

Pythia Time Series Data Transfer Specification

Version 4, 15.10.2020

Data Quality

- Raw data as little processed as possible
- Especially no record should be removed or interpolated

Date Range

Each time series transfer data fulfills the request for data in a previous specified date range. It is defined by an inclusive start date and an exclusive end date. The detection timestamp of each record must be within these boundaries. If there is no record with a detection timestamp that equals the start date and earlier data is available at the start date, the **nearest predecessor** data point must be added to the records – its detection timestamp may be set to the start date, but doesn't need to.

File Package

Time series data is transferred via CSV files which can be packed in a ZIP archive. In both cases they must be stored directly in the root folder and not in subfolders.

Generally, the following rules apply:

- The file's charset is UTF-8
- Records are sorted ascending by the detection timestamp
- Records are separated by CR LF (Windows line endings)
- Columns are separated by comma

File Format

The CSV files match one of the two following formats:

- **Single Signal**
 - File name: "<signal id>.csv"
 - No header
 - Each line matches "<detection timestamp>,<availability timestamp>,<value>"
- **Multiple Signal**
 - File name: irrelevant but with extension ".csv"
 - Header is "timestamp,availability,<signal 1 id>,<signal 2 id>"
 - Each line matches "<detection timestamp>,<availability timestamp>,<value of signal 1>,<value of signal 2>"
 - Analogously, there can be more signals than 2
 - If a signal does not have a value at some detection timestamp, the value is left out ("<detection timestamp>,<availability timestamp>,,<value of signal 2>")

Generally, the following rules apply:

- Signal ids do not contain " or ; or \$
- Timestamps are represented as milliseconds since Linux Epoch UTC and formatted as unsigned 64bit Integer written as in XML Schema
- Values are formatted as 64bit Float written as in XML Schema