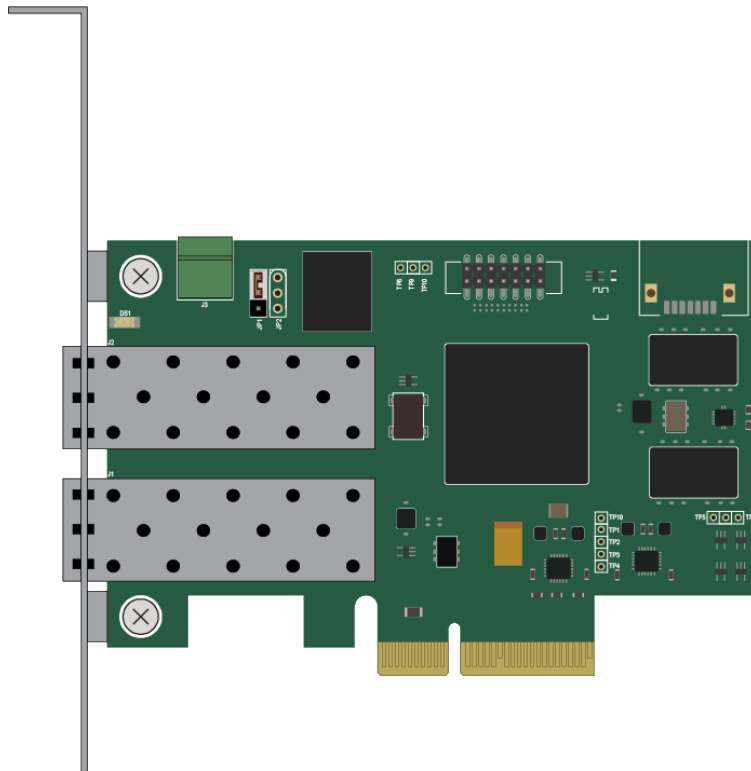


# Automation1 HyperWire Card

## HARDWARE MANUAL

Revision 2.02



## GLOBAL TECHNICAL SUPPORT

Go to the [Global Technical Support Portal](#) for information and support about your Aerotech, Inc. products. The website supplies software, product manuals, Help files, training schedules, and PC-to-PC remote technical support. If necessary, you can complete Product Return (RMA) forms and get information about repairs and spare or replacement parts. To get help immediately, contact a service office or your sales representative. Include your customer order number in your email or have it available before you call.

This manual contains proprietary information and may not be reproduced, disclosed, or used in whole or in part without the express written permission of Aerotech, Inc. Product names mentioned herein are used for identification purposes only and may be trademarks of their respective companies.

Copyright © 2019-2022, Aerotech, Inc., All rights reserved.



**Table of Contents**

<b>Automation1 HyperWire Card</b> .....	<b>1</b>
Table of Contents .....	3
List of Figures .....	4
List of Tables .....	4
EU Declaration of Conformity .....	5
<b>Chapter 1: HyperWire™ Card</b> .....	<b>7</b>
1.1. Installation .....	9
1.2. HyperWire Card Firmware .....	11
1.3. Cables .....	13
1.4. Environmental Specifications .....	14
<b>Appendix A: Warranty and Field Service</b> .....	<b>15</b>
<b>Appendix B: Revision History</b> .....	<b>17</b>
<b>Index</b> .....	<b>19</b>

## List of Figures

Figure 1-1: HyperWire Card Dimensions .....	8
Figure 1-2: Open PCIE Slot .....	9
Figure 1-3: HyperWire Card Installed .....	10
Figure 1-4: Default Position of JP1 .....	11
Figure 1-5: Cable Pull Tab .....	13
Figure 1-6: Cable Dimensions .....	14

## List of Tables

Table 1-1: JP1 Jumper Positions .....	11
Table 1-2: HyperWire Cable Part Numbers .....	13
Table 1-3: Cable Specifications .....	13
Table 1-4: HyperWire Card Environmental Specifications .....	14
Table 1-5: HyperWire Cable Environmental Specifications .....	14

## EU Declaration of Conformity

**Manufacturer** Aerotech, Inc.  
**Address** 101 Zeta Drive  
Pittsburgh, PA 15238-2811  
USA  
**Product** HyperWire Card  
**Model/Types** All


This is to certify that the aforementioned product is in accordance with the applicable requirements of the following directive(s):

2014/35/EU	Low Voltage Directive
2011/65/EU	RoHS 2 Directive
EU 2015/863	Amendment RoHS 3 Directive


and has been designed to be in conformity with the applicable requirements of the following standard(s) when installed and used in accordance with the manufacturer's supplied installation instructions.

EN 61010-1:2010/A1:2016	Safety Requirements for Electrical Equipment
-------------------------	--

**Authorized Representative**

 / Simon Smith, European Director  
Aerotech Ltd  
The Old Brick Kiln, Ramsdell, Tadley  
Hampshire RG26 5PR  
UK

**Engineer Verifying Compliance**

 / Alex Weibel  
Aerotech, Inc.  
101 Zeta Drive  
Pittsburgh, PA 15238-2811  
USA  
2/11/2022

**Date**



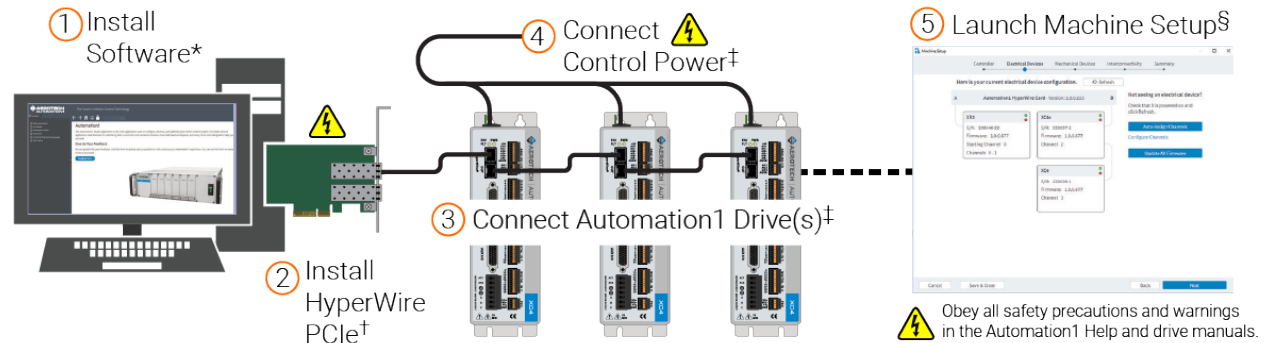
*This page intentionally left blank.*

## Chapter 1: HyperWire™ Card

The HyperWire bus is the high-speed communications connection to the HyperWire Card operating at 2 gigabits per second. The PC sends all command and configuration information through the HyperWire bus.

The driver for the HyperWire™ card is installed with the software. You can install the software before or after you install the HyperWire card. To install a HyperWire card, use the procedure in [Section 1.1..](#)

### Automation1 Software and Automation1 Drives



\* Refer to the Automation1 Help system: Get Started / Software Setup / Install the Software.

† Refer to the Automation1 Help system: Get Started / HyperWire Communication / Install the HyperWire Card.

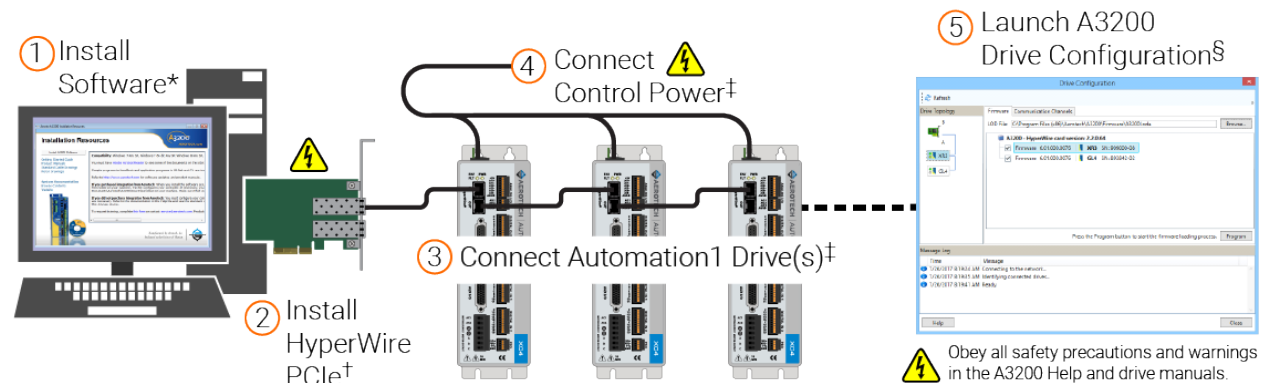
‡ Refer to the hardware manual for your drive.

§ Launch the Automation1 Studio application to access Machine Setup. Use this tool to load drive firmware.

If you want to operate without a HyperWire card:

1. Open Automation1 Studio, select Machine Setup and click Start.
2. Select "Yes" if you are prompted by any dialogs to proceed.
3. During the Controller step of Machine Setup, select "Use Virtual Communication" or "Select Virtual". The option you see depends on if you have previously set up Machine Setup.
4. Click "Save Progress And Close" to save the setting.

### A3200 Software with Automation1 Drives



\* Refer to *Install the Software* in the Getting Started section in the A3200 Help.

† Refer to *Install the FireWire or HyperWire card* in the Get Started section in the A3200 Help.

‡ Refer to the hardware manual for your drive.

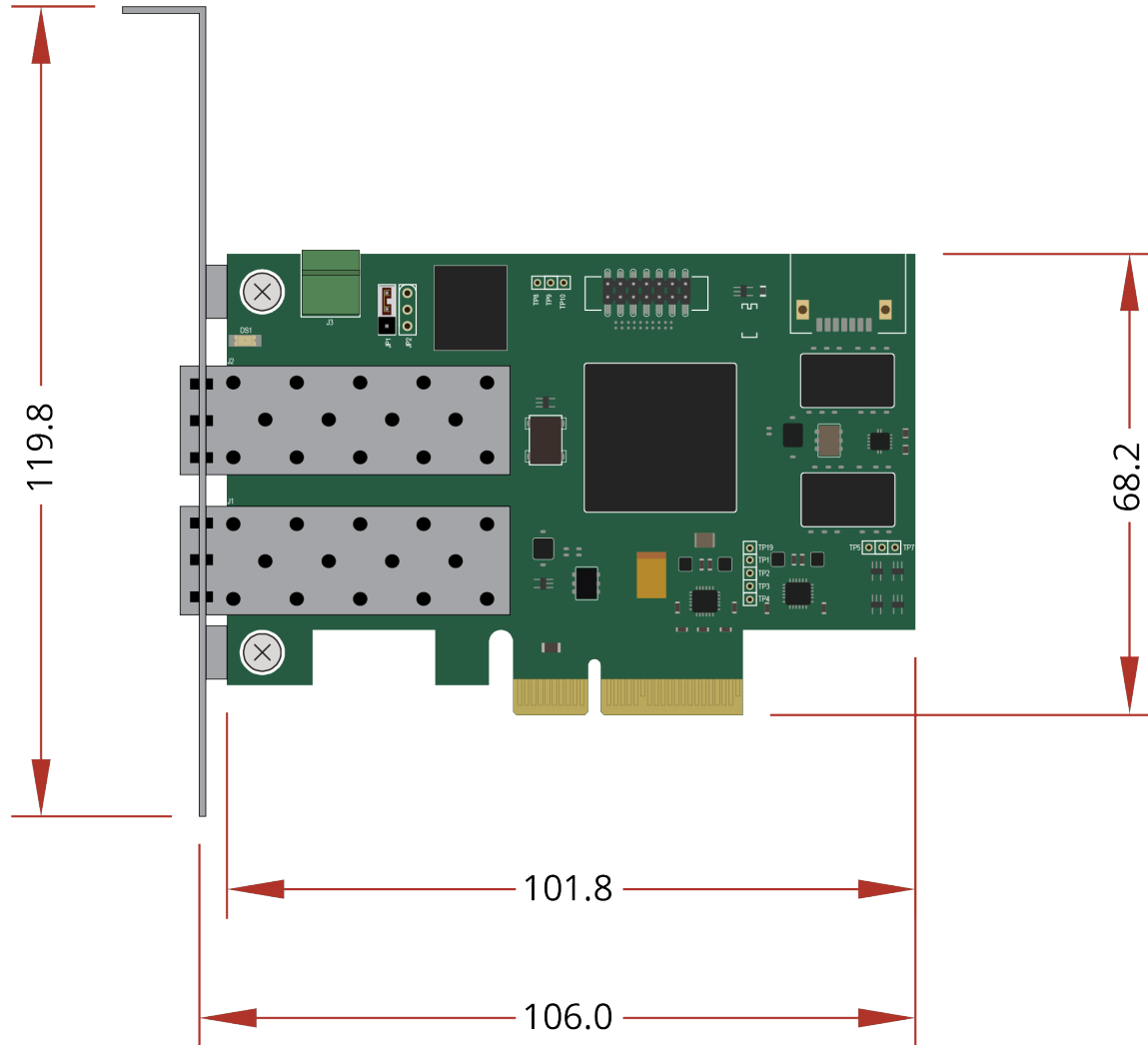
§ Launch the A3200 Configuration Manager to access the Drive Configuration tool.

If you want to operate without a HyperWire card, refer to the **Operation without a FireWire or HyperWire Card** section of FireWire or HyperWire **Card Options** in the Help file.



**IMPORTANT:** All specifications and illustrations are for reference only and were complete and accurate as of the release of this manual. To find the newest information about this product, refer to [www.aerotech.com](http://www.aerotech.com).

**Figure 1-1: HyperWire Card Dimensions**





## 1.1. Installation



**IMPORTANT:** Do not install the HyperWire card in a PCI Express (PCIe) expansion chassis. You must install the card in a PCIe slot, x4 or larger, on the motherboard.

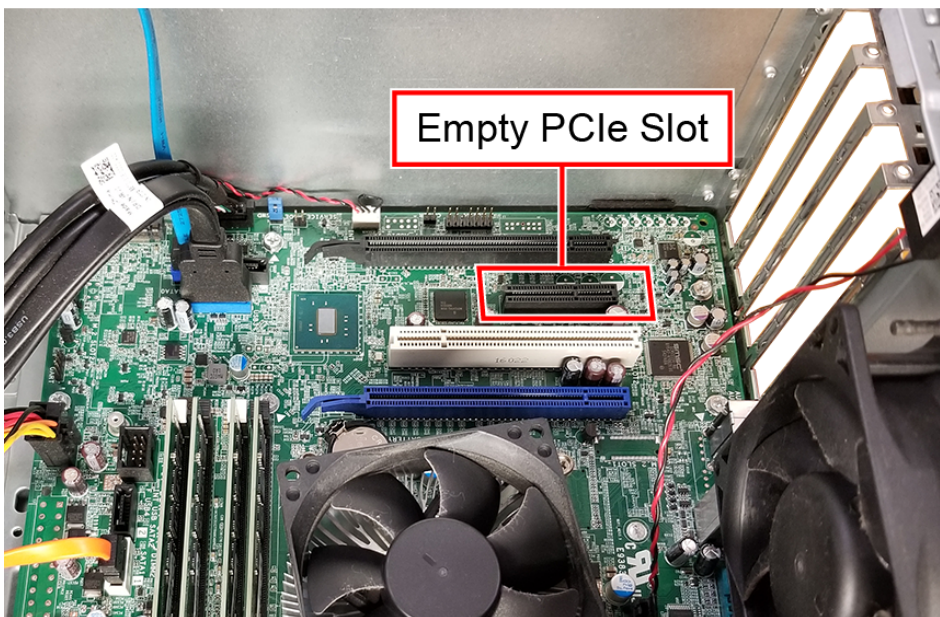


**DANGER:** Risk of Electric Shock. Turn off the power and disconnect the power cord before you open the PC chassis.

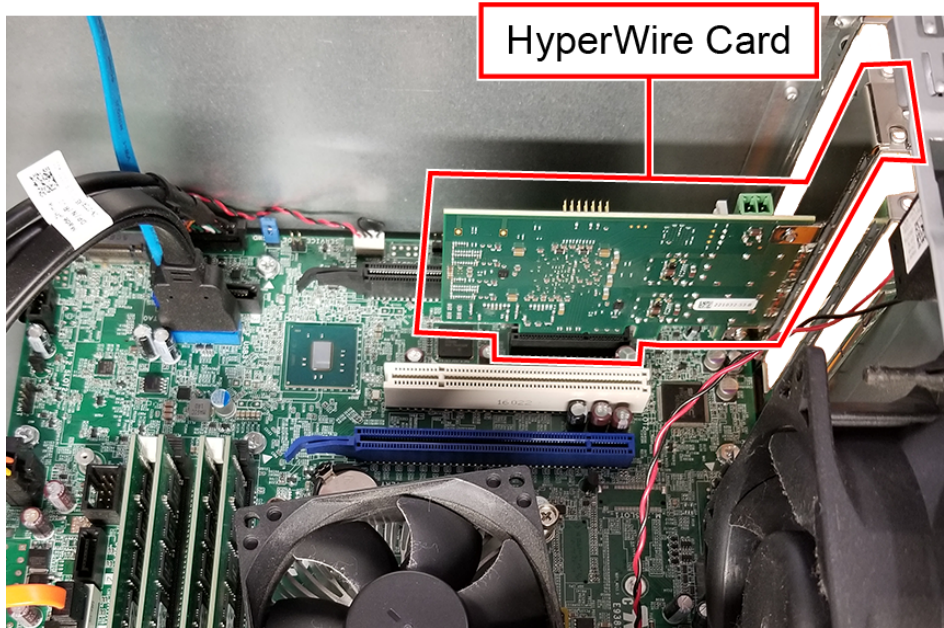
To Install the HyperWire™ Card

1. Power off the computer and disconnect the computer from the power supply.
2. To get access to the motherboard, remove the computer system cover.
3. Find an available PCIe slot, x4 or larger. If necessary, refer to your computer manual for information about available slots.

**Figure 1-2: Open PCIe Slot**



4. Remove the cover of the available slot that you want to use.
5. Carefully push the HyperWire card into the slot.

**Figure 1-3: HyperWire Card Installed**

6. Attach the metal tab on the card to your computer with the method in your computer manual. This is typically a mounting screw.
7. Put the cover on the computer.
8. Connect the computer to the power supply and power on the computer.

## 1.2. HyperWire Card Firmware

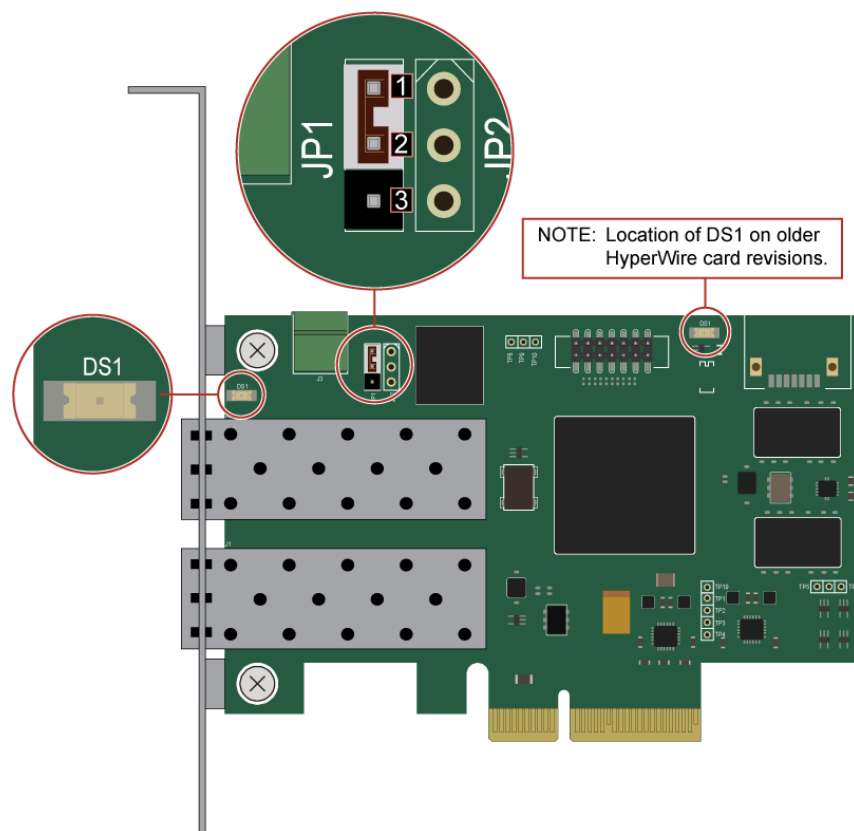
Two firmware images are embedded on the HyperWire card, a **Default** image and a **Recovery** image. The default image is updated each time you update the firmware. The recovery image is the image of the original firmware that was installed at the factory. The position of the JP1 jumper determines the active firmware image on the HyperWire card (Table 1-1). JP1 should remain in the default [1-2] position under most circumstances. The recovery mode should only be used if you think that the default firmware image has become corrupt.

**Table 1-1: JP1 Jumper Positions**

Image	Position	Description
Default	1-2	Firmware updates will overwrite this image.
Recovery	2-3	Use this image to reload the default image. The default image could become corrupt if, for example, power is interrupted during a firmware update.

If you suspect that the default image has become corrupt, use the status LED DS1 on the HyperWire card (Figure 1-4) to determine if the HyperWire card is initialized. The LED should come on and remain illuminated immediately after you turn on the PC. The LED can also flash briefly during a PC restart. If the LED continues to flash or remains off, the default firmware image could be corrupt.

**Figure 1-4: Default Position of JP1**



**How to Restore Corrupt HyperWire Card Firmware:**

**DANGER:** Risk of Electric Shock. Turn off the power and disconnect the power cord before you open the PC chassis.

1. Turn off the power to the computer and disconnect the power cord.
2. Disconnect the HyperWire cable from PC and the drive.
3. Set JP1 on the HyperWire card to the Recovery [2-3] position to configure the card to use the Recovery firmware image. Refer to [Figure 1-4](#) for JP1 location and pin numbers.
  - a. Uninstall the HyperWire card from its motherboard PCIe slot to access the jumper JP1, if necessary.
  - b. Reinstall the HyperWire card after you have configured JP1.
4. Reconnect the power cord and restart the PC.
5. Make sure that DS1 is fully illuminated. Refer to [Figure 1-4](#) for DS1 LED location.
  - The LED can be viewed through the bracket on the back of the PC.
  - For an older revision of the HyperWire board, remove the PC cover to view the DS1 LED.
  - If DS1 fails to illuminate correctly, the HyperWire card could be defective.
6. Use the Drive Configuration dialog in the Configuration Manager to load firmware on to the HyperWire card.
7. Turn the power off to the computer and disconnect the power cord.
8. Set JP1 on the HyperWire card to the Default [1-2] position to configure the card to use the restored Default firmware image.
9. Reconnect the power cord and restart the PC.
10. Make sure that DS1 is fully illuminated.
  - If DS1 fails to illuminate correctly, the HyperWire card could be defective.
11. Reconnect the HyperWire cable and determine whether there is HyperWire communication between the PC and the drive.
  - A HyperWire card configured in Recovery [2-3] mode might not establish HyperWire communication between the PC and the drive.
  - If there is no communication, make certain the JP1 is set to [1-2]

### 1.3. Cables

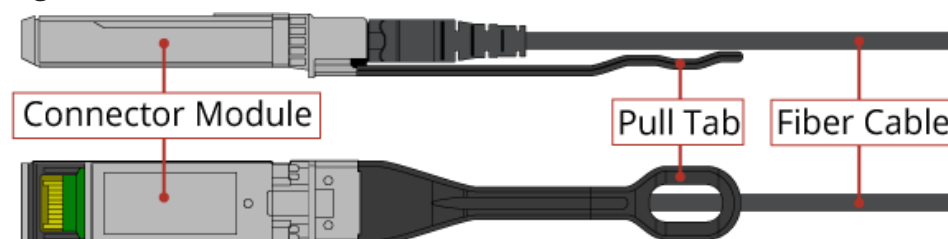
The cables are SFP+ active optical cables. They are designed for use in 10-Gigabit Ethernet links.

**Table 1-2: HyperWire Cable Part Numbers**

Part Number	Description
HYPERWIRE-AO10-5	HyperWire cable, active optical, 0.5 m
HYPERWIRE-AO10-10	HyperWire cable, active optical, 1.0 m
HYPERWIRE-AO10-30	HyperWire cable, active optical, 3.0 m
HYPERWIRE-AO10-50	HyperWire cable, active optical, 5.0 m
HYPERWIRE-AO10-200	HyperWire cable, active optical, 20.0 m

The connector module latches into the connector housing. Release the latch by pulling on the plastic pull tab located near the connector module (Figure 1-5).

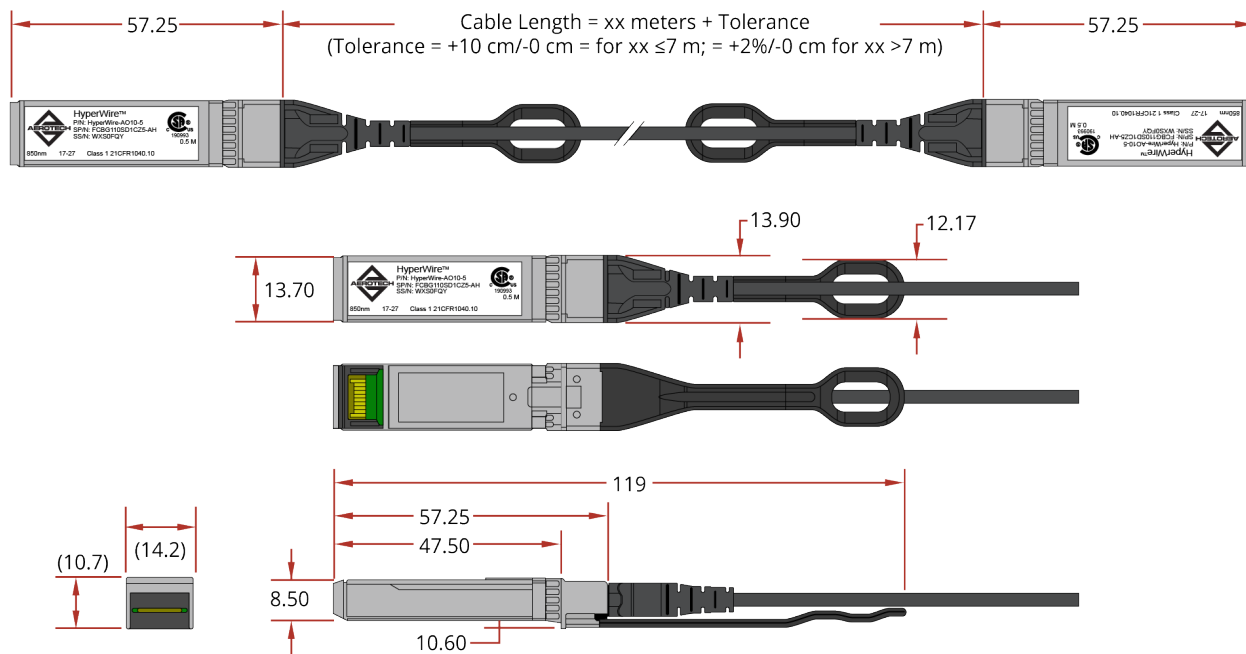
**Figure 1-5: Cable Pull Tab**



**Table 1-3: Cable Specifications**

Specification	Description	
Cable Jacket Material	PVC	
Cable Flammability Rating	Optical Fiber Nonconductive Riser (OFNR)	
Cable Outer Diameter	Minimum	2.8 mm
	Typical	3.0 mm
	Maximum	3.2 mm
Tensile Load	Short Term	200 N
	Long Term	100 N
Crush Resistance	10 N/mm (minimum) [FOTP-41]	
Impact Resistance	0.5 N·m (minimum) [FOTP-25]	
Flexing	300 cycles [FOTP-104]	
Twist Bend	Exceeds FOTP-85 Fiber Optic Cable Twist Test	
Bend Radius	Short Term	25 mm (minimum)
	Long Term	30 mm (minimum)
Durability	100 Cycle Minutes (minimum)	

**Figure 1-6: Cable Dimensions**



## 1.4. Environmental Specifications

**Table 1-4: HyperWire Card Environmental Specifications**

<b>Ambient Temperature</b>	Operating: 0° to 40°C
	Storage: -30° to 85°C
<b>Humidity Non-condensing</b>	The maximum relative humidity is 80% for temperatures that are less than 31°C and decreases linearly to 50% relative humidity at 40°C.
<b>Operating Altitude</b>	0 m to 2,000 m above sea level. If you must operate this product above 2,000 m or below sea level, contact Aerotech, Inc.
<b>Pollution</b>	Pollution Degree 2 Typically only nonconductive pollution occurs.
<b>Operation</b>	Use only indoors

**Table 1-5: HyperWire Cable Environmental Specifications**

<b>Ambient Temperature</b>	Operating: 0° to 70°C
	Storage: -20° to 75°C
<b>Humidity (Non-condensing)</b>	The maximum relative humidity is 85%.

## Appendix A: Warranty and Field Service

Aerotech, Inc. warrants its products to be free from harmful defects caused by faulty materials or poor workmanship for a minimum period of one year from date of shipment from Aerotech. Aerotech's liability is limited to replacing, repairing or issuing credit, at its option, for any products that are returned by the original purchaser during the warranty period. Aerotech makes no warranty that its products are fit for the use or purpose to which they may be put by the buyer, whether or not such use or purpose has been disclosed to Aerotech in specifications or drawings previously or subsequently provided, or whether or not Aerotech's products are specifically designed and/or manufactured for buyer's use or purpose. Aerotech's liability on any claim for loss or damage arising out of the sale, resale, or use of any of its products shall in no event exceed the selling price of the unit.

THE EXPRESS WARRANTY SET FORTH HEREIN IS IN LIEU OF AND EXCLUDES ALL OTHER WARRANTIES, EXPRESSED OR IMPLIED, BY OPERATION OF LAW OR OTHERWISE. IN NO EVENT SHALL AEROTECH BE LIABLE FOR CONSEQUENTIAL OR SPECIAL DAMAGES.

### Return Products Procedure

Claims for shipment damage (evident or concealed) must be filed with the carrier by the buyer. Aerotech must be notified within thirty (30) days of shipment of incorrect material. No product may be returned, whether in warranty or out of warranty, without first obtaining approval from Aerotech. No credit will be given nor repairs made for products returned without such approval. A "Return Materials Authorization (RMA)" number must accompany any returned product(s). The RMA number may be obtained by calling an Aerotech service center or by submitting the appropriate request available on our website ([www.aerotech.com](http://www.aerotech.com)). Products must be returned, prepaid, to an Aerotech service center (no C.O.D. or Collect Freight accepted). The status of any product returned later than thirty (30) days after the issuance of a return authorization number will be subject to review.

Visit [Global Technical Support Portal](#) for the location of your nearest Aerotech Service center.

### Returned Product Warranty Determination

After Aerotech's examination, warranty or out-of-warranty status will be determined. If upon Aerotech's examination a warranted defect exists, then the product(s) will be repaired at no charge and shipped, prepaid, back to the buyer. If the buyer desires an expedited method of return, the product(s) will be shipped collect. Warranty repairs do not extend the original warranty period.

**Fixed Fee Repairs** - Products having fixed-fee pricing will require a valid purchase order or credit card particulars before any service work can begin.

**All Other Repairs** - After Aerotech's evaluation, the buyer shall be notified of the repair cost. At such time the buyer must issue a valid purchase order to cover the cost of the repair and freight, or authorize the product(s) to be shipped back as is, at the buyer's expense. Failure to obtain a purchase order number or approval within thirty (30) days of notification will result in the product(s) being returned as is, at the buyer's expense.

Repair work is warranted for ninety (90) days from date of shipment. Replacement components are warranted for one year from date of shipment.

### Rush Service

At times, the buyer may desire to expedite a repair. Regardless of warranty or out-of-warranty status, the buyer must issue a valid purchase order to cover the added rush service cost. Rush service is subject to Aerotech's approval.

### On-site Warranty Repair

If an Aerotech product cannot be made functional by telephone assistance or by sending and having the customer install replacement parts, and cannot be returned to the Aerotech service center for repair, and if Aerotech determines the problem could be warranty-related, then the following policy applies:

Aerotech will provide an on-site Field Service Representative in a reasonable amount of time, provided that the customer issues a valid purchase order to Aerotech covering all transportation and subsistence costs. For warranty field repairs, the customer will not be charged for the cost of labor and material. If service is rendered at times other than normal work periods, then special rates apply.

If during the on-site repair it is determined the problem is not warranty related, then the terms and conditions stated in the following "On-Site Non-Warranty Repair" section apply.

### On-site Non-Warranty Repair

If any Aerotech product cannot be made functional by telephone assistance or purchased replacement parts, and cannot be returned to the Aerotech service center for repair, then the following field service policy applies:

Aerotech will provide an on-site Field Service Representative in a reasonable amount of time, provided that the customer issues a valid purchase order to Aerotech covering all transportation and subsistence costs and the prevailing labor cost, including travel time, necessary to complete the repair.

### Service Locations

<http://www.aerotech.com/contact-sales.aspx?mapState=showMap>

#### **USA, CANADA, MEXICO**

Aerotech, Inc.  
Global Headquarters

#### **CHINA**

Aerotech China  
Full-Service Subsidiary

#### **GERMANY**

Aerotech Germany  
Full-Service Subsidiary

#### **TAIWAN**

Aerotech Taiwan  
Full-Service Subsidiary

#### **UNITED KINGDOM**

Aerotech United Kingdom  
Full-Service Subsidiary



## Appendix B: Revision History

Revision	Description
2.02	Updated with Automation1 information.
2.01	Updated: <ul style="list-style-type: none"><li>• <a href="#">EU Declaration of Conformity</a></li></ul>
2.00	New Manual

*This page intentionally left blank.*

**Index**

			<b>J</b>	
		JP1		11
	<b>2</b>	Jumper Position		11
2011/65/EU		5	<b>L</b>	
2014/35/EU		5		
		Latch Release		13
	<b>A</b>		<b>O</b>	
Altitude		14		
Ambient Temperature		14	OFNR	13
			Operation	14
	<b>C</b>		<b>P</b>	
Cable Dimensions		14		
Cable Pull Tab		13	PCIE slot	9
Cable Specifications		13	Pollution	14
Cables			Pull Tab	13
HyperWire		13		
	<b>D</b>		<b>R</b>	
			Revision History	17
Declaration of Conformity		5	<b>T</b>	
Default Jumper (JP1) Position		11		
Default Position of JP1		11	Table of Contents	3
Dimensions			<b>U</b>	
Cable		14		
HyperWire Card		8	Use	14
	<b>E</b>		<b>W</b>	
EU 2015/863		5	Warranty and Field Service	15
	<b>F</b>			
FOTP-104		13		
FOTP-25		13		
FOTP-41		13		
FOTP-85		13		
	<b>H</b>			
Humidity		14		
HyperWire				
Cable Part Numbers		13		
HyperWire Card Dimensions		8		

*This page intentionally left blank.*