Triggers: Using Digital Inputs

Introduction

The Pharos LPC, EXT, RIO 44 and RIO 80 are all capable of receiving up to 8 inputs, which can be configured as Contact Closure, Digital Input, or Analog Input.

When configured as Contact Closure or Digital Input, as well as being used for simple triggering e.g. a simple light switch, the inputs can be used together to pass information from one system to another.

This AppNote is intended to accompany the example project file available from pharoscontrols.com

Simple Usage

Normally a Digital Input or Contact Closure will be used to fire a trigger when that input changes state (High to Low or Low to High). Setting this up is relatively simple, and can be done by adding a Digital Input trigger to the project, choosing which input to listen to, on which device, and then choosing the state change to wait for. This can be expanded upon by allowing multiple inputs to fire the same trigger and using the input number to determine the course of action through the use of variables.

The majority of cases will be solved just by using the Digital Input trigger, though sometimes the Digital Input Condition will be required to advance the triggering capabilities.

Advanced Usage

The Digital Word condition can be used in a number of ways:

- Firstly is can be used to ensure that a series of inputs are in the correct configuration for a trigger to be fired. This could be used with an interactive installation where a series of actions must be performed to cause a change in the lighting.

- Secondly this condition can be used to capture the states of the inputs and combine them into a single number which can then be used by the action.

Using the condition for a series of inputs

If you are using the Digital Word condition to check the state of multiple inputs, you would configure it as shown the the right.

The match row is used to set whether the input needs to be High (H) or Low (L). A blank entry is ignored.

This allows you to set exactly which state each of the inputs you are interested in is set to for the trigger to fire.

Using the condition to pass data

The condition can also be setup such that the trigger is fired regardless of the states of the inputs, but these states are captured by the trigger.

If this is the case then the Inputs are captured and converted into a binary number e.g.

Input	8	7	6	5	4	3	2	1
State	Low	High	High	Low	High	Low	Low	High

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Binary	1	0	0	1	0	1	1	0

In this example, the captured value would be 150.

This value can then be used directly in an action (e.g. Start Timeline) immediately, or it could be taken into a piece of script (using the Run Script action) and more logic applied to it.

If you want to detect whenever this 8 bit number changes, your project file will require two triggers. One to detect when any input goes Low and a second to detect when any input goes High. The condition and action would be identical for each of these triggers, and between the two of them any change in the number would be detected.

If using a script, the important line is:

```
incoming_number = get_trigger_variable(2).integer
```

This will set the value of the variable incoming_number to the 8 bit (0-255) number that was captured. You can use this later on in the same script, or in a different trigger later on to determine what should be done.

Electrical Rating

When in Contact Closure mode, the input outputs a 5V sensing voltage. Connected devices should be rated to 5V, 2.5mA (or greater).

When in Digital (or Analog) mode, the input is rated at 24V. Any voltage greater than this may cause damage to the device.

Further Information

For further information on the Digital Input Trigger, please see the Software Help > Reference > Trigger > Triggers.
For further information on the Digital Input Condition, please see the Software Help > Reference > Trigger > Conditions.
For further information on the Digital Word Condition, please see the Software Help > Reference > Trigger > Conditions.
For further information on variable capture, please see the Software Help > Reference > Trigger > Variables.
For further information on Scripting, please see the Software Help > Reference > Scripting

If you require further assistance, please contact Pharos Support.

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