PIR Detector Module

BMA26M221
User Guide

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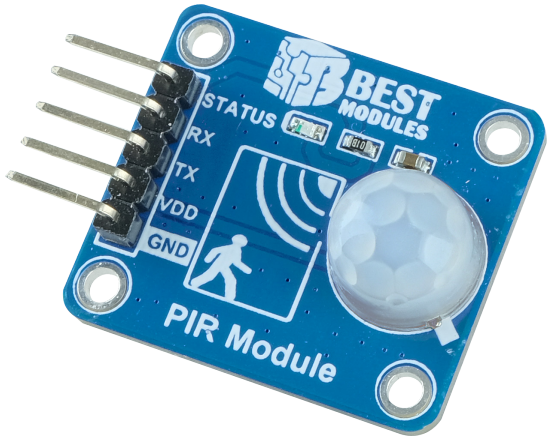
www.bestmodulescorp.com

Contents

Introduction

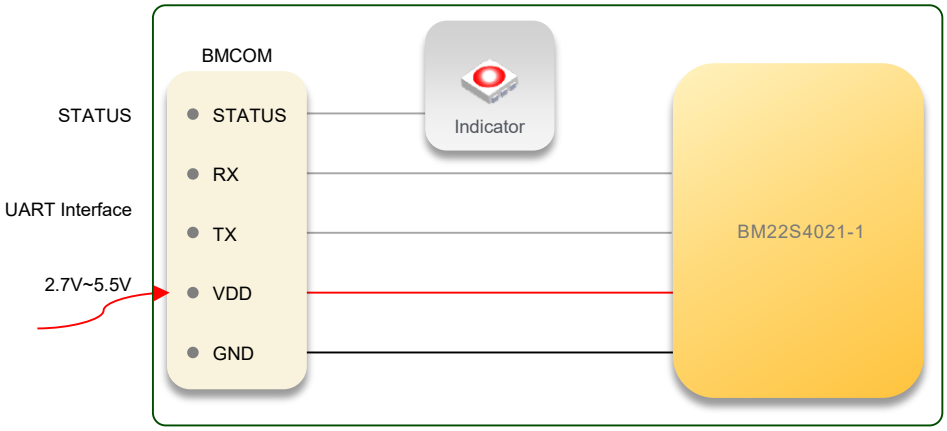
The BMA26M221 is a PIR detector module from Best Modules, which includes an on-board PIR digital sensor, the BM22S4021-1, from Best Modules. The module integrates a passive infrared (PIR) sensor, a high-performance Analog Front End circuit and an A/D Converter. These hardware functions when combined with appropriate algorithms give the module the characteristics of high integration and small size. The module can output the PIR detection results and raw data of PIR signals directly. The module can implement the functions such as PIR human body detection using the UART communication method via the BMCOM interface. The module is suitable for use in safety protection products, energy saving devices, IoT terminal applications, etc.



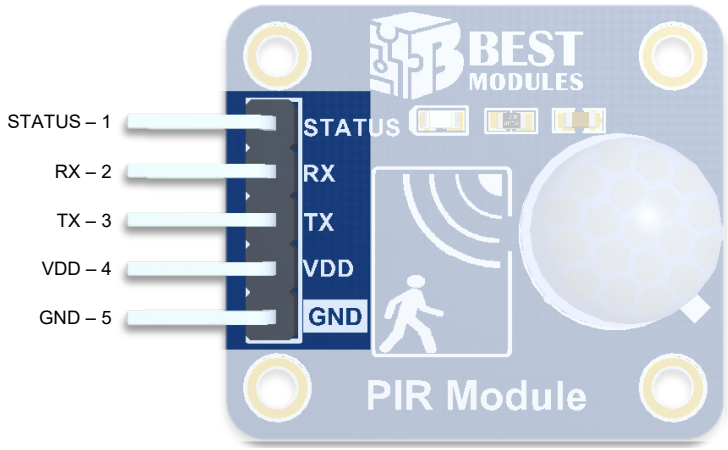
Features

- Operating voltage: 2.7V~5.5V
- Operating current: 2.5mA @ 5V
- Standby current: 1μA @ 5V
- On-board PIR digital sensor: BM22S4021-1
- Module functions
  - ♦ 8-level sensitivity adjustment
  - ♦ Trigger Mode: Single shot/Continuous trigger
  - ♦ Low voltage detection: 2.7/3.0/3.3/3.6/4.0V selection
  - ♦ Output delay time: 1s~6553.5s, step 0.1s
  - ♦ Block time: 0.2s~51s, step 0.2s
    (Block time: The time elapsed between the end of the output delay time and the next trigger)
- Intelligent signal recognition algorithm and temperature compensation function
- Temperature value output
- Warm-up time: 30s
- Communication interfaces:
  - ♦ BMCOM×1 (STATUS, RX, TX, VDD, GND)
  - ♦ Communication method: UART (baud rate: 38400bps)
- Arduino Lib application support
- Module size: 31.5mm×23.3mm×10.9mm

Block Diagram



Pin Description



BMCOM pins:

Pin	Function	Description
1	STATUS	LED control pin, turn on when output high
2	RX	UART receiving data line
3	TX	UART transmitting data line
4	VDD	Positive power supply
5	GND	Negative power supply, ground

Technical Specifications

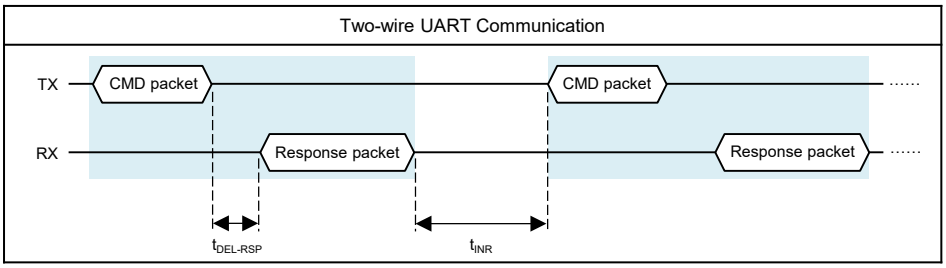
Recommended Operation Conditions

Ta=25°C

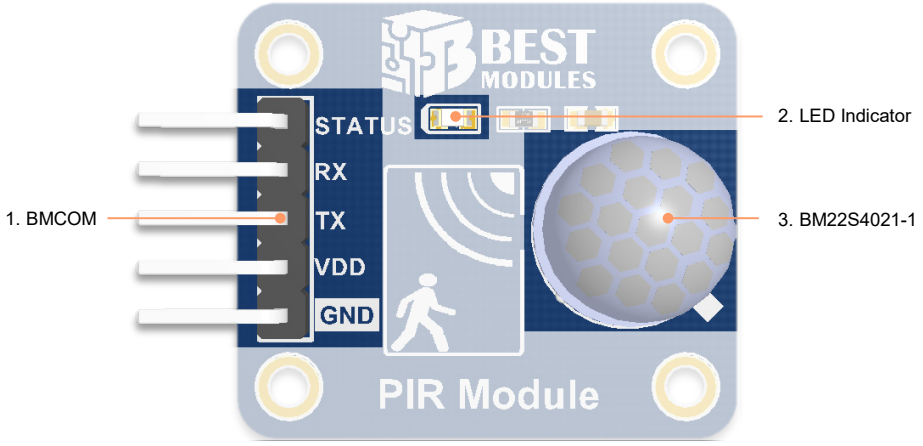
Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
V_{DD}	Operating Voltage		2.7	5	5.5	V
I_{DD}	Operating Current	V_{DD}=3.3V	—	1.8	—	mA
		V_{DD}=5V	—	2.5	—	
I_{STB}	Standby Current	V_{DD}=3.3V	—	1	—	μA
		V_{DD}=5V	—	1	—	
	PIR Detection Distance	—	—	2	3	m
	PIR Maximum Detection Angle (Horizontal/Vertical)	—	—	—	121/77	degree

Timing Specification

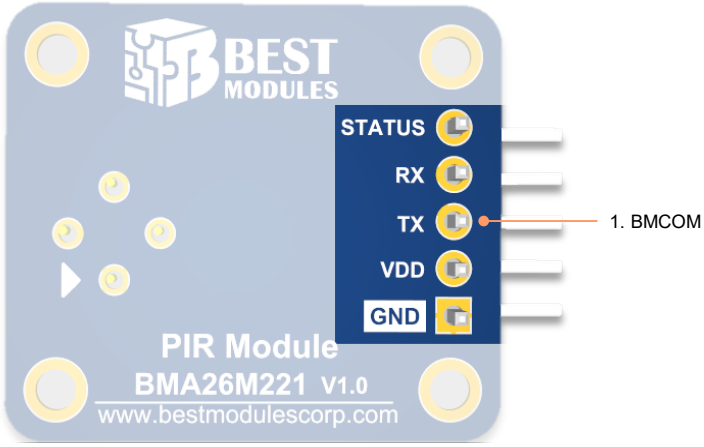
Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
	UART Baud Rate	V_{DD}=3.3V	—	38400	—	bps
	PIR Warm-up Time	V_{DD}=3.3V	—	30	—	s
$t_{DEL-RSP}$	Response Delay Time	V_{DD}=3.3V	—	—	60	ms
t_{INR}	Interval Time	V_{DD}=3.3V	—	1	—	ms



Hardware Overview

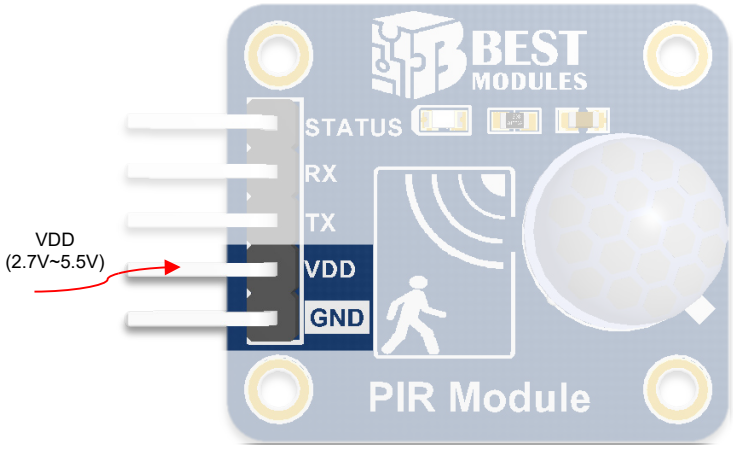


PCBA Front View



PCBA Back View

Power Supply



- BMCOM pin: Provided by the VDD input, 2.7V~5.5V

LED Indicator

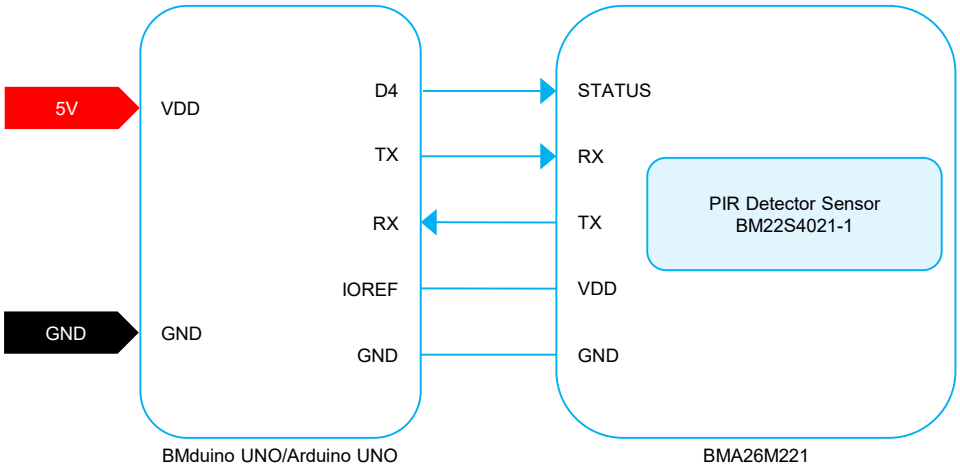
PIR status indicator, driven by the host.

STATUS Pin	LED On/Off Status
High	LED On
Low	LED Off

Communication Interfaces

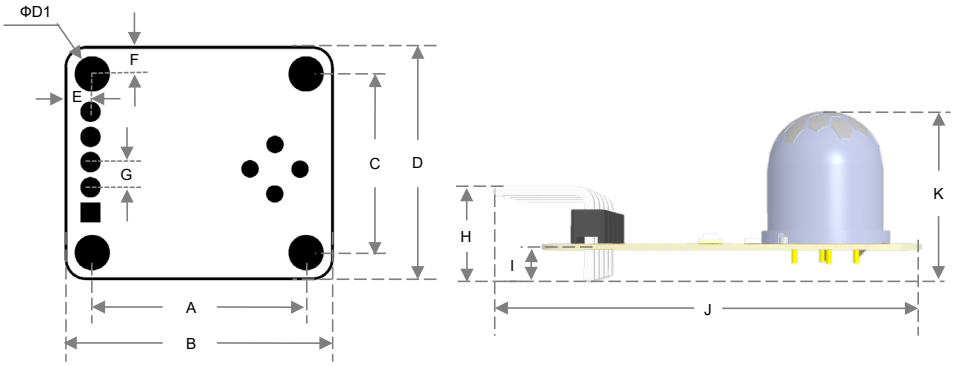
- Communication method: UART
- Baud rate: 38400bps
- Communication logic reference voltage: 2.7V~5.5V
- Communication protocol:
  - Refer to the BM22S4021-1 datasheet

Application Circuit



Connection Diagram

Dimensions



Dimension Information

Symbol \ Unit	mm	inch
A	21.52	0.847
B	26.80	1.055
C	18.00	0.709
D	23.30	0.917
E	2.76	0.109
F	2.80	0.110
G	2.54	0.1
H	7.40	0.291
I	1.40	0.055
J	31.50	1.240
K	10.90	0.429
D1	2.2	0.087

Dimension List