AMCI NXAE2 Sample Program - READ ME

The ***AMCI_NXAE2 _Sample_Program*** shows how to program and preset the NXAE2 for both Single Turn and Multi Turn Resolver settings.

The ***AMCI_NXAE2_Library*** includes common ***Functions***, ***Data Blocks***, and ***Tags***, which are used in the sample program. This library can be imported, and modified if needed, for use in any of your projects.

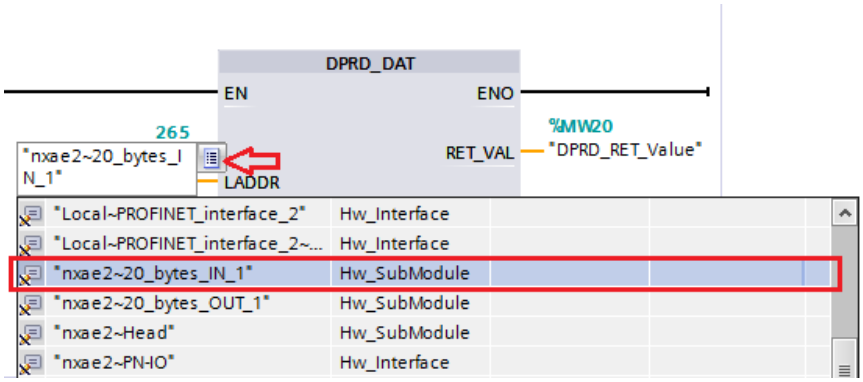
Reading and Writing to the NXAE2

This sample program also shows how to read and write data to the NXAE2 using DPRD_DAT and DPWR_DAT instructions to preserve the consistency of the transferred data.

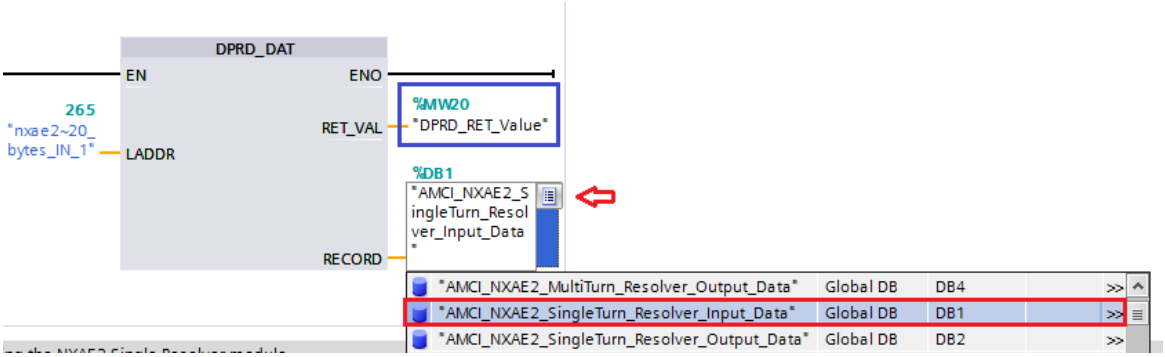
The following information will help you correctly set the needed parameters for the DPRD_DAT and DPWR_DAT instructions.

1. A **DPRD_DAT** instruction is used to read data from the NXAE2. It ensures that consistent data is transferred without any interruption. This instruction has 3 parameters that need to be assigned:

    a) The **LADDR** parameter selects the PROFINET I/O module from which the data will be read. As shown in the following figure, to find an available address, click on a ***list*** icon, and from the drop down list select a hardware submodule assigned to the NXAE2 input area.
    b) The **RECORD** parameter defines the target ***Data Block*** (***DB***), which will contain the NXAE2 Input Data that is read by this instruction. To select the data block, click on the ***list*** icon and from the drop down list find the appropriate data block.
    c) The **RET_VAL** parameter will contain an error code if an error occurs while the instruction is being executed.



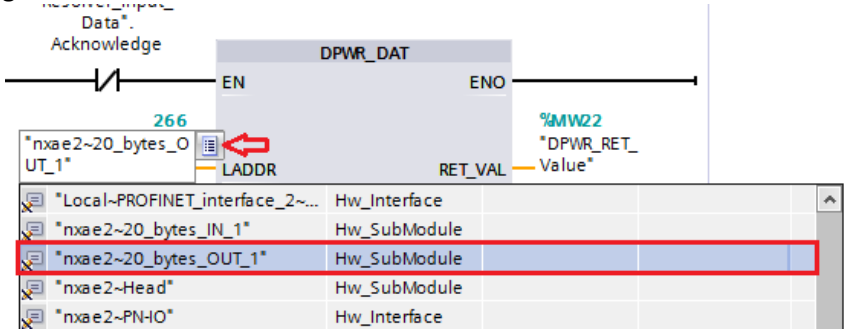
DPRD_DAT LADDR



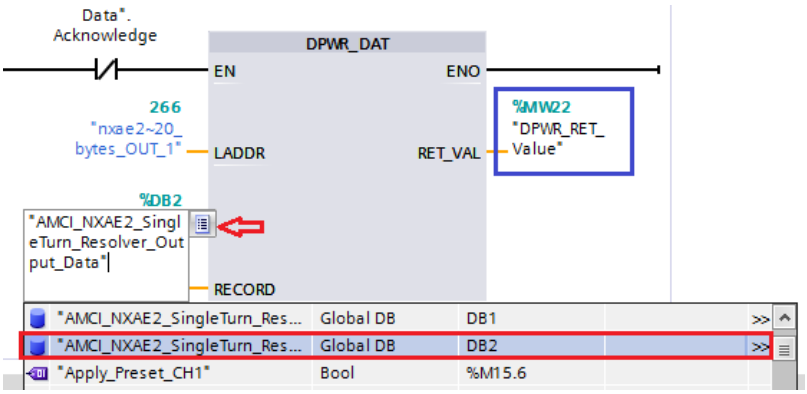
DPRD_DAT RECORD

2. A **DPWR_DAT** instruction is used to write data to the NXAE2. It ensures that consistent data is transferred without any interruption. This instruction has 3 parameters that need to be assigned:

   a) The **LADDR** parameter selects the PROFINET I/O module to which data will be written. As shown in the following figure, to find an available address, click on a ***list*** icon, and from the drop down list select a hardware submodule assigned to the NXAE2 output area.
   b) The **RECORD** parameter defines the target ***Data Block*** (***DB***), which will contain the NXAE2 Output Data to be written to the NXAE2 by this instruction. To select the data block, click on the ***list*** icon and from the drop down list find the appropriate data block.
   c) The **RET_VAL** parameter will contain an error code if an error occurs while the instruction is being executed.

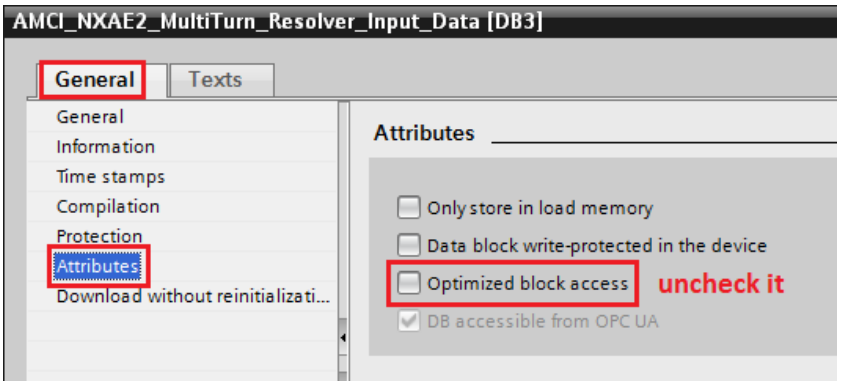


DPWR_DAT LADDR



DPWR_DAT RECORD

3. The ***"Optimized block access"*** attribute must be unchecked for the DPRD_DAT and DPWR_DAT instructions to work correctly with the ***Data Blocks (DB)*** used to read data from and write data to the NXAE2. To verify, right click on the selected ***Data Block (DB)*** and, from the pop-up menu, choose ***Properties …*** As shown in the following image, in the ***Properties*** window under the ***General*** tab select ***Attributes,*** and verify that the ***"Optimized block access"*** is unchecked.

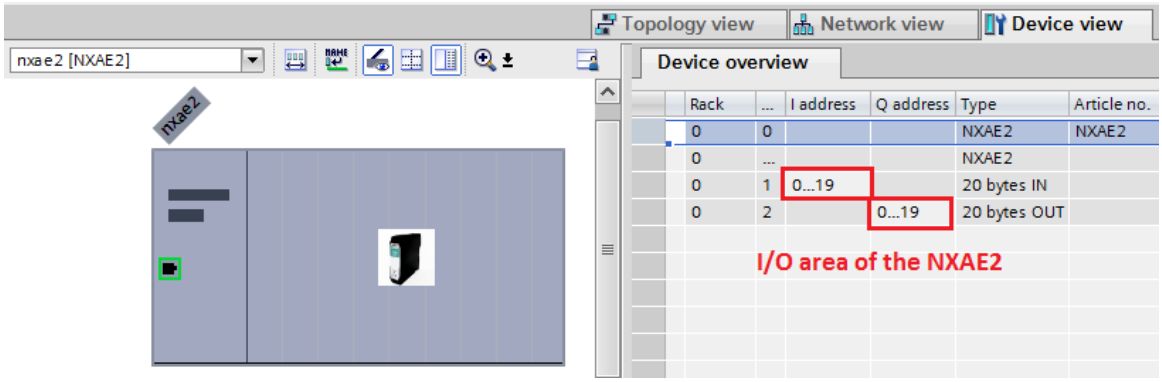


Data Block - ***Attributes*** properties

I/O Area of the NXAE2

In some cases, such as Clearing Errors, Applying the Preset, or resetting the Acknowledge bit, only the *Command Word*, the first output word, needs to be sent to the NXAE2. In these cases, the NXAE2 can be accessed directly through its I/O area.

Input and Output Module addresses are assigned by the system when the NXAE2 is added to the network. To learn the NXAE2's I/O area addresses, select the NXAE2 from the ***Network view*** and then select the ***Device view*** tab. In this example, the Input area address range is from 0 to 19, and the Output area address range is from 0 to 19. Therefore, *Module Status* word, as an input word, would be located in **IW00**, *Channel Status* word in **IW02**… and the *Command Word*, the first output word, would be located in **QW00**, *Setup Word* in **QW02**…



Input and Output Module Addresses

In this sample program, as depicted in the following figure, the Command Word is tagged as “NXAE2_Command_Word”, which is how it will be used in the function blocks, and its address is QW0.

AMCI_NXAE2_Tag_Table

	Name	Data type	Address	Retain	Acces...	Writa...	Visibl...	Supervis...
1	DPRD_RET_Value	Int	%MW20	☐	☑	☑	☑	
2	AMCI_NXAE2_Control	Int	%MW10	☐	☑	☑	☑	
3	DPWR_RET_Value	Int	%MW22	☐	☑	☑	☑	
4	NXAE2_Command_Word	Word	%QW0	☐	☑	☑	☑	
5	Command Word	Word	%MW30	☐	☑	☑	☑	
6	Setup Word	Word	%MW32	☐	☑	☑	☑	

NXAE2_Command_Word tag