



BTD-300 Thunderstorm Detector

# Archive Plotter User Guide





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This manual describes the installation and operation of the Senseca BTD-300 Archive Plotter and should be read **fully** before the software is used.

If there are any questions about the software supplied or the instructions contained within this manual please consult Senseca at the above address.

To assist Senseca in the event of questions could you please indicate the equipment type (and serial number if applicable), nature of your question, approximate number of hours in use and your return contact details.

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## 1. Software purpose

The BTD-300 Archive Plotter program provides a simple method of plotting all the data logged from a BTD-300 Thunderstorm Detector. The raw output data is logged by the sensor every 2 seconds and stored in a comma separated (CSV) text file. A new file is produced at regular time intervals (default hourly). The Archive Plotter provides a method of displaying warning times and types, as well as the times and distances of any flashes displayed as a graph with a given start and end time, even if the required timespan covers multiple CSV files. There is a choice of graph format, so the graph can be placed directly into any report or presentation, and the option to output a list of all the flash times, distances and directions in the time period.

## 2. Installation

Requirements:

- PC running Windows 7 or later
- Microsoft Visual C++ 2010 Redistributable Package (freely available from Microsoft and usually already installed on modern computers)

Setup:

All the files needed to run this program are included in a zipped folder available as part of the software included in the purchase of your BTD-300. The software therefore does not require “installation”, but instead simply needs to be unzipped and placed in the desired location on the computer.

Locate the zip file named “BTD warning and flash archive plotter.zip” and save to your computer. Unzip the folder and locate the file named “BTD3XX\_archive\_plotter\_senseca.exe” near the top of the list of unzipped files (see screen capture below). Double clicking on this file will start the program. It is recommended that you create a shortcut to this file on your desktop for ease of access.

 BTD\_archive\_icon.ico

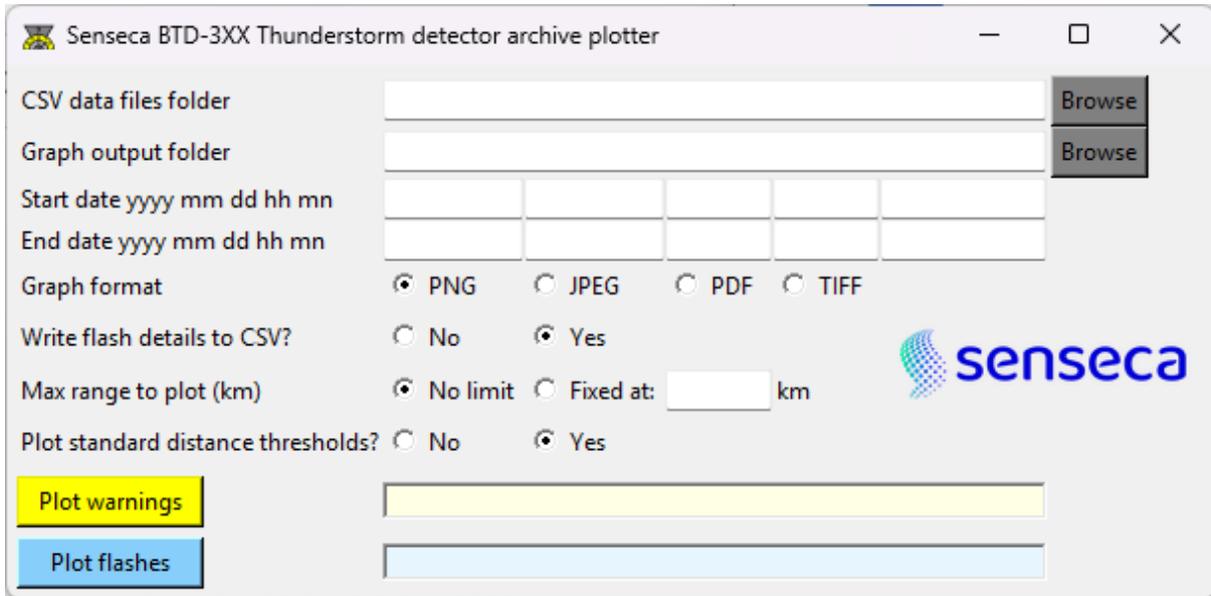
 BTD3XX\_archive\_plotter\_senseca.exe

 Senseca logo 15pct trans.png

← Create shortcut to this file



Once the program is started you will be presented with a user interface, which you can use to enter your data requests:



Firstly, enter the required folder locations (directly or via the “browse” button) where the BTD-300 CSV log files are stored, and the location for the generated graph, ensuring that you have permission to write files to that location.

Next enter the start and end dates and times for the graph. There are 5 boxes for the date and time, which need to be entered as a number. For example, a time interval between 04:30 and 08:00 on 19 July 2014 is entered in the example pictured above.

The format of the output graph is then chosen (default of .PNG due to relative clarity and small file size for storing on the computer). If the graphs are to be printed, it is recommended that the .PDF format is used, since this will provide the sharpest image.

If only warning times and types are to be plotted, then the yellow “Plot warnings” button can now be pressed, producing a file in the chosen output folder entitled “BTD300\_warning\_flags\_dd-mm-yyyy” where dd, mm and yyyy are your chosen start day, month and year respectively. The graph shows the time of “caution” (lowest level - 1), “warning” and “alert” (highest level - 3) on the top plot, with the warning flag identification shown in the lower plot. Details of the warning flags (the event which triggered the warning) can be found in the manual and summarised in the table on the next page. Note it is possible to add warning flag numbers if both are triggered in the same 2s interval. For example, a warning flag of 6 would infer strongly charged rain and electric field (flag 4) with the charged rainfall component being sufficiently strong to warrant an alert of its own right (flag 2), or strong electric field (flag 1) and distant lightning (flag 8) will produce a flag of 9.



Warning Flag	Description	Warning level
1	Strong electric field	2 (overhead threat)
2	Charged precipitation	1 (overhead threat)
4	Strong electric field and charged precipitation	2 (overhead threat)
8	Distant lightning	1
16	Overhead lightning	3
32	Vicinity lightning	2

For plotting the time and distance of flashes, you have three additional options:

- “Write flash details to CSV?”

If “Yes” is selected, a CSV file listing the distance and direction of each flash detected by the BTD-300 and the time corresponding to the beginning of the two second sample interval containing the flash(es). The distance and direction of up to four flashes which occurred in the same two second update interval are written in successive columns of the same time row. The output CSV files is named “BTD300 CSV extracted flashes dd-mm-yyyy”, where dd, mm and yyyy are your chosen start day, month and year respectively.

- “Max range to plot (km)”

If no limit is selected, the graph will be plotted to include all the flash distances. However, if a shorter maximum distance is required for display purposes then the “Fixed at:” button should be selected and the required maximum range entered (in kilometres) into the adjacent box.

- “Plot standard distance thresholds?”

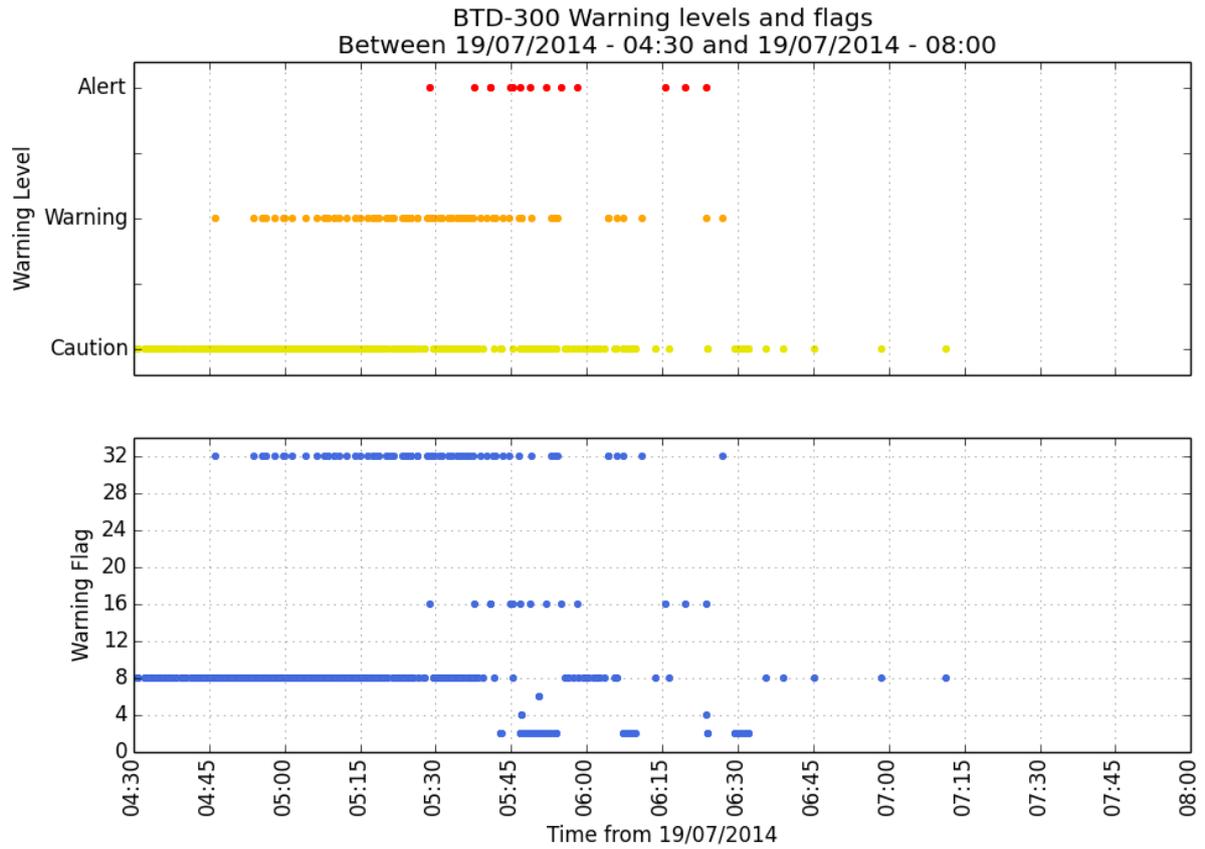
This option is selected by default and will plot horizontal lines on the graph corresponding to the distance of standard (US FAA) thunderstorm reporting zones, which are also the default warning thresholds for the BTD-300. These are Alert (5 nmi = 9.26 km), Vicinity (10 nmi = 18.52 km) and Distant (30 nmi = 55.56 km), with additional lines marking the middle of Distant zone (20 nmi = 37.04 km) and the maximum warning range of the BTD-300 (45 nmi = 83.34 km). Should you not want these lines plotted, then select the “No” option.

Press the “Plot flashes” button to generate the graph, which will be named “BTD300\_csv\_flashes\_with\_time\_dd-mm-yyyy”, where dd, mm and yyyy are your chosen start day, month and year respectively.

The next page shows example graphs produced by the plotter.



“Plot warnings” output:



“Plot flashes” output:

