

## AMCI NX2A4E2 Sample Program - READ ME

The **AMCI\_NX2A4E2\_Sample\_Program** shows how to program and preset the NX2A4E2 for both **Single Turn** and **Multi Turn** Resolver settings.

### Reading and Writing to the NX2A4E2

This sample program also shows how to read and write data to the drive using SFC14 and SFC15 functions to preserve the consistency of the transferred data.

The following information will help you correctly set the needed parameters for the SFC14 and SFC15 functions.

1. A **SFC14** function is used to read data from the NX2A4E2 drive. 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 data will be read. As shown in the Figure 1, the starting address for the NX2A4E2 input area is 256, which is 100hex.
  - b) The **RECORD** parameter defines the target **Data Block (DB)**, which will contain the NX2A4E2 Input Data that is read by this function. Set the pointer to the beginning of the data block (P#DB3.DBX0.0) and define the data length (BYTE 42).
  - c) The **RET\_VAL** parameter will contain an error code if an error occurs while the function is being executed.

```
SFC14 function is used to read consistent data from the NX2A4E2 unit:  
  
LADDR = W#16#100, this is the starting address for the input Module (256  
          = 100hex)  
RECORD = P# DB3.DBX0.0 BYTE 42, pointer loaded with starting bit of the  
          Data Block DB3 (byte 0, bit 0) and the length is 42 bytes.  
RET_VAL = MW12, a memory location 1 word long, which is used to store an error  
          message if the function is not executed properly  
  
It is this stored data that your ladder logic program should use when  
referencing the NX2A4E2 unit.
```

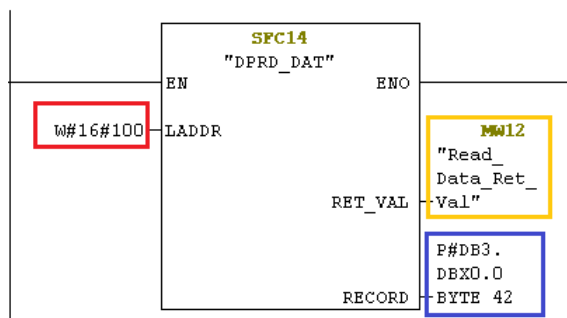


Figure 1: SFC14

2. A **SFC15** function is used to write data to the NX2A4E2 drive. It ensures that consistent data is transferred without any interruption. This function has 3 parameters that need to be assigned:
- The **LADDR** parameter selects the PROFINET I/O module to which data will be written. As shown in the Figure 2, the starting address for the NX2A4E2 output area is 256, which is 100hex.
  - The **RECORD** parameter defines the target **Data Block (DB)**, which will contain the NX2A4E2 Output Data to be written to the NX2A4E2 drive by this function. Set the pointer to the beginning of the data block (P#DB5.DBX0.0) and define the data length (BYTE 20).
  - The **RET\_VAL** parameter will contain an error code if an error occurs while the function is being executed.

```
SFC15 function is used to write consistent data to the NX2A4E2 unit:  
  
LADDR = W#16#100, this is the starting address for the output Module (256  
        = 100hex)  
RECORD = P# DB5.DBX0.0 BYTE 20, pointer loaded with starting bit of the  
        Data Block DB5 (byte 0, bit 0) and the length is 20 bytes.  
RET_VAL = MW14, a memory location 1 word long, which is used to store an error  
        message if the function is not executed properly.
```

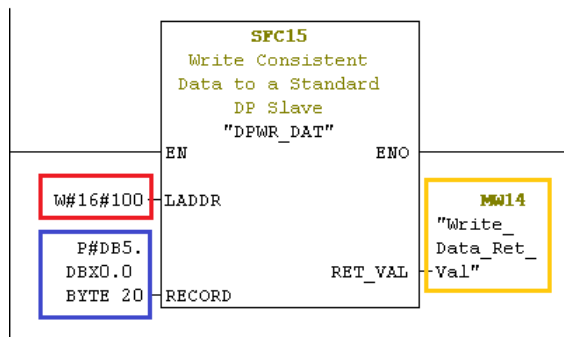


Figure 2: SFC15

## 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.

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, go to the HW Configuration window and select the NX2A4E2. In this example, the Input area address range is from 256 to 297, and the Output area address range is from 256 to 275. Therefore, *Module Status* word, as an input word, would be located in **PIW256**, *Channel Status* word in **PIW258...** and the *Command Word*, the first output word, would be located in **PQW256**, *Setup Word* in **PQW258...**

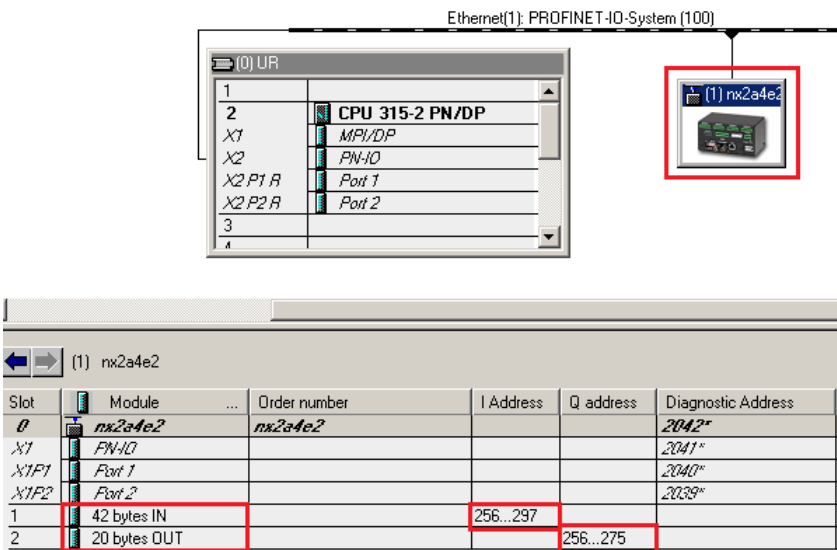


Figure 3: I/O area address range of the NX2A4E2

In this sample program, as depicted in the following figure, the Output Command Word is tagged as “Output\_Command\_Word”, which is how it will be used in the function blocks, and its address is PQW256.

22		Offset_Once	M 20.1	BOOL	
23		Output_Command_Word	PQW 256	WORD	
24		Read_Data_Ret_Val	MW 12	INT	
25		Write_Data_Ret_Val	MW 14	INT	

Figure 4: Output\_Command\_Word tag