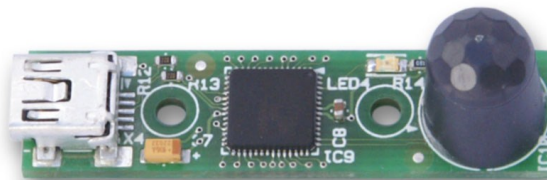


# Oak Move V1.2b

## Passive Infrared Motion Detector

# Datasheet



Originally authored by Toradex AG. This work is now available under the terms and conditions of the Creative Commons License 'Attribution CC BY'

Details of which can be found here: <http://creativecommons.org/licenses/by/3.0/>



## Contents

1.	Introduction.....	3
1.1	Reference Documents .....	3
2.	Hardware Specifications.....	4
2.1	Sensor: Panasonic AMN3111 .....	4
2.2	Measurement Range.....	4
2.3	Supported Sensor Features .....	4
2.4	USB Interface.....	4
2.5	Operating Temperature Range .....	4
3.	Software Specifications .....	5
3.1	INTERRUPT IN Report Contents (Real time data) .....	5
3.2	FEATURE Report Commands.....	5
4.	Technical Specifications .....	8
4.1	Electrical Specifications .....	8
4.2	Mechanical Dimensions.....	8
4.3	RoHS Compliance .....	8



# 1. Introduction

---

The Oak–Move is a USB attached motion detector.

The Oak–Move can be integrated in a custom application very easily. The operating power as well as real time sensor data and uncritical sensor configuration data are all transferred through a simple USB cable. The very low power consumption, including automatic entering into sleep mode, allows using the device not only in fixed installations, but also in mobile applications.

## 1.1 Reference Documents

Sensor Datasheet:

[http://files.toradex.com/Oak/Datasheets/Components/Oak\\_Move/AMN31111.pdf](http://files.toradex.com/Oak/Datasheets/Components/Oak_Move/AMN31111.pdf)

Programming Guide to the Oak Sensor Family



## 2. Hardware Specifications

---

### 2.1 Sensor: Panasonic AMN3111

The AMN31111 is a fully integrated motion sensor with a multi-surface lens construction and an optimized optical filter. To improve further on the performance of this device, it comes with a quad type passive infrared element to reduce false triggering and improve sensitivity.

### 2.2 Measurement Range

Range: Approximately 5 meters (200 inch)

Sensitivity: Detects movement of approximately 30cm (11.811inch) at a distance of 2 meters (80 inch) to the sensor.

At larger quantities, other detection characteristics are available.

For more details, please refer to the sensor datasheet (link in chapter 1.1)

### 2.3 Supported Sensor Features

Count number of motion events during sampling period

Sample rate adjustable

### 2.4 USB Interface

Interface: USB 2.0 Full Speed (12Mbit/s)

Connector: Standard USB Mini-B

Device Class: HID

Vendor ID: 0x1B67

Product ID: 0x0006

Sampling Rate: 1ms to 65s, user adjustable

Report Rate: 1ms to 65s, user adjustable

### 2.5 Operating Temperature Range

Minimum Operating Temperature: -10°C

Maximum Operating Temperature: +60°C



## 3. Software Specifications

All Oak Sensors are implemented as HID devices. Thus driver support is built into all major operating systems.

Captured sensor Data is transmitted through an INTERRUPT IN reports. Therefore real time processing can be guaranteed. This data can be received by the host using regular file read operations. Chapter 0 describes the contents of this report.

On an independent communication channel, sensor configuration is done using FEATURE reports that are 32 Bytes in length. Special operating system calls exist to transmit / receive feature reports. Chapter 3.2 shows the structure of a feature report for each supported command.

Please refer also to the document “Programming Guide to the Oak Sensor Family” for more details.

### 3.1 INTERRUPT IN Report Contents (Real time data)

16 Bit    Frame Number                       $10^{-3}$     s

16 Bit    Number of motion events  $10^{-4}$     –

### 3.2 FEATURE Report Commands

#### 3.2.1 Report Mode

Byte#	0	1	2	3	4	5
Content	GnS	Tgt	0x01	0x00	0x00	RPTMODE

GnS:                0 = Set  
                      1 = Get

Tgt                0 = RAM  
                      1 = Flash

RPTMODE:        0 = After Sampling (Factory Default)  
                      1 = After Change  
                      2 = Fixed Rate

#### 3.2.2 LED Mode

Byte#	0	1	2	3	4	5
Content	GnS	Tgt	0x01	0x01	0x00	LEDMODE

GnS:                0 = Set  
                      1 = Get

Tgt                0 = RAM  
                      1 = Flash



## Oak Move Datasheet

LEDMODE:      0 = Off (Factory Default)  
                 1 = On  
                 2 = Blink Slowly  
                 3 = Blink Fast  
                 4 = Blink 4 pulses

### 3.2.3 Report Rate

Number of milliseconds between two IN reports. This parameter will only be regarded if Report Mode = 2 (fixed rate)

Byte#	0	1	2	3	4	5	6
Content	GnS	Tgt	0x02	0x00	0x00	RptRate LSB	RptRate MSB

GnS:            0 = Set  
                 1 = Get

Tgt             0 = RAM  
                 1 = Flash

RptRate:       Report Rate [ms]

### 3.2.4 Sample Rate

This is the actual sample rate the sensor is working on. If Report Mode = 0 (After Sampling) this is also the rate at which the device reports values to the host PC.

Byte#	0	1	2	3	4	5	6
Content	GnS	Tgt	0x02	0x01	0x00	SampRate LSB	SampRate MSB

GnS:            0 = Set  
                 1 = Get

Tgt             0 = RAM  
                 1 = Flash

SampRate:      Sample Rate [ms]

### 3.2.5 User Device Name

Byte#	0	1	2	3	4	5–25
Content	GnS	Tgt	0x15	0x00	0x00	UsrDevName

GnS:            0 = Set  
                 1 = Get

Tgt             0 = RAM  
                 1 = Flash

UsrDevName:   User defined name for the whole device  
                    Null-terminated string, max. 20+1 characters



## Oak Move Datasheet

### 3.2.6 User Channel Name

Byte#	0	1	2	3	4	5-25
Content	GnS	Tgt	0x15	ChP1	0x00	UsrChName

GnS: 0 = Set

1 = Get

Tgt 0 = RAM

1 = Flash

ChP1 1 = Channel 0 (Frame Number)

2 = Channel 1 (Number of Motion Events)

UsrChName: User defined name for the channel

Null-terminated string, max. 20+1 characters



## 4. Technical Specifications

### 4.1 Electrical Specifications

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
$I_q^{1)}$	Operating current				20	mA
$I_{Stby}$	Standby current	No USB activity			500	$\mu$ A

<sup>1)</sup> The maximum operating current is mainly influenced by the on board LED.

### 4.2 Mechanical Dimensions

The PCB is designed to be mounted using two standard M2 screws. There are no components on the back side of the PCB, but the three sensor leads protrude beyond the back side pcb surface.

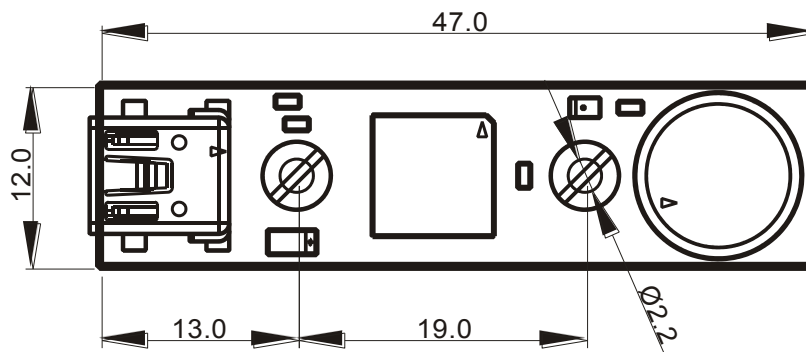


Figure 1: Mechanical dimensions of the Oak Move sensor

### 4.3 RoHS Compliance

Unless otherwise stated, all Toradex products comply with the European Union's Directive 2002/95/EC: "Restrictions of Hazardous Substances".





## Oak Move Datasheet

### Document Revision history

Date	Doc. Rev.	Changes
30-Dec-2011	Rev. 1.4	Changed Sensor Type to AMN31111
29-Oct-2010	Rev. 1.3	Added Operating Temperature Range
30-Sep-2010	Rev. 1.2	Added USB Vendor ID and Product ID
29-Feb-2008	Rev. 1.1	Minor Edits (section 1.1)
25-Mar-2007	Rev. 1.0	Initial Release

### Disclaimer:

Toradex AG reserves the right to make changes, without notice, to any product, including circuits and/or software described or contained in this datasheet.

Toradex AG assumes no responsibility or liability for the use of the described product(s), conveys no license or title under any patent, copyright, or mask work rights to these products, and makes no representations or warranties that these products are free from patent, copyright, or mask work right infringement, unless otherwise specified.

### Trademark Acknowledgement:

Brand and product names are trademarks or registered trademarks of their respective owners.