

## SMDYYx2 Sample Programs - READ ME

**NOTE:** The SMDYYx2 sample programs are written to work with all of AMCI's SMD integrated drives – SMD17x2, SMD23x2, SMD24x2, and SMD34x2. If you want to use these sample programs for any other drive besides the SMD23x2, replace the existing SMD23x2 with the one of your choice and assign to the chosen drive the generic name: SMDYYx2.

The *SMDYYx2\_Sample\_Program* shows the basic steps needed to get you started controlling all of AMCI's integrated stepper motor drivers. 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 *SMDYYx2\_Sample\_Program\_Assembled\_Move* shows how to program assembled moves and to perform blend and dwell moves.

These sample programs also show how to read and write data to the drive using DPRD\_DAT and DPWR\_DAT instructions in order to preserve the consistency of the transferred data.

There is also a **SMDYYx2 Library** folder with common *Functions*, *Data Blocks*, and *SMDYYx2 Tags*, some of which are used in the sample programs. This library can be imported, and modified if needed, for use in any other project.

The following information will help you correctly set parameters by finding needed values that are assigned by your system and, therefore, are unique to your program.

1. A **DPRD\_DAT** instruction is used to read data from the SMDYYx2 driver and ensures consistent data that does not change in the middle of the program scan. 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, open either the *Default tag table* or *Show all tags* and select the *System constants* tab.
  - b) The **RECORD** parameter defines the target *Data Block (DB)*, which will contain the SMDYYx2 Input Data that is read by this instruction.
  - c) The **RET\_VAL** parameter will contain an error code if an error occurs while the instruction being executed.

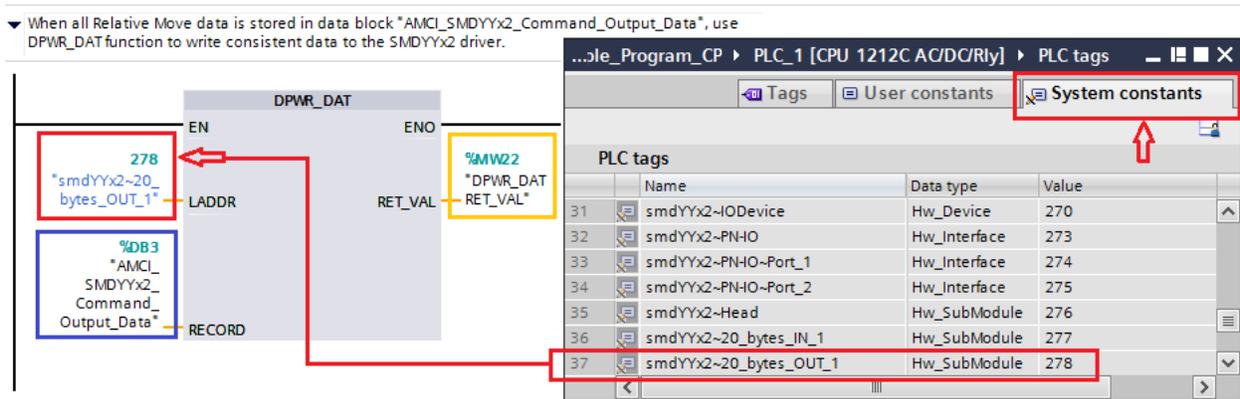
▼ To read a consistent data from the SMDYYx2 driver, a DPRD\_DAT instruction is used. Data will be stored in Data Block \*AMCI\_SMDYYx2\_Input\_Data. It is this stored data that your ladder logic program should use when referencing the SMDYYx2 input data.

The screenshot shows a ladder logic program with a DPRD\_DAT instruction. The instruction has three parameters: EN, ENO, and RET\_VAL. The LADDR parameter is set to 277, which is highlighted in a red box. The RET\_VAL parameter is set to %MW20, which is highlighted in a yellow box. The RECORD parameter is set to %DB1, which is highlighted in a blue box. The PLC tags table is open, showing the System constants tab. The table lists the following tags:

Name	Data type	Value
smdYYx2-IIODevice	Hw_Device	270
smdYYx2-PNHO	Hw_Interface	273
smdYYx2-PNHO-Port_1	Hw_Interface	274
smdYYx2-PNHO-Port_2	Hw_Interface	275
smdYYx2-Head	Hw_SubModule	276
smdYYx2-20_bytes_IN_1	Hw_SubModule	277
smdYYx2-20_bytes_OUT_1	Hw_SubModule	278

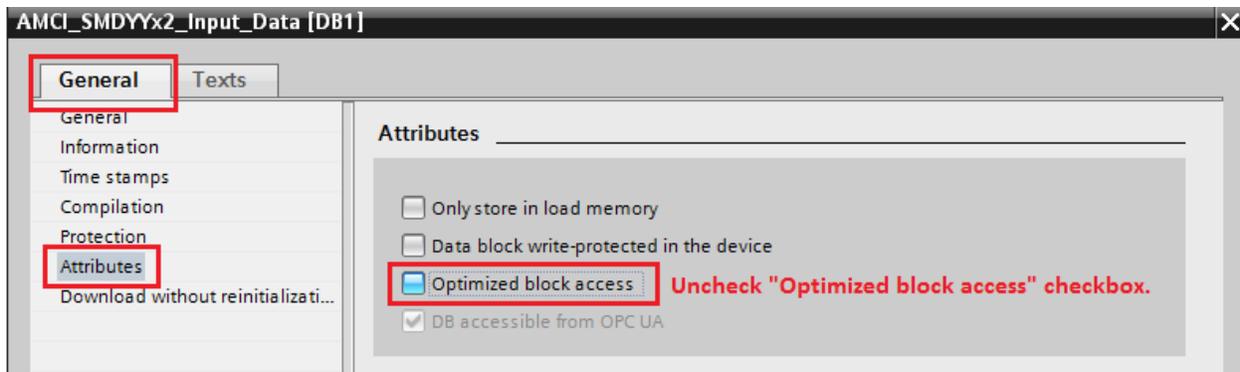
DPRD\_DAT instruction

2. A **DPWR\_DAT** instruction is used to write data to the SMDYYxx2 and ensures that all twenty bytes of data reach the driver at one time. 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, open either the **Default tag table** or **Show all tags** and select the **System constants** tab.
  - b) The **RECORD** parameter defines the target **Data Block (DB)**, which will contain the SMDYYx2 Output Data to be written to the SMDYYx2 driver by this instruction.
  - c) The **RET\_VAL** parameter will contain an error code if an error occurs while the instruction being executed.



DPWR\_DAT instruction

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 SMDYYx2 driver. 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 SMDYYx2 driver is added to the network. If you would prefer to access the SMDyyx2's information directly, to learn the location of these registers, select the SMDYYx2 driver from the **Network view** and then select the **Device view** tab. In this example, Status Word 0, as an input word, would be located in **IW68**, Status Word 1 in **IW70**... and the Command Word 0, as an output word, would be located in **QW64**, Command Word 1 in **QW66**...

Module	Rack	Slot	I address	Q address	Type
smdYYx2	0	0			SMD23x2
PNHO	0	0 X1			smd23x2
20 bytes IN_1	0	1	68...87		20 bytes IN
20 bytes OUT_1	0	2		64...83	20 bytes OUT

Input and Output Module Addresses