

# GPS eXchange Format (GPX) Reader

## FORMAT NOTES:

- This format is not supported by FME Base Edition.

## Overview

GPX (the GPS Exchange Format) is a lightweight XML data format for the interchange of GPS data (waypoints, routes, and tracks) between applications and Web services on the Internet. FME is capable of reading both GPX 1.0 and GPX 1.1 and writing GPX 1.1.

When reading GPX 1.0, the reader returns Bounds, Waypoint, Route, Routepoint, Track and Trackpoint features. When reading GPX 1.1, the reader returns Metadata, Waypoint, Route, and Track features.

Note: The GPX reader has changed from the official FME 2008 release. It now reads GPX Route and Track elements differently.

For more information, go to:

<http://www.topografix.com/gpx.asp>

## GPX Quick Facts

Format Type Identifier	GPX
Reader/Writer	Reader/Writer
Licensing Level	Professional
Dependencies	None
Dataset Type	File
Feature Type	Metadata, Waypoint, Route, Track
Typical File Extensions	.gpx .xml
Automated Translation Support	Yes
User-Defined Attributes	No
Coordinate System Support	Yes
Generic Color Support	No
Spatial Index	Never
Schema Required	Yes
Transaction Support	No
Geometry Type	xml_type

Geometry Support			
Geometry	Supported?	Geometry	Supported?
aggregate	yes	point	yes
circles	no	polygon	no
circular arc	no	raster	no
donut polygon	no	solid	no
elliptical arc	no	surface	no
ellipses	no	text	no
line	yes	z values	no
none	yes		

## Reader Overview

The GPX reader supports reading GPX 1.0 and 1.1 datasets.

The GPX reader has changed from the official FME 2008 release. The GPX reader now generates FME features from GPX 1.1 files with the format specified in the "Schema Overview" section below. It returns Metadata, Waypoint, Route, and Track features.

The GPX 1.1 reader released with FME 2008 generated FME features of types Metadata, Waypoint, Route, Routepoint, Track, and Trackpoint. The FME 2008 reader is deprecated, but is still available for backward compatibility. To use the 2008 reader, the source dataset's settings dialog "Reader Mode" option should be set to "Backward-Compatibility(FME2008)".

## Coordinate Systems

The GPX reader supports data in decimal degrees (WGS84 datum).

## Reader Directives

The suffixes shown are prefixed by the current <ReaderKeyword> in a mapping file. By default, the <ReaderKeyword> for the GPX reader is GPX.

### READER\_MODE

**Required/Optional:** Optional

Specifies how GPX elements are read into FME features. Backward compatibility mode will read Trackpoints and Routepoints in as features, as well as Tracks and Routes. Normal mode will only read in Track and Route features, storing the point information as traits of the features' geometries, as specified in the schema overview. The default value is Normal for new workspaces, but backward compatibility mode will be used if the keyword value is not present.

#### Examples:

```
GPX_READER_MODE Normal
GPX_READER_MODE Backward-Compatibility(FME2008)
```

#### Workbench Parameter: Reader Mode

## Writer Overview

The GPX writer supports writing GPX 1.1 datasets.

The GPX writer accepts only one Metadata feature; all other Metadata features are ignored and a warning is logged. The writer expects FME Features that it receives to be formatted in a specific format. The formats are described in the "Fixed Schema and Feature Representation" section.

## Coordinate Systems

The GPX writer supports data in decimal degrees (WGS84 datum).

## Schema Overview

### Fixed Schema and Feature Representation

The GPX reader and writer support a fixed schema. The reader generates FME features with the same schema that the writer accepts for writing. The GPX elements and their corresponding FME feature representations are mapped by the reader and writer according to the following schemas.

## Feature types

### Metadata

To write a <metadata> tag, pass a feature of the following form to the writer.

Feature Type: Metadata

```
<metadata>
```

*feature's attributes as xml tags*

```
</metadata>
```

Feature Type: Metadata

Geometry type: any (geometry is ignored by writer)

Feature Attribute	GPX XML Entity
name	<name>
description	<desc>
author_name	<author> <name>
author_email	<author> <email>
author_link_text	<author> <link> <text>
author_link_type	<author> <link> <type>
author_link_href	<author> <link href="">
copyright_year	<copyright> <year>
copyright_license	<copyright> <license>
copyright_author	<copyright author="">
link_text	<link> <text>
link_type	<link> <type>
link_href	<link href="">
creation_time	<time>
keywords	<keywords>

**Waypoint**

To write a <wpt> tag, pass a feature of the following form to the writer.

```
<wpt>
```

*feature's attributes as xml tags*

```
</wpt>
```

Feature Type: Waypoint

Geometry type: IFMEPoint

<b>Feature Attribute</b>	<b>GPX XML Entity</b>
elevation	<ele>
creation_time	<time>
magnetic_variation	<magvar>
geoid_height	<geoidheight>
comment	<cmt>
description	<src>
link_text	<link><type>
link_type	<copyright><year>
link_href	<link href="">
symbol	<sym>
type	<type>
gps_fix_type	<fix>
number_of_satellites	<sat>
hdop	<hdop>
vdop	<vdop>
pdop	<pdop>
age_of_dgps_data	<ageofdgpsdata>
dgps_id	<dgpsid>

**Routepoint and Trackpoint**

Routepoints and Trackpoints aren't created by the reader as FME features. Instead, Routes and Tracksegments are constructed as IFMELine features, and their Routepoints and Trackpoints are represented by x-y paired coordinates in the IFMELine fea-

ture's geometry. A point's extra information is stored in the IFMELine feature's geometry traits as a list trait of the form *type{index}.name*.

*type* is either 'Routepoint' or 'Trackpoint'.

*index* is the numeric index of the point in the IFMELine's geometry.

*name* is an FME name that corresponds to an XML entity name

The *names* are the same as Waypoint's feature attribute names.

Geometry type: (implicit) IFMELine coordinate

Example:

Refer to fmepedia <http://fmepedia.com/Examples/GPX> for an example

The feature format that you want to establish before passing

## Route

To get Routepoints to be written with more than just their longitude and latitude, refer to the "Routepoint and Trackpoint" section.

```
<rte>
```

*feature's attributes as xml tags*

```
<rtept lon="" lat="">
```

*feature's geometry traits of name Routepoint{index}.name as xml tags*

```
</rtept>
```

```
</rte>
```

Feature Type: Route

Geometry type: IFMELine

To write an <rte> tag, pass a feature of the following form to the writer.

Feature Attribute	GPX XML Entity
name	<name>
comment	<cmt>
description	<desc>
source	<src>

Feature Attribute	GPX XML Entity
link_text	<link><text>
link_type	<link><type>
link_href	<link href="">
number	<number>
type	<type>

Example:

Refer to fmepedia <http://fmepedia.com/Examples/GPX> for an example

The feature format that you want to establish before passing

### Track

To get Trackpoints to be written with more than just their longitude and latitude, refer to the "Routepoint and Trackpoint" section.

```
<trk>
  <trkpt lon="" lat="">
    feature's geometry traits of name Trackpoint{index}.name as xml tags
  </trkpt>
</trk>
```

Feature Type: Track

Geometry type: IFMEAggregate of IFMELines

