

AMCI SMD23x2 Sample Program - READ ME

NOTE: This sample program uses the AMCI SMD23x2, but the program is fully applicable for all of AMCI's SMD integrated stepper drives – SMD17x2, SMD23x2, SMD24x2, and SMD34x2. If you want to use these sample programs for any other stepper drive besides the SMD23x2, replace the existing SMD23x2 with the one of your choice and assign to the chosen drive a name that is suitable for your application.

This sample program, with some slight modifications, is also applicable for our AC (SD17060x2 and SD31045x2) and DC (SD4840x2) drives since all of our drives are based on 20 bytes of input and output modules and follow the same configuration and command format.

The **AMCI_SMD23x2_Basic_Moves_Sample_Program** shows the basic steps needed to begin controlling all of AMCI's integrated stepper motor drives. This program will preset the position, make relative and absolute moves, make JOG CW and CCW moves, make CW home move, or clear errors.

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 SMD23x2 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 3, the starting address for the SMD23x2 input area is 256, which is 100hex.
 - b) The **RECORD** parameter defines the target **Data Block (DB)**, which will contain the SMD23x2 Input Data that is read by this function. Set the pointer to the beginning of the data block (P#DB1.DBX0.0) and define the data length (BYTE 20).
 - 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 SMD23x2 unit:  
  
LADDR = W#16#100, this is the starting address for the first input Module (256  
= 100hex)  
RECORD = P# DB1.DBX0.0 BYTE 20, pointer loaded with starting bit of the  
Data Block DB1 (byte 0, bit 0) and the length is 20 bytes.  
RET_VAL = MM21, 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 SMD23x2 unit.
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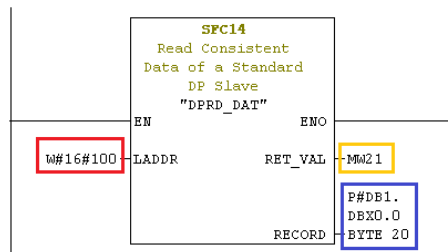


Figure 1: SFC14

2. A **SFC15** function is used to write data to the SMD23x2 drive. It ensures that consistent data is transferred without any interruption. This function 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 Figure 3, the starting address for the SMD23x2 output area is 256, which is 100hex.
 - b) The **RECORD** parameter defines the target **Data Block (DB)**, which will contain the SMD23x2 Output Data to be written to the SMD23x2 drive by this function. Set the pointer to the beginning of the data block (P#DB2.DBX0.0) and define the data length (BYTE 20).
 - c) 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 SMD23x2 unit:

LADDR = W#16#100, this is the starting address for the first output Module (256 = 100hex)

RECORD = P# DB2.DBX0.0 BYTE 20, pointer loaded with starting bit of the Data Block DB2 (byte 0, bit 0) and the length is 20 bytes.

RET_VAL = M022, a memory location 1 word long, which is used to store an error message if the function is not executed properly

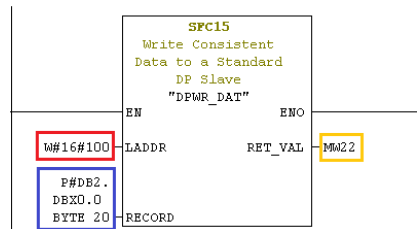


Figure 2: SFC15

ADDITIONAL NOTES

CONFIGURATION GSDML FILES

There are two versions, V2.33 and V2.31, of the same GSDML file for all AMCI drives:

- GSDML-V2.33-AMCI-SD-SMD-20171214
- GSDML-V2.31-AMCI-SD-SMD-20171214

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

I/O AREA OF THE SMD23x2

After the SMD23x2 drive is added to the network configuration, there will be an I/O area assigned to the input and output modules. To determine the range of I/O modules' addresses, go to the HW Configuration window and select the smd23x2. In this example, the address ranges for the SMD23x2 are from 256 to 275.

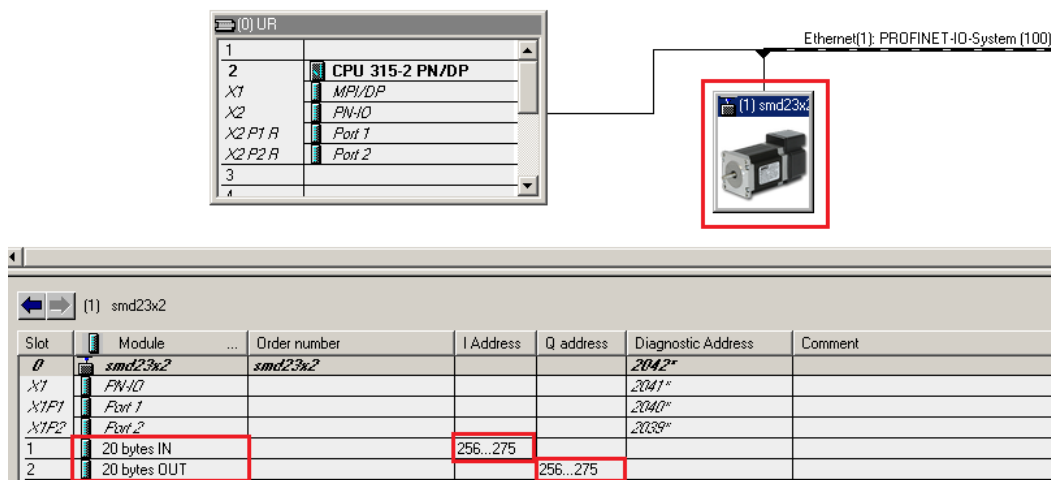


Figure 3: I/O area address range of the SMD23x2

CONFIGURATION PARAMETERS

As introduced by the GSDML file, there are configuration parameters that need to be set. To access the configuration parameters, from the HW Configuration window, select the **smd23x2** then right click on the top row – Slot: 0, Module: **smd23x2**. From the pop-up menu select **Object Properties ...**

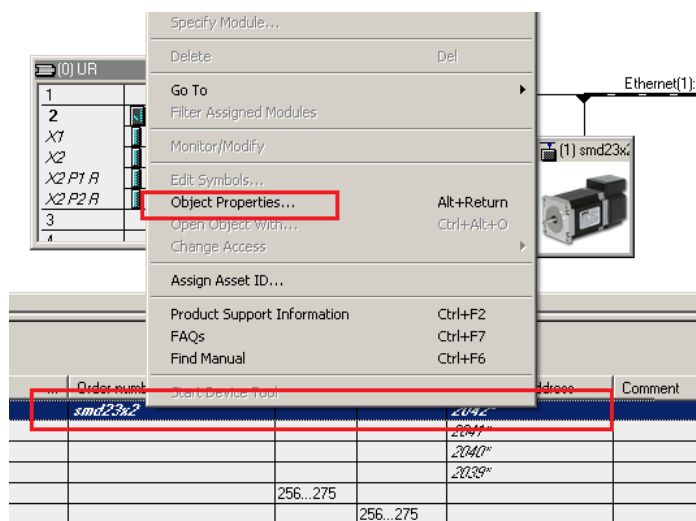


Figure 4: Object Properties

From the pop-up window, select the **Parameters** tab and open the **Configuration Parameters** folder. As you can see in the following figure, there are default values and you can change them for your specific application.

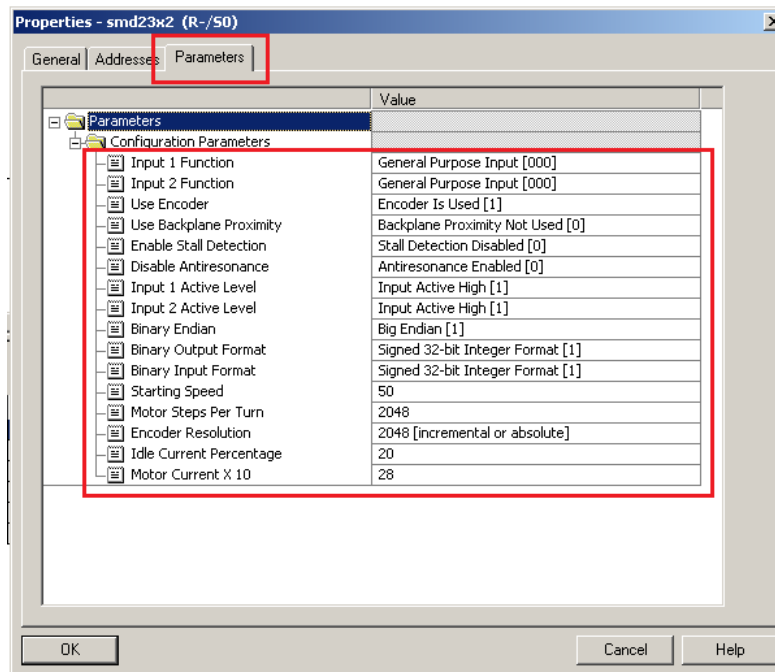


Figure 5: Configuration Parameters

Some of the configuration parameters are selectable from a drop-down menu (like the **Input 1 Function** shown in the following figure) and for others you have to enter a valid value, for example the **Motor Steps Per Turn**.

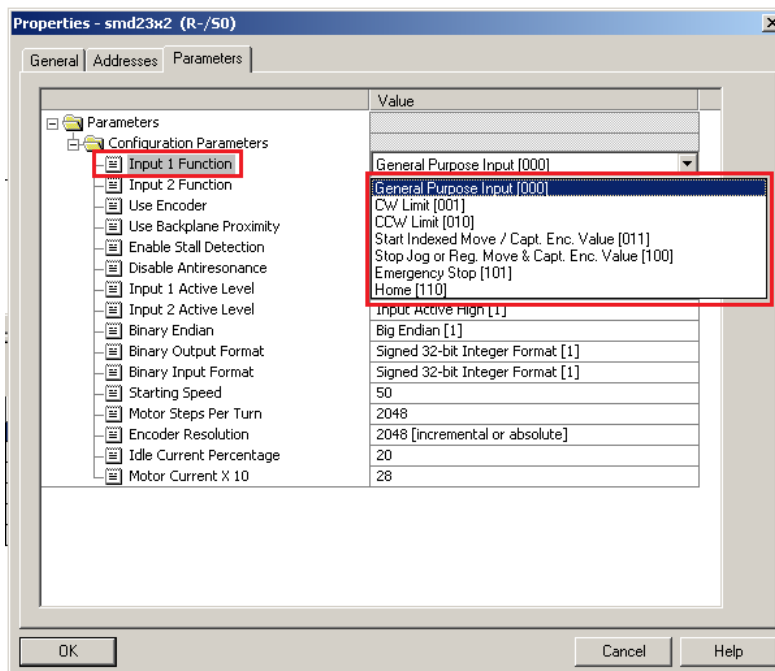


Figure 6: Selectable Configuration Parameters

After all of the Configuration Parameters have been set, save the configuration and download it to the CPU. This configuration data will now automatically be sent to the SMD23x2 every time it is powered up.