

# R95C R130C 8B22 Process Data Function

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February 16<sup>th</sup>, 2026

This document covers the installation and use of a function for Siemens' TIA Portal software package. This function handles cyclic IO-Link Process Data In from a Banner R95C-8B22-KQ or R130C-8P22-KQ sensor via an IO-Link Master to a Siemens PLC. The function covers parsing and display of the R95C-8B22-KQ sensor Process Data.

## **Components**

Banner R90C R95C R130C Hubs v16 Library.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.



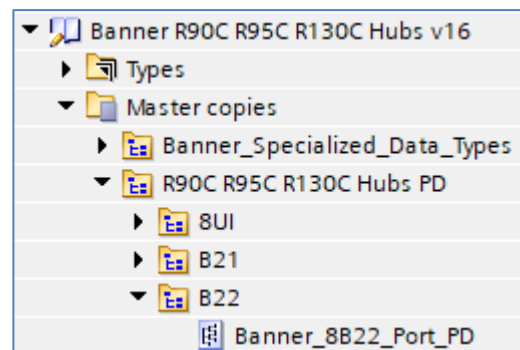
3. Switch the “Files of type” to Compressed libraries. Go to the location of the compressed library.
4. Press the Open button and the library will be uncompressed and opened.
5. The library is now accessible in the Libraries tab in v16 or greater.

**Setup of R95C-8B22-KQ or R130C-8P22-KQ 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 2/2 byte option has been selected for port 1. Make note of the I and Q addresses for the Slot 2 which represents Port 1. Slot 2 starts are I12. The other number needed I16 (this value is calculated by adding 4 to the previous number [I12 here]). The data for the port start at that point (I16). The previous four bytes represents Port Status, Process Data In Size, and Process Data Out Size. The Q address is also necessary. Slot 2 starts at Q12, while the second number needed is Q14 (calculated by adding 2 to the previous number).

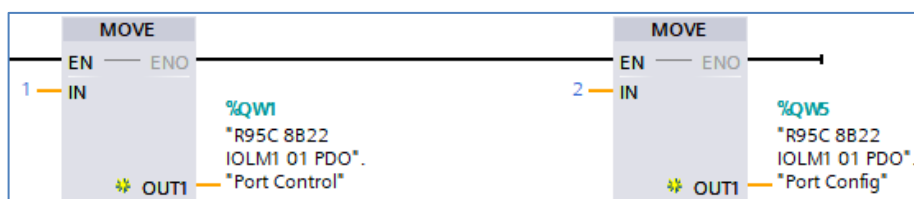
Module	Rack	Slot	I address	Q address
▼ dxm	0	0		
▶ Interface	0	0 X1		
Banner IO-Link Master Info_1	0	1	2...10	
IO-Link In/Out 2/ 2 Byte + Status_1	0	2	12...17	12...27

3. Drag the Banner\_8B22\_Port\_PD to the PLC Data Types area.
4. Drag the necessary tags from Banner\_Specialized\_Data\_Types. The tag used in this example is “Banner\_2in” and “Banner\_2out”. These tags represent the full raw process data along with port information.
5. Go to PLC Tags. Create four tags. Two of the tags use the Banner Specialized tags while the other two use the “Banner\_8B22\_Port\_PD” data types. The I and Q addresses calculated previously are used.





▶ DXM8K P1 in	"Banner_2In"	%I12.0
▶ DXM8K P1 out	"Banner_2Out"	%Q12.0
▶ 8B22 In	"Banner_8B22_Port_PD"	%I16.0
▶ 8B22 Out	"Banner_8B22_Port_PD"	%Q14.0

6. 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 “CL50 IOLM1 01 PDO”.



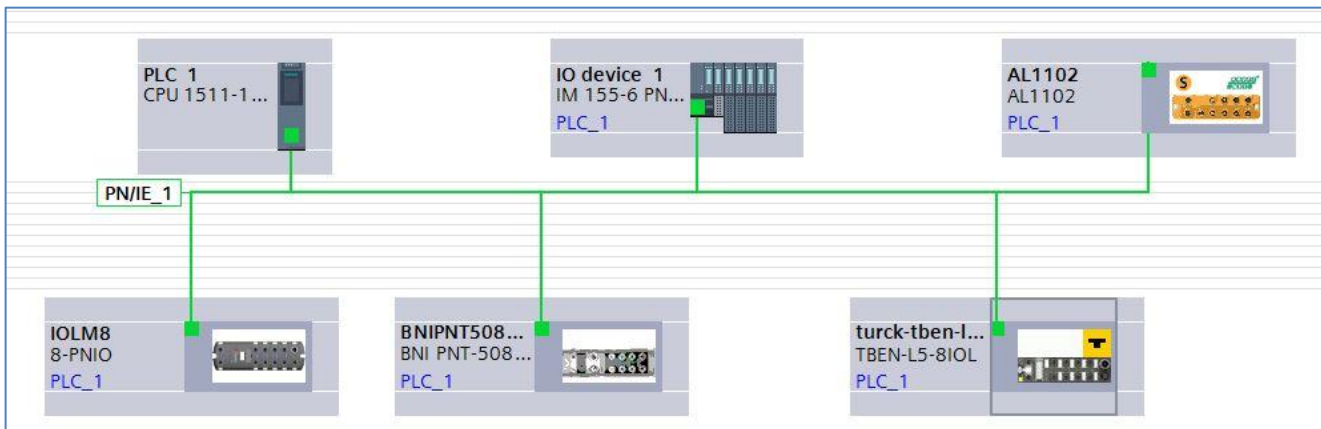
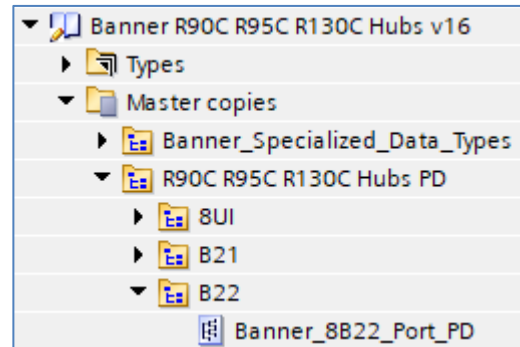
7. Process Data setup is complete.
8. While online the two tags (in this example 8B22 In and 8B22 Out) allow access and control. Each Port needs to have the inputs or outputs (set via parameter data) selected for the corresponding data to be correct.

▼ 8B22 In	*Banner_8B22_Port_PD*	%I16.0	
P1 D1	Bool	%I16.0	<input checked="" type="checkbox"/> TRUE
P1 D2	Bool	%I16.1	<input checked="" type="checkbox"/> TRUE
P2 D1	Bool	%I16.2	<input type="checkbox"/> FALSE
P2 D2	Bool	%I16.3	<input type="checkbox"/> FALSE
P3 D1	Bool	%I16.4	<input type="checkbox"/> FALSE
P3 D2	Bool	%I16.5	<input type="checkbox"/> FALSE
P4 D1	Bool	%I16.6	<input type="checkbox"/> FALSE
P4 D2	Bool	%I16.7	<input type="checkbox"/> FALSE
P5 D1	Bool	%I17.0	<input type="checkbox"/> FALSE
P5 D2	Bool	%I17.1	<input type="checkbox"/> FALSE
P6 D1	Bool	%I17.2	<input type="checkbox"/> FALSE
P6 D2	Bool	%I17.3	<input type="checkbox"/> FALSE
P7 D1	Bool	%I17.4	<input type="checkbox"/> FALSE
P7 D2	Bool	%I17.5	<input type="checkbox"/> FALSE
P8 D1	Bool	%I17.6	<input type="checkbox"/> FALSE
P8 D2	Bool	%I17.7	<input type="checkbox"/> FALSE

▼ 8B22 Out	*Banner_8B22_Port_PD*	%Q14.0	
P1 D1	Bool	%Q14.0	<input type="checkbox"/> FALSE
P1 D2	Bool	%Q14.1	<input type="checkbox"/> FALSE
P2 D1	Bool	%Q14.2	<input type="checkbox"/> FALSE
P2 D2	Bool	%Q14.3	<input type="checkbox"/> FALSE
P3 D1	Bool	%Q14.4	<input type="checkbox"/> FALSE
P3 D2	Bool	%Q14.5	<input type="checkbox"/> FALSE
P4 D1	Bool	%Q14.6	<input type="checkbox"/> FALSE
P4 D2	Bool	%Q14.7	<input type="checkbox"/> FALSE
P5 D1	Bool	%Q15.0	<input type="checkbox"/> FALSE
P5 D2	Bool	%Q15.1	<input type="checkbox"/> FALSE
P6 D1	Bool	%Q15.2	<input type="checkbox"/> FALSE
P6 D2	Bool	%Q15.3	<input type="checkbox"/> FALSE
P7 D1	Bool	%Q15.4	<input type="checkbox"/> FALSE
P7 D2	Bool	%Q15.5	<input type="checkbox"/> FALSE
P8 D1	Bool	%Q15.6	<input type="checkbox"/> FALSE
P8 D2	Bool	%Q15.7	<input type="checkbox"/> FALSE

**Setup of R95C-8B22-KQ or R130C-8P22-KQ with other IO-Link Masters**

1. The Banner IO-Link Library will now be in the Global Library List. Expand the Master copies section. The “R90C R95C R130C Hubs PD” folder contains the PLC Data Type for B22.
2. Drag Banner\_8B22\_Port\_PD to the PLC Data Types folder area under your PLC.
3. 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.





4. 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 R95C 8B22 or R130C 8P22 requires 2 bytes of space for the Process Data in and out.
5. Record the “I” and “Q” addresses where this 8B22 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 1 on the IO-Link Master will be stored starting at I16. The Q addresses start at Q14.
6. Go to PLC Tags. Add a new tag table, if desired, then create a new tags to represent the raw Process Data from the IO-Link Master. In this example the tag “8B22 In” and “8B22 Out” were created using a Data Type of “Banner\_8B22\_Port\_PD”.

▶ 8B22 In	"Banner_8B22_Port_PD"	%I16.0
▶ 8B22 Out	"Banner_8B22_Port_PD"	%Q14.0

7. Process Data setup is complete.

8. While online the two tags (in this example 8B22 In and 8B22 Out) allow access and control. Each Port needs to have input or output selected for the corresponding data to be correct.

▼ 8B22 In	*Banner_8B22_Port_PD*	%I16.0	
P1 D1	Bool	%I16.0	<input checked="" type="checkbox"/> TRUE
P1 D2	Bool	%I16.1	<input checked="" type="checkbox"/> TRUE
P2 D1	Bool	%I16.2	<input type="checkbox"/> FALSE
P2 D2	Bool	%I16.3	<input type="checkbox"/> FALSE
P3 D1	Bool	%I16.4	<input type="checkbox"/> FALSE
P3 D2	Bool	%I16.5	<input type="checkbox"/> FALSE
P4 D1	Bool	%I16.6	<input type="checkbox"/> FALSE
P4 D2	Bool	%I16.7	<input type="checkbox"/> FALSE
P5 D1	Bool	%I17.0	<input type="checkbox"/> FALSE
P5 D2	Bool	%I17.1	<input type="checkbox"/> FALSE
P6 D1	Bool	%I17.2	<input type="checkbox"/> FALSE
P6 D2	Bool	%I17.3	<input type="checkbox"/> FALSE
P7 D1	Bool	%I17.4	<input type="checkbox"/> FALSE
P7 D2	Bool	%I17.5	<input type="checkbox"/> FALSE
P8 D1	Bool	%I17.6	<input type="checkbox"/> FALSE
P8 D2	Bool	%I17.7	<input type="checkbox"/> FALSE

▼ 8B22 Out	*Banner_8B22_Port_PD*	%Q14.0	
P1 D1	Bool	%Q14.0	<input type="checkbox"/> FALSE
P1 D2	Bool	%Q14.1	<input type="checkbox"/> FALSE
P2 D1	Bool	%Q14.2	<input type="checkbox"/> FALSE
P2 D2	Bool	%Q14.3	<input type="checkbox"/> FALSE
P3 D1	Bool	%Q14.4	<input type="checkbox"/> FALSE
P3 D2	Bool	%Q14.5	<input type="checkbox"/> FALSE
P4 D1	Bool	%Q14.6	<input type="checkbox"/> FALSE
P4 D2	Bool	%Q14.7	<input type="checkbox"/> FALSE
P5 D1	Bool	%Q15.0	<input type="checkbox"/> FALSE
P5 D2	Bool	%Q15.1	<input type="checkbox"/> FALSE
P6 D1	Bool	%Q15.2	<input type="checkbox"/> FALSE
P6 D2	Bool	%Q15.3	<input type="checkbox"/> FALSE
P7 D1	Bool	%Q15.4	<input type="checkbox"/> FALSE
P7 D2	Bool	%Q15.5	<input type="checkbox"/> FALSE
P8 D1	Bool	%Q15.6	<input type="checkbox"/> FALSE
P8 D2	Bool	%Q15.7	<input type="checkbox"/> FALSE



## Appendix A

## R95C-8B22-KQ or R130C-8P22-KQ Process Data

The R95C-8B22-KQ has 2 bytes of Process Data In and Out, as shown below.

Process Data Input Configuration = 0 (Group by Port)

ProcessDataIn "Process Data Input" id=PD_ProcessDataIn									
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					Port1 Discrete1 Input State	true (1) = Discrete1 Input Active. Note - even if Discrete1 is configured as an output, the active state will be reflected at the input
2	9	Boolean	false = Inactive, true = Active					Port1 Discrete2 Input State	true (1) = Discrete2 Input Active. Note - even if Discrete2 is configured as an output, the active state will be reflected at the input
3	10	Boolean	false = Inactive, true = Active					Port2 Discrete1 Input State	true (1) = Discrete1 Input Active. Note - even if Discrete1 is configured as an output, the active state will be reflected at the input
4	11	Boolean	false = Inactive, true = Active					Port2 Discrete2 Input State	true (1) = Discrete2 Input Active. Note - even if Discrete2 is configured as an output, the active state will be reflected at the input
5	12	Boolean	false = Inactive, true = Active					Port3 Discrete1 Input State	true (1) = Discrete1 Input Active. Note - even if Discrete1 is configured as an output, the active state will be reflected at the input
6	13	Boolean	false = Inactive, true = Active					Port3 Discrete2 Input State	true (1) = Discrete2 Input Active. Note - even if Discrete2 is configured as an output, the active state will be reflected at the input
7	14	Boolean	false = Inactive, true = Active					Port4 Discrete1 Input State	true (1) = Discrete1 Input Active. Note - even if Discrete1 is configured as an output, the active state will be reflected at the input
8	15	Boolean	false = Inactive, true = Active					Port4 Discrete2 Input State	true (1) = Discrete2 Input Active. Note - even if Discrete2 is configured as an output, the active state will be reflected at the input
9	0	Boolean	false = Inactive, true = Active					Port5 Discrete1 Input State	true (1) = Discrete1 Input Active. Note - even if Discrete1 is configured as an output, the active state will be reflected at the input
10	1	Boolean	false = Inactive, true = Active					Port5 Discrete2 Input State	true (1) = Discrete2 Input Active. Note - even if Discrete2 is configured as an output, the active state will be reflected at the input
11	2	Boolean	false = Inactive, true = Active					Port6 Discrete1 Input State	true (1) = Discrete1 Input Active. Note - even if Discrete1 is configured as an output, the active state will be reflected at the input
12	3	Boolean	false = Inactive, true = Active					Port6 Discrete2 Input State	true (1) = Discrete2 Input Active. Note - even if Discrete2 is configured as an output, the active state will be reflected at the input
13	4	Boolean	false = Inactive, true = Active					Port7 Discrete1 Input State	true (1) = Discrete1 Input Active. Note - even if Discrete1 is configured as an output, the active state will be reflected at the input
14	5	Boolean	false = Inactive, true = Active					Port7 Discrete2 Input State	true (1) = Discrete2 Input Active. Note - even if Discrete2 is configured as an output, the active state will be reflected at the input
15	6	Boolean	false = Inactive, true = Active					Port8 Discrete1 Input State	true (1) = Discrete1 Input Active. Note - even if Discrete1 is configured as an output, the active state will be reflected at the input
16	7	Boolean	false = Inactive, true = Active					Port8 Discrete2 Input State	true (1) = Discrete2 Input Active. Note - even if Discrete2 is configured as an output, the active state will be reflected at the input

Process Data Output Configuration = 0 (Group by Port)

**ProcessDataOut "Process Data Output" id=PD\_ProcessDataOut**

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 = Off, true = On					Port1 Discrete1 Output State	true (1) = Discrete1 Output Active
2	9	Boolean	false = Off, true = On					Port1 Discrete2 Output State	true (1) = Discrete2 Output Active
3	10	Boolean	false = Off, true = On					Port2 Discrete1 Output State	true (1) = Discrete1 Output Active
4	11	Boolean	false = Off, true = On					Port2 Discrete2 Output State	true (1) = Discrete2 Output Active
5	12	Boolean	false = Off, true = On					Port3 Discrete1 Output State	true (1) = Discrete1 Output Active
6	13	Boolean	false = Off, true = On					Port3 Discrete2 Output State	true (1) = Discrete2 Output Active
7	14	Boolean	false = Off, true = On					Port4 Discrete1 Output State	true (1) = Discrete1 Output Active
8	15	Boolean	false = Off, true = On					Port4 Discrete2 Output State	true (1) = Discrete2 Output Active
9	0	Boolean	false = Off, true = On					Port5 Discrete1 Output State	true (1) = Discrete1 Output Active
10	1	Boolean	false = Off, true = On					Port5 Discrete2 Output State	true (1) = Discrete2 Output Active
11	2	Boolean	false = Off, true = On					Port6 Discrete1 Output State	true (1) = Discrete1 Output Active
12	3	Boolean	false = Off, true = On					Port6 Discrete2 Output State	true (1) = Discrete2 Output Active
13	4	Boolean	false = Off, true = On					Port7 Discrete1 Output State	true (1) = Discrete1 Output Active
14	5	Boolean	false = Off, true = On					Port7 Discrete2 Output State	true (1) = Discrete2 Output Active
15	6	Boolean	false = Off, true = On					Port8 Discrete1 Output State	true (1) = Discrete1 Output Active
16	7	Boolean	false = Off, true = On					Port8 Discrete2 Output State	true (1) = Discrete2 Output Active



Process Data Input Configuration = 1 (Group by Channel)

ProcessDataIn "Process Data Input" id=PD_ProcessDataInByChannel									
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					Port1 Discrete1 Input State	true (1) = Discrete1 Input Active. Note - even if Discrete1 is configured as an output, the active state will be reflected at the input
2	9	Boolean	false = Inactive, true = Active					Port2 Discrete1 Input State	true (1) = Discrete1 Input Active. Note - even if Discrete1 is configured as an output, the active state will be reflected at the input
3	10	Boolean	false = Inactive, true = Active					Port3 Discrete1 Input State	true (1) = Discrete1 Input Active. Note - even if Discrete1 is configured as an output, the active state will be reflected at the input
4	11	Boolean	false = Inactive, true = Active					Port4 Discrete1 Input State	true (1) = Discrete1 Input Active. Note - even if Discrete1 is configured as an output, the active state will be reflected at the input
5	12	Boolean	false = Inactive, true = Active					Port5 Discrete1 Input State	true (1) = Discrete1 Input Active. Note - even if Discrete1 is configured as an output, the active state will be reflected at the input
6	13	Boolean	false = Inactive, true = Active					Port6 Discrete1 Input State	true (1) = Discrete1 Input Active. Note - even if Discrete1 is configured as an output, the active state will be reflected at the input
7	14	Boolean	false = Inactive, true = Active					Port7 Discrete1 Input State	true (1) = Discrete1 Input Active. Note - even if Discrete1 is configured as an output, the active state will be reflected at the input
8	15	Boolean	false = Inactive, true = Active					Port8 Discrete1 Input State	true (1) = Discrete1 Input Active. Note - even if Discrete1 is configured as an output, the active state will be reflected at the input
9	0	Boolean	false = Inactive, true = Active					Port1 Discrete2 Input State	true (1) = Discrete2 Input Active. Note - even if Discrete2 is configured as an output, the active state will be reflected at the input
10	1	Boolean	false = Inactive, true = Active					Port2 Discrete2 Input State	true (1) = Discrete2 Input Active. Note - even if Discrete2 is configured as an output, the active state will be reflected at the input
11	2	Boolean	false = Inactive, true = Active					Port3 Discrete2 Input State	true (1) = Discrete2 Input Active. Note - even if Discrete2 is configured as an output, the active state will be reflected at the input
12	3	Boolean	false = Inactive, true = Active					Port4 Discrete2 Input State	true (1) = Discrete2 Input Active. Note - even if Discrete2 is configured as an output, the active state will be reflected at the input
13	4	Boolean	false = Inactive, true = Active					Port5 Discrete2 Input State	true (1) = Discrete2 Input Active. Note - even if Discrete2 is configured as an output, the active state will be reflected at the input
14	5	Boolean	false = Inactive, true = Active					Port6 Discrete2 Input State	true (1) = Discrete2 Input Active. Note - even if Discrete2 is configured as an output, the active state will be reflected at the input
15	6	Boolean	false = Inactive, true = Active					Port7 Discrete2 Input State	true (1) = Discrete2 Input Active. Note - even if Discrete2 is configured as an output, the active state will be reflected at the input
16	7	Boolean	false = Inactive, true = Active					Port8 Discrete2 Input State	true (1) = Discrete2 Input Active. Note - even if Discrete2 is configured as an output, the active state will be reflected at the input

Process Data Output Configuration = 1 (Group by Channel)

**ProcessDataOut "Process Data Output" id=PD\_ProcessDataOutByChannel**

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 = Off, true = On					Port1 Discrete1 Output State	true (1) = Discrete1 Output Active
2	9	Boolean	false = Off, true = On					Port2 Discrete1 Output State	true (1) = Discrete1 Output Active
3	10	Boolean	false = Off, true = On					Port3 Discrete1 Output State	true (1) = Discrete1 Output Active
4	11	Boolean	false = Off, true = On					Port4 Discrete1 Output State	true (1) = Discrete1 Output Active
5	12	Boolean	false = Off, true = On					Port5 Discrete1 Output State	true (1) = Discrete1 Output Active
6	13	Boolean	false = Off, true = On					Port6 Discrete1 Output State	true (1) = Discrete1 Output Active
7	14	Boolean	false = Off, true = On					Port7 Discrete1 Output State	true (1) = Discrete1 Output Active
8	15	Boolean	false = Off, true = On					Port8 Discrete1 Output State	true (1) = Discrete2 Output Active
9	0	Boolean	false = Off, true = On					Port1 Discrete2 Output State	true (1) = Discrete2 Output Active
10	1	Boolean	false = Off, true = On					Port2 Discrete2 Output State	true (1) = Discrete2 Output Active
11	2	Boolean	false = Off, true = On					Port3 Discrete2 Output State	true (1) = Discrete1 Output Active
12	3	Boolean	false = Off, true = On					Port4 Discrete2 Output State	true (1) = Discrete2 Output Active
13	4	Boolean	false = Off, true = On					Port5 Discrete2 Output State	true (1) = Discrete2 Output Active
14	5	Boolean	false = Off, true = On					Port6 Discrete2 Output State	true (1) = Discrete2 Output Active
15	6	Boolean	false = Off, true = On					Port7 Discrete2 Output State	true (1) = Discrete2 Output Active
16	7	Boolean	false = Off, true = On					Port8 Discrete2 Output State	true (1) = Discrete2 Output Active