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Per Vehicle Data File Format
iTHEIA

2.2

May 23, 2025

1 Introduction

This document describes the format for the Per Vehicle data file generated by iTHEIA 2. The data file is a CSV file divided into two major sections: The Header section and the Data section containing the vehicle records.

This document describes the Per Vehicle data file format for the following version:

Version	Release Date
2.2	May 2025

2 Data File Format

The file name has 3 pieces separated by underscores. The first piece is the type of report, which is always “PerVehicle”, followed by the Site ID from section 2.1, and finally a timestamp. If the data file is an Automated (Daily) data file the timestamp will be in the format “YYYYMMDD”, only specifying the date. If the data file was generated on-demand, the timestamp will be in the format “YYYMMDDHHmmss”, indicating the date and time the report was generated.

Example Automated (Daily) file name: PerVehicle_SiteId_20250720.itheia.csv

Example On-Demand file name, including time: PerVehicle_SiteId_20230720142544.itheia.csv

2.1 Header Section

Unless otherwise specified, the maximum number of characters for any String is 50.

Field Name	**Data Type**	**Description**
<Header Begin>	N/A	String marking the beginning of the header section. No data field, just a marker.
Data File Version	String	Version number for the Per Vehicle data file.
iTHEIA Core Version	String	Version number of iTHEIA core.
Product Name	String	Name of the product the report was generated from. Currently it’s static and set to “iTHEIA”.
Product Serial Number	String	Serial number of the device. This value is given to the unit during the manufacturing process.
Site ID	String	The identifier for the site.
Site Name	String	The legible, user-friendly identifier for the site. Max 100 characters
Timezone	String	The name of the timezone being used on site. Possible values are defined in the IANA Time zone database.
Latitude	Float	Latitude of the site.
Longitude	Float	Longitude of the site.
Units	String	The unit of measurement used at the site. Currently only supports “Metric”.

Report Start	String	The beginning of the time period covered by this report. ISO 8601 datetime format in site time zone. (ex. "2023-04-01T12:34:56.789-06:00")
Report End	String	The end of the time period covered by this report. ISO datetime format in site time zone. (ex. "2023-04-01T12:34:56.789-06:00")
Classification Type	String	The classification format being used in this report. (ex. FHWA 13)
<Header End>	N/A	String marking the end of the header section. No data field, just a marker.

2.2 Data Section

This section has a header row that organizes the data beneath it. Each row underneath the header row represents a single, complete vehicle record.

Field Name	**Data Type**	**Description**
<Data Begin>	N/A	String marking the beginning of the data section. No data field, just a marker.
Headers	N/A	A row describing the data in each column. The headers are "Vehicle ID,Timestamp,Station Number,Lane,Dir,Class,Axle Count,Speed"
Vehicle ID	Integer	Unique integer identifier created by iTHEIA to distinguish vehicles.
Timestamp	String	The time the vehicle was recorded as an ISO datetime format in site time zone. (ex. "2023-04-01T12:34:56.789-06:00")
Station Number	String	The identifier for the station. Note: does not have to be a number. For use with Road Reporter II, must be 12 or 16 characters.
Lane	Integer	The lane number the vehicle was recorded driving in.
Dir	String	One or two character short name for the direction associated with the lane that the vehicle passed in. (ex. W for West and NE for NorthEast)
Class	Integer	The vehicle's class, according to Classification Type specified in the header.
Axle Count	Integer	The vehicle's axle count.
Speed	Integer	When the data file is in metric, the speed of the vehicle in kilometers per hour. This may be omitted in certain products. Uncalculatable or invalid speeds are indicated with 999.
<Data End>	N/A	String marking the end of the data section. No data field, just a marker.

3 Appendix

3.1 Sample File

This is a sample Per Vehicle Data File in plain text. Note: most data files generated from real data will have far more vehicle entries.

This file's name is "PerVehicle_Test_20240410092801.itheia.csv".

<Header Begin>,
Data File Version:,2.2,
iTHEIA Core Version:,1.2.1,
Product Name:,iTHEIA,
Product Serial Number:, 1234567890,
Site ID:,Test,
Site Name:,Test Site,
Timezone:,America/Regina,
Latitude:,48.8606,
Longitude:,2.3376,
Units:,Metric,
Report Start:,2024-04-08T00:00:00.000-06:00,
Report End:,2024-04-11T11:59:59.999-06:00,
Classification Type:,FHWA13 Class,
<Header End>,
<Data Begin>,
Vehicle ID,Timestamp,Station Number,Lane,Dir,Class, Axle Count,Speed,
21134,2024-04-09T00:57:04.525-06:00,000123,1,W,2,2,50,
21135,2024-04-09T01:19:54.834-06:00,000123,1,W,2,3,61,
21136,2024-04-09T01:36:34.336-06:00,000123,2,E,2,2,32,
21137,2024-04-09T01:46:53.475-06:00,000123,2,E,2,2,71,
21138,2024-04-09T03:49:55.348-06:00,000123,1,W,3,2,67,
21139,2024-04-09T03:53:04.289-06:00,000123,1,W,5,2,83,
<Data End>,

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