

Banner Pro Indicator Process Data Function

February 18th, 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 Out to a Banner Pro Indicator (K50 & K90 models) light via an IO-Link Master from a Siemens PLC. The function covers parsing and display of the Pro Indicator Process Data Out. This write-up will use a K90 for the setup.

Components

Banner ProIndicator 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.



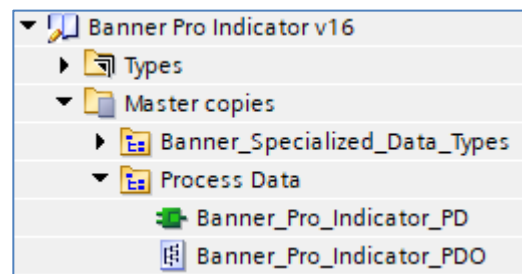
3. Switch the “Files of type” to Compressed libraries. Go to the location of the compressed library.
4. Press the Open button and the library will be uncompressed and opened.
5. The library is now accessible in the Libraries tab in v16 or greater.

Setup of Pro Indicator 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. Add Banner IO-Link Master Info to Slot 1. This sets the DXMR for IO-Link mode.
3. Open the IO-Link Generic Devices and select the proper module. The 4/4 byte is required for K50 Pro Indicator. Make note of the Q address for the Slot 2 which represents Port 1. Slot 2 starts are 1 for outputs. The other number needed is Q3. The data for the port start at that point (Q3). The previous two bytes are for Port Control.

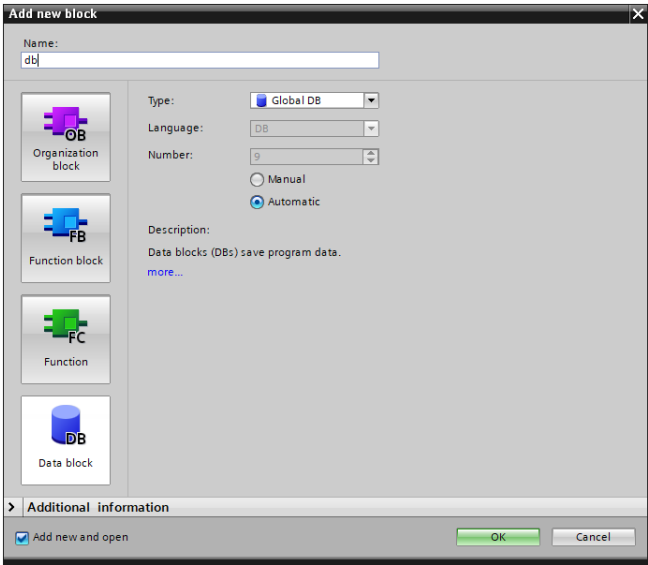
Module	Rack	Slot	I address	Q address	Type
▼ dxm	0	0			1-port Device
▶ Interface	0	0 X1			dxm
Banner IO-Link Master Info_1	0	1	1...9		Banner IO-Link Master Info
IO-Link In/Out 4/ 4 Byte + Status_1	0	2	10...17	1...18	IO-Link In/Out 4/ 4 Byte + Status

4. Drag the necessary tag from Banner_Specialized_Data_Types. The tag used in this example is "Banner_4out". This tag represents the full raw process data along with port status information.
5. Drag the necessary files from the Process Data Folder.
 - a. Move Banner_Pro_Indicator_PDO to the PLC Data Types area.
 - b. Move Banner_Pro_Indicator_PD to the Program Blocks area.
6. Go to PLC Tags. Create two tags. The first tag is for the full data structure while the second tag represents the raw Process Data from the IO-Link Master. In this example, Tag table_1 was created, then the tag "K90 IOLM1 01 PDO" was created using a Data Type of "Banner_4out". This naming convention calls out the type of device 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 "Q" address found in step 2 (%Q1) is tied to this new tag. The tag that represents the raw data is "K90 IOLM1 01 outRaw" and uses the "Q" address found in step 2 (%Q3).



Name	Data type	Address
▶ K90 IOLM1 01 PDO	"Banner_4Out"	%Q1.0
K90 IOLM1 01 oRaw	DInt	%QD3

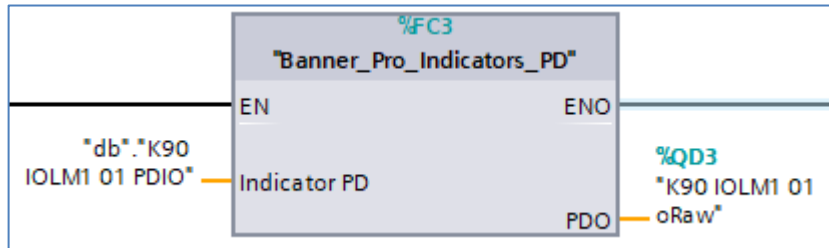
- 7. Go to Program blocks. Add a new Data block if necessary. In this example the new data block is named “db”.



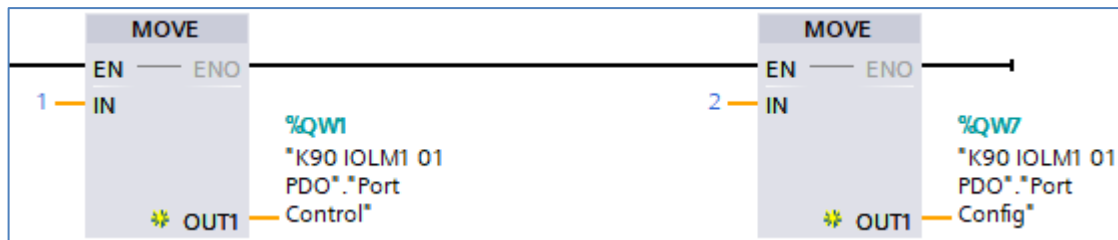
- 8. In the new data block, create a new tag to represent the parsed Process Data Output for our K90. The tag name again calls out the type of sensor, the IO-Link Master, and the port number. Use the data type “Banner_ProIndicator_PDO” for the new tag.

K90 IOLM1 01 PDIO		*Banner_ProIndicator_PDO*
■	Color1	USInt
■	Color Flash Rate	USInt
■	Color2	USInt
■	Audible Mode	USInt
■	Rotation Direction	Bool
■	Animation Type	USInt
■	Color 1 Intensity	USInt
■	Color 2 Intensity	USInt

9. Add the “Banner_Pro_Indicators_PD” function to an OB ladder. Link the “PDO” to the raw process data variable from step 6. The tag name again calls out the type of device, IO-Link Master, and the port number. Use the variable called “K90 IOLM1 01 oRaw” in this example. The “Indicator PD” needs to be linked to the variable created in step 8. It was called “K90 IOLM1 01 PDIO” for this example.



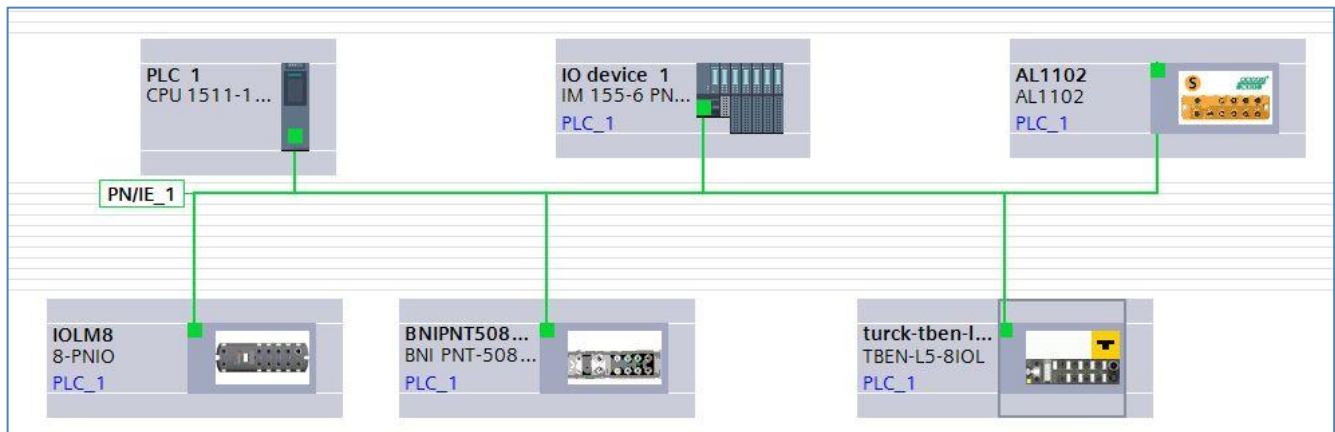
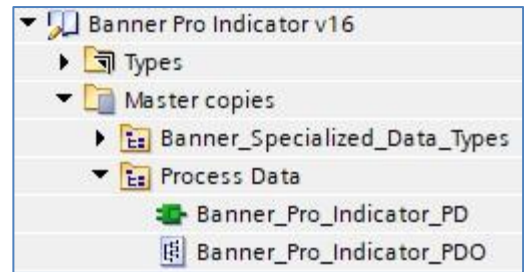
10. The final step is to configure the IO-Link output control. This is done by sending a 1 to Port Control and a 2 to Port Config. Both parameters are part of the tag created in step 6 “K90 IOLM1 01 PDO”.



11. Process Data Setup is complete.
 12. Compile and download the configuration to the PLC, then go online. Open the “db” data block and click Monitor all. The Pro Indicator can be controlled now.

Setup of Pro Indicator with other IO-Link Masters

1. The Banner Pro Indicator library will now be in the Global Library List. Expand the Master copies section. The Process Data folder contains elements that are the focus of this document.
2. Drag Banner_Pro_Indicator_PD to the Program Blocks area under your PLC.
3. Drag the Banner_Pro_Indicator_PDO 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.

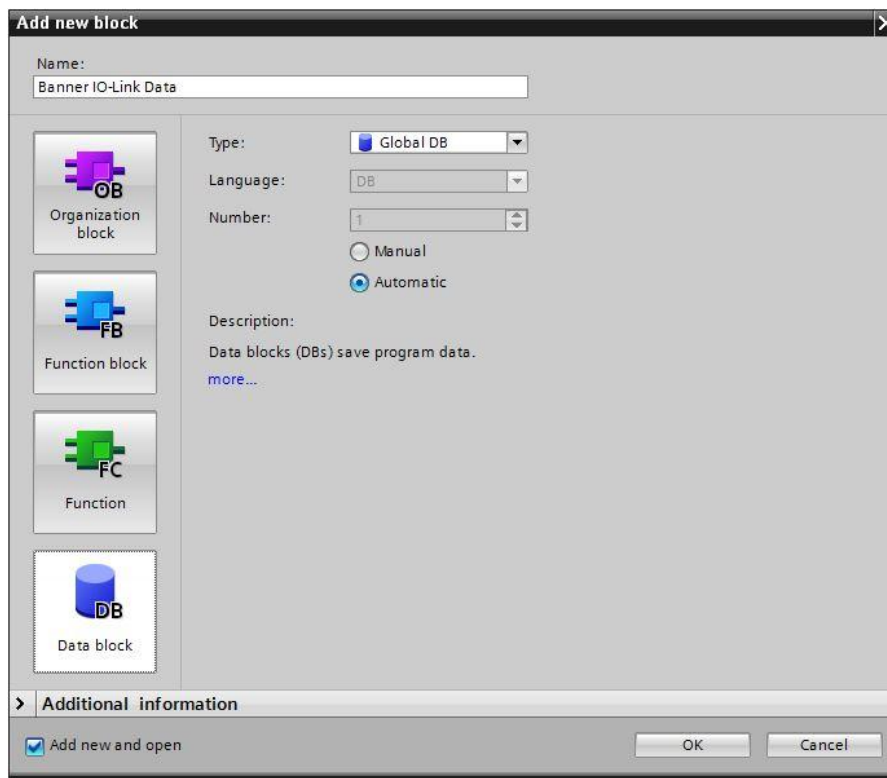


5. Click on the relevant device and configure the IO-Link Master as necessary. Refer to the documentation for the IO-Link Master. Recall that a Pro Indicator requires 4 bytes of space for the Process Data.
6. Record the "Q" address where this Process Data is to be stored, as the address will be required in the next step. In this example, 4 bytes of Process Data Out for port 3 on the IO-Link Master will be stored starting at Q68.

7. Go to PLC Tags. Add a new tag table, then create a new tag to represent the raw Process Data Out to be sent to the IO-Link Master. In this example, Tag table_1 was created, then the tag “K90 IOLM1 01 oRaw” was created using a Data Type of “DINT”. 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 IOLM1 or IOLM2, for instance, and other specific sensors may be connected to different port numbers. The “Q” address found in step 6 is tied to this new tag.

K90 IOLM1 01 oRaw	DInt	%QD68
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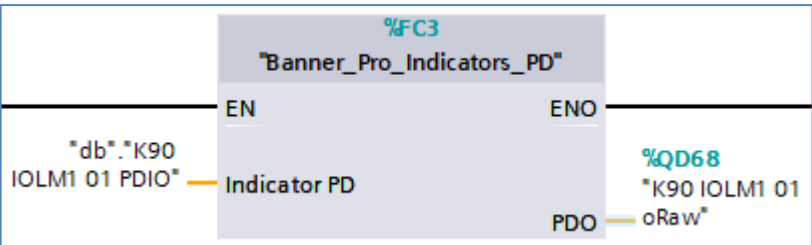
8. Go to Program blocks. Add a new Data block if necessary. In this example the new data block is named “Banner IO-Link Data”.



9. In the new data block, create a new tag to represent the parsed Process Data Out for our K90. The tag name again calls out the type of sensor, the IO-Link Master, and the port number. Use the data type “Banner_ProIndicator_PDO” for the new tag.

▼ K90 IOLM1 01 PDIO	*Banner_ProIndicator_PDO*
■ Color1	USInt
■ Color Flash Rate	USInt
■ Color2	USInt
■ Audible Mode	USInt
■ Rotation Direction	Bool
■ Animation Type	USInt
■ Color 1 Intensity	USInt
■ Color 2 Intensity	USInt

10. Add the “Banner_Pro_Indicator_PD” function to an OB ladder. Link the “PDO” to the raw Process Data variable from step 7. Link “Indicator PD” to the parsed Process Data variable from step 9.



11. Process Data setup is complete.

Appendix A

Pro Indicator Process Data

The K50 Pro L2 or K90 has 4 bytes of Process Data Out, as shown below.

ProcessDataOut "Process Data Out" id=V_Pd_OutConfigurationT									
bit length: 32 data type: 32-bit Record									
subindex	bit offset	data type	allowed values	default value	acc. restr.	mod. other var.	excl. from DS	name	description
1	0	5-bit Unsigned	0 = Green, 1 = Red, 2 = Orange, 3 = Yellow, 4 = Lime Green, 5 = Spring Green, 6 = Cyan, 7 = Sky Blue, 8 = Blue, 9 = Violet, 10 = Magenta, 11 = Rose, 12 = White, 13 = Custom 1, 14 = Custom 2, 15 = Custom 3, 16 = Custom 4, 17 = Custom 5					Color 1	
2	5	3-bit Unsigned	0 = 1.5, 1 = 0.5, 2 = 3.0, 3 = 6.0, 4 = 9.0, 5 = 12.0, 6 = Custom					Color Flash Rate (Hz)	
3	8	5-bit Unsigned	0 = Green, 1 = Red, 2 = Orange, 3 = Yellow, 4 = Lime Green, 5 = Spring Green, 6 = Cyan, 7 = Sky Blue, 8 = Blue, 9 = Violet, 10 = Magenta, 11 = Rose, 12 = White, 13 = Custom 1, 14 = Custom 2, 15 = Custom 3, 16 = Custom 4, 17 = Custom 5					Color 2	
4	13	2-bit Unsigned	0 = Off, 1 = On, 2 = Pulse					Audible Mode	
5	15	Boolean	false = Counter Clockwise, true = Clockwise					Rotation Direction	
6	16	4-bit Unsigned	0 = Off, 1 = Steady, 2 = Flash, 3 = Two Color Flash, 4 = Strobe, 5 = Half/Half, 6 = Half/Half Rotate, 7 = Chase, 8 = Demo Mode					Animation Type	
7	20	4-bit Unsigned	0 = High, 1 = Low, 2 = Medium, 3 = Custom, 4 = Off					Color 1 Intensity	
8	24	4-bit Unsigned	0 = High, 1 = Low, 2 = Medium, 3 = Custom, 4 = Off					Color 2 Intensity	
9	28	4-bit Unsigned	0					Reserved	

This Process Data is mapped to a specific group of PROFINET addresses. The 32-bits of Process Data actually encode 8 separate pieces of information, as shown above.

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