

AMCI SMD23x2 Sample Programs - READ ME

NOTE: All of the sample programs use the AMCI SMD23x2, but the programs are 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.

The **AMCI_SMD23x2_Basic_Moves_Sample_Program** shows the basic steps needed to get you started 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 repetitive CW and CCW moves, or clear errors.

The **AMCI_SMD23x2_Assembled_Moves_Sample_Program** shows how to program assembled moves and to perform blend and dwell moves.

The **AMCI_SMD23x2_Axis_Follower_Sample_Program** shows how to implement linear and circular axis follower functionality with the integrated stepper drive.

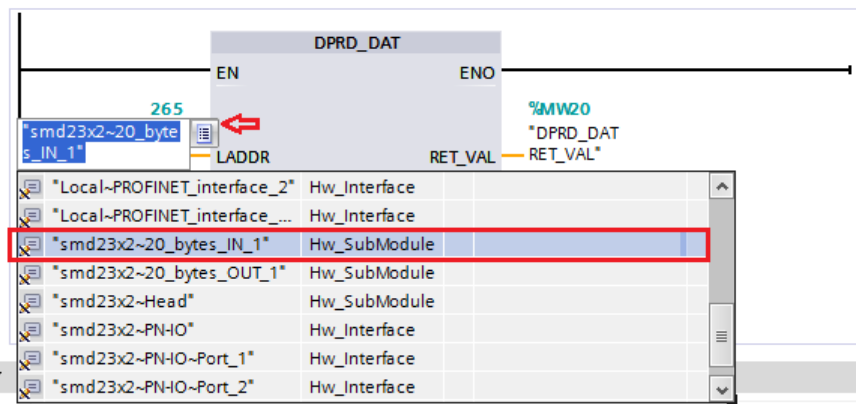
The **AMCI_SMD23x2_Library** includes common **Functions**, **Data Blocks**, and **Tags**, some of which are used in the sample programs. This library can be imported, and modified if needed, for use in any of your projects.

These sample programs also show how to read and write data to the drive 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.

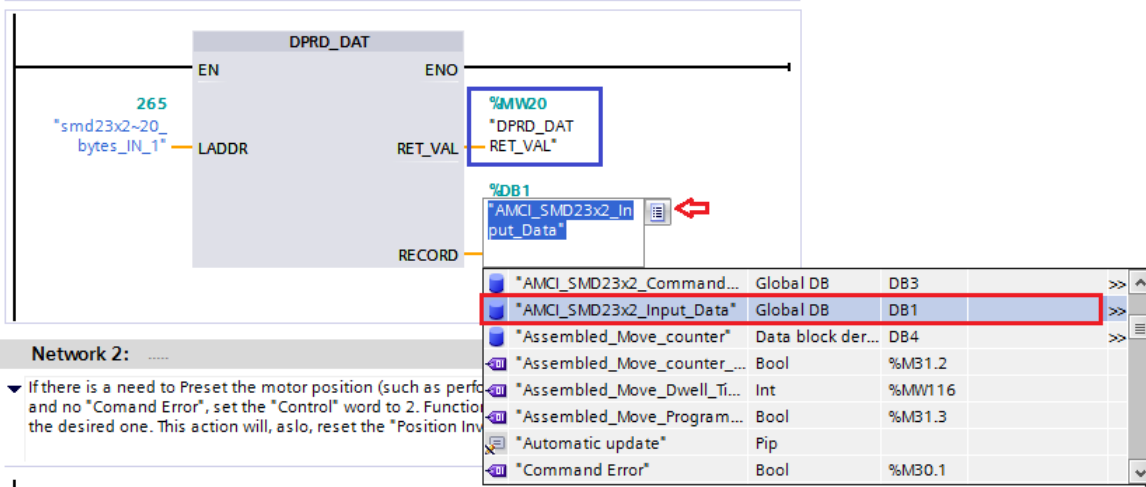
1. A **DPRD_DAT** instruction is used to read data from the SMD23x2 drive. It ensures that consistent data is transferred without any interruption. This instruction has 3 parameters that need to be assigned:
 - a) The **LADDR** parameter selects the PROFINET I/O module from which data will be read. As shown in the 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 SMD23x2 input area.
 - b) The **RECORD** parameter defines the target **Data Block (DB)**, which will contain the SMD23x2 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.

- ▼ To read a consistent data from the SMD23x2 driver, a DPRD_DAT instruction is used. Data will be stored in Data Block "AMCI_SMD23x2_Input_Data". It is this stored data that your ladder logic program should use when referencing the SMD23x2 input data.



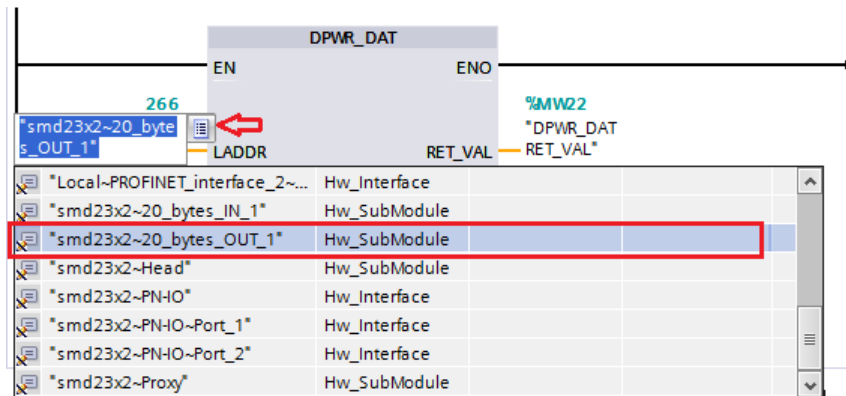
DPRD_DAT LADDR

- ▼ To read a consistent data from the SMD23x2 driver, a DPRD_DAT instruction is used. Data will be stored in Data Block "AMCI_SMD23x2_Input_Data". It is this stored data that your ladder logic program should use when referencing the SMD23x2 input data.

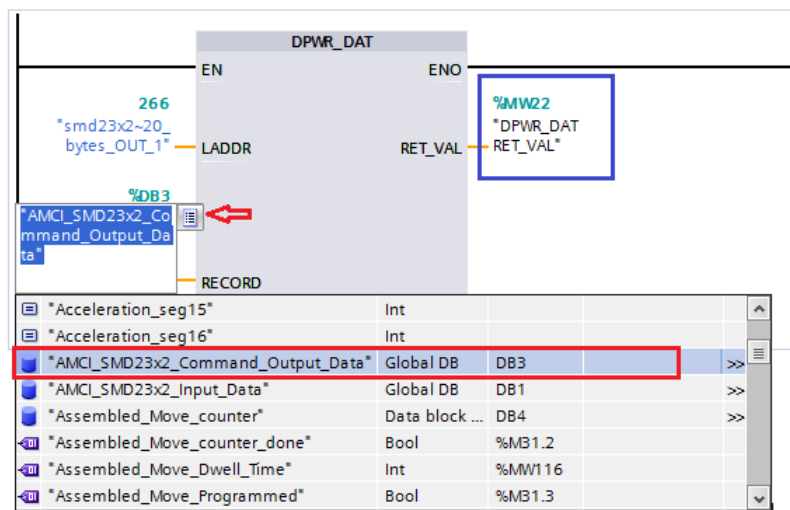


DPRD_DAT RECORD

2. A **DPWR_DAT** instruction is used to write data to 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 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 SMD23x2 **output** area.
 - 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 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.

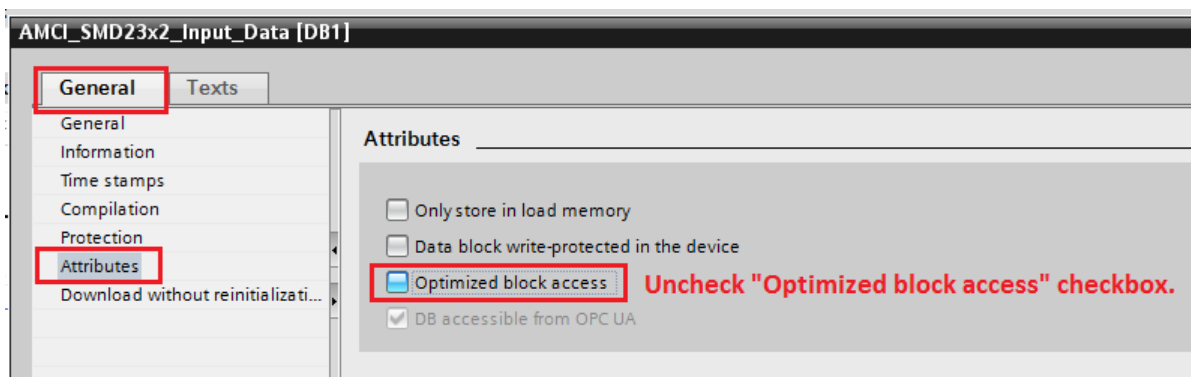


DPWR_DAT LADDR



DPWR_DAT RECORD

- 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 SMD23x2 drive. 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

4. Input and Output Module addresses are assigned by the system when the SMD23x2 drive is added to the network. If you need to access the SMD23x2's I/O area directly, select the SMD23x2 drive 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, Status Word 0, as an input word, would be located in **IW00**, Status Word 1 in **IW02**... and the Command Word 0, as an output word, would be located in **QW00**, Command Word 1 in **QW02**...

Module	Rack	Slot	I address	Q address	Type
smd23x2	0	0			SMD23x2
PNHO	0	0 X1			smd23x2
20 bytes IN_1	0	1	0...19		20 bytes IN
20 bytes OUT_1	0	2		0...19	20 bytes OUT

Input / Output area of the SMD23x2 I/O modules.

Input and Output Module Addresses