Arest Software User Guide

Version: 1.2.7
Revision Date: 2018-11-28

Purpose

- Collect data from WASP loggers over the Internet using the API REST protocol.

- Collection may be done automatically according to a user specified schedule or manually at will.

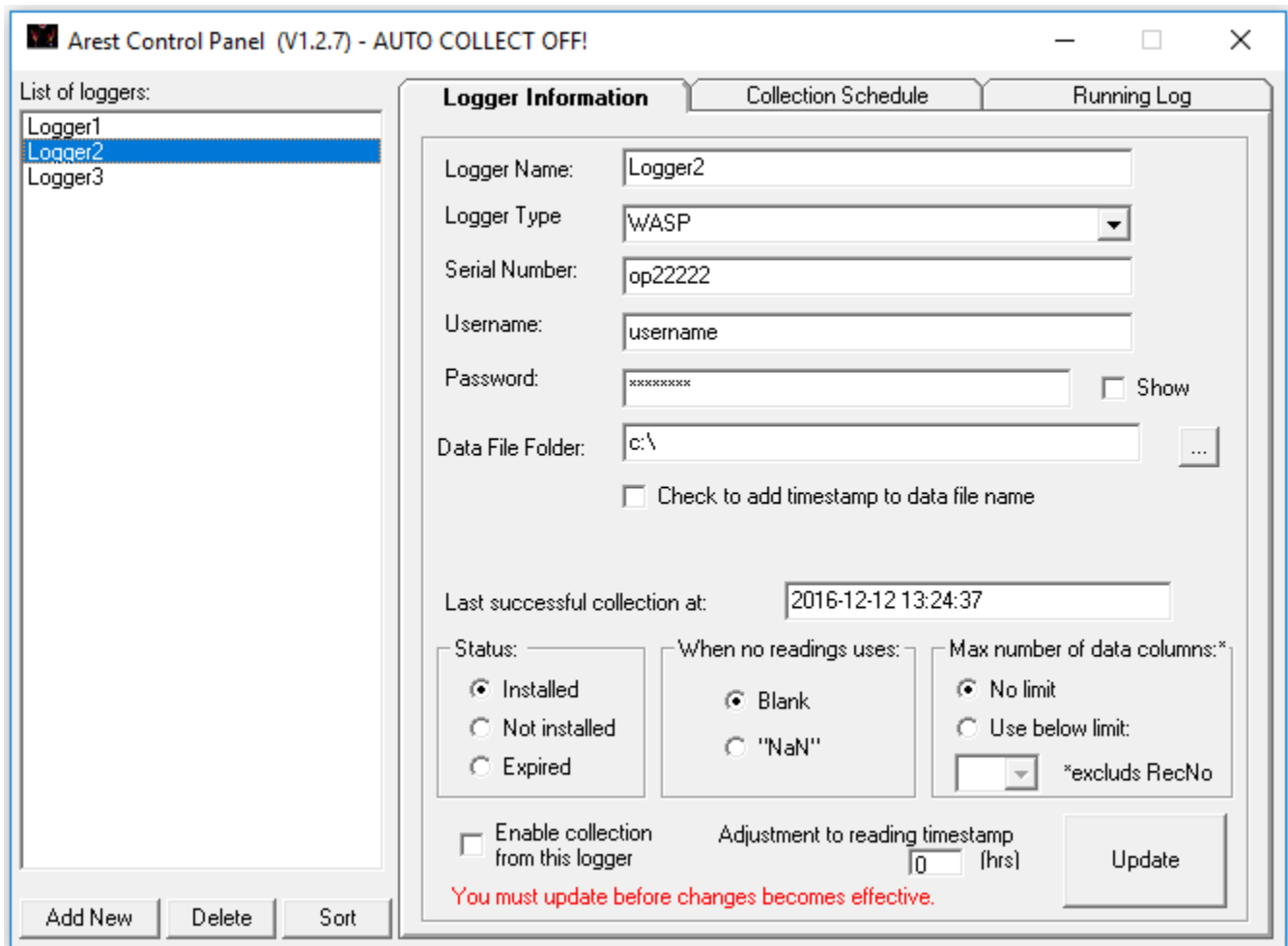- Store the data compatible to the Campbell Scientific Table Data Format.

Installation

- Download the latest set up file from the URL provided.
- Unzip arestsetup.zip to get setup.exe. Run it to install on to your hard drive.
- A shortcut for Arest.exe will be placed on the desktop.

Arest Control Panel

Control Panel is where you perform all functions of the Arest.exe
The below screen shot is what you'll see when you run it for the first time. On the left is a list of loggers. On the right, there are 3 tabs for Logger Information, Collection Schedule and Running Log.

Logger Information

When you highlight a logger in the list of loggers in the left column, the configuration settings for this logger will be displayed on the right of the control panel.

Logger Name: `Logger2`	A text string that describes the logger
Logger Type `WASP` ▼	Type of logger. WASP is the only selection at present
Serial Number: `op22222`	Serial Number of the logger. For WASP, this is typically "opxxxxx". (use lower case for op)
Username: `username`	Enter the username that you use to sign on to your WASP web portal
Password: `********` ☐ Show	Enter the password that you use to sign on to your WASP web portal. It is normally hidden unless you check the "Show" option to the right
Data File Folder: `c:\` ... ☐ Check to add timestamp to data file name	• This is where you'll save the data files from the loggers after retrieval. You can change it by clicking the "…" (browse) button on the right • By default, the data file name is the serial number with ".dat" appended. (e.g. op22222,dat). Newly downloaded data will be appended to the data file if it already exists. • You can change the default data file name to include a timestamp at which the data were downloaded by checking the box "Check to add timestamp to data file name" (e.g. op22222_20181128184052.dat)
Last successful collection at: `2016-12-12 13:24:37`	This is the timestamp of the latest data set that was successfully collected from this logger. Arest will keep track of this and use it as the starting time for future data collection. No user input is required here. When you add a new logger, Arest will assign a default date of 2-year before the current time.
Status: ⦿ Installed ○ Not installed ○ Expired	The WASP status as set on the web portal
When no readings uses: ⦿ Blank ○ "NaN"	Select between Blank and "NaN" (including the quotation marks) to use as the symbols to represent "no reading" in the final data files. You should select one that is compatible with your data processing and presentation

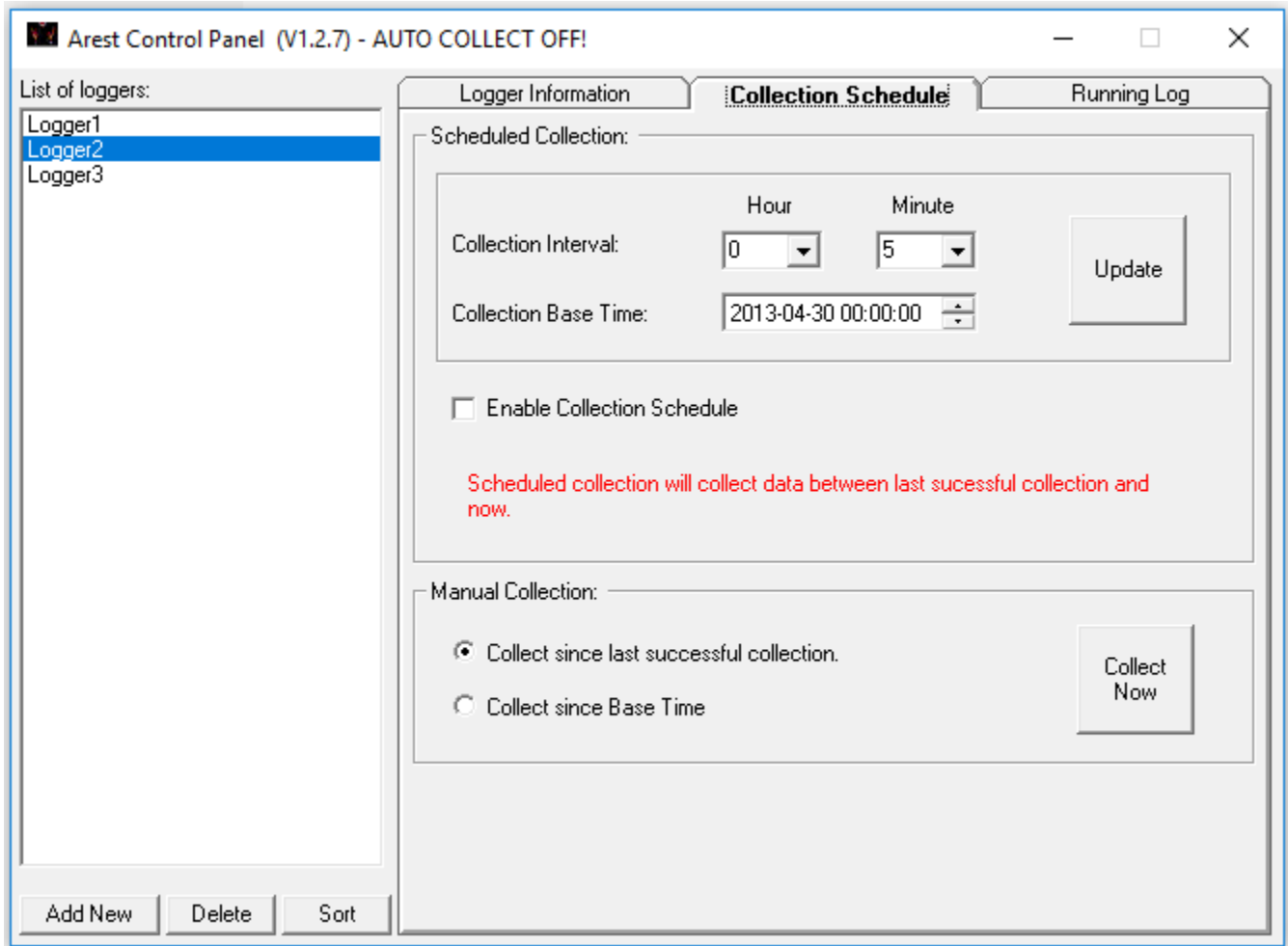|	
	software. For Argus, select "Blank", for VDV, select "NaN".
Max number of data columns:* ○ No limit ○ Use below limit: [ ] ▾ *excluds RecNo	Select between "No limit" and "Use below limit". You can set a limit between 1 and 200. Once set, the number of columns in the final *.dat file will not exceed this limit. Use this to fix the number of data points per data set. Exclude the timestamp and Record No. columns when you count the data columns.
☐ Enable collection from this logger	Uncheck this option if the logger you highlighted is not ready for data collection (either scheduled or manual) yet.
Adjustment to reading timestamp [0] (hrs)	If you are collecting data from a WASP in a different time zone, you can enter the time adjustment in hours here to modify the timestamp of the data downloaded. The number can be integer or fraction, negative or positive.
Update You must update before changes becomes effective.	Press this button will update any changes you made to the logger information. IMPORTANT - you must do this before the changes are taken into effect.
Add New	Click on this button to add a new logger to the list. Arest will fill in the logger information with default values. You must edit and update them as required.
Delete	You may remove a logger from the list by clicking on this button.
Sort	By default, the loggers in the list are arranged in the order them are entered. You may re-arrange loggers in alpha-numeric order by clicking on this button. The caption of the button will change to "Unsort" for you to click if you wish to go back to the default arrangement.

Summary Logger Information

Place the mouse in the "List of Loggers" and click on the right mouse button, the Logger information will be displaced in table form (see below) in a pop-up window.

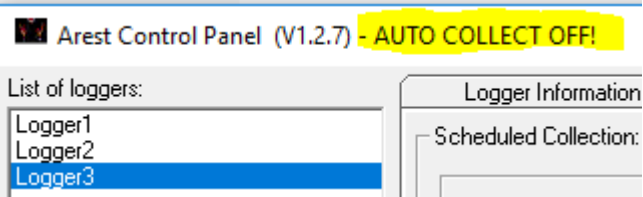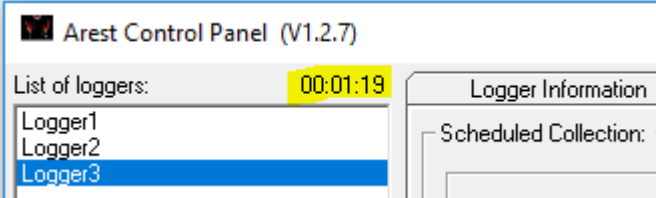| #	Logger Name	SN	Latest Data Download	Data File Folder	Enabled	Status	If No Reading Uses	Max Data Column	Timestamp Adj.(hrs)	Filename + timestamp
1	Logger1	op11111	2013-01-01 00:00:00	E:\arest\	True	Installed		No limit		False
2	Logger2	op22222	2016-12-12 13:24:37	E:\arest\	False	Installed		No limit		False
3	Logger3	op33333	2016-12-12 13:24:40	E:\arest\	True	Installed		No limit		False

Please note that
- scheduled collection (if enabled) is suspended when above summary logger information is displayed.
- The contents of the table can be displayed in ascending ordered according to the values in individual column by clicking of the heading of that column.

- **Collection Schedule**
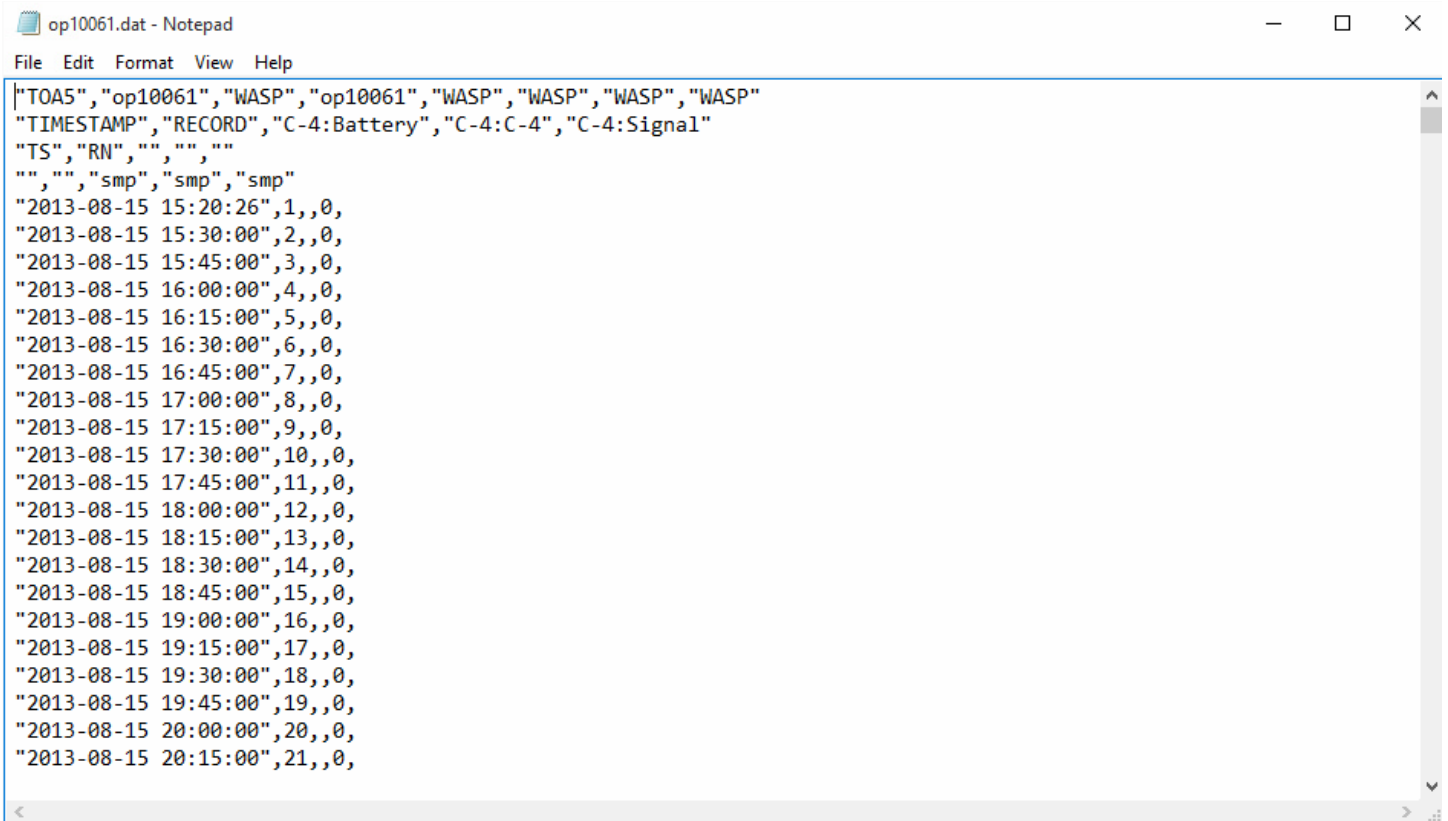
Scheduled Collection

	This is how often Arest will connect to the loggers that are enabled to retrieve data. You can select the interval with a combination of hours and minutes.
	This time has 2 uses: 1. This is the theoretical time that the first scheduled collection would take place. All subsequent scheduled collection times are calculated from this Base Time. For example: if the collection interval is every 5 minutes and the Collection Base Time is 2013-04-30 00:00:00 then the

	collection (polling) will take place at the below time: 00:00:00 00:05:00 00:10:00 00:15:00 ….. etc 2. This is the time from which you wish to manually collect all data till now.
Update	You must click this button to made changes to the Collection Interval and Collection Base Time effective.
☐ Enable Collection Schedule Scheduled collection will collect data between last sucessful collection and now.	click on this check box will initiate the scheduled collection. Scheduled collections are performed at the collection interval and all data between the last successful data collection and now will be retrieved. When scheduled collection is enabled, a count-down clock will be displayed on the top-right of the list of loggers to notify you how long before the next collection will take place.
Arest Control Panel (V1.2.7) - AUTO COLLECT OFF! List of loggers: Logger Information Logger1 Logger2 Logger3 Scheduled Collection:	When the "Enable Collection Schedule" is unchecked, the warming "AUTO COLLECT OFF!" will be displayed.
Arest Control Panel (V1.2.7) List of loggers: 00:01:19 Logger Information Logger1 Logger2 Logger3 Scheduled Collection:	When the "Enable Collection Schedule" is checked, the warming will disappear and a count-down timer will be displayed till the next scheduled collection.
Manual Collection: ⦿ Collect since last successful collection. ○ Collect since Base Time Collect Now	click this button to initiate a data collection immediately. You can select one of the 2 options for the period of data: • Collect since last successful collection • Collection since Base Time

View Collected Data

Place the mouse pointer over one of the logger names in the "List of Loggers" and double-click the left mouse button, you can view the content of the data file (if still exists in the data file folder) collected from this logger. This function requires the association of a text viewing program (such as Notepad.exe) for files with .dat extension.

```
op10061.dat - Notepad                                              —   □   ×
File  Edit  Format  View  Help
"TOA5","op10061","WASP","op10061","WASP","WASP","WASP","WASP"
"TIMESTAMP","RECORD","C-4:Battery","C-4:C-4","C-4:Signal"
"TS","RN","","",""
"","","smp","smp","smp"
"2013-08-15 15:20:26",1,,0,
"2013-08-15 15:30:00",2,,0,
"2013-08-15 15:45:00",3,,0,
"2013-08-15 16:00:00",4,,0,
"2013-08-15 16:15:00",5,,0,
"2013-08-15 16:30:00",6,,0,
"2013-08-15 16:45:00",7,,0,
"2013-08-15 17:00:00",8,,0,
"2013-08-15 17:15:00",9,,0,
"2013-08-15 17:30:00",10,,0,
"2013-08-15 17:45:00",11,,0,
"2013-08-15 18:00:00",12,,0,
"2013-08-15 18:15:00",13,,0,
"2013-08-15 18:30:00",14,,0,
"2013-08-15 18:45:00",15,,0,
"2013-08-15 19:00:00",16,,0,
"2013-08-15 19:15:00",17,,0,
"2013-08-15 19:30:00",18,,0,
"2013-08-15 19:45:00",19,,0,
"2013-08-15 20:00:00",20,,0,
"2013-08-15 20:15:00",21,,0,
```

Running Log

You may monitor the progress of data collection (both scheduled and manual) using this tab. When collection is initiated and on-going, time stamped messages will be displayed here.

Send log to file - By default, the above messages and any error messages will be send to a file in the temporary folder on your PC's hard drive. You can disable it by un-checking this check box.

View Log file - You can view the content of the log file by clicking on this button.
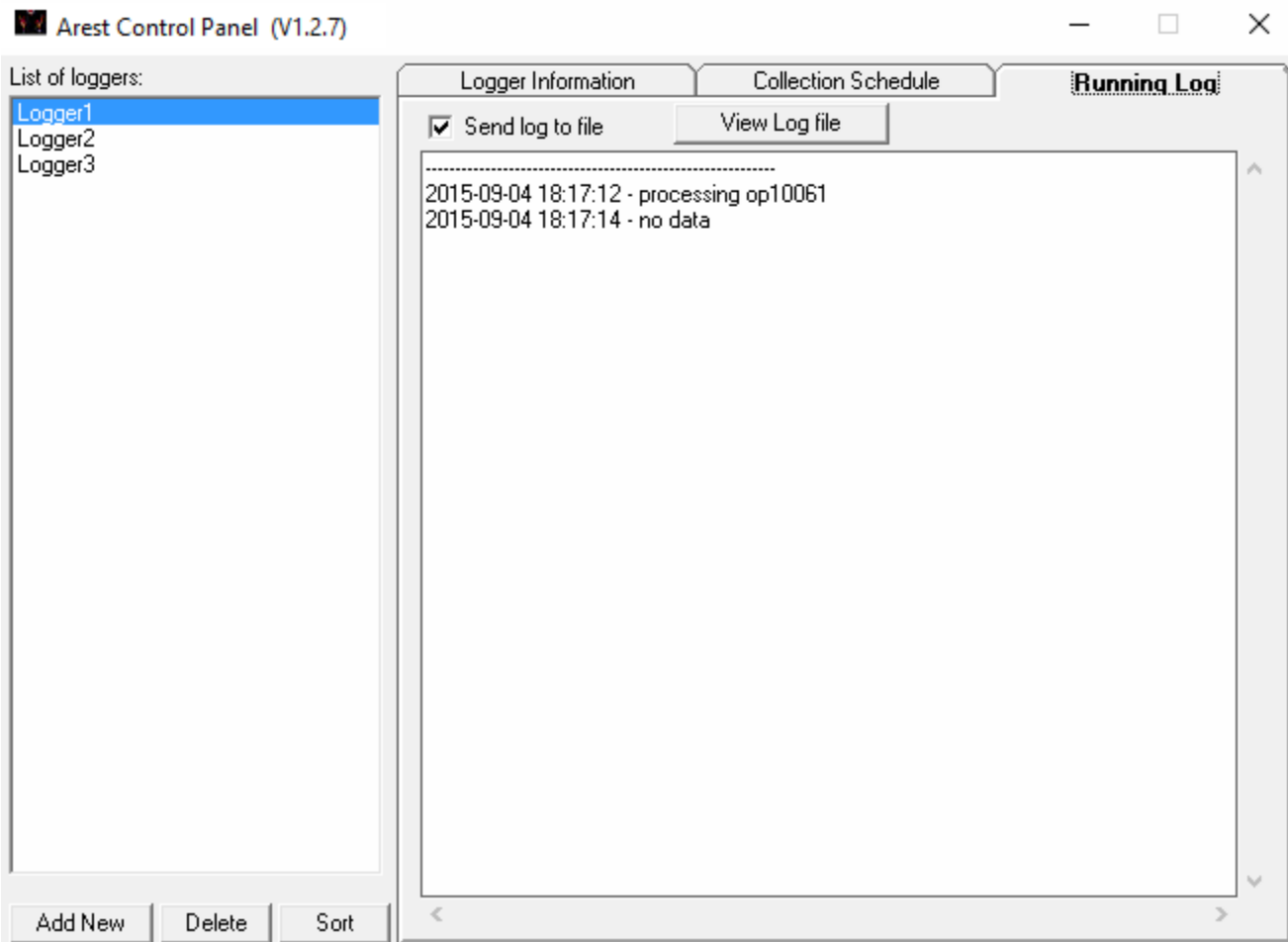
Data Format

Data is collected in Campbell Scientific Inc's Table Data format

- Values are comma separated
- File extension is .dat
- One file is created per WASP logger
- Column definitions are different for various models of WASP.
- Below is a typical column definition for WASP loggers

Timestamp	Record #	Native Inputs	Calculated Inputs	Signal Level	Battery Level
mm/dd/yyyy hh:mm:ss	Integer	If more than one calculated input is configured, additional columns will be added to show data	If more than one calculated input is configured, additional columns will be added to show data	Level between 0-30	In volts

An example of how data may look when opened using Excel is shown in the screen shot below:

	A	B	C	D	E	F	G	H	I	J
1	TOA5,"op8783","WASP","op8783","WASP","WASP","WASP","WASP"									
2	TIMESTAMP,"RECORD","Demo WASP:Signal","Demo WASP:Battery","Demo WASP:Polynomial Calibration (n									
3	TS,"RN","","","","","","",""									
4	,"","smp","smp","smp","smp","smp","smp","smp"									
5	2013-12-16 00:00:00,1,,,,,,,0.0162,10.56									
6	2013-12-16 00:40:06,2,,3.5254,,,,,									
7	2013-12-16 00:40:23,3,10,,,,,,									
8	2013-12-16 00:40:35,4,,,,,,29102,,									

Autostart Arest

If necessary, you can start Arest automatically when Windows starts by creating a short cut named "Arest Autostart" and place the short cut in the "Startup" folder. The properties of the short cut are shown below. It involves adding a space then 'autostart' after the full pathname of the program ("C:\Program Files (x86)\Arest\Arest.exe").
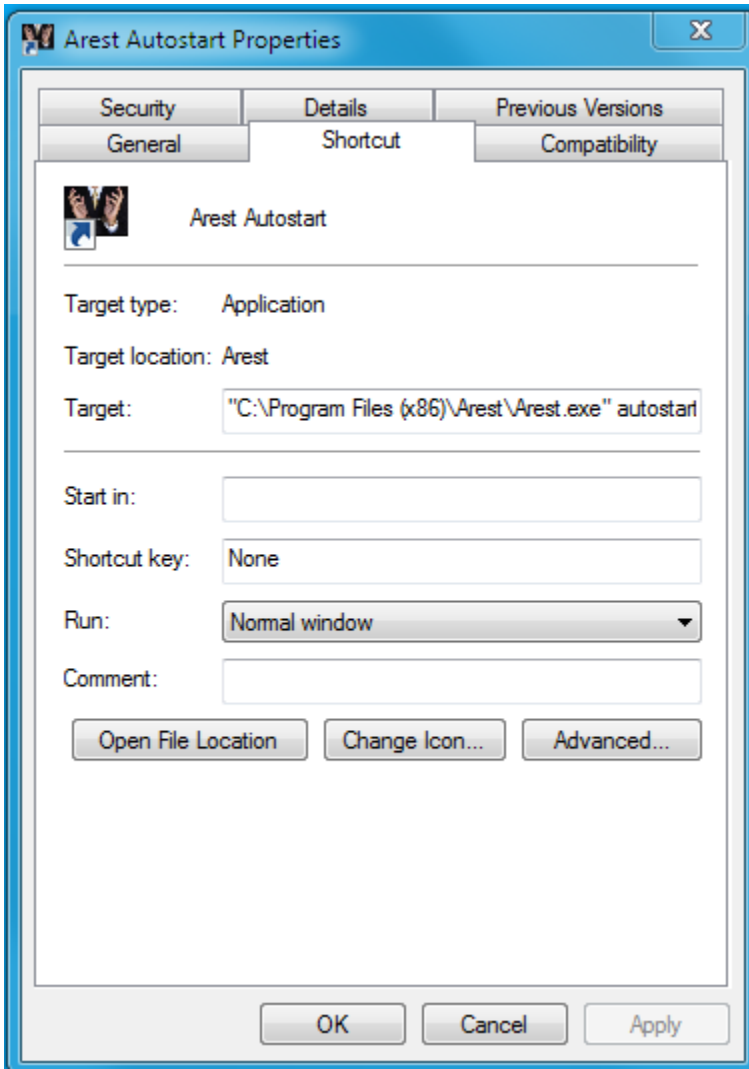
This will start the Arest and enable the collection schedule automatically when Windows starts.

More Information on Number of Columns

- After you upgrade to and run V1.1.9 for the first time, Arest will stores the names and current order of the data columns in database (Arest.mdb). This name and order relationship will be maintained in all future *.dat files despite any change in column order on the WASP web portal, thus avoiding problem when importing *.dat to a 3rd-party data management program.

  For example: if "op11111:Battery" is the 2nd column now, it will stay at 2nd column in all future *.dat files, as long as the column name remains unchanged and the Arest.mdb is not deleted and recreated.

  When a new sensor is added in the web portal, it will be add to the end of current columns. When an existing column, such as "op11111:Battery" is removed on the web portal, the name "op11111:Battery" will remain as the 2nd column in the data file except there will be no readings in the 2nd column.

- You can now fix the number of data columns in the *.dat files by specifying a "Max number of data columns" for each WASP datalogger. This allows you to fix the number of columns in future data files to the current number, by using the current number of columns as the "Max number of data columns". Once selected, any future increase of data columns by the web portal will be ignored. Please note that the "Max number of data columns" excludes the timestamp and the record number (RecNo) columns.

- You can view the list of loggers with summary logger information in the table form by right mouse click in the box of list of loggers

- You can view the contents of a *.dat file by double-click on a logger name in the list of dataloggers. The content of the data file (if it has not been moved) will be open with the default viewing program for *.dat files. You may need to associate a text viewing program (such as Notepad.exe) to files with the *.dat extension if it has not been done on your PC already.