
sparkfun_qwiic_kx13x_py

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SparkFun Electronics

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Python module for the [SparkFun Qwiic KX132 Accerlerometer](#) and the [SparkFun Qwiic KX134 Accelerometer](#).

This python package is a port of the existing [SparkFun KX13X Arduino Library](#)

This package can be used in conjunction with the overall [SparkFun qwiic Python Package](#)

New to qwiic? Take a look at the entire [SparkFun qwiic ecosystem](#).

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- *Dependencies*
- *Installation*
- *Documentation*
- *Example Use*

DEPENDENCIES

This driver package depends on the qwiic I2C driver: [Qwiic_I2C_Py](#)

DOCUMENTATION

The SparkFun Qwiic KX13X module documentation is hosted at [ReadTheDocs](#)

INSTALLATION

4.1 PyPi Installation

This repository is hosted on PyPi as the `sparkfun-qwiic-kx13x` package. On systems that support PyPi installation via pip, this library is installed using the following commands

For all users (note: the user must have sudo privileges):

```
sudo pip install sparkfun-qwiic-kx13x
```

For the current user:

```
pip install sparkfun-qwiic-kx13x
```

4.2 Local Installation

To install, make sure the `setuptools` package is installed on the system.

Direct installation at the command line:

```
python setup.py install
```

To build a package for use with pip:

```
python setup.py sdist
```

A package file is built and placed in a subdirectory called `dist`. This package file can be installed using pip.

```
cd dist  
pip install sparkfun_qwiic_kx13x-<version>.tar.gz
```


EXAMPLE USE

See the examples directory for more detailed use examples.

```
from __future__ import print_function
import qwiic_kx13x
import time
import sys

def runExample():

    print("\nSparkFun KX13X Accelerometer Example 1\n")
    # myKx = qwiic_kx13x.QwiicKX134() # If using the KX134 un-comment this line and
    ↪replace other instances of "kx132" with "kx134"
    myKx = qwiic_kx13x.QwiicKX132()

    if myKx.connected == False:
        print("The Qwiic KX13X Accelerometer device isn't connected to the system.↪
    ↪Please check your connection", \
            file=sys.stderr)
        return

    if myKx.begin():
        print("Ready.")
    else:
        print("Make sure you're using the KX132 and not the KX134")

    # myKx.set_range(myKx.KX132_RANGE8G) # Update the range of the data output.
    myKx.initialize(myKx.BASIC_SETTINGS) # Load basic settings

    while True:

        myKx.get_accel_data()
        print("X: {0}g Y: {1}g Z: {2}g".format(myKx.kx132_accel.x,
                                             myKx.kx132_accel.y,
                                             myKx.kx132_accel.z))

        time.sleep(.02) #Set delay to 1/Output Data Rate which is by default 50Hz 1/50 =↪
    ↪.02

if __name__ == '__main__':
    try:
```

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```
runExample()  
except (KeyboardInterrupt, SystemExit) as exErr:  
    print("\nEnding Example 1")  
    sys.exit(0)
```


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6.1 API Reference

6.2 Example One - This basic example simply reads accelerometer data.

Listing 1: examples/qwiic_kx13x_ex1.py

```
1  #!/usr/bin/env python3
2  #-----
3  # qwiic_kx13x_ex1.py
4  #
5  # Simple example for the Qwiic KX132/4 Accelerometer
6  #-----
7  #
8  # Written by SparkFun Electronics, April 2021
9  #
10 # This python library supports the SparkFun Electronics qwiic
11 # qwiic sensor/board ecosystem on a Raspberry Pi (and compatible) single
12 # board computers.
13 #
14 # More information on qwiic is at https://www.sparkfun.com/qwiic
15 #
16 # Do you like this library? Help support SparkFun. Buy a board!
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```

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37 # SOFTWARE.
38 #=====
39 # Example 1
40 # A simple example for the kx132 showing asynchronous data streaming i.e. continuous.
↳ streaming.
41
42 from __future__ import print_function
43 import qwiic_kx13x
44 import time
45 import sys
46
47 def runExample():
48
49     print("\nSparkFun KX13X Accelerometer Example 1\n")
50     # myKx = qwiic_kx13x.QwiicKX134() # If using the KX134 un-comment this line and
↳ replace other instances of "kx132" with "kx134"
51     myKx = qwiic_kx13x.QwiicKX132()
52
53     if myKx.connected == False:
54         print("The Qwiic KX13X Accelerometer device isn't connected to the system.
↳ Please check your connection", \
55             file=sys.stderr)
56         return
57
58     if myKx.begin():
59         print("Ready.")
60     else:
61         print("Make sure you're using the KX132 and not the KX134")
62
63     # myKx.set_range(myKx.KX132_RANGE8G) # Update the range of the data output.
64     myKx.initialize(myKx.BASIC_SETTINGS) # Load basic settings
65
66     while True:
67
68         myKx.get_accel_data()
69         print("X: {0}g Y: {1}g Z: {2}g".format(myKx.kx132_accel.x,
70                                             myKx.kx132_accel.y,
71                                             myKx.kx132_accel.z))
72         time.sleep(.02) #Set delay to 1/Output Data Rate which is by default 50Hz 1/50 =
↳ .02
73
74
75 if __name__ == '__main__':
76     try:
77         runExample()
78     except (KeyboardInterrupt, SystemExit) as exErr:
79         print("\nEnding Example 1")

```

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80 sys.exit(0)

6.3 Example 2 - This example demonstrates the use of hardware interrupts.

Listing 2: examples/qwiic_kx13x_ex2.py

```

1  #!/usr/bin/env python3
2  -----
3  # qwiic_kx13x_ex2.py
4  #
5  # Simple example for the Qwiic KX132/4 Accelerometer using hardware interrupts
6  # to indicate that data is ready.
7  -----
8  #
9  # Written by SparkFun Electronics, April 2021
10 #
11 # This python library supports the SparkFun Electronics qwiic
12 # qwiic sensor/board ecosystem on a Raspberry Pi (and compatible) single
13 # board computers.
14 #
15 # More information on qwiic is at https://www.sparkfun.com/qwiic
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38 # SOFTWARE.
39 =====
40 # Example 2: Using hardware interrupts.
41
42 from __future__ import print_function

```

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```
43 import qwiic_kx13x
44 import time
45 import sys
46 import RPi.GPIO
47
48 def runExample():
49
50     print("\nSparkFun KX13X Accelerometer Example 1\n")
51     # myKx = qwiic_kx13x.QwiicKX134() # If using the KX134 un-comment this line and
↪ replace other instances of "kx132" with "kx134"
52     myKx = qwiic_kx13x.QwiicKX132()
53
54     if myKx.connected == False:
55         print("The Qwiic KX13X Accelerometer device isn't connected to the system.
↪ Please check your connection", \
56             file=sys.stderr)
57         return
58
59     if myKx.begin():
60         print("Ready.")
61     else:
62         print("Make sure you're using the KX132 and not the KX134")
63
64     # myKx.set_range(myKx.KX132_RANGE8G) # Update the range of the data output.
65     myKx.initialize(myKx.INT_SETTINGS) # Load basic settings
66
67     dataReadyPin = 5
68     GPIO.setmode(GPIO.BCM)
69     GPIO.setup(dataReadyPin, GPIO.IN)
70
71     while True:
72
73         if GPIO.INPUT(dataReadyPin) == 1:
74
75             myKx.get_accel_data()
76             print("X: {0}g Y: {1}g Z: {2}g".format(myKx.kx132_accel.x,
77                                                 myKx.kx132_accel.y,
78                                                 myKx.kx132_accel.z))
79
80             time.sleep(.02) #Set delay to 1/Output Data Rate which is by default 50Hz 1/50 =
↪ .02
81
82 if __name__ == '__main__':
83     try:
84         runExample()
85     except (KeyboardInterrupt, SystemExit) as exErr:
86         print("\nEnding Example 1")
87         sys.exit(0)
```

6.4 Example 3 - This example demonstrates of polling the “data ready” bit, i.e. software interrupt.

Listing 3: examples/qwiic_kx13x_ex3.py

```

1  #!/usr/bin/env python3
2  #-----
3  # qwiic_kx13x_ex3.py
4  #
5  # Simple example for the Qwiic KX132/4 Accelerometer using software interrupts
6  # to indicate that data is ready.
7  #-----
8  #
9  # Written by SparkFun Electronics, April 2021
10 #
11 # This python library supports the SparkFun Electronics qwiic
12 # qwiic sensor/board ecosystem on a Raspberry Pi (and compatible) single
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39 #=====
40 # Example 3: Using software interrupts.
41
42 from __future__ import print_function
43 import qwiic_kx13x
44 import time
45 import sys
46
47 def runExample():

```

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```

48
49     print("\nSparkFun KX13X Accelerometer Example 1\n")
50     # myKx = qwiic_kx13x.QwiicKX134() # If using the KX134 un-comment this line and
↳replace other instances of "kx132" with "kx134"
51     myKx = qwiic_kx13x.QwiicKX132()
52
53     if myKx.connected == False:
54         print("The Qwiic KX13X Accelerometer device isn't connected to the system.
↳Please check your connection", \
55             file=sys.stderr)
56         return
57
58     if myKx.begin():
59         print("Ready.")
60     else:
61         print("Make sure you're using the KX132 and not the KX134")
62
63     # myKx.set_range(myKx.KX132_RANGE8G) # Update the range of the data output.
64     myKx.initialize(myKx.SOFT_INT_SETTINGS) # Load basic settings
65
66     while True:
67
68         if myKx.data_trigger():
69
70             myKx.get_accel_data()
71             print("X: {0}g Y: {1}g Z: {2}g".format(myKx.kx132_accel.x,
72                                                 myKx.kx132_accel.y,
73                                                 myKx.kx132_accel.z))
74
75             time.sleep(.02) #Set delay to 1/Output Data Rate which is by default 50Hz 1/50 =
↳.02
76
77 if __name__ == '__main__':
78     try:
79         runExample()
80     except (KeyboardInterrupt, SystemExit) as exErr:
81         print("\nEnding Example 1")
82         sys.exit(0)

```

6.5 Example 4 - This example demonstrates the use of the FIFO buffer to store and retrieve accelerometer data.

Listing 4: examples/qwiic_kx13x_ex4.py

```

1  #!/usr/bin/env python3
2  #-----
3  # qwiic_kx13x_ex4.py
4  #
5  # Simple example for the Qwiic KX132/4 Accelerometer using hardware interrupts

```

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```

6  # to indicate that the buffer is full and ready to be read.
7  #-----
8  #
9  # Written by SparkFun Electronics, April 2021
10 #
11 # This python library supports the SparkFun Electronics qwiic
12 # qwiic sensor/board ecosystem on a Raspberry Pi (and compatible) single
13 # board computers.
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39 #=====
40 # Example 4: Using the Buffer
41
42 from __future__ import print_function
43 import qwiic_kx13x
44 import time
45 import sys
46 import RPi.GPIO
47
48 def runExample():
49
50     print("\nSparkFun KX13X Accelerometer Example 1\n")
51     # myKx = qwiic_kx13x.QwiicKX134() # If using the KX134 un-comment this line and
52     ↪ replace other instances of "kx132" with "kx134"
53     myKx = qwiic_kx13x.QwiicKX132()
54
55     if myKx.connected == False:
56         print("The Qwiic KX13X Accelerometer device isn't connected to the system.
57         ↪ Please check your connection", \

```

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```
56         file=sys.stderr)
57     return
58
59     if myKx.begin():
60         print("Ready.")
61     else:
62         print("Make sure you're using the KX132 and not the KX134")
63
64     # myKx.set_range(myKx.KX132_RANGE8G) # Update the range of the data output.
65     myKx.initialize(myKx.BUFFER_SETTINGS) # Load basic settings
66
67     dataReadyPin = 5
68     GPIO.setmode(GPIO.BCM)
69     GPIO.setup(dataReadyPin, GPIO.IN)
70
71     while True:
72
73         if GPIO.INPUT(dataReadyPin) == 1: # When the buffer is full, the pin will go high
74
75             myKx.get_accel_data()
76             print("X: {0}g Y: {1}g Z: {2}g".format(myKx.kx132_accel.x,
77                                                    myKx.kx132_accel.y,
78                                                    myKx.kx132_accel.z))
79
80             time.sleep(.02) #Set delay to 1/Output Data Rate which is by default 50Hz 1/50 = .02
81
82 if __name__ == '__main__':
83     try:
84         runExample()
85     except (KeyboardInterrupt, SystemExit) as exErr:
86         print("\nEnding Example 1")
87         sys.exit(0)
```


INDICES AND TABLES

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