

ADIO-EI (Studio 5000 Logix Designer Guide)

User Manual MTO-ADIOEIU1-V1.0-2202US

Thank you for purchasing an Autonics product.

This user manual contains information about the product and its proper use, and should be kept in a place where it will be easy to access.

Autonics

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Preface

Thank you for purchasing Autonics products.

Be sure to read and follow the **Safety Precautions** thoroughly before use.

This manual contains information about the product and how to use it properly, so keep it in a place where users can easily find it.

Manual Guide

- Use the product after fully reading the contents of the manual.
- The manual explains the product functions in detail and does not guarantee the contents other than the manual.
- Any or all of the manual may not be edited or copied without permission.
- The manual is not provided with the product.
- Download and use from our website (www.autonics.com).
- The contents of the manual are subject to change without prior notice according to the improvement of the product's performance, and upgrade notices are provided through our website.
- We put a lot of effort to make the contents of the manual a little easier and more accurate. Nevertheless, if you have any corrections or questions, please feel free to comment through our website.

Common Symbols in the Manual



Failure to follow instructions may result in serious injury or death.



Failure to follow instructions may result in injury or product damage.



Supplementary explanation of the function



Example of that function



Important information about the feature

1. ADIO-EI (Studio 5000 Logix Designer Guide)

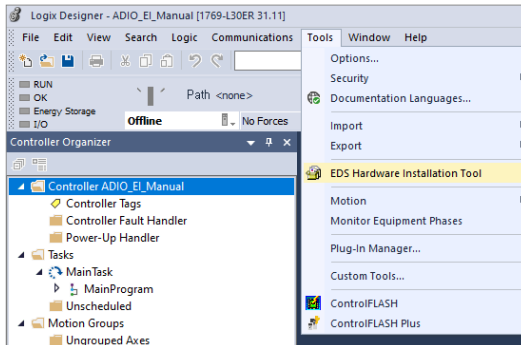


- Be sure to see the product manual of the ADIO-EI (EtherNet/IP) model and follow the precautions.
- This guide document describes the configuration and settings of the ADIO-EI (EtherNet/IP) model based on Studio 5000 Logix Designer which is Rockwell Automation's project planning software.
- Refer to the project configuration used in this documentation below.
 - CompactLogix™ 5370 controller: 1769-L30ER

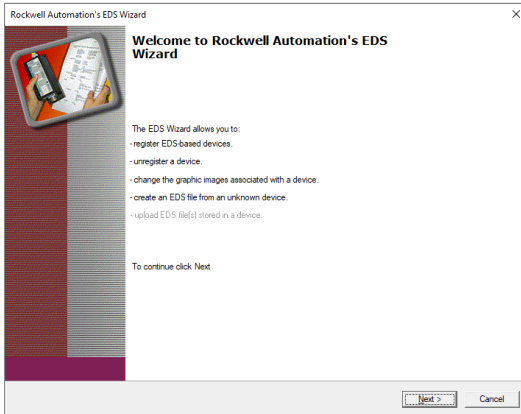
1.1. Install EDS File

The EDS file describes specific data information about the EtherNet/IP Slave (Adapter) required for EtherNet/IP project planning software, and defines parameters, process data and valid values for the configuration of IO-Link communication.

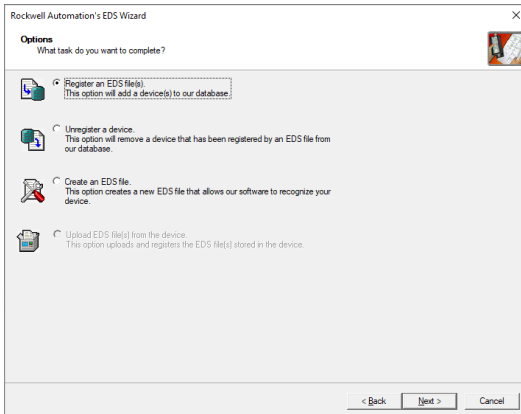
1. Download the ADIO-EI's EDS file on the Autonics website.
2. Launch Studio 5000 Logix Designer.
3. Select **Tools** » **EDS Hardware Installation Tool**.



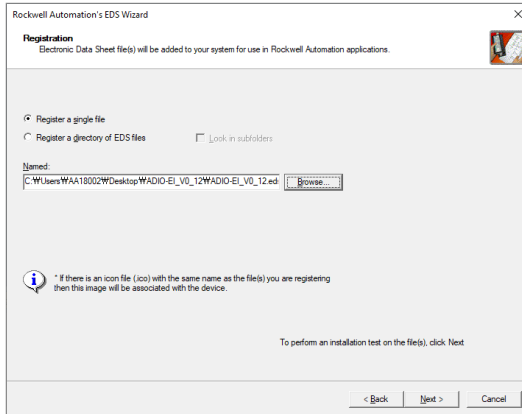
4. The EDS Wizard begins.



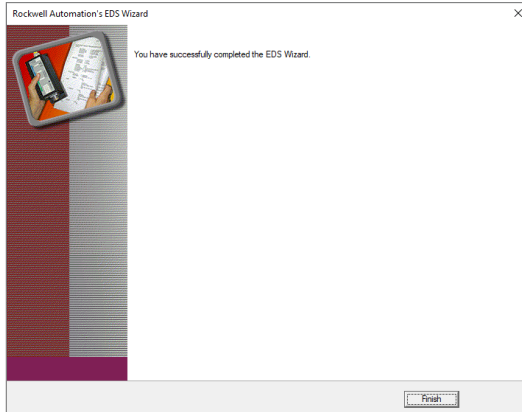
5. Select Register an EDS file(s).



6. Define a path of the EDS file.



7. Keep the EDS Wizard and register the EDS file to the project.



1.2. Configure the Ethernet Module (ADIO-EI)

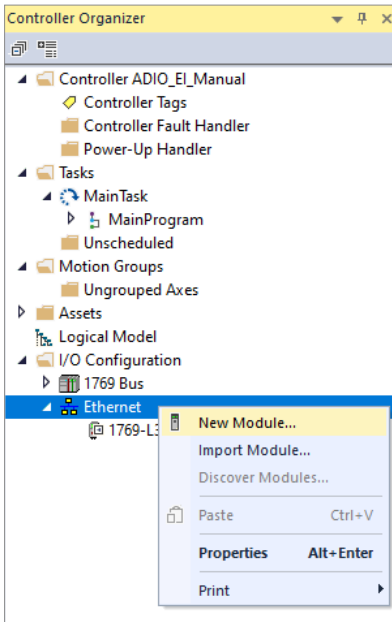
IP address settings

The setting method of IP address is different depending on the number of rotary switches on the ADIO-EI. See the table below and consider your environment for selecting the setting method of IP address.

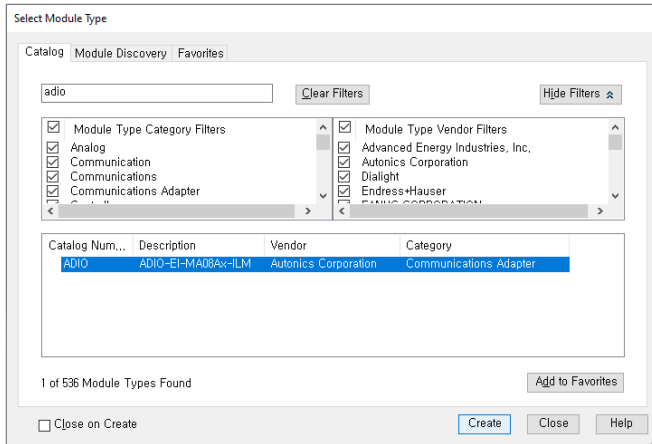
The static IP address is used in this guide document.

Setting mode	Rotary switches	Description
Default IP address	000	The IP address stored in the ADIO-EI's EEPROM.
Static IP address	001 to 255	Set the last octet of the IP address. • 192.168.2.□□□
BOOTP	800 to 899	Set the IP address in BOOTP.
DHCP	900 to 999	Set the IP address in the DHCP server.

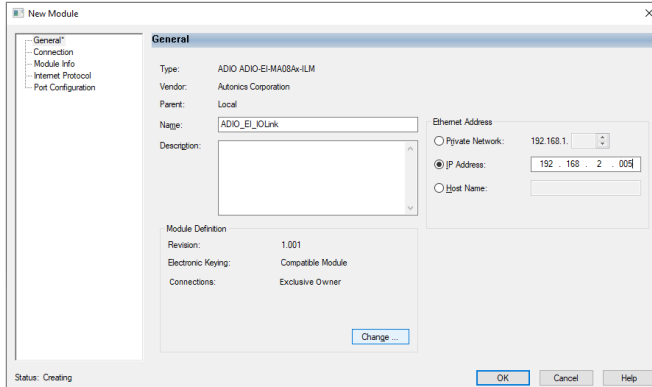
1. Right-click **Controller Organizer** » **I/O Configuration** » **Ethernet** on the left side of the screen, and select **New Module**.



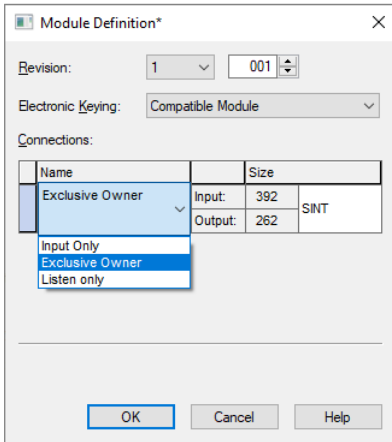
2. Enter a Series Name of IO-Link Master (e.g., ADIO), select the available module, and click **Create**.



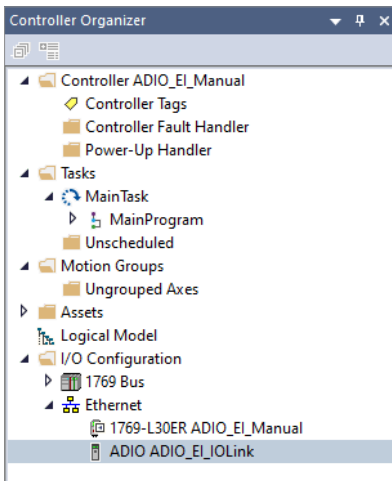
3. Assign a Name of the Ethernet module and IP address, then click **Change** to open the **Module Definition** window.



4. Select the Connections type as **Exclusive Owner** and check the size, then click **OK**.

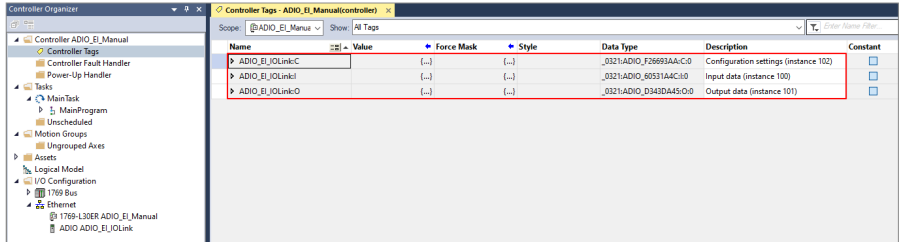


5. The ethernet module is created under the **Controller Organizer » I/O Configuration » Ethernet**.



1.3. Controller Tags

Controller Tags for configuring ADIO-EI are automatically created after the installation of EDS file is completed. The controller tags make you available to set input, output and configuration data or use the ladder logic. For more information about methods and examples of configuration, refer to the next chapter.



Structure of Instance Assembly

For detailed information on the instances, refer to 4, Instance.

- Module Name: C → Configuration Assembly (Instance 102)
- Module name: I → Input Assembly (Instance 100)
- Module Name: O → Output Assembly (Instance 101)

Controller tags and mapping

e.g.) module name:**C.Data[0].0-1**

- Since the name structure of controller tag is module name:**Configuration.Data[Index].Bit number**, it means the port 0 consisted of two bits (0 to 1) in the index 0 from Configuration Assembly.

Index	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
0	Port 3		Port 2		Port 1		Port 0	
1	Port 7		Port 6		Port 5		Port 4	

1.4. Configure I/O Port: Instance 102

Expand **module name:C** in Controller Tags to find more tags for port configuration.

The attributes of Instance 102 is shown in the figure below and this document describes based on the index of port 0.

- For detailed information, refer to 4.1, “Instance 102: Parameter Data”.

Name	Value	Force Mask	Style	Data Type	Description	Constant
ADIO_EI_IOLinkC		[...]	[...]	_0321:ADIO_F26693AA:C:0		<input type="checkbox"/>
ADIO_EI_IOLinkC.Data		[...]	Decimal	SINT[194]		
ADIO_EI_IOLinkC.Data[0]	85		Decimal	SINT	Port Mode	
ADIO_EI_IOLinkC.Data[1]	85		Decimal	SINT	Port Mode	
ADIO_EI_IOLinkC.Data[2]	0		Decimal	SINT	Port 0_Cycle time	
ADIO_EI_IOLinkC.Data[3]	0		Decimal	SINT	Port 0_Validation type	
ADIO_EI_IOLinkC.Data[4]	0		Decimal	SINT	Port 0_Vendor ID	
ADIO_EI_IOLinkC.Data[5]	0		Decimal	SINT	Port 0_Vendor ID	
ADIO_EI_IOLinkC.Data[6]	0		Decimal	SINT	Port 0_Device ID	
ADIO_EI_IOLinkC.Data[7]	0		Decimal	SINT	Port 0_Device ID	
ADIO_EI_IOLinkC.Data[8]	0		Decimal	SINT	Port 0_Device ID	
ADIO_EI_IOLinkC.Data[9]	3		Decimal	SINT	Port 0_Input filter	
ADIO_EI_IOLinkC.Data[10]	0		Decimal	SINT	Reserved	
ADIO_EI_IOLinkC.Data[11]	0		Decimal	SINT	Reserved	
ADIO_EI_IOLinkC.Data[12]	0		Decimal	SINT	Reserved	
ADIO_EI_IOLinkC.Data[13]	0		Decimal	SINT	Reserved	
ADIO_EI_IOLinkC.Data[14]	0		Decimal	SINT	Reserved	
ADIO_EI_IOLinkC.Data[15]	0		Decimal	SINT	Reserved	
ADIO_EI_IOLinkC.Data[16]	0		Decimal	SINT	Reserved	
ADIO_EI_IOLinkC.Data[17]	0		Decimal	SINT	Reserved	
ADIO_EI_IOLinkC.Data[18]	0		Decimal	SINT	Reserved	
ADIO_EI_IOLinkC.Data[19]	0		Decimal	SINT	Reserved	
ADIO_EI_IOLinkC.Data[20]	0		Decimal	SINT	Reserved	
ADIO_EI_IOLinkC.Data[21]	0		Decimal	SINT	Reserved	
ADIO_EI_IOLinkC.Data[22]	0		Decimal	SINT	Reserved	
ADIO_EI_IOLinkC.Data[23]	0		Decimal	SINT	Reserved	
ADIO_EI_IOLinkC.Data[24]	0		Decimal	SINT	Reserved	
ADIO_EI_IOLinkC.Data[25]	0		Decimal	SINT	Port 0_Data storage	
ADIO_EI_IOLinkC.Data[26]	0		Decimal	SINT	Port 1_Cycle time	
ADIO_EI_IOLinkC.Data[27]	0		Decimal	SINT	Port 1_Validation type	
ADIO_EI_IOLinkC.Data[28]	0		Decimal	SINT	Port 1_Vendor ID	
ADIO_EI_IOLinkC.Data[29]	0		Decimal	SINT	Port 1_Vendor ID	
ADIO_EI_IOLinkC.Data[30]	0		Decimal	SINT	Port 1_Device ID	

1.4.1. Configure Operation Mode

1. Double-click the Controller Tags on the left side of screen and expand **Module Name:C**.
2. Refer to the mapping of 4.1.2, “Port Mode” and designate the operation mode to each port.



Configure the IO-Link mode

1. Enter 16#55 in the Value field of **module name:C.Data[0~1]** to designate all ports as the IO-Link mode.

Name	Value	Force Mask	Style	Data Type	Description	Constant
ADIO_EI_IOLink:C	[...]	[...]	[...]	_0321:ADIO_F26593AA:C:0		<input type="checkbox"/>
ADIO_EI_IOLink:C.Data	[...]	[...]	Decimal	SINT[194]		
ADIO_EI_IOLink:C.Data[0]	16#55		Hex	SINT	Port Mode	
ADIO_EI_IOLink:C.Data[0].0	1		Decimal	BOOL	Port 0	
ADIO_EI_IOLink:C.Data[0].1	0		Decimal	BOOL	Port 0	
ADIO_EI_IOLink:C.Data[0].2	1		Decimal	BOOL	Port 1	
ADIO_EI_IOLink:C.Data[0].3	0		Decimal	BOOL	Port 1	
ADIO_EI_IOLink:C.Data[0].4	1		Decimal	BOOL	Port 2	
ADIO_EI_IOLink:C.Data[0].5	0		Decimal	BOOL	Port 2	
ADIO_EI_IOLink:C.Data[0].6	1		Decimal	BOOL	Port 3	
ADIO_EI_IOLink:C.Data[0].7	0		Decimal	BOOL	Port 3	
ADIO_EI_IOLink:C.Data[1]	16#55		Hex	SINT	Port Mode	
ADIO_EI_IOLink:C.Data[1].0	1		Decimal	BOOL	Port 4	
ADIO_EI_IOLink:C.Data[1].1	0		Decimal	BOOL	Port 4	
ADIO_EI_IOLink:C.Data[1].2	1		Decimal	BOOL	Port 5	
ADIO_EI_IOLink:C.Data[1].3	0		Decimal	BOOL	Port 5	
ADIO_EI_IOLink:C.Data[1].4	1		Decimal	BOOL	Port 6	
ADIO_EI_IOLink:C.Data[1].5	0		Decimal	BOOL	Port 6	
ADIO_EI_IOLink:C.Data[1].6	1		Decimal	BOOL	Port 7	
ADIO_EI_IOLink:C.Data[1].7	0		Decimal	BOOL	Port 7	
ADIO_EI_IOLink:C.Data[2]	0		Decimal	SINT	Port 0_Cycle time	
ADIO_EI_IOLink:C.Data[3]	0		Decimal	SINT	Port 0_Validation type	
ADIO_EI_IOLink:C.Data[4]	0		Decimal	SINT	Port 0_Vendor ID	
ADIO_EI_IOLink:C.Data[5]	0		Decimal	SINT	Port 0_Vendor ID	
ADIO_EI_IOLink:C.Data[6]	0		Decimal	SINT	Port 0_Device ID	
ADIO_EI_IOLink:C.Data[7]	0		Decimal	SINT	Port 0_Device ID	
ADIO_EI_IOLink:C.Data[8]	0		Decimal	SINT	Port 0_Device ID	
ADIO_EI_IOLink:C.Data[9]	3		Decimal	SINT	Port 0_Input filter	
ADIO_EI_IOLink:C.Data[10]	0		Decimal	SINT	Reserved	
ADIO_EI_IOLink:C.Data[11]	0		Decimal	SINT	Reserved	
ADIO_EI_IOLink:C.Data[12]	0		Decimal	SINT	Reserved	
ADIO_EI_IOLink:C.Data[13]	0		Decimal	SINT	Reserved	
ADIO_EI_IOLink:C.Data[14]	0		Decimal	SINT	Reserved	



Configure the Standard I/O (SIO) mode

1. Enter 16#00 in the Value field of **module name:C.Data[0~1]** to designate all ports as the SIO mode.

Name	Value	Force Mask	Style	Data Type	Description	Constant
ADIO_EI_JOLink:C	[...]	[...]	[...]	_0321:ADIO_F26693AA:C:0		<input type="checkbox"/>
ADIO_EI_JOLink:C.Data	[...]	[...]	Decimal	SINT[194]		
ADIO_EI_JOLink:C.Data[0]	16#00		Hex	SINT	Port Mode	
ADIO_EI_JOLink:C.Data[0].0	0		Decimal	BOOL	Port 0	
ADIO_EI_JOLink:C.Data[0].1	0		Decimal	BOOL	Port 0	
ADIO_EI_JOLink:C.Data[0].2	0		Decimal	BOOL	Port 1	
ADIO_EI_JOLink:C.Data[0].3	0		Decimal	BOOL	Port 1	
ADIO_EI_JOLink:C.Data[0].4	0		Decimal	BOOL	Port 2	
ADIO_EI_JOLink:C.Data[0].5	0		Decimal	BOOL	Port 2	
ADIO_EI_JOLink:C.Data[0].6	0		Decimal	BOOL	Port 3	
ADIO_EI_JOLink:C.Data[0].7	0		Decimal	BOOL	Port 3	
ADIO_EI_JOLink:C.Data[1]	16#00		Hex	SINT	Port Mode	
ADIO_EI_JOLink:C.Data[1].0	0		Decimal	BOOL	Port 4	
ADIO_EI_JOLink:C.Data[1].1	0		Decimal	BOOL	Port 4	
ADIO_EI_JOLink:C.Data[1].2	0		Decimal	BOOL	Port 5	
ADIO_EI_JOLink:C.Data[1].3	0		Decimal	BOOL	Port 5	
ADIO_EI_JOLink:C.Data[1].4	0		Decimal	BOOL	Port 6	
ADIO_EI_JOLink:C.Data[1].5	0		Decimal	BOOL	Port 6	
ADIO_EI_JOLink:C.Data[1].6	0		Decimal	BOOL	Port 7	
ADIO_EI_JOLink:C.Data[1].7	0		Decimal	BOOL	Port 7	
ADIO_EI_JOLink:C.Data[2]	0		Decimal	SINT	Port 0_Cycle time	
ADIO_EI_JOLink:C.Data[3]	0		Decimal	SINT	Port 0_Validation type	
ADIO_EI_JOLink:C.Data[4]	0		Decimal	SINT	Port 0_Vendor ID	
ADIO_EI_JOLink:C.Data[5]	0		Decimal	SINT	Port 0_Device ID	
ADIO_EI_JOLink:C.Data[6]	0		Decimal	SINT	Port 0_Device ID	
ADIO_EI_JOLink:C.Data[7]	0		Decimal	SINT	Port 0_Device ID	
ADIO_EI_JOLink:C.Data[8]	0		Decimal	SINT	Port 0_Device ID	
ADIO_EI_JOLink:C.Data[9]	3		Decimal	SINT	Port 0_Input filter	
ADIO_EI_JOLink:C.Data[10]	0		Decimal	SINT	Reserved	
ADIO_EI_JOLink:C.Data[11]	0		Decimal	SINT	Reserved	
ADIO_EI_JOLink:C.Data[12]	0		Decimal	SINT	Reserved	
ADIO_EI_JOLink:C.Data[13]	0		Decimal	SINT	Reserved	
ADIO_EI_JOLink:C.Data[14]	0		Decimal	SINT	Reserved	



- For detailed description of port functions based on the operation mode, refer to 4.1.3, “Port Functions: Port 0”.

1.4.2. Configure IO-Link Functions

Cycle Time	Enter a value in the Value field of Module Name:C.Data[2] .
Validation for IO-Link device	<p>Compare and verify a connected IO-Link device with a IO-Link device information stored in the IO-Link Master.</p> <ol style="list-style-type: none">1. Enter a Vendor ID of IO-Link device in the Value field of Module name: C.Data[4~5].2. Enter a Device ID of IO-Link device in the Value field of Module name: C.Data[6~8].3. Enter the value of 1 in the Value field of Module Name:C.Data[3] to complete the configuration of validation.
Data Storage	<p>The whole parameters of IO-Link device are stored/uploaded in the IO-Link Master (backup), or apply/download last updated parameters to the compatible IO-Link device (restore).</p> <ol style="list-style-type: none">1. Enter the value of 1 to configure Validation Type as compatible.2. Parameters of the IO-Link device can be read or written via ISDU access if necessary. For detailed information, refer to 2.3, “Access ISDU Parameters”.3. Select the data storage mode by entering the value in the Value field of Module Name:C.Data[25].

1.4.3. Configure SIO Functions

Digital Input Filter

The processing time of the digital input signal can be set via this function. The digital input filtering time suppresses unwanted input signal changes or eliminates noise from input signals to prevent a data distortion or chattering. It can also be used as ON Delay/OFF Delay depending on the selected filter time.

Enter the setting value in the Value field of **Module Name:C.Data[9]**.

1.5. Read Input Data: Instance 100

Expand **Module Name:I** in Controller Tags to monitor the input data of the connected sensor or IO-Link device. The attributes of Instance 100 is shown in the figure below and and this document describes based on the index of port 0.

- Firstly see the value of **module name:I.ConnectionFaulted** to check whether the communication status between the PLC and IO-Link Master is in the normal state.
- For detailed information, refer to 4.2, “Instance 100: Input Process Data”.

Name	Value	Force Mask	Style	Data Type	Description	Constant
ADIO_EI_LinkI.C	(-)	(-)	(-)	_0021:ADIO_F3693AA:C:0	Configuration settings (instance 102)	<input type="checkbox"/>
ADIO_EI_LinkI	(-)	(-)	(-)	_0021:ADIO_60531AAC:I:0	Input data (instance 100)	<input type="checkbox"/>
ADIO_EI_LinkI.ConnectionFaulted	0		Decimal	BOOL	0 = Connection OK, 1 = Connection failed	
ADIO_EI_LinkI.Data	(-)	(-)	(-)	SINT[382]	Input data (instance 100)	
ADIO_EI_LinkI.Data[0]		2	Decimal	SINT	Input data	
ADIO_EI_LinkI.Data[1]		0	Decimal	SINT	Input data	
ADIO_EI_LinkI.Data[2]		0	Decimal	SINT	Port status_Short circuit	
ADIO_EI_LinkI.Data[3]		0	Decimal	SINT	Reserved	
ADIO_EI_LinkI.Data[4]		0	Decimal	SINT	Port status_Overload	
ADIO_EI_LinkI.Data[5]		0	Decimal	SINT	Reserved	
ADIO_EI_LinkI.Data[6]		0	Decimal	SINT	Port status_Supply voltage	
ADIO_EI_LinkI.Data[7]		0	Decimal	SINT	Reserved	
ADIO_EI_LinkI.Data[8]		0	Decimal	SINT	Port O-Link input data	
ADIO_EI_LinkI.Data[9]		83	Decimal	SINT	Port O-Link input data	
ADIO_EI_LinkI.Data[10]		0	Decimal	SINT	Port O-Link input data	
ADIO_EI_LinkI.Data[11]		0	Decimal	SINT	Port O-Link input data	
ADIO_EI_LinkI.Data[12]		0	Decimal	SINT	Port O-Link input data	
ADIO_EI_LinkI.Data[13]		0	Decimal	SINT	Port O-Link input data	
ADIO_EI_LinkI.Data[14]		0	Decimal	SINT	Port O-Link input data	
ADIO_EI_LinkI.Data[15]		0	Decimal	SINT	Port O-Link input data	
ADIO_EI_LinkI.Data[16]		0	Decimal	SINT	Port O-Link input data	
ADIO_EI_LinkI.Data[17]		0	Decimal	SINT	Port O-Link input data	
ADIO_EI_LinkI.Data[18]		0	Decimal	SINT	Port O-Link input data	
ADIO_EI_LinkI.Data[19]		0	Decimal	SINT	Port O-Link input data	
ADIO_EI_LinkI.Data[20]		0	Decimal	SINT	Port O-Link input data	
ADIO_EI_LinkI.Data[21]		0	Decimal	SINT	Port O-Link input data	
ADIO_EI_LinkI.Data[22]		0	Decimal	SINT	Port O-Link input data	
ADIO_EI_LinkI.Data[23]		0	Decimal	SINT	Port O-Link input data	
ADIO_EI_LinkI.Data[24]		0	Decimal	SINT	Port O-Link input data	
ADIO_EI_LinkI.Data[25]		0	Decimal	SINT	Port O-Link input data	
ADIO_EI_LinkI.Data[26]		0	Decimal	SINT	Port O-Link input data	
ADIO_EI_LinkI.Data[27]		0	Decimal	SINT	Port O-Link input data	
ADIO_EI_LinkI.Data[28]		0	Decimal	SINT	Port O-Link input data	

1.5.1. Usage Examples



Access the standard input data

- Refer to 4.2.4, “Mapping: Input Data”.

1. Configure the port mode as the SIO mode in **module name:C**.
2. Check a value in the Value field of **module name:I.Data[0~1]** changes.
(A sensor is connected to port 0 in the figure below.)

Name	Value	Force Mask	Style	Data Type	Description	Constant
ADIO_EIOLinkC				._0321-ADIO_F26693AAC:0	Configuration settings (instance 102)	<input type="checkbox"/>
ADIO_EIOLinkI				._0321-ADIO_60531A4C:0	Input data (instance 100)	<input type="checkbox"/>
ADIO_EIOLinkI.ConnectionFailed	0		Decimal	BOOL	0 = Connection OK, 1 = Connection failed	
ADIO_EIOLinkI.Data			Decimal	SINT[392]	Input data (instance 100)	
ADIO_EIOLinkI.Data[0]	2		Decimal	SINT	Input data	
ADIO_EIOLinkI.Data[0].0	0		Decimal	BOOL	Port 0, Pin 4, Digital Input	
ADIO_EIOLinkI.Data[0].1	1		Decimal	BOOL	Port 0, Pin 2, Digital Input	
ADIO_EIOLinkI.Data[0].2	0		Decimal	BOOL	Port 1, Pin 4, Digital Input	
ADIO_EIOLinkI.Data[0].3	0		Decimal	BOOL	Port 1, Pin 2, Digital Input	
ADIO_EIOLinkI.Data[0].4	0		Decimal	BOOL	Port 2, Pin 4, Digital Input	
ADIO_EIOLinkI.Data[0].5	0		Decimal	BOOL	Port 2, Pin 2, Digital Input	
ADIO_EIOLinkI.Data[0].6	0		Decimal	BOOL	Port 3, Pin 4, Digital Input	
ADIO_EIOLinkI.Data[0].7	0		Decimal	BOOL	Port 3, Pin 2, Digital Input	
ADIO_EIOLinkI.Data[1]			Decimal	SINT	Input data	
ADIO_EIOLinkI.Data[1].0	0		Decimal	BOOL	Port 4, Pin 4, Digital Input	
ADIO_EIOLinkI.Data[1].1	0		Decimal	BOOL	Port 4, Pin 2, Digital Input	
ADIO_EIOLinkI.Data[1].2	0		Decimal	BOOL	Port 5, Pin 4, Digital Input	
ADIO_EIOLinkI.Data[1].3	0		Decimal	BOOL	Port 5, Pin 2, Digital Input	
ADIO_EIOLinkI.Data[1].4	0		Decimal	BOOL	Port 6, Pin 4, Digital Input	
ADIO_EIOLinkI.Data[1].5	0		Decimal	BOOL	Port 6, Pin 2, Digital Input	
ADIO_EIOLinkI.Data[1].6	0		Decimal	BOOL	Port 7, Pin 4, Digital Input	
ADIO_EIOLinkI.Data[1].7	0		Decimal	BOOL	Port 7, Pin 2, Digital Input	
ADIO_EIOLinkI.Data[2]	0		Decimal	SINT	Port status, Short circuit	
ADIO_EIOLinkI.Data[3]	0		Decimal	SINT	Reserved	
ADIO_EIOLinkI.Data[4]	0		Decimal	SINT	Port status, Overload	
ADIO_EIOLinkI.Data[5]	0		Decimal	SINT	Reserved	
ADIO_EIOLinkI.Data[6]	0		Decimal	SINT	Port status, Supply voltage	
ADIO_EIOLinkI.Data[7]	0		Decimal	SINT	Reserved	
ADIO_EIOLinkI.Data[8]	0		Decimal	SINT	Port 0, IO-Link input data	
ADIO_EIOLinkI.Data[9]	83		Decimal	SINT	Port 0, IO-Link input data	
ADIO_EIOLinkI.Data[10]	0		Decimal	SINT	Port 0, IO-Link input data	
ADIO_EIOLinkI.Data[11]	0		Decimal	SINT	Port 0, IO-Link input data	
ADIO_EIOLinkI.Data[12]	0		Decimal	SINT	Port 0, IO-Link input data	



Port status information: Overload detection

- Refer to 4.2.5, “Mapping: Port Status Information”.

Expand **Module Name:I.Data[4]**, then the value of 1 is displayed in the Value field of port that the overload occurs. (The overload is detected on the port 1 in the figure below.)

Name	Value	Force Mask	Style	Data Type	Description	Constant
ADIO_EI_OLinkI.C		(-)	(-)	_0321:ADIO_F32693AA:C:0	Configuration settings (instance 102)	<input type="checkbox"/>
ADIO_EI_OLinkI		(-)	(-)	_0321:ADIO_60531A4C:I:0	Input data (instance 100)	<input type="checkbox"/>
ADIO_EI_OLinkI.ConnectionFaulted	0		Decimal	BOOL	0 = Connection OK, 1 = Connection failed	
ADIO_EI_OLinkI.Data		(-)	(-)	SINT[392]	Input data (instance 100)	
ADIO_EI_OLinkI.Data[0]	2		Decimal	SINT	Input data	
ADIO_EI_OLinkI.Data[1]	0		Decimal	SINT	Input data	
ADIO_EI_OLinkI.Data[2]	0		Decimal	SINT	Port status_Short circuit	
ADIO_EI_OLinkI.Data[3]	0		Decimal	SINT	Reserved	
ADIO_EI_OLinkI.Data[4]	2		Decimal	SINT	Port status_Overload	
ADIO_EI_OLinkI.Data[4]:0	0		Decimal	BOOL	Port 0_Overload	
ADIO_EI_OLinkI.Data[4]:1	1		Decimal	BOOL	Port 1_Overload	
ADIO_EI_OLinkI.Data[4]:2	0		Decimal	BOOL	Port 2_Overload	
ADIO_EI_OLinkI.Data[4]:3	0		Decimal	BOOL	Port 3_Overload	
ADIO_EI_OLinkI.Data[4]:4	0		Decimal	BOOL	Port 4_Overload	
ADIO_EI_OLinkI.Data[4]:5	0		Decimal	BOOL	Port 5_Overload	
ADIO_EI_OLinkI.Data[4]:6	0		Decimal	BOOL	Port 6_Overload	
ADIO_EI_OLinkI.Data[4]:7	0		Decimal	BOOL	Port 7_Overload	
ADIO_EI_OLinkI.Data[5]	0		Decimal	SINT	Reserved	
ADIO_EI_OLinkI.Data[6]	0		Decimal	SINT	Port status_Supply voltage	
ADIO_EI_OLinkI.Data[7]	0		Decimal	SINT	Reserved	
ADIO_EI_OLinkI.Data[8]	0		Decimal	SINT	Port 0_IO-Link input data	
ADIO_EI_OLinkI.Data[9]	83		Decimal	SINT	Port 0_IO-Link input data	
ADIO_EI_OLinkI.Data[10]	0		Decimal	SINT	Port 0_IO-Link input data	
ADIO_EI_OLinkI.Data[11]	0		Decimal	SINT	Port 0_IO-Link input data	
ADIO_EI_OLinkI.Data[12]	0		Decimal	SINT	Port 0_IO-Link input data	
ADIO_EI_OLinkI.Data[13]	0		Decimal	SINT	Port 0_IO-Link input data	
ADIO_EI_OLinkI.Data[14]	0		Decimal	SINT	Port 0_IO-Link input data	
ADIO_EI_OLinkI.Data[15]	0		Decimal	SINT	Port 0_IO-Link input data	
ADIO_EI_OLinkI.Data[16]	0		Decimal	SINT	Port 0_IO-Link input data	
ADIO_EI_OLinkI.Data[17]	0		Decimal	SINT	Port 0_IO-Link input data	
ADIO_EI_OLinkI.Data[18]	0		Decimal	SINT	Port 0_IO-Link input data	
ADIO_EI_OLinkI.Data[19]	0		Decimal	SINT	Port 0_IO-Link input data	
ADIO_EI_OLinkI.Data[20]	0		Decimal	SINT	Port 0_IO-Link input data	



Monitor the IO-Link status

- Refer to 4.2.6, “Mapping: IO-Link Status Information”.

1. Expand **ModuleName:I.Data[40]**.

2. • The value of **1** is displayed in the Value field of **Module Name:I.Data[40].0** when the port is in IO-Link communication state.

• A value of **1** is displayed in the Value field of **module name: status[40].1**

when the ADIO-EI and IO-Link device are normally connected.

Name	Value	Force Mask	Style	Data Type	Description	Constant
ADIO_EI_IOLinkI.Data[37]	0	0	Decimal	SINT	Port 0_IO-Link input data	
ADIO_EI_IOLinkI.Data[38]	0	0	Decimal	SINT	Port 0_IO-Link input data	
ADIO_EI_IOLinkI.Data[39]	0	0	Decimal	SINT	Port 0_IO-Link input data	
ADIO_EI_IOLinkI.Data[40]	3	0	Decimal	SINT	Port 0_IO-Link Status	
ADIO_EI_IOLinkI.Data[40].0	1	1	Decimal	BOOL	Port 0_IO-Link Status_IO-Link state	
ADIO_EI_IOLinkI.Data[40].1	1	1	Decimal	BOOL	Port 0_IO-Link Status_IO-Link_Device Connected	
ADIO_EI_IOLinkI.Data[40].2	0	0	Decimal	BOOL	0	
ADIO_EI_IOLinkI.Data[40].3	0	0	Decimal	BOOL	0	
ADIO_EI_IOLinkI.Data[40].4	0	0	Decimal	BOOL	0	
ADIO_EI_IOLinkI.Data[40].5	0	0	Decimal	BOOL	0	
ADIO_EI_IOLinkI.Data[40].6	0	0	Decimal	BOOL	0	
ADIO_EI_IOLinkI.Data[40].7	0	0	Decimal	BOOL	0	
ADIO_EI_IOLinkI.Data[41]	0	0	Decimal	SINT	Port 0_IO-Link Status_Error	
ADIO_EI_IOLinkI.Data[42]	3	0	Decimal	SINT	Port 0_IO-Link_Vendor ID	
ADIO_EI_IOLinkI.Data[43]	-125	0	Decimal	SINT	Port 0_IO-Link_Vendor ID	
ADIO_EI_IOLinkI.Data[44]	1	0	Decimal	SINT	Port 0_IO-Link_Device ID	
ADIO_EI_IOLinkI.Data[45]	0	0	Decimal	SINT	Port 0_IO-Link_Device ID	
ADIO_EI_IOLinkI.Data[46]	18	0	Decimal	SINT	Port 0_IO-Link_Device ID	
ADIO_EI_IOLinkI.Data[47]	0	0	Decimal	SINT	Port 0_IO-Link_Event 1	
ADIO_EI_IOLinkI.Data[48]	0	0	Decimal	SINT	Port 0_IO-Link_Event 1_Code (High)	
ADIO_EI_IOLinkI.Data[49]	0	0	Decimal	SINT	Port 0_IO-Link_Event 1_Code (Low)	
ADIO_EI_IOLinkI.Data[50]	0	0	Decimal	SINT	Port 0_IO-Link_Event 2	
ADIO_EI_IOLinkI.Data[51]	0	0	Decimal	SINT	Port 0_IO-Link_Event 2_Code (High)	
ADIO_EI_IOLinkI.Data[52]	0	0	Decimal	SINT	Port 0_IO-Link_Event 2_Code (Low)	
ADIO_EI_IOLinkI.Data[53]	0	0	Decimal	SINT	Port 0_IO-Link_Event 3	
ADIO_EI_IOLinkI.Data[54]	0	0	Decimal	SINT	Port 0_IO-Link_Event 3_Code (High)	
ADIO_EI_IOLinkI.Data[55]	0	0	Decimal	SINT	Port 0_IO-Link_Event 3_Code (Low)	
ADIO_EI_IOLinkI.Data[56]	0	0	Decimal	SINT	Port 1_IO-Link input data	
ADIO_EI_IOLinkI.Data[57]	0	0	Decimal	SINT	Port 1_IO-Link input data	
ADIO_EI_IOLinkI.Data[58]	0	0	Decimal	SINT	Port 1_IO-Link input data	
ADIO_EI_IOLinkI.Data[59]	0	0	Decimal	SINT	Port 1_IO-Link input data	
ADIO_EI_IOLinkI.Data[60]	0	0	Decimal	SINT	Port 1_IO-Link input data	
ADIO_EI_IOLinkI.Data[61]	0	0	Decimal	SINT	Port 1_IO-Link input data	

1.6. Write Output Data: Instance 101

Expand **Module Name:0** in Controller Tags to access the output data of the connected sensor or IO-Link device. The attributes of Instance 101 is shown in the figure below and this document describes based on the index of port 0.

- For more information, refer to 4.3, “Instance 101: Output Process Data”.

Name	Value	Force-Mask	Style	Data Type	Description	Constant
ADIO_EI_IOLink:C	(--)	(--)	(--)	_0321:ADIO_F26693AA:C:0	Configuration settings (instance 102)	<input type="checkbox"/>
ADIO_EI_IOLink:I	(--)	(--)	(--)	_0321:ADIO_60531A4C:I:0	Input data (instance 100)	<input type="checkbox"/>
ADIO_EI_IOLink:O	(--)	(--)	(--)	_0321:ADIO_D343D445:O:0	Output data (instance 101)	<input type="checkbox"/>
ADIO_EI_IOLink:O.Data	(--)	(--)	(--)	SINT[262]	Output data (instance 101)	
ADIO_EI_IOLink:O.Data#0	0	0	Decimal	SINT	Output data	
ADIO_EI_IOLink:O.Data#1	0	0	Decimal	SINT	Reserved	
ADIO_EI_IOLink:O.Data#2	0	0	Decimal	SINT	Reserved	
ADIO_EI_IOLink:O.Data#3	0	0	Decimal	SINT	Reserved	
ADIO_EI_IOLink:O.Data#4	0	0	Decimal	SINT	Reserved	
ADIO_EI_IOLink:O.Data#5	0	0	Decimal	SINT	Reserved	
ADIO_EI_IOLink:O.Data#6	0	0	Decimal	SINT	Port 0_IO-Link output data	
ADIO_EI_IOLink:O.Data#7	0	0	Decimal	SINT	Port 0_IO-Link output data	
ADIO_EI_IOLink:O.Data#8	0	0	Decimal	SINT	Port 0_IO-Link output data	
ADIO_EI_IOLink:O.Data#9	0	0	Decimal	SINT	Port 0_IO-Link output data	
ADIO_EI_IOLink:O.Data#10	0	0	Decimal	SINT	Port 0_IO-Link output data	
ADIO_EI_IOLink:O.Data#11	0	0	Decimal	SINT	Port 0_IO-Link output data	
ADIO_EI_IOLink:O.Data#12	0	0	Decimal	SINT	Port 0_IO-Link output data	
ADIO_EI_IOLink:O.Data#13	0	0	Decimal	SINT	Port 0_IO-Link output data	
ADIO_EI_IOLink:O.Data#14	0	0	Decimal	SINT	Port 0_IO-Link output data	
ADIO_EI_IOLink:O.Data#15	0	0	Decimal	SINT	Port 0_IO-Link output data	
ADIO_EI_IOLink:O.Data#16	0	0	Decimal	SINT	Port 0_IO-Link output data	
ADIO_EI_IOLink:O.Data#17	0	0	Decimal	SINT	Port 0_IO-Link output data	
ADIO_EI_IOLink:O.Data#18	0	0	Decimal	SINT	Port 0_IO-Link output data	
ADIO_EI_IOLink:O.Data#19	0	0	Decimal	SINT	Port 0_IO-Link output data	
ADIO_EI_IOLink:O.Data#20	0	0	Decimal	SINT	Port 0_IO-Link output data	
ADIO_EI_IOLink:O.Data#21	0	0	Decimal	SINT	Port 0_IO-Link output data	
ADIO_EI_IOLink:O.Data#22	0	0	Decimal	SINT	Port 0_IO-Link output data	
ADIO_EI_IOLink:O.Data#23	0	0	Decimal	SINT	Port 0_IO-Link output data	
ADIO_EI_IOLink:O.Data#24	0	0	Decimal	SINT	Port 0_IO-Link output data	
ADIO_EI_IOLink:O.Data#25	0	0	Decimal	SINT	Port 0_IO-Link output data	
ADIO_EI_IOLink:O.Data#26	0	0	Decimal	SINT	Port 0_IO-Link output data	
ADIO_EI_IOLink:O.Data#27	0	0	Decimal	SINT	Port 0_IO-Link output data	
ADIO_EI_IOLink:O.Data#28	0	0	Decimal	SINT	Port 0_IO-Link output data	

1.6.1. Usage Examples



Write the standard output data

- Refer to 4.3.4, “Mapping: Output Data”.

1. Configure the port mode as the SIO mode in **module name:C**.
2. Expand **Module Name:O.Data[0]** and enter a value of 1 in the Value field of the port to send the signal of output. (All ports are configured as the output ports in the figure below.)

Name	Value	Force Mask	Style	Data Type	Description	Constant
ADIO_EJ_OLinkC	(...)		(...)	._032I:ADIO_F26693AA:C:0	Configuration settings (instance 102)	<input type="checkbox"/>
ADIO_EJ_OLinkC.Data	(...)		Decimal	SINT[194]	Configuration settings (instance 102)	<input type="checkbox"/>
ADIO_EJ_OLinkI	(...)		(...)	._032I:ADIO_60531A4C:I:0	Input data (instance 100)	<input type="checkbox"/>
ADIO_EJ_OLinkO	(...)		(...)	._032I:ADIO_0343D445:O:0	Output data (instance 101)	<input type="checkbox"/>
ADIO_EJ_OLinkO.Data	(...)		Decimal	SINT[262]	Output data (instance 101)	<input type="checkbox"/>
ADIO_EJ_OLinkO.Data[0]	-1		Decimal	SINT	Output data	<input type="checkbox"/>
ADIO_EJ_OLinkO.Data[0].0	1		Decimal	BOOL	Port 0, Pin 4, Digital Output	<input type="checkbox"/>
ADIO_EJ_OLinkO.Data[0].1	1		Decimal	BOOL	Port 1, Pin 4, Digital Output	<input type="checkbox"/>
ADIO_EJ_OLinkO.Data[0].2	1		Decimal	BOOL	Port 2, Pin 4, Digital Output	<input type="checkbox"/>
ADIO_EJ_OLinkO.Data[0].3	1		Decimal	BOOL	Port 3, Pin 4, Digital Output	<input type="checkbox"/>
ADIO_EJ_OLinkO.Data[0].4	1		Decimal	BOOL	Port 4, Pin 4, Digital Output	<input type="checkbox"/>
ADIO_EJ_OLinkO.Data[0].5	1		Decimal	BOOL	Port 5, Pin 4, Digital Output	<input type="checkbox"/>
ADIO_EJ_OLinkO.Data[0].6	1		Decimal	BOOL	Port 6, Pin 4, Digital Output	<input type="checkbox"/>
ADIO_EJ_OLinkO.Data[0].7	1		Decimal	BOOL	Port 7, Pin 4, Digital Output	<input type="checkbox"/>
ADIO_EJ_OLinkO.Data[1]	0		Decimal	SINT	Reserved	<input type="checkbox"/>
ADIO_EJ_OLinkO.Data[2]	0		Decimal	SINT	Reserved	<input type="checkbox"/>
ADIO_EJ_OLinkO.Data[3]	0		Decimal	SINT	Reserved	<input type="checkbox"/>
ADIO_EJ_OLinkO.Data[4]	0		Decimal	SINT	Reserved	<input type="checkbox"/>
ADIO_EJ_OLinkO.Data[5]	0		Decimal	SINT	Reserved	<input type="checkbox"/>
ADIO_EJ_OLinkO.Data[6]	0		Decimal	SINT	Port 0, IO-Link output data	<input type="checkbox"/>
ADIO_EJ_OLinkO.Data[7]	0		Decimal	SINT	Port 0, IO-Link output data	<input type="checkbox"/>
ADIO_EJ_OLinkO.Data[8]	0		Decimal	SINT	Port 0, IO-Link output data	<input type="checkbox"/>
ADIO_EJ_OLinkO.Data[9]	0		Decimal	SINT	Port 0, IO-Link output data	<input type="checkbox"/>
ADIO_EJ_OLinkO.Data[10]	0		Decimal	SINT	Port 0, IO-Link output data	<input type="checkbox"/>
ADIO_EJ_OLinkO.Data[11]	0		Decimal	SINT	Port 0, IO-Link output data	<input type="checkbox"/>
ADIO_EJ_OLinkO.Data[12]	0		Decimal	SINT	Port 0, IO-Link output data	<input type="checkbox"/>
ADIO_EJ_OLinkO.Data[13]	0		Decimal	SINT	Port 0, IO-Link output data	<input type="checkbox"/>
ADIO_EJ_OLinkO.Data[14]	0		Decimal	SINT	Port 0, IO-Link output data	<input type="checkbox"/>
ADIO_EJ_OLinkO.Data[15]	0		Decimal	SINT	Port 0, IO-Link output data	<input type="checkbox"/>
ADIO_EJ_OLinkO.Data[16]	0		Decimal	SINT	Port 0, IO-Link output data	<input type="checkbox"/>
ADIO_EJ_OLinkO.Data[17]	0		Decimal	SINT	Port 0, IO-Link output data	<input type="checkbox"/>
ADIO_EJ_OLinkO.Data[18]	0		Decimal	SINT	Port 0, IO-Link output data	<input type="checkbox"/>
ADIO_EJ_OLinkO.Data[19]	0		Decimal	SINT	Port 0, IO-Link output data	<input type="checkbox"/>

3. The yellow LED lights up on the I/O port indicator 0 of the output port.

2. Configuration with Explicit Message



- For more information about the Ladder logic using commands and messages, refer to Rockwell Automation's **Logix 5000 Controllers General Instructions**.
- For more information on QuickConnect EtherNet/IP function, refer to Allen-Bradley's **Ethernet/IP QuickConnect Application Technique**.

2.1. Address Conflict Detection (ACD)

For QuickConnect function, see the class instance attributes in the table below to enable ACD function.

- Port mode: Standard I/O

Class Code	Service Type (Code)	Instance	Attribute	Value
0xF5	Set_Attribute_Single (0x10)	1	0x0A	0: Disabled
	Get_Attribute_Single (0x0E)			1: Enabled (default)

Example of Ladder logic screen

The screenshot displays a ladder logic editor with the following rungs:

- Rung 0: ACD_Enable_Message (EN) coil.
- Rung 1: ACD_Disable_Message (DN) coil.
- Rung 2: ACD_Enable_Message (EN) coil.
- Rung 3: ACD_Disable_Message (DN) coil.

The Watch window shows the following variables and their values:

Name	Scope	Value	Force Mask	Description
ACD_Enable_Message	Controller	1		
ACD_Disable_Message	Controller	0		
ACD_Enable_Message	Controller	1		
ACD_Disable_Message	Controller	0		
ACD_Enable_Message	Controller	1		
ACD_Disable_Message	Controller	0		
ADIO_EH_Data[0]	Controller	1		
ADIO_EH_Data[1]	Controller	1		
ADIO_EH_Data[2]	Controller	0		
ADIO_EH_Data[3]	Controller	1		

2.2. Fault State

Define the behaviour of output on each I/O port when the communication connection is interrupted between the EtherNet/IP Master (Scanner) and Slave (Adapter).

See the class instance attributes in the table below to configure the Fault state function.

- Port mode: Standard I/O

Fault State Settings : Transfer the input signal.

Class Code	Service Type (Code)	Instance	Attribute	Value
0x09	Set_Attribute_Single (0x10) Get_Attribute_Single (0x0E)	1 to 8 ⁰¹⁾	0x06	0: Disabled 1: Enabled

Fault State Action : Define the behaviour of output on the corresponding port.

Class Code	Service Type (Code)	Instance	Attribute	Value
0x09	Set_Attribute_Single (0x10) Get_Attribute_Single (0x0E)	1 to 8 ⁰¹⁾	0x05	0: Output On 1: Hold Last State

01) It is mapped from port 0 to 7.

Example of Ladder logic screen

Name	Scope	Value	Force Mask	Description
ADIO_EI1Data[0] 2	Controller	1		
ADIO_EI1Data[0] 3	Controller	0		
> Fault_State_Active_CHK_Message	Controller	[...]	[...]	
> Fault_State_Disable_Message	Controller	[...]	[...]	
Fault_State_Disable_Message.EN	Controller	0		
> Fault_State_Enable_Message	Controller	[...]	[...]	
Fault_State_Enable_Message.EN	Controller	1		
> Fault_State_Read_Tag	Controller	0		
> Fault_State_Write_Tag[0]	Controller	0		
> Fault_State_Write_Tag[1]	Controller	1		

2.3. Access ISDU Parameters

You can select the following two options to access the ISDU parameters of the connected IO-Link device. Be sure to consider the environmental conditions and use the suitable configuration method.

- **atIOLink**

atIOLink, Autonics' PDCT software, supports the read and write the ISDU parameters of IO-Link devices, data storage, and more. Refer to the atIOLink User Manual.

- **Explicit Message**

See the class instance attributes in the table below to configure a message for reading and writing the ISDU parameters of the connected IO-Link device.

For more information about Ladder logic, refer to 2.3.1, "Example of Ladder logic".

Class Code	Service Type (Code)	Instance	Attribute	Value
0x96	Custom (0x32)	1 to 8 ⁰¹⁾	0x03: Read 0x02: Write	-

01) It is mapped from port 0 to 7.

2.3.1. Example of Ladder logic



- Firstly check the parameter index and process data length of the IO-Link device. In general, you can find the related information on the instructions manual of the IO-Link device.
- Port mode: IO-Link
- Parameter index of the IO-Link device: 24 (0x18, Application specific tag)
- Size of parameter data of IO-Link device: 32-byte

1. Go Offline the PLC project.
2. In **Edit Tags**, create tags and messages as shown in the figure below.

Name	Alias For	Base Tag	Data Type	Description	External Access	Constant	Style
ADIO_EI_IOLink-C				_0321ADIO_F26693A...	Configuration settings (instance 102)	Read/Write	<input type="checkbox"/>
ADIO_EI_IOLink-I				_0321ADIO_60531A4...	Input data (instance 100)	Read/Write	<input type="checkbox"/>
ADIO_EI_IOLink-O				_0321ADIO_D343DA4...	Output data (instance 101)	Read/Write	<input type="checkbox"/>
IO_Link_Parameter_Write_Tag			SINT[35]	Source Element	Read/Write	<input type="checkbox"/>	Decimal
IO_Link_Parameter_Read_Tag			SINT[35]	Destination Element	Read/Write	<input type="checkbox"/>	Decimal
IO_Link_Parameter_Write_MSG			MESSAGE		Read/Write	<input checked="" type="checkbox"/>	
IO_Link_Parameter_Read_MSG			MESSAGE		Read/Write	<input type="checkbox"/>	

Select data type

Select Data Type

Data Types:

SINT[35]

OK

Cancel

Help

Array Dimensions

Dim 2: 0

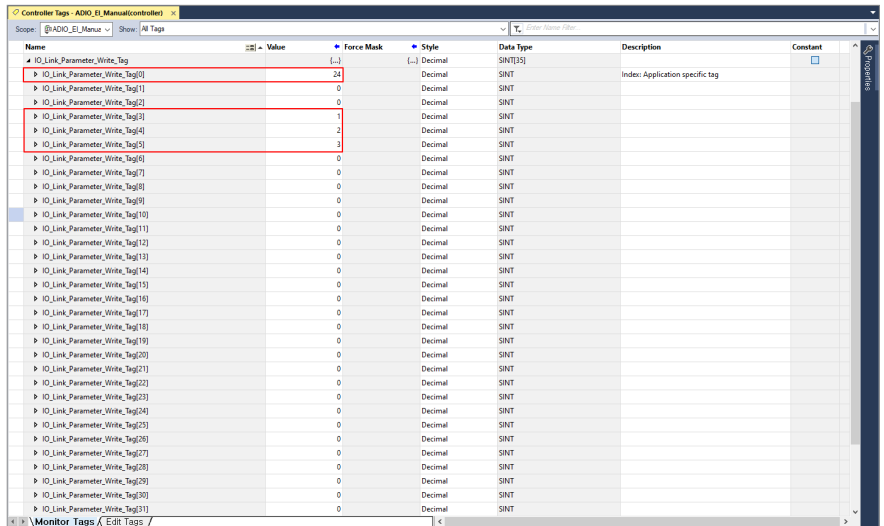
Dim 1: 0

Dim 0: 35

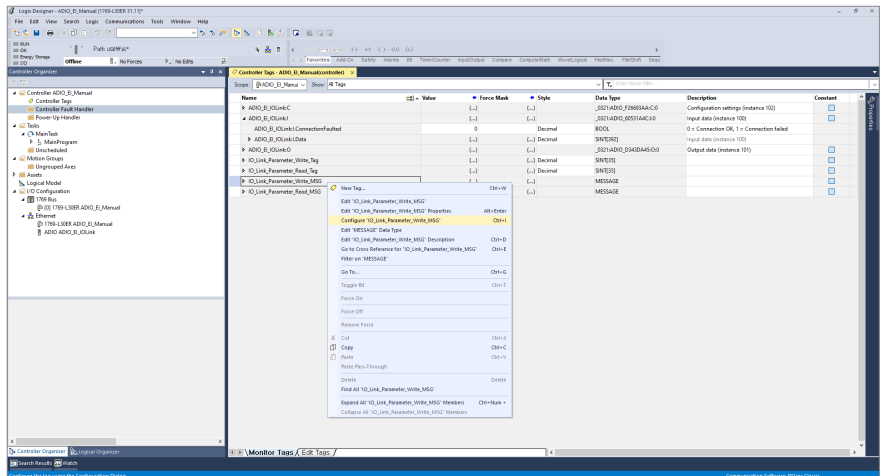
Show Data Types by Groups

- **Source Element (Write_tag)**
Enter the parameter index to be read and set the array size to include at least the length of parameter index and data.
- **Destination Element (Read_tag)**
Set the array size larger than the parameter length since it shows the read-out value.

- In **Monitor Tags**, Enter the parameter index in the Value field of **IO_Link_Parameter_Write_Tag[0]**.
Enter the data to be written in the Value field of **IO_Link_Parameter_Write_Tag[3 ~ 34]**.
(Enter the sub-index of parameter in the Value field of **IO_Link_Parameter_Write_Tag[1 ~ 2]**.)



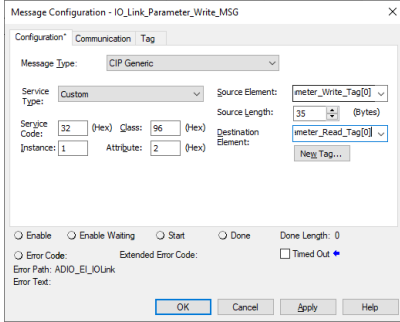
- Right-click on the message tag in **Monitor Tags** and select **Configure "message name"**.



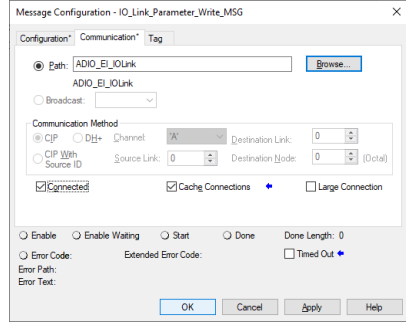
5. Configure write/read message in Configuration tab referring to the class instance attributes. Select the Ethernet module to be applied the message configuration and check the Connected/Cache Connections in Communication tab.

• **Configuration of Write Message**

Configuration tab

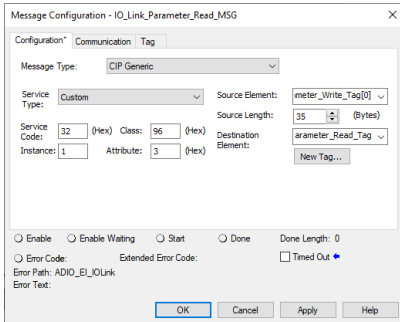


Communication tab

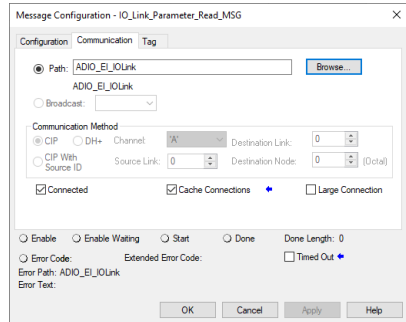


• **Configuration of Read Message**

Configuration tab



Communication tab



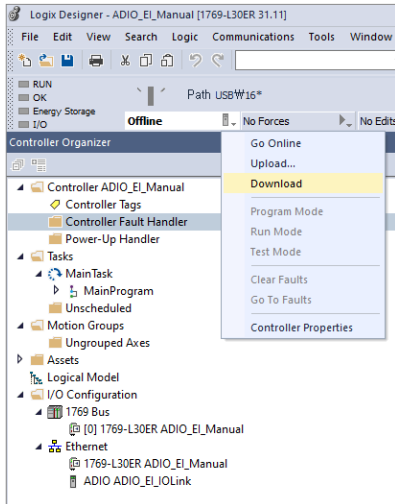
6. Example of Ladder logic screen

The screenshot shows a ladder logic editor with two rungs. Rung 0 contains a normally open contact for 'Port_1_Pin_4_Digital Input' (address ADIO_EI_IOLink1Data[0]) connected to a coil for 'MSG' (address Message Control_ID_Link_Parameter_Write_MSG). Rung 1 contains a normally open contact for 'Port_1_Pin_2_Digital Input' (address ADIO_EI_IOLink1Data[0]) connected to a coil for 'MSG' (address Message Control_ID_Link_Parameter_Read_MSG). Below the editor is a 'Watch' window showing the following table:

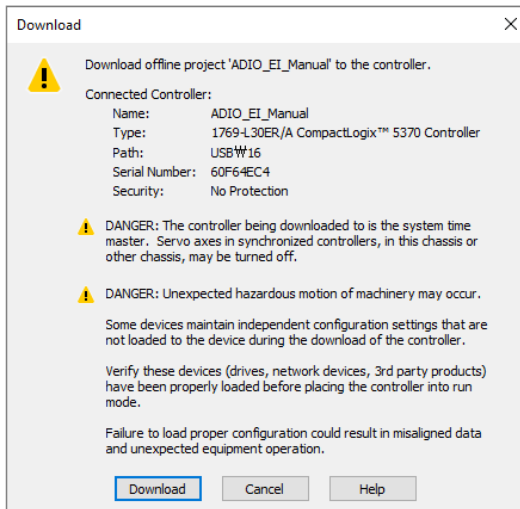
Name	Scope	Value	Force Mask	Description
ADIO_EI_IOLink1Data[0]_0	Controller	0		Port_1_Pin_4_Digital Input
ADIO_EI_IOLink1Data[0]_1	Controller	1		Port_1_Pin_2_Digital Input
ID_Link_Parameter_Read_MSG	Controller	[...]	[...]	[...]
ID_Link_Parameter_Read_Tag	Controller	[...]	[...]	[...] Destination Element
ID_Link_Parameter_Read_Tag[0]	Controller	0		Destination Element
ID_Link_Parameter_Read_Tag[1]	Controller	1		Destination Element
ID_Link_Parameter_Read_Tag[2]	Controller	2		Destination Element
ID_Link_Parameter_Read_Tag[3]	Controller	3		Destination Element
ID_Link_Parameter_Read_Tag[4]	Controller	0		Destination Element

3. Download the Program to a Controller

1. Click **Offline** and select **Download**.



2. Select **Download**.



4. Instance

Instance	Assembly	Data length	Description
100	Input	392-byte	→ 4.2, “Instance 100: Input Process Data”
101	Output	262-byte	→ 4.3, “Instance 101: Output Process Data”
102	Configuration	194-byte	→ 4.1, “Instance 102: Parameter Data”

4.1. Instance 102: Parameter Data

4.1.1. Instance Attributes

Index	Designation	Description
0 to 1	All I/O ports	Port mode
2 to 25	Port 0	Port configuration
26 to 49	Port 1	Port configuration
50 to 73	Port 2	Port configuration
74 to 97	Port 3	Port configuration
98 to 121	Port 4	Port configuration
122 to 145	Port 5	Port configuration
146 to 169	Port 6	Port configuration
170 to 193	Port 7	Port configuration

4.1.2. Port Mode

Index	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
0	Port 3		Port 2		Port 1		Port 0	
1	Port 7		Port 6		Port 5		Port 4	

Port Mode Configure the operation mode on each I/O port
0x00: Standard Input and Output (SIO)
0x01: IO-Link

4.1.3. Port Functions: Port 0

Index	Designation	Data length
2	Cycle Time	1-byte
3	Validation Type	1-byte
4 to 5	Vendor ID	2-byte
6 to 8	Device ID	3-byte
9	Input Filter	1-byte
10 to 24	Reserved	15-byte
25	Data Storage	1-byte

- From port 1 to 7: The attributes and data length are the same with the table above.

Cycle Time Select the cycle time
Range: 1.6 to 132.8 ms

Validation Type Configure the validation type
0: No validation
1: Compatible (Vendor ID + Device ID)

Input Filter Select the digital input filtering time

0: None	6: 8 ms
1: 250 us	7: 16 ms
2: 500 us	8: 32 ms
3: 1 ms (default)	9: 64 ms
4: 2 ms	10: 128 ms
5: 4 ms	11: 256 ms

Data Storage Select the data storage (DS) mode
0x00: DS disable + clear
0x82: DS restore
0x83: DS backup + restore

4.2. Instance 100: Input Process Data

4.2.1. Instance Attributes

Index	Designation	Description
0 to 7	A port in the SIO mode	Input process data in the digital input mode
8 to 55	Port 0	Input process data in the IO-Link mode
56 to 103	Port 1	Input process data in the IO-Link mode
104 to 151	Port 2	Input process data in the IO-Link mode
152 to 199	Port 3	Input process data in the IO-Link mode
200 to 247	Port 4	Input process data in the IO-Link mode
248 to 295	Port 5	Input process data in the IO-Link mode
296 to 343	Port 6	Input process data in the IO-Link mode
344 to 391	Port 7	Input process data in the IO-Link mode

4.2.2. Standard Input Data

Index	Designation	Data length	Description
0 to 1	Inputs	2-byte	→ 4.2.4, “Mapping: Input Data”
2	Short circuit	1-byte	→ 4.2.5, “Mapping: Port Status Information”
3	Reserved	1-byte	-
4	Overload	1-byte	→ 4.2.5, “Mapping: Port Status Information”
5	Reserved	1-byte	-
6	Supply voltage	1-byte	→ 4.2.5, “Mapping: Port Status Information”
7	Reserved	1-byte	-

4.2.3. IO-Link Input Data: Port 0

Index	Designation	Data length	Description
8 to 39	IOL input data	32-byte	Depending on the connected device
40	IOL Status	1-byte	→ 4.2.6, “Mapping: IO-Link Status Information”
41	IOL Error	1-byte	
42 to 43	Vendor ID	2-byte	Depending on the connected device
44 to 46	Device ID	3-byte	Depending on the connected device
47	IOL Event 1	1-byte	→ 4.2.7, “Mapping: IO-Link Events”
48	IOL Event 1 Code	1-byte (High)	
49	IOL Event 1 Code	1-byte (Low)	
50	IOL Event 2	1-byte	
51	IOL Event 2 Code	1-byte (High)	
52	IOL Event 2 Code	1-byte (Low)	
53	IOL Event 3	1-byte	
54	IOL Event 3 Code	1-byte (High)	
55	IOL Event 3 Code	1-byte (Low)	

- From port 1 to 7: The attributes and data length are the same with the table above.

4.2.4. Mapping: Input Data

Index	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
0	DI P3 Pin 2	DI P3 Pin 4	DI P2 Pin 2	DI P2 Pin 4	DI P1 Pin 2	DI P1 Pin 4	DI P0 Pin 2	DI P0 Pin 4
1	DI P7 Pin 2	DI P7 Pin 4	DI P6 Pin 2	DI P6 Pin 4	DI P5 Pin 2	DI P5 Pin 4	DI P4 Pin 2	DI P4 Pin 4

DI Digital input

P0 to P7 Number of each I/O port

Pin 2 Signal level of pin 2 on the I/O port
0x00: Low
0x01: High

Pin 4 Signal level of pin 4 on the I/O port
0x00: Low
0x01: High

4.2.5. Mapping: Port Status Information

Index	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
2	S P7	S P6	S P5	S P4	S P3	S P2	S P1	S P0
3	Reserved							
4	OL P7 Pin 4	OL P6 Pin 4	OL P5 Pin 4	OL P4 Pin 4	OL P3 Pin 4	OL P2 Pin 4	OL P1 Pin 4	OL P0 Pin 4
5	Reserved							
6	0	0	0	0	0	No UA	US PWR	UA PWR
7	Reserved							

P0 to P7

Number of each I/O port

S

Short circuit status

0x00: Normal

0x01: Short circuit detected

OL

Overload status

0x00: Normal

0x01: Overload detected

No UA

No actuator supply voltage

0x00: Normal

0x01: No actuator power

US PWR (Sensor Power)

Status of the sensor supply voltage

0x00: Normal

0x01: Low-voltage detected

UA PWR (Actuator Power)

Status of the actuator supply voltage

0x00: Normal

0x01: Low-voltage detected

4.2.6. Mapping: IO-Link Status Information

Index	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
40	0	0	0	0	0	0	DC	IOL
41	SC	0	0	0	0	PDI	DF	VF

DC Connection status between ADIO-EI and IO-Link device
 0x00: Not connected
 0x01: Connected

IOL IO-Link status
 0x00: Not IO-Link
 0x01: Port in IO-Link mode

SC Short circuit status
 0x00: Normal
 0x01: Short circuit detected

PDI Status of input process data
 0x00: Valid
 0x01: Invalid

DF Status of data storage (DS) validation
 0x00: Normal
 0x01: Failed (invalid Vendor ID and Device ID)

VF Status of validation
 0x00: Normal
 0x01: Failed (invalid Vendor ID and Device ID)

4.2.7. Mapping: IO-Link Events

Index	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
47	Event 1: Mode		Event 1: Type		0	0	0	0
48	Event 1: Code (High byte)							
49	Event 1: Code (Low byte)							
50	Event 2: Mode		Event 2: Type		0	0	0	0
51	Event 2: Code (High byte)							
52	Event 2: Code (Low byte)							
53	Event 3: Mode		Event 3: Type		0	0	0	0
54	Event 3: Code (High byte)							
55	Event 3: Code (Low byte)							

Mode Event mode
 0x00: Reserved
 0x01: Event single-shot
 0x02: Event disappears
 0x03: Event appears

Type Event type
 0x00: Reserved
 0x01: Notification
 0x02: Warning
 0x03: Error

4.3. Instance 101: Output Process Data

4.3.1. Instance Attributes

Index	Designation	Description
0 to 5	A port in the SIO mode	Output process data in the digital output mode
6 to 37	Port 0	Output process data in the IO-Link mode
38 to 69	Port 1	Output process data in the IO-Link mode
70 to 101	Port 2	Output process data in the IO-Link mode
102 to 133	Port 3	Output process data in the IO-Link mode
134 to 165	Port 4	Output process data in the IO-Link mode
166 to 197	Port 5	Output process data in the IO-Link mode
198 to 229	Port 6	Output process data in the IO-Link mode
230 to 261	Port 7	Output process data in the IO-Link mode

4.3.2. Standard Output Data

Index	Designation	Data length	Description
0	Outputs	1-byte	→ 4.3.4, “Mapping: Output Data”
1 to 5	Reserved	5-byte	-

4.3.3. IO-Link Output Data: Port 0

Index	Designation	Data length	Description
6 to 37	IOL output data	32-byte	Depending on the connected device

- From port 1 to 7: The attributes and data length are the same with the table above.

4.3.4. Mapping: Output Data

Index	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
0	DO P7 Pin 4	DO P6 Pin 4	DO P5 Pin 4	DO P4 Pin 4	DO P3 Pin 4	DO P2 Pin 4	DO P1 Pin 4	DO P0 Pin 4

DO Digital output

P0 to P7 Number of each I/O port

Pin 4 Signal level of pin 4 on the I/O port
 0x00: Low
 0x01: High

5. Explicit Message

5.1. Supported Classes

1. Address Conflict Detection (ACD)

Class Code	Service Type (Code)	Instance	Attribute	Value
0xF5	Set_Attribute_Single (0x10) Get_Attribute_Single (0x0E)	1	0x0A	0: Disabled 1: Enabled (default)

2. Fault State Settings

Class Code	Service Type (Code)	Instance	Attribute	Value
0x09	Set_Attribute_Single (0x10) Get_Attribute_Single (0x0E)	1 to 8 ⁰¹⁾	0x06	0: Disabled 1: Enabled

3. Fault State Action

Class Code	Service Type (Code)	Instance	Attribute	Value
0x09	Set_Attribute_Single (0x10) Get_Attribute_Single (0x0E)	1 to 8 ⁰¹⁾	0x05	0: Output On 1: Hold Last State

4. IO-Link Parameter (ISDU_Read/Write)

Class Code	Service Type (Code)	Instance	Attribute	Value
0x96	Custom (0x32)	1 to 8 ⁰¹⁾	0x03: Read 0x02: Write	-

- 01) It is mapped from port 0 to 7.

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