Data Terminal Ready
5	GND			Ground
6	CT107 DSR	O	RS232 (V24/V28)	Data Set Ready
7	CT105 RTS	I	RS232 (V24/V28)	Request To Send
8	CT106 CTS	O	RS232 (V24/V28)	Clear To Send
9	CT125 RI	O	RS232 (V24/V28)	Ring Indicator

Note: the Wismo Quik Q2400 series starter kit is a DCE. It can be connected with a DTE (PC or terminal) with a "**straight cable**".
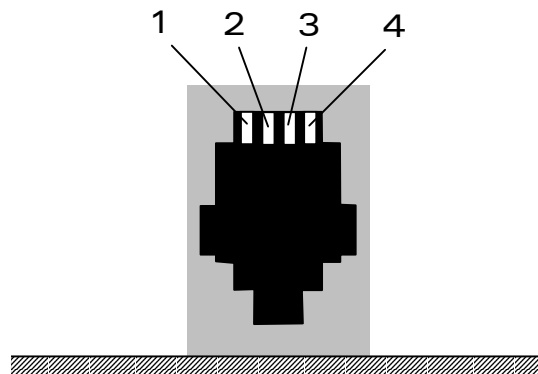
2.9 J500 connector (audio 1)

J500 is a RJ9 4-pin connector.

The Table bellow gives the description of the signals of this connector.

Pin number	Signal name	I/O	I/O type	Description
1	MIC1N	I	Analog	Microphone 1 negative input
2	SPK1P	O	Analog	Speaker 1 positive output
3	SPK1N	O	Analog	Speaker 1 negative output
4	MIC1P	I	Analog	Microphone 1 positive input

2.10 J501 connector (audio 2)


J501 is a RJ9 4-pin connector.

The Table bellow gives the description of the signals of this connector.

Pin number	Signal name	I/O	I/O type	Description
1	MIC2N	I	Analog	Microphone 2 negative input
2	SPK2P	O	Analog	Speaker 2 positive output
3	SPK2N	O	Analog	Speaker 2 negative output
4	MIC2P	I	Analog	Microphone 2 positive input

3 SIM function

If you use the SIM_PRES signal then you must connect the jumper **JP100** between pin 2 and pin3.

If your application does not use the SIM_PRES signal, the jumper **JP100** can be left open or connected between pin 1 and 2.

```
        3  2  1
      ┌─────────┐
      │ ○  ○  ○ │  JP100
      └─────────┘
        SIM_PRES
```
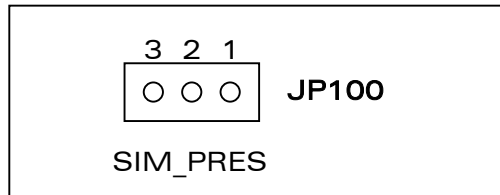
4 Supply connector

J200 is the Power Supply connector of the WISMO module. The voltage applied to this connector is described hereafter.

	Minimum	Typical	Maximum
VBATT+	3.3 V		4.5 V

5 Charger function

J201 is used to simulate a charger. The voltage applied to this connector is described hereafter.

	Minimum	Typical	Maximum
CHG_IN	4.6 V		5.0 V

<u>Note</u>: CHG_IN current = 800 mA max.

6 RS232 function

6.1 Introduction

The Starter Kit is fitted with a MAX3238 RS232 transceiver device (U400).

The Wismo Quik Q2400 series starter kit is a DCE. It can be connected with a DTE (PC or terminal) with a **"straight cable"**.
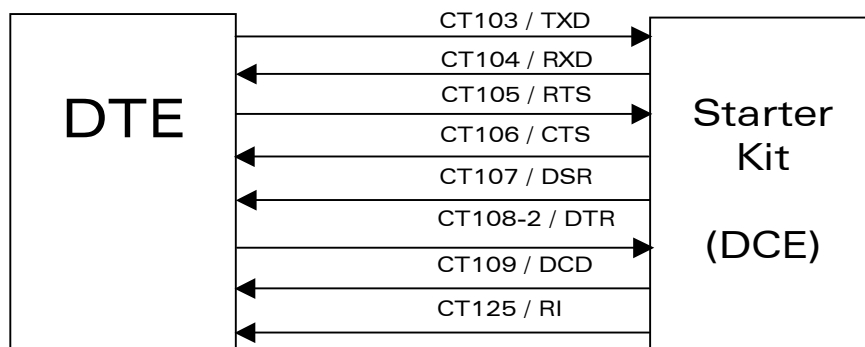

Figure 1: RS232 serial link

6.2 Power supply

The MAX3238 device can be supplied in two different ways:

- from a regulator supplied by +VBATT,
- from VCC power source supplied by the WISMO Quik module.

6.2.1 RS232 device supplied from a regulator

That is the default hardware configuration of the mother board:

- The following components are connected: R300, R301, U300, C302, C303 and C304.
- R302 (zero ohm resistor) is not connected.

6.2.2 RS232 device supplied from VCC

If you want to supply the RS232 transceiver via the VCC output of the WISMO Quik module, you must:

- <u>Connect</u> R302 (zero ohm resistor).
- <u>Disconnect</u> these components: R300, R301, U300, C302, C303 and C304.
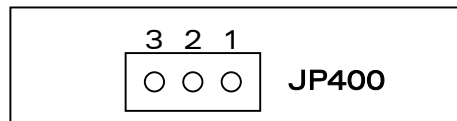
6.3 Shutdown of Max3238

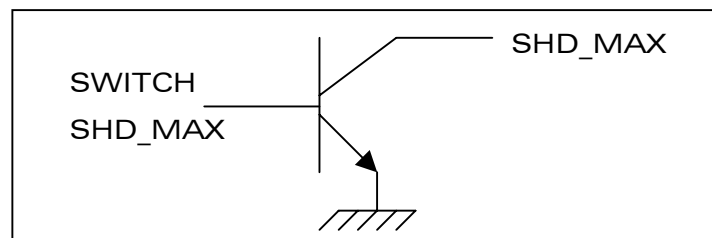The Max3238 device can be shut down in two different ways:

- by the jumper **JP400**,

- by an NMOS or NPN transistor, which will drive the SHD_MAX signal (pin 48 of **J101**) as shown in the diagram below.

<u>Shut down by the jumper JP400:</u>

Connect the jumper **JP400** between pin 2 and pin3.

```
        3  2  1
       ┌─────────┐
       │ ○  ○  ○ │  JP400
       └─────────┘
```

<u>Shut down by a transistor</u>:

- If SWITCH SHD_MAX = 1, SHD_MAX (J101 pin 48)= 0 (shut down activated),

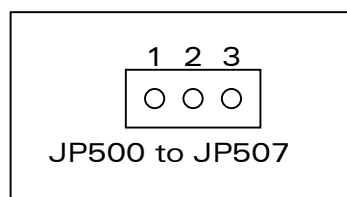- If SWITCH SHD_MAX = 0, SHD_MAX (J101 pin 48)= 1.

7 Audio function

When you use **Audio 1** of mother board:

- You must connect the jumpers JP500, JP501, JP502 and JP503 between pin 2 and pin 3.

When you use **Audio 2** of mother board:

- You must connect the jumpers JP504, JP505, JP506 and JP507 between pin 2 and pin 3.

```
        1  2  3
       ┌─────────┐
       │ ○  ○  ○ │
       └─────────┘
      JP500 to JP507
```

8 ON/~OFF and BOOT function

Mode	BOOT (SW201)	ON/~OFF (SW200)
Normal	OFF	ON
Download	ON	ON

Note: internal boot is started when both **SW201** (**BOOT**) and **SW200** (**ON/~0FF**) are **ON** during the reset of the module.

9 RESET function

When **SW202** is pressed (**RESET** button), the WISMO module is reset.

10 KEYPAD function

The following table shows the matrix of the keyboard:

	COL0	COL1	COL2	COL3	COL4
ROW0	SW300	SW305	SW310	SW315	SW320
ROW1	SW301	SW306	SW311	SW316	SW321
ROW2	SW302	SW307	SW312	SW317	SW322
ROW3	SW303	SW308	SW313	SW318	SW323
ROW4	SW304	SW309	SW314	SW319	SW324

Example: If you press the key SW312, an electric detection will be made on ROW2 and COL2.

11 Antenna function

A coaxial cable with a SMA connector is provided on the board.

The unused extremity of the cable must be soldered on the WISMO module plugged on the board (refer to module documentation for instructions).

12 Appendix

The table hereafter gives the signal name correspondence between the WISMO Quik Q24x6 and Q2403 modules.

Only signals, which name is different between the WISMO Quik Q24x6 and Q2403 modules, are given.

In addition, the corresponding pin number of the WISMO modules is mentioned.

Q24x6	Q2403	60-pin Connector
GPI/TXD2*	GPI	18
GPO2/RXD2*	GPO2	20
GPIO0/CTS2*	GPIO0	24
GPO3/SPI_EN*	SPI_EN	28
RTS1	RTS	30
RXD1	RX	32
GPIO5/RTS2*	GPIO5	35
DSR1	DSR	36
CTS1	CTS	37
TXD1	TX	39

* Multiplexed signals