

# **IO-LINK** BLOCK

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*IOLB-8108*

## **8 Point Digital Output - M8**

### **User Guide**



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# Table of Contents

<b>Overview.....</b>	<b>5</b>
IOLB-8108 Module Overview .....	5
8 - Digital Outputs (24VDC I <sub>max</sub> 0.5A) .....	5
IOLB-8108 LEDs .....	6
Process Data Output .....	6
IOLB-8108 Technical Specifications .....	7
IO-Link Basics .....	8
<b>Hardware Installation.....</b>	<b>11</b>
Mounting the IOLB-8108 .....	11
Connecting the IOLB-8108.....	12
IOLB-8108 Power Supply Requirements .....	12
Installation With an IP67 Class A IO-Link Master.....	13
Installation With a Class A IP20 IO-Link Master.....	16
Digital Outputs (M8) .....	17
Control IO-Link Master Diagnostic Page.....	18
<b>Configuring the IOLB-8108 .....</b>	<b>19</b>
Locating the IOLB-8108 IODD Files .....	19
Loading the IODD Files Onto the Control IO-Link Master .....	19
Configuring the IOLB-8108 .....	23
<b>Object Descriptions .....</b>	<b>27</b>
IOLB-8108 Parameters.....	27
Diagnostics Parameters .....	28



# Overview

## IOLB-8108 Module Overview

The IOLB-8108 has eight digital points, each of which can be operated as an output and is connected to an IO-Link Master.

The outputs handle load currents of up to 0.5A, and although the total current is limited to 4A, they are short-circuit proof and protected against inverse polarity. The state of each signal is indicated by means of LEDs. The signals are connected via M8 connectors.

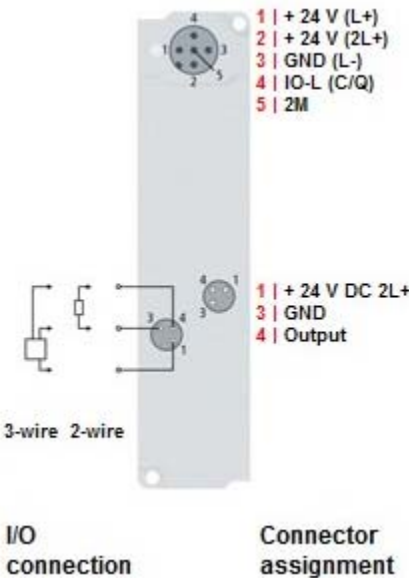
The small IOLB-8108 form factor (H126 x W30 x D26.5 mm) means that they are suitable for use where space is at a premium. The small mass of the IOLB-8108 module facilitates applications with mobile I/O interface, for example, a robot arm.

The robust design of the IOLB-8108 module enables them to be used directly at the machine. Control cabinets and terminal boxes are now no longer required. The module is fully sealed and therefore ideally prepared for wet, dirty or dusty conditions (IP67).

Pre-assembled cables significantly simplify IO-Link and signal wiring. Very few wiring errors are made, so that commissioning is optimized. In addition to pre-assembled IO-Link, power and sensor cables, field-configurable connectors and cables are available for maximum flexibility. Sensors and actuators are connected through M8 connectors.


## 8 - Digital Outputs (24VDC I<sub>max</sub> 0.5A)

The IOLB-8108 digital outputs connects binary control signals from the controller to the actuators at the process level. The eight outputs handle load currents of up to 0.5A, and indicate their status through LEDs.



IOLB-8108 LEDs

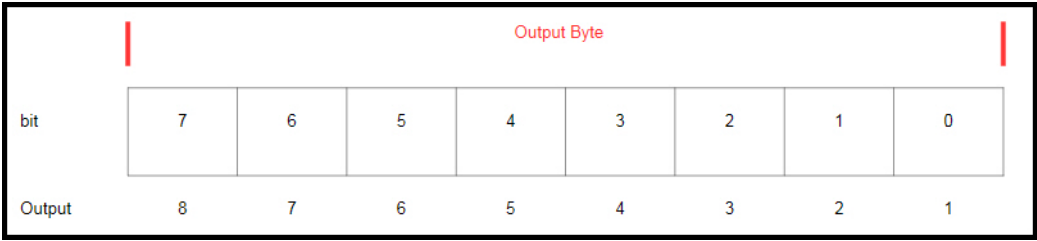
This subsection provides information about the IOLB-8108 LEDs.

<div>X1 (IO-Link LED) </div>	Description
Off	IO-Link communications not active.
Flashing green (1 Hz)	IO-Link communications active.
Lit (Red)	Short circuit on C/Q line or overheating.

<div>Power Supply LEDs </div>		Description
24V (L+)	Off	Voltage L+ Unavailable
	Green	Voltage L+ Ok
	Red	Voltage L+ Too Low
24V (2L+)	Off	Voltage 2L+ Unavailable
	Green	Voltage 2L+ Ok
	Red	Voltage 2L+ Too Low, Short Circuit

Process Data Output

The following image illustrates the PDO output byte.



## IOLB-8108 Technical Specifications

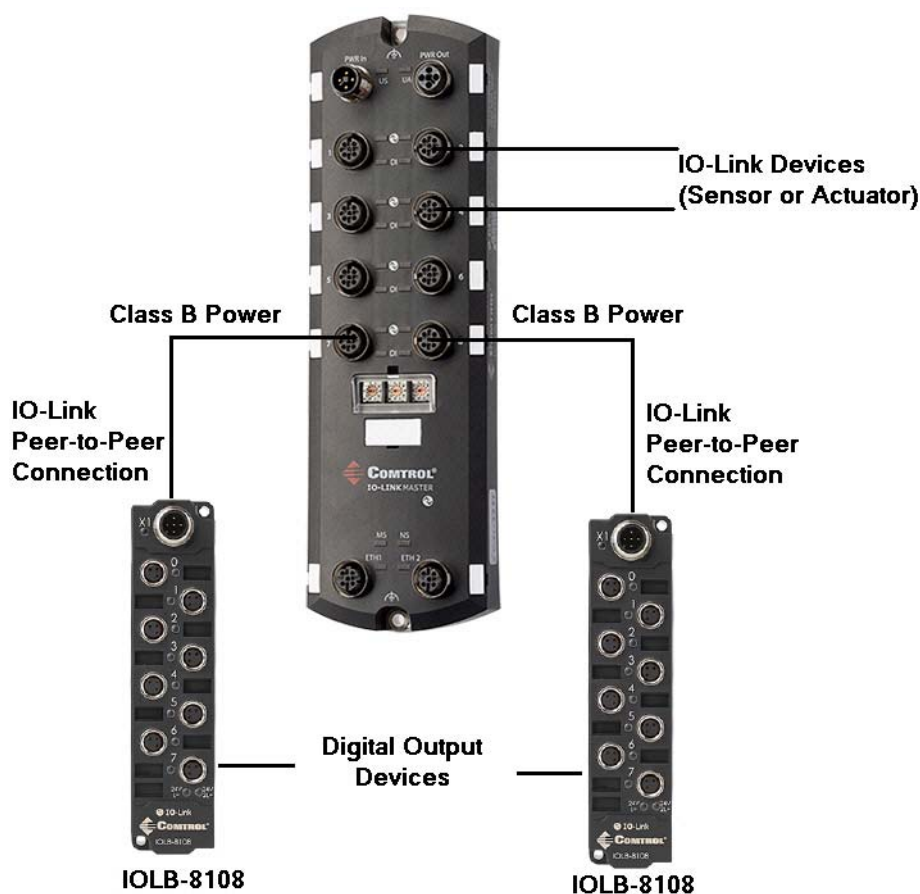
IOLB-8108 Technical Specifications	
Communication	IO-Link
Data transfer rate	230.4K Baud (COM 3)
IO-Link connection	1 x M12 connector, A-coded
Specification version	IO-Link V1.1, Class B
Requirements IO-Link Master	V1.1
Number of outputs	8
Output connections	M8
Load type	Ohmic, inductive, lamp load
Rated output voltage	24VDC (-15%/+20%)
Output current	Max. 0.5A each channel
Short circuit current	Typically 1.5A
Module electronic current consumption	Typically 100mA from L+
Output driver current consumption	Typically 8mA per channel
Module electronic supply	L+
Output driver supply	2L+
Process image	8 output bits
Permissible ambient temperature during operation <b>Note:</b> To meet the UL requirements, the IOLB-8108 has to be operated only at an ambient temperature range of 0 to 55°C!	-25°C to +60°C
Permissible ambient temperature during storage	-40°C to +85°C
Vibration / shock resistance	Conforms to EN 60068-2-6 / EN 60068-2-27
EMC resistance/emission	Conforms to EN 61000-6-2 / EN 61000-6-4
Protection class	IP65, IP66, IP67 (conforms to EN 60529)
Installation position	Variable
Approvals	CE

## IO-Link Basics

IO-Link is a communications system for connecting intelligent sensors and actuators to an automation system in IEC 61131-9 under the name *Single-drop digital communication interface for small sensors and actuators* (SDCI). Both the electrical connection data and the communication protocol are standardized and in the IO-Link specification summarized.

The IOLB-8108 meets the IO-Link specification 1.1. The IO-Link specification is included in the IEC standards and is accepted as IEC 61131-9 in an extended form. In this case, the new designation voltage SDCI is introduced.

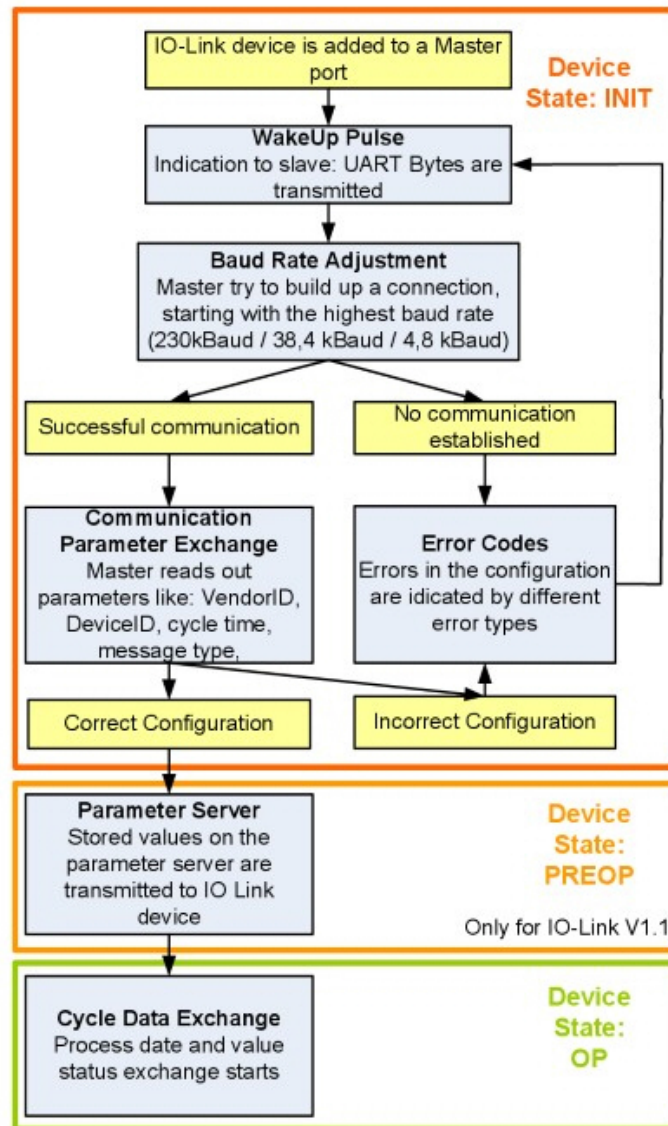
An IO-Link system consists of an IO-Link Master, one or more IO-Link devices and sensors or actuators. The IO-Link Master provides the interface to the higher-level controller and controls the communication with the connected IO-Link devices. The Control IO-Link Master series has four or eight IO-Link ports at which each one IO-Link device can be connected. Therefore, IO-Link is not a fieldbus, but rather is a peer-to-peer connection as shown in the figure.



The connected IO-Link devices have individual parameter information detected during automatic scanning with the Control IO-Link Master. Refer to [Configuring the IOLB-8108](#) on Page 19 for more information.



The structure of the IO-Link communication is shown in the following figure. In particular, this represents the sequence in the automatic scanning of the IO-Link ports.



The Pre-operate State occurs if the IO-Link device is v1.1 and if Data Storage is enabled then the device parameters are uploaded or downloaded.



# Hardware Installation

This section provides installation information for the IOLB-8108.

## Mounting the IOLB-8108

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The following table provides information that you may require for installation.

IOLB-8108	
Housing material	PA6 (polyamide)
Casting compound	Polyurethane
Mounting	Two fastening holes Ø 3 mm for M3
Metal parts	Brass, nickel-plated
Contacts	CuZn, gold-plated
Installation position	Any
Protection class	IP65, IP66, IP67 (conforms to EN 60529)
Dimensions (H x W x D)	126 x 30 x 26.5 mm
Weight	180g
	6.4oz

**Note:** While mounting the IOLB-8108, protect all connectors against contamination. All connectors must have either a cable or plug to guarantee IP67 rating.

Keep the following in mind when mounting the IOLB-8108.

- Mount the IOLB-8108 with two M3 bolts.
- The bolts must be longer than 15 mm. The fixing holes of the modules are not threaded.
- When assembling, remember that the connectors increases the overall height.

## Connecting the IOLB-8108

Use the appropriate procedure to connect the IOLB-8108 to an IO-Link Master.

- [Installation With an IP67 Class A IO-Link Master](#) on Page 13
- [Installation With a Class A IP20 IO-Link Master](#) on Page 16

### IOLB-8108 Power Supply Requirements

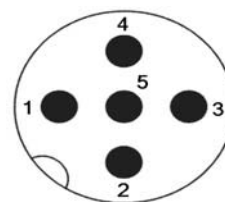
The power supply/supplies that you connect to the IOLB-8108 must meet the following requirements:

- 24VDC supplied by an isolating source and protected by means of a fuse (in accordance with UL248), rated maximum 4A or a 24VDC power source that satisfies NEC Class 2.
- A NEC Class 2 power supply shall not be connected in series or parallel with another (Class 2) power source.
- To meet the UL requirements, the IOLB-8108 must not be connected to unlimited power sources!

**Note:** To meet the UL requirements, the IOLB-8108 must not be connected to telecommunications networks and must be operated at the ambient temperature range specified in the specifications.

For additional information, see [IOLB-8108 Technical Specifications](#) on Page 7.

Pin	Input - Male
1	24V (L+) - electronics power
2	24V (L2+) - sensor or device power
3	GND (L-)
4	IO-Link (C/Q)
5	GND (2M)



The following Control cables and M12 Y-splitter can be used to connect the IOLB-8108 to the Class A IP67 IO-Link Master models.

Control Part Number	Description
1200143	Y Splitter, M12 5-poles, A-Coded, M to 2F
Varies by length†	Sensor cable, M12 5-poles, A-coded, M to F
Varies by length†	Power Cable, Control IOLB, M12 A-Coded to wires
† Contact Control Sales for the part number.	

**Note:** It is recommended to pull the M12 connectors tight with a nut torque of 0.6 Nm.

## Installation With an IP67 Class A IO-Link Master

Use the following procedure to connect the IOLB-8108 to a Class A IP67 IO-Link Master.

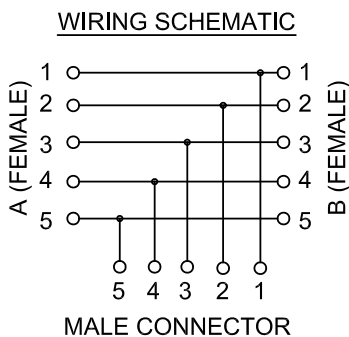
The images in this subsection shows connecting the 8-port IP67 model. Please note that the same procedures work for the 4-port model.

**Note:** This procedure assumes that the IO-Link Master is powered on, connected to the network and the IP address has been programmed for your environment.

1. Connect the M12 Y splitter to an available Control IO-Link Master IO-Link port.

This image shows:

- IO-Link sensor cable connected between the IO-Link Master port and the Y Splitter (1200143).
- Y Splitters connected directly to Ports 4 and 5.



**Note:** In the next step, make sure that the 24V power supply or is not energized during the wiring.

2. Connect the white and green wires of the Control IOLB power cable to a  $U_a$  power source.
  - a. Connect the white wire to the positive 24V terminal.
  - b. Connect the green wire to the negative 24V terminal.
3. Connect the M12 connector end of the Control IOLB power cable to one of the connectors on the Y-Splitter.



**Note:** Connectors A and B are interchangeable on the Y Splitter.



4. Connect the 5-pole (M12) sensor cable between the remaining M12 connectors on the Y-splitter and the IOLB-8108 IO-Link Port X1.



5. Apply power to the  $U_a$  power source connected to the IOLB-8108.
6. Verify that the following LEDs are lit:
  - Green 24V (L+) and 24V (2L+) LEDs on the IOLB-8108
  - Green IO-Link on the Control IO-Link Master is lit

**Note:** Refer to [IOLB-8108 LEDs](#) on Page 6 for detailed LED information.





## Installation With a Class A IP20 IO-Link Master

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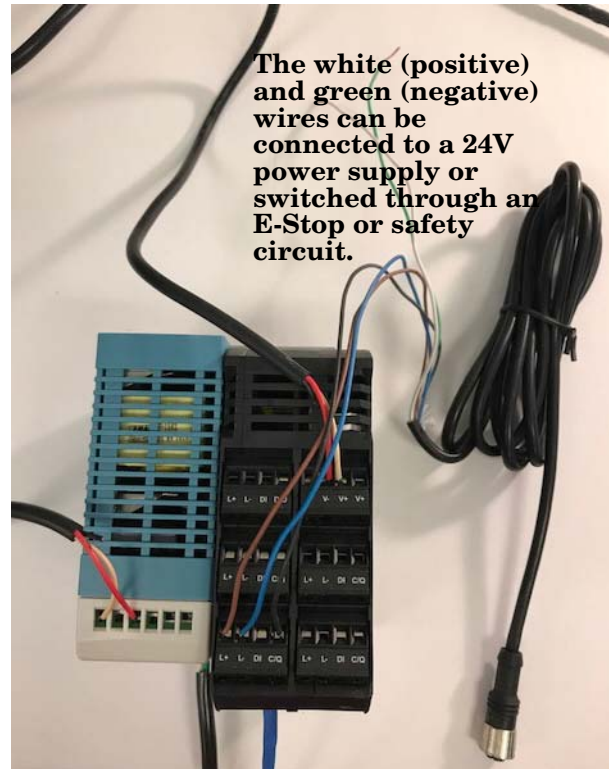
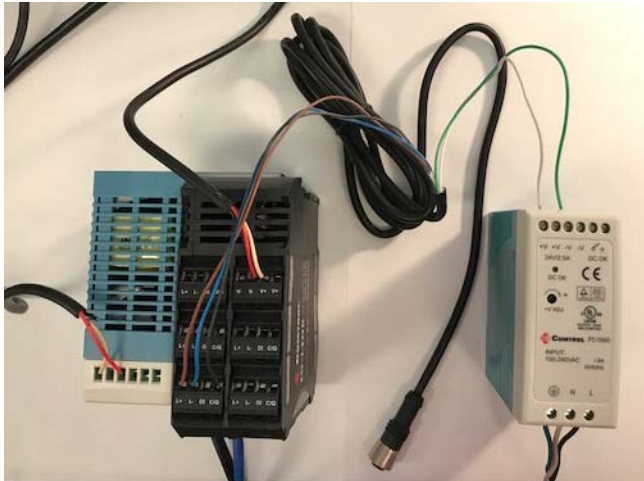
Use the following procedure to connect the IOLB-8108 to a Class A IP20 (DIN rail model) IO-Link Master.

**Note:** This procedure assumes that the IO-Link Master is powered on, connected to the network and the IP address has been programmed for your environment.

1. Connect a M8 A-coded to bare wire cable to the IO-Link Master:
  - Black to C/Q
  - Blue to L-
  - Brown to L+

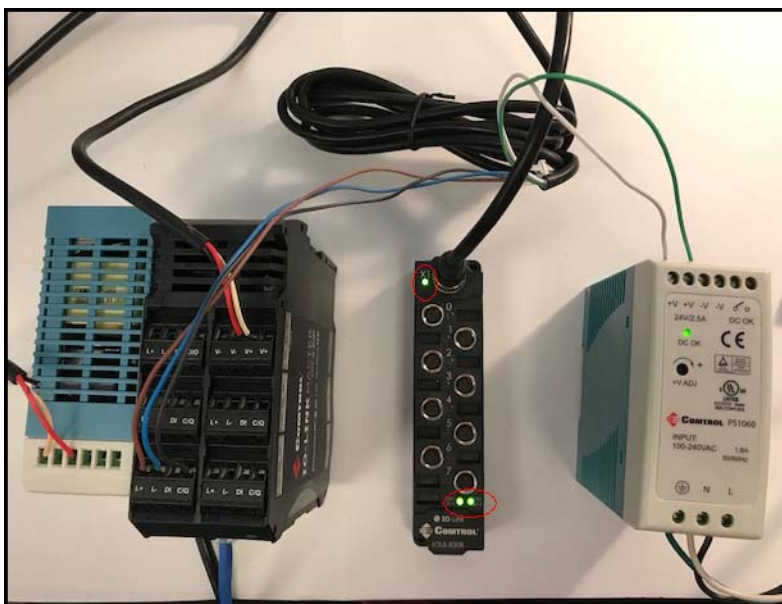
**Note:** In the next step, make sure that the 24V power supply or is not energized during the wiring.

2. Connect the white and green wires of the IO-Link cable to a  $U_a$  power source. The image below illustrates connecting to a power supply.
  - c. Connect the white wire to the positive 24V terminal.
  - d. Connect the green wire to the negative 24V terminal.
  - e. Apply power to the  $U_a$  power source.





3. Connect the M12 connector from the IO-Link Master to the IOLB-8108 X1 connector.



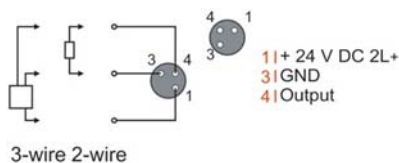
4. Verify that the following LEDs are lit:
- Green 24V (L+) and 24V (2L+) LEDs on the IOLB-8108
  - Green IO-Link on the Control IO-Link Master is lit

**Note:** Refer to [IOLB-8108 LEDs](#) on Page 6 for detailed LED information.

## Digital Outputs (M8)

The digital output modules connect the binary control signals from the automation unit on to the actuators at the process level.

The signals are connected via M8 connectors.




The outputs are short-circuit safe and protected against inverse connection. The outputs indicate their status through light emitting diodes.

# Control IO-Link Master Diagnostic Page

You can also verify IOLB-8108 operation by viewing the Control IO-Link Master **IO-Link Diagnostics** page.

- 1. Log into the Control IO-Link Master using the IP address.
- 2. Click **Diagnostics | IO-Link**.

 **CONTROL**

[Home](#) [Diagnostics](#) [Configuration](#) [Advanced](#) [Attached Devices](#) [Help](#)

IO-Link Master 8-PNIO [Logout](#)

[IO-LINK](#) [PROFINET IO](#) [MODBUS/TCP](#)

IO-Link Diagnostics ?

UPDATE STOP LIVE UPDATES RESET STATISTICS

IO-LINK PORT STATUS	PORT 1			PORT 4				
Port Name	IO-Link Port 1			IO-Link Port 4				
Port Mode	IOLink			IOLink				
Port Status	Operational			Operational				
IOLink State	Operate			Operate				
Device Vendor Name	Control Corporation			Control Corporation				
Device Product Name	Control IOLB-8118			Control IOLB-8108				
Device Serial Number	9652-38			9650-36				
Device Hardware Version	00			00				
Device Firmware Version	04			04				
Device IO-Link Version	1.1			1.1				
Actual Cycle Time	4.0ms			4.0ms				
Device Minimum Cycle Time	0.5ms			0.5ms				
Configured Minimum Cycle Time	4ms			4ms				
Data Storage Capable	Yes			Yes				
Automatic Data Storage Configuration	Disabled			Disabled				
Auxiliary Input (AI) Bit Status	Off			Off				

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# Configuring the IOLB-8108

This section discusses loading the IODD on the Control IO-Link Master.

## Locating the IOLB-8108 IODD Files

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The IOLB-8108 IODD files are located on the Control download site using one of these addresses:

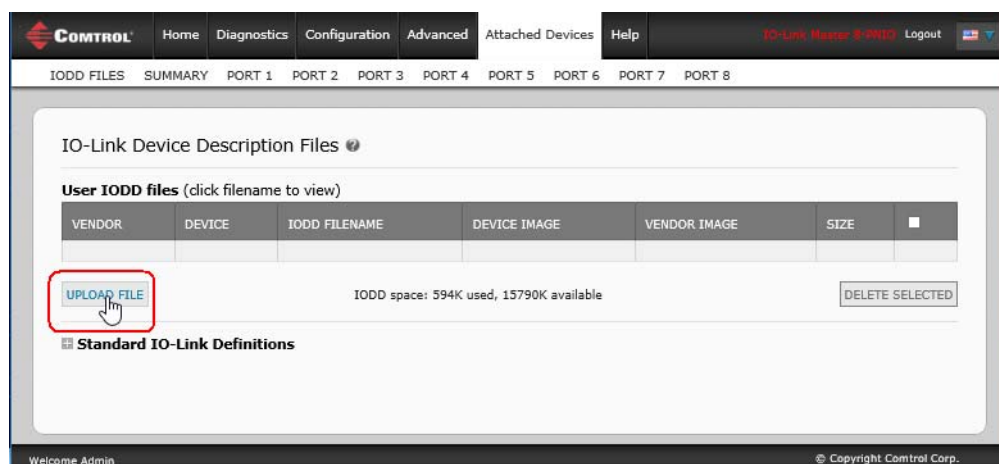
- [http://downloads.comtrol.com/IO\\_Link\\_Block/IOLB\\_8108/IODD](http://downloads.comtrol.com/IO_Link_Block/IOLB_8108/IODD)
- [ftp://ftp.comtrol.com/IO\\_Link\\_Block/IOLB\\_8108/IODD](ftp://ftp.comtrol.com/IO_Link_Block/IOLB_8108/IODD)

## Loading the IODD Files Onto the Control IO-Link Master

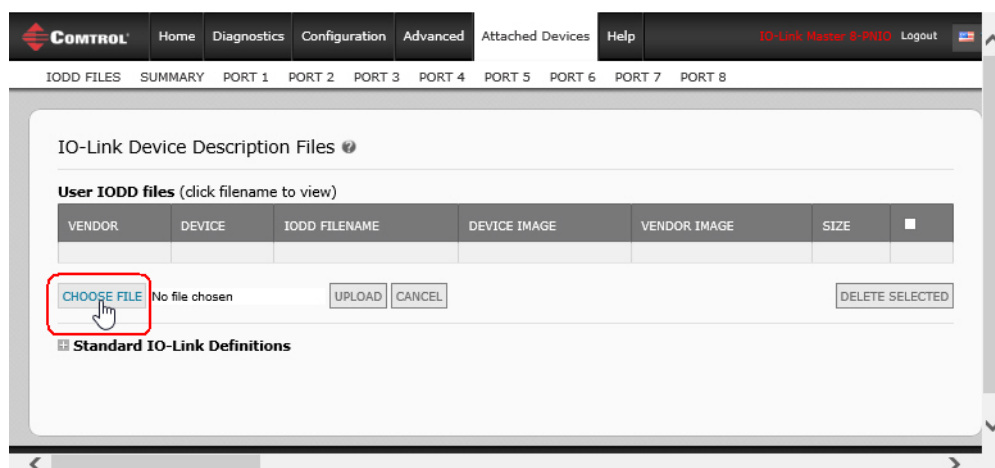
---

Use the following procedure to load the IOLB-8108 IODD file.

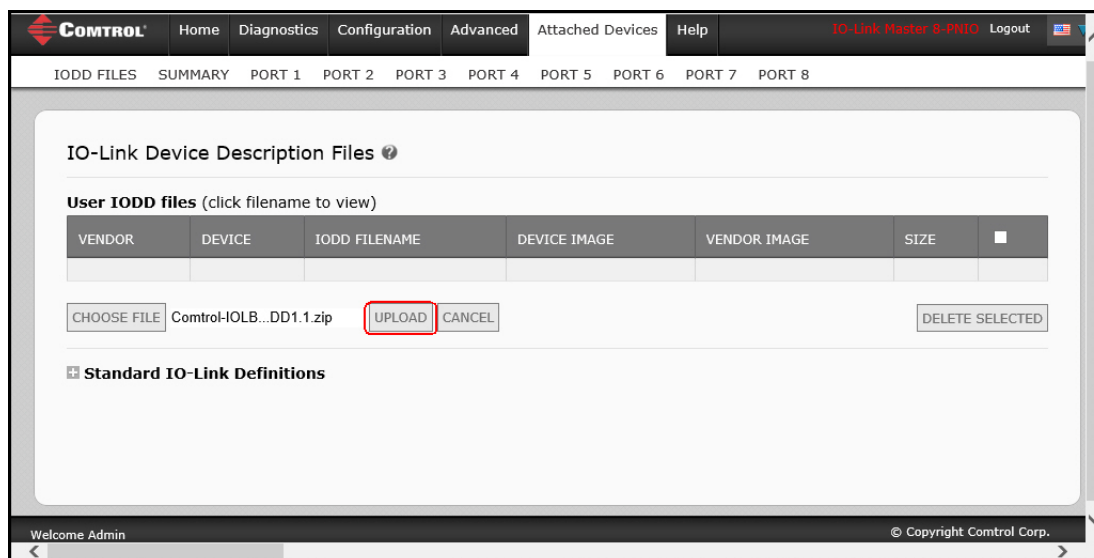
1. If necessary, download the IOLB-8108 IODD files.
2. Log into the Control IO-Link Master using the IP address.
3. Click **Attached Devices**.
4. Click the **UPLOAD FILE** button.



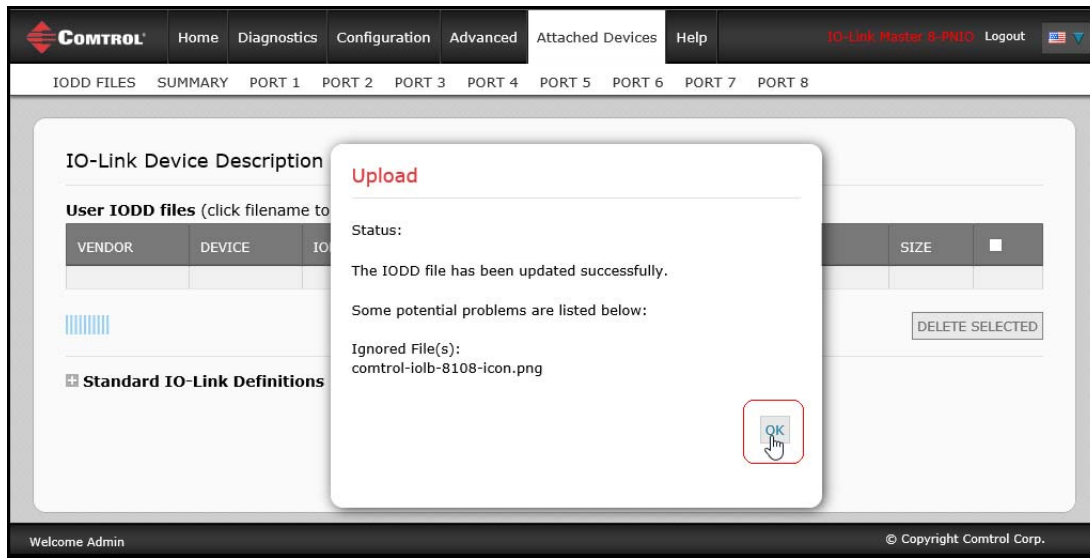
- Click the **CHOOSE FILE** button.



- Browse to the location you saved the IODD file and select the file.
- Click the **UPLOAD** button.

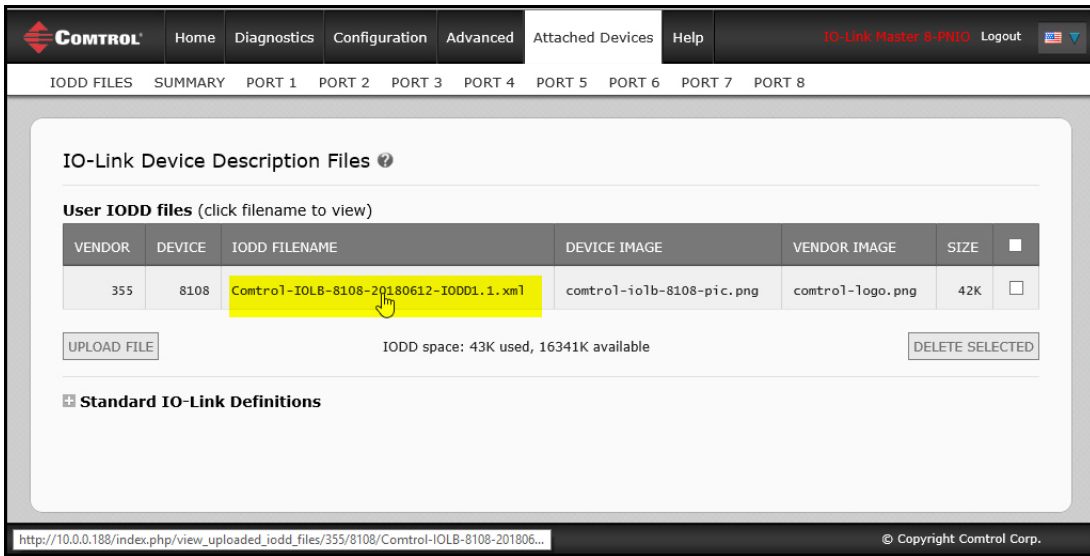


8. Click the **Ok** button.



**Note:** The above message is expected behavior because the .icon file is not required by the XML file.

9. Optionally, click the file name if you want to view the xml file.



- Click the **SUMMARY** link to verify that the correct IODD file loaded. If a file name displays in the IODD Name field that means that the correct IODD file is loaded.

The screenshot shows the Control IO-Link Master web interface. The top navigation bar includes links for Home, Diagnostics, Configuration, Advanced, Attached Devices, and Help. The user is logged in as 'IO-Link Master 8-PNIO' and can click 'Logout'. Below the navigation bar, there are tabs for IODD FILES, SUMMARY, and PORT 1 through PORT 8. The 'SUMMARY' tab is selected, displaying the 'IO-Link Device Configuration Summary' for PORT4. The summary table lists various device settings, with the 'IODD Name' field highlighted in yellow, indicating the correct IODD file is loaded.

DEVICE SETTINGS	PORT1	MORE	PORT2	MORE	PORT3	MORE	PORT4	MORE
Vendor Name							Control Corporation	
VENDOR							355	
DEVICE							8108	
Description							8-Ch Digital Output Module, M8	
IO-Link Version							1.1	
Hardware Version							00	
Firmware Version							04	
Baud Rate							230400	
SIO Mode							Yes	
Min Cycle Time							0.5 ms	
IODD Name							Control-IOLB-8108-201806 12-IODD1.1.xml	
Serial Number							9650-36	

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## Configuring the IOLB-8108

After loading the IODD file on the IOLB-8108 you change the Application Specific Tag, Restore Factory Defaults, and implement the Data Storage Lock feature. In addition, you can review the *Diagnostics* group.

1. If necessary, log into the Control IO-Link Master.
2. Click **Attached Devices | Port x**, where x is the IO-Link port that you have attached the IOLB-8108.
3. Click the **EDIT** button.

IO-Link Device - Port 4 ⓘ User role menu + Control REFRESH **EDIT** COMMAND

Parameter Name	Index	Subindex	Value	Description	R/W	Unit
<b>- Identification</b>						
Vendor Name	16		Control Corporation		RO	
Vendor Text	17		www.control.com		RO	
Product Name	18		Control IOLB-8108		RO	
Product Text	20		8-Ch Digital Output Module, M 8		RO	
Serial Number	21		9650-36		RO	
Hardware Version	22		00		RO	
Firmware Version	23		04		RO	
Application Specific Tag	24		*****		RW	
<b>- Parameter</b>						
<b>- Miscellaneous Settings</b>						
Standard Command	2		<span>Restore Factor...</span>	130:Restore Factory Settings	WO	
Data Storage Lock	12	2*	0	0 1	RW	
<b>- Diagnosis</b>						

**IO-Link Device ISDU Interface - Port 4** Port Status: Operational, PDO Invalid

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**Note:** For information about using the Control IO-Link Master, refer to the help system or appropriate User Guide for the model.

- Make the necessary changes to reflect the devices that you intend on connecting and click the **SAVE** button.

**IO-Link Device - Port 4** ⓘ User role menu + CONTROL SAVE CANCEL

Parameter Name	Index	Subindex	Value	Description	R/W	Unit
<b>- Identification</b>						
Vendor Name	16		Control Corporation		RO	
Vendor Text	17		www.comtrol.com		RO	
Product Name	18		Control IOLB-8108		RO	
Product Text	20		8-Ch Digital Output Module, M 8		RO	
Serial Number	21		9650-36		RO	
Hardware Version	22		00		RO	
Firmware Version	23		04		RO	
Application Specific Tag	24		Digital OUTPUT #1		RW	
<b>- Parameter</b>						
<b>- Miscellaneous Settings</b>						
Standard Command	2		Restore Factor...	130:Restore Factory Settings	WO	
Data Storage Lock	12	2*	<input type="checkbox"/>	0 1	RW	
<b>- Diagnostic</b>						

**IO-Link Device ISDU Interface - Port 4** Port Status: Operational,PDO Invalid

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After the page is saved, note that the changes have been implemented.

[Home](#)
[Diagnostics](#)
[Configuration](#)
[Advanced](#)
[Attached Devices](#)
[Help](#)

IO-Link Master 8-PNIO
Logout

IODD FILES
SUMMARY
PORT 1
PORT 2
PORT 3
PORT 4
PORT 5
PORT 6
PORT 7
PORT 8

IO-Link Device - Port 4
User role menu

REFRESH

EDIT

COMMAND

Parameter Name	Index	Subindex	Value	Description	R/W	Unit
<b>- Identification</b>						
Vendor Name	16		Control Corporation		RO	
Vendor Text	17		www.control.com		RO	
Product Name	18		Control IOLB-8108		RO	
Product Text	20		8-Ch Digital Output Module, M 8		RO	
Serial Number	21		9650-36		RO	
Hardware Version	22		00		RO	
Firmware Version	23		04		RO	
Application Specific Tag	24		Digital OUTPUT #1		RW	
<b>- Parameter</b>						
<b>- Miscellaneous Settings</b>						
Standard Command	2		<div>Restore Factor...</div>	130:Restore Factory Settings	WO	
Data Storage Lock	12	2*	0	0 1	RW	
<b>- Diagnosis</b>						

IO-Link Device ISDU Interface - Port 4

Port Status: Operational,PDO Invalid

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# Object Descriptions

This section provides supporting information for the IOLB-8108 object descriptions.

## IOLB-8108 Parameters

**Note:** The Index and Sub-indexes are displayed as decimal numbers, which match the Control IO-Link Master.

*Hardware and firmware versions may be different than what is displayed in this table.*

Index	Subindex	Name	Meaning	Data type	Flags	Default
Identification						
16		Vendor Name	Comtrol Corporation	StringT64	RO	N/A
17		Vendor Text	www.comtrol.com	StringT64	RO	N/A
18		Product Name	Comtrol IOLB-8108	StringT64	RO	N/A
20		Product Text	8-Ch Digital Output Module, M8	StringT64	RO	N/A
21		Serial Number	9650-XXXXXX	StringT16	RO	N/A
22		Hardware Version	00	StringT64	RO	N/A
23		Firmware Version	04	StringT64	RO	N/A
24		Application Specific Tag	*****	StringT32	RO	N/A
Parameter						
Miscellaneous Settings						
2		Standard Command	130 - Restore factory defaults	UINT8	WO	0x0000 (0dec)
12	02	Data Storage Lock		BOOLEAN	RW	0x0000 (0dec)

## Diagnostics Parameters

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Index	Subindex	Name	Meaning	Data type	Flags
Diagnostics					
2560	01	Overtemperature	Temperature exceeded limits	RecordT	RO
2560	02	Short detected	Short circuit on the IO-Link C/Q line	RecordT	RO
2560	03	L low	Supply voltage too low (<18V)	RecordT	RO
2560	04	2L low	Additional power supply too low (<18V)	RecordT	RO
2560	05	2L stat	Additional power supply non-existent (<8V)	RecordT	RO