AMCI NX2A4E2 Sample Program - READ ME
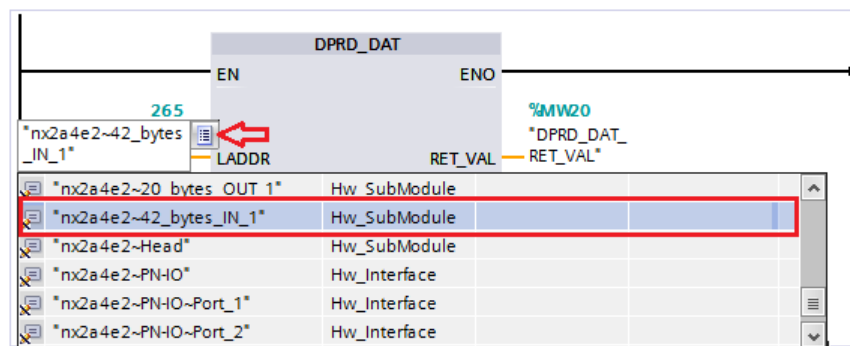
The *AMCI_NX2A4E2 _Sample_Program* shows how to program and preset the NX2A4E2 for both **S**ingle **T**urn and **M**ulti **T**urn Resolver settings.

Reading and Writing to the NX2A4E2
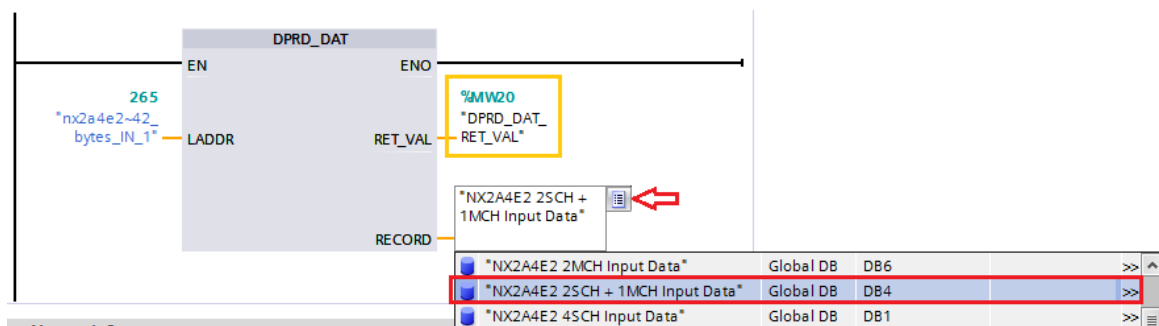
This sample program also shows how to read and write data to the NX2A4E2 using DPRD_DAT and DPWR_DAT instructions to preserve the consistency of the transferred data.

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 NX2A4E2. 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 NX2A4E2 <u>input</u> area.

   b) The **RECORD** parameter defines the target *Data Block* (*DB*), which will contain the NX2A4E2 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.
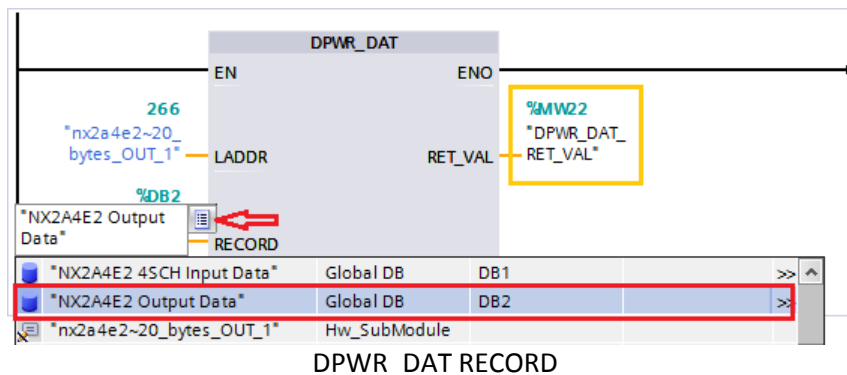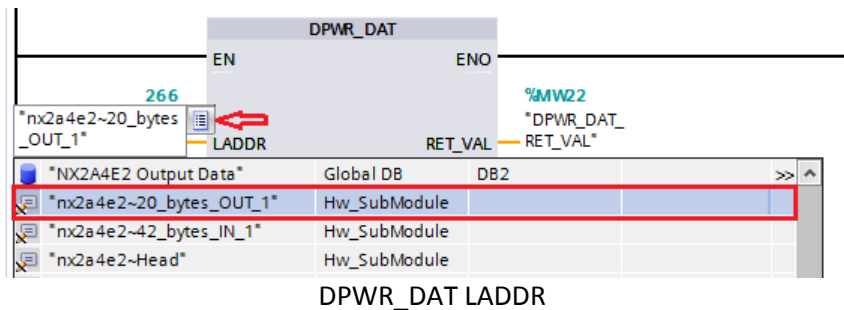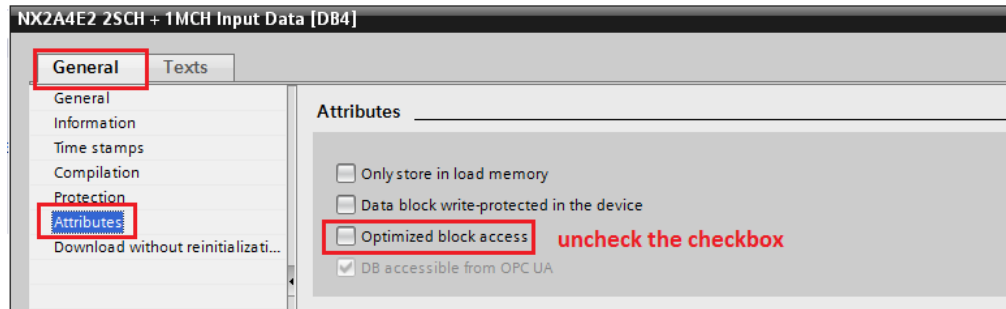

DPRD_DAT LADDR

DPRD_DAT RECORD

2. A **DPWR_DAT** instruction is used to write data to the NX2A4E2. 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 NX2A4E2 <u>output</u> area.
   b) The **RECORD** parameter defines the target *Data Block* (*DB*), which will contain the NX2A4E2 Output Data to be written to the NX2A4E2 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 NX2A4E2. 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.
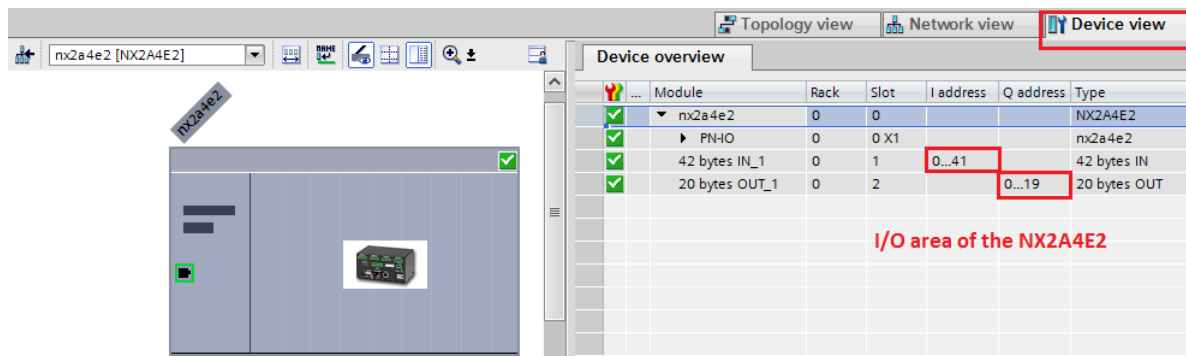
Data Block - **_Attributes_** properties

I/O Area of the NX2A4E2

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 NX2A4E2. In these cases, the NX2A4E2 can be accessed directly through its I/O area.

Input and Output Module addresses are assigned by the system when the NX2A4E2 is added to the network. To learn the NX2A4E2's I/O area addresses, select the NX2A4E2 from the **_Network view_** and then select the **_Device view_** tab. In this example, the Input area address range is from 0 to 41, and the Output area address range is from 0 to 19. Therefore, _Module Status_ word, as an input word, would be located in **IW0**, _Channel Status_ word in **IW2**… and the _Command Word_, the first output word, would be located in **QW0**, _Setup Word_ in **QW2**…

Input and Output Module Addresses

In this sample program, as depicted in the following figure, the Command Word is tagged as "NX2A4E2_Command_Word", which is how it will be used in the function blocks, and its address is QW0.
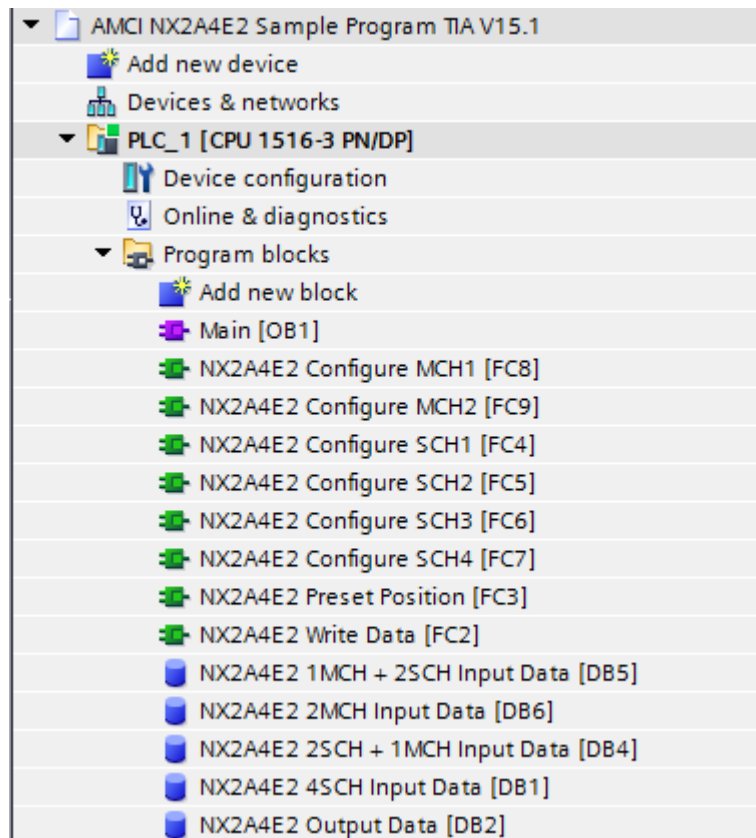

NX2A4E2_Command_Word tag

Functions and Data Blocks

The sample program contains Functions (FC) and Data Blocks (DB), as shown in the following figure, for different configuration options of the NX2A4E2. As an example, this program will configure the NX2A4E2 as following:

- channel 1 (CH1) to work with a single resolver transducer – FC: **NX2A4E2 Configure SCH1**
- channel 2 (CH2) to work with a single resolver transducers – FC: **NX2A4E2 Configure SCH2**
- channels 3&4 (CH3, CH4) to work with one dual (**m**ultiturn) resolver transducer – FC: **NX2A4E2 Configure MCH2**

Input data from such configured NX2A4E2 will be stored in the corresponding Data Block – DB: **NX2A4E2 2SCH + 1MCH Input Data.**

NX2A4E2 Functions and Data Blocks

ADDITIONAL NOTES

CONFIGURATION GSDML FILES

There are two versions, V2.33 and V2.31, of the GSDML file that is common for all of AMCI Specialty IO devices:

- GSDML-V2.33-AMCI-IO-20200915
- GSDML-V2.31-AMCI-IO-20200915

If your system does not support the latest version V2.33, try to install an earlier version V2.31.