

## TIA PORTAL DAD Protocol – Notes

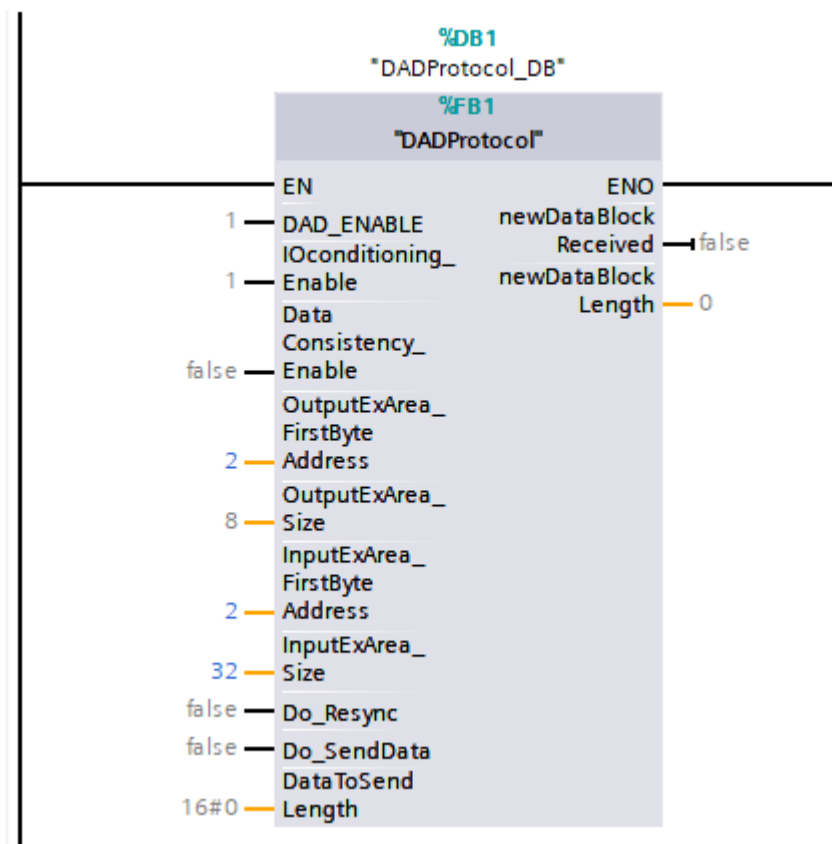
Here we have a TIA Portal project containing the Function Block which implements the DAD protocol. The Hardware configuration includes a PLC S7-1500 and a node, it's just an example that can be easily changed according to any specific application.

The implemented functionalities are:

- **Data Handshake**
- **Synchronization between PLC and reader.**  
This procedure is executed automatically by the PLC if the reader disconnects unexpectedly from the network (e.g the reader turns off due to a power supply drop). Another way to perform the synchronization is through the input "ProtocolDoResync" of the DAD function block.
- **Fragmentation.**
- **Data Consistency check.**

The Program Blocks cluster shows:

- **Main [OB1]:** simple ladder program with only one network containing the DAD function block.
- **DADProtocol [FB1]:** State machine written in ST language which implements the above functionalities.
- **DADProtocol\_DB [DB1]:** data block of the DAD Function Block (FB1) instance called by the Main (OB1) program. It contains the configuration parameters of the DAD. This block should be modified accordingly to the Hardware configuration of the TIA project and the device configuration too.



A user should modify the following parameters:

- *IOconditioning\_Enable* → Enable of the input/output conditioning (this parameter can be configured in the device configuration tool)
- *DataConsistency\_Enable* → Enable of the Data Consistency Check (this parameter can be configured in the device configuration tool).
- *OutputExArea\_FirstByteAddress* → Address of the first byte of the Exchange area in which the PLC can write data to the reader (this parameter is set in the TIA Hardware Configuration)
- *OutputExArea\_Size* → Dimension of the Exchange area in which the PLC can write data to the reader (this parameter is set in the device configuration tool).
- *InputExArea\_FirstByteAddress* → Address of the first byte of the Exchange area in which the PLC reads the data from the reader (this parameter is set in the TIA Hardware Configuration).
- *InputExArea\_Size* → Dimension of the Exchange area in which the PLC reads the data from the reader (this parameter is set in the device configuration tool).
- *Do\_Resync* → to activate the Resync procedure
- *Do\_Senddata* → to activate the writing procedure from PLC to the node
- *DataToSendLength* → outgoing message size

**Note:** the internal IObuffer, so the array of bytes which contains the input from the reader is set to 512 by default.

| DADProtocol_DB |  |                       |                       |
|----------------|--|-----------------------|-----------------------|
|                |  | Name                  | Data type             |
| 15             |  | DataToSendLength      | Byte                  |
| 16             |  | Static                |                       |
| 17             |  | newInputDataAvailable | Bool                  |
| 18             |  | InputExArea_Type      | Byte                  |
| 19             |  | OutputExArea_Type     | Byte                  |
| 20             |  | DB_Number             | DInt                  |
| 21             |  | inputBuffer           | Array[0..512] of Byte |
| 22             |  | outputBuffer          | Array[0..512] of Byte |

Adjust the array size in the DADProtocol\_DB if needed by the application.