# Industrial Automation Using E3 I/O<sup>™</sup> Heartbeat Bypass Tech Note 34



#### Abstract

This document provides step-by-step instructions for using the heartbeat bypass bit in Red Lion E3 I/O modules.

#### **Products:**

All Red Lion E3 I/O modules

#### Use Case: Bypassing the E3 Heartbeat

Disabling the heartbeat is useful when testing applications that do not have a heartbeat.

## **Required Software:**

Crimson<sup>®</sup> 3.0 or 3.1

## **Required Firmware:**

Build 700, or higher

## **Required Operating System:**

Microsoft Windows 2000, or above

#### Introduction

There are two primary tasks that must be completed when configuring Crimson to support the E3 I/O Heartbeat Bypass. First, the heartbeat must be enabled and configured within Crimson. Second, the heartbeat bypass must be configured. This document describes how to perform both tasks.

- **NOTE 1**: Crimson support for the E3 I/O Heartbeat Bypass requires Crimson 3.0 or higher and is only available to Windows 2000 or above users. Please update your version of Crimson to the latest; available online at www.redlion.net.
- NOTE 2: This document is not intended to provide comprehensive information on E3 I/O Heartbeat Bypass operation. The E3 I/O Modules Hardware Guide (LP0976) provides detailed E3 I/O module operational information, including configuration settings/options and a list of all digital and analog inputs/outputs. Download the latest version; available online at www.redlion.net.

### **Enable and Configure Heartbeat**

To enable and configure Crimson to support the heartbeat, refer to Figure 1 and perform the following steps:

- 1. Start Crimson and click on *Communications* in the Navigation Pane.
- 2. Click on Watchdog/Heartbeat under Services in the Navigation Pane.
- 3. Set the Heartbeat Timeout option to Enabled.
- 4. Set other configuration options, as needed.

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∛ Modbus UDP =⊕ RS-485 Comms Port	Heartbeat Register Type:	DO ~	
E Services	Heartbeat Register Address:	64	
Web Server	Boot Delay:	25 seconds	- 1
	Timeout:	5 econds	
ÆB en er		Drop Physical Outputs	
→ I/O Channels		Drop First Discrete Output	
Security Manager		Drop Virtual Outputs	~

Figure 1.



## **Configure Heartbeat Bypass**

The Heartbeat Bypass bit is a writable discrete and is part of each E3 I/O module's Discrete Input (DI) status bit set. The Heartbeat Bypass bit's address is DI 41 (Modbus 100041). As shown in Figure 2, a definition for each DI status bit is located on the System - I/O Channels page (accessed via the Navigation Pane: I/O Channels > I/O Channels). While exposed as a Modbus register, DI registers are read only. Therefore, they are only useful for monitoring Heartbeat Bypass status. Bypassing the Heartbeat needs to be done via the E3 I/O module's web interface or via the Crimson user interface.

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<ul> <li>I/O Channels</li> <li>Discrete Input Channels</li> <li>Discrete Output Channels</li> <li>Analog Input Channels</li> <li>Analog Output Channels</li> </ul>	1 - 20 : Discrete Inputs			
	21 - 32 : Free Internal Registers			
	33 : Self Test OK (Read Only)			
	34 : Power 1 OK (Read Only)			
	35 : Power 2 OK (Read Only)			
	36 : I/O Status (Read Only)			
	37 : Link Status 1 (Read Only)			
	38 : Link Status 2 (Read Only)			
	39 : Ring Complete (Read Only)			
	40 : Reserved			
	41 : Heartbeat Bypass			
	42 : Reserved			
HO Channels	43 : Network Overload (Read Only)			
	44 - 48 : Reserved			
Security Manager	49 - 64 : I/O Transfer Status (Read Only)	~		
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#### Figure 2.

To configure the Heartbeat Bypass via an E3 I/O module's web interface, perform the following steps:

- 1. Open a web browser (Chrome, Internet Explorer, Firefox, etc...).
- 2. Enter the E3 I/O module's IP address in the address bar and press Enter.

NOTE: The E3 I/O module's default IP address, as shipped from the factory, is: 192.168.1.21



- 3. Navigate to the Full Access Watch Window tool by clicking Tools > Watch Window > Full Access.
- **4.** Enable Refresh page every 3 seconds.
- 5. Referring to Figure 3, scroll down to DI 41 and specify the desired option:
  - a. Checked: Heartbeat Bypassed.
  - b. Unchecked: Heartbeat Honored.
- **6.** Set other configuration options, as needed.





#### Disclaimer

It is the customer's responsibility to review the advice provided herein and its applicability to the system. Red Lion makes no representation about specific knowledge of the customer's system or the specific performance of the system. Red Lion is not responsible for any damage to equipment or connected systems. The use of this document is at your own risk. Red Lion standard product warranty applies.

#### **Red Lion Technical Support**

If you have any questions or trouble contact Red Lion Technical Support by emailing <u>support@redlion.net</u> or calling 1-877-432-9908.

For more information: http://www.redlion.net/support/policies-statements/warranty-statement

