

Configuration of Alarm System

BNCS Acquisition Module

Alm_bncs_acq.dll, Config_alm_bncs_acq.dll

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1 Alarm System – BNCS Acquisition Module

1.1 Overview

This module (config_alm_bncs_acq.dll) is part of the suite of modules that form the BNCS Alarm System. This module is used to configure the module which gathers input information for the alarm system from BNCS devices.

1.2 Description

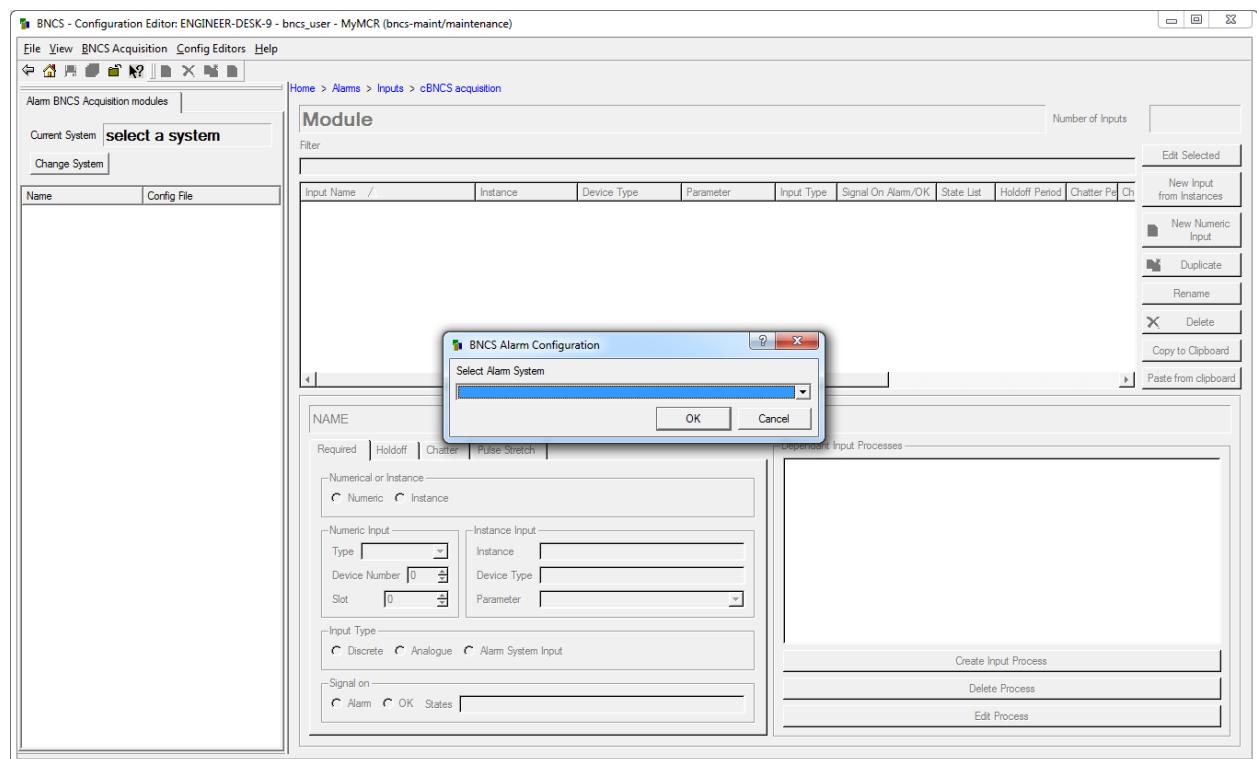
The BNCS Acquisition module registers with and then polls the required parameters on the required BNCS devices and presents their states to the logic module, which is part of the host application. In addition some pre-processing can be achieved, including timed holdoffs, frequency detection and pulse stretching.

2 Configuration Procedure

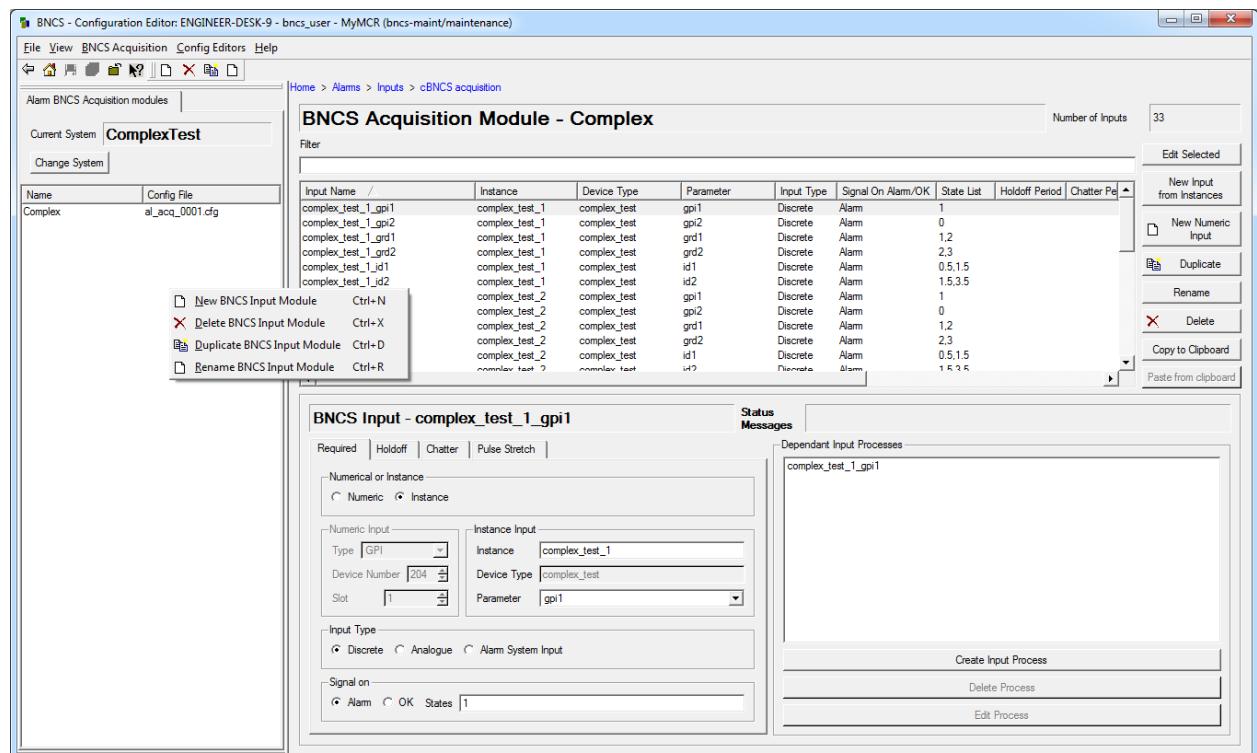
To configure the module the BNCS v4.5 configuration tool should be used. The following explanation assumes that you are running the configuration editor and that this is connected to the relevant configuration server.

Select Alarms, then Inputs, then BNCS Acquisition.

The Current System will show “select a system” if you have not yet selected one, in which case then select the Change System button, then select an alarm system from the drop down list. This step is needed because there may be several alarm systems within one BNCS installed system.



If there are no BNCS Acquisition modules configured yet, create a new one. This may be achieved in two ways, either from the context (right-click) menu in the left hand pane or using the "New" icon in the tool menu at the top of the dialog.



2.1 Add Inputs

Inputs may be added manually using the New Numeric Input control, or in groups based on instances and device descriptions.

2.1.1 New Numeric Input

On selecting New Numeric Input a new input is created and the cursor left in the name field. Once this has been set the other parameters may be set using the parameter dialog at the bottom of the page.

When adding inputs to a system there are several required settings. These are detailed below along with an example of adding some inputs.

2.1.2 New Input from Instances

See below for an example of creating inputs from instances and device descriptions.

2.2 Required Settings

2.2.1 Name

Each input must have a unique name.

This may only be set using Rename in the context menu (or F2), and not from the parameter values dialog.

2.2.2 Instance or Numeric type

This is whether the input is defined in an "Instance" or a "Numeric" type. Instance is where the input location is expressed as a parameter on an instance of a device on the system, where the instance of the device appears in the "instances" table e.g. ARC2 of type "Axon_ARC20". Numeric is for a BNCS input specified numerically e.g. slot 283 on infodriver 114 – this might be the output of an automatic or a driver that does conform to the "instance" format.

For the "Instance" type, the "Instance" and "Parameter" must be supplied, the tool leads you through this when you press the "New Input from Instances" button. For the numeric type, the driver type (I, G, or R), the device number and slot/index must be supplied. The instance type will be resolved to its driver type, number and index when the runtime module starts.

2.2.3 Input type

The next aspect is whether the input is "Discrete", "Analogue" or "Alarm System Input". Discrete means one or more of the possible states is considered to be in alarm e.g. for a "SDI-Input" parameter "present" is an OK state and "NA" is an Alarm state, i.e. it is picking states from a list (usually enumerated but can be textual). Analogue is used where the value of a parameter is a range e.g. >25 is considered an alarm. Alarm System Input is a special case where the input is an output of another alarm system. In this case there is no normalisation to the three states (OK, Fail, or Unknown) – the state from the previous alarm system is passed directly to the calculation process.

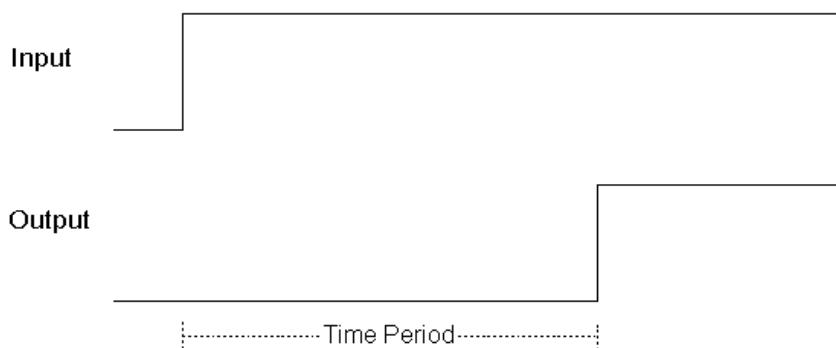
2.2.4 Signal On

The next aspect is "Signal On"; this can be either "Alarm" or "OK" whichever is more appropriate e.g. If "OK" is selected then the state(s) listed will be considered to be OK and if "Alarm" is selected then the state value(s) listed will be considered to be in the Alarm state. See below for a configuration example.

2.3 Optional Pre-Conditioning

There are three optional timed functions which can be used to precondition the data: Holdoff, Chatter and Pulse Stretch.

2.3.1 Holdoff

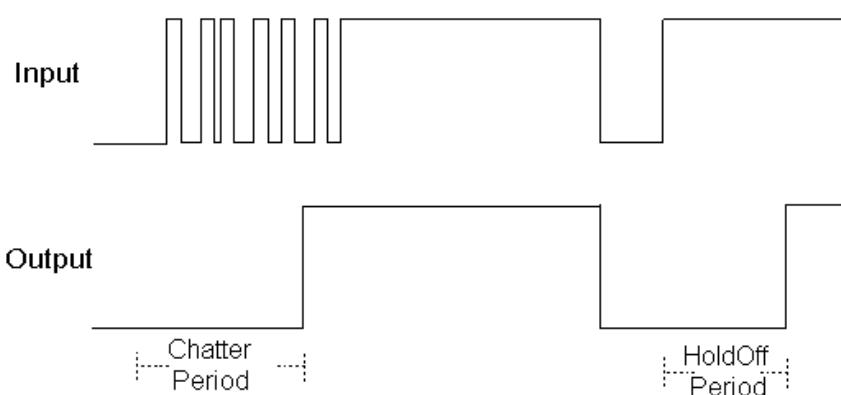


A holdoff delays the Ok to Alarm transition by a fixed period of time. It does not delay the Alarm to Ok transition.

Note Holdoff period must be between 0.1 second and 24 hours (minimum resolution of 0.1 second). The units are seconds.

This is configured and enabled using the 'Holdoff' tab in the editor.

2.3.2 Chatter Filter



The chatter filter will note the number of positive (OK -> Alarm) transitions in a given (rolling) time period. If the number exceeds the threshold set, then the input will go into the Alarm state. When the number falls below the threshold it will return to the OK state.

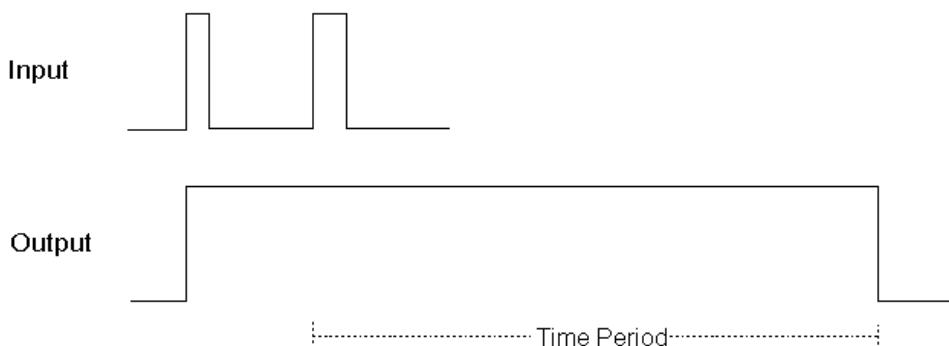
The Chatter Period is the time period (rolling) in seconds over which we are monitoring the input for OK to Alarm transitions. The Chatter Threshold is the number of OK to Alarm transitions that need to occur in a Chatter Period for the state to be considered to be Alarm. For example if the Chatter Period is 60 seconds and the Chatter Threshold is 5 then an alarm condition will be notified if the input changes to alarm state more than 5 times in any one minute. It changes to OK when the number of triggers falls below the threshold.

Note. It is advisable also to set a holdoff period when using the Chatter parameters. If the example is as above with a holdoff of 5 seconds then the input will be considered to be in Alarm if the input triggers more than 5 times in a minute or if it stays in an 'Alarm' state for more than five seconds.

If no Holdoff is set then the alarm will trigger when the input is chattering, as set above and not if it triggers once (or less than the chatter Threshold) and stays in the fault condition. When the number of triggers falls below the threshold in any period the alarm will be OK whether the incoming value corresponds to an OK or Alarm state.

Note Chatter Threshold must be less than ten times the period in seconds. The period may be from 1 second up to 24 hours. Periods less than 60 seconds may have a resolution of 0.1 seconds. The units are seconds.

2.3.3 Pulse Stretcher (Hold On)

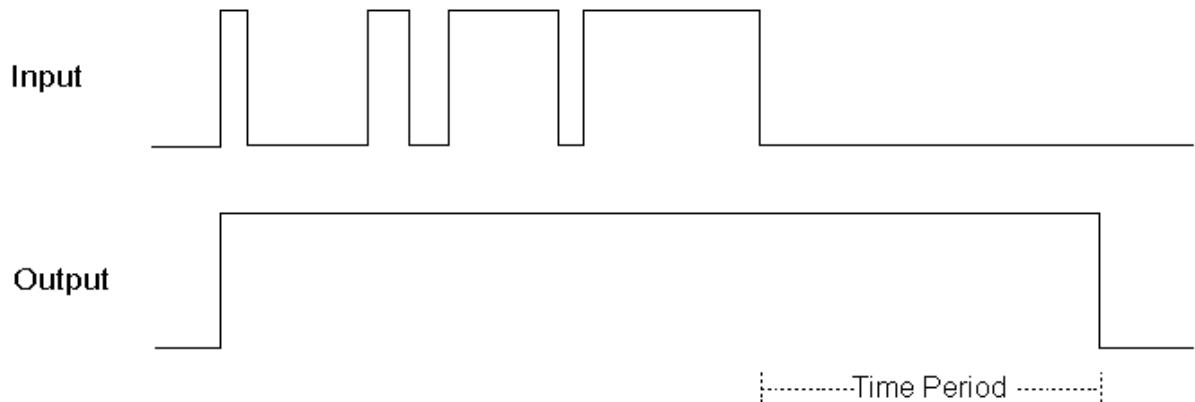


This is a standalone feature and cannot be used in conjunction with Holdoff or Chatter settings. This feature enables the alarm signal to be generated as if the length of a pulse has been stretched.

There are two modes for this feature, one where it will stay in the Alarm state until a time period after the last positive edge, the other where it will stay in the Alarm state until a time period after the last negative edge.

For example if the Pulse Stretch Period is 2.5 seconds and the Pulse Stretch Trigger is positive then the alarm will remain triggered until 2.5 seconds after the last positive transition. If it is in the Alarm state for longer than this period it will remain so until it changes to the OK state.

The Pulse Stretch Trigger set to negative can be useful if you wish to hide short periods of OK state in a long period of being in the Alarm state as shown below.



Note Pulse Stretch Period must be between 0.1 second and 24 hours (minimum resolution of 0.1 second).

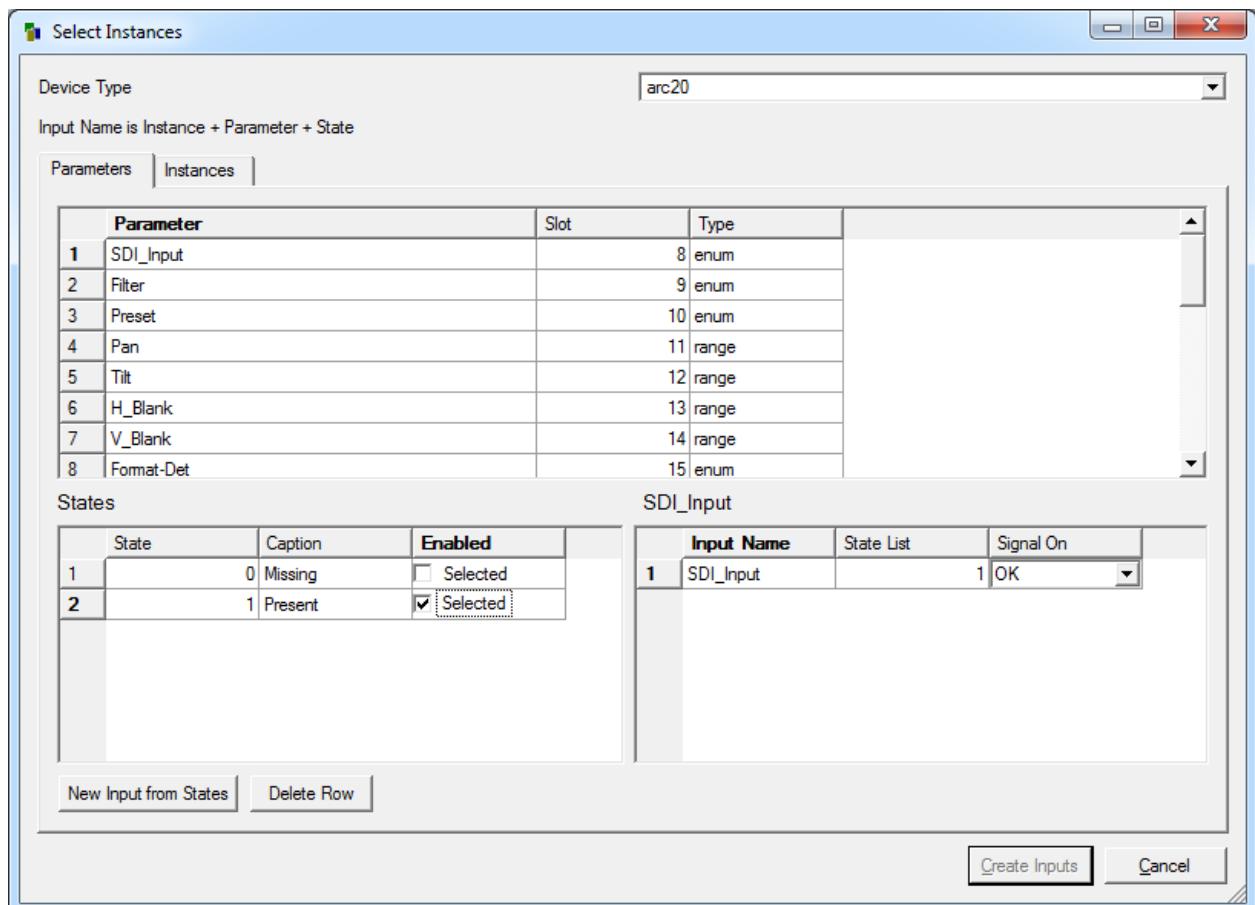
2.4 Configuring Inputs Examples

The following are some examples of configuration, showing the main features.

2.4.1 Configuring Inputs From Instances Example

The New Input from Instances dialog allows multiple inputs to be created from sets of instances of the same device type.

To add some new inputs that are from device instances click on the "New Input from Instances" button. The following dialog is displayed.



Select the device type from the drop-down list at the top of the screen which lists all the device types in the BNCS System. In this case "arc20" has been selected.

Note that this control is populated using the devicetypes.xml config file. Only types listed in that file will be available for selection.

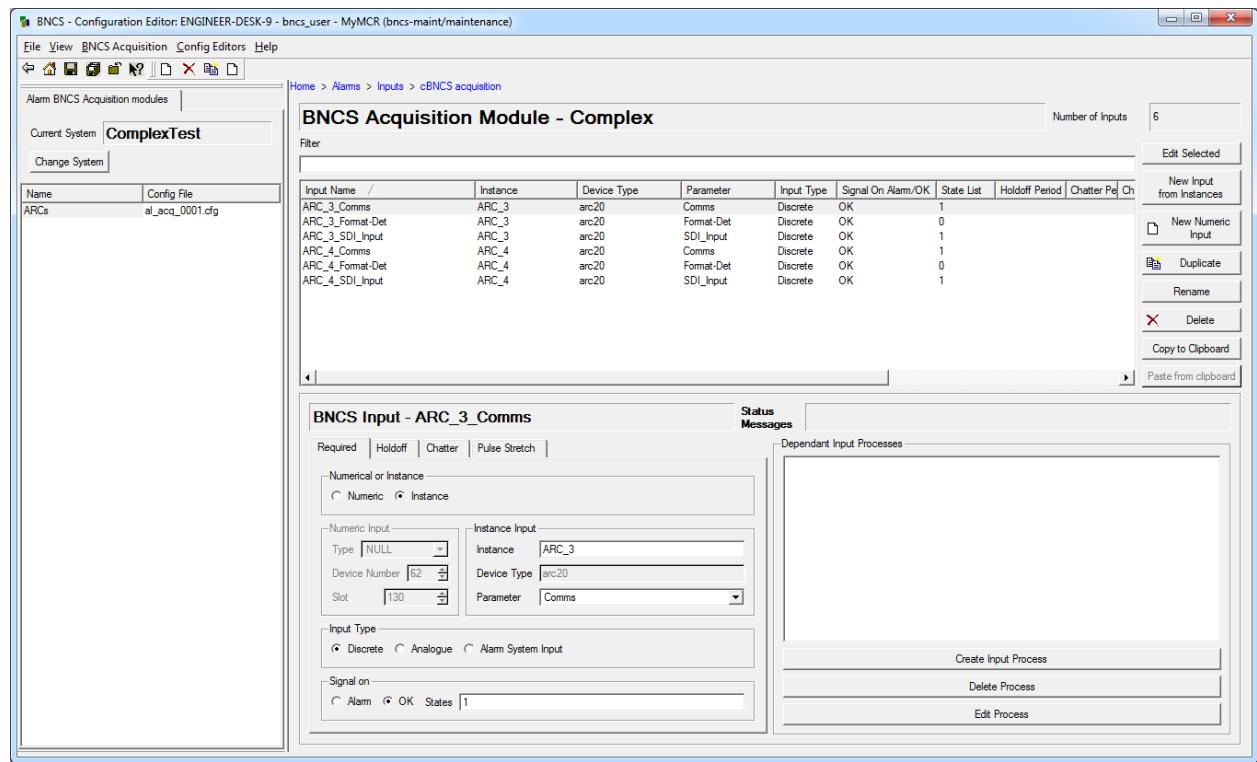
From the Instances tab select all the instances of devices for which you want to generate Inputs.

From the Parameters tab select a parameter to monitor. Its possible values will appear in the bottom left pane. If the parameter is not "enum" nothing will appear. The Type columns shows the parameter types.

In the bottom left pane select which state(s) you wish to generate an input entry for. Then click the "New Input from States" button. The parameter will then appear in the bottom right pane of the dialog.

In the bottom right hand pane decide whether you want to specify that the selected States are "Alarm" state(s) or the "OK" state(s). In this case we are looking at "SDI_Input" and have selected "Present" as the "OK" state. This means that all other states will be considered as "Alarm" conditions. Repeat this for all the parameters that you wish to monitor for this type of device.

Then click "Create Inputs". The dialog disappears and the new inputs are listed in the main display.

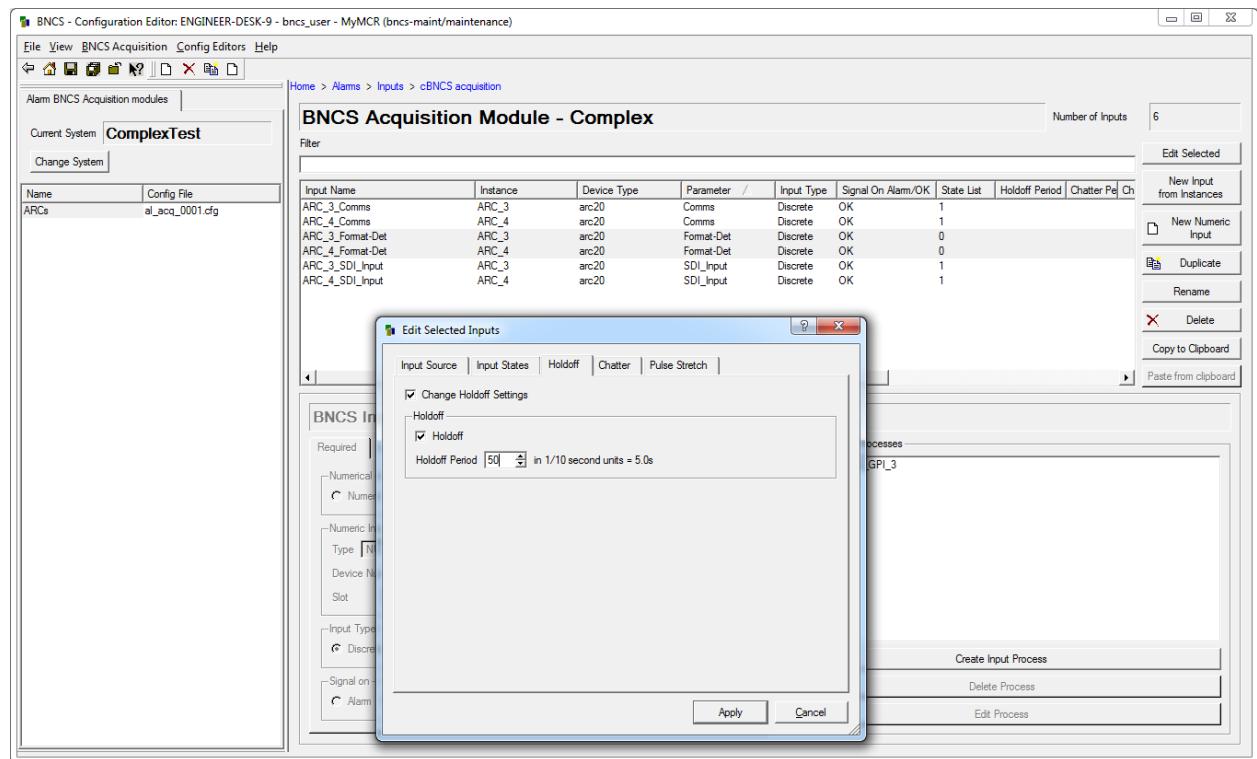


Clicking on an individual input is shown above. The name is also shown above the tab controls in the dialog in the bottom left hand corner. All the input parameters can be edited here.

2.4.2 Editing Several Inputs

To edit more than one input, select a number of inputs and press the "Edit Selected" button. Use the tab control to change the features. This is useful when you want to add the same parameter to more than one input. For example, we want to add a Holdoff to all the inputs that are from the "Format-Det" parameter of a video ARC card (called an ARC20). We sort the view by parameter, select all the "Format-Det" inputs, and then press the "Edit Selected" button.

On the popup, select the Holdoff tab, tick "Change Holdoff Settings" the box, then tick the "Holdoff" box and enter the time period required, say 5 seconds (enter 50 for this as the value is in 1/10 second units). Then press "Apply" to assert the changes.



2.4.3 Creating Inputs by Duplication

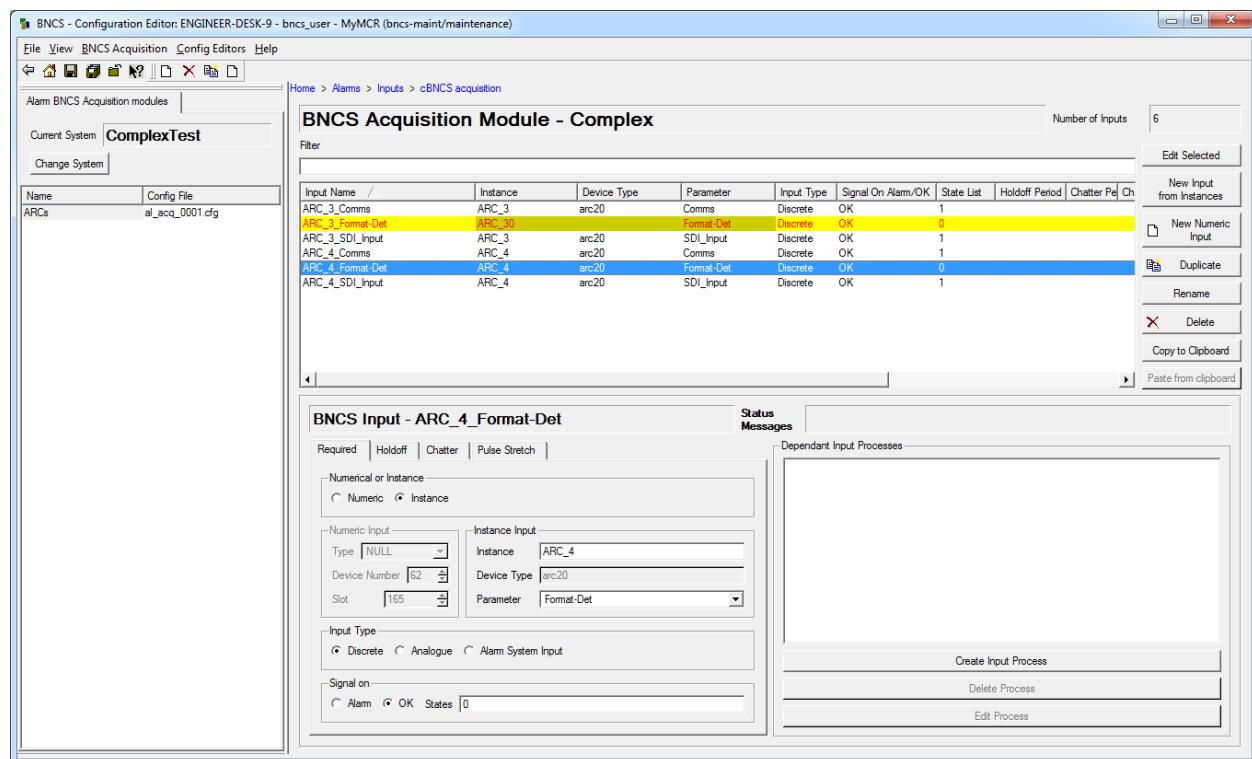
Inputs may be copied using the Duplicate function. It also allows changes to be made to the slot number or instance as well as copying of all the other fields.

If all the items selected for copying are within the same instance then they may be copied with their instances replaced by another instance of the same device type. If this situation is detected the instance selectin combo-box is enabled and populated with all the instances with the same device type.

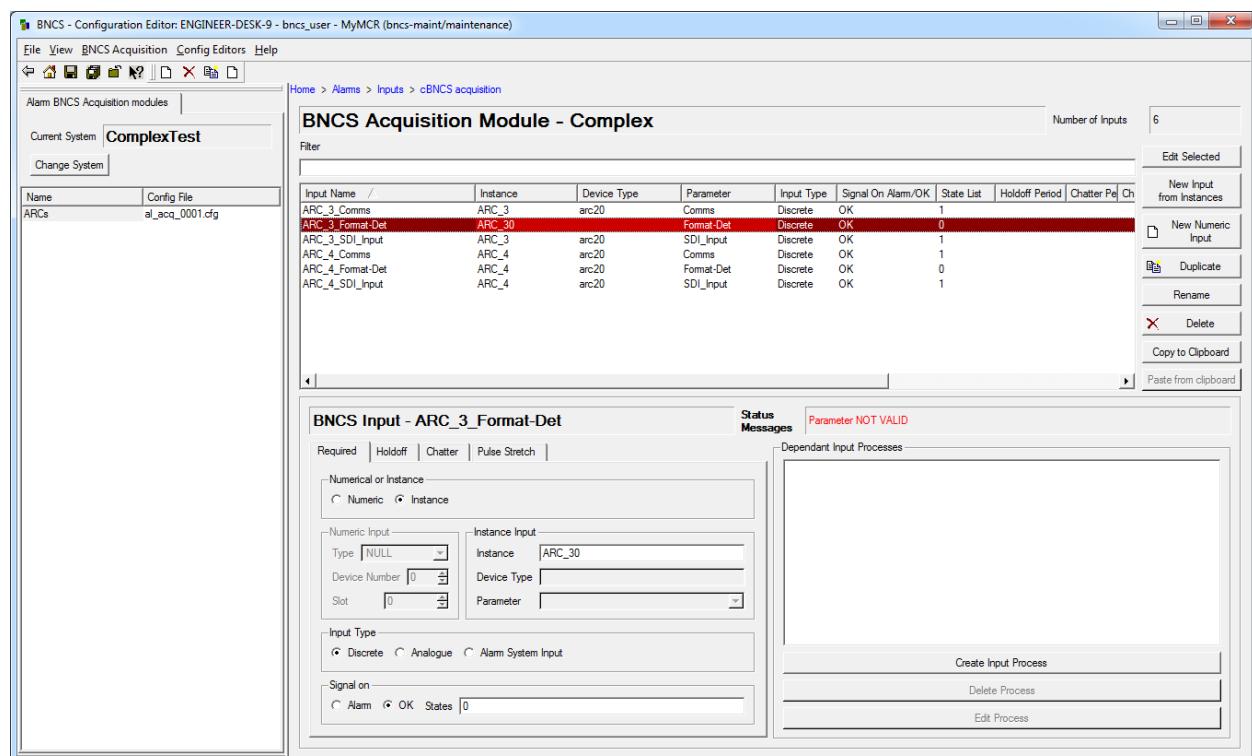
The slot numbers may be offset for each new copy made.

2.5 Validation

If the required elements are all present the screen will be monochrome. If there are any errors in the features then the affected inputs will be coloured yellow and "NOT VALID" will be shown in the Valid column. For example the example below shows an input where the instance name is not valid.



When the line itself is selected a message is shown in the Status Messages area. In this case it says Parameter Not Valid, which actually means it is unable to find the given instance/parameter combination. Note that in this circumstance the Device Type and Parameter controls are disabled.



2.6 Importing and Exporting data

It is possible to copy one or more rows to the clipboard by using the "Copy to Clipboard" button. The data is tab delimited so is easy to paste into other applications such as Excel.

It is also possible to paste in suitably formatted data into the tool. If the clipboard data is suitable then the "Paste from Clipboard" button will be enabled.

3 Documents Referenced

This document should be read in conjunction with other documents in the tree.

In particular:

Alarm – overview

alarm - Colledia Control Acquisition

alarm – mainapplication

The documentation relating to file formats may also be useful.

4 Version history

4.1 Software Version

Version numbers shown here may not be seen within the software itself. The implementation date is a more reliable way of determining whether a particular issue is present in any particular instance of the software.

Version No	Date	Details	Name
1.00.00	27 October 2014	Original Release	Charlotte Bell
1.00.1	10 December 2003	Remove excessive debugging + tidy diagnostics + minimise	Charlotte Bell
1.1.0	6 January 2004	Add Pulse Stretcher Code	Charlotte Bell
1.1.1	12 January 2004	Add negative trigger for pulse stretcher	Charlotte Bell
1.1.2	13 January 2004	Add 0.1 second resolution for Holdoff and Pulse	Charlotte Bell
1.1.3	27 January 2004	Add 0.1 second resolution for Chatter < 60 seconds	Charlotte Bell
1.2.0	28 January 2004	Added analogue inputs	Charlotte Bell
2.0.1	31 March 2004	Now a plugin dll with proper range polling for each device	Charlotte Bell

2.0.4	1 June 2004	Now able to take inputs from instance data	Charlotte Bell
4.5.0.3	4 th February 2008	Speeded up creation of new processes. Fixed issue of not always loading processes.	Charlotte Bell

4.2 Document Version

Version No	Date	Details	Name
1.00.00	27 October 2014	Original Release	Charlotte Bell
1.00.1	10 December 2003	Remove excessive debugging + tidy diagnostics + minimise	Charlotte Bell
1.1.0	6 January 2004	Add Pulse Stretcher Code	Charlotte Bell
1.1.1	12 January 2004	Add negative trigger for pulse stretcher	Charlotte Bell
1.1.2	27 January 2004	Add notes about time resolutions	Charlotte Bell
1.2.0	28 January 2004	Added analogue inputs section	Charlotte Bell
2.0.0	31 March 2004	Now a plugin dll updates	Charlotte Bell
2.0.1	1 June 2004	Instance information added	Charlotte Bell
	27/10/2014	Document revised to current conventions and template.	Richard Kerry
	08/01/2015	Corrections and amendments. Images reworked from current versions of software.	Richard Kerry

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