
PhilDB Documentation

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Contents:

1.1 Submodules

1.2 phildb.console module

1.3 phildb.constants module

1.4 phildb.create module

```
phildb.create.create(tsdb_path)  
phildb.create.main()
```

1.5 phildb.database module

```
class phildb.database.PhilDB(tsdb_path)  
    Bases: object
```

```
    add_attribute(attribute_id, description)  
        Define an attribute.
```

Parameters

- **attribute_id**(*string*) – Identifier of the attribute.
- **description**(*string*) – Description of the attribute.

```
    add_attribute_value(attribute_id, value)  
        Store an attribute value.
```

Parameters

- **attribute_id** (*string*) – Identifier of the attribute.
- **value** (*string*) – The attribute value to store.

add_mesurand (*mesurand_short_id, mesurand_long_id, description*)

Create a mesurand entry.

Mesurand being a measurable timeseries type. e.g. Streamflow, Temperature, Rainfall, etc.

Parameters

- **mesurand_short_id** (*string*) – Short identifier of the mesurand.
- **mesurand_long_id** (*string*) – Long identifier of the mesurand.
- **description** (*string*) – Description of the mesurand.

add_source (*source, description*)

Define a source.

Source being the origin of the data. For example the source used in the examples/hrs example is BOM_HRS. Indicated the origin of the data was the Bureau of Meteorology Hydrologic Reference Stations project.

Parameters

- **source** (*string*) – Identifier of the source.
- **description** (*string*) – Description of the source.

add_timeseries (*identifier*)

Create a timeseries entry to be identified by the supplied ID.

Parameters **identifier** (*string*) – Identifier of the timeseries.

add_timeseries_instance (*identifier, freq, initial_metadata, **kwargs*)

Define an instance of a timeseries.

A timeseries instance is a combination of a timeseries, frequency and attributes.

Parameters

- **identifier** (*string*) – Identifier of the timeseries.
- **freq** (*string*) – Data frequency (e.g. 'D' for day, as supported by pandas.)
- **initial_metadata** (*string*) – Store some metadata about this series. Potentially freeform header from a source file about to be loaded.
- ****kwargs** (*kwargs*) – Any additional attributes to attach to the timeseries instance.

get_file_path (*identifier, freq, ftype='tsdb', **kwargs*)

Get a path to a file for a given timeseries instance.

Parameters

- **identifier** (*string*) – Identifier of the timeseries.
- **ftype** (*string*) – File extension to use (i.e. the type of file). (Default='tsdb')

Returns string – Path to file for a timeseries instance identified by the given arguments.

help ()

List methods of the PhilDB class with the first line of their docstring.

list_ids ()

Returns list of timeseries IDs for all timeseries records.

Returns list(string) – Sorted list of timeseries identifiers.

list_measurands ()

Returns list of measurand short IDs for all measurand records.

Returns list(string) – Sorted list of timeseries identifiers.

list_sources ()

Returns list of source IDs for all sources.

Returns list(string) – Sorted list of source identifiers.

list_timeseries_instances (**kwargs)

Returns list of timeseries instances for all instance records.

Can filter by using keyword arguments.

Returns list(string) – Sorted list of timeseries instances.

read (identifier, freq, **kwargs)

Read the entire timeseries record for the requested timeseries instance.

Parameters

- **identifier** (string) – Identifier of the timeseries.
- **freq** (string) – Timeseries data frequency.
- **kwargs** (kwargs) – Attributes to match against timeseries instances (e.g. source, measurand).

Returns pandas.DataFrame – Timeseries data.

read_all (freq, excludes=None, **kwargs)

Read the entire timeseries record for all matching timeseries instances. Optionally exclude timeseries from the final DataFrame by specifying IDs in the exclude argument.

Parameters

- **identifier** (string) – Identifier of the timeseries.
- **freq** (string) – Timeseries data frequency.
- **excludes** (array[string]) – IDs of timeseries to exclude from final DataFrame.
- **kwargs** (kwargs) – Attributes to match against timeseries instances (e.g. source, measurand).

Returns pandas.DataFrame – Timeseries data.

read_dataframe (identifiers, freq, **kwargs)

Read the entire timeseries record for the requested timeseries instances.

Parameters

- **identifiers** (array[string]) – Identifiers of the timeseries to read into a DataFrame.
- **freq** (string) – Timeseries data frequency.
- **kwargs** (kwargs) – Attributes to match against timeseries instances (e.g. source, measurand).

Returns pandas.DataFrame – Timeseries data.

read_log (identifier, freq, as_at_datetime, **kwargs)

Read timeseries record for the requested timeseries instance as it was at specified datetime in the log.

Parameters

- **identifier** (*string*) – Identifier of the timeseries.
- **freq** (*string*) – Timeseries data frequency.
- **as_at_datetime** (*datetime*) – Filter to a timeseries, as available at this specified datetime, from the log.
- **kwargs** (*kwargs*) – Attributes to match against timeseries instances (e.g. source, measurand).

Returns pandas.DataFrame – Timeseries data.

read_metadata (*ts_id*, *freq*, ***kwargs*)

Returns the metadata that was associated with an initial TimeseriesInstance.

Parameters **identifier** (*string*) – Identifier of the timeseries.

Returns string – The initial metadata that was recorded on instance creation.

ts_list (***kwargs*)

Returns list of primary ID for all timeseries records.

Parameters **kwargs** (*kwargs*) – Restrict to records associated with this the kwargs attributes supplied. (Optional).

Returns list(string) – Sorted list of timeseries identifiers.

version ()

Returns the version number of the database schema.

Returns string – Schema version.

write (*identifier*, *freq*, *ts*, ***kwargs*)

Write/update timeseries data for existing timeseries.

Parameters

- **identifier** (*string*) – Identifier of the timeseries.
- **freq** (*string*) – Data frequency (e.g. 'D' for day, as supported by pandas.)
- **ts** (*pd.Series*) – Timeseries data to write into the database.

1.6 phildb.exceptions module

exception phildb.exceptions.AlreadyExistsError

Bases: exceptions.Exception

exception phildb.exceptions.DataError

Bases: exceptions.Exception

exception phildb.exceptions.DuplicateError

Bases: exceptions.Exception

exception phildb.exceptions.MissingAttributeError

Bases: exceptions.Exception

exception phildb.exceptions.MissingDataError

Bases: exceptions.Exception

1.7 phildb.log_handler module

```
class phildb.log_handler.LogHandler(filename, mode)

    FILTERS = <Mock name='mock.Filters()' id='140479072547664'>
    create_skeleton()
        Create the skeleton of the log self.hdf5.
    read(as_at_datetime)
    write(log_entries, operation_datetime)
```

1.8 phildb.reader module

```
phildb.reader.read(filename)
phildb.reader.read_log(log_file, as_at_datetime)
```

1.9 phildb.writer module

```
phildb.writer.write(tsdb_file, ts, freq)
    Smart write.
```

Will only update existing values where they have changed. Changed existing values are returned in a list.

Parameters

- **tsdb_file** (*string*) – File to write timeseries data into.
- **ts** (*pd.Series*) – Timeseries data to write.
- **freq** (*string*) – Frequency of the data. (e.g. ‘D’ for daily, ‘1Min’ for minutely). Accepts any string that pandas.TimeSeries.asfreq does or ‘IRR’ for irregular data.

```
phildb.writer.write_irregular_data(tsdb_file, series)
    Smart write of irregular data.
```

Will only update existing values where they have changed. Changed existing values are returned in a list.

Parameters

- **tsdb_file** (*string*) – File to write timeseries data into.
- **series** (*pandas.Series*) – Pandas Series of irregular data to write.

```
phildb.writer.write_log(log_file, modified, replacement_datetime)
```

```
phildb.writer.write_regular_data(tsdb_file, series)
    Smart write. Expects continuous time series.
```

Will only update existing values where they have changed. Changed existing values are returned in a list.

Parameters

- **tsdb_file** (*string*) – File to write timeseries data into.
- **series** (*pandas.Series*) – Pandas Series of regular data to write.

1.10 Module contents

CHAPTER 2

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