
python-aqi Documentation

Release 0.6.1

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A library to convert between AQI value and pollutant concentration ($\mu\text{g}/\text{m}^3$ or ppm) using the following algorithms:

- United States Environmental Protection Agency (EPA)
- China Ministry of Environmental Protection (MEP)

CHAPTER 1

Install

```
$ pip install python-aqi
```


2.1 Library

Convert a pollutant to its IAQI (Intermediate Air Quality Index):

```
import aqi
myaqi = aqi.to_iaqi(aqi.POLLUTANT_PM25, '12', algo=aqi.ALGO_EPA)
```

Get an AQI out of several pollutant concentrations, default algorithm is EPA:

```
import aqi
myaqi = aqi.to_aqi([
    (aqi.POLLUTANT_PM25, '12'),
    (aqi.POLLUTANT_PM10, '24'),
    (aqi.POLLUTANT_O3_8H, '0.087')
])
```

Convert an IAQI to its pollutant concentration:

```
import aqi
mycc = aqi.to_cc(aqi.POLLUTANT_PM25, '22', algo=aqi.ALGO_EPA)
```

2.2 Command line

List supported algorithms and pollutants:

```
$ aqi -l
aqi.algos.epa: pm10 (µg/m³), o3_8h (ppm), co_8h (ppm), no2_1h (ppb), o3_1h (ppm), so2_
→ 1h (ppb), pm25 (µg/m³)
aqi.algos.mep: no2_24h (µg/m³), so2_24h (µg/m³), no2_1h (µg/m³), pm10 (µg/m³), o3_1h_
→ (µg/m³), o3_8h (µg/m³), so2_1h (µg/m³), co_1h (mg/m³), pm25 (µg/m³), co_24h (mg/m³)
```

Convert PM2.5 to IAQI using EPA algorithm:

```
$ aqi aqi.algos.epa pm25:12
50
```

Convert PM2.5 to IAQI using EPA algorithm (full length):

```
$ aqi -c aqi aqi.algos.epa pm25:12
50
```

Convert pollutants concentrations to AQI using EPA algorithm:

```
$ aqi aqi.algos.epa pm25:40.9 o3_8h:0.077 co_1h:8.4
114
```

Convert pollutants concentrations to AQI using EPA algorithm, display IAQIs:

```
$ aqi -v aqi.algos.epa pm25:40.9 o3_8h:0.077 co_1h:8.4
pm25:102 o3_8h:104 co_1h:90
114
```

Convert PM2.5 IAQI to concentration using EPA algorithm:

```
$ aqi -c cc aqi.algos.epa pm25:39
pm2.5:9.3
```

CHAPTER 3

Development

To install the development environment:

```
$ pip install -r dev_requirements.txt
```


CHAPTER 4

Test

Test the package:

```
$ python -m unittest discover
```

Automatic testing in various environments:

```
$ tox
```


CHAPTER 5

Release

Use *bump*r to release the package:

```
$ bump -b -m
```


CHAPTER 6

Project

- [Source code on github](#)
- [Documentation on readthedocs](#)
- [Package on pypi](#)

CHAPTER 7

Resources

- EPA AQI: Technical Assistance Document for the Reporting of Daily Air Quality – the Air Quality Index (AQI) December 2013) found at <http://www.epa.gov/airnow/aqi-technical-assistance-document-dec2013.pdf>
- National Ambient Air Quality Standards for Particulate Matter found at <http://www.gpo.gov/fdsys/pkg/FR-2013-01-15/pdf/2012-30946.pdf>
- MEP AQI:
 - GB3095—2012 (2012/02/29) found at http://www.mep.gov.cn/gkml/hbb/bwj/201203/t20120302_224147.htm
 - HJ633-2012 (2012/02/29) found at http://www.zzemc.cn/em_aw/Content/HJ633-2012.pdf

CHAPTER 8

License

python-aqi is published under a BSD 3-clause license, see the LICENSE file distributed with the project.

CHAPTER 9

Indices and tables

- `genindex`
- `modindex`
- `search`