

## SMDYYx2 Sample Programs - READ ME

**NOTE:** The SMDYYx2 sample programs are written to be fully applicable for all of AMCI SMD integrated drives – SMD17x2, SMD23x2, SMD24x2, and SMD34x2.

**SMDYYx2\_Sample\_Program** is written to show the basic instructions needed to get you started with controlling the SMDYYx2. This program will configure the drive, preset the position, make relative and absolute moves, make JOG CW and CCW moves, make repetitive CW and CCW moves, or clear errors. **SMDYYx2\_Sample\_Program\_Assembled\_Move** is written to show 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.

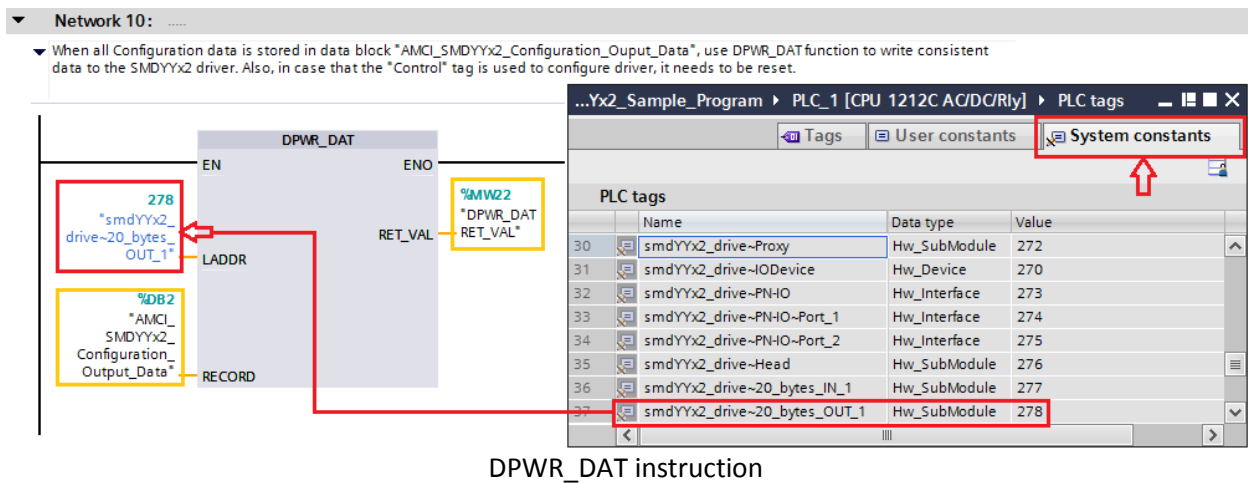
The screenshot shows the LAD editor for Network 1. The DPRD\_DAT instruction is configured as follows:

- EN:** Connected to a constant value of 277.
- LADDR:** Connected to the tag `*smdYYx2_drive~20_bytes_IN_1`.
- RET\_VAL:** Connected to the tag `*DPRD_DAT_RET_VAL`.
- RECORD:** Connected to the tag `*AMCI_SMDYYx2_Input_Data`.

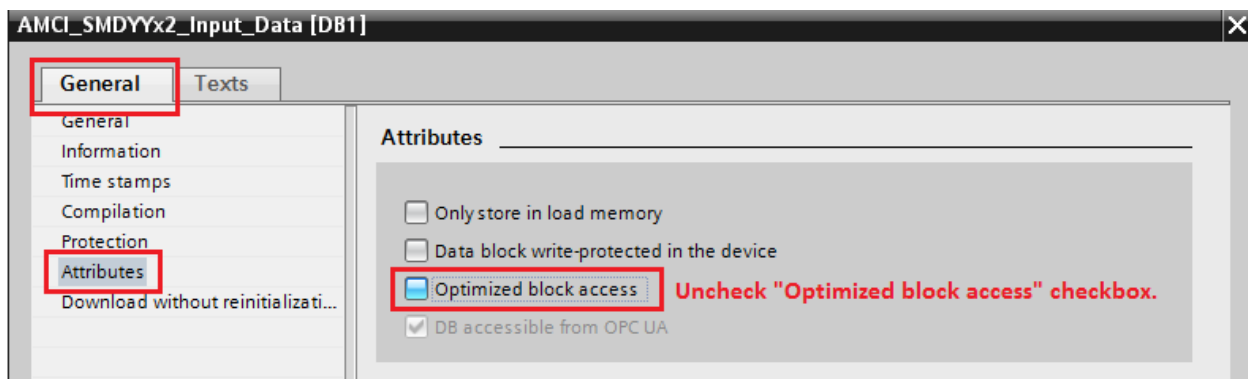
The 'PLC tags' window on the right shows the 'System constants' tab. The tag `smdYYx2_drive~20_bytes_IN_1` is highlighted, showing a value of 277. The tag `DPRD_DAT_RET_VAL` is also highlighted, showing a value of 277.

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.



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**...

The screenshot shows the SIMATIC Manager interface with the 'Device view' tab selected. The 'Device overview' table is displayed, showing the following data:

Module	Rack	Slot	I address	Q address	Type
smdYYx2 drive	0	0			SMD17x2
PN-H	0	0 X1			smd17x2
20 bytes IN_1	0	1	68...87		20 bytes IN
20 bytes OUT_1	0	2		64...83	20 bytes OUT

Red boxes highlight the 'I address' '68...87' and the 'Q address' '64...83'. Red arrows point from these boxes to the labels 'Input Address' and 'Output Address' respectively. The 'Device view' tab is highlighted in the top navigation bar.

Input and Output Module Addresses