

K50 Select Process Data Function

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 for Banner K50 Select Indicator, Sensor, and Touch models via an IO-Link Master from a Siemens PLC. The function covers parsing and display of the K50 select sensor Process Data Out.

Components

Banner K50 Select Process Data Library v16.zal16

There are two methods for 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 manufacturers' IO-Link masters.

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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.

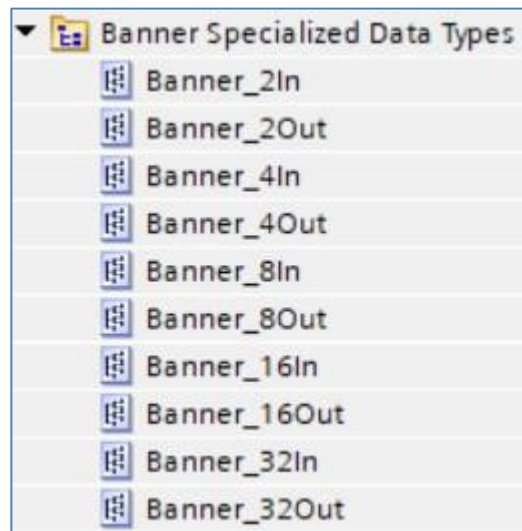
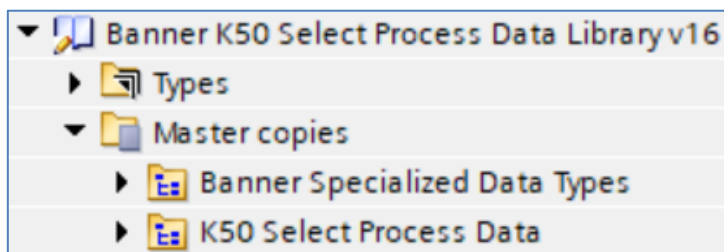
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Setup of K50 Select with a Banner DXMR

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 **8/8 byte** is required for **K50 Select**. Make note of the input %I1 address for Slot 2 which represents Port 1. Slot 2 starts are %Q1 for outputs.

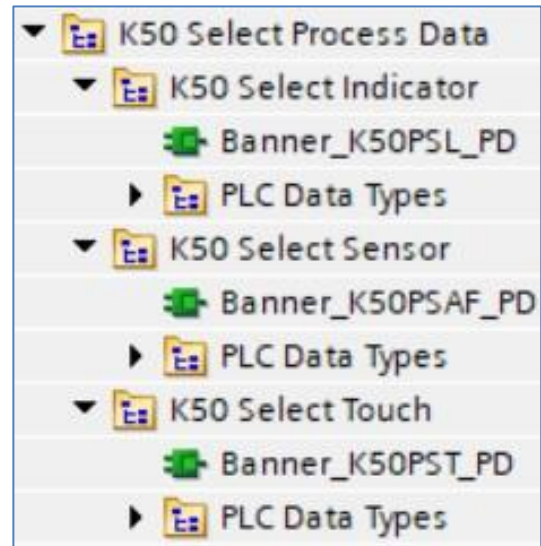
Module	Rack	Slot	I address	Q address
▼ dxm	0	0		
▶ Interface	0	0 X1		
Banner IO-Link Master Info_1	0	1	68...76	
IO-Link In/Out 8/ 8 Byte + Status_1	0	2	1...12	1...22

4. Open the Master Copies folder.
5. Open the Banner Specialized Data Types folder.
6. Drag the “Banner_8In” and “Banner_8Out” to the PLC Data Types folder in the PLC.
7. Open K50 Select Process Data folder.
8. Go to step 9 if using a K50 Select Indicator, step 10 if a K50 Select Sensor, and step 11 if a K50 Select Touch is being used.



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9. Drag the necessary files from the **K50 Select Indicator** Folder.
 - a. Move “Banner_K50PSL_4State”, “Banner_K50PSL_Advanced”, “Banner_K50PSL_LED”, “Banner_K50PSL_PDIO”, and “Banner_K50PSL_PDORaw” to the PLC Data Types area from the PLC Data Types.
 - b. Move “Banner_K50PSL_PD” to the Program Blocks area.



10. Drag the necessary files from the **K50 Select Sensor** Folder.
 - a. Move “Banner_K50PSAF_4State”, “Banner_K50PSAF_Adv”, “Banner_K50PSAF_LED”, “Banner_K50PSAF_Multi”, “Banner_K50PSAF_PDIO”, and “Banner_K50PSAF_PDORaw” to the PLC Data Types area from the PLC Data Types.
 - b. Move Banner_K50PSAF_PD to the Program Blocks area.
11. Drag the necessary files from the **K50 Select Touch** folder.
 - a. Move “Banner_K50PST_4State”, “Banner_K50PST_Adv”, “Banner_K50PST_LED”, “Banner_K50PST_Multi”, “Banner_K50PST_PDIO”, and “Banner_K50PST_PDORaw” to the PLC Data Types Area from the PLC Data Types.
 - b. Move Banner_K50PST_PD to the Program Blocks area.
12. Go to PLC Tags. Create the necessary tags for the K50 Select being used. One set of tags is for the full data structure while the second set creates tags to represent the raw Process Data from the IO-Link Master. The below images show the setup for the K50 Select Indicator, Sensor, and Touch models.

▶ K50PSL IOLM1 01 PDO	*Banner_8Out*	%Q1.0
▶ K50PSL IOLM1 01 oRaw	*Banner_K50PSL_PDORaw*	%Q3.0

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▶ K50PST IOLM1 01 PDI	*Banner_8In*	%I1.0
▶ K50PST IOLM1 01 PDO	*Banner_8Out*	%Q1.0
▶ K50PST IOLM1 01 iRaw	DWord	%ID5
▶ K50PST IOLM1 01 oRaw	*Banner_K50PST_PDORaw*	%Q3.0

K50 Select Touch

▶ K50PSAF IOLM1 01 PDI	*Banner_8In*	%I1.0
▶ K50PSAF IOLM1 01 PDO	*Banner_8Out*	%Q1.0
▶ K50PSAF IOLM1 01 iRaw	DWord	%ID5
▶ K50PSAF IOLM1 01 oRaw	*Banner_K50PSAF_PDORaw*	%Q3.0

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

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14. In the new data block, create a new tag to represent the parsed Process Data Output for our K50 Select. The tag name again calls out the type of sensor, the IO-Link Master, and the port number. Use the data type "Banner_K50PSL_PDIO" for the new tag.

▼ K50PSL IOLM1 01 PDO	"Banner_K50PSL_PDIO"
■ MultiColor - State	USInt
■ ▶ Four State	"Banner_K50PSL_4State"
■ ▶ Advanced	"Banner_K50PSL_Advanced"
■ ▶ LED	"Banner_K50PSL_LED"
▼ K50PST IOLM1 01 PDIO	"Banner_K50PST_PDIO"
■ ▶ MultiColor	"Banner_K50PST_Multi"
■ ▶ 4State	"Banner_K50PST_4State"
■ ▶ Advanced	"Banner_K50PST_Adv"
■ ▶ LED	"Banner_K50PST_LED"
▼ K50PSAF IOLM1 01 PDIO	"Banner_K50PSAF_PDIO"
■ ▶ MultiColor	"Banner_K50PSAF_Multi"
■ ▶ Four State	"Banner_K50PSAF_4State"
■ ▶ Advanced	"Banner_K50PSAF_Adv"
■ ▶ LED	"Banner_K50PSAF_LED"

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15. Add the “Banner_K50PST_PD” function to an OB ladder. Link the “PDI” and “PDO” to the raw process data variable from step 12. The K50 Select Indicator does not have a “PDI”. The tag name again calls out the type of device, IO-Link Master, and the port number. The “K50 PD” needs to be linked to the variable created in step 14. It was called “K50PST IOLM1 01 PDIO” for this example.

The last variable, “Operational Mode”, allow the function to correctly interpret the Process Data Out. In the case of the K50 Select, there are four user-selected modes for the Process Data Out. This function needs to know what choice has been made in the K50 Select for this Operational Mode variable.

There are two ways to achieve this goal. We can simply type in the correct number for Operational Mode (see Fig. 1), or we can link this K50 Select Process Data Function to the K50 Select Parameter Data Function Block (see Fig. 2). See Appendix A for more information about K50 Select Process Data Out.

Images shown are for a K50 Select Touch unit.

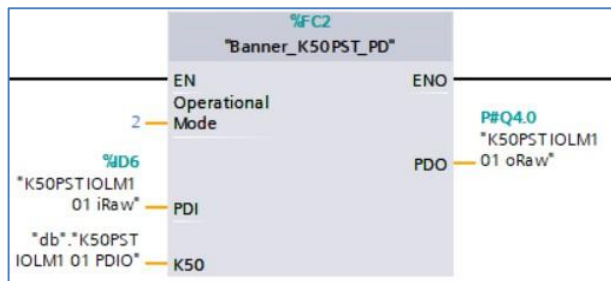


Figure 1: Hand type correct number for Operational Mode

NOTE: if you type in the incorrect number (i.e. it does not match the light’s current Operational Mode) you will get incorrectly displayed Process Data Out information.

Operational Mode: the options here are “0” (MultiColor Mode), “1” (Four State Mode), “2” (Advanced Mode), and “3” (LED Mode); where the entire tower light behaves as a level indicator). The default is “2”.

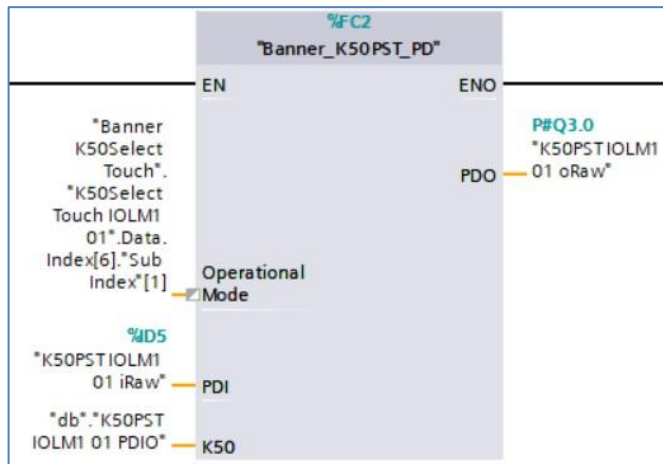
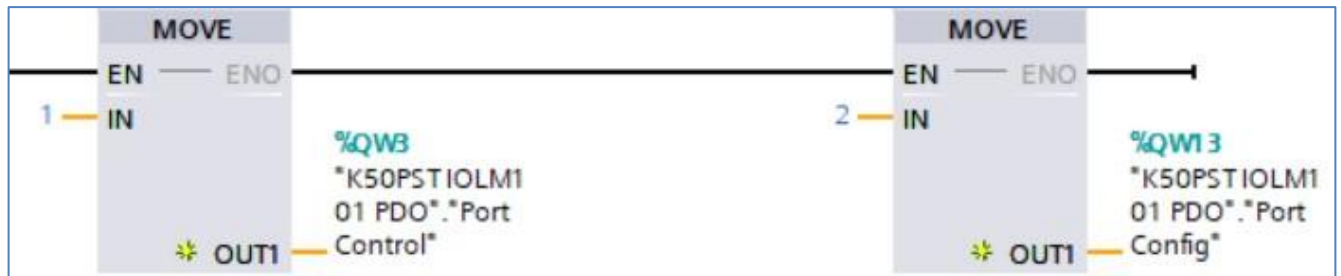


Figure 2: Linking Operational Mode variable to K50 Select Parameter Data Function Block

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16. 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 12 "K50PST IOLM1 01 PDO".

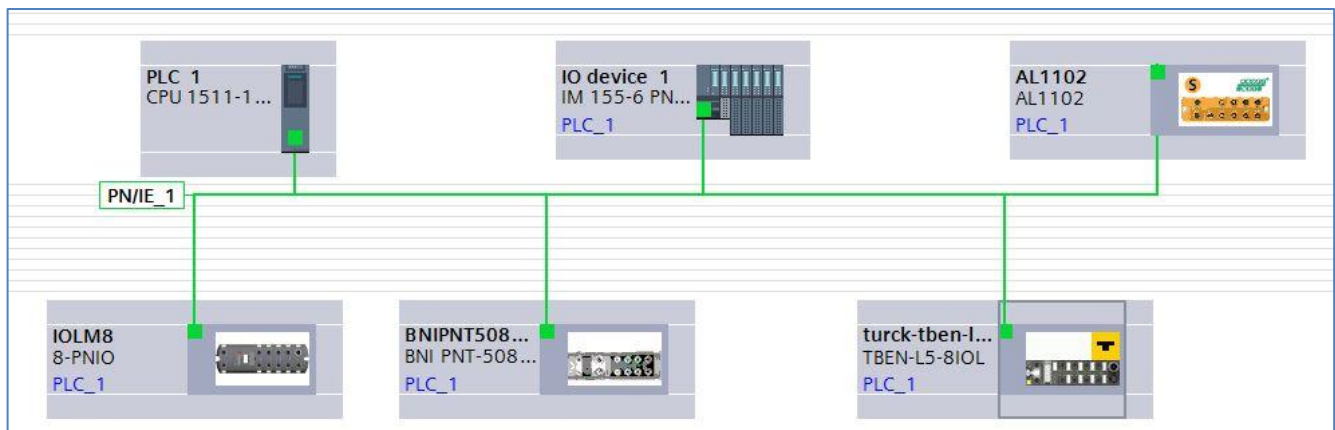
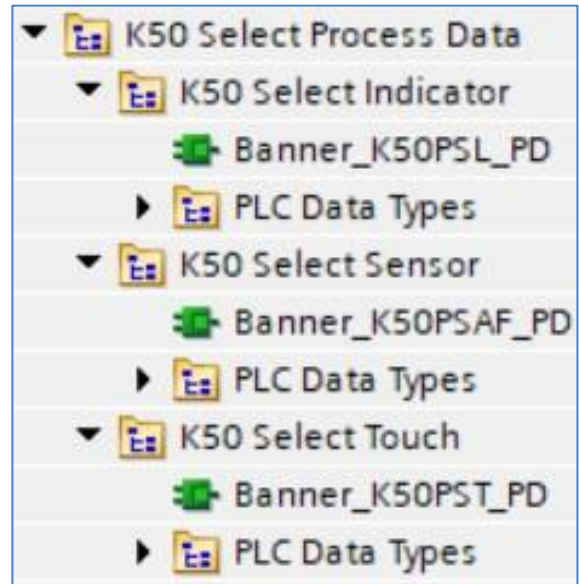


17. Process Data Setup is complete.
18. Compile and download the configuration to the PLC, then go online. Open the "db" data block and click Monitor all. The K50 Select can be controlled now.

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Setup of K50 Select with other IO-Link Masters

1. The Banner K50 Select library will now be in the Global Library List. Expand the Master copies section. Open the K50Pro PD folder.
2. Go to Step 3 for a K50 Select Indicator folder, Step 4 for a K50 Select Sensor, or Step 5 for a K50 Select Touch.
3. Drag the necessary files from the K50 Select Indicator Folder.
 - a. Move "Banner_K50PSL_4State", "Banner_K50PSL_Advanced", "Banner_K50PSL_LED", "Banner_K50PSL_PDIO", and "Banner_K50PSL_PDORaw" to the PLC Data Types area from the PLC Data Types.
 - b. Move "Banner_K50PSL_PD" to the Program Blocks area.
4. Drag the necessary files from the K50 Select Sensor Folder.
 - c. Move "Banner_K50PSAF_4State", "Banner_K50PSAF_Adv", "Banner_K50PSAF_LED", "Banner_K50PSAF_Multi", "Banner_K50PSAF_PDIO", and "Banner_K50PSAF_PDORaw" to the PLC Data Types area from the PLC Data Types.
 - d. Move "Banner_K50PSAF_PD" to the Program Blocks area.
5. Drag the necessary files from the K50 Select Touch folder.
 - e. Move "Banner_K50PST_4State", "Banner_K50PST_Adv", "Banner_K50PST_LED", "Banner_K50PST_Multi", "Banner_K50PST_PDIO", and "Banner_K50PST_PDORaw" to the PLC Data Types Area from the PLC Data Types.
 - f. Move "Banner_K50PST_PD" to the Program Blocks area.
6. 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.



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7. 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 K50 Select requires 8 bytes of Process Data. This will require a 8 byte IN/OUT type.
8. Record the “I” and “Q” addresses where this K50 Select Process Data is to be stored, as these addresses will be required in the next step.
9. Go to PLC Tags. Add a new tag table, then create a new tag to represent the raw Process Data in and Process Data Out to be sent from the IO-Link Master.
 - a. Create a tag for the K50 Select Indicator. In this example the tag “K50PSL IOLM1 01 oRaw” was created using a Data Type of “Banner_K50Pro_PDORaw”.

▶ K50PSL IOLM1 01 oRaw	"Banner_K50PSL_PDORaw"	%Q1.0
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- b. Create two tags for the K50 Select Touch. In this example the tag “K50PST IOLM1 01 oRaw” was created using a Data Type of “Banner_K50PST_PDORaw” and “K50PST IOLM1 01 iRaw” was created using a Data Type of “DWord”.

K50PST IOLM1 01 iRaw	DWord	%ID1
▶ K50PST IOLM1 01 oRaw	"Banner_K50PST_PDORaw"	%Q1.0

- c. Create two tags for the K50 Select Sensor. In this example the tag “K50PSAF IOLM1 01 oRaw” was created using a Data Type of “Banner_K50PSAF_PDORaw” and “K50PSAF IOLM1 01 iRaw” was created using a Data Type of “DWord”.

K50PSAF IOLM1 01 iRaw	DWord	%ID1
▶ K50PSAF IOLM1 01 oRaw	"Banner_K50PSAF_PDORaw"	%Q1.0

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

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11. In the new data block, create a new tag to represent the parsed Process Data In for our K50 Select Touch. The tag name again calls out the type of sensor, the IO-Link Master, and the port number. Use the data type "Banner_K50PST_PDIO" for the new tag.

▼ K50PSL IOLM1 01 PDO	"Banner_K50PSL_PDIO"
■ MultiColor - State	USInt
■ ▶ 4State	"Banner_K50PSL_4State"
■ ▶ Advanced	"Banner_K50PSL_Advanced"
■ ▶ LED	"Banner_K50PSL_LED"
▼ K50PST IOLM1 01 PDIO	"Banner_K50PST_PDIO"
■ ▶ MultiColor	"Banner_K50PST_Multi"
■ ▶ 4State	"Banner_K50PST_4State"
■ ▶ Advanced	"Banner_K50PST_Adv"
■ ▶ LED	"Banner_K50PST_LED"
▼ K50PSAF IOLM1 01 PDIO	"Banner_K50PSAF_PDIO"
■ ▶ MultiColor	"Banner_K50PSAF_Multi"
■ ▶ 4State	"Banner_K50PSAF_4State"
■ ▶ Advanced	"Banner_K50PSAF_Adv"
■ ▶ LED	"Banner_K50PSAF_LED"

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12. Add the “Banner_K50PST_PD” function to an OB ladder. Link the “PDI” and “PDO” to the raw process data variable from step 9. The K50 Select Indicator does not have a “PDI”. The tag name again calls out the type of device, IO-Link Master, and the port number. The “K50 PD” needs to be linked to the variable created in step 11. It was called “K50PST IOLM1 01 PDIO” for this example.

The last variable, “Operational Mode”, allow the function to correctly interpret the Process Data Out. In the case of the K50 Select, there are four user-selected modes for the Process Data Out. This function needs to know what choice has been made in the K50 Select for this Operational Mode variable.

There are two ways to achieve this goal. We can simply type in the correct number for Operational Mode (see Fig. 3), or we can link this K50 Select Process Data Function to the K50 Select Parameter Data Function Block (see Fig. 4). See Appendix A for more information about K50 Select Process Data Out.

Images shown are for a K50 Select Touch unit.

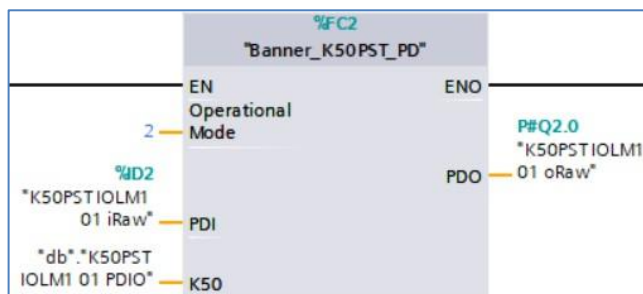


Figure 3: Hand type correct number for Operational Mode

NOTE: if you type in the incorrect number (i.e. it does not match the light’s current Operational Mode) you will get incorrectly displayed Process Data Out information.

Operational Mode: the options here are “0” (MultiColor Mode), “1” (Four State Mode), “2” (Advanced Mode), and “3” (LED Mode); where the entire tower light behaves as a level indicator). The default is “2”.

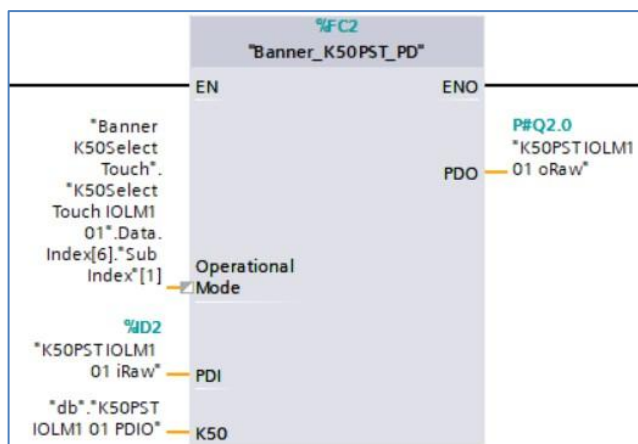


Figure 4: Linking Operational Mode variable to K50 Select Parameter Data Function Block

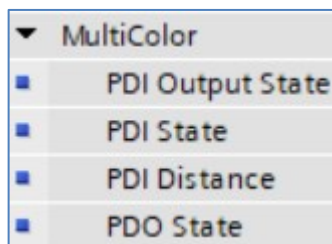
13. Process Data setup is complete.
14. Compile and download the configuration to the PLC, then go online. Open the “Banner IO-Link Data” data block and click Monitor all. You should see parsed K50 Select Process Data In.

K50 Select Process Data Function

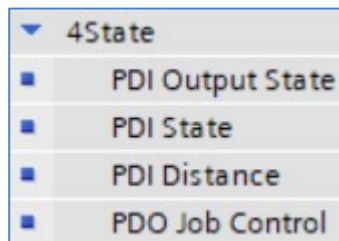
Using K50 Select Process Data

IO-Link Devices K50 Audible, K50 Display and K50 Touch all have similar Process Data. The K50 Compact Audible is different than the other three. Below each of the process data modes will be described for the devices. There are slight differences for the three units that are similar, but the overall operation follows the same pattern.

1. Multicolor Mode (0)
 - a. PDI Output State: gives the status of the K50.
 - b. PDI State: Current state that the device is in.
 - c. PDI Distance: Gives the distance measured by the sensor in millimeters.
 - d. PDO State: Set by a user to tell the device what state should be displayed.



2. Four State Full Logic Mode (1)
 - a. PDI Output State: gives the status of the K50.
 - b. PDI State: Current state that the device is in.
 - c. PDI Distance: Gives the distance measured by the sensor in millimeters.
 - d. PDO Job Control: Used to control which of the 4 modes the unit is in.



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3. Advanced Mode (2, Default)

- a. PDI Output State: Current state that the device is in.
- b. PDI Distance: Gives the distance measured by the sensor in millimeters.
- c. PDO Light Control: All the tags that control the light state of the light.

▼ Advanced
■ PDI Output State
■ PDI Distance
■ ▼ PDO Light Control
■ Animation
■ Animation Direction
■ Animation Pattern
■ Animation Speed
■ Static Sequence Value
■ Sequence Start Location
■ Color 1
■ Color 1 Intensity
■ Color 2
■ Color 2 Intensity

4. LED Mode (3)

- a. PDI Output State: gives the status of the touch button. K50 Display has two tags for touch state.
- b. PDI Distance: Gives the distance measured by the sensor in millimeters.
- c. LED (1 to 8) Color: Sets the color for the LED. Each LED can have a different color.
- d. LED Intensity (1 to 8): Sets the intensity of the LED.

▼ LED
■ PDI Output State
■ PDI Distance
■ LED 1 Color
■ LED 1 Intensity
■ LED 2 Color
■ LED 2 Intensity
■ LED 3 Color
■ LED 3 Intensity
■ LED 4 Color
■ LED 4 Intensity
■ LED 5 Color
■ LED 5 Intensity
■ LED 6 Color
■ LED 6 Intensity
■ LED 7 Color
■ LED 7 Intensity
■ LED 8 Color
■ LED 8 Intensity

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Appendix A

K50 Select Indicator Process Data

The K50 Select Indicator has 8 bytes of Process Data Out. There are four modes for displaying this data, as shown below. This Process Data is mapped to a specific group of PROFINET addresses. This function intelligently parses this Process Data into its component pieces.

The first is mode 0, "Multicolor".

ProcessDataOut "Process Data Out" id=V_Pd_OutMulticolor

bit length: 64

data type: 64-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	56	2-bit UInteger	0 = State1, 1 = State2, 2 = State3, 3 = State4					State	Animation State. Related parameters defined in Four State Full Logic/Multicolor parameter data.

The next mode, "1", is "Four State Full Logic".

ProcessDataOut "Process Data Out" id=V_Pd_OutFourStateFullLogic

bit length: 64

data type: 64-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	56	Boolean	false = Off, true = On					Job Input	Job Input for Four State Full Logic mode.
2	57	Boolean	false = Off, true = On					User Input (Indicator only)	User Input for Four State Full Logic mode (Indicator only).

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Mode 2 is “Advanced”.

ProcessDataOut "Process Data Out" id=V_Pd_OutAdvanced

bit length: 64

data type: 64-bit Record

subindex	bit offset	data type	allowed values	default value	acc. restr.	mod. other var.	excl. from DS	name	description
1	56	4-bit UInteger	0 = Off, 1 = Steady, 2 = Flash, 3 = Two Color Flash, 4 = 50/50, 5 = 50/50 Rotate, 6 = Chase, 7 = Intensity Sweep, 8 = Color Sweep, 9 = Sequence, 10 = Wave, 11 = Double Wave					Animation Type	The Animation type
2	60	Boolean	false = CCW, true = CW					Animation Direction	The Direction of Animation rotation
3	61	3-bit UInteger	0 = Flash, 1 = Strobe, 2 = Three Pulse, 3 = SOS, 4 = Random					Animation Pattern	The pattern of Animation
4	48	2-bit UInteger	0 = Slow, 1 = Medium, 2 = Fast, 3 = Custom					Animation Speed	The speed of the Animation
5	24	8-bit UInteger	0..255					Static Sequence Value (0-255)	Value describing the LED position of the device. LED state defined in parameter data.
6	16	3-bit UInteger	0 = LED1, 1 = LED2, 2 = LED3, 3 = LED4, 4 = LED5, 5 = LED6, 6 = LED7, 7 = LED8					Sequence Start Location	Defines the LED location that the sequence animation is initiated at.
7	8	5-bit UInteger	0 = Green, 1 = Red, 2 = Orange, 3 = Amber, 4 = Yellow, 5 = Lime Green, 6 = Spring Green, 7 = Cyan, 8 = Sky Blue, 9 = Blue, 10 = Violet, 11 = Magenta, 12 = Rose, 13 = White, 14 = Custom1, 15 = Custom2					Color 1	The main color of the Animation, Custom Colors are defined in Parameter data
8	13	3-bit UInteger	0 = High, 1 = Medium, 2 = Low, 3 = Off, 4 = Custom					Color 1 Intensity	The Intensity of Color 1, Custom Intensity defined in Parameter Data
9	0	5-bit UInteger	0 = Green, 1 = Red, 2 = Orange, 3 = Amber, 4 = Yellow, 5 = Lime Green, 6 = Spring Green, 7 = Cyan, 8 = Sky Blue, 9 = Blue, 10 = Violet, 11 = Magenta, 12 = Rose, 13 = White, 14 = Custom1, 15 = Custom2					Color 2	The secondary color of the Animation, Custom Colors are defined in Parameter data
10	5	3-bit UInteger	0 = High, 1 = Medium, 2 = Low, 3 = Off, 4 = Custom					Color 2 Intensity	The Intensity of Color 2, Custom Intensity defined in Parameter Data

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Mode 3 is “LED Control”. Just partial section is shown. Unit has 8 LEDs.

ProcessDataOut "Process Data Out" id=V_Pd_OutLedControl

bit length: 64

data type: 64-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	56	4-bit UInteger	0 = Green, 1 = Red, 2 = Orange, 3 = Amber, 4 = Yellow, 5 = Lime Green, 6 = Spring Green, 7 = Cyan, 8 = Sky Blue, 9 = Blue, 10 = Violet, 11 = Magenta, 12 = Rose, 13 = White, 14 = Custom1, 15 = Custom2					LED 1 Color	Defines the color of the designated LED. LED 1 is oriented at the 12 O'clock position
2	60	4-bit UInteger	0..10					LED 1 Intensity (0-10)	Defines the intensity of the designated LED
3	48	4-bit UInteger	0 = Green, 1 = Red, 2 = Orange, 3 = Amber, 4 = Yellow, 5 = Lime Green, 6 = Spring Green, 7 = Cyan, 8 = Sky Blue, 9 = Blue, 10 = Violet, 11 = Magenta, 12 = Rose, 13 = White, 14 = Custom1, 15 = Custom2					LED 2 Color	Defines the color of the designated LED
4	52	4-bit UInteger	0..10					LED 2 Intensity (0-10)	Defines the intensity of the designated LED

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Appendix B

K50 Select Sensor Process Data

The K50 Select Sensor has 2 bytes of Process Data In and 10 bytes of Process Data Out. There are four modes for displaying this data, as shown below. This Process Data is mapped to a specific group of PROFINET addresses. This function intelligently parses this Process Data into its component pieces.

The first is mode 0, "Multicolor".

ProcessDataIn "Process Data In" id=V_Pd_InMulticolor

bit length: 32

data type: 32-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	24	Boolean	false = Inactive, true = Active					Output State	Output State. Related parameters defined in output and touch settings parameter data.
2	16	3-bit UInteger	0 = State 1, 1 = State 2, 2 = State 3, 3 = State 4, 4 = State 5					State	Animation State. Related parameters defined in Four State Full Logic/Multicolor parameter data.
3	0	16-bit UInteger						Distance	Measured distance in millimeters

ProcessDataOut "Process Data Out" id=V_Pd_OutMulticolor

bit length: 64

data type: 64-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	56	3-bit UInteger	0 = State1, 1 = State2, 2 = State3, 3 = State4, 5 = State5					State	Animation State. Related parameters defined in Four State Full Logic/Multicolor parameter data.

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Mode 1 is "4State".

ProcessDataIn "Process Data In" id=V_Pd_InFourStateFullLogic

bit length: 32

data type: 32-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	24	Boolean	false = Inactive, true = Active					Output State	Output State. Related parameters defined in output and touch settings parameter data.
2	16	2-bit UInteger	0 = State 1, 1 = State 2, 2 = State 3, 3 = State 4					State	Animation State. Related parameters defined in Four State Full Logic/Multicolor parameter data.
3	0	16-bit UInteger						Distance	Measured distance in millimeters

ProcessDataOut "Process Data Out" id=V_Pd_OutFourStateFullLogic

bit length: 64

data type: 64-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	56	Boolean	false = Off, true = On					Job Input	Job Input for Four State Full Logic mode.

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Mode 2 is “Advanced”.

ProcessDataIn "Process Data In" id=V_Pd_InAdvanced

bit length: 32

data type: 32-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	24	Boolean	false = Inactive, true = Active					Output State	Output State. Related parameters defined in output and touch settings parameter data.
2	0	16-bit UInteger						Distance	Measured distance in millimeters

ProcessDataOut "Process Data Out" id=V_Pd_OutAdvanced

bit length: 64

data type: 64-bit Record

subindex	bit offset	data type	allowed values	default value	acc. restr.	mod. other var.	excl. from DS	name	description
1	56	4-bit UInteger	0 = Off, 1 = Steady, 2 = Flash, 3 = Two Color Flash, 4 = 50/50, 5 = 50/50 Rotate, 6 = Chase, 7 = Intensity Sweep, 8 = Color Sweep, 9 = Sequence, 10 = Wave, 11 = Double Wave					Animation Type	The Animation type
2	60	Boolean	false = CCW, true = CW					Animation Direction	The Direction of Animation rotation
3	61	3-bit UInteger	0 = Flash, 1 = Strobe, 2 = Three Pulse, 3 = SOS, 4 = Random					Animation Pattern	The pattern of Animation
4	48	2-bit UInteger	0 = Slow, 1 = Medium, 2 = Fast, 3 = Custom					Animation Speed	The speed of the Animation
5	24	8-bit UInteger	0..255					Static Sequence Value (0-255)	Value describing the LED position of the device. LED state defined in parameter data.
6	16	3-bit UInteger	0 = LED1, 1 = LED2, 2 = LED3, 3 = LED4, 4 = LED5, 5 = LED6, 6 = LED7, 7 = LED8					Sequence Start Location	Defines the LED location that the sequence animation is initiated at.
7	8	5-bit UInteger	0 = Green, 1 = Red, 2 = Orange, 3 = Amber, 4 = Yellow, 5 = Lime Green, 6 = Spring Green, 7 = Cyan, 8 = Sky Blue, 9 = Blue, 10 = Violet, 11 = Magenta, 12 = Rose, 13 = White, 14 = Custom1, 15 = Custom2					Color 1	The main color of the Animation, Custom Colors are defined in Parameter data
8	13	3-bit UInteger	0 = High, 1 = Medium, 2 = Low, 3 = Off, 4 = Custom					Color 1 Intensity	The Intensity of Color 1, Custom Intensity defined in Parameter Data
9	0	5-bit UInteger	0 = Green, 1 = Red, 2 = Orange, 3 = Amber, 4 = Yellow, 5 = Lime Green, 6 = Spring Green, 7 = Cyan, 8 = Sky Blue, 9 = Blue, 10 = Violet, 11 = Magenta, 12 = Rose, 13 = White, 14 = Custom1, 15 = Custom2					Color 2	The secondary color of the Animation, Custom Colors are defined in Parameter data
10	5	3-bit UInteger	0 = High, 1 = Medium, 2 = Low, 3 = Off, 4 = Custom					Color 2 Intensity	The Intensity of Color 2, Custom Intensity defined in Parameter Data

K50 Select Process Data Function

Mode 3 is “LED”. Just partial section is shown. Unit has 8 LEDs.

ProcessDataIn "Process Data In" id=V_Pd_InLedControl

bit length: 32

data type: 32-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	24	Boolean	false = Inactive, true = Active					Output State	Output State. Related parameters defined in output and touch settings parameter data.
2	0	16-bit UInteger						Distance	Measured distance in millimeters

ProcessDataOut "Process Data Out" id=V_Pd_OutLedControl

bit length: 64

data type: 64-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	56	4-bit UInteger	0 = Green, 1 = Red, 2 = Orange, 3 = Amber, 4 = Yellow, 5 = Lime Green, 6 = Spring Green, 7 = Cyan, 8 = Sky Blue, 9 = Blue, 10 = Violet, 11 = Magenta, 12 = Rose, 13 = White, 14 = Custom1, 15 = Custom2					LED 1 Color	Defines the color of the designated LED. LED 1 is oriented at the 12 O'clock position
2	60	4-bit UInteger	0..10					LED 1 Intensity (0-10)	Defines the intensity of the designated LED
3	48	4-bit UInteger	0 = Green, 1 = Red, 2 = Orange, 3 = Amber, 4 = Yellow, 5 = Lime Green, 6 = Spring Green, 7 = Cyan, 8 = Sky Blue, 9 = Blue, 10 = Violet, 11 = Magenta, 12 = Rose, 13 = White, 14 = Custom1, 15 = Custom2					LED 2 Color	Defines the color of the designated LED
4	52	4-bit UInteger	0..10					LED 2 Intensity (0-10)	Defines the intensity of the designated LED

K50 Select Process Data Function

Appendix C

K50 Select Touch Process Data

The K50 Select Touch Display has 2 bytes of Process Data In and 19 bytes of Process Data Out. There are four modes for displaying this data, as shown below. This Process Data is mapped to a specific group of PROFINET addresses. This function intelligently parses this Process Data into its component pieces.

The first is mode 0, "Multicolor".

ProcessDataIn "Process Data In" id=V_Pd_InMulticolor

bit length: 16

data type: 16-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	8	Boolean	false = Inactive, true = Active					Output State	Output State. Related parameters defined in output and touch settings parameter data.
2	0	2-bit UInteger	0 = State 1, 1 = State 2, 2 = State 3, 3 = State 4					State	Animation State. Related parameters defined in Four State Full Logic/Multicolor parameter data.

ProcessDataOut "Process Data Out" id=V_Pd_OutMulticolor

bit length: 64

data type: 64-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	56	2-bit UInteger	0 = State1, 1 = State2, 2 = State3, 3 = State4					State	Animation State. Related parameters defined in Four State Full Logic/Multicolor parameter data.

K50 Select Process Data Function

Mode 1 is "4State".

ProcessDataIn "Process Data In" id=V_Pd_InFourStateFullLogic

bit length: 16

data type: 16-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	8	Boolean	false = Inactive, true = Active					Output State	Output State. Related parameters defined in output and touch settings parameter data.
2	0	2-bit UInteger	0 = State 1, 1 = State 2, 2 = State 3, 3 = State 4					State	Animation State. Related parameters defined in Four State Full Logic/Multicolor parameter data.

ProcessDataOut "Process Data Out" id=V_Pd_OutFourStateFullLogic

bit length: 64

data type: 64-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	56	Boolean	false = Off, true = On					Job Input	Job Input for Four State Full Logic mode.

K50 Select Process Data Function

Mode 2 is “Advanced”.

ProcessDataIn "Process Data In" id=V_Pd_InAdvanced

bit length: 16

data type: 16-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	8	Boolean	false = Inactive, true = Active					Output State	Output State. Related parameters defined in output and touch settings parameter data.

ProcessDataOut "Process Data Out" id=V_Pd_OutAdvanced

bit length: 64

data type: 64-bit Record

subindex	bit offset	data type	allowed values	default value	acc. restr.	mod. other var.	excl. from DS	name	description
1	56	4-bit UInteger	0 = Off, 1 = Steady, 2 = Flash, 3 = Two Color Flash, 4 = 50/50, 5 = 50/50 Rotate, 6 = Chase, 7 = Intensity Sweep, 8 = Color Sweep, 9 = Sequence, 10 = Wave, 11 = Double Wave					Animation Type	The Animation type
2	60	Boolean	false = CCW, true = CW					Animation Direction	The Direction of Animation rotation
3	61	3-bit UInteger	0 = Flash, 1 = Strobe, 2 = Three Pulse, 3 = SOS, 4 = Random					Animation Pattern	The pattern of Animation
4	48	2-bit UInteger	0 = Slow, 1 = Medium, 2 = Fast, 3 = Custom					Animation Speed	The speed of the Animation
5	24	8-bit UInteger	0..255					Static Sequence Value (0-255)	Value describing the LED position of the device. LED state defined in parameter data.
6	16	3-bit UInteger	0 = LED1, 1 = LED2, 2 = LED3, 3 = LED4, 4 = LED5, 5 = LED6, 6 = LED7, 7 = LED8					Sequence Start Location	Defines the LED location that the sequence animation is initiated at.
7	8	5-bit UInteger	0 = Green, 1 = Red, 2 = Orange, 3 = Amber, 4 = Yellow, 5 = Lime Green, 6 = Spring Green, 7 = Cyan, 8 = Sky Blue, 9 = Blue, 10 = Violet, 11 = Magenta, 12 = Rose, 13 = White, 14 = Custom1, 15 = Custom2					Color 1	The main color of the Animation, Custom Colors are defined in Parameter data
8	13	3-bit UInteger	0 = High, 1 = Medium, 2 = Low, 3 = Off, 4 = Custom					Color 1 Intensity	The Intensity of Color 1, Custom Intensity defined in Parameter Data
9	0	5-bit UInteger	0 = Green, 1 = Red, 2 = Orange, 3 = Amber, 4 = Yellow, 5 = Lime Green, 6 = Spring Green, 7 = Cyan, 8 = Sky Blue, 9 = Blue, 10 = Violet, 11 = Magenta, 12 = Rose, 13 = White, 14 = Custom1, 15 = Custom2					Color 2	The secondary color of the Animation, Custom Colors are defined in Parameter data
10	5	3-bit UInteger	0 = High, 1 = Medium, 2 = Low, 3 = Off, 4 = Custom					Color 2 Intensity	The Intensity of Color 2, Custom Intensity defined in Parameter Data

K50 Select Process Data Function

Mode 3 is "LED". Just partial section is shown. Unit has 8 LEDs.

ProcessDataIn "Process Data In" id=V_Pd_InLedControl

bit length: 16

data type: 16-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	8	Boolean	false = Inactive, true = Active					Output State	Output State. Related parameters defined in output and touch settings parameter data.

ProcessDataOut "Process Data Out" id=V_Pd_OutLedControl

bit length: 64

data type: 64-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	56	4-bit UInteger	0 = Green, 1 = Red, 2 = Orange, 3 = Amber, 4 = Yellow, 5 = Lime Green, 6 = Spring Green, 7 = Cyan, 8 = Sky Blue, 9 = Blue, 10 = Violet, 11 = Magenta, 12 = Rose, 13 = White, 14 = Custom1, 15 = Custom2					LED 1 Color	Defines the color of the designated LED. LED 1 is oriented at the 12 O'clock position
2	60	4-bit UInteger	0..10					LED 1 Intensity (0-10)	Defines the intensity of the designated LED
3	48	4-bit UInteger	0 = Green, 1 = Red, 2 = Orange, 3 = Amber, 4 = Yellow, 5 = Lime Green, 6 = Spring Green, 7 = Cyan, 8 = Sky Blue, 9 = Blue, 10 = Violet, 11 = Magenta, 12 = Rose, 13 = White, 14 = Custom1, 15 = Custom2					LED 2 Color	Defines the color of the designated LED
4	52	4-bit UInteger	0..10					LED 2 Intensity (0-10)	Defines the intensity of the designated LED