

# S15C-MTH Process Data Function

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January 15<sup>th</sup>, 2026

This document covers the installation and use of a function for Siemen's TIA Portal software package. This function handles cyclic IO-Link Process Data In from a Banner S15C-MTH sensor via an IO-Link Master to a Siemens PLC. The function covers parsing and display of the S15C-MTH sensor Process Data In.

## **Components**

Banner S15C R45C Library v16.zal16

There are two methods for the process data. The first is used when creating a connection to Banner's IO-Link masters. The second set of instructions are for systems using other manufacturer's IO-Link masters.

### **Installation Instructions**

1. Open a project.
2. Go to the Open Global Library option in the Libraries tab in TIA Portal v16 or greater.



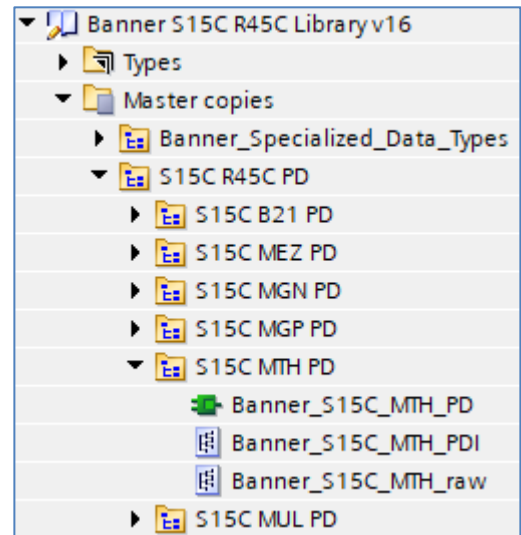
3. Switch the “Files of type” to Compressed libraries. Go to the location of the compressed library.
4. Press the Open button and the library will be uncompressed and opened.
5. The library is now accessible in the Libraries tab in v16 or greater.

### **Setup of S15C-MTH with a Banner DXMR**

1. Go to Device and Networks to configure the DXMR. Add the DXMR if it has yet to be added to the system.
2. Open the IO-Link Generic Devices and select the proper module. The 8/8 byte option has been selected for port 1. Make note of the I address for the Slot 2 which represents Port 1. Slot 2 starts are 10. The other number needed is I14. The data for the port start at that point (I14). The previous four bytes represents Port Status, Process Data In Size, and Process Data Out Size.

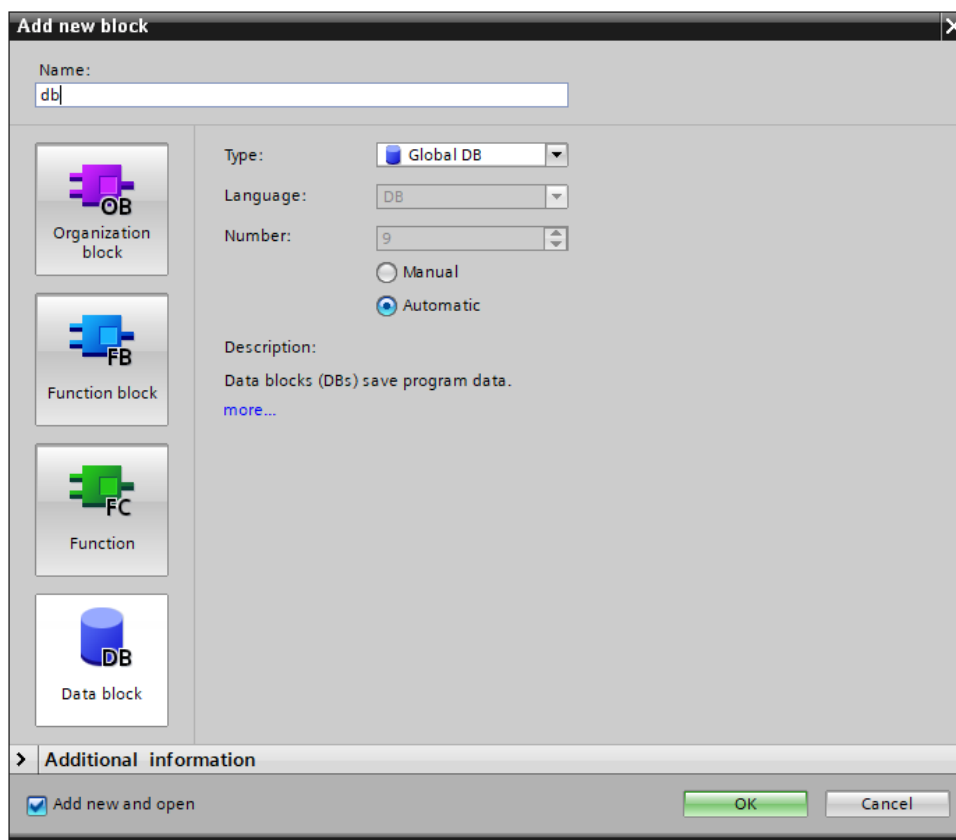
Module	Rack	Slot	I address	Q address	Type
▼ dxm	0	0			1-port Device
▶ Interface	0	0 X1			dxm
Banner IO-Link Master Info_1	0	1	1...9		Banner IO-Link Master Info
IO-Link In/Out 8/ 8 Byte + Status_1	0	2	10...21	1...22	IO-Link In/Out 8/ 8 Byte + Status

3. Drag the Banner\_S15C\_MTH\_PDI and Banner\_S15C\_MTH\_raw to the PLC Data Types area under your PLC.
4. Drag the Banner\_S15C\_MTH\_PD to the Program Blocks area.
5. Drag the necessary tags from Banner\_Specialized\_Data\_Types. The tags used in this example is "Banner\_8In". These tags represent the full raw process data along with port status information.
6. Go to PLC Tags. Create two tags. One tag is for the full data structure while the second creates a tag to represent the raw Process Data from the IO-Link Master. In this example, Tag table\_1 was created, then the tag "S15C MTH IOLM1 01 PDI" was created using a Data Type of "Banner\_8In". This naming convention calls out the type of sensor in question as well as the specific IO-Link Master and port number where the sensor is connected. A different IO-Link Master might be named IOLM2 or IOLM3, for instance, and other specific sensors may be connected to different port numbers. The "I" address found in step 2 is tied to this new tag. The second is "S15C MTH IOLM1 01 inRaw". This is the tag that will be used in the Function block.



Name	Data type	Address
▶ S15C MTH IOLM1 01 PDI	"Banner_8In"	%I10.0
▶ S15C MTH IOLM1 01 inRaw	"Banner_S15C_MTH_raw"	%I14.0

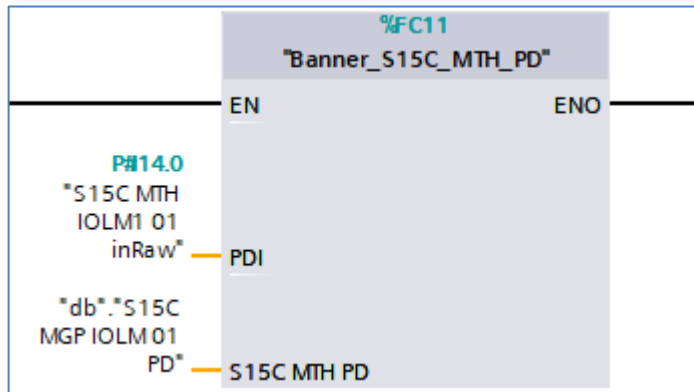
7. Go to Program blocks. Add a new Data block if necessary. In this example the new data block is named "db".



8. In the new data block, create a new tag to represent the parsed Process Data In for our S15C MTH. The tag name again calls out the type of sensor, the IO-Link Master, and the port number. Use the data type "Banner\_S15C\_MTH\_PDI" for the new tag.

S15C MTH IOLM1 01 PD		*Banner_S15C_MTH_PDI*
■	Humidity	Real
■	Temperature C	Real
■	Temperature F	Real

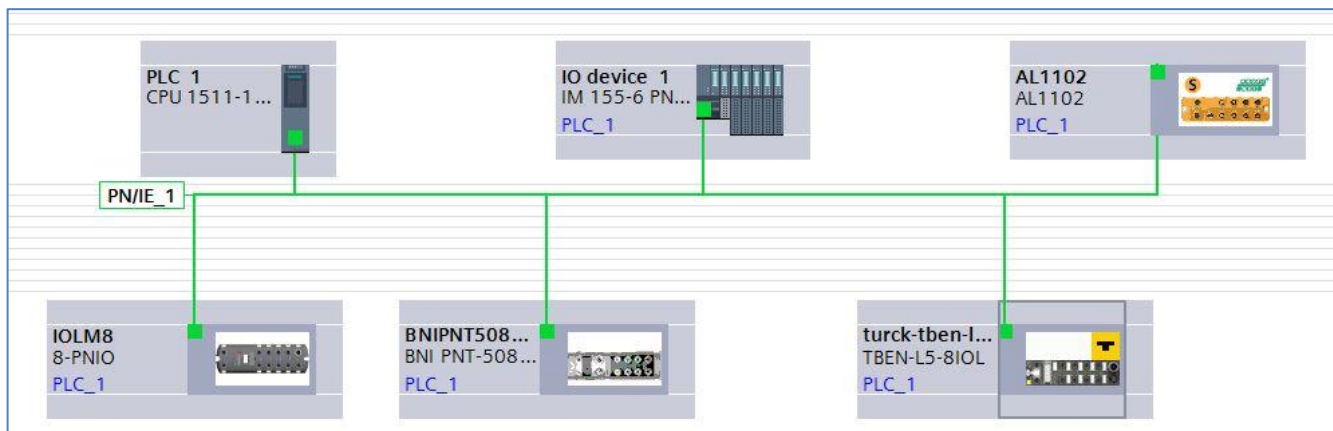
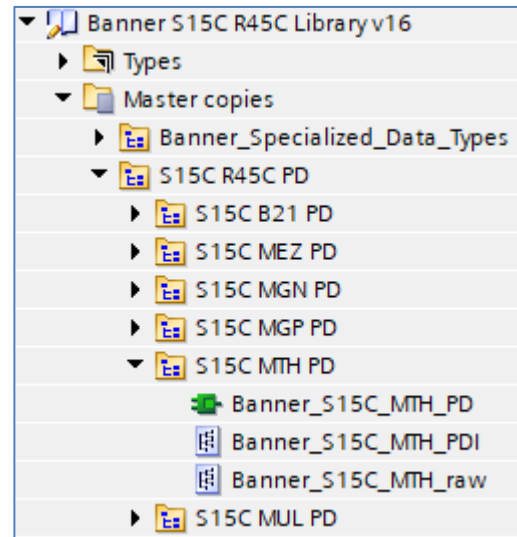
9. Add the “Banner\_S15C\_MTH\_PD” function to an OB ladder. Link the “PDI” and “PDO” to the raw Process Data variable from step 5. Link the “S15C MTH PD” to the parsed Process Data variable from step 7.



10. Process Data setup is complete.
11. Compile and download the configuration to the PLC, then go online. Open the “db” data block and click Monitor all. You should see parsed S15C Process Data.

### **Setup of S15C-MTH with other IO-Link Masters**

1. The Banner IO-Link Library will now be in the Global Library List. Expand the Master copies section.
2. Drag Banner\_S15C\_MTH\_PD to the Program Blocks area under your PLC.
3. Drag Banner\_S15C\_MTH\_PDI and Banner\_S15C\_MTH\_raw to the PLC Data Types area under your PLC.
4. Go to Devices and networks to configure the system as necessary. Below is an example of what a configuration might look like. This example shows 5 different IO-Link Masters connected to the same PLC.

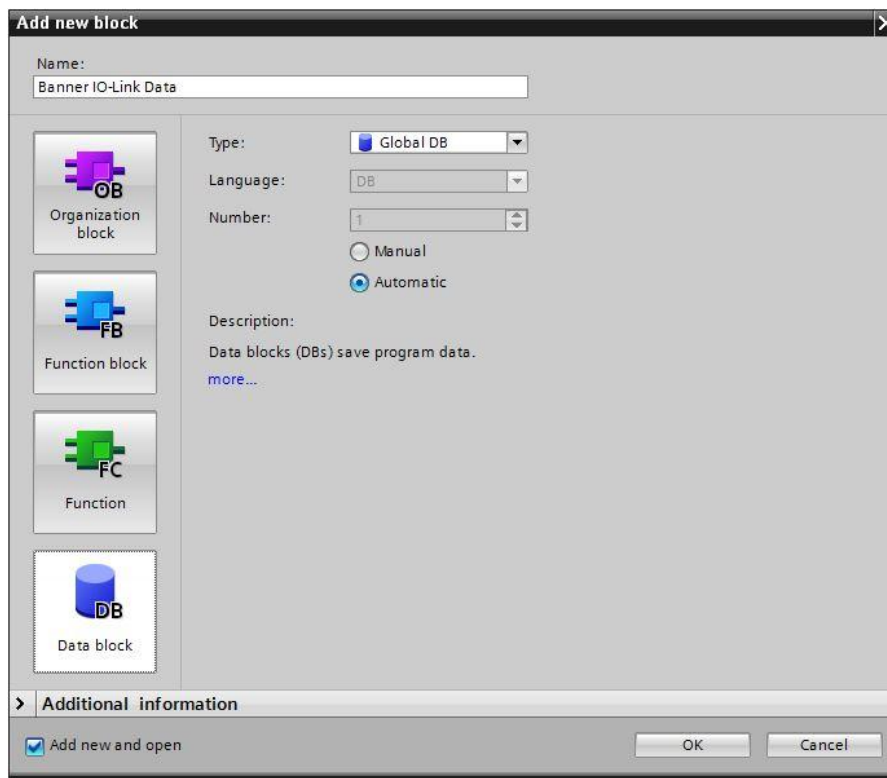


5. Click on the relevant device and configure the IO-Link Master as necessary. Refer to the documentation for the IO-Link Master. Recall that a S15C-MTH requires 6 bytes of space for the Process Data In.
6. Record the "I" address where this S15C-MTH Process Data In is to be stored, as the address will be required in the next step. In this example, 6 bytes of Process Data In for port 1 on the IO-Link Master will be stored starting at I68.

7. Go to PLC Tags. Add a new tag table, if desired, then create a new tag to represent the raw Process Data from the IO-Link Master. In this example the tag “S15C MTH IOLM1 01 PDI” was created using a Data Type of “Banner\_S15C\_MTH\_raw”. This naming convention calls out the type of sensor in question as well as the specific IO-Link Master and port number where the sensor is connected. A different IO-Link Master might be named IOLM2 or IOLM3, for instance, and other specific sensors may be connected to different port numbers. The “I” address found in step 6 is tied to this new tag.

▶ S15C MTH IOLM1 01 inRaw	"Banner_S15C_MTH_raw"	%I68.0
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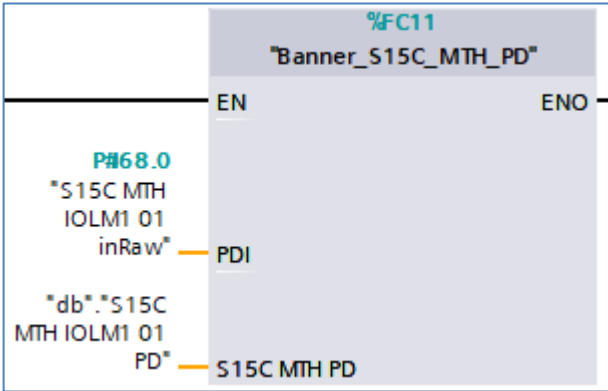
8. Go to Program blocks. Add a new Data block if necessary. In this example the new data block is named “Banner IO-Link Data”.



9. In the new data block, create a new tag to represent the parsed Process Data for our S15C-MTH. The tag name again calls out the type of sensor, the IO-Link Master, and the port number. Use the data type “Banner\_S15C\_MTH\_PDI” for the new tag.

▼ S15C MTH IOLM1 01 PD	"Banner_S15C_MTH_PDI"
■ Humidity	Real
■ Temperature C	Real
■ Temperature F	Real

10. Add the “Banner\_S15C\_MTH\_PD” function to an OB ladder. Link the “PDI” and “PDO” to the raw Process Data variables from step 10. Link the “S15 MTH PD” to the parsed Process Data variable from step 12. For the “Include Binary” decision, see Appendix A.



11. Process Data setup is complete.
12. Compile and download the configuration to the PLC, then go online. Open the “Banner IO-Link Data” data block and click Monitor all. Expand “S15C MTH IOLM1 01”.

	Name	Data type
1	Static	
2	S15C MTH IOLM1 01	"Banner_S15C_MTH_PDI"
3	Humidity	Real
4	Temperature C	Real
5	Temperature F	Real



**Appendix A****S15C-MTH Process Data**

The S15C-MTH has 6 bytes of Process Data In, as shown below.

**ProcessDataIn "Process Data In" id=V\_Pd\_InData**

bit length: 48

data type: 48-bit Record (subindex access not supported)

subindex	bit offset	data type	allowed values	default value	acc. restr.	mod. other var.	excl. from DS	name	description
1	0	16-bit UInteger	0..65535					Humidity (%RH)	Humidity (%RH). Only available on the M12FTH3Q model. Humidity sensor is not included with the M12FT3Q model. The humidity = (value) / 100.
2	16	16-bit Integer	-32768..32767					Temperature (C)	Temperature in Celcius or Fahrenheit. The temperature = (value) / 20.
3	32	16-bit Integer	-32768..32767					Temperature (F)	Temperature in Celcius or Fahrenheit. The temperature = (value) / 20.

This function intelligently parses this Process Data into its component pieces.