PhilDB Documentation

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CHAPTER 1

phildb package

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_measurand(*measurand_short_id*, *measurand_long_id*, *description*)
Create a measurand entry.

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

Parameters

- **measurand_short_id** (*string*) – Short identifier of the measurand.
- **measurand_long_id** (*string*) – Long identifier of the measurand.
- **description** (*string*) – Description of the measurand.

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 Metorology 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='140125483438928'>

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

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