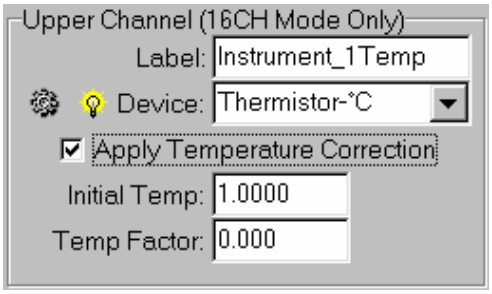
75 Newport Road, Suite 211
New London, NH 03257
Voice: (603) 526-9088
Fax: (603) 526-9004
info@canarysystems.com
www.canarysystems.com

How To Use a Single Temperature Measurement for Correction

MultiLogger Application Note #1

Overview



MultiLogger includes a function in the channel configuration form to activate temperature correction for a particular channel to which a temperature measuring device is attached.

However, what of the circumstance where you have a single temperature measurement that will be used to correct multiple channels? This too can be accomplished in MultiLogger using the Processing File/Extended Properties capability.

A Processing File is simply a list of additional instructions that execute after the instruments on a mux (or instruments that are directly connected) are all read, including any math or conversion units that have been applied. Press the  button located on the channel configuration form to access the Processing File/Extended Properties form. The MultiLogger help file contains much more information on the Processing File/Extended Properties form, but in short this form allows the selection of a Processing File (the instructions that will execute) and the entering of any Extended Properties that are associated with the requested file. Extended Properties refer specifically to values that MultiLogger must look up or are entered by the user so that the Processing File can function properly.

In the case described above we will use this feature to select a Processing File that will use a single temperature measurement to apply temperature correction to any number of channels. Following are the steps that must be followed:

1) The Processing File must be built. The file must be stored in the MultiLogger program directory, usually Program Files\MultiLogger.
2) The file name must be added to the [Processing File] section of the multilogger setup file.
3) The file must be selected in the Processing File/Extended Properties form.
4) The Extended Properties must be configured for the channel.

Detailed instructions for each of these steps follows in this MultiLogger Application Note.

1) Build the Processing File called tempcorrection.ins using the MultiLogger Editor (press the setup button in MultiLogger, press New, select Instruction File). The file is listed at the end of this MAN (MultiLogger Application Note). Alternately the file may be copied as received via e-mail or other means to the MultiLogger directory.

2) This file must added to the multilogger.ini setup file. Close the editor after completing the above modifications and saving. Press the Setup button in MultiLogger. Scroll down to the **[Processing Files]** section. Note the last entry, add an entry with the following format:

File#n=Temperature Correction,tempcorrection.ins

For **n** simply increment that last number shown by one. Press Save, close the Editor.

Note: When future updates are applied to the installed version of MultiLogger these settings should remain after the update completes.

3) Locate a channel which requires the temperature correction. Press the Processing File/Extended Properties button. Click the “down arrow” of the combo box to display the list of available Processing Files. Note the “Temperature Correction” option just added in step 2. If it does not appear check for completion of step #2, ie make sure the sequence number follows properly for the “File#” listing, make sure the setup file was saved. Select “Temperature Correction”.

4) Note that “TempInit”, “TempFactor” and “WhichChannel” all show in blue in the File Properties list. This means that MultiLogger was not able to figure out what these values in the instruction represent, they must be entered in the column labeled “Value”. For “TempInit” enter the initial temperature to be used as a reference for the temperature correction. For “TempFactor” enter the factor by which temperature change (presumably in degrees C) is converted to engineering units. Note: These units must be in same units as the channel output! For “WhichChannel” scroll down the “Available Properties” until the “MuxReadingLocnn” locations display. Locate which channel the actual temperature device is connected. For example, if the temperature device is connected to channel #3, double-click the item in “Available Properties” listed as “MuxReadingLoc3”. If the temperature device is connected as the “Upper Channel” on channel #3 then select “MuxReadingLoc19” (this is calculated by understanding that the Upper Channel devices start with MuxReadingLoc17). Press “Accept”. You will notice that the button above the Processing Files/Extended Properties button now displays enabled  .

Instruction File tempcorrection.ins

```
;-----------------------------------------------------
;Temperature Correction
;-----------------------------------------------------
;load the initial temperature
P30   Z=F              ;load value
1:[TempInit             ]   F          ;initial temperature
2:[0                    ]   Exponent of 10              ;no exponent
3:[ScratchLoc1          ]   Z Loc      ;scratch location

;load the temperature factor
P30   Z=F   ;
1:[TempFactor           ]   F     ;
2:[0                    ]   Exponent of 10   ;
3:[ScratchLoc2          ]   Z Loc ;

;calculate temperature change
P35   Z=X-Y            ;deduct
1:[WhichChannel         ]   X Loc ;temperature channel
2:[ScratchLoc1          ]   Y Loc      ;enter initial temperature
3:[ScratchLoc1          ]   Z Loc      ;scratch location

;convert change from to engineering units
P36   Z=X*Y ;
1:[ScratchLoc1          ]   X Loc ; temperature change
2:[ScratchLoc2          ]   Y Loc ; temperature factor
3:[ScratchLoc1          ]   Z Loc ; change to apply

;deduct temperature change
P35   Z=X-Y            ;deduct
1:[MuxReadingLoc++      ]   X Loc ;current channel
2:[ScratchLoc1          ]   Y Loc      ;adjust
3:[MuxReadingLoc++      ]   Z Loc ;current channel updated
```