IO-Link Configuration Software Instruction Manual

Original Instructions
p/n: 228876 Rev. D
September 19, 2023
© Banner Engineering Corp. All rights reserved.

Contents

Contents **2**

Chapter 1 Software Description

Overview 3

Chapter 2 Specifications and Requirements

IO-Link Configuration Software PC Requirements 5
Adapter Cable – Required for use with Serial IO-Link Masters 5
Model 5
BWA-UCT-900 Adapter Cable Specifications 5
Ethernet Cordset – Required for use with Ethernet IO-Link Masters 6
Models 6
FCC Part 15 Class B 6
Industry Canada ICES-003(B) 6

Chapter 3 Installation Instructions

Install the Software 7
Connect the Cables 7
Connect an IO-Link Device with a Cable 7
Load an IO-Link Device IODD 8
Use the IODD Finder 8
Add the IODD File Manually 9
Connect to the Software 10
Connect a Serial IO-Link Master 10
Connect an Ethernet IO-Link Master 11

Chapter 4 Configuration Instructions

Read and Change the Banner IO-Link Device Configuration 15
Process Data 16
Read and Change the Banner IO-Link Master Port Configuration 17
Change the IP Address on the DXMR90-4K and DXMR110-8K IO-Link Masters 18
Change the Server ID on the R90C-4K-MQ and R45C-2K-MQ IO-Link Masters 19

Chapter 5 Accessories

IO-Link Hardware 21

Chapter 6 Product Support and Maintenance

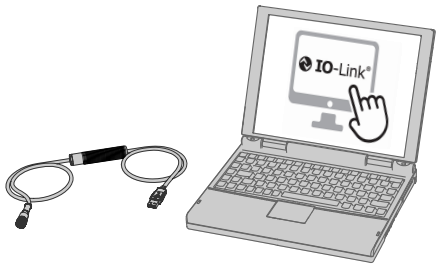
Maintenance 23
Update the Software 23
IO-Link Configuration Release Notes 23
Contact Us 23
Banner Engineering Corp Limited Warranty 23
Banner Engineering Corp. Software Copyright Notice 24

Chapter Contents

Overview 3

Chapter 1 Software Description

Software that Enables the Field Configuration of Banner IO-Link Masters and Banner IO-Link Devices



- Allows the configuration of Banner IO-Link devices
- Free to download and available on the product pages for the DXMR110-8K, DXMR90-4K, R90C-4K-MQ, and R45C-2K-MQ IO-Link masters
- Works on Microsoft® Windows® 7 and 10[1]
- BWA-UCT-900 or Ethernet cable required to connect PC-based IO-Link Configuration Software to Banner IO-Link masters and Banner IO-Link devices, depending on which Banner IO-Link master you are using

NOTE: Administrative rights are required to install the IO-Link Configuration Software.

Overview

Banner's IO-Link Configuration Software offers an easy way to configure Banner IO-Link masters and Banner IO-Link devices, offering users full control of master and device configuration. The easy-to-use software provides a variety of tools and works with the DXMR110-8K, DXMR90-4K, R90C-4K-MQ, and R45C-2K-MQ IO-Link masters.

Configure Banner IO-Link masters and Banner IO-Link devices using the free IO-Link Configuration Software, available for download at https://www.bannerengineering.com/us/en/products/software/io-link-software.html.

[1] Microsoft and Windows are registered trademarks of Microsoft Corporation in the United States and/or other countries.

© Banner Engineering Corp. All rights reserved.

Blank page

Chapter Contents

IO-Link Configuration Software PC Requirements 5
Adapter Cable – Required for use with Serial IO-Link Masters 5
Ethernet Cordset – Required for use with Ethernet IO-Link Masters 6
FCC Part 15 Class B 6
Industry Canada ICES-003(B) 6

Chapter 2 Specifications and Requirements

IO-Link Configuration Software PC Requirements

Operating System
Microsoft® Windows® operating system versions 7 or 10[(1)]

Hard Drive Space
120 MB

[(1)] Microsoft® and Windows® are registered trademarks of Microsoft® Corporation in the United States and/or other countries.

USB
Available USB port

Screen Resolution
1366 × 768 full-color minimum

Third-Party Software
.NET version 4.6.2 or higher

IMPORTANT: Administrative rights are required to install the IO-Link Configuration Software.

Adapter Cable – Required for use with Serial IO-Link Masters

An adapter cable, model BWA-UCT-900, is required for use with the IO-Link Configuration Software, Banner R90C-4K-MQ, and Banner R45C-2K-MQ serial IO-Link masters. Use the adapter cable to connect Banner serial IO-Link devices to read, write, and preview device configurations.

- Connects Banner serial IO-Link masters to the PC-based IO-Link Configuration Software

Model

Model	Adapter	Length	Connections
BWA-UCT-900	RS-485 to USB	1 m (3.28 ft)	USB and 5-pin M12 quick disconnect

BWA-UCT-900 Adapter Cable Specifications

Input Voltage
5 V DC from USB Type A connector

Certifications
CE

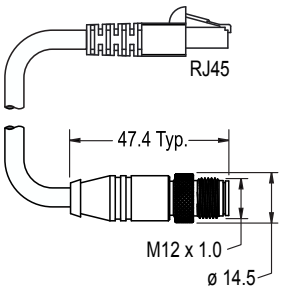
Output Voltage
24 V DC power output for a single device transmitting at 1 Watt

Operating Conditions
–40 °C to +80 °C (–40 °F to +176 °F)
95% maximum relative humidity (non-condensing)

© Banner Engineering Corp. All rights reserved.

Ethernet Cordset – Required for use with Ethernet IO-Link Masters

An Ethernet cordset is required for use with the IO-Link Configuration Software, Banner DXMR110-8K, and Banner DXMR90-4K IO-Link masters with an Ethernet IP interface. Use an M12 to RJ45 Ethernet cordset to connect to Banner Ethernet IO-Link masters to read, write, and preview device configurations.



- Connects Banner Ethernet IO-Link masters to the PC-based IO-Link Configuration Software

Models

Model	Adapter	Lengths	Connections
STP-M12D-4xx	M12 D-code to RJ45 Shielded Ethernet	1.83 m (6 ft) 4.57 m (15 ft) 9.14 m (30 ft)	Ethernet and 4-pin M12 quick disconnect

FCC Part 15 Class B

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Industry Canada ICES-003(B)

This device complies with CAN ICES-3 (B)/NMB-3(B). Operation is subject to the following two conditions: 1) This device may not cause harmful interference; and 2) This device must accept any interference received, including interference that may cause undesired operation.

Cet appareil est conforme à la norme NMB-3(B). Le fonctionnement est soumis aux deux conditions suivantes : (1) ce dispositif ne peut pas occasionner d'interférences, et (2) il doit tolérer toute interférence, y compris celles susceptibles de provoquer un fonctionnement non souhaité du dispositif.

© Banner Engineering Corp. All rights reserved.

Chapter Contents

Install the Software 7
Connect the Cables 7
Load an IO-Link Device IODD 8
Connect to the Software 10

Chapter 3 Installation Instructions

Install the Software

IMPORTANT: Administrative rights are required to install the IO-Link Configuration Software.

1. Download the latest version of the software from https://www.bannerengineering.com/us/en/products/software/io-link-software.html.
2. Navigate to the downloaded file **IOLConfigInstaller.exe**.
3. Double-click the installer to open **Banner IO-Link Configuration Software Setup**.
4. Accept the terms in the License Agreement by selecting the checkbox.
5. Click **Install** to install the software.
6. Depending on the system settings, a pop-up window may appear prompting to allow the IO-Link Configuration Software to make changes to the computer. Click **Yes**.
7. Click **Close** to exit the installer after installation is complete.

Connect the Cables

For serial IO-Link masters:

1. With the BWA-UCT-900 adapter cable, plug the M12 connector into male connector of the IO-Link master.
2. Plug the USB connector of the BWA-UCT-900 into the PC.
3. Plug the power cable of the BWA-UCT-900 into a wall outlet.

For Ethernet IO-Link masters:

1. With an Ethernet cordset, plug the M12 connector into the male connector of the IO-Link Master.
2. Plug the RJ45 connector of the Ethernet cordset into the PC.

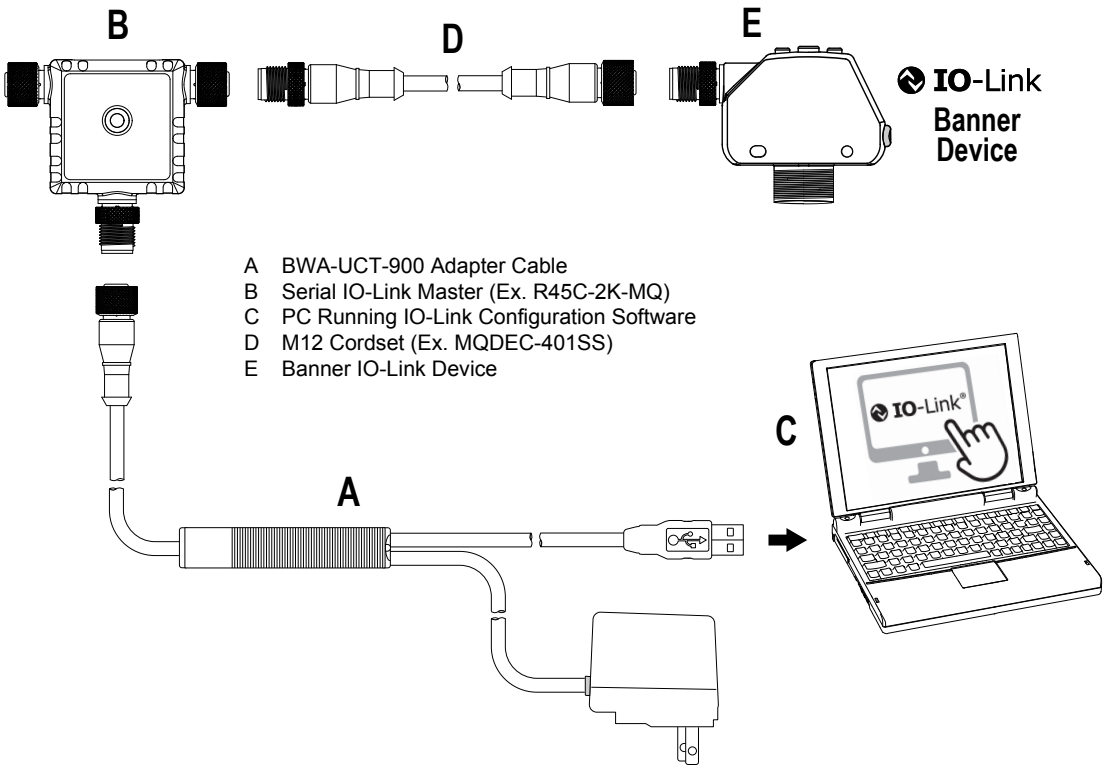
Connect an IO-Link Device with a Cable

To connect Banner IO-Link devices:

1. Connect the Banner IO-Link device or devices to the ports on the IO-Link masters using an M12 cordset.
2. Plug the applicable accessory into the IO-Link master:
    a. For serial IO-Link masters: Use the BWA-UCT-900 adapter cable, and plug the female M12 connector into the male M12 communication port on the serial IO-Link master.
    b. For Ethernet IO-Link masters: Use an Ethernet cordset, and plug the male M12 connector into the female M12 D-code Ethernet port on the Ethernet IO-Link master.
3. Plug the USB or RJ45 connector into the PC.

© Banner Engineering Corp. All rights reserved.

Example - Serial IO-Link Master Device Connection



Load an IO-Link Device IODD

After connecting a Banner IO-Link master to a PC, use one of these methods to connect IO-Link devices to the IO-Link Configuration Software.

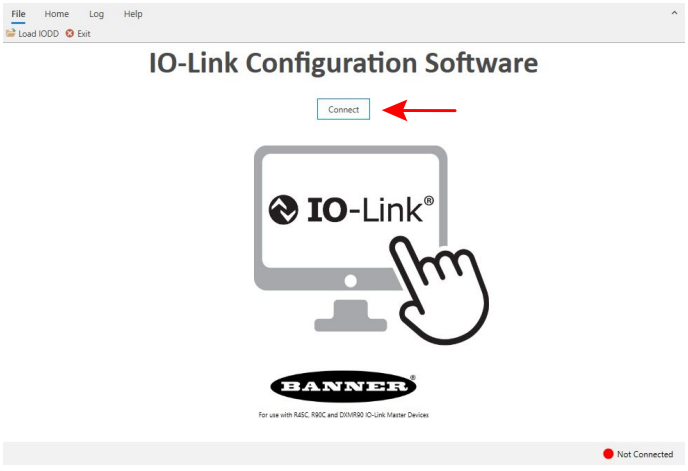
Use the IODD Finder

Use the software to scan the connected device to download and install the IODD files automatically.

Use this method if there is not an IODD file already downloaded onto the PC. See "Add the IODD File Manually" on page 9.

1. Click **Connect** on the IO-Link Configuration Software start page.

Connect the IO-Link master



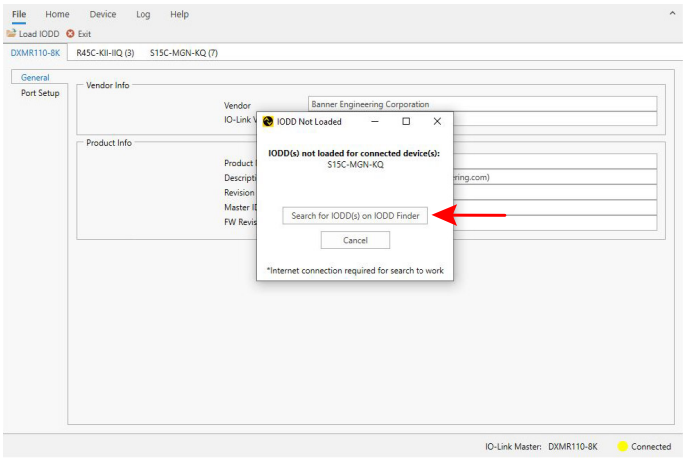
An **IODD Not Loaded** pop-up window appears when the IO-Link device is connected successfully.

2. Select **Search for IODD(s) on IODD Finder**.

© Banner Engineering Corp. All rights reserved.

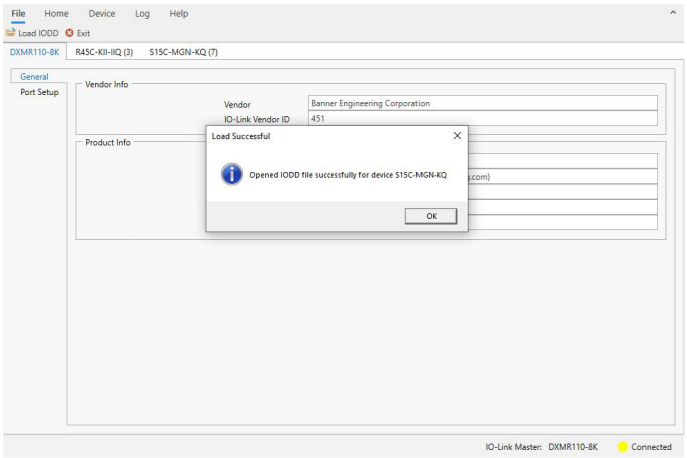
IMPORTANT: An internet connection on the PC is required for this functionality.

IODD Finder



A **Load Successful** pop-up window appears when the IODD file is installed successfully. Click **OK** to close.

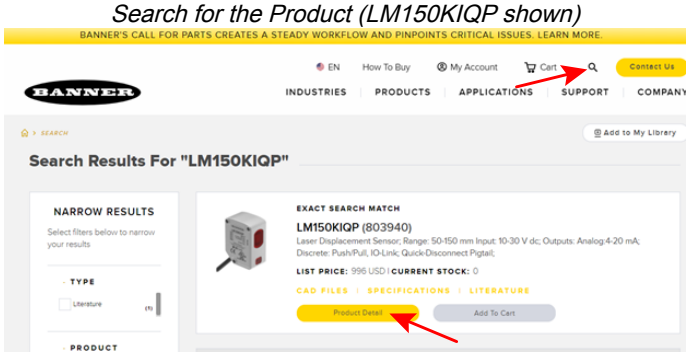
Load Successful



Add the IODD File Manually

1. Download the Banner IO-Link device IODDs manually.
   a. Go to www.bannerengineering.com.
      You can also go to ttps://ioddfinder.io-link.com/ to search and download device IODDs.
   b. Search for the desired Banner IO-Link devices.
   c. Click **Product Detail**.

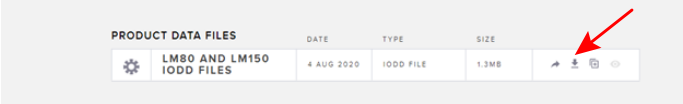
Search for the Product (LM150KIQP shown)



   d. On the product page, under **Downloads**, navigate to the IODD file and click the download button.

© Banner Engineering Corp. All rights reserved.

Download the IODD Files

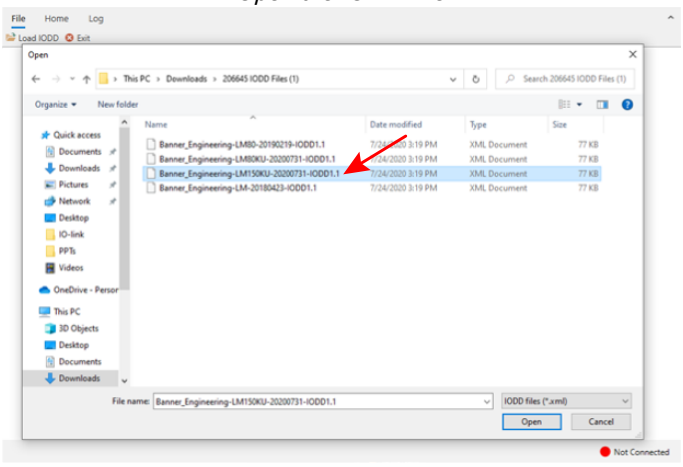


2. Extract the downloaded IODD zip file and save it to a desired location.
   Repeat this process for every Banner IO-Link device that is connected to the IO-Link master.
3. Open the IO-Link Configuration Software and click **File › Load IODD** in the upper left corner of the window.

Load IODD

   A File Explorer window opens.
4. Navigate to where the IODD file was extracted to in File Explorer and click on it.
5. Click **Open** in File Explorer.

Open the IODD File



The file explorer window closes, and the IODD file loads into the IO-Link Configuration Software.

Connect to the Software

Connect a Serial IO-Link Master

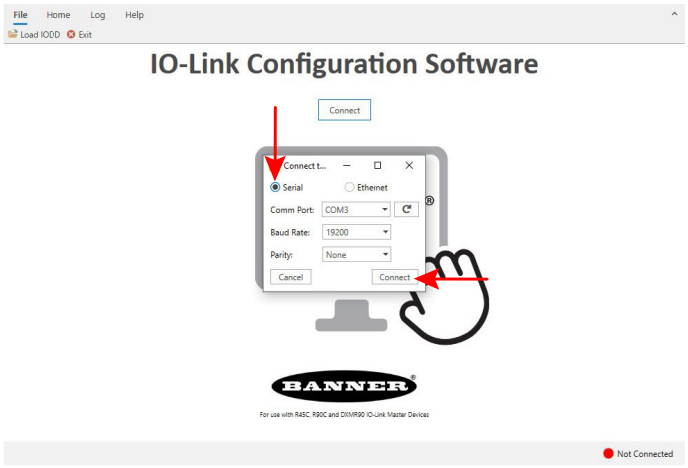
1. Click **Connect** on the IO-Link Configuration Software start page.

© Banner Engineering Corp. All rights reserved.

Connect the Device

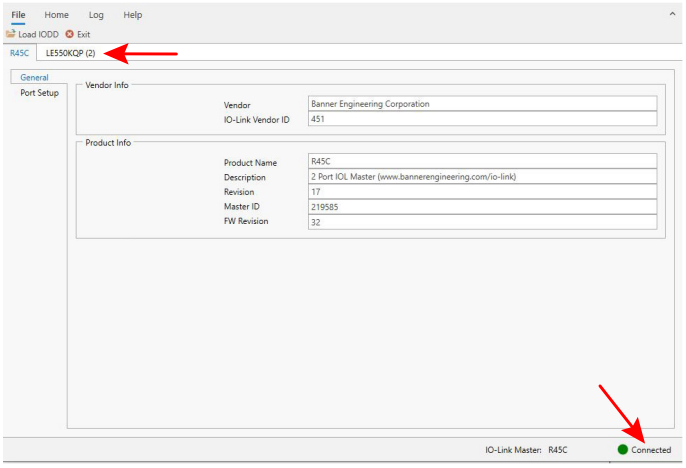
2. In the pop-up window, select **Serial**, and then click **Connect**.

Select Serial



The Banner IO-Link master and devices are now connected to the IO-Link Configuration Software. The connected IO-Link devices appear in new tabs within the software window, and the status in the bottom right corner now reads as **Connected**.

Serial Connected



Connect an Ethernet IO-Link Master

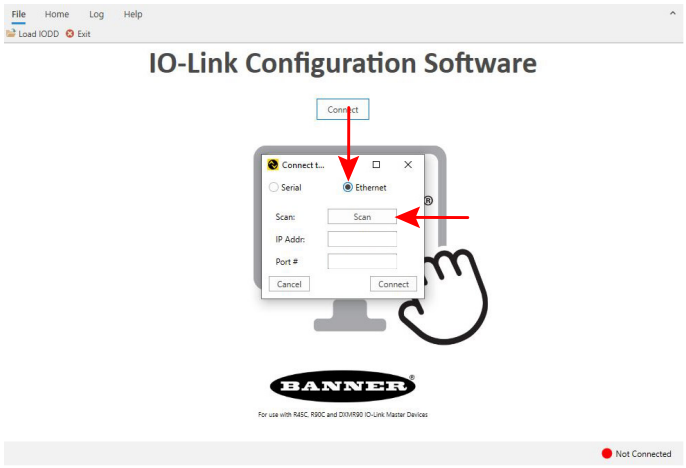
1. Click **Connect** on the IO-Link Configuration Software start page.

© Banner Engineering Corp. All rights reserved.

Connect the Device

2. In the Connect window, select **Ethernet**, and click **Scan**.

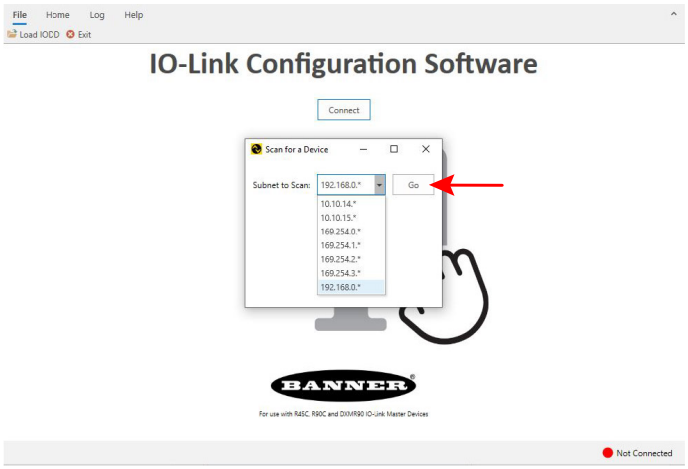
Select Ethernet



When the scan is complete, a new pop-up window appears.

3. In the new pop-up window, select the subnet the IO-Link master is connected to from the drop-down menu, and click **Go**.

Select Subnet

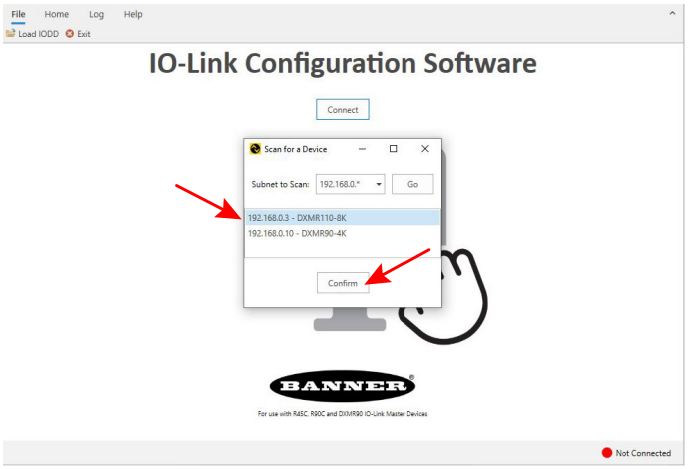


The model number and the IP addresses of the connected Ethernet IO-Link masters are displayed.

4. Select the IP address of the IO-Link master to connect to, and click **Confirm.**

© Banner Engineering Corp. All rights reserved.

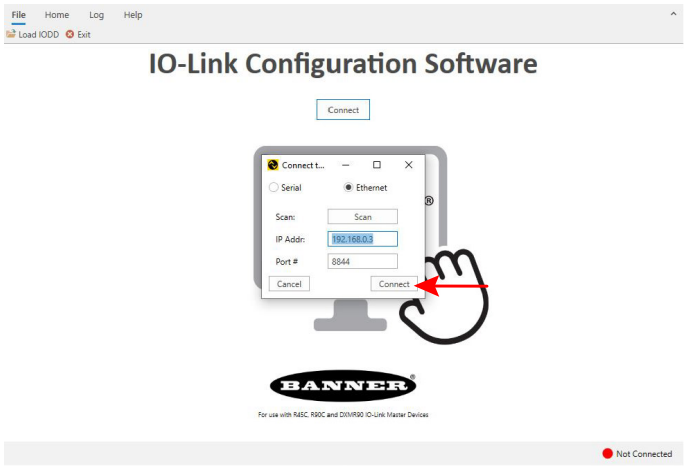
Select IP Address and Model Number



The pop-up window closes, and the IP address of the connected IO-Link master auto-fills in the Connect window.

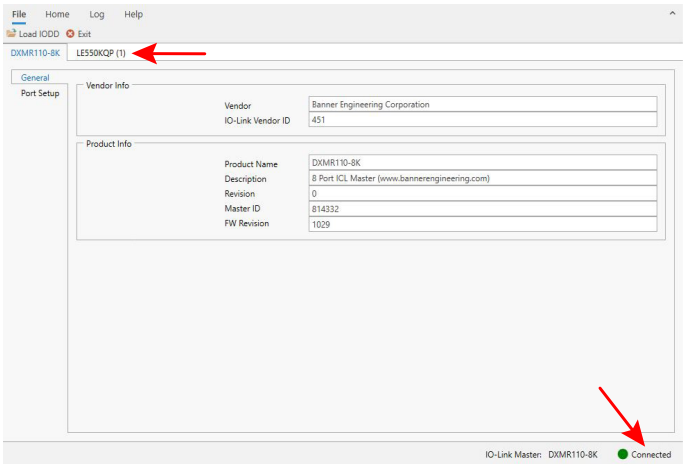
5. Click **Connect** to connect to the IO-Link master.

Connect Ethernet



The Banner IO-Link master and devices are now connected to the IO-Link Configuration Software. The connected IO-Link devices appear in new tabs within the software window, and the status in the bottom right corner now reads as **Connected**.

Ethernet Connected



© Banner Engineering Corp. All rights reserved.

Blank page

Chapter Contents

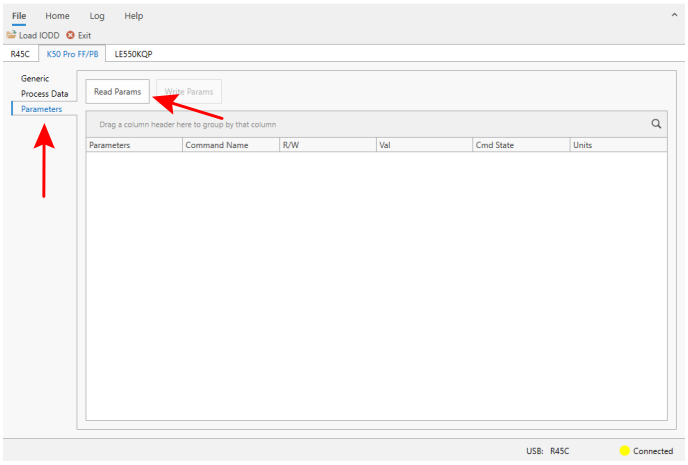
Read and Change the Banner IO-Link Device Configuration 15
Read and Change the Banner IO-Link Master Port Configuration 17
Change the IP Address on the DXMR90-4K and DXMR110-8K IO-Link Masters 18
Change the Server ID on the R90C-4K-MQ and R45C-2K-MQ IO-Link Masters 19

Chapter 4 Configuration Instructions

Read and Change the Banner IO-Link Device Configuration

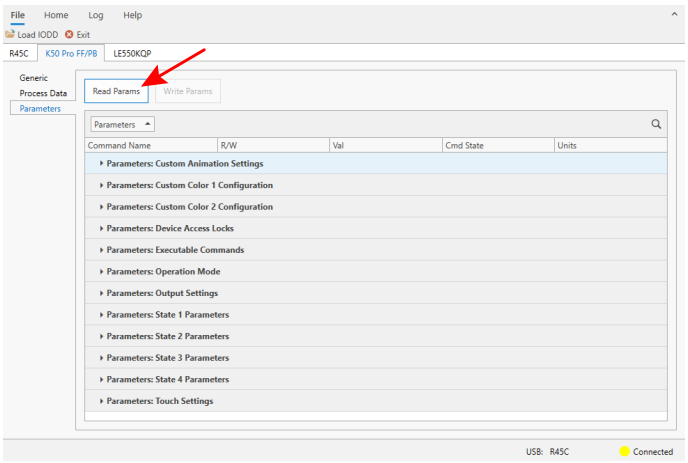
1. Select the device tab in the software window, and click **Parameters** in the left menu.
   Parameters is used to read and change the Banner IO-Link device configuration. After clicking on **Parameters**, the Parameters pane opens within the device tab.

Parameters



2. Click **Read Params** to read the current configuration of the connected Banner IO-Link device.

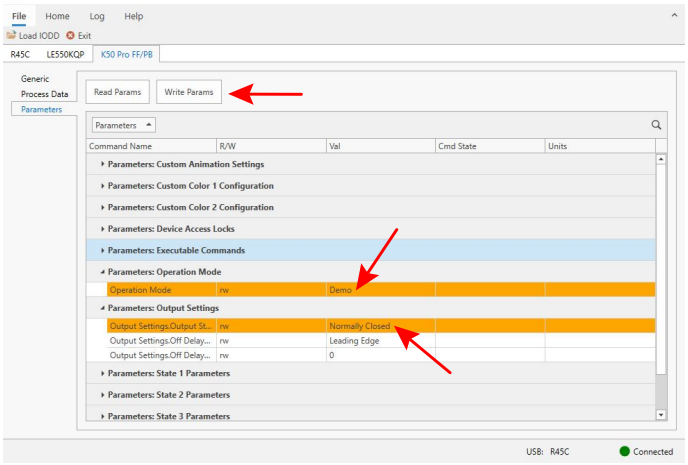
Read Params



   This displays the current IO-Link configuration information in the Parameters pane, along with all of the device's available settings.
3. If desired, make any changes to the Banner IO-Link device's configuration in this pane using the available settings.
4. If changes were made to the settings, write the changes to the device by clicking **Write Params**.

© Banner Engineering Corp. All rights reserved.

Write Params



Process Data

Process data refers to the information that the device reads and transmits to the master, such as the distance reading on a laser measurement sensor.

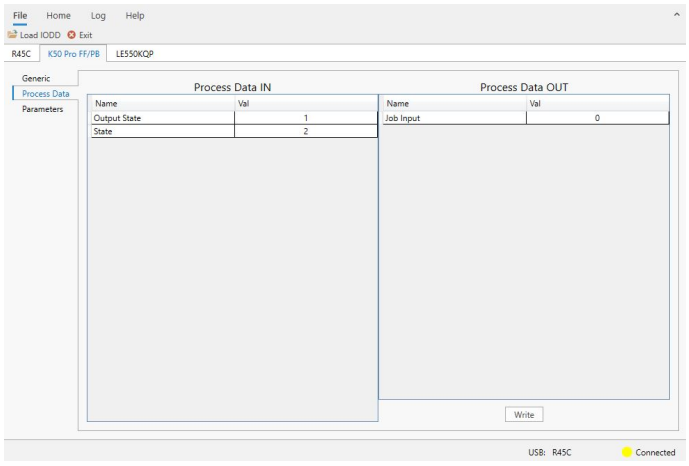
Process data can also refer to information that is transmitted to the device from the master, such as messages sent to a tower light indicating which color segments should be illuminated.

Cyclic and acyclic process data can be transferred between an IO-Link master and an IO-Link device. By clicking **Process Data** in the left menu, the user is able to view the live process data of the Banner IO-Link device connected to the IO-Link master.

Process Data IN is data that is sent from the IO-Link device to the IO-Link master.

Process Data OUT is data that is sent from the IO-Link master to the IO-Link device.

Process Data

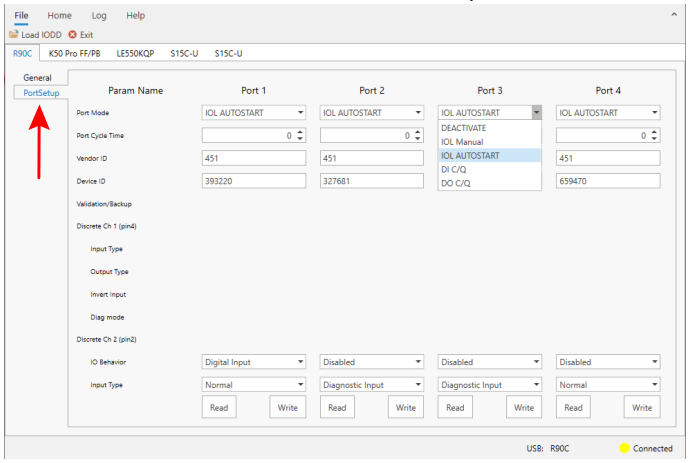


© Banner Engineering Corp. All rights reserved.

Read and Change the Banner IO-Link Master Port Configuration

The IO-Link Configuration Software has a special tab for configuring the port settings on the IO-Link master. To access, click on the IO-Link master tab and select **PortSetup**.

IO-Link Master Port Setup



The operating mode can be configured for any port on the IO-Link master. The following modes can be used:

Deactivated

Use deactivated mode for any unused IO-link master ports if a device is not connected.

IO-Link Manual

The IO-Link master only connects IO-Link devices that have a certain vendor ID and device ID (1: IOL_MANUAL).

IO-Link Autostart

The IO-Link master connects to every connected IO-Link device (2: IOL_AUTOSTART).

Digital Input

The IO-Link port functions as a standard digital input (3: DI_C/Q).

Digital Output

The IO-Link port functions as a standard digital output (4: DO_C/Q).

When the backup function of the IO-Link master is used, the IO-Link master automatically provides the saved parameters to the new device after replacement. This makes IO-Link device replacement seamless in IO-Link applications. Another common industry term for this function is *data storage mode*.

. Backup+Restore Mode

If a port on the IO-Link master is set to Backup+Restore, then the new device added to the IO-Link port takes in the same device configuration as the device that was just replaced, as the IO-Link master had stored the last configuration change by a backup (3: Type compatible Device V1.1, Backup + Restore).

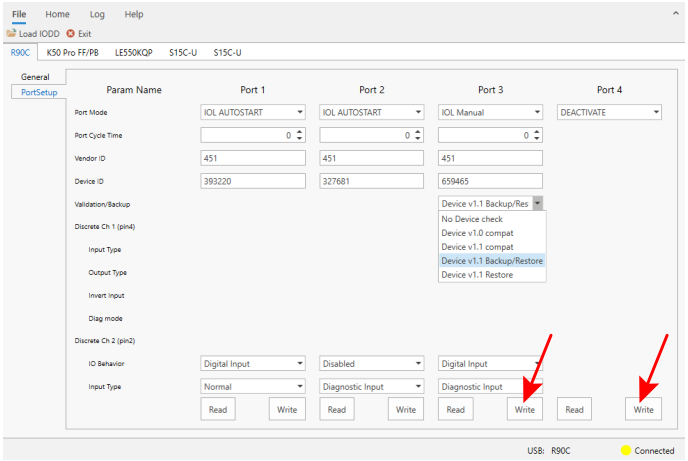
. Restore

If the port on the IO-Link master port is set to Restore, then the new device takes in the configuration according the settings saved in the master at the time of the last backup. Because possible configuration changes were not saved in the master, a different behavior from the previous one before the replacement may occur (4: Type compatible Device V1.1, Restore).

Make changes to the ports' settings by selecting the drop-down menus for each port. To read the current configuration of each port, select the applicable **Read** button. After making the desired changes to the port settings, select the applicable **Write** button.

© Banner Engineering Corp. All rights reserved.

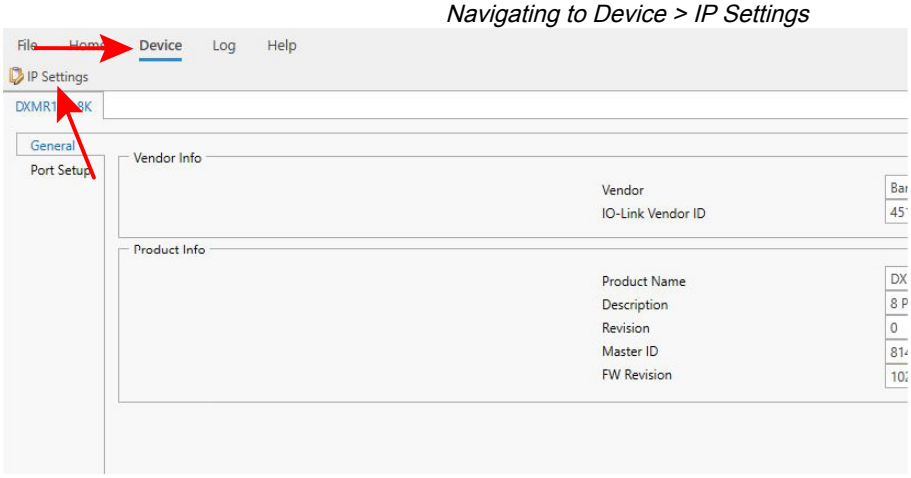
Write Port Settings



Change the IP Address on the DXMR90-4K and DXMR110-8K IO-Link Masters

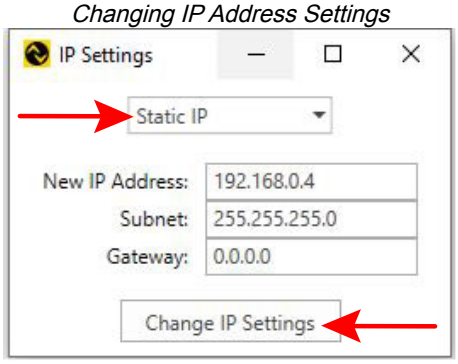
1. Click **Device › IP Settings**.

Navigating to Device > IP Settings



2. In the pop-up window, select **Static IP**, **DHCP**, or **Follow DXM XML Settings** from the drop-down menu.
3. Enter the desired IP address settings, and click **Change IP Settings**.

Changing IP Address Settings



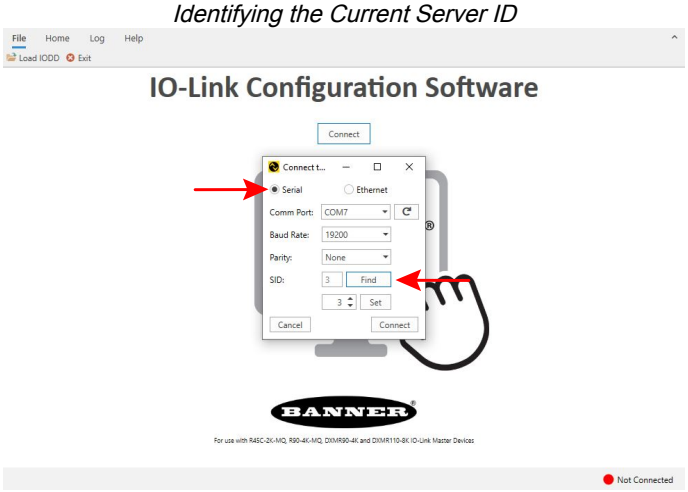
© Banner Engineering Corp. All rights reserved.

Change the Server ID on the R90C-4K-MQ and R45C-2K-MQ IO-Link Masters

Connect the R45C-2K-MQ or R90C-4K-MQ to the PC, and then to the IO-Link Configuration Software (see "Connect the Cables" on page 7 and "Connect to the Software" on page 10). A pop-up window appears after clicking “Connect.”

1. Select **Serial**.
2. Click **Find**.

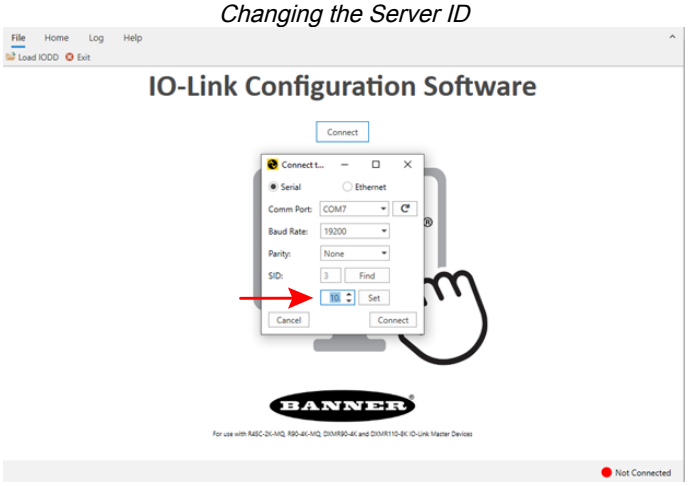
Identifying the Current Server ID



The software displays the current server ID of the connected IO-Link master.

3. Change the server ID of the IO-Link master by using the up and down arrows.
4. Click **Set** to apply the new server ID to the IO-Link master.

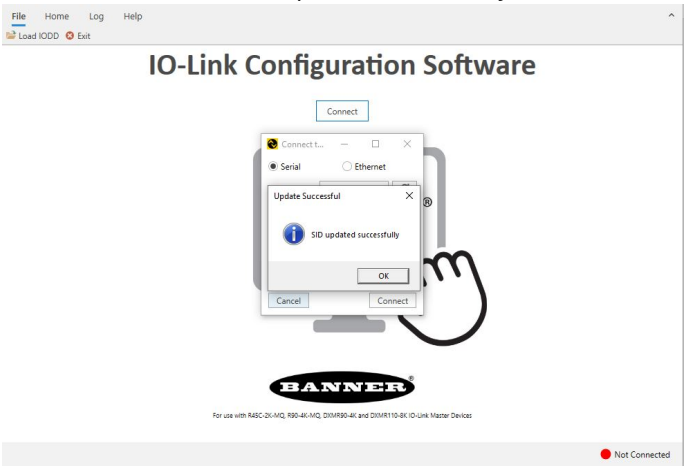
Changing the Server ID



A pop-up window displays that the server ID change was implemented successfully. Click **OK** to close.

© Banner Engineering Corp. All rights reserved.

Server ID Updated Successfully



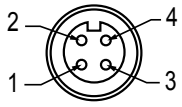
© Banner Engineering Corp. All rights reserved.

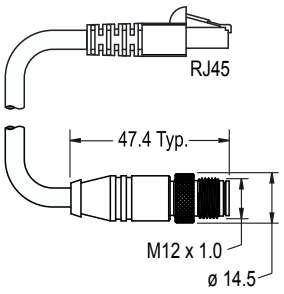
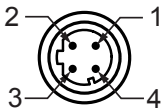
Chapter Contents

IO-Link Hardware 21

Chapter 5 Accessories

IO-Link Hardware

4-Pin Threaded M12 RS-485 to USB Adapter Cordset, with Wall Plug				
Model	**Length**	**Style**	**Dimensions**	**Pinout (Female)**
BWA-UCT-900	1 m (3.28 ft)	Straight		 1 = Brown 2 = White 3 = Blue 4 = Black

4-pin M12 D-code to RJ45 Shielded Ethernet				
Model	**Length**	**Style**	**Dimensions**	**Pinout (Male)**
STP-M12D-406	1.83 m (6 ft)	Straight		 1 = White/Orange 2 = Orange 3 = White/Blue 6 = Blue  1 = White/Orange 2 = White/Blue 3 = Orange 4 = Blue
STP-M12D-415	4.57 m (15 ft)			
STP-M12D-430	9.14 m (30 ft)			

© Banner Engineering Corp. All rights reserved.

Blank page

Chapter Contents

Maintenance 23
IO-Link Configuration Release Notes 23
Contact Us 23
Banner Engineering Corp Limited Warranty 23

Chapter 6 Product Support and Maintenance

Maintenance

Maintenance tasks include updating the IO-Link Configuration Software as new versions become available.

Update the Software

The current version of the IO-Link Configuration Software is available for download from https://www.bannerengineering.com/us/en/products/part.811445.html.

When connected to a network, if a IO-Link Configuration Software update is available, a red icon displays in the bottom right corner of the IO-Link Configuration Software. Click this icon to update the software to the latest version.

IO-Link Configuration Release Notes

Version	Devices	General
2.0.37	Added support for setting the server ID on serial IO-Link masters R90-4K-MQ and R45C-2K-MQ	IODD Finder API support for automatic searching and downloading of IODDs
2.0.29	Added support for DXMR110-8K IO-Link Master, Ethernet connectivity, and IP addressing functionality	DXMR90-4K and DXMR110-8K can connect via Ethernet, and IP addressing functionality added
2.0.7	Added support for DXMR90-4K IO-Link Master	Can now connect multiple devices and configure multiple ports
1.0.16	Supports R45C and R90C IO-Link Master devices	Initial release

Contact Us

Banner Engineering Corp. headquarters is located at: 9714 Tenth Avenue North | Minneapolis, MN 55441, USA | Phone: + 1 888 373 6767

For worldwide locations and local representatives, visit www.bannerengineering.com.

Banner Engineering Corp Limited Warranty

Banner Engineering Corp. warrants its products to be free from defects in material and workmanship for one year following the date of shipment. Banner Engineering Corp. will repair or replace, free of charge, any product of its manufacture which, at the time it is returned to the factory, is found to have been defective during the warranty period. This warranty does not cover damage or liability for misuse, abuse, or the improper application or installation of the Banner product.

THIS LIMITED WARRANTY IS EXCLUSIVE AND IN LIEU OF ALL OTHER WARRANTIES WHETHER EXPRESS OR IMPLIED (INCLUDING, WITHOUT LIMITATION, ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE), AND WHETHER ARISING UNDER COURSE OF PERFORMANCE, COURSE OF DEALING OR TRADE USAGE.

This Warranty is exclusive and limited to repair or, at the discretion of Banner Engineering Corp., replacement. **IN NO EVENT SHALL BANNER ENGINEERING CORP. BE LIABLE TO BUYER OR ANY OTHER PERSON OR ENTITY FOR ANY EXTRA COSTS, EXPENSES, LOSSES, LOSS OF PROFITS, OR ANY INCIDENTAL, CONSEQUENTIAL OR SPECIAL DAMAGES RESULTING FROM ANY PRODUCT DEFECT OR FROM THE USE OR INABILITY TO USE THE PRODUCT,**

© Banner Engineering Corp. All rights reserved.

WHETHER ARISING IN CONTRACT OR WARRANTY, STATUTE, TORT, STRICT LIABILITY, NEGLIGENCE, OR OTHERWISE.

Banner Engineering Corp. reserves the right to change, modify or improve the design of the product without assuming any obligations or liabilities relating to any product previously manufactured by Banner Engineering Corp. Any misuse, abuse, or improper application or installation of this product or use of the product for personal protection applications when the product is identified as not intended for such purposes will void the product warranty. Any modifications to this product without prior express approval by Banner Engineering Corp will void the product warranties. All specifications published in this document are subject to change; Banner reserves the right to modify product specifications or update documentation at any time. Specifications and product information in English supersede that which is provided in any other language. For the most recent version of any documentation, refer to: www.bannerengineering.com.

For patent information, see www.bannerengineering.com/patents.

Banner Engineering Corp. Software Copyright Notice

© Banner Engineering Corp., All Rights Reserved.

https://www.bannerengineering.com/us/en/company/terms-and-conditions.html

Disclaimer of Warranties. This software is provided "AS-IS." To the maximum extent permitted by applicable law, Banner, it affiliates, and its channel partners disclaim all warranties, expressed or implied, including any warranty that the software is fit for a particular purpose, title, merchantability, data loss, non-interference with or non-infringement of any intellectual property rights, or the accuracy, reliability, quality or content in or linked to the services. Banner and its affiliates and channel partners do not warrant that the services are secure, free from bugs, viruses, interruption, errors, theft or destruction. If the exclusions for implied warranties do not apply to you, any implied warranties are limited to 60 days from the date of first use of this software.

Limitation of Liability and Indemnity. Banner, its affiliates and channel partners are not liable for indirect, special, incidental, punitive or consequential damages, damages relating to corruption, security, loss or theft of data, viruses, spyware, loss of business, revenue, profits, or investment, or use of software or hardware that does not meet Banner minimum systems requirements. The above limitations apply even if Banner and its affiliates and channel partners have been advised of the possibility of such damages. This Agreement sets forth the entire liability of Banner, its affiliates and your exclusive remedy with respect to the software use.

LinkedIn

Twitter

Facebook

© 2023. All rights reserved.
www.bannerengineering.com