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All About the MultiLogger Setup File Application Note #7

Overview

The MultiLogger setup file, the file `multilogger.ini` located in the MultiLogger install directory, details a variety of settings that MultiLogger will use to populate list boxes as well as to configure various screens.

Many of the settings in the file may be user modified, some are modified by MultiLogger in the course of operation, some are constants to be used by MultiLogger. Keywords that may NOT be modified by the user are shown in italics.

First, a few notes on the terminology. **Section** refers to the bracketed item in the setup file (e.g. **[Version]**) and **Keyword** describes the items listed under the section (e.g. **Version=**). Some keywords have more than 1 parameter, in this case separate them with commas (e.g. **Device#2=SM192,smodule.ins**).

[Version]

Version=1.4.3

- » The version of the setup file (and MultiLogger software) are indicated by this keyword in the Version section. The latest version, including up-to-date feature update list, is available at the Canary Systems website (www.canarysystems.com). It is available free of charge to registered users of MultiLogger.

[Startup]

Load Last Configuration=1

Last Configuration File=default.cfg

Show Toolbar=1

Main Heading=MultiLogger

Height=646

Width=853

Left=84

Top=44

Window State=0

Company=ane

Animate=globe1.gif

Max Excel Row=65536

Various system startup options are defined in the Startup section.

- » **Load Last Configuration** can be set to **1**, true, or **0**, false, to indicate whether the **Last Configuration File** is loaded when MultiLogger is started. The default is **1**. When loading a configuration file using the command line parameters this option is ignored.
- » **Last Configuration File** lists the name of the configuration file that was last loaded. If **Load Last Configuration** is set to **1** then this file will be loaded the next time MultiLogger is started. You may also specify a configuration file to be loaded at startup using the command line parameters of MultiLogger. A configuration file specified on the command line overrides this setting.
- » **Show Toolbar** can be set to **1**, true or **0**, false to enable or disable the MultiLogger Toolbar. This may be desirable when you want to maximize the display area for the monitoring or another purpose. The default setting is **1**, to display the toolbar.

- » **Main Heading** specifies the root section of the caption displayed for the MultiLogger form. The default is MultiLogger but can be changed to display a company name or other information.
- » **Height, Width** specify the size of the main form of MultiLogger when it was last running. These settings are automatically updated each time MultiLogger is closed.
- » **Left, Top** specify the position of the main form of MultiLogger when it was last running. These settings are updated each time MultiLogger is closed.
- » **Window State** specifies the maximized or minimized state of MultiLogger when last executed.
- » **Company** specifies the supplier of the software.
- » **Animate** specifies the animated gif that displays as the right-most button on the toolbar. You may specify a different animated gif as long as it is located in the MultiLogger program directory.
- » **Max Excel Row** specifies the row limit when copying monitor data to Excel.

[Datalogger Models]

Model#1=Campbell CR10

Model#2=Campbell CR10X

Model#3=Campbell CR500

- » The Datalogger Model list on the Configuration tab of MultiLogger is populated from this section. These are the currently supported dataloggers.

[Data Collection]

All Data Gap=1

- » When the Collect Option of the Data Collection configuration is specified as **All Data** then this keyword indicates how many locations are skipped between the present location pointer and the oldest location pointer. The default is 1 indicating that all data are collected from the datalogger when All Data is specified. This number may need to be increased in situations where the scan rate is fairly short (less than 10 seconds) and the oldest location pointer is changed rapidly. MultiLogger may have trouble collecting all the data because during the determination of the oldest location pointer it changes. Two problems may appear, one, only a small number of locations would be collected or, two, the data collection would abort.

[Connection Devices]

Device#1=None,none.scr

Device#2=SC32A,sc32a.scr

Device#3=Phone Modem,phone.scr

Device#4=MD-9 MultiDrop,md-9.scr

Device#5=Digital Wireless,digital.scr

- » The Connection Device lists on the Connection tab of MultiLogger are populated from this section. The first parameter is the name that appears in the lists, the second identifies the script file that will be loaded when the device is selected. See Appendix D.2 for more information.

[Multiplexer Models]

Model#1=None,This does not specify a multiplexer

Model#2=ANE MultiMux,Canary Systems 16/32/48 channel multiplexer

Model#3=ANE MiniMux,Canary Systems 16/32 channel multiplexer

Model#4=ANE DaisyMux,Canary Systems 16 channel daisy-chain multiplexer

Model#5=Geokon 8032,Geokon 16/32 channel multiplexer

Model#6=Geokon 8033,Geokon 16 channel multiplexer

Model#7=CSI AM32,Campbell Scientific 32 channel multiplexer

Model#8=CSI AM416,Campbell Scientific 16 channel multiplexer

Model#9=Geokon DaisyMux,Geokon 16 channel daisy-chain

- » The Multiplexer Model list is populated with this list. These are the currently supported multiplexers. The first parameter describes the model name, second parameter is the description displayed when pressing the Model button.

[Data Output]

Output#1=Always,always.ins

Output#2=During Alarm,alarm.ins

- » Custom Data Output techniques may be supported by adding them to the **Data Output** section. Index the output types as shown above. The first parameter in each keyword is used to populate the Data Output list on the Configuration tab of MultiLogger. The second parameter refers to the instruction file that will be incorporated into the datalogger program that MultiLogger generates.

[Storage Devices]

Device#1=None,none.ins

Device#2=SM192,smodule.ins

- » Storage devices such as Storage Modules or PCMCIA cards may be supported by adding them to the **Storage Devices** section. Index the device numbers as shown above. The first parameter in each keyword is used to populate the Storage Device list on the Configuration tab of MultiLogger. The second parameter refers to the instruction file that will be incorporated into the datalogger program that MultiLogger generates. **None** does not contain any instructions.

[Alarm Actions]

Action#1=None,none.ins

Action#2=Enable Port,port.ins

- » Alarm actions may be added by listing them after the **Alarm Actions** section as shown above. Index the alarm actions as shown. The first parameter in each keyword will be used to populate the Alarm Action list on the Configuration tab of MultiLogger. The second parameter refers to the instruction file that will be incorporated into the datalogger program that MultiLogger generates. **None** does not contain any instructions.

[Units]

Conversion#1=Default,None,None,1.0

Conversion#2=Pressure,psi,psi,1.0

Conversion#3=Pressure,psi,inches H2O,27.730

Conversion#nn=

- » Additional conversion units may be added to the Units Conversion lists of the Channel Configuration form by listing them under the **Units** section. There are 4 parameters in each keyword. The first defines the Units Type category and is used to populate the Units Type list of the Channel Configuration form. The second defines the Input Units or the default units of the calibration coefficients, either Linear or Polynomial. It is also used to populate the Input Units list of the Channel Configuration form. The third defines the Output Units, or the units to convert the calibration coefficients to. This entry is also used to populate the Output Units list of the Channel Configuration form. The last parameter is the factor to convert from the Input Units to the Output Units. For every new category type you must add a default units category. For example, as shown above, there is a **Pressure,psi,psi,1.0** keyword for the Pressure category. When adding keywords be sure to add them at the end of the list and increment the index number.

[Gage Types]

Type#1=None, None, None, none.ins, 1, 0, This does not specify a measurement

Type#2=Vibrating Wire, Generic, Low Freq-12V, vw-low.ins, 1000, 1, A vibrating wire gage in the 400-1000Hz range with a 12V pluck

Type#3=Vibrating Wire, Generic, Low Freq-5V, vw-low.ins, 1000, 2, A vibrating wire gage in the 400-1000Hz range with a 5V pluck

- » All available gage types, makes and models that are available on the Channel Configuration form, whether for instruments directly connected to the wiring panel or through multiplexers, are defined in the **Gage Types** section. The first parameter is the type, the second the make, third the model, fourth is the instruction file that contains the datalogger instructions used to make the gage measurement, fifth is the zero factor, sixth is the MultiSensor Interface assignment and the last parameter is the description. The zero factor scales the magnitude of the readings displayed in the Zero mode and is used to adjust the Linear coefficients gage factor to maximize the 5 digit resolution limitation with entering this value. For example, raw vibrating wire instrument readings are typically in "digits" which translates to a range of values between 2,000 and 10,000. If the gage factor is fairly small, say for example, 0.0004629, then two of the least significant digits would be "lost" when entering the Gage Factor. To correct for this the raw instrument readings recorded in the datalogger are digits x 10⁻³, yielding a typical range of between 2.000 and 10.000 The gage factor is then divided by the zero factor to correct the magnitude of the raw instrument readings. Confused?

[MultiSensor Types]

Type#0=0, 0, 0, 0, 0, 0

Type#1=32, 10, 0, 133, 0, 0

- » The MultiSensor Interface requires a 6 digit code to configure the channel for the specified instrument. See Application Note #1 available from Canary Systems for an explanation of MultiSensor Interface Assignments. The Application Note is available by contacting them directly or via their website.

[Upper Channel Devices]

Type#1=None, none.ins, 0, This does not specify a measurement

Type#2=Thermistor-°C, thermistorc.ins, 20, A YSI44005 type thermistor with output in °C

Type#3=Thermistor-°F, thermistorf.ins, 20, A YSI44005 type thermistor with output in °F

- » The Upper Channel Devices you may select on the Channel Configuration form are derived from this section. The first parameter in each keyword is used to populate the list, the second is the file containing the instructions used to make the measurement, the third parameter is the MultiSensor Interface assignment and the fourth is the description. **None.ins** does not contain any instructions.

[Processing Files]

File#1=None, none.ins

File#2=CSI 247W Probe, csi247correction.ins

File#3=Barometric Correction, barocomp_mbar-m.ins

- » Processing Files are instruction files that are included in the datalogger program after all the instruments on a multiplexer are read. This section provides the source for the Processing File list on the Extended Properties form. The first parameter is the listing for the Processing File list, the second is the respective instruction file.

[Input Storage Labels]

Location#1=Year,true,false,0,0
Location#2=Julian_Day,true,false,0,0
Location#3=Time(HHMM),true,false,0,0
Location#4=Seconds,true,false,0,0
Location#5=Decimal_Day,true,false,0,0
Location#6=Elapsed_Hours,true,false,0,0
Location#7=Elapsed_Minutes,true,false,0,0
Location#8=Elapsed_Seconds,true,false,0,0
Location#9=Battery_Voltage,true,false,0,0
Location#10=Panel_Temp,true,false,0,0
Location#11=Read_Timer,false,false,0,0
Location#12=Counter,false,false,0,0
Location#13=Current_Interval,false,false,0,0
Location#14=Interval_Length,false,false,0,0
Location#15=Iterations,false,false,0,0
Location#16=Program_Mode,false,false,0,0
Location#17=Read_Sequence,false,false,0,0
Location#18=Reading,false,false,0,0
Location#19=User_Location_1,false,false,0,0
Location#20=User_Location_2,false,false,0,0
Location#21=User_Location_3,false,false,0,0
Location#22=User_Location_4,false,false,0,0
Location#23=User_Location_5,false,false,0,0
Location#24=User_Location_6,false,false,0,0
Location#25=User_Location_7,false,false,0,0
Location#26=User_Location_8,false,false,0,0
Location#27=User_Location_9,false,false,0,0
Location#28=User_Location_10,false,false,0,0
Location#29=User_Location_11,false,false,0,0
Location#30=User_Location_12,false,false,0,0

- » Input Storage locations 1 through 18 are used by the datalogger program for various functions and locations 19 through 30 are available for user program modifications. The first parameter in each keyword is the label that will be used to identify the location in the monitor mode. The second parameter can be true or false to indicate whether the location is stored to Final Storage. The third parameter can also be true or false to indicate whether alarm checking is used. The last two parameters are the low limit and high limit, respectively, used for the alarm checking. The user locations, locations 19-30, are usually customized using the Configure User Locations form.

Please note the following acceptable characters for use in your labels:

- Lower case alphabet, a through z.
- Upper case alphabet, A through Z.
- Numeric, 0 through 9.
- The underscore character, _.
- The dollar sign, \$.

Do not use any other characters, such as commas, spaces or other special characters in your labels!

[Text Monitor]

Max Display Digits=7

Show Errors=0

Show Locations=1

Display Grid Height=16

Display Grid Font Size=8

- » **Max Display Digits** specifies the number of digits displayed for the Input Storage values in the Monitor mode.
- » **Show Errors** is set to **1**, true or **0**, false, to enable or disable the display of the monitor errors on the text monitor screen (below the ports group). The monitor errors gives some indication regarding the quality of the communication.
- » **Show Locations** is set to **1**, true or **0**, false, to enable or disable the display of the number of monitor locations (both text and graphical) on the text monitor screen (below the ports group).
- » **Display Grid Height** specifies the height of each grid row on the Text Monitor tab. The width of each grid column is automatically sized depending on the column contents and font size.
- » **Display Grid Font Size** specifies the point size of the font used for the display grid on the Text Monitor tab.

[Graphical Monitor]

Max Chart Series=16

Max Chart Values=200

Chart#1 Top Gap=20

Chart#2 Top Gap=20

Chart#3 Top Gap=20

Chart#4 Top Gap=20

Chart#1 Bottom Gap=20

Chart#2 Bottom Gap=20

Chart#3 Bottom Gap=20

Chart#4 Bottom Gap=20

Chart#1 Left Gap=50

Chart#2 Left Gap=50

Chart#3 Left Gap=50

Chart#4 Left Gap=50

Chart#1 Right Gap=10

Chart#2 Right Gap=10

Chart#3 Right Gap=10

Chart#4 Right Gap=10

Keep Data=1

Various Graphical monitor options are configured in the Graphical Monitor section.

- » **Max Chart Series** determines how many series of data can be displayed on each axis of each monitor chart. The default is 16 with a range of 1 through 16.
- » **Max Chart Values** determines how many values for each series may be used to build each monitor chart. The default is 200. The minimum value is 1, maximum is only limited by available memory. It is recommended, due to the demands of re-creating the chart with a large number of values, that the maximum be less than or equal to 2000 values.
- » **Chart Top, Bottom, Left, Right Gap** specifies the number of pixels between each side of each monitor chart and the edge of the displayable area.
- » **Keep Data** can be set to 1, true or 0, false, to indicate whether the templates used to store chart configuration should also keep the data that were acquired while the Monitor mode was active. This feature allows you to continue charting where you left off from a previous monitoring session. Please note that changing chart settings such as the elements being charted will cause the chart to be cleared of all data.

[Alarm Type]

Type#1=None,none.ins,This does not specify an alarm type.

Type#2=Low and High,lowhigh.ins,Set alarm flag if reading falls outside low and high limits.

- » Alarm Type entries are listed in the Type list box in the Check Alarms section of the Channel Configuration form. The first parameter is the actual name that will appear in the list box, second parameter is the instruction file which contains the instructions to be incorporated into the datalogger program, third parameter is the description.

[Terminal]

Font=Terminal

Size=10

- » **Font** specifies the font type for the terminal emulation window
- » **Size** specifies the font size for the terminal emulation window.

[Input Storage Assignments]

Assignment#1=YearLoc,1

Assignment#2=JulianLoc,2

Assignment#3=TimeLoc,3

- » Input Storage Assignments are used by MultiLogger to resolve references to Input Storage locations both internally and in all instruction files. Generally speaking the default settings should not be modified, however the list may be increased depending on your needs.

[Subroutine Assignments]

Assignment#1=ReadMux0Sub,89

Assignment#2=ReadMux1Sub,1

Assignment#3=ReadMux2Sub,2

- » Subroutine Assignments are used by MultiLogger to resolve references to subroutine names, both internally and in all instruction files. Generally speaking the default settings should not be modified, however the list may be increased depending on your needs.

[Miscellaneous Variables]

Assignment#1=DelayReps,100

Assignment#2=MinInterval,1

Assignment#3=MaxInterval,86400

Assignment#4=MaxIterations,255

- » Miscellaneous Variables are used by MultiLogger to resolve references to variables both internally and in all instruction files. Generally speaking the default settings should not be modified, however the list may be increased depending on your needs.

[Print Setup]

Font=Arial

Size=10

Orientation=portrait

- » **Font** specifies the report font type.
- » **Size** specifies the report font size.
- » **Orientation** specifies the orientation of the report, portrait or landscape.