

Triggering Measurements Using Pulse Inputs MultiLogger Application Note #18

Overview

This MultiLogger Application Note will provide instructions for configuring measurements of your system to be triggered by an external switch closure or relay input, using either the P1 or P2 pulse input.

It is intended to apply to the use of the CR10 or CR10X MCU. Contact Canary Systems for application assistance with other MCU's.

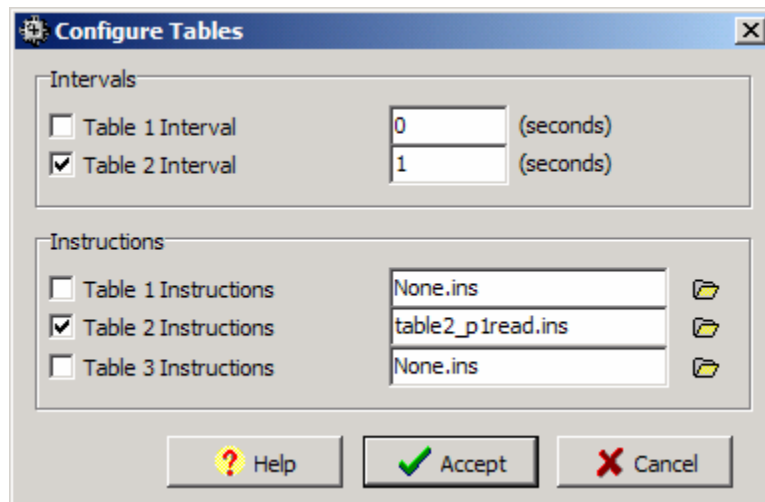
Note: The instruction files referenced below will included in the latest version of MultiLogger software, this includes the updated v3.2.8 or the current v4.0.2 Contact Canary Systems or your software vendor to obtain these files or to obtain access to the software updates available at www.canarysystems.com

Software Configuration

There are 4 steps to the software configuration.

1. First the instruction file that will read the status of the pulse inputs must be copied to the Project Path for the configuration that will be used. When using ML v3.2.8 these files will be in the \Program Files\MultiLogger path, when using ML v4.0.2 or higher these files will be in the \Program Files\MultiLogger\ins path. The files are **table2_p1read.ins** (for using P1 as the pulse input channel) or **table2_p2read.ins** (for using P2 as the pulse input channel).
2. Configure the Table 2 Scan Interval and associated Table 2 instruction file to run the instructions contained in the file. These instructions are designed to check the status of the pulse input channel and then execute the subroutine which reads instruments and stores data in the event a pulse is received. To display this form load the Logger form and then select **Program | Tables**.

The form is shown below with appropriate selections configured. Note the scan interval setting for Table 2 and the instruction file selection. Select the file for the pulse input channel you wish to use.



Section	Item	Value	Unit
Intervals	Table 1 Interval	0	(seconds)
	Table 2 Interval	1	(seconds)
Instructions	Table 1 Instructions	None.ins	
	Table 2 Instructions	table2_p1read.ins	
	Table 3 Instructions	None.ins	

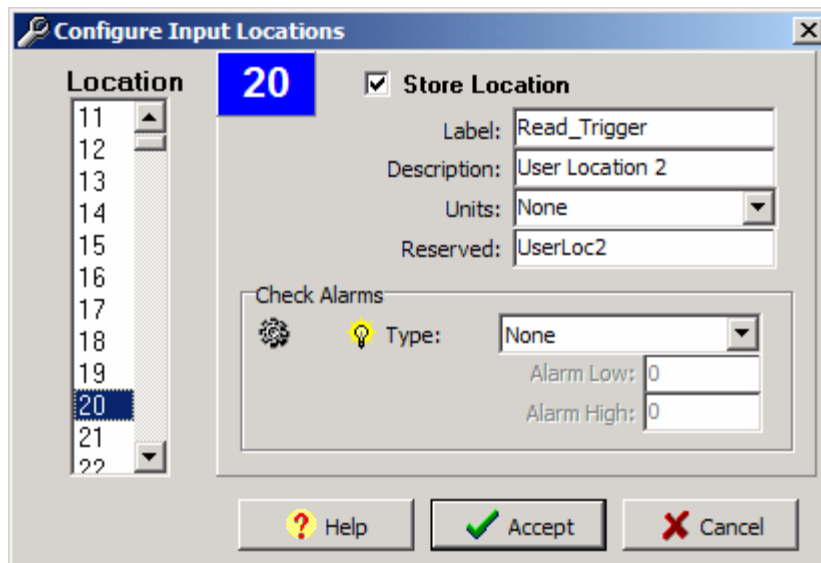
- The last step is to configure the location that will be used to record the pulse inputs. This step is optional and is only required if you wish to see a specific label associated with the pulse input location. You may also specify that the location be stored for trouble-shooting purposes. To access the location select the menu item Program | Input Locations from the Logger form. Advanced to the UserLoc2, which is location 20.

Note the **Store Location** checkbox (by default the location is NOT stored), check if storage of the trigger values are desired.

Note the **Label** edit, modify the default label if desired.

When finished press **Accept**.

You may need to re-configure the Text Monitor to show this value, otherwise once Store Location is checked and Auto Configure is enabled (MultiLogger v4 or newer) it will show up automatically in the Text Monitor.



Notes on operation:

These instructions utilize Table 2 programming of the MCU's. Table 2 is an optional second table that can be executed by the system. Table 1 takes precedence over Table 2, however pulses accumulated during the measurement sequence will be recorded. This means that if a trigger is received while the Table 1 measurement sequence is running that once complete a measurement sequence will be initiated by these Table 2 instructions so the measurement scans will immediately follow one after another.

Contact Canary Systems for additional application assistance if your system must also read other pulse output type sensors such as rain gages or wind speed sensors.

Hardware Configuration

The hardware interface is very simple. Either a switch or relay input can be used to trigger measurements. Connect the switch or relay contacts between G and P1 or P2 terminals on the wiring panel. It is highly recommended that this programming be tested thoroughly before deployment. A switch can be used to simulate the relay contacts.

The pulse inputs can also be configured for digital type signals, change the 3rd parameter of the P3 instruction shown in the following program segment to 0 in this case.

Instruction File Listing – Table2_p1read.ins

```
;This table will check status of P1 for switch closure
;if closure detected then measurements are initiated
;This will accumulate closures even during a measurement scan
;whether initiated from Table 1 or from Table 2
P3   Pulse ;
1:[1           ]   Reps   ;
2:[1           ]   Pulse Channel (Pulse Channel 1) ;
3:[2           ]   Config (Switch Closure, All Counts) ;
4:[UserLoc2    ]   Loc    ;
5:[1           ]   Mult   ;
6:[0           ]   Offset ;

;Check if switch closure detected
P89   If (X<=>F) ;
1:[UserLoc2    ]   X Loc  ;
2:[3           ]   Comparison Code Option (>=) ;
3:[1           ]   F      ;
4:[30          ]   Command Code Option (Then Do) ;

;Call our measurement subroutine
P86   Do ;
1:[9           ]   Command Code Option (Call Subroutine 9) ;

;Clear our switch closure location
P30   Z=F ;
1:[0           ]   F      ;
2:[0           ]   Exponent of 10 ;
3:[UserLoc2    ]   Z Loc  ;

P95   End ;
```

Instruction File Listing – Table2_p2read.ins

```
;This table will check status of P1 for switch closure
;if closure detected then measurements are initiated
;This will accumulate closures even during a measurement scan
;whether initiated from Table 1 or from Table 2
P3   Pulse ;
1:[1           ]   Reps   ;
2:[2           ]   Pulse Channel (Pulse Channel 2) ;
3:[2           ]   Config (Switch Closure, All Counts) ;
4:[UserLoc2    ]   Loc    ;
5:[1           ]   Mult   ;
6:[0           ]   Offset ;

;Check if switch closure detected
P89   If (X<=>F) ;
1:[UserLoc2    ]   X Loc  ;
2:[3           ]   Comparison Code Option (>=) ;
3:[1           ]   F      ;
4:[30          ]   Command Code Option (Then Do) ;

;Call our measurement subroutine
P86   Do ;
1:[9           ]   Command Code Option (Call Subroutine 9) ;

;Clear our switch closure location
P30   Z=F ;
1:[0           ]   F      ;
2:[0           ]   Exponent of 10 ;
3:[UserLoc2    ]   Z Loc  ;

P95   End ;
```