

# Flexible Text File Plugin

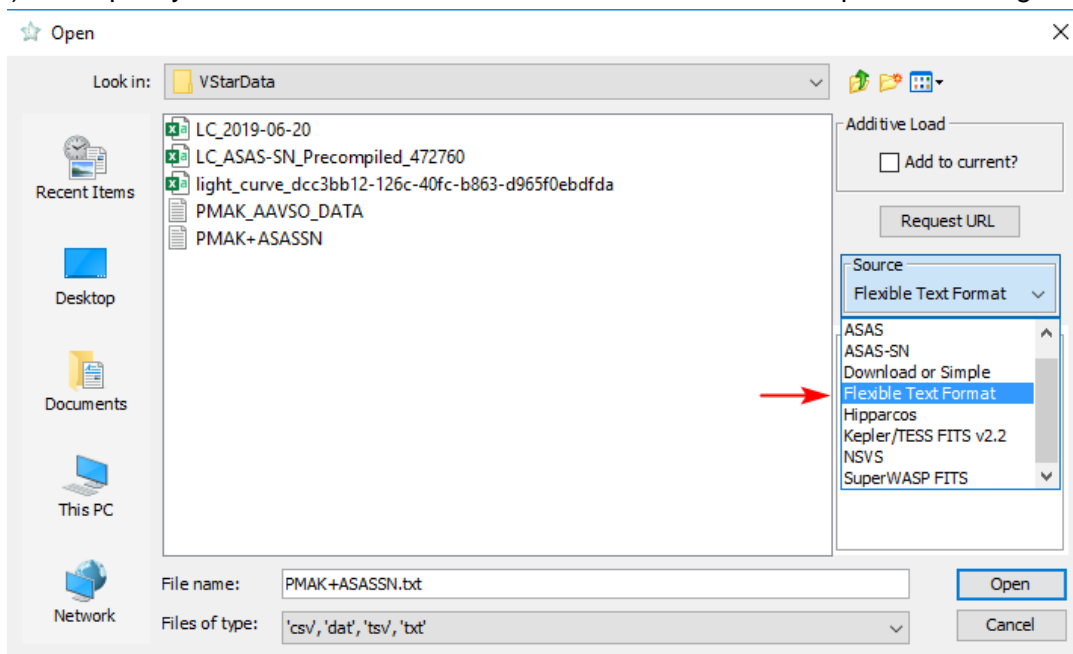
Ver. 1.2

*VStar* supports loading data from plain text files which can be prepared manually. There are two kinds of such “standard” plain text files: simple format containing very basic information and AAVSO download format having many columns with very detailed information about observations; preparation of the latter is quite troublesome. To fill a gap between the two formats, the new plugin was created to read files having a format that extends the “simple” text file format. The plugin recognizes an additional optional column containing filter (band) specification; other features were introduced via *directives* (lines in the form “#<directive>=<value>”). See the full list of the directives in a dedicated section beneath.

The key features of the new format are:

- 1) Support of filter (band) specification (globally or specifically for each observation)
- 2) Explicit specification of a kind of Julian Date: JD or HJD (heliocentric) or BJD (barycentric)
- 3) Explicit specification of column types (i.e. the order of columns and their types: time, magnitude, uncertainty, etc.)
- 4) Zero level shift can be specified with “#MAGSHIFT” directive (see beneath)
- 5) A value to be added to Julian dates can be specified with “#DATEADD” directive (can be negative, see beneath)

To load observations from a text file via *Flexible Text Format plugin*, select the *New Star* from *File...* menu item from the *File* menu (or click the second-to-left-most button in the toolbar) then specify *Flexible Text Format File* source in the *Open File* dialog:



By default, the plugin recognizes the following columns (any of them, but time and magnitude columns, can be omitted):

Time,Magnitude,[Uncertainty],[Observer Code],[Validation Flag],[Filter]

By default, the plugin expects a file to be comma-separated. “#DELIM” directive can be used to specify a separator explicitly.

To inform the plugin that the file is tab-separated use the following directive:

```
#DELIM=tab
```

For semicolon-separated file use

```
#DELIM=;
```

A new column “Filter” is introduced in addition to columns defined in *VStar* “simple” text format. A user can specify filter “globally” too, for example, Johnson V filter can be specified by the following directive:

```
#FILTER=V
```

A user can explicitly specify what columns to read from a file with “#FIELDS” directive. For example, an “AAVSO Download Format” file can be read by the plugin if a user puts the following directive at the beginning of the file:

```
#FIELDS=time,mag,magerr,,filter,obscode,,,,,comments,,,flag,,,,name
2419789.5,1.11,,,Vis.,SFE,CZ,,,,,No,,G,,,,alf ori,STD,,
2421597.3,1.00,,,Vis.,HDD,,,,,No,,G,,,,alf ori,STD,,
2421602.4,0.80,,,Vis.,HDD,,,,,No,,G,,,,alf ori,STD,,
2421607.3,0.90,,,Vis.,HDD,,,,,No,,G,,,,alf ori,STD,,
...
```

“#FIELDS” directive allows one to read text files from different sources, i.e. for sources for which no plugin exists yet. For example, the following directives can be used to read data (at least partially) from ASAS-SN file (this is an example only, a plugin for ASAS-SN data does exist):

```
#NAME=V1991 Cyg
#DATE=HJD
#FIELDS=time,,,,,mag,magerr,,,filter
#The current and the next line are comments and are ignored
#HJD,UT Date,Camera,FWHM,Limit,mag,mag_err,flux(mJy),flux_err,Filter
2457926.01441,2017-06-21.5131589,bb,1.66,16.777,16.457,0.164,1.002,0.149,V
2457926.01568,2017-06-21.5144263,bb,1.66,16.873,16.381,0.140,1.074,0.137,V
2457926.01695,2017-06-21.5157013,bb,1.73,16.877,16.442,0.147,1.016,0.136,V
2457929.99987,2017-06-25.4983607,bb,1.60,16.724,16.455,0.171,1.004,0.157,V
2457930.00113,2017-06-25.4996263,bb,1.66,16.683,16.625,0.208,0.859,0.163,V
...
```

# List of directives recognized by the plugin

Names of directives are case insensitive, i.e. `#name` is equal to `#NAME`.

The following directives can be used to customize the input.

**#BAND=(filter specification)**

The same as `#FILTER`, see below.

Example:

```
#BAND=V
```

**#DATE=(date column type)**

Date type can be JD or HJD or BJD, default: JD. Any other values are treated as JD. May appear before observations only.

Example:

```
#DATE=HJD
```

**#DATEADD=(value to be added to date values, default = 0.0)**

May appear in any line (i.e. to change the value to be added to dates)

Example (MJD is converted to JD with “`#DATEADD`” directive):

```
#NAME=T Umi
#data from NSVS (MJD)
#DELIM=tab
#FIELDS=time,mag,magerr
#DATE=JD
#DATEADD=2450000.5
1318.163916      8.697 0.01  0
1318.164236      8.683 0.01  0
1318.219486      8.664 0.01  0
1318.219806      8.655 0.01  0
1325.211736      8.791 0.01  0
1325.212046      8.793 0.01  0
...
```

**#DELIM=(delimiter)**

The delimiter can be `comma`, `tab`, `space`, `multispace` or a single ASCII character with an ordinal value between 32 and 126. The default value is `comma`. May appear in any line (i.e. to change delimiter).

The `multispace` delimiter means that a group of spaces is treated as one delimiter.

Example 1 (for a tab-separated file):

```
#DELIM=tab
```

Example 2 (for a semicolon-separated file):

```
#DELIM=;
```

Example 3 (ampersand as a delimiter):

#DELIM=&

**#ERROR=(N or Y)**

May appear in any line. Use “#ERROR=N” to ignore validation errors (for uncertainty and validation flag values). Time and Magnitude values are always validated.

**#ESCAPINGQUOTES=(N: use "" inside quotes; Y: use \" inside quotes)**

May appear in any line. This directive can be useful while reading “AAVSO download format” files.

**#FIELDS=(list of fields)**

List of fields (columns) to be read from the input file. Field type identifiers are case insensitive. The following field types are recognized:

Field type	Description
time	Time of observation (Julian day by default. Use “#DATE=HJD” if time values are heliocentric Julian days, “#DATE=BJD” if time values are barycentric Julian days)
mag	Magnitude
magnitude	Synonym for mag
mager	Uncertainty
uncertainty	Synonym for mager
filter	Filter (band), see also “#FILTER”
band	Synonym for filter
obscode	Observer code (value is not validated by the plugin), see also “#OBSCODE”
comments	Commentary (double-quoted)
notes	Synonym for comments
flag	Validation flag
validation	Synonym for flag
name	Object name, see also “#NAME”

Example 1 (any extra columns will be ignored):

```
#FIELDS=Time,Mag,MagErr,ObsCode,Flag,Filter
```

Example 2 (the file contains Time values in the first column, Magnitude values in the second column, and Filter values in the 6th column. Other columns (between Mag and Filter and any extra columns) will be ignored:

```
#FIELDS=Time,Mag,,,,Filter
```

If there is no #FIELDS directive, only the first two columns (assuming Time and Mag) are recognized.

**#FILTER=(filter specification)**

Default filter value. May appear in any line (i.e. to change the filter).

Example:

```
#FILTER=V
```

**#NAME=(object name)**

May appear in any line. This directive specifies a name of the object (to be displayed in the plot title).

If the object name starts with the '^' symbol, the plot title is not prepended with "Light Curve for". The '^' is not displayed in the title.

Example:

```
#NAME=T Umi
```

**#MAGSHIFT=(value to be added to magnitudes, default = 0.0)**

May appear in any line (i.e. to change magnitude shift).

Example:

```
#MAGSHIFT=-0.08
```

**#OBSCODE=(Observer Code)**

Default Observer Code. May appear in any line (i.e. to change ObsCode). This value is not validated (it may not conform to AAVSO requirements). This allows one to use non-standard observer codes, for example, "ASAS-SN" which can be useful while filtering the data.

Example:

```
#OBSCODE=PMAK
```

**#TITLEX=(axis title)**

Custom title of the domain (X) axis.

Example:

```
#TITLEX=BJD
```

**#TITLEY=(axis title)**

Custom title of the domain (Y) axis.

Example:

```
#TITLEY=Johnson V
```

**#VELAFILTER=<VeLa expression>**

A VeLa expression can be specified to filter data.

In the following example (SuperWASP CSV file) data to be read are restricted by #VELAFILTER directive. Only observations having uncertainty (MagErr) less than 0.03 and magnitude less than 11.5 will be read from the file. Please note that in the example #MAGSHIFT is applied so the VeLa filter sees modified “magnitude” values.

```
#FIELDS=TIME,,MAG,MAGERR
```

```
#FILTER=SuperWASP
```

```
#DATE=HJD
```

```
#MAGSHIFT=-0.1054
```

```
## VeLaFilter: "magnitude" after applying #MAGSHIFT and "time" after  
applying #DATEADD!
```

```
#VELAFILTER= uncertainty <0.03 and magnitude < 11.5
```

```
#HJD,camera,magnitude,"magnitude error"
```

```
2453901.661042,145,10.9648,0.0050
```

```
2453901.686169,145,10.9604,0.0054
```

```
2453901.702905,145,10.9807,0.0067
```

```
2453902.654005,145,10.9801,0.0046
```

```
2453902.674919,145,10.9838,0.0046
```

```
2453902.685532,145,10.9785,0.0047
```

```
...
```

**#DEFINESERIES=SeriesDescription, ShortName, ColorHexCode**

Example (new series with name "TESS +0.73"):

```
#DEFINESERIES= TESS +0.73, TESS +0.73, #660099
```

```
#FILTER= TESS +0.73
```

**# <any text>**

Other lines starting with “#” are considered to be comments. It is advised to put space after # to guarantee to distinguish them from directives, even future ones.

## Revision History

Rev	Date	Description	Author
D	24 Apr 2024	Synonyms for directive names, some clarifications.	Maksym Pyatnytsky (PMAK)
C	25 Feb 2024	#TITLEX, #TITLEY, ‘^’ in the object name	Maksym Pyatnytsky (PMAK)
B	24 Jan 2021	‘multispace’ delimiter	Maksym Pyatnytsky (PMAK)
A	26 Apr 2020	Initial release	Maksym Pyatnytsky (PMAK)