British Astronomical Association Variable Star Section
Guide to CCD & DSLR Observation Submission File Layout

This is a guide to the file layout "CCD/CMOS v2.03" used for submitting CCD and DSLR observations to the BAA VSS. It is up to date as of 11th March 2023.

Contents

Introduction

Whenever you make CCD or CMOS observations of a variable star, you should report these to one or more of the astronomical organisations which maintain a long-term database of variable star observations. They will then be available for future use. Professional astronomers frequently request the results of previous amateur observations of a specific object and this data often proves very helpful in supporting or disproving new theories about the object's behaviour.

The purpose of this guide is to help observers to create files for submitting their CCD and CMOS observations to the BAA VSS. It is worth noting that the BAA VSS CCD photometry spreadsheet will automatically create the file layout described in this guide, although it requires that you use AIP4Win or AIJ to extract the photometry from your images.

The database website has example file layouts in Excel and "text and tab" format. Opening these files will make it easier to understand the layout, and they can be used as templates for your own observations. Note that the web site does not allow Excel files to be submitted, but any Excel file can be converted to the correct file type by "Saving As" a "Text (Tab Delimited) (*.txt)" file type. Other spreadsheet applications will have similar file saving options.

If you intend to submit several files at the same time, it makes handling them easier if you create a zipped folder containing the files and send that.

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Overview of the File Layout

The files should be submitted in text and tab format with a .txt file extension. Though it is often easiest to prepare the data in Excel or another spreadsheet package and then save it to the required format.

The file is divided into 2 sections separated by an empty row.

- Top – Header Section of general information
    - Data such as:
        - Observer
        - Variable observed
        - Instrumentation
        - Location
    - The header section is divided into 2 columns, descriptor and value:
        - First column gives a brief descriptor of the data.
        - The second column gives the value of the data.
        - The descriptor and value are separated by a tab character.
- Bottom – Individual observation rows
    - A single row of column headers followed by 1 or more rows of observations underneath.
    - Each column is separate by a tab character.

Note that not all information is compulsory, and where data is not provided then that entire column or row should not be included and so removed.

The following 2 sections give a detailed description of the data required in the 2 files sections.

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Top – Header Section (General Information)

Top – Header Section			
Row Identifier	**Compulsory**	**Description**	**Data Format Restrictions**
File Format	Yes	This must be set to: CCD/CMOS V2.03	
Observation Method	Yes	Either CCD, CMOS or DSLR	
Variable	Yes	A valid designation for the variable star.	Maximum 255 characters
Chart ID	Yes	Where used the BAA VSS chart id, or AAVSO chart id. Otherwise a short description of the chart, which must include the source of the comparison magnitudes. E.g. BAAVSS 305.01 AAVSO 13029H CMC14 APASS + UCAC4 USNO A2 + UCAC4	Maximum 50 characters
Observer Code	Yes	Your observer code, normally 3 characters. To obtain an observer code please contact the VSS Director or Database Secretary. Contact details may be found on the VSS web page and at the back of the circulars.	Maximum 5 characters
Location	Yes	The latitude and longitude from where the observation was made. If available then include the height in metres. E.g. 51 25 40N 2 43 15W H50m Or 51 25 40N 2 43 15W Other formats are allowed but they should give the latitude and longitude.	Maximum 255 characters
Telescope	No	A short description of the telescope used. E.g. Meade 10 LX200	Maximum 255 characters
Camera	No	A short description of the CCD, DSLR or other camera used. E.g. SXVR-H694 Canon 450D	Maximum 255 characters
Magnitude type	Yes	Can be 1 of: **PreCalculated** – If only the calculated magnitude is provided. **Instrumental** – If the instrumental magnitudes of the variable and comparison stars are provided as well as the calculated magnitude result.	

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Top – Header Section			
Row Identifier	**Compulsory**	**Description**	**Data Format Restrictions**
Timing uncertainty	No	The uncertainty in the time of the observation. Note that computer time is rarely accurate to more than a few seconds, unless it has been explicitly updated. E.g. 5	A number with up to 2 decimal places.
Phot star rad (arcsec)	No	The photometry star radius in arc seconds. E.g. 7.55	A number with up to 2 decimal places.
Phot inner ann (arcsec)	No	The photometry inner annulus in arc seconds. E.g. 11.33	A number with up to 2 decimal places.
Phot outer ann (arcsec)	No	The photometry outer annulus in arc seconds. E.g. 15.10	A number with up to 2 decimal places.
Photometry software	No	The name or description of the software used to extract the photometry. E.g. AIP4Win v2 – Ensemble photometry	Maximum 255 characters
Analysis software	No	The name or description of the software used to analyse the data and convert to BAA VSS format. E.g. VSS CCD Photometry Spreadsheet 2.03 Or Manual with Excel	Maximum 255 characters
Comments	No	Any information which you think would be useful such as the observing conditions should be included in the comment field.	Maximum 255 characters

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Bottom Section – Individual Observation Rows

Column Identifier	Compulsory	Description	Data Format
JulianDate	Yes	The mid Julian Date of the observation, i.e. half way between the start and the end of the observation.	Number with a minimum of 3 decimal places and up to 6 decimal places.
Filter	Yes	The short code of the filter. The current list of filters is given at the end of this document. E.g. V	
VarCalcMag	Yes	The calculated magnitude of the variable star.	Number with up to 4 decimal places.
VarCalcErr	No	The error in the calculated magnitude of the variable star.	Number with up to 4 decimal places.
VarInstMag	No	The instrumental magnitude of the variable star.	Number with up to 4 decimal places.
VarInstErr	No	The error in the instrumental magnitude of the variable star.	Number with up to 4 decimal places.
ExpLen	Yes	The exposure length in seconds.	Number with up to 2 decimal places. Maximum allowed number is 99999.99.
FileName	No	The image file name.	Maximum 255 characters
The following 5 columns should be repeated once per comparison star. Only the first column is compulsory, and where data is not provided then the entire column should be left out with no space between columns.			
CmpStar	Yes	The identifier of the comparison star from the chart used, e.g. 'G' or '101'. Where a chart was not used then a standard star id should be given, like the GSC, A2, USNO, 2MASS.	Maximum 255 characters
CmpRefMag	No	The reference magnitude of the comparison star from the chart / sequence.	Number with up to 4 decimal places.
CmpRefErr	No	The reference magnitude error of the comparison star from the chart / sequence.	Number with up to 4 decimal places.
CmpInstMag	No	The instrumental magnitude of the comparison star.	Number with up to 4 decimal places.
CmpInstErr	No	The instrumental magnitude error of the comparison star.	Number with up to 4 decimal places.

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Filter List

Filter	Description
B	Johnson B
BesB	Bessell-B
BesV	Bessell-V
C	Clear
CR	Clear (unfiltered) R-band comp star mag
CV	Clear (unfiltered) V-band comp star mag
C_GaiaG	Clear (unfiltered) Gaia G-band comp star mag
H	NIR 1.6 micron
I	Cousins I
IRB	Infrared Blocking
J	NIR 1.2 micron
K	NIR 2.2 micron
N	No Filter
R	Cousins R
SG	Sloan G
SI	Sloan I
SR	Sloan R
SU	Sloan U
SZ	Sloan Z
TB	Blue Filter (tricolour)
TG	Green Filter (tricolour)
TR	Red Filter (tricolour)
TY	Yellow Filter
U	Johnson U
V	Johnson V
VG	Corrected Green Channel to Johnson V