

Motion Detection Board

An add-on board with a HC-SR501 based PIR Sensor

Contents

Introduction	3
Board Overview	4
Specification	6
Absolute maximum rating.	6
Pinout Diagram	7
Onboard Setting, Symbols and indicators	8
How to use this Peripheral Board	8
Reference Documentation	9
mikroBUS™ Standard and Specification	9
EmMate Documentation	9
HCSR501 Datasheet	9
Motion sensor Based Application and Firmware	9
Schematic Diagram	9
Copyright	10
HC-SR501 based Peripheral Board Datasheet	2

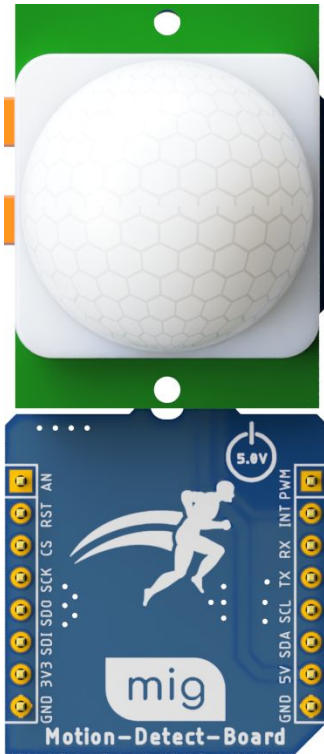
1. Introduction

Motion detection add on board uses a PIR sensor to detect motion. This add on peripheral board opens up an easy to go Temperature and Humidity sensor integration into your targeted hardware. It is based on a popular HCSR501 sensor.

To ensure compatibility over a wide range of development boards the Peripheral is designed using popular mikroBUS™ standard from *MikroElektronika*.

This Peripheral Board also supports the Micro IoT Gateway platform. For additional hasslefree support of integration, it is advisable to use this sensor with the EmMate platform.

2. Board Overview



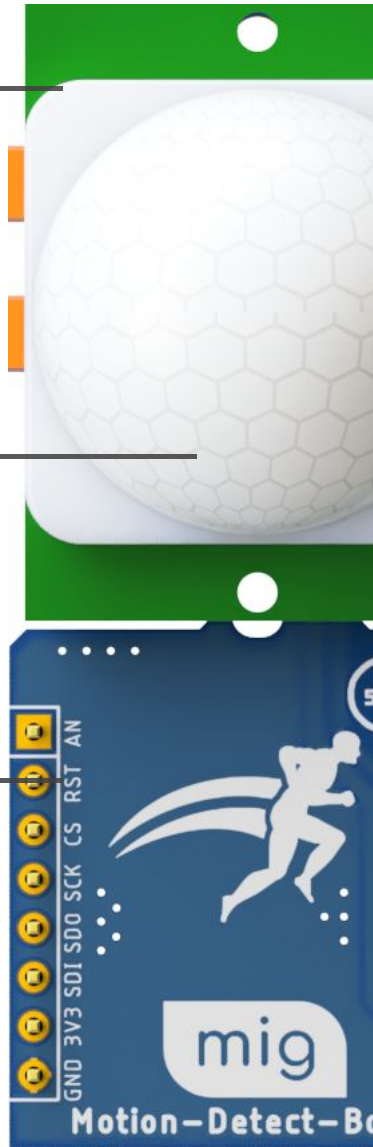
PIR Sensor

Time Delay Adjust

Sensitivity Adjust

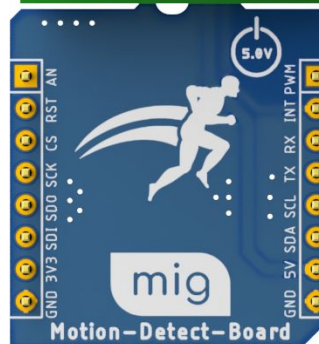
PIR Sensor

mikroBUS™ Port





Symbol of Voltage Level



3. Specification

Motion Peripheral Board is specified to sense Motion within a certain distance. The Peripheral Board uses Digital communication and 5.0V operational voltage.

As this board uses HCSR501 as the main sensor, the operating specification is highly dependable on the specification of HCSR501.

The below table can be useful to identify the key parameters of this motion sensor based Peripheral Board.

Type	Description
Board Type	Motion Sensor
On Board Module	HCSR501
Key Features	Configurable distance and signal time, 3-7 meter distance
Interface	Digital
Size	25.4mm x 59.30mm
Input Voltage	5.0V

Note 1: See the reference document section and find the HCSR501 datasheet to know the detailed features of the HCSR501 module.

4. Absolute maximum rating.

Using this module above the maximum rating could potentially damage the sensor. Therefore, it is essential to know the limitations and maximum rating of the Peripheral Board before integrating with the hardware platform.

Description	Min	Typ	Max	Unit
Power Supply Voltage	5	-	20	VDC
Sensing Period (Time Delay)	5		300	Seconds
Range	3		7	meters
Operating Range Temperature	-40	-	80	Celsius

Note: Kindly go through the reference document section for more info about HCSR501 Sensor.

WARNING 1: Do not use the module over 20VDC.

5. Pinout Diagram

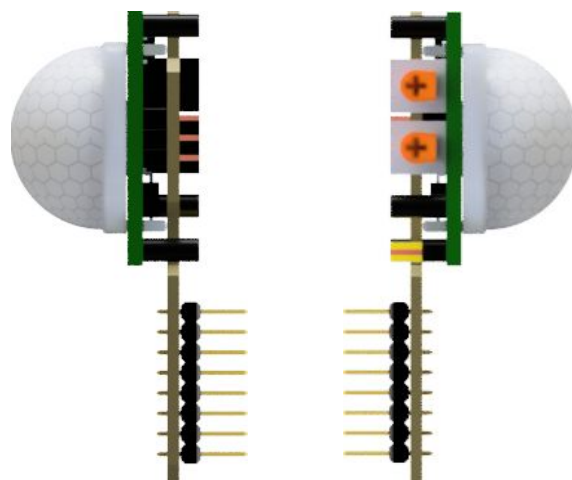
The motion detect Board uses the mikroBUS™ standard. Thus, the pinout is the same as other mikroBUS boards.


Four pins are associated with this Peripheral Board, three for the Power related operations and the other one for DATA communication. The sensor provides Low to High signal when motion is detected. The high pulse voltage is 3.3V.

The Board uses .254" Berg header pins. One can use Berg Wires to connect the board with other development boards where mikroBUS™ ports are not available.

If a wired connection is used, make sure to connect all GND connections.

To know more about the pinout diagram, use the table below.



Notes	Pin					Pin	Notes
	NC	1	AN	PWM	16	NC	
	NC	2	RST	INT	15	DATA	Data
	NC	3	CS	RX	14	NC	
	NC	4	SCK	TX	13	NC	
	NC	5	MISO	SCL	12	NC	
	NC	6	MOSI	SDA	11	NC	
	NC	7	3.3V	5V	10	+5V	Power Supply
Ground	GND	8	GND	GND	9	GND	Ground

6. Onboard Setting, Symbols and indicators

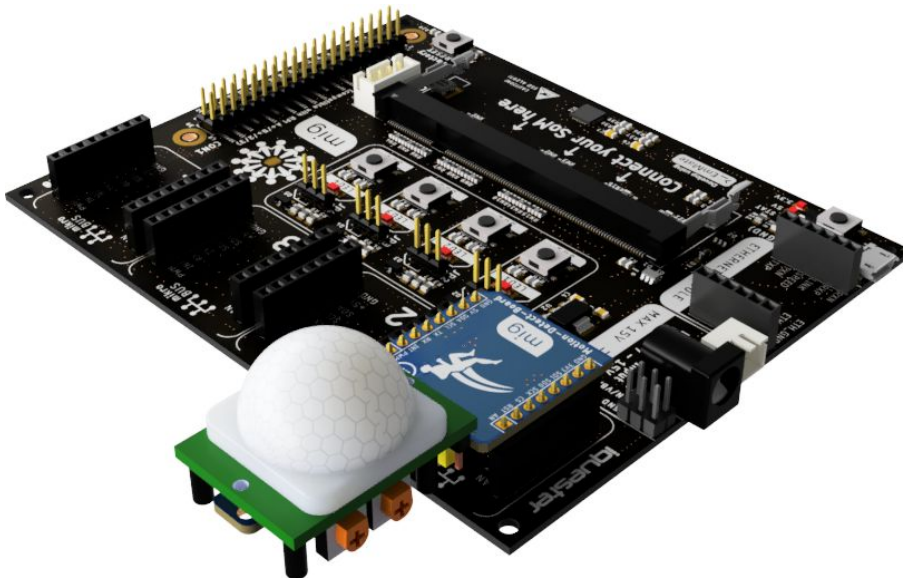
This sensor board has multiple on board settings such as Sensitivity adjust and Time delay adjust. Single or rippitable trigger mode can also be configured using the jumper setting.

For how to use those settings and how to configure the module, please go through the reference document section and find the HCSR501 sensor datasheet.

7. How to use this Peripheral Board

Attaching the Peripheral Board in the mikroBUS™ socket is effortless.

Before proceeding with the hardware interfacing, make sure that the development board has a clean 5V Power Output.



Connect the board carefully without putting a lot of pressure on the development board.

Note 1: - Use the board cutout marking in Peripheral and development boards to find out the orientation.

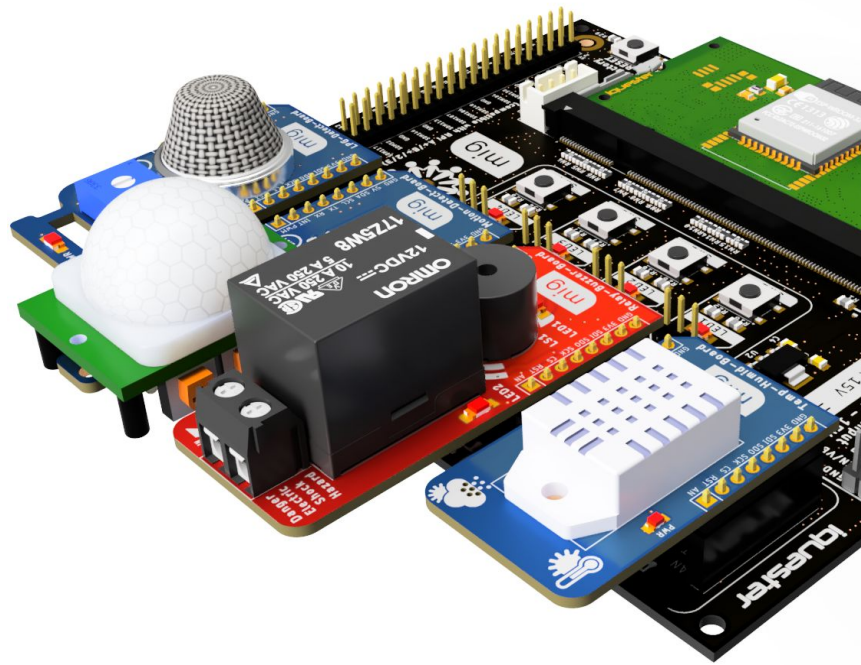
To setup the development board use the “hardware setup guide” guide for quick and effortless installation of this peripheral board. For “hardware setup guide” video, Go to - <https://mig.iquesters.com/video/hw-setup.mp4>

After connecting everything on the development board, kindly power up the board. For detail information on how to power up the board use “Power up your hardware” guide on the below link -

Go to - <https://mig.iquesters.com/video/power-up-hw.mp4>

Use EmMate or your desired development platform to integrate the sensor.

8. Reference Documentation



mikroBUS™ Standard and Specification

<https://download.mikroe.com/documents/standards/mikrobus/mikrobus-standard-specification-v200.pdf>

EmMate Documentation

<https://mig.iquesters.com/?s=embedded&p=documentation>

HCSR501 Datasheet

<https://www.sunrom.com/get/191965>

Motion sensor Based Application and Firmware

<https://gitlab.com/micro-iot-platform/projects/motion-detector>

Schematic Diagram

<https://gitlab.com/micro-iot-platform/hardware/peripheral/motion-click/blob/master/doc/motion-board-schematic.pdf>

Copyright

© Iquester Solutions LLP

This document contains proprietary and confidential information of Iquester Solutions LLP and shall not be reproduced or transferred to other documents, disclosed to others, or used for any purpose other than that for which it is furnished, without the prior written consent of Iquester Solutions LLP. It shall be returned to the respective owners or Iquester Solutions LLP, or based on where you live, to one of its affiliates upon request.

The trade and service marks of Iquester Solutions LLP, including the Iquester Solutions LLP mark and logo, are the exclusive property of Iquester Solutions LLP, and may not be used without permission. All other marks mentioned in this material are the property of their respective owners.