



**UART Expansion Module**

**BMB22M210**

**User Guide**

Revision: V1.01 Date: September 13, 2023

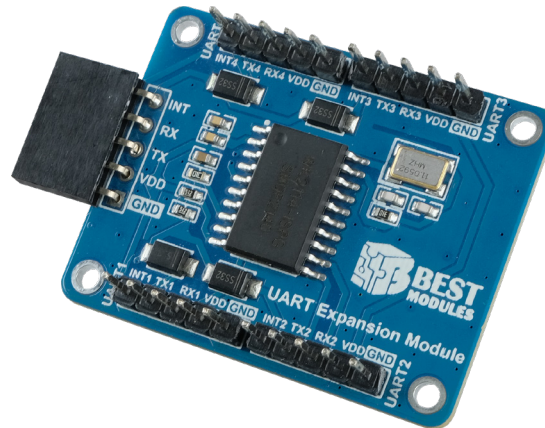
[www.bestmodulescorp.com](http://www.bestmodulescorp.com)

## Contents

<b>Introduction</b> .....	<b>3</b>
<b>Features</b> .....	<b>3</b>
<b>Block Diagram</b> .....	<b>4</b>
<b>Pin Description</b> .....	<b>4</b>
<b>Technical Specifications</b> .....	<b>5</b>
Recommended Operating Conditions .....	5
Timing Specification .....	5
<b>Hardware Overview</b> .....	<b>6</b>
Power Supply .....	6
Communication Interface .....	7
<b>Application Circuit</b> .....	<b>7</b>
<b>Dimensions</b> .....	<b>8</b>

## Introduction

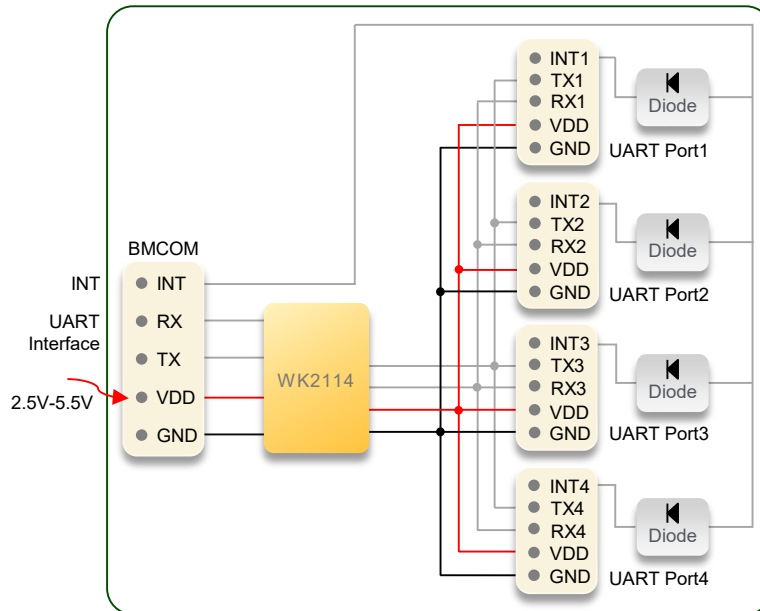
The Best Modules BMB22M210 is an UART expansion module, which is developed by the IC, WK2114. With this module, one main serial port can be expanded into four sub-serial port. Each sub-serial port can set the baud rate, check format and stop bit of UART. It has 256 bytes FIFO for receiving/transmitting, and can query the number of bytes of receiving/transmitting FIFO. The expansion module can use the UART communication method through the BCOM interface to implement the communication function between the main control board and multiple modules. The module is suitable for the UART interface expansion of the BMduino UNO development board.



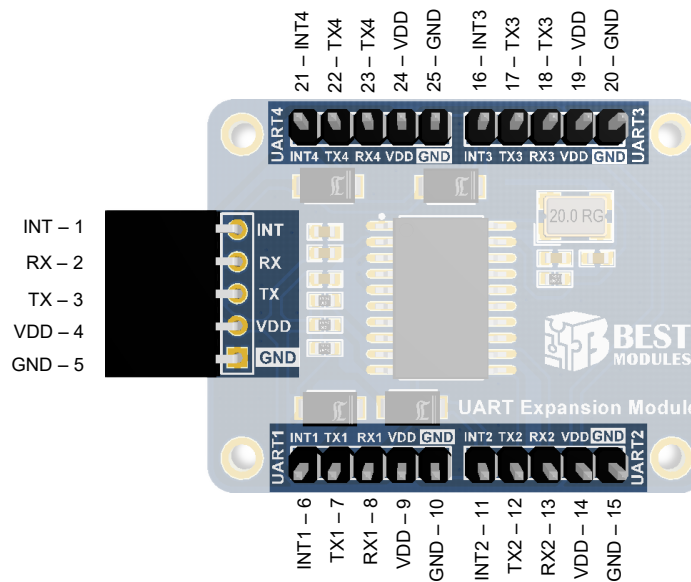
## Features

- Operating voltage: 2.5V~5.5V
- Operating current: 3mA @ 3.3V
- Four-channel universal asynchronous transceiver IC: WK2114
- Independent sub-serial port
  - ◆ Data bits number: 8-bit
  - ◆ Baud rate: Up to 230400bps
  - ◆ Parity format: Parity bit (odd/even parity, 0/1 parity), No parity bit
  - ◆ Stop bit: 1 bit or 2 bits
  - ◆ Receive/transmit FIFO: 256 bytes, the byte number can be queried
  - ◆ TX/RX pin status: Enable/disable
- Communication interface:
  - ◆ BCOM×1 (INT, RX, TX, VDD, GND)
  - ◆ Communication method: UART
- Provides Arduino Lib support
- Board size: 47mm×31mm×12mm

## Block Diagram



## Pin Description



BMCOM interfaces:

Pin	Function	Description
1	INT	Interrupt pin. If the INTn pin status of any sub-serial port is low, the INT pin of the main port will be pulled low.
2	RX	UART data receive line
3	TX	UART data transmit line

Pin	Function	Description
4	VDD	Positive power supply
5	GND	Negative power supply, GND
6~10	UART Port1	Sub-serial port 1
11~15	UART Port2	Sub-serial port 2
16~20	UART Port3	Sub-serial port 3
21~25	UART Port4	Sub-serial port 4

## Technical Specifications

### Recommended Operating Conditions

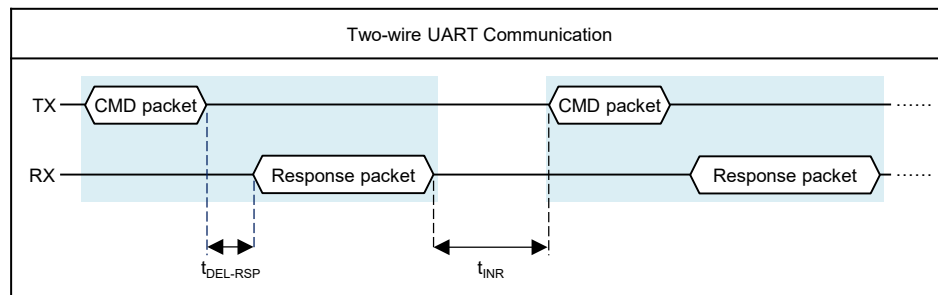
Ta=25°C

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
V <sub>DD</sub>	Operating Voltage	—	2.5	—	5.5	V

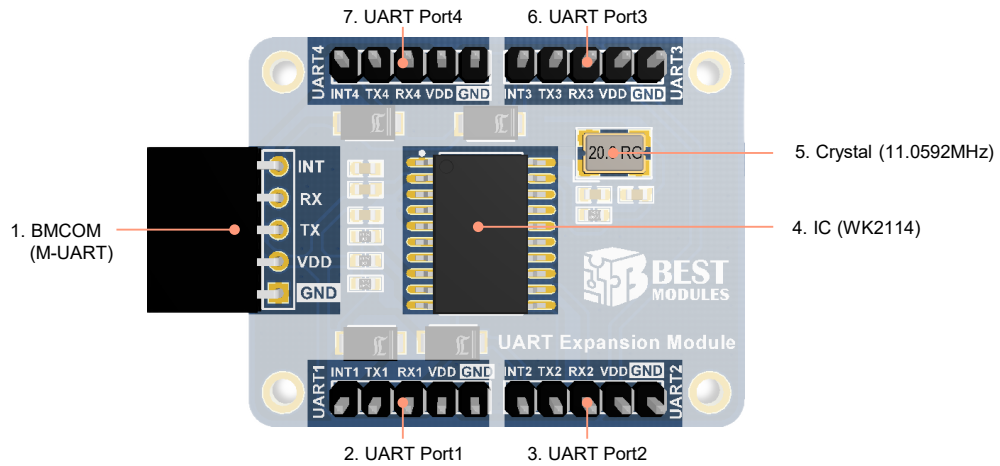
### Timing Specification

Ta=25°C

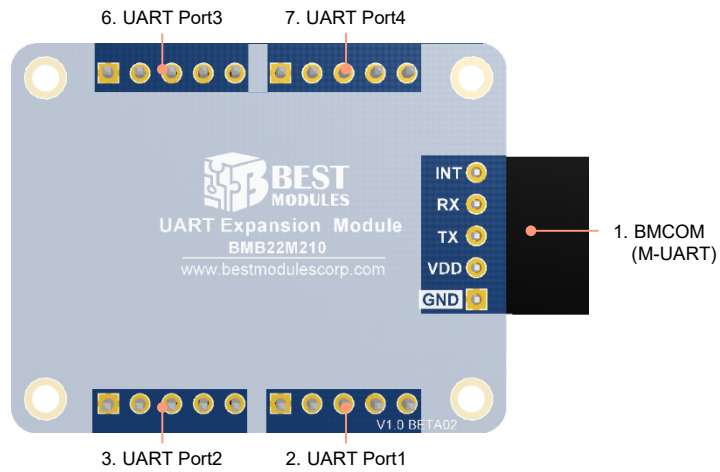
Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
t <sub>DEL-RSP</sub>	Response Delay Time	—	—	80	—	μs
t <sub>INR</sub>	Interval Time	—	2	—	—	ms



## Hardware Overview

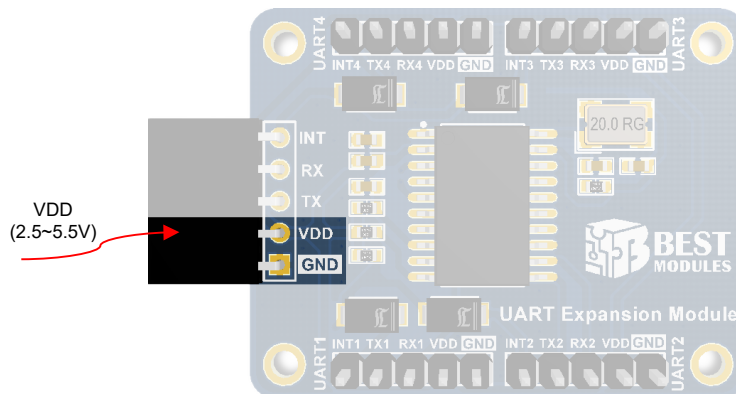


**PCBA Front View**



**PCBA Back View**

## Power Supply

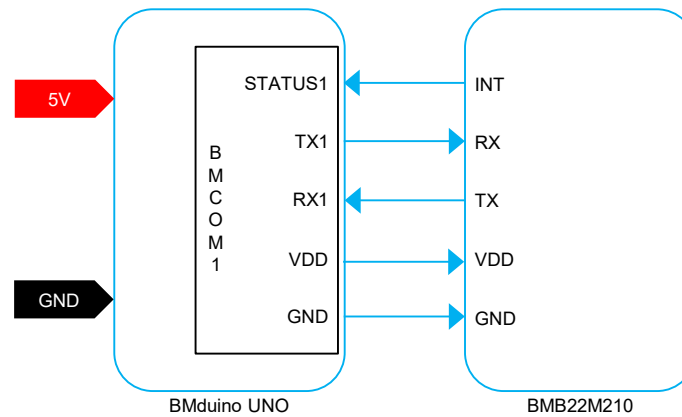


- BCOM interface: provided by the VDD input, 2.5V~5.5V.

## Communication Interface

- Communication method: UART
- Main serial port baud rate: Adaptive
- Communication logic reference voltage: 2.5V~5.5V
- Communication protocol:
  - ◆ Refer to the WK2114 datasheet

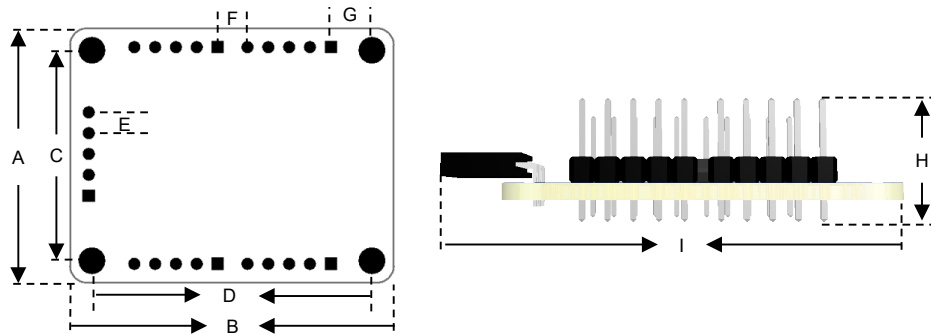
## Application Circuit



**Connection Diagram**

Note: The data length for continuous read/write operation should be less than or equal to 16 bytes.

## Dimensions



**Dimension Information**

No.	Unit	mm	inch
A		31	1.220
B		39.5	1.556
C		25.7	1.012
D		34.2	1.346
E		2.54	0.1
F		3.65	0.144
G		5.14	0.202
H		12	0.472
I		47	1.850

**Dimension List**

Copyright© 2023 by BEST MODULES CORP. All Rights Reserved.

The information provided in this document has been produced with reasonable care and attention before publication, however, BEST MODULES does not guarantee that the information is completely accurate. The information contained in this publication is provided for reference only and may be superseded by updates. BEST MODULES disclaims any expressed, implied or statutory warranties, including but not limited to suitability for commercialization, satisfactory quality, specifications, characteristics, functions, fitness for a particular purpose, and non-infringement of any third-party's rights. BEST MODULES disclaims all liability arising from the information and its application. In addition, BEST MODULES does not recommend the use of BEST MODULES' products where there is a risk of personal hazard due to malfunction or other reasons. BEST MODULES hereby declares that it does not authorize the use of these products in life-saving, life-sustaining or safety critical components. Any use of BEST MODULES' products in life-saving/sustaining or safety applications is entirely at the buyer's risk, and the buyer agrees to defend, indemnify and hold BEST MODULES harmless from any damages, claims, suits, or expenses resulting from such use. The information provided in this document, including but not limited to the content, data, examples, materials, graphs, and trademarks, is the intellectual property of BEST MODULES (and its licensors, where applicable) and is protected by copyright law and other intellectual property laws. No license, express or implied, to any intellectual property right, is granted by BEST MODULES herein. BEST MODULES reserves the right to revise the information described in the document at any time without prior notice. For the latest information, please contact us.