

Banner Safety Controller RCD

9/30/2022

This document covers the installation and use of a function block for Beckhoff's TwinCAT software package. This function block handles the software reset or cancel delay feature for a Banner Safety Controller (XS26).

Components

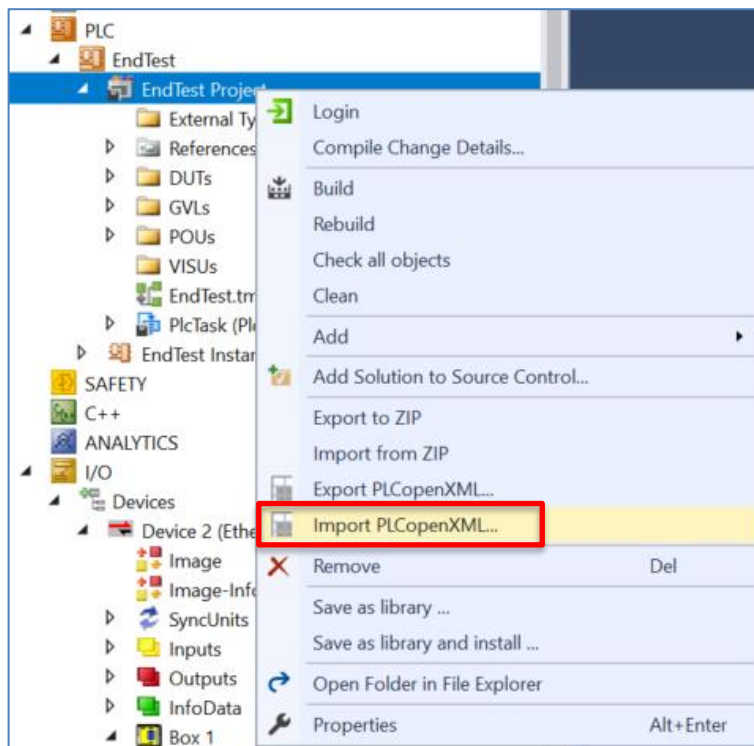
Banner_RCD_v1 (PLCopenXML format)

Items Packaged in Fault Log

Banner_RCD_v1 (FB)

Installation Instructions

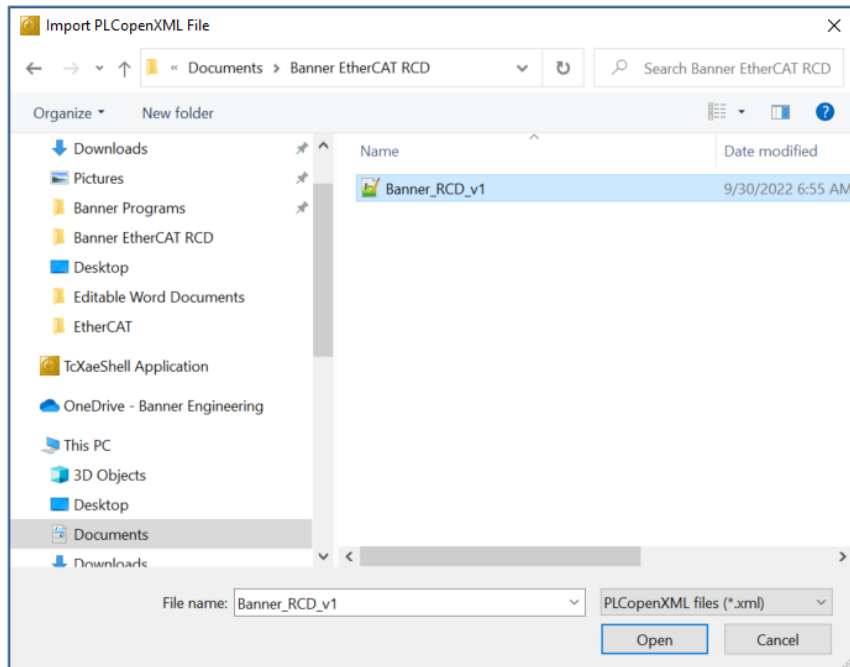
1. Open a project.
2. Right click under PLC. Look for the Import PLCopenXML option and select this option. A new window will open.



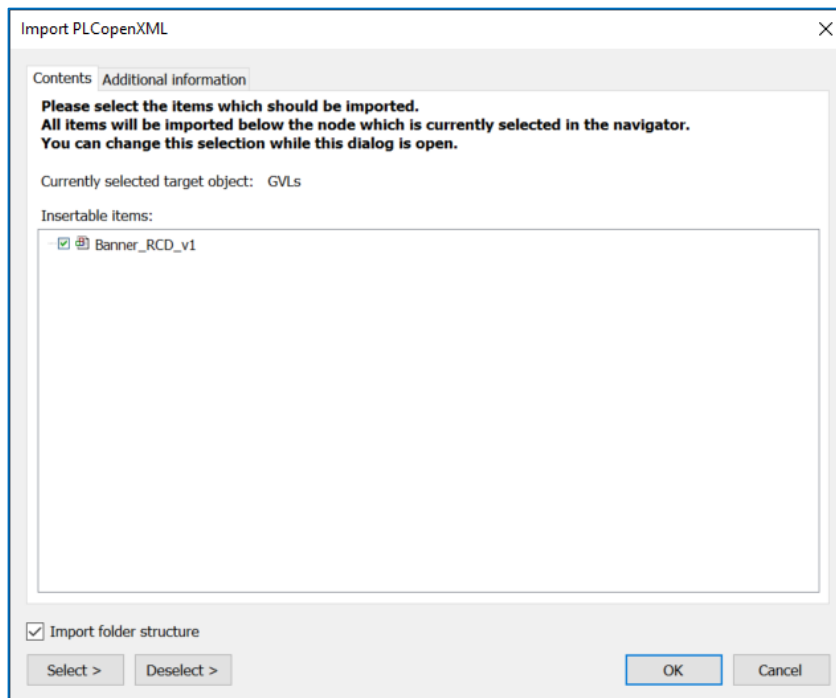
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RCD Function Block

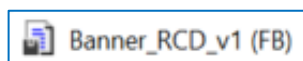
3. Navigate to the location that the file was stored in. Select the Banner_RCD_v1. This is an XML file.



4. A window will pop up stating what files will be imported. There should be one item.



5. One item has now been added to the PLC section in Solution Explorer.



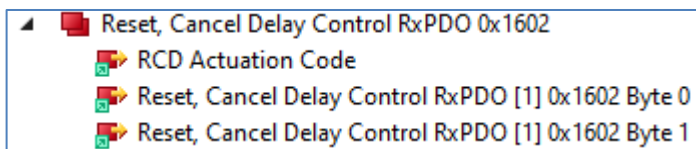
6. Move Banner_RCD_v1 to the necessary location in the project (optional: make a folder for it).
7. Export the Tags from the Safety Controller if that has yet to be done (see relevant document for this process). Many of the items that need to be linked in step 9 use the exported tags from the controller. Alternatively, these can manually be configured.
8. Next step is to create a variable of the type of Banner_RCD_v1 in the program the function block will be called in. Create a variable that will activate the RCD with a type of UINT. In this example the names fbXS26Reset and rcdControl2 are used. An additional two optional variables can be created. They should be called value and code. These are used to tell the function block what resets need to be activated and the reset code that will be sent. The Safety Controller requires a reset code (called an Actuation Code in the controller) for the reset to work.

```
fbXS26Reset      : Banner_RCD_v1;
value            : USINT := 0;
code             : UINT  := 0;
rcdControl2     : UINT;
```

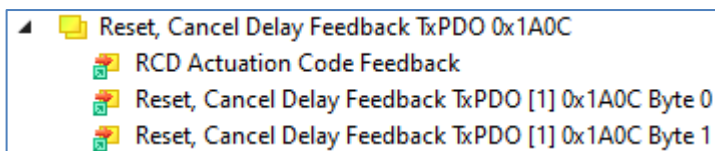
9. Finally add some structured text code into the program. The code should look like what is shown below. When rcdControl2 is set to TRUE the function block will begin the reset or cancel delay process. If the code sent matches what the controller has the reset will begin.

```
//RCD Function Block
fbXS26Reset(rcdValue := Box_1_GVL.Box_1_RCD_Byte0,
            rcdCode  := BOX_1_GVL.Box_1_RCD_Code,
            rcdActivate := rcdControl2,
            rcdCodeFB := Box_1_GVL.Box_1_RCD_Code_Feedback,
            Value := value,
            Code := code);
```

- a. rcdValue: This is linked to the tag created for Reset, Cancel Delay Control RxPDO [1] 0x1602 Byte0 (for resets 1 through 8) or Byte1 (for resets 9 through 16).



- b. rcdCode: This is linked to the tag created for RCD Actuation Code.
- c. rcdCodeFB: This is linked to the tag created for RCD Actuation Code Feedback.



10. Setup complete.

Banner RCD v1 - How to Use

1. The value and code elements for the Function Block need to be set. Value needs a number that represents which of the reset or cancel delays (RCD) need to be activated. As an example, let's assume the safety controller has 2 virtual RCD in it. If only the first RCD needs to be activated, then the Value should be set to 1. If both RCD need to be activated, then a Value of 3 needs to be used. Think of each RCD as a bit in the value. So, the first RCD is 1 and the second RCD is 2. If we had a third one, it would be 4. That is how the number is generated.
2. The code needs match the Actuation Code that was set up in the XS26 Safety Controller. In this example we will be using 1234.
3. Setting the rcdControl2 to TRUE activates the RCD. If safety controller encounters an issue, then the fbXS26Reset.error will be set to TRUE. If everything works correctly the XS26 will be reset and the rcdControl2 will automatically be turned off.