

# EZ-Array K2 Process Data Function

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February 2<sup>nd</sup>, 2026

This document covers the installation and use of a function for Siemens's TIA Portal software package. This function handles cyclic IO-Link Process Data In from a Banner EZ-Array K2 via an IO-Link Master to a Siemens PLC. The function covers parsing and display of the EZ-Array K2 Process Data In.

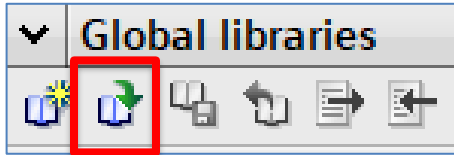
## **Components**

Banner EZ-Array 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.



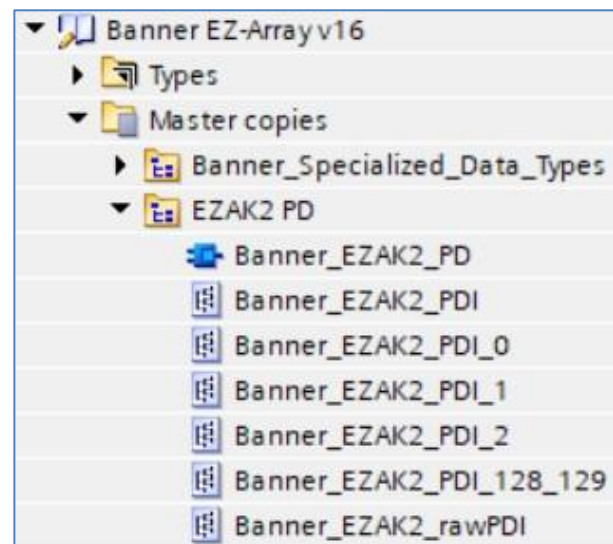
3. Switch the “Files of type” to Compressed libraries. Go to the location of the compressed library.
4. Press the Open button and the library will be uncompressed and opened.
5. The library is now accessible in the Libraries tab in v16 or greater.

### **Setup of EZAK2 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 32/32 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.

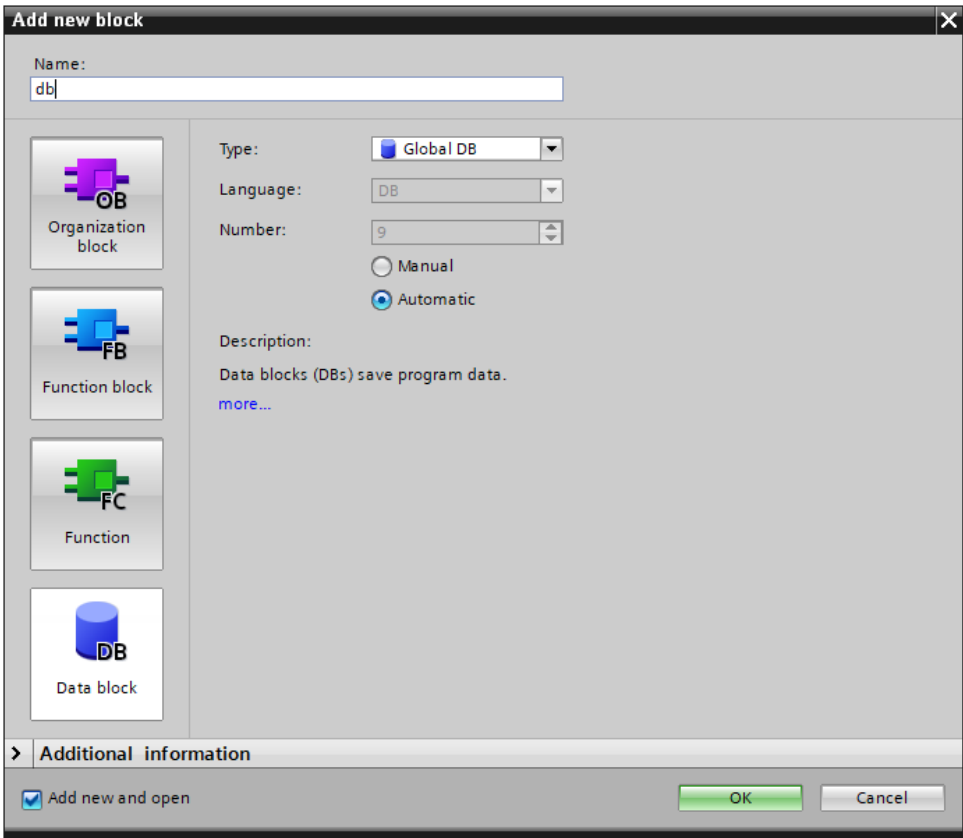
| Module                               | Rack | Slot | I address | Q address | Type                               |
|--------------------------------------|------|------|-----------|-----------|------------------------------------|
| ▼ dxm                                | 0    | 0    |           |           | 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 32/32 Byte + Status_1 | 0    | 2    | 10...45   | 1...46    | IO-Link In/Out 32/32 Byte + Status |

4. Drag the Banner\_EZAK2\_PDI, Banner\_EZAK2\_PDI\_0, Banner\_EZAK2\_PDI\_1, Banner\_EZAK2\_PDI\_2, Banner\_EZAK2\_PDI\_128\_129, Banner\_EZAK2\_rawPDI to the PLC Data Types area under your PLC. Banner\_EZA\_PDI is found in the EZAK2 PD folder in the library. Drag the Banner\_EZAK2\_PD to the Program Blocks area.
5. Drag the necessary tag from Banner\_Specialized\_Data\_Types. The tag used in this example is "Banner\_32in". This tag represents 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 "EZAK2 IOLM1 01 PDI" was created using a Data Type of "Banner\_32In". 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 "EZAK2 IOLM1 01 inRaw". This is the tag that will be used in the Function block.



| Name                   | Data type             | Address |
|------------------------|-----------------------|---------|
| ▶ EZAK2 IOLM1 01 PDI   | "Banner_32In"         | %I10.0  |
| ▶ EZAK2 IOLM1 01 inRaw | "Banner_EZAK2_rawPDI" | %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 EZAK2. The tag name again calls out the type of sensor, the IO-Link Master, and the port number. Use the data type “Banner\_EZAK2\_PDI” for the new tag.

| Name                  | Data type                  |
|-----------------------|----------------------------|
| ▼ Static              |                            |
| ■ ▼ EZAK2 IOLM1 01 PD | "Banner_EZAK2_PDI"         |
| ■ ▶ Array Measurement | "Banner_EZAK2_PDI_0"       |
| ■ ▶ Straight Scan     | "Banner_EZAK2_PDI_1"       |
| ■ ▶ Edge Scan         | "Banner_EZAK2_PDI_2"       |
| ■ ▶ Channel State OR  | "Banner_EZAK2_PDI_128_129" |
| ■ ▶ Channel State AND | "Banner_EZAK2_PDI_128_129" |

9. Add the “Banner\_EZAK2\_PD” function to an OB ladder. Link the “Raw PDI” to the raw Process Data variable from step 5. Link the “PDI” to the parsed Process Data variable from step 7.

The last variable, “UserPD”, allow the function to correctly interpret the Process Data. In the case of the EZ-Array K2, there are five user-selected modes for the Process Data. This function needs to know what choice has been made in the EZA K2 for this User Process Data variable.

There are two ways to achieve this goal. We can simply type in the correct number for User Process Data (see Fig. 1), or we can link this EZA K2 Process Data Function to the EZA K2 Parameter data function block (see Fig. 2). See Appendix A for more information about EZAK2 Process Data.

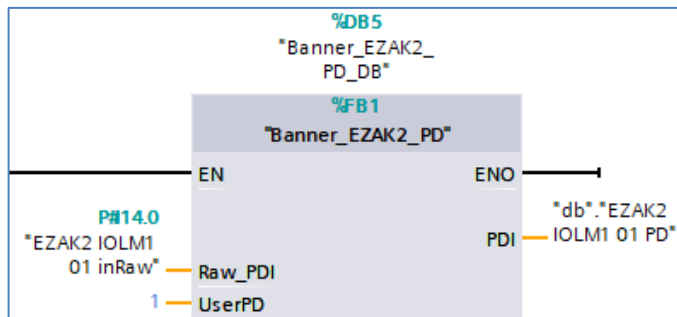


Figure 1: Hand type correct number for User Process Data

**NOTE:** if you type in the incorrect number (i.e. it does not match the UserPD) you will get incorrectly displayed Process Data information.

**UserPD:** the options here are “0” (Active Measurements Only), “1” (Straight Scan Measurements), “2” (Single/Double Edge Measurements), “128” (Channel States/Reduced States using OR), and “129” (Channel States/Reduced States using AND). The default is “0”.

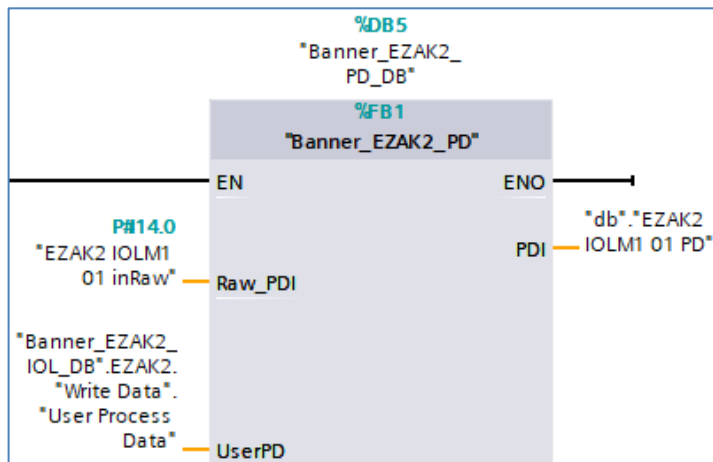


Figure 2: Linking User Process Data variable to EZAK2 Parameter Data Function Block

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 EZA K2, like that shown below.

|                       |                            |   |    |
|-----------------------|----------------------------|---|----|
| ▼ EZAK2 IOLM1 01 PD   | *Banner_EZAK2_PDI*         |   |    |
| ■ ▼ Array Measurement | *Banner_EZAK2_PDI_0*       |   |    |
| ■ Measurement 1       | UInt                       | 0 | 1  |
| ■ Measurement 2       | UInt                       | 0 | 93 |
| ■ ▶ Straight Scan     | *Banner_EZAK2_PDI_1*       |   |    |
| ■ ▶ Edge Scan         | *Banner_EZAK2_PDI_2*       |   |    |
| ■ ▶ Channel State OR  | *Banner_EZAK2_PDI_128_129* |   |    |
| ■ ▶ Channel State AND | *Banner_EZAK2_PDI_128_129* |   |    |

#### User Process Data 0 – Active Measurements

|                       |                      |   |     |                               |
|-----------------------|----------------------|---|-----|-------------------------------|
| ▼ EZAK2 IOLM1 01 PD   | *Banner_EZAK2_PDI*   |   |     |                               |
| ■ ▶ Array Measurement | *Banner_EZAK2_PDI_0* |   |     |                               |
| ■ ▼ Straight Scan     | *Banner_EZAK2_PDI_1* |   |     |                               |
| ■ FBB                 | UInt                 | 0 | 26  | First Beam Blocked            |
| ■ LBB                 | UInt                 | 0 | 43  | Last Beam Blocked             |
| ■ TBB                 | UInt                 | 0 | 18  | Total Beams Blocked           |
| ■ Transitions         | UInt                 | 0 | 2   |                               |
| ■ CBB                 | UInt                 | 0 | 18  | Contiguous Beams Blocked      |
| ■ FBM                 | UInt                 | 0 | 1   | First Beam Made               |
| ■ LBM                 | UInt                 | 0 | 120 | Last Beam Made                |
| ■ TBM                 | UInt                 | 0 | 102 | Total Beams Made              |
| ■ CBM                 | UInt                 | 0 | 77  | Contiguous Beams Made         |
| ■ MBB                 | UInt                 | 0 | 34  | Middle Beam Blocked           |
| ■ CFBB                | UInt                 | 0 | 26  | Contiguous First Beam Blocked |
| ■ CLBB                | UInt                 | 0 | 43  | Contiguous Last Beam Blocked  |

#### User Process Data 1 – Straight Scan Measurements

|                       |                      |   |    |                               |
|-----------------------|----------------------|---|----|-------------------------------|
| ▼ EZAK2 IOLM1 01 PD   | *Banner_EZAK2_PDI*   |   |    |                               |
| ■ ▶ Array Measurement | *Banner_EZAK2_PDI_0* |   |    |                               |
| ■ ▶ Straight Scan     | *Banner_EZAK2_PDI_1* |   |    |                               |
| ■ ▼ Edge Scan         | *Banner_EZAK2_PDI_2* |   |    |                               |
| ■ FBB                 | UInt                 | 0 | 26 | First Beam Blocked            |
| ■ LBB                 | UInt                 | 0 | 43 | Last Beam Blocked             |
| ■ TBB                 | UInt                 | 0 | 18 | Total Beams Blocked           |
| ■ CBB                 | UInt                 | 0 | 18 | Contiguous Beams Blocked      |
| ■ MBB                 | UInt                 | 0 | 34 | Middle Beam Blocked           |
| ■ OD                  | UInt                 | 0 | 18 | Outer Diameter                |
| ■ ID                  | UInt                 | 0 | 0  | Inner Diameter                |
| ■ CLBB                | UInt                 | 0 | 43 | Contiguous Last Beam Blocked  |
| ■ CFBB                | UInt                 | 0 | 26 | Contiguous First Beam Blocked |
| ■ Object 1 FBB        | UInt                 | 0 | 0  |                               |
| ■ Object 1 LBB        | UInt                 | 0 | 0  |                               |
| ■ Object 2 FBB        | UInt                 | 0 | 0  |                               |
| ■ Object 2 LBB        | UInt                 | 0 | 0  |                               |
| ■ Object 3 FBB        | UInt                 | 0 | 0  |                               |
| ■ Object 3 LBB        | UInt                 | 0 | 0  |                               |

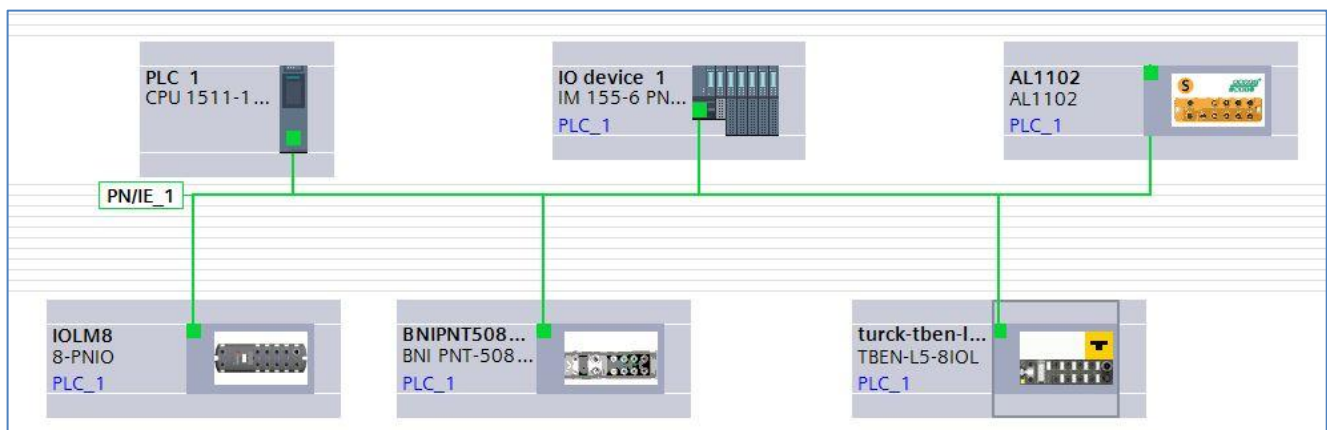
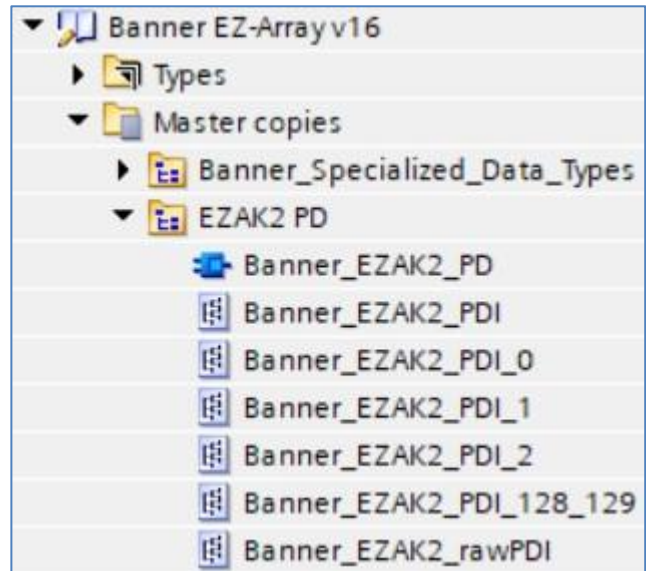
#### User Process Data 2 – Single/Double Edge Measurements

|                     |                            |   |       |
|---------------------|----------------------------|---|-------|
| ▼ EZAK2 IOLM1 01 PD | "Banner_EZAK2_PDI"         |   |       |
| ▀ Array Measurement | "Banner_EZAK2_PDI_0"       |   |       |
| ▀ Straight Scan     | "Banner_EZAK2_PDI_1"       |   |       |
| ▀ Edge Scan         | "Banner_EZAK2_PDI_2"       |   |       |
| ▀ Channel State OR  | "Banner_EZAK2_PDI_128_129" |   |       |
| ▀ ▼ Beam State      | Array[1..15] of UInt       |   |       |
| ▀ Beam State[1]     | UInt                       | 0 | 0     |
| ▀ Beam State[2]     | UInt                       | 0 | 65024 |
| ▀ Beam State[3]     | UInt                       | 0 | 2047  |
| ▀ Beam State[4]     | UInt                       | 0 | 0     |
| ▀ Beam State[5]     | UInt                       | 0 | 0     |
| ▀ Beam State[6]     | UInt                       | 0 | 0     |
| ▀ Beam State[7]     | UInt                       | 0 | 0     |
| ▀ Beam State[8]     | UInt                       | 0 | 0     |
| ▀ Beam State[9]     | UInt                       | 0 | 0     |
| ▀ Beam State[10]    | UInt                       | 0 | 0     |
| ▀ Beam State[11]    | UInt                       | 0 | 0     |
| ▀ Beam State[12]    | UInt                       | 0 | 0     |
| ▀ Beam State[13]    | UInt                       | 0 | 0     |
| ▀ Beam State[14]    | UInt                       | 0 | 0     |
| ▀ Beam State[15]    | UInt                       | 0 | 0     |
| ▀ Channel State AND | "Banner_EZAK2_PDI_128_129" |   |       |

User Process Data 128 Channel States "OR" & 129 Channel States "AND"

### **Setup of EZ-Array K2 with other IO-Link Masters**

1. The Banner EZ-Array library will now be in the Global Library List. Expand the Master copies section. The EZ-Array folder contains elements for both Process Data and Parameter Data connections to an EZ-Array. As Process Data is the focus of this paper, we will concern ourselves with these two items: Banner\_EZAK2\_PD, Banner\_EZAK2\_PDI, Banner\_EZAK2\_PDI\_0, Banner\_EZAK2\_PDI\_1, Banner\_EZAK2\_PDI\_2, Banner\_EZAK2\_PDI\_128\_129, and Banner\_EZAK2\_rawPDI.
2. Drag Banner\_EZAK2\_PD to the Program Blocks area under your PLC.
3. Drag the Banner\_EZAK2\_PDI, Banner\_EZAK2\_PDI\_0, Banner\_EZAK2\_PDI\_1, Banner\_EZAK2\_PDI\_2, Banner\_EZAK2\_PDI\_128\_129, and Banner\_EZAK2\_rawPDI 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. The EZ-Array K2 requires 30 bytes of space for the Process Data.



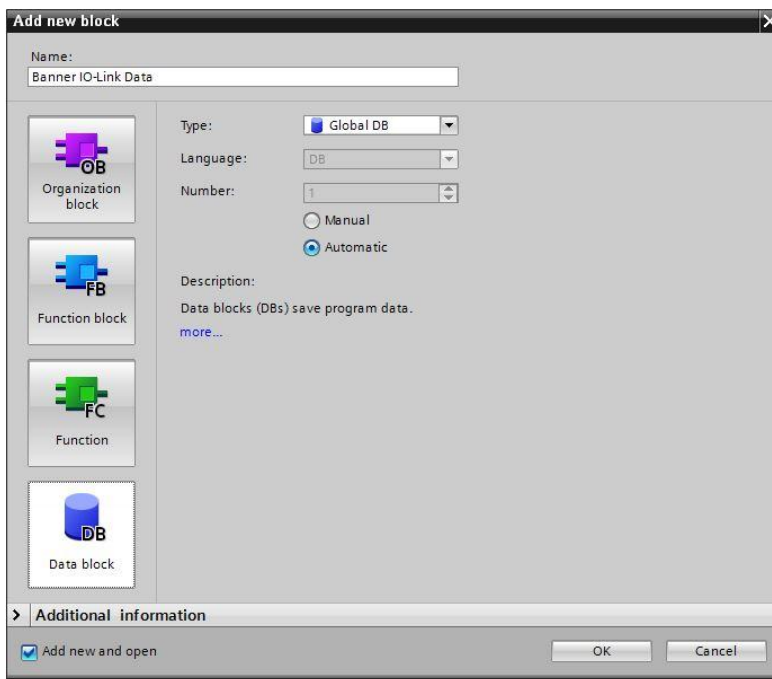
6. Record the “I” address where this EZ-Array Process Data is to be stored, as the address will be required in the next step. In this example, 2 bytes of Process Data In for port 2 on the IO-Link Master will be stored in I68 to I99.

| Module                | ... | Rack | Slot | I address | Q address | Type                |
|-----------------------|-----|------|------|-----------|-----------|---------------------|
| ▼ IOLM8               |     | 0    | 0    |           |           | 8-PNIO              |
| ▶ Interface           |     | 0    | 0 X1 |           |           | IOLM8               |
| IO-Link In 32 bytes_1 |     | 0    | 1    | 68...99   |           | IO-Link In 32 bytes |

7. Go to PLC Tags. Add a new tag table, then create a new tag to represent the raw Process Data from the IO-Link Master. In this example, Tag table\_1 was created, then the tag “EZAK2 IOLM1 01 rawPD” was created using a Data Type of “Banner\_EZAK2\_rawPDI”. 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 9 is tied to this new tag.

|   | Name                   | Data type             | Address |
|---|------------------------|-----------------------|---------|
| 1 | ▶ EZAK2 IOLM1 01 rawPD | "Banner_EZAK2_rawPDI" | %I68.0  |

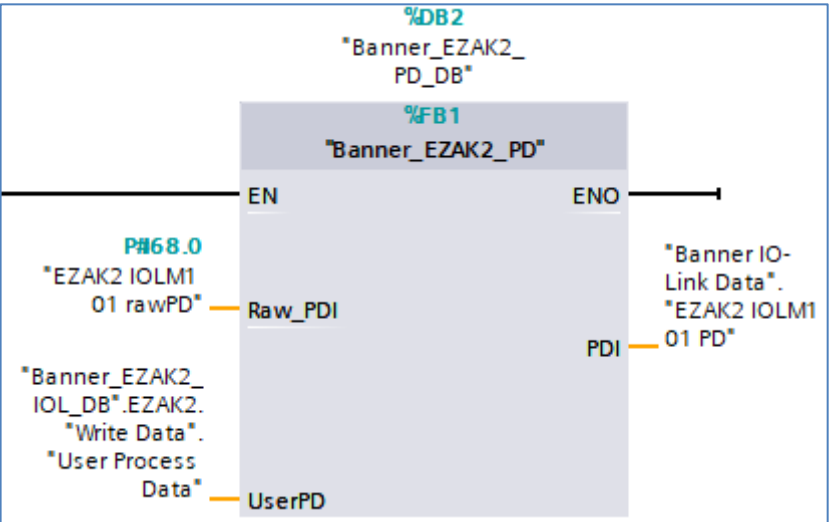
8. Go to Program blocks. Add a new Data block if necessary. In this example the new data block is named “Banner IO-Link Data”.



9. In the new data block, create a new tag to represent the parsed Process Data In for our EZ-Array. The tag name again calls out the type of sensor, the IO-Link Master, and the port number. Use the data type “Banner\_EZAK2\_PDI” for the new tag.

| Banner IO-Link Data |                   |                    |
|---------------------|-------------------|--------------------|
|                     | Name              | Data type          |
| 1                   | Static            |                    |
| 2                   | EZAK2 IOLM1 01 PD | "Banner_EZAK2_PDI" |

10. Add the “Banner\_EZAK2\_PD” function block to an OB ladder. Link the “Raw\_PDI” to the raw Process Data variable from step 10. Link the “PDI” to the parsed Process Data variable from step 12. Finally, the UserPD needs to either have a number entered or link it to the Parameter data.



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. You should see parsed EZ-Array Process Data In, like one of the options shown below.

|                       |                            |   |    |
|-----------------------|----------------------------|---|----|
| ▼ EZAK2 IOLM1 01 PD   | "Banner_EZAK2_PDI"         |   |    |
| ■ ▼ Array Measurement | "Banner_EZAK2_PDI_0"       |   |    |
| ■ Measurement 1       | UInt                       | 0 | 1  |
| ■ Measurement 2       | UInt                       | 0 | 93 |
| ■ ▶ Straight Scan     | "Banner_EZAK2_PDI_1"       |   |    |
| ■ ▶ Edge Scan         | "Banner_EZAK2_PDI_2"       |   |    |
| ■ ▶ Channel State OR  | "Banner_EZAK2_PDI_128_129" |   |    |
| ■ ▶ Channel State AND | "Banner_EZAK2_PDI_128_129" |   |    |

#### User Process Data 0 – Active Measurements

|                       |                      |   |     |                               |
|-----------------------|----------------------|---|-----|-------------------------------|
| ▼ EZAK2 IOLM1 01 PD   | "Banner_EZAK2_PDI"   |   |     |                               |
| ■ ▶ Array Measurement | "Banner_EZAK2_PDI_0" |   |     |                               |
| ■ ▼ Straight Scan     | "Banner_EZAK2_PDI_1" |   |     |                               |
| ■ FBB                 | UInt                 | 0 | 26  | First Beam Blocked            |
| ■ LBB                 | UInt                 | 0 | 43  | Last Beam Blocked             |
| ■ TBB                 | UInt                 | 0 | 18  | Total Beams Blocked           |
| ■ Transitions         | UInt                 | 0 | 2   |                               |
| ■ CBB                 | UInt                 | 0 | 18  | Contiguous Beams Blocked      |
| ■ FBM                 | UInt                 | 0 | 1   | First Beam Made               |
| ■ LBM                 | UInt                 | 0 | 120 | Last Beam Made                |
| ■ TBM                 | UInt                 | 0 | 102 | Total Beams Made              |
| ■ CBM                 | UInt                 | 0 | 77  | Contiguous Beams Made         |
| ■ MBB                 | UInt                 | 0 | 34  | Middle Beam Blocked           |
| ■ CFBB                | UInt                 | 0 | 26  | Contiguous First Beam Blocked |
| ■ CLBB                | UInt                 | 0 | 43  | Contiguous Last Beam Blocked  |

#### User Process Data 1 – Straight Scan Measurements

|                       |                      |   |    |                               |
|-----------------------|----------------------|---|----|-------------------------------|
| ▼ EZAK2 IOLM1 01 PD   | "Banner_EZAK2_PDI"   |   |    |                               |
| ■ ▶ Array Measurement | "Banner_EZAK2_PDI_0" |   |    |                               |
| ■ ▶ Straight Scan     | "Banner_EZAK2_PDI_1" |   |    |                               |
| ■ ▼ Edge Scan         | "Banner_EZAK2_PDI_2" |   |    |                               |
| ■ FBB                 | UInt                 | 0 | 26 | First Beam Blocked            |
| ■ LBB                 | UInt                 | 0 | 43 | Last Beam Blocked             |
| ■ TBB                 | UInt                 | 0 | 18 | Total Beams Blocked           |
| ■ CBB                 | UInt                 | 0 | 18 | Contiguous Beams Blocked      |
| ■ MBB                 | UInt                 | 0 | 34 | Middle Beam Blocked           |
| ■ OD                  | UInt                 | 0 | 18 | Outer Diameter                |
| ■ ID                  | UInt                 | 0 | 0  | Inner Diameter                |
| ■ CLBB                | UInt                 | 0 | 43 | Contiguous Last Beam Blocked  |
| ■ CFBB                | UInt                 | 0 | 26 | Contiguous First Beam Blocked |
| ■ Object 1 FBB        | UInt                 | 0 | 0  |                               |
| ■ Object 1 LBB        | UInt                 | 0 | 0  |                               |
| ■ Object 2 FBB        | UInt                 | 0 | 0  |                               |
| ■ Object 2 LBB        | UInt                 | 0 | 0  |                               |
| ■ Object 3 FBB        | UInt                 | 0 | 0  |                               |
| ■ Object 3 LBB        | UInt                 | 0 | 0  |                               |

#### User Process Data 2 – Single/Double Edge Measurements

|                      |                            |   |       |
|----------------------|----------------------------|---|-------|
| ▼ EZAK2 IOLM1 01 PD  | "Banner_EZAK2_PDI"         |   |       |
| ▀ Array Measurement  | "Banner_EZAK2_PDI_0"       |   |       |
| ▀ Straight Scan      | "Banner_EZAK2_PDI_1"       |   |       |
| ▀ Edge Scan          | "Banner_EZAK2_PDI_2"       |   |       |
| ▀ ▼ Channel State OR | "Banner_EZAK2_PDI_128_129" |   |       |
| ▀ ▼ Beam State       | Array[1..15] of UInt       |   |       |
| ▀ Beam State[1]      | UInt                       | 0 | 0     |
| ▀ Beam State[2]      | UInt                       | 0 | 65024 |
| ▀ Beam State[3]      | UInt                       | 0 | 2047  |
| ▀ Beam State[4]      | UInt                       | 0 | 0     |
| ▀ Beam State[5]      | UInt                       | 0 | 0     |
| ▀ Beam State[6]      | UInt                       | 0 | 0     |
| ▀ Beam State[7]      | UInt                       | 0 | 0     |
| ▀ Beam State[8]      | UInt                       | 0 | 0     |
| ▀ Beam State[9]      | UInt                       | 0 | 0     |
| ▀ Beam State[10]     | UInt                       | 0 | 0     |
| ▀ Beam State[11]     | UInt                       | 0 | 0     |
| ▀ Beam State[12]     | UInt                       | 0 | 0     |
| ▀ Beam State[13]     | UInt                       | 0 | 0     |
| ▀ Beam State[14]     | UInt                       | 0 | 0     |
| ▀ Beam State[15]     | UInt                       | 0 | 0     |
| ▀ Channel State AND  | "Banner_EZAK2_PDI_128_129" |   |       |

User Process Data 128 Channel States "OR" & 129 Channel States "AND"

## Appendix A

## EZ-Array K2 Process Data

The EZ-Array K2 has 30 bytes of Process Data In, as shown below. The image shows how the data is organized for the various Process Data. The Parameter Data item User Process controls which of the data is displayed.

|             |           |           |           |           |           |           |           |           |
|-------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| octet       | 0         | 1         | 2         | 3         | 4         | 5         | 6         | 7         |
| bit offset  | 239 - 232 | 231 - 224 | 223 - 216 | 215 - 208 | 207 - 200 | 199 - 192 | 191 - 184 | 183 - 176 |
| subindex    | 1         | 1         | 2         | 2         | 3         | 3         | 4         | 4         |
| element bit | 15 - 8    | 7 - 0     | 15 - 8    | 7 - 0     | 15 - 8    | 7 - 0     | 15 - 8    | 7 - 0     |

|             |           |           |           |           |           |           |           |           |
|-------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| octet       | 8         | 9         | 10        | 11        | 12        | 13        | 14        | 15        |
| bit offset  | 175 - 168 | 167 - 160 | 159 - 152 | 151 - 144 | 143 - 136 | 135 - 128 | 127 - 120 | 119 - 112 |
| subindex    | 5         | 5         | 6         | 6         | 7         | 7         | 8         | 8         |
| element bit | 15 - 8    | 7 - 0     | 15 - 8    | 7 - 0     | 15 - 8    | 7 - 0     | 15 - 8    | 7 - 0     |

|             |           |          |         |         |         |         |         |         |
|-------------|-----------|----------|---------|---------|---------|---------|---------|---------|
| octet       | 16        | 17       | 18      | 19      | 20      | 21      | 22      | 23      |
| bit offset  | 111 - 104 | 103 - 96 | 95 - 88 | 87 - 80 | 79 - 72 | 71 - 64 | 63 - 56 | 55 - 48 |
| subindex    | 9         | 9        | 10      | 10      | 11      | 11      | 12      | 12      |
| element bit | 15 - 8    | 7 - 0    | 15 - 8  | 7 - 0   | 15 - 8  | 7 - 0   | 15 - 8  | 7 - 0   |

|             |         |         |         |         |        |       |  |  |
|-------------|---------|---------|---------|---------|--------|-------|--|--|
| octet       | 24      | 25      | 26      | 27      | 28     | 29    |  |  |
| bit offset  | 47 - 40 | 39 - 32 | 31 - 24 | 23 - 16 | 15 - 8 | 7 - 0 |  |  |
| subindex    | 13      | 13      | 14      | 14      | 15     | 15    |  |  |
| element bit | 15 - 8  | 7 - 0   | 15 - 8  | 7 - 0   | 15 - 8 | 7 - 0 |  |  |

When the User Process is set as 0 (Active Measurements Only) the below data is displayed.

| <b>ProcessData id=PD_ProcessDataMeasurement1 (condition V_UserProcess = 0)</b> |            |                 |                |               |             |                 |               |                      |             |
|--|------------|-----------------|----------------|---------------|-------------|-----------------|---------------|----------------------|-------------|
| <b>ProcessDataIn "Array Measurement" id=PD_ProcessDataInMeasurement1</b>       |            |                 |                |               |             |                 |               |                      |             |
| bit length: 240  |            |                 |                |               |             |                 |               |                      |             |
| data type: 240-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  | 224        | 16-bit UInteger |                |               |             |                 |               | Active Measurement 1 |             |
| 2  | 208        | 16-bit UInteger |                |               |             |                 |               | Active Measurement 2 |             |

When the User Process is set as 1 (Straight Scan Measurements) the below data is displayed.

**ProcessData id=PD\_ProcessDataMeasurement2 (condition V\_UserProcess = 1)**

**ProcessDataIn "Straight Scan Measurements" id=PD\_ProcessDataInMeasurement2**

bit length: 240

data type: 240-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        | 224        | 16-bit UInteger |                |               |             |                 |               | First Beam Blocked            |             |
| 2        | 208        | 16-bit UInteger |                |               |             |                 |               | Last Beam Blocked             |             |
| 3        | 192        | 16-bit UInteger |                |               |             |                 |               | Total Beam Blocked            |             |
| 4        | 176        | 16-bit UInteger |                |               |             |                 |               | Transitions                   |             |
| 5        | 160        | 16-bit UInteger |                |               |             |                 |               | Contiguous Beam Blocked       |             |
| 6        | 144        | 16-bit UInteger |                |               |             |                 |               | First Beam Made               |             |
| 7        | 128        | 16-bit UInteger |                |               |             |                 |               | Last Beam Made                |             |
| 8        | 112        | 16-bit UInteger |                |               |             |                 |               | Total Beam Made               |             |
| 9        | 96         | 16-bit UInteger |                |               |             |                 |               | Contiguous Beam Made          |             |
| 10       | 80         | 16-bit UInteger |                |               |             |                 |               | Middle Beam Blocked           |             |
| 11       | 64         | 16-bit UInteger |                |               |             |                 |               | Contiguous First Beam Blocked |             |
| 12       | 48         | 16-bit UInteger |                |               |             |                 |               | Contiguous Last Beam Blocked  |             |
| 13       | 32         | 16-bit UInteger |                |               |             |                 |               | No Measurement                |             |
| 14       | 16         | 16-bit UInteger |                |               |             |                 |               | No Measurement                |             |
| 15       | 0          | 16-bit UInteger |                |               |             |                 |               | No Measurement                |             |

When the User Process is set as 2 (Single/Double Edge Measurements) the below data is displayed.

| ProcessData id=PD_ProcessDataMeasurement3 (condition V_UserProcess = 2) |            |                 |                |               |             |                 |               |                               |             |
|---|------------|-----------------|----------------|---------------|-------------|-----------------|---------------|-------------------------------|-------------|
| ProcessDataIn "Edge Scan Measurements" id=PD_ProcessDataInMeasurement3  |            |                 |                |               |             |                 |               |                               |             |
| bit length: 240   |            |                 |                |               |             |                 |               |                               |             |
| data type: 240-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   | 224        | 16-bit UInteger |                |               |             |                 |               | First Beam Blocked            |             |
| 2   | 208        | 16-bit UInteger |                |               |             |                 |               | Last Beam Blocked             |             |
| 3   | 192        | 16-bit UInteger |                |               |             |                 |               | Total Beam Blocked            |             |
| 4   | 176        | 16-bit UInteger |                |               |             |                 |               | Contiguous Beam Blocked       |             |
| 5   | 160        | 16-bit UInteger |                |               |             |                 |               | Middle Beam Blocked           |             |
| 6   | 144        | 16-bit UInteger |                |               |             |                 |               | Outer Diameter                |             |
| 7   | 128        | 16-bit UInteger |                |               |             |                 |               | Inner Diameter                |             |
| 8   | 112        | 16-bit UInteger |                |               |             |                 |               | Contiguous First Beam Blocked |             |
| 9   | 96         | 16-bit UInteger |                |               |             |                 |               | Contiguous Last Beam Blocked  |             |
| 10  | 80         | 16-bit UInteger |                |               |             |                 |               | Object 1 First Beam Blocked   |             |
| 11  | 64         | 16-bit UInteger |                |               |             |                 |               | Object 1 Last Beam Blocked    |             |
| 12  | 48         | 16-bit UInteger |                |               |             |                 |               | Object 2 First Beam Blocked   |             |
| 13  | 32         | 16-bit UInteger |                |               |             |                 |               | Object 2 Last Beam Blocked    |             |
| 14  | 16         | 16-bit UInteger |                |               |             |                 |               | Object 3 First Beam Blocked   |             |
| 15  | 0          | 16-bit UInteger |                |               |             |                 |               | Object 3 Last Beam Blocked    |             |

When the User Process is set as 128 (Channel States “OR”) the below data is displayed.

**ProcessData id=PD\_ProcessDataChannelState1 (condition V\_UserProcess = 128)**

**ProcessDataIn "Channel State" id=PD\_ProcessDataInChannelState1**

bit length: 240  
data type: 240-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        | 224        | 16-bit UInteger |                |               |             |                 |               | Beam State |             |
| 2        | 208        | 16-bit UInteger |                |               |             |                 |               | Beam State |             |
| 3        | 192        | 16-bit UInteger |                |               |             |                 |               | Beam State |             |
| 4        | 176        | 16-bit UInteger |                |               |             |                 |               | Beam State |             |
| 5        | 160        | 16-bit UInteger |                |               |             |                 |               | Beam State |             |
| 6        | 144        | 16-bit UInteger |                |               |             |                 |               | Beam State |             |
| 7        | 128        | 16-bit UInteger |                |               |             |                 |               | Beam State |             |
| 8        | 112        | 16-bit UInteger |                |               |             |                 |               | Beam State |             |
| 9        | 96         | 16-bit UInteger |                |               |             |                 |               | Beam State |             |
| 10       | 80         | 16-bit UInteger |                |               |             |                 |               | Beam State |             |
| 11       | 64         | 16-bit UInteger |                |               |             |                 |               | Beam State |             |
| 12       | 48         | 16-bit UInteger |                |               |             |                 |               | Beam State |             |
| 13       | 32         | 16-bit UInteger |                |               |             |                 |               | Beam State |             |
| 14       | 16         | 16-bit UInteger |                |               |             |                 |               | Beam State |             |
| 15       | 0          | 16-bit UInteger |                |               |             |                 |               | Beam State |             |

When the User Process is set as 129 (Channel States “AND”) the below data is displayed.

**ProcessData id=PD\_ProcessDataChannelState2 (condition V\_UserProcess = 129)**

**ProcessDataIn "Channel State" id=PD\_ProcessDataInChannelState2**

bit length: 240  
data type: 240-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        | 224        | 16-bit UInteger |                |               |             |                 |               | Beam State |             |
| 2        | 208        | 16-bit UInteger |                |               |             |                 |               | Beam State |             |
| 3        | 192        | 16-bit UInteger |                |               |             |                 |               | Beam State |             |
| 4        | 176        | 16-bit UInteger |                |               |             |                 |               | Beam State |             |
| 5        | 160        | 16-bit UInteger |                |               |             |                 |               | Beam State |             |
| 6        | 144        | 16-bit UInteger |                |               |             |                 |               | Beam State |             |
| 7        | 128        | 16-bit UInteger |                |               |             |                 |               | Beam State |             |
| 8        | 112        | 16-bit UInteger |                |               |             |                 |               | Beam State |             |
| 9        | 96         | 16-bit UInteger |                |               |             |                 |               | Beam State |             |
| 10       | 80         | 16-bit UInteger |                |               |             |                 |               | Beam State |             |
| 11       | 64         | 16-bit UInteger |                |               |             |                 |               | Beam State |             |
| 12       | 48         | 16-bit UInteger |                |               |             |                 |               | Beam State |             |
| 13       | 32         | 16-bit UInteger |                |               |             |                 |               | Beam State |             |
| 14       | 16         | 16-bit UInteger |                |               |             |                 |               | Beam State |             |
| 15       | 0          | 16-bit UInteger |                |               |             |                 |               | Beam State |             |

This Process Data is mapped to a specific group of PROFINET addresses.

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