

# DES Reader

The DES Reader module allows the Feature Manipulation Engine (FME) to read DES files. The DES is a published ASCII format used in the design industry.

## Overview

DES is a three-dimensional (3D) system.

DES files store both feature geometry and attribution. The file extension is added to the basename of the DES file.

The DES reader and writer supports the storage of point, line, and polygon geometric data in `.des` files. The DES format also stores features with no geometry (which are referred to as having a geometry of *none*).

## DES Quick Facts

Format Type Identifier	DES
Reader/Writer	Reader
Licensing Level	Professional
Dependencies	None
Dataset Type	File
Feature Type	File base name
Typical File Extensions	.des
Automated Translation Support	Yes
User-Defined Attributes	No
Coordinate System Support	No
Generic Color Support	No
Spatial Index	Never
Schema Required	Not applicable
Transaction Support	No
Geometry Type	des_type

Geometry Support			
Geometry	Supported?	Geometry	Supported?
aggregate	no	point	yes
circles	no	polygon	yes
circular arc	no	raster	no
donut polygon	yes	solid	no
elliptical arc	no	surface	no
ellipses	no	text	no

Geometry Support			
Geometry	Supported?	Geometry	Supported?
line	yes	z values	yes
none	yes		

## Reader Overview

The DES reader then extracts features from a file one at a time, and passes them on to the rest of FME for further processing. The reader finishes when it reaches the end of the file.

## Reader Directives

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

### DATASET

**Required/Optional:** *Required*

The value for this keyword is the file path of the DES file to be read.

#### Example:

```
DES_DATASET /usr/data/des/desfile.des
```

**Workbench Parameter:** [<WorkbenchParameter>](#)

### DEF

**Required/Optional:** *Required*

Each DES file must be defined before it can be read. The definition specifies the base name of the file, and the names and the types of all attributes. The syntax of a DES DEF line is:

```
<ReaderKeyword>_DEF <baseName> \
    [<attrName> <attrType>]+
```

The basename specified on the DES DEF lines is constructed by using either the file name without the extension specified by the DATASET keyword or `des_record` (used only when DES is the source).

DES files require at least one attribute to be defined. The attribute definition given must match the definition of the file being read. If it does not, translation is halted and the true definition of the DES file's attributes gets logged to the log file.

The following table shows the attribute types supported:

Field Type	Description
<code>char (&lt;width&gt;)</code>	Character fields store fixed length strings. The <code>width</code> parameter controls the maximum number of characters that can be stored by the field. No padding is required for strings shorter than this width.

Field Type	Description
date	Date fields store dates as character strings with the format YYYYMMDD.
number(<width>, <decimals>)	Number fields store single and double precision floating point values. The <code>width</code> parameter is the total number of characters allocated to the field, including the decimal point. The <code>decimals</code> parameter controls the precision of the data and is the number of digits to the right of the decimal.
logical	Logical fields store TRUE/FALSE data. Data read or written from and to such fields must always have a value of either <code>true</code> or <code>false</code> .

The following mapping file fragment defines a DES file `DEF` line when DES is the source file format.

```
DES_DEF des_record \
    des_headerinfo char(254) \
    des_featinfo char(254) \
    des_featnum number(11,0) \
    des_headertype char(50) \
    des_headnum number(11,0) \
    des_num char(10) \
    des_units char(10) \
    des_info char(20) \
    des_feattype char(20) \
    des_code number(11,0) \
    des_coordnum number(11,0) \
    des_idx number(11,0) \
    des_feat number(11,0) \
    des_ival char(254) \
    des_jval char(254) \
    des_kval char(254)
```

The example below is a `DEF` line for the trees DBF file that has the attributes `name` and `id_number`:

```
DBF_DEF trees \
    name char(30) \
    id_number number(11,0)
```

**Workbench Parameter:** [<WorkbenchParameter>](#)

## Feature Representation

In addition to the generic FME feature attributes that FME Workbench adds to all features (see *About Feature Attributes* on page 7), this format adds the format-specific attributes described in this section.

DES features consist of geometry and attributes. The attribute names are defined in the `DEF` line and there is a value for each attribute in each DES feature.

The table below lists the attributes contained in all DES features.

Attribute Name	Contents
des_type	The DES geometric type of this entity. Range: des_point   des_polygon  des_line  des_none Default: No default
des_headerinfo	This is a string list of header information. The lines are separated by the " "character. Range: Maximum of 254 characters Default: Blank
des_featnum	The feature number. Range: Integer Default: Increments by 1 from 0.
des_headertype	This specifies what type of header the file contains.. Range: Maximum of 50 characters Default: Blank
des_headnum	The number of miscellaneous header lines. Range: Integer Default: 0
des_num	This is the first line number encountered for the feature. Range: Maximum of 10 characters Default: None
des_units	Specifies the unit of measure used for the file. Range: Maximum of 10 characters Default: None
des_info	Comments. Range: Maximum of 30 characters Default: Blank
des_feattype	The assigned feature type name from the file. Range: Maximum of 20 characters Default: Blank
des_code	The unique feature code. Range: Maximum of 20 characters Default: Blank
des_coordnum	The number of coordinates the feature contains. Range: Integer Default: 0
des_idx	This is the feature index number. Currently this value is the same as des_coordnum. Range: Integer Default: 0
des_feat	This is the feature set number. Range: Integer Default: 1

Attribute Name	Contents
des_ival	This is the i coordinate to the point that is in normal vector. Range: Floating Point Number Default: Blank
des_jval	This is the j coordinate to the point that is in normal vector. Range: Floating Point Number Default: Blank
des_kval	This is the k coordinate to the point that is in normal vector.. Range: Floating Point Number Default: Blank

## Points

**des\_type:** des\_point

DES point features specify a single  $x$  and  $y$  coordinate in addition to any associated user-defined attributes. There are no special FME attributes for the DES line type.

## Lines

**des\_type:** des\_line

DES line features specify linear features defined by a sequence of  $x$  and  $y$  coordinates. There are no special FME attributes for the DES line type.

## Polygon

**des\_type:** des\_polygon

DES polygon features specify area (polygonal) features. The areas that make up a single feature may or may not be disjoint, and may contain polygons that have holes. There are no special FME attributes for the DES region type.

