# time-series-metadata Documentation

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time-series-buffer is a Python software package developed by software developers and researchers from Physikalisch-Technische Bundesanstalt (Germany) as part of the joint European Research Project EMPIR 17IND12 Met4FoF<sup>1</sup> and the German research project FAMOUS<sup>2</sup>.

For the *time-series-buffer* homepage go to GitHub<sup>3</sup>.

*time-series-buffer* is written in Python 3 and strives to run with all Python versions with upstream support<sup>4</sup>. Currently it is tested to work with Python 3.5 to 3.8.

Python package<sup>5</sup> Documentation Status<sup>6</sup>

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<sup>&</sup>lt;sup>1</sup> https://met4fof.eu

<sup>&</sup>lt;sup>2</sup> https://famous-project.eu

<sup>&</sup>lt;sup>3</sup> https://github.com/PTB-PSt1/time-series-buffer

<sup>&</sup>lt;sup>4</sup> https://devguide.python.org/#status-of-python-branches

<sup>&</sup>lt;sup>5</sup> https://pypi.org/project/time-series-buffer/

<sup>6</sup> https://time-series-buffer.readthedocs.io/en/latest/

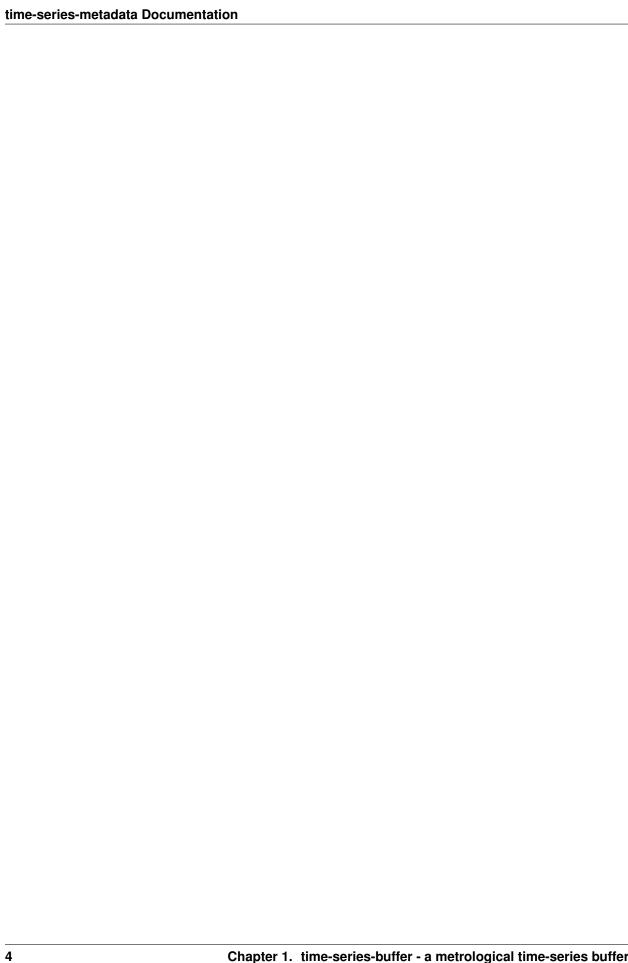
2 Getting started:

## CHAPTER 1

### time-series-buffer - a metrological time-series buffer

This package provides support for time-series buffering based on the build-in Python collections.deque.

The package is developed and maintained at the "Physikalisch-Technische Bundesanstalt" by Björn Ludwig and Maximilian Gruber.



### TimeSeriesBuffer - the reference

class time\_series\_buffer.buffer.TimeSeriesBuffer (maxlen=10, return\_type='array')

Custom buffer class, that allows to save streams of time-series with uncertainty in timestamps and values. Acts like a FIFO buffer.

add (data=None, time=nan, time\_unc=0.0, val=nan, val\_unc=0.0)

Append one or more new datapoints to the buffer. A datapoint consists of the tuple (time, time\_uncertainty, value, value\_uncertainty).

#### **Parameters**

- data (iterable of iterables with shape (N, M) (default: None)) If given, all other kwargs are ignored.
  - M==2 (pairs): assumed to be like (time, value)
  - M==3 (triple): assumed to be like (time, value, value\_unc)
  - M==4 (4-tuple): assumed to be like (time, time\_unc, value, value\_unc)
- time(float, or iterable of float/ufloat (default: np.nan))-Timestamp(s) to be added.
- **time\_unc** (float, or iterable of float (default: 0.0)) Uncertainty(ies) of the timestamp(s) to be added.
- ${\tt val}$  ((iterable of) float/ufloat (default: np.nan))  ${\tt Value}(s)$  to be added.
- val\_unc ((iterable of) float (default: 0.0)) Uncertainty(ies) of the value(s) to be added.
- time\_unc, val, val\_unc need to be of same shape, but uncertainties can be omitted. (time,)-

#### $pop(n\_samples=1)$

Return the next n\_samples from the left side of the buffer.

View the latest n additions to the buffer. Returns the format that was specified during init of the buffer.

**Parameters n** (int (default: 1)) – How many datapoints to return.

Returns

**Return type** Depends on return\_type, see \_\_\_init\_\_\_() for details

show (n\_samples=1)

View the latest  $n_samples$  additions to the buffer. Returns the format that was specified during init of the buffer.

**Parameters** n\_samples (int (default: 1)) - How many samples to return. Return all samples in buffer, if set to -1.

Returns

**Return type** Depends on return\_type, see \_\_init\_\_() for details

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