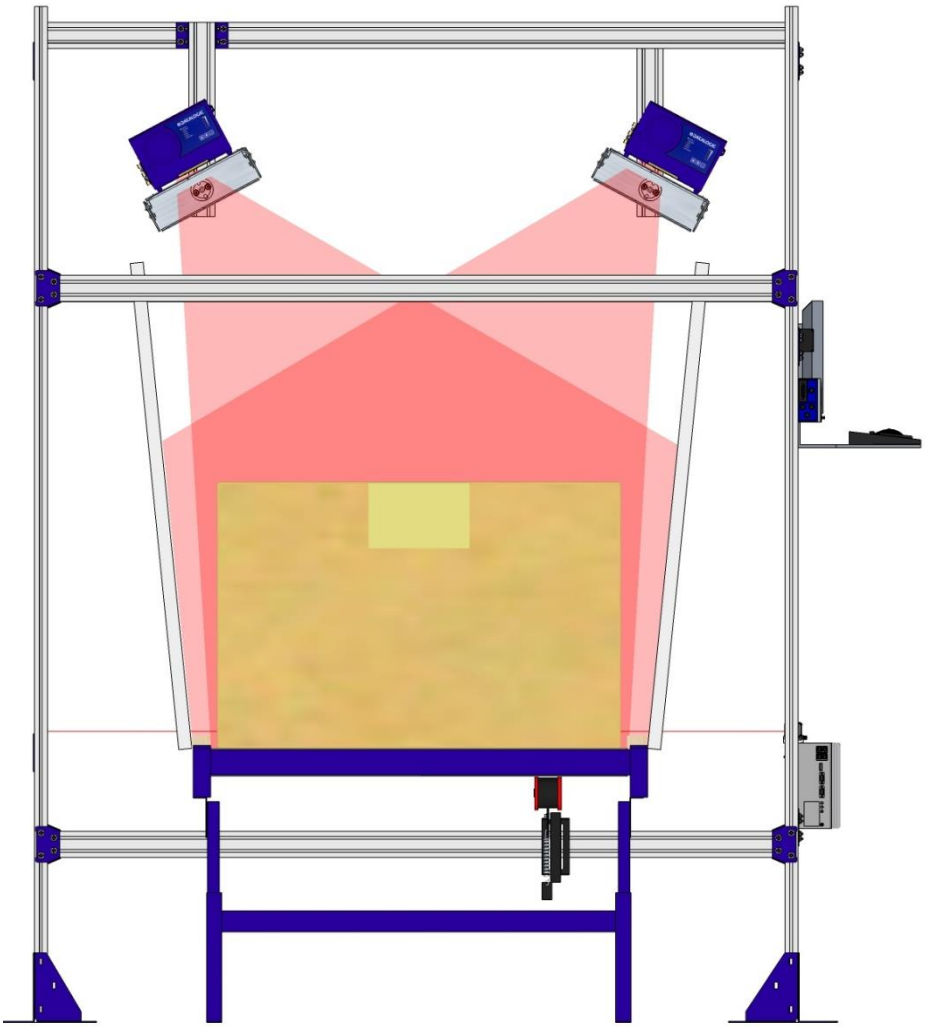
INSTALLATION GUIDE



> DM3610

Two-Head Dimensioning System

Installation and Calibration

DATALOGIC

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Bologna - Italy

DM3610 Reference Manual

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CONTENTS

REFERENCES

REFERENCE DOCUMENTATION

The documentation related to the Two-Head Dimensioning System management is listed below:

- Two-Head Dimensioning System Reference Manual
- DM3610 Dimensioner Reference Manual

SUPPORT THROUGH THE WEBSITE

Datalogic provides several services as well as technical support through its website. Log on to **www.datalogic.com** and click on the **Industrial Automation** links for further information:

- **Products - Industrial Automation - Identification**

  Select your product from the links on the **Identification** page. The product page describes specific Info, Features, Applications, Models, Accessories, and Downloads including documentation.

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  Several links from the **Industrial Automation** list take you to additional services such as: Service Program which contains Maintenance Agreements and Warranty Extensions; Repair Centers; On-Line RMA Return Material Authorizations; Technical Support through email or phone, Partner Program; Downloads for additional downloads.

INSTALLATION GUIDE: TWO-HEAD DIMENSIONING

This installation guide presents the main procedures needed to successfully install a two-head dimensioning system using DM3610 dimensioners and a DC3000 Dimensioning Controller. Detailed information about this system and DM3610 Dimensioners is available in the ***DM3610 Dimensioner Reference Manual*** and the ***Two-Head Dimensioning System Reference Manual*.**

INSTALL THE MOUNTING STRUCTURE

The mounting structure should be installed as defined in the application specific drawings. See *chapter 2 in the Two-Head Dimensioning System Reference Manual* for general structure guidelines.

A typical structure and system components are shown in the diagram below:

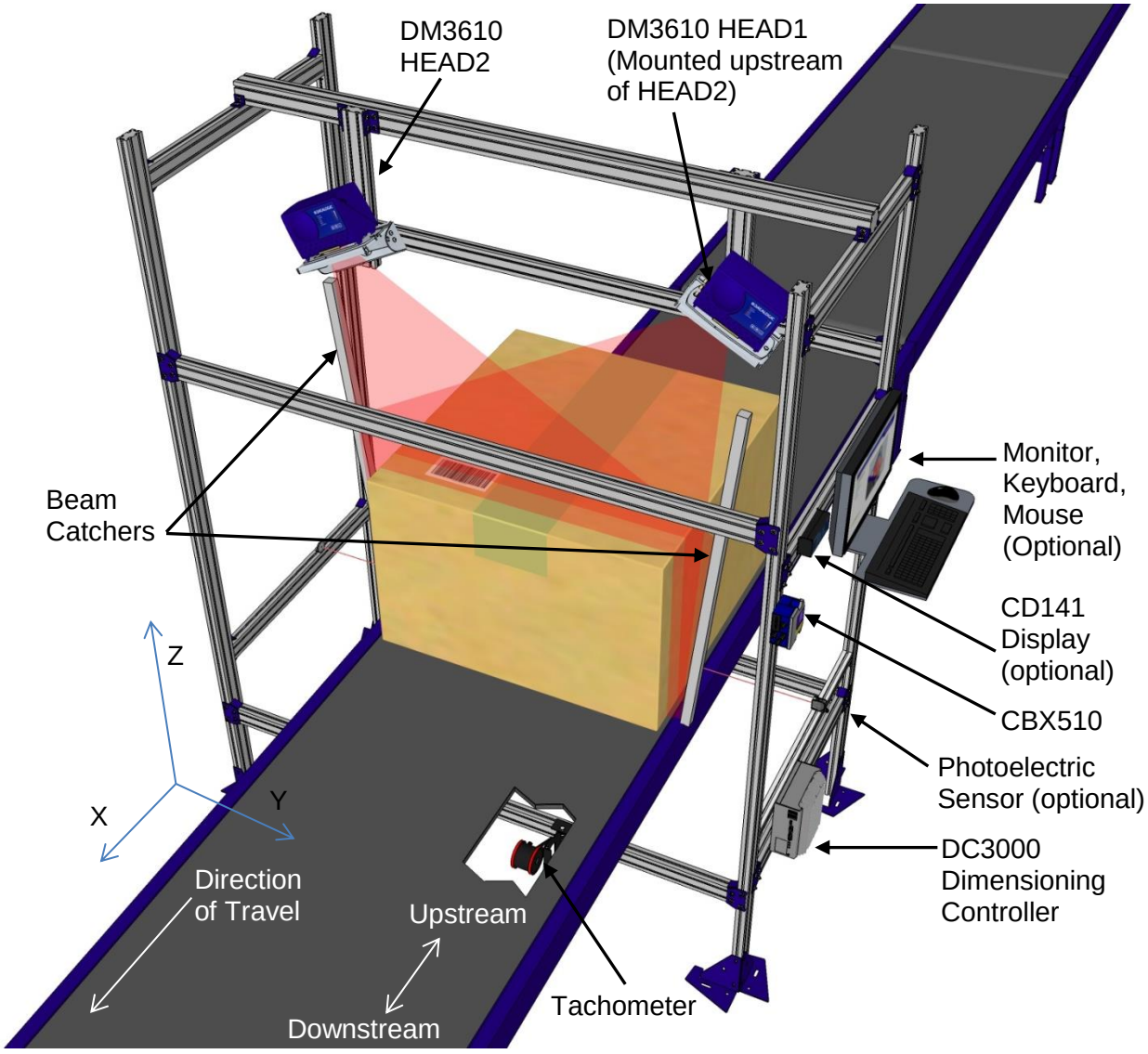


Figure 1: System Overview

MOUNT THE UNIVERSAL MOUNTING BRACKETS (UMB)

1. Position the extrusion to which UMBs will be mounted based on your application drawings.

2. Since applications may vary, the correct mounting position and angle are defined in the application mounting structure drawing. Identify the correct location on the structure and mark the position of the UMB.

1. The UMBs are fastened to the mounting structure with the UMB Mounting Disks, threaded inserts, set screws, and matching nuts. Place the threaded inserts into the mounting extrusion tracks one at a time and secure them at the mounting mark with the set screws provided.

NOTE: The UMB Mounting Disks are designed for installation to the T-slots of both Bosch Rexroth (40 and 45 Series) and 80/20® 1.5in aluminum extrusion.

NOTE: These threaded inserts are what holds the UMB in position, and once tightened down, should not be touched during the alignment process.

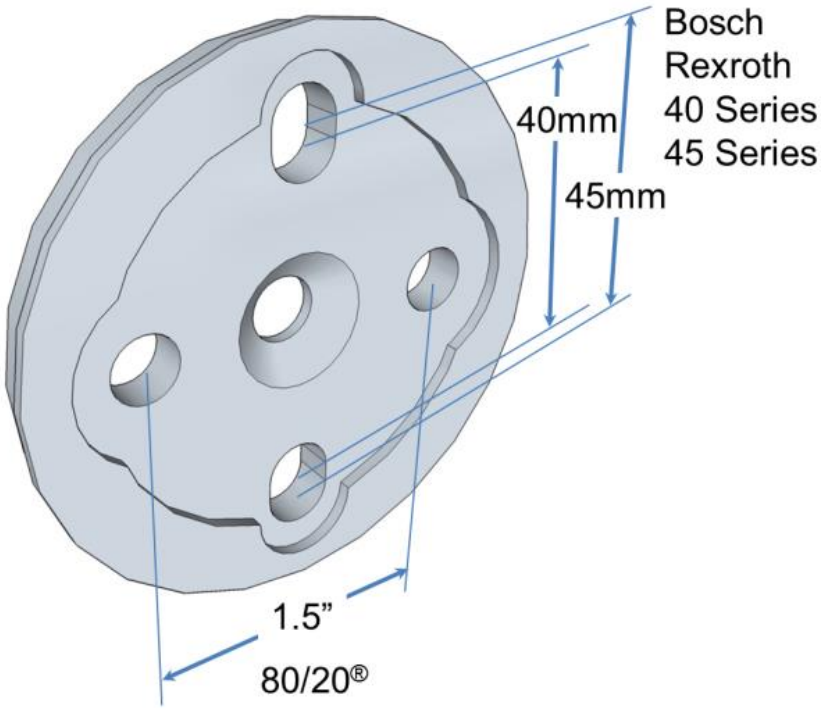


Figure 2: UMB Mounting Disk Versatility

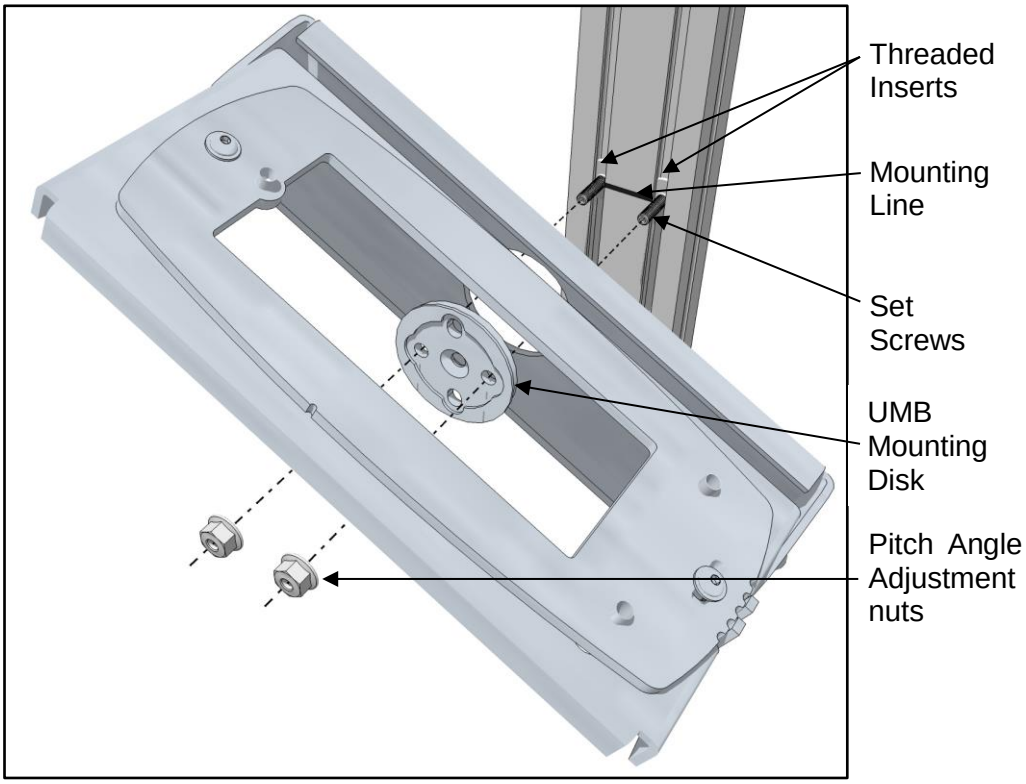


Figure 3: Securing the UMB to the structure

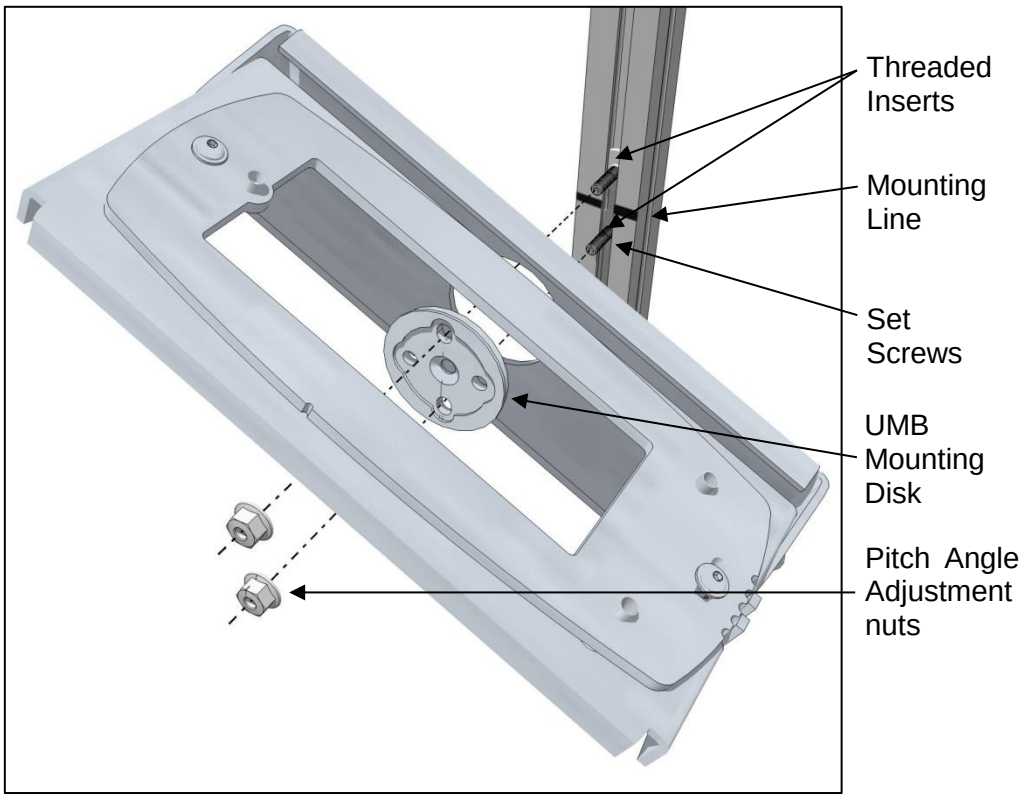


Figure 4: Securing the UMB to the structure (Alternate)

1. Adjust the UMB so that the installation mark is at the center slot of the UMB Mounting Disk, and then secure the mounting disk and bracket with the pitch angle adjustment nuts.

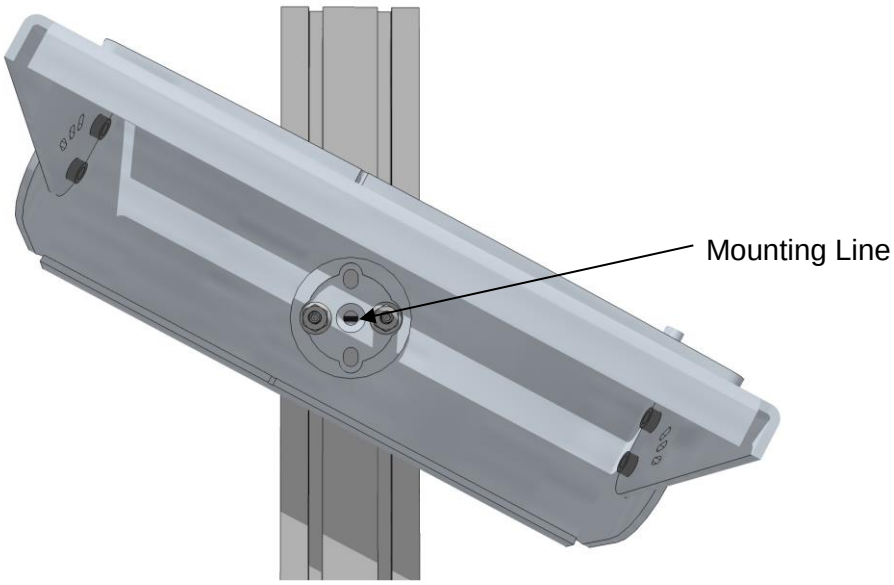


Figure 5: Aligning the UMB with the installation mark

NOTE: DO NOT over-tighten hardware that holds the UMB in-place.

2. Using a digital level (or other angle finding device), adjust the degree of pitch angle of each UMB based on the application drawing for your system. The laser should angle in toward the conveyor. The angle may need to be adjusted based on your application specifications and during the calibration process.

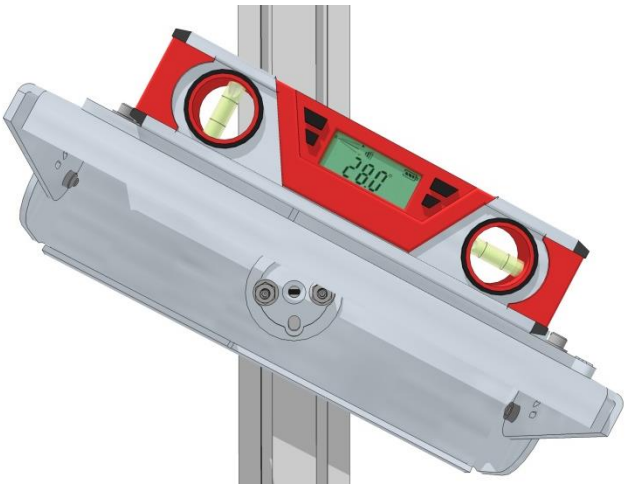


Figure 6: Adjusting the pitch angle

3. Slightly loosen the nuts on the UMB Mounting Disk on the UMB to adjust the pitch angle.

NOTE: Take care to only loosen the nuts and not the two set screws that anchor the UMB to the mounting structure

PRE-CONFIGURE THE DM3610 DIMENSIONERS

When preparing the DM3610 dimensioners for a multi-head dimensioning system, several parameters must be changed, including the default IP address. All DM3610 dimensioners are defaulted to an IP address of 198.168.3.100. Since your multi-head dimensioning system will have more than one dimensioner, the IP addresses must be changed before connecting to the network to avoid IP address conflicts. Each DM3610 must have a unique IP address. Also, in a multi-head system, dimensioners are numbered from left to right. The left most head facing downstream is named **HEAD1** (connected to the CBX510 via a 25-pin connector), followed by **HEAD2**, and etc.

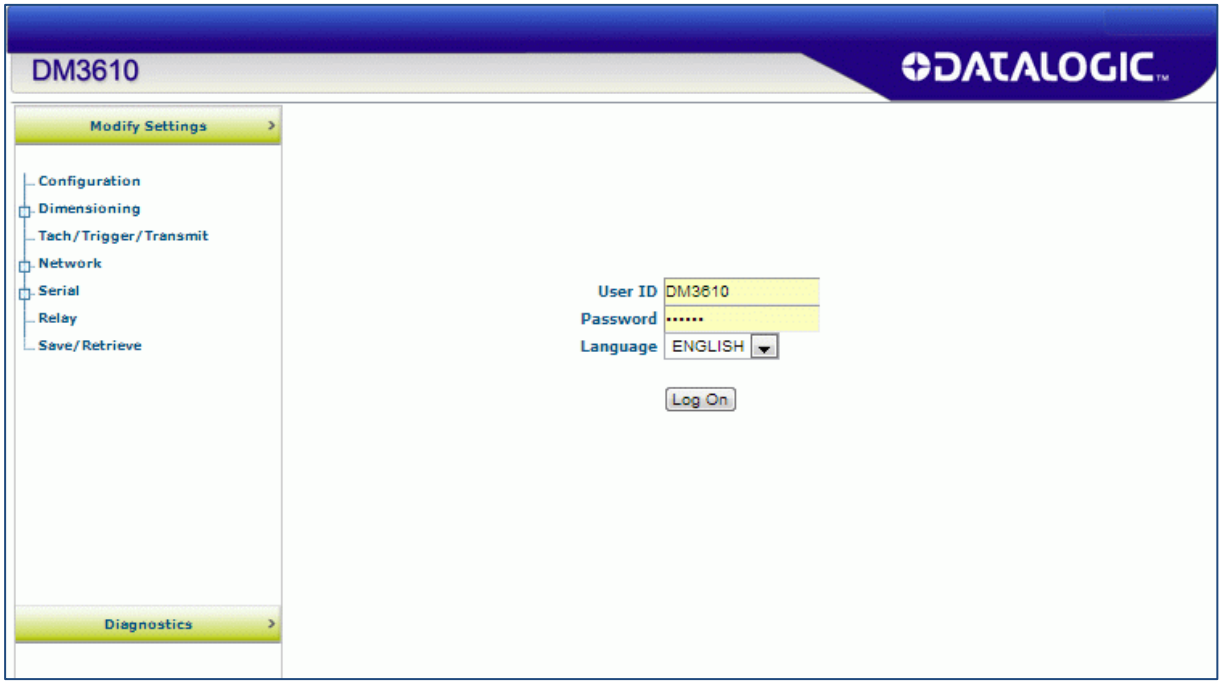
To change the DM3610 parameters (repeat steps below for each system dimensioner):

1. Plug the dimensioners in using the power supplies provided.

   You must configure your PC's IP Address to be in the same network as the DM3610's IP Address (example: 192.168.3.1). Set the Netmask to 255.255.255.0 and the Gateway to 0.0.0.0.

2. Connect your laptop computer to the DM3610 HOST port using either the CAB-ETH-M0x M12-IP67 ETHERNET CABLE or CBL-1534-0.2 ADAPT.CABLE ETH M12-TO-RJ45F.

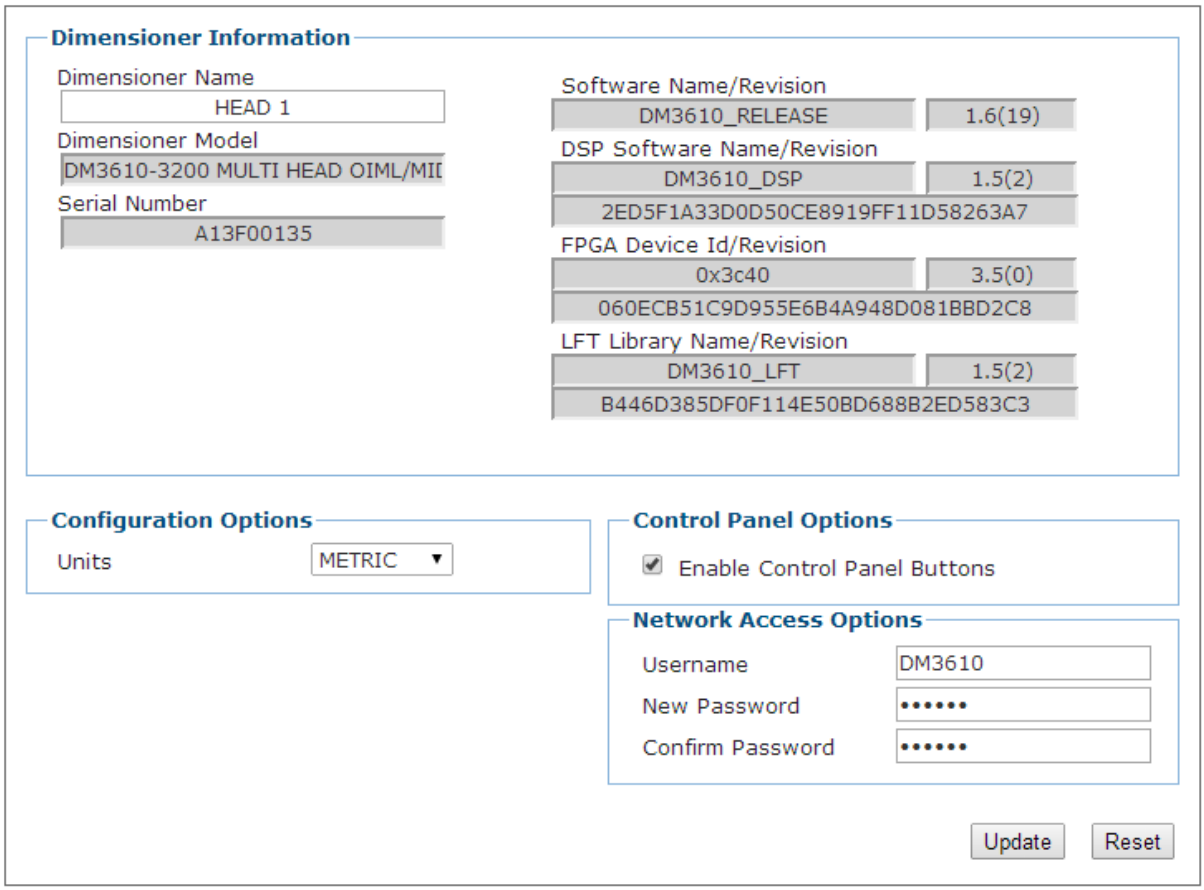
3. Open a browser on the laptop computer, and type in the default IP address of 198.168.3.100. The **DM3610 User Interface** opens in the browser window.



NOTE: Details on using the DM3610 User Interface are available in the ***DM3610 Dimensioner Reference Manual***, *Chapter 4*.

4. Log on to the user interface. The default **User ID** is DM3610, and default **Password** is DM3610.

5. From the menu tree under **Modify Settings,** select **Configuration.** The **Configuration** window opens.



6. Confirm the following items:

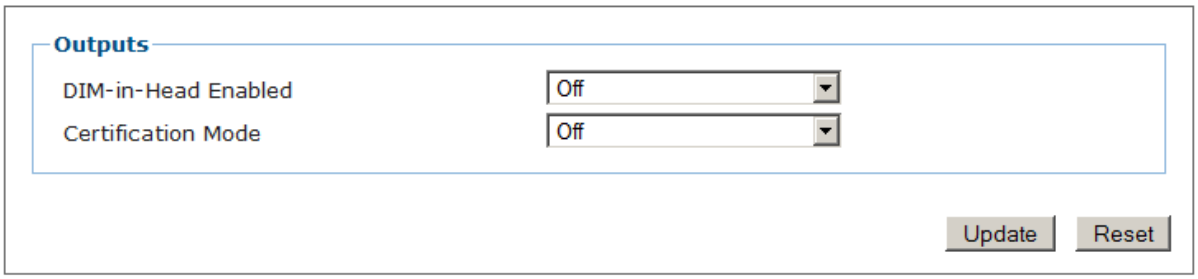
   - Dimensioner Model should be **DM3610-3*x*00 MULTI HEAD.** If it is not, contact Datalogic (www.datlogic.com).

   - Software revision should be **1.6(19)** or GREATER.

7. Enter a unique name for the dimensioner in the **Dimensioner Name** field. The master DM3610 should be named "**HEAD1**" (this dimensioner will be mounted to the left looking downstream and connected to the CBX510 via a 25-pin connector), the next DM3610 "**HEAD2**," and etc.

8. Click **Update**.

9. From the menu tree under **Modify Settings,** select **Dimensioning | Settings.** The **Dimensioning | Settings** window opens.



10. Make sure **DIM-in-Head Enabled** is set to **Off,** and **Certification Mode** is set to **Off.**

IMPORTANT: You must turn Certification Mode back on after calibration is completed if this is a Legal-for-Trade system

11. Click **Update.**

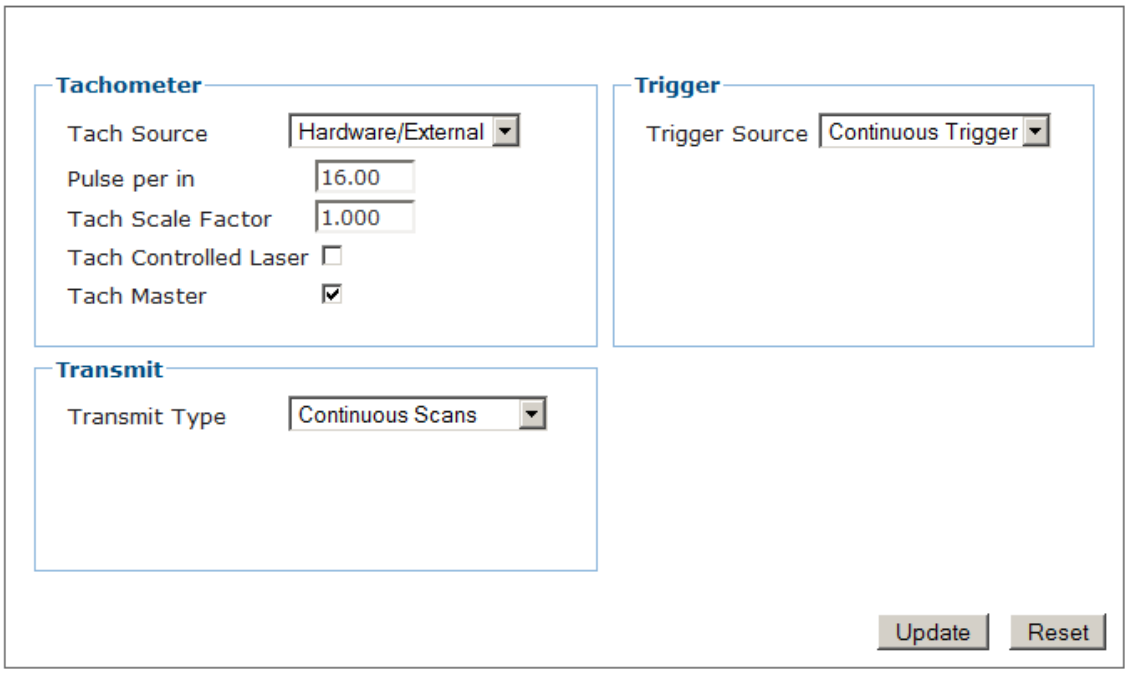
12. In the tree menu under **Modify Settings**, select **Tach/Trigger/Transmit**. The **Tach/Trigger/Transmit** window opens.

13. Set the **Tach Source** to **Hardware/External**.

14. Set the **Pulses per** in [cm] to match the application tachometer setting.

15. Set the **Trigger Source** to **Continuous Trigger**.

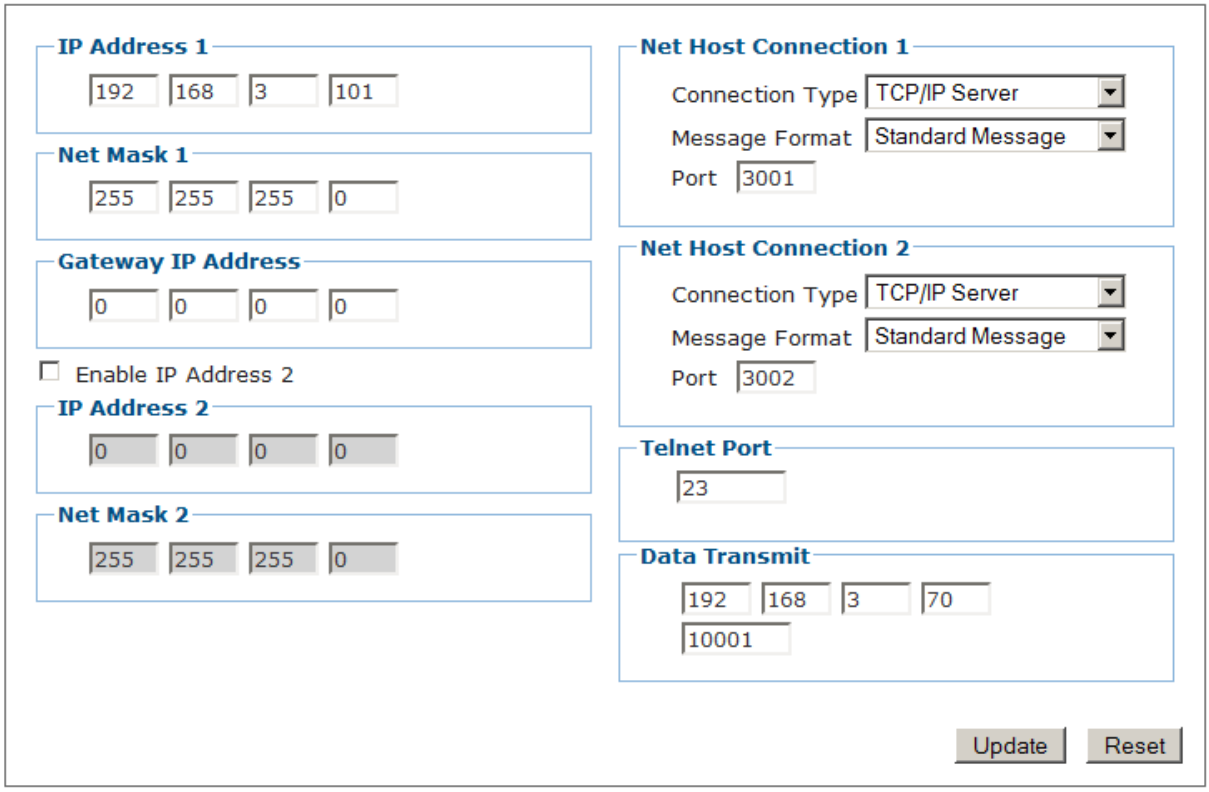
16. Set the **Transmit Type** to **Continuous Scans**.



17. **(FOR HEAD1 ONLY)** Select the **Tach Master** check box to make this DM3610 the system master dimensioner (HEAD1 is the dimensioner connected to the CBX510 via a 25-pin connector).

18. Click **Update**.

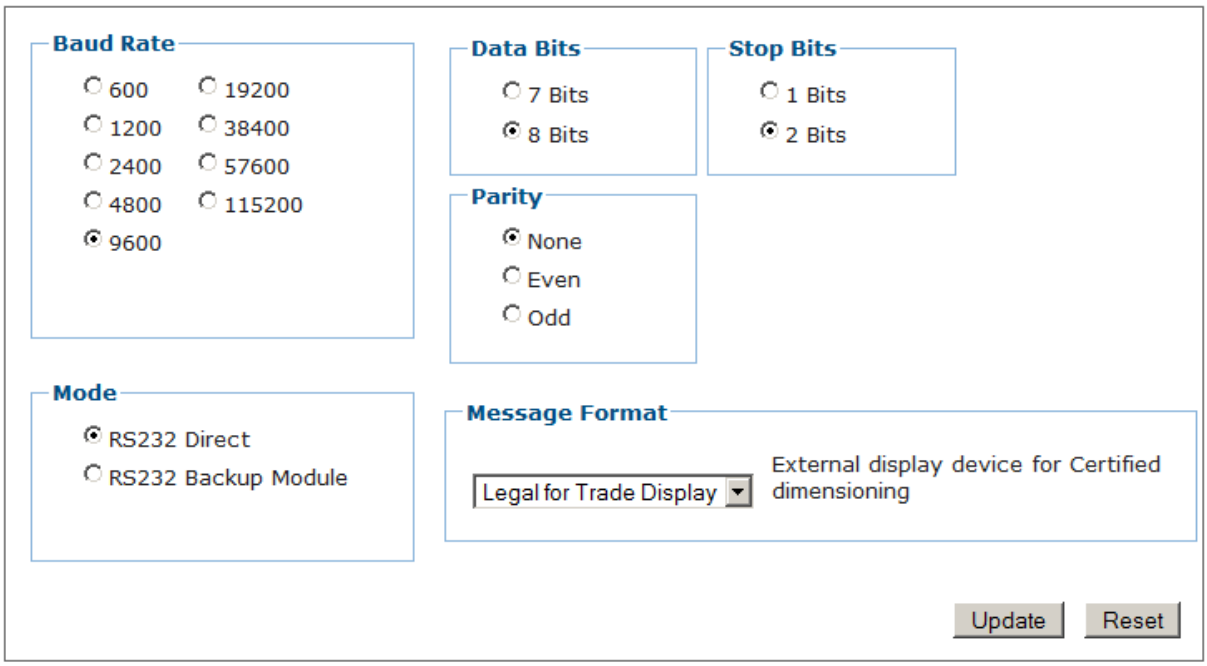
19. In the tree menu under **Modify Settings**, select **Network | Settings**. The **Network Settings** window opens.



20. Adjust the parameters for each head as shown in the table below. Click **Update** to save the parameters.

Dimensioner Name	**HEAD1**	**HEAD2**
IP Address 1	192.168.3.101	192.168.3.102
Net Mask 1	255.255.255.0	255.255.255.0
Data Transmit IP Address	192.168.3.70	192.168.3.70
Data Transmit Port	10001	10002
Tach Master Checkbox (Tach sync source)	HEAD1 is always the master, and this selection is found in **Modify Settings	Tach/Trigger/Transmit.**	

21. In the tree menu under **Modify Settings**, select **Serial | Port 1.** The **Serial | Port 1** window opens.

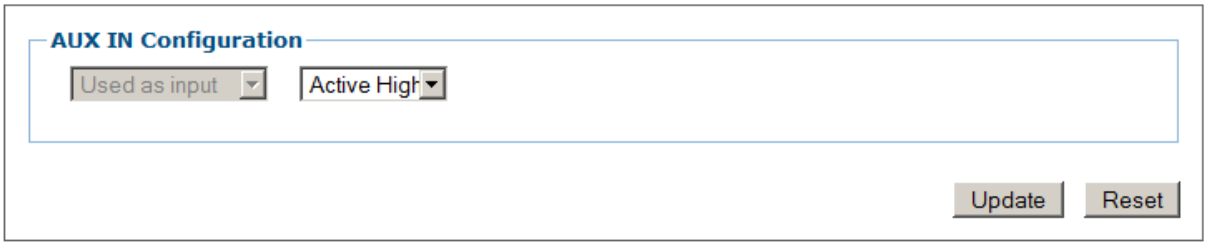


22. Under **Mode**, select **RS232 Direct**.

23. Under **Message Format,** select the **Legal for Trade Display** from the drop-down list**.**

24. Click **Update**.

25. In the tree menu under **Modify Settings**, select Relay. The **Relay** window opens.



26. From the drop-down list, select **Active High** or **Active Low** to match the polarity of your hardware trigger (Photoelectric Sensor) if the system uses one.

27. Click **Update**.

28. Power down the DM3610. **Repeat the previous configuration steps for each dimensioner in the system.**

INSTALL THE DIMENSIONING SYSTEM EQUIPMENT

Install the DM3610 Dimensioners

When each of the DM3610 dimensioners in the system has been configured, mount the dimensioners to the **UMB Mounting Plate** of their **UMB**. Start by mounting HEAD1 on the Left (looking downstream), and then mount the next dimensioner to the right.

1. Set the DM3610 dimensioners on top of each UMB assembly, placing the feet of the DM3610s over the positioning posts on the UMB Mounting Plate.

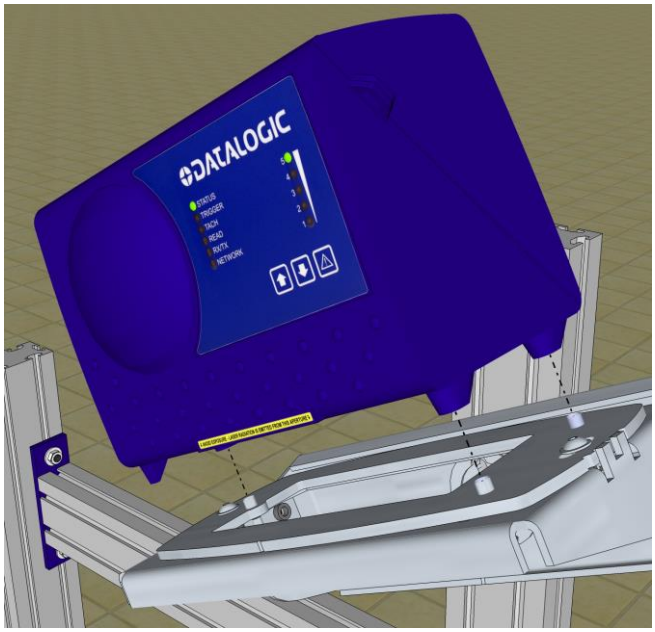


Figure 7: Placing the DM3610 on the positioning posts of the UMB Mounting Plate

2. Secure the DM3610 with the three mounting screws provided. The mounting screws pass through the positioning posts and into the feet of the DM3610.

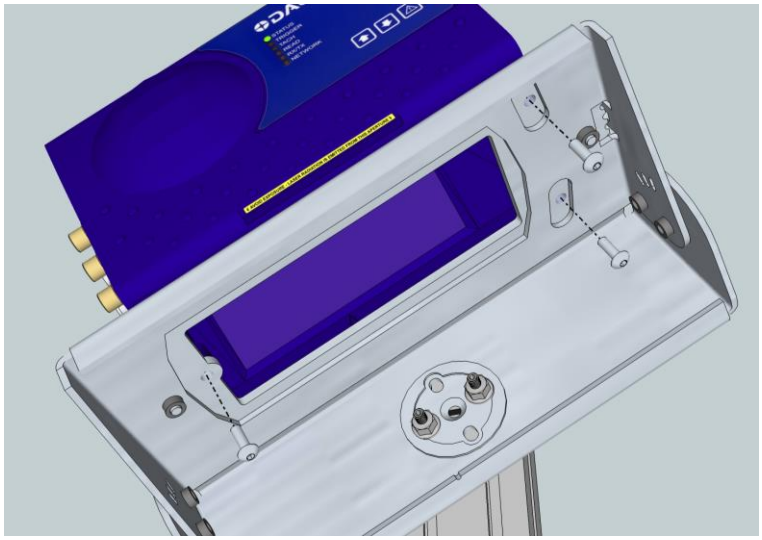


Figure 8: Securing the DM3610

Install the DC3000 Dimensioning Controller

Mount the Controller firmly to the mounting structure with T-bolts provided.

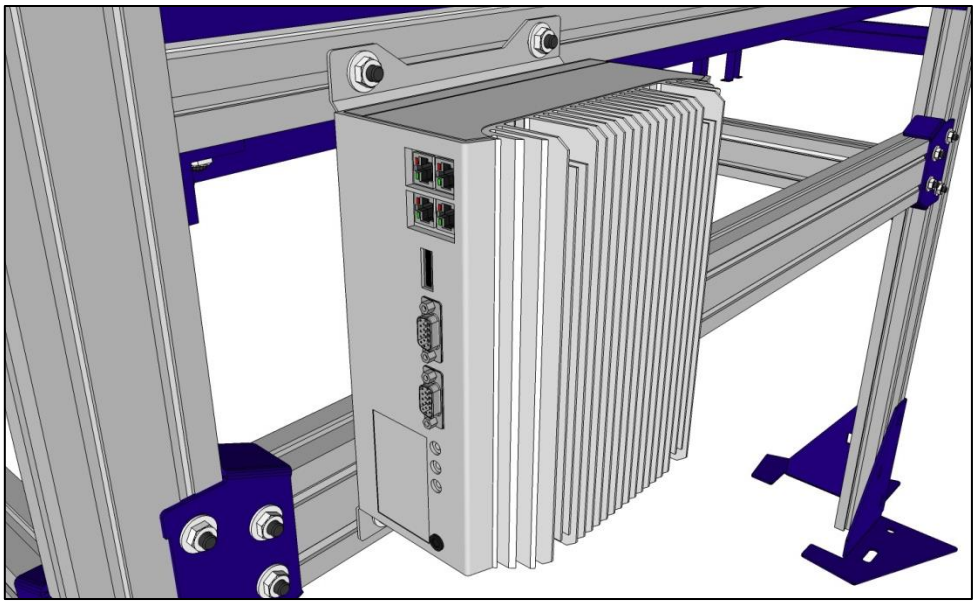


Figure 9: Mounting the DC3000 Dimensioning Controller

Install the CBX Connection Box

Mount the CBX510 to the mounting structure in a location to facilitate easy access to wiring. Secure the CBX510 with the bolts and drop-in T-nuts provided.

When mounting CBX510 to a fixed surface, the stencil include in the package can be used to drill the appropriate mounting holes.

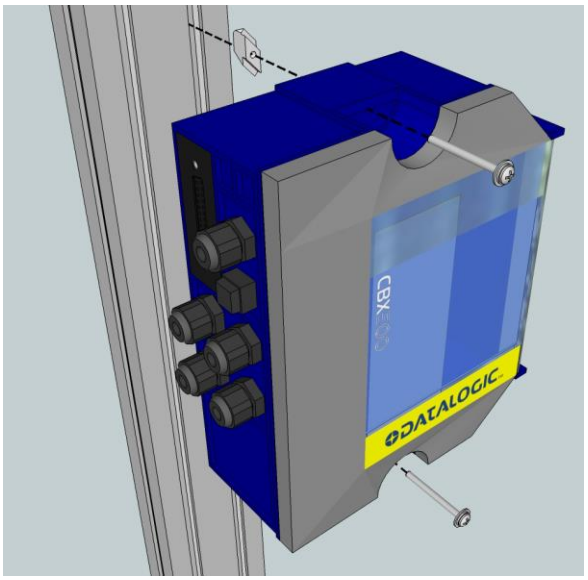


Figure 10: Mounting the CBX Connection Box

Install the Datalogic Photoelectric Sensor

1. Mount the photoelectric sensor so it is perfectly perpendicular to the conveyor and 50 to 150mm [2 to 6 inches] upstream from the nearest DM3610 laser line.

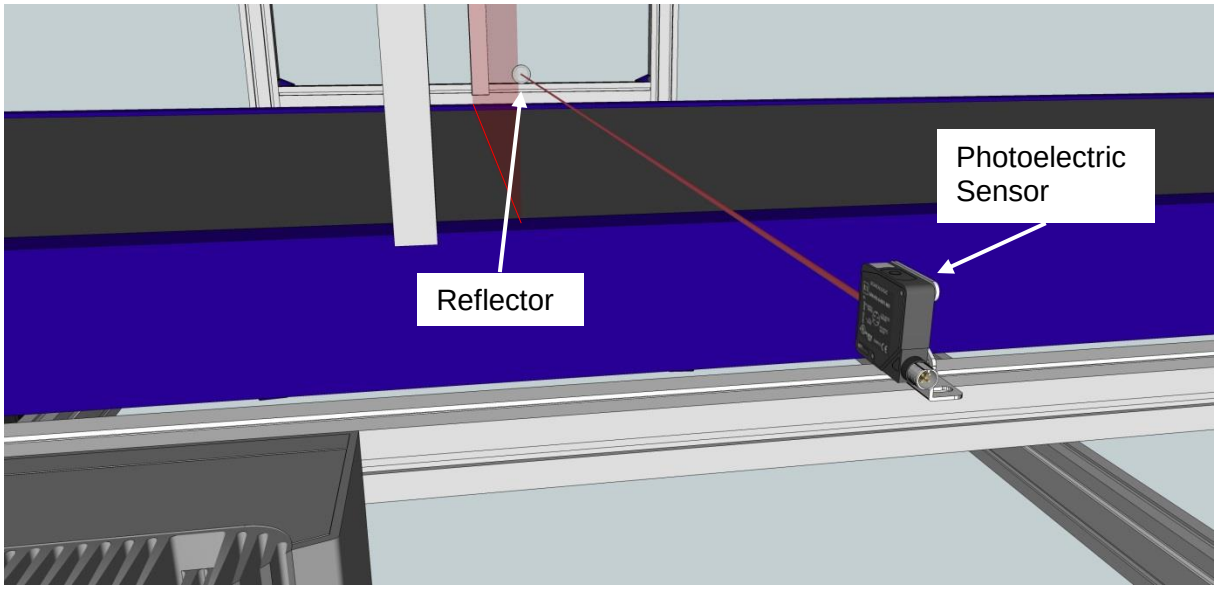


Figure 11: Mounting the Photoelectric Sensor

2. Mount the reflector on the conveyor side opposite that of the photoelectric sensor.

Install the Tachometer

Follow the guidelines below as closely as possible:

- Mount tachometer on the conveyor section where dimensioning is performed.
- Mount tachometer on the underside of the conveyor, away from areas where the conveyor bows downward. A good place to mount the tachometer is on one end of the conveyor, close to the drive shaft.
- Make sure tachometer assembly angles in the same direction that the underside of the conveyor travels.
- The tachometer must make good contact with the conveyor.
- If used, the anti-static brush provided with the tachometer must be installed to assure proper operation.
- Use the tachometer mounting kit to make tachometer mounting and setup easier.

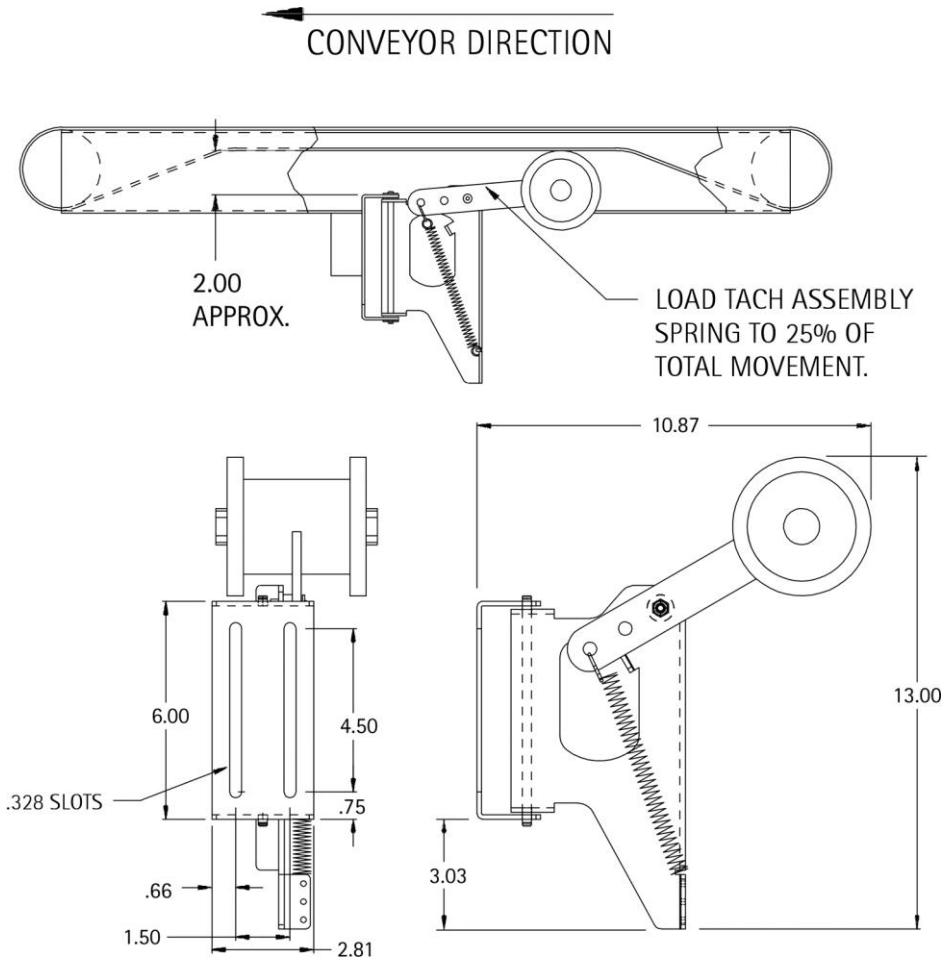


Figure 12: Tachometer Mounting Kit Installation

Install the Power Supplies

Mount the DM3610 power supplies in appropriate locations on the structure where their DC cables can reach the intended DM3610. Secure the power supplies to the mounting structure using the supplied hex screws and drop-in T-nuts as shown below.

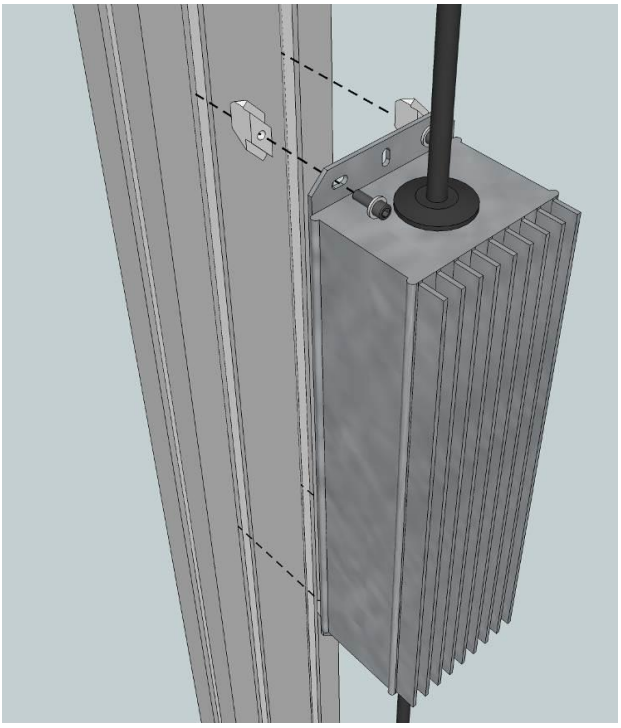


Figure 13: Securing the power supply to the mounting structure.

Install the CD141 Display (optional)

Mount the 40-character display to a structure crosspiece with the hardware provided. Be sure to mount the display where it will be easily readable.

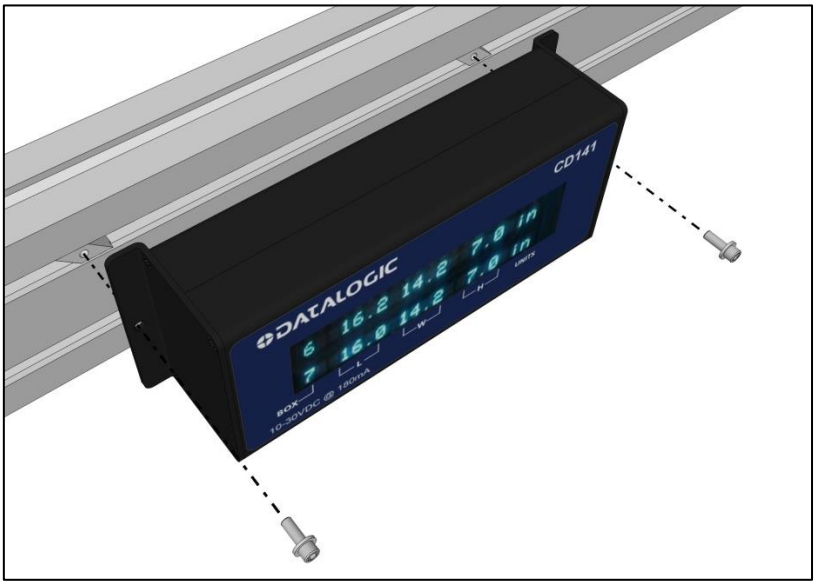


Figure 14: Securing the CD141

INSTALL AND TERMINATE THE SYSTEM CABLING

CAUTION: While performing wiring connection procedures, be sure to follow standard safety procedures. No power should be applied to any device until all wiring is completed and checked for accuracy.

IMPORTANT: Socket-outlet must be installed near the DM3610. The outlet must be a readily accessible disconnect device.

The CBX510 connection box provides flexible connectivity to a range of I/O devices as well as serial hosting. The Master DM3610 (HEAD1) connects to the CBX510 via its I/O port using a single 17-pin M12 to 25-pin D cable.

The following block diagrams show interconnections for 2-head dimensioning system.

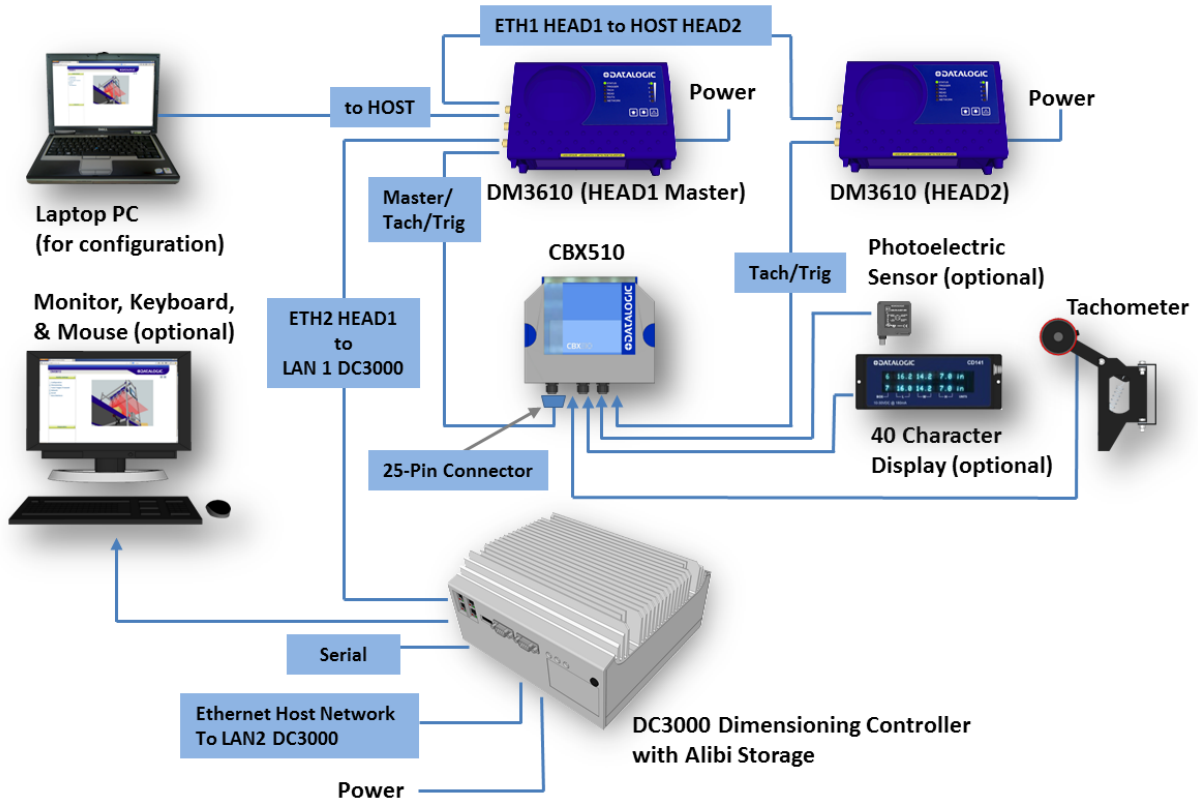


Figure 15: Wiring Block Diagram

The system requires a CBX510 Connection Box and DC3000 Dimensioning Controller. The CBX510 provides easy wiring to tachometer and triggers, while the DC3000 provides connections to the Host network. The DC3000 Dimensioning Controller also includes the User Interface and backup/Alibi storage.

Wire your system based on its Application Specifications, the Wiring Block Diagram shown above and the detailed information provided in the **Two-Head Dimensioning System Reference Manual.**

Connect all system internal communication cabling for the two-head *system (see Figure 15: Wiring Block Diagram),* including:

- System internal communications and power supply connections to the DM3610

Figure 16: Connections to the DM3610 Connector Panel

- Ethernet connection to the DC3000 Dimensioning Controller
    - Serial communication (if used)
- Connections to the CBX510 connection box
    - Connections to a photoelectric sensor
    - Connections to a tachometer
    - Connections to a remote display

After the system internal cabling has been connected, connect the power supply cables to the DM3610s, and then attach the power supply to a power source.

ADJUST THE TILT AND SKEW OF THE DM3610 DIMENSIONERS

Adjust the Tilt

1. With the DM3610 dimensioners powered up and the lasers active, set the largest test box *(see **Calibration Kit** in Two-Head Dimensioning Reference Manual, chapter 1, Introduction)* perpendicular to the conveyor with its edge even with the edge of the conveyor.

2. While keeping the test box aligned with the conveyor, adjust its position until the laser is just touching the edge of the box. The goal is to adjust the alignment of the DM3610 until the laser is parallel to the edge of the test box.

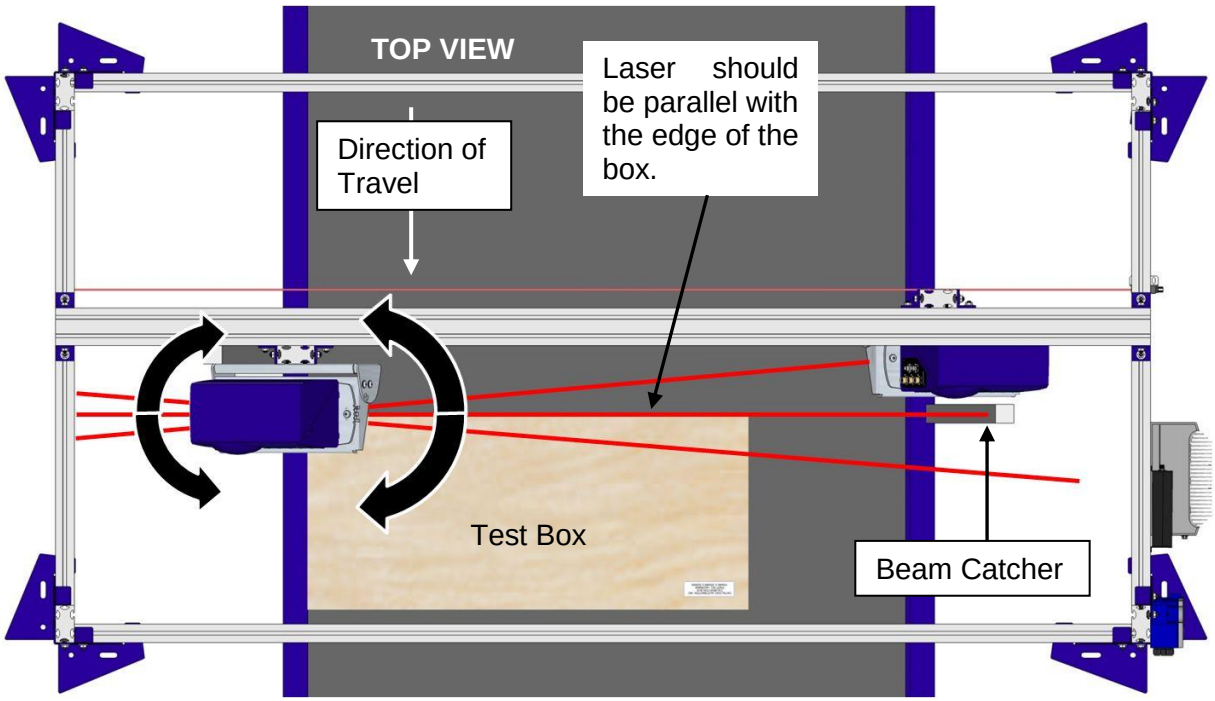


Figure 17: Adjusting the Tilt

3. To adjust the laser tilt, loosen the screws securing the UMB Mounting Plate to the UMB and using a flathead screwdriver carefully pry the plate back and forth until the laser is exactly parallel to the edge of the test box. When adjusted correctly, tighten the UMB Mounting Play screws.

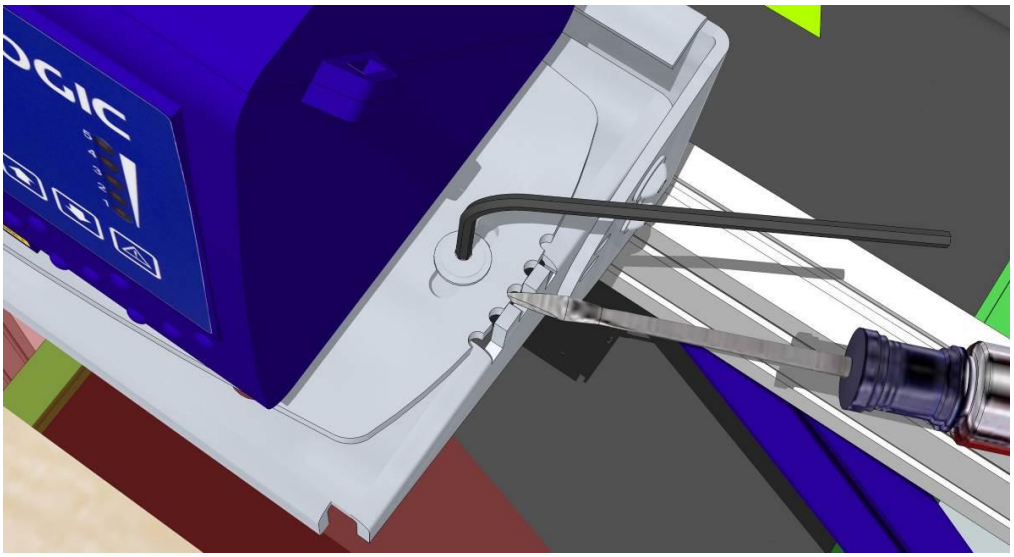


Figure 18: Adjusting UMB Mounting Plate with a Screwdriver

Adjust the Skew

To adjust the laser skew, loosen the screws securing the front of each UMB to its back and use a flathead screwdriver to carefully pry the front of the UMB up and down using the adjustment slots until the laser is exactly 90° to the conveyor. Again, use the edge of the box as a guide. When adjusted correctly, tighten the UMB screws. Repeat this process for each dimensioning head.

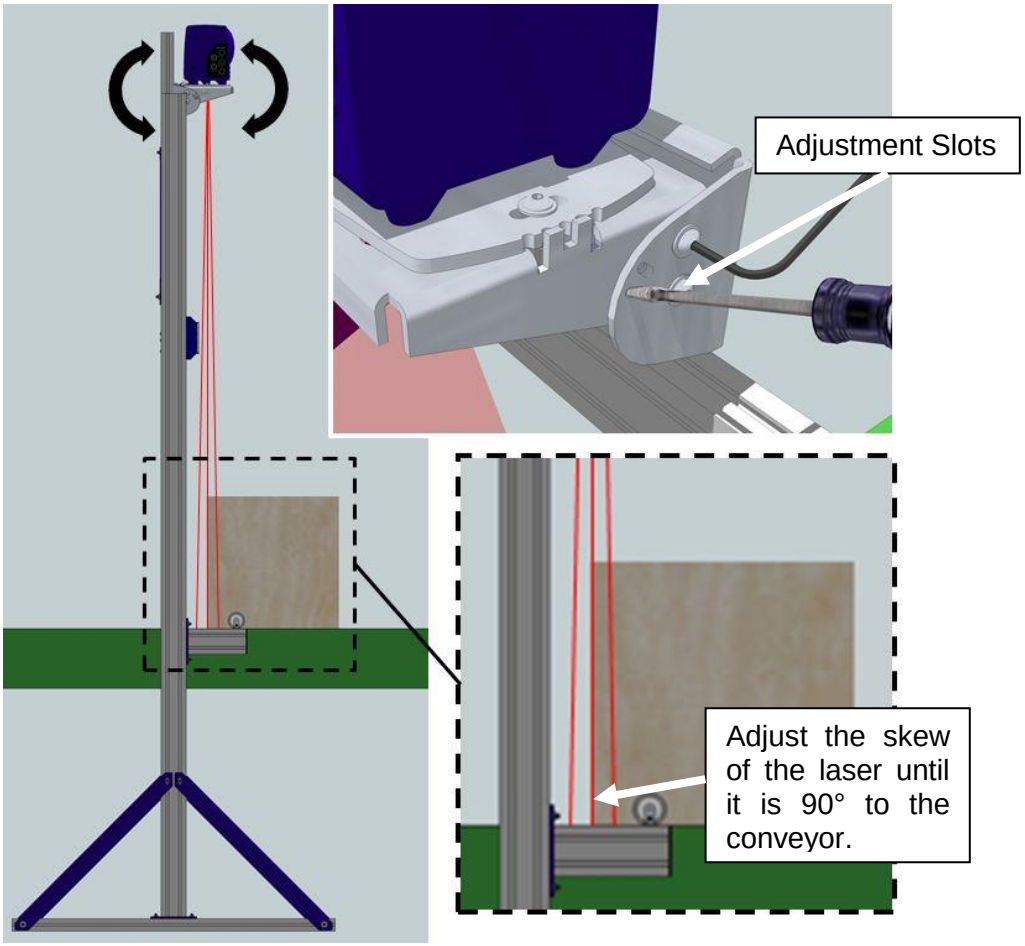


Figure 19: Adjusting the Skew

ELECTRONICALLY ALIGN THE SYSTEM LASERS

Adjusting the Field of View and Angle Offset for Each Dimensioner (DM3610 User Interface)

The field of view (FOV) and angle offset of *each* DM3610 dimensioner must be adjusted manually using the **DM3610 User Interface** to cover its portion of the dimensioning area over the conveyor. Perform the following adjustments for ***each*** DM3610:

1. Configure your laptop PC's IP Address to be in the same network as the DM3610's IP Address (example: 192.168.3.1)

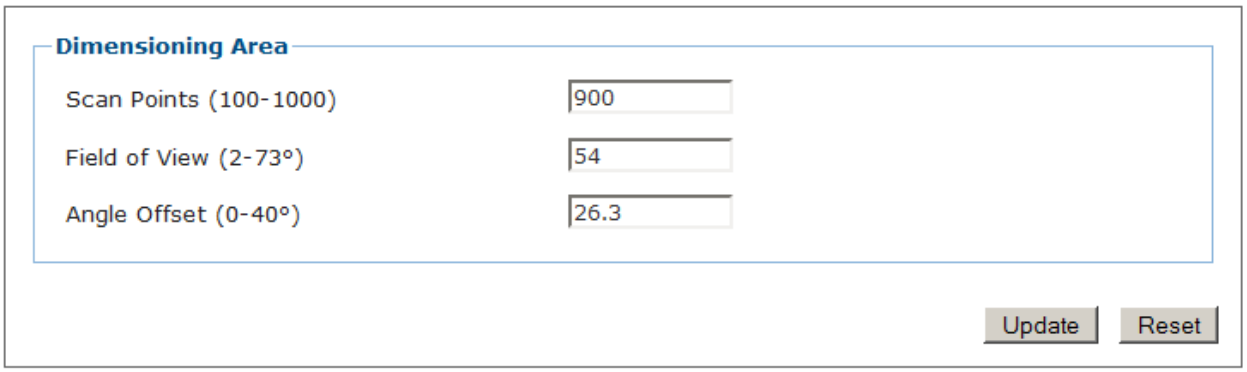
2. Connect your laptop computer to the DM3610 HEAD1 HOST port using either the CAB-ETH-M0x M12-IP67 ETHERNET CABLE or CBL-1534-0.2 ADAPT.CABLE ETH M12-TO-RJ45F.

3. Open a browser on the laptop computer, and type in the default IP address for the DM3610 to which your PC is attached (HEAD1 - 192.168.3.101, HEAD2 - 192.168.3.102). The **DM3610 User Interface** opens in the browser window.

NOTE: Details on using the DM3610 User Interface are available in the ***DM3610 Reference Manual***, *Chapter 4*.

4. Open a browser tab for both **HEAD1** (192.168.3.101) and **HEAD2** (192.168.3.102), and log on to their user interfaces.

5. From the menu tree **Modify Settings**, navigate to **Dimensioning | Calibration**. The Calibration window opens.



6. Adjust the three following parameters in the **DM3610 User Interface** for each dimensioner in **Modify Settings | Dimensioning | Calibration:**

    - Set **Scan Points** to **900** (default) unless otherwise authorized by Datalogic.
    - **Field of View**: Adjust FOV to cover largest system boxes at edges of conveyor.
    - **Angle Offset:** Adjust the **Angle Offset** to cover largest system boxes at edges of conveyor. In order to achieve a satisfactory calibration, you will need to go back and forth between the **Field of View** and **Angle Offset** parameters making single integer adjustments.

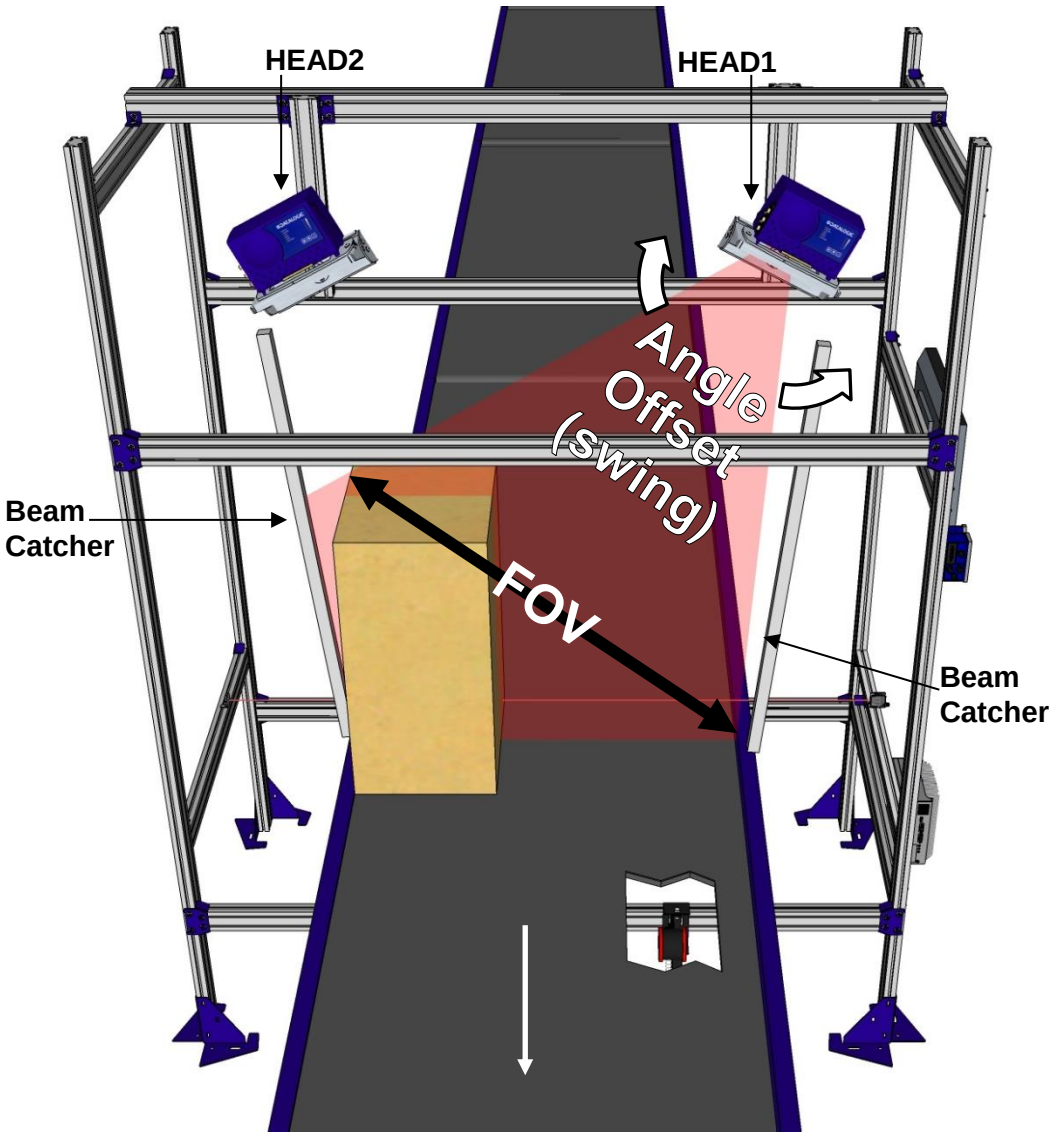


Figure 20: Field of View (FOV) and Angle Offset

The laser line on the near side must hit the very edge of the dimensioning area, and the laser line on the far side should cover the entire top of the box and extend from 25mm [1-inch] to 50mm [2-inches] beyond the top outside edge of the box. The laser beam on the opposite side of the belt must be completely caught by the beam catcher.

To adjust the Field of View and Angle Offset (Viewing Downstream):

1. Starting with HEAD1, place the tallest box defined by the application on the side of the belt furthest from HEAD1.

2. Change the **Field of View** of HEAD1 to 20, and click **Update**.

3. Increase the **Field of View** by 10-degree increments until the beam spans across the dimensioning area reaching from just beyond the top of the box to just beyond the edge of the conveyor below HEAD1.

4. Then, make small adjustments to the **Field of View** and **Angle Offset** for HEAD1 until the laser beam covers the dimensioning area. The right side of the laser beam should extend approximately 25mm [1-inch] to 50mm [2-inches] beyond the top outside edge of the box, and left side of the laser beam should end at the edge of the conveyor. Make sure the right side of the beam falls completely on the beam catcher.

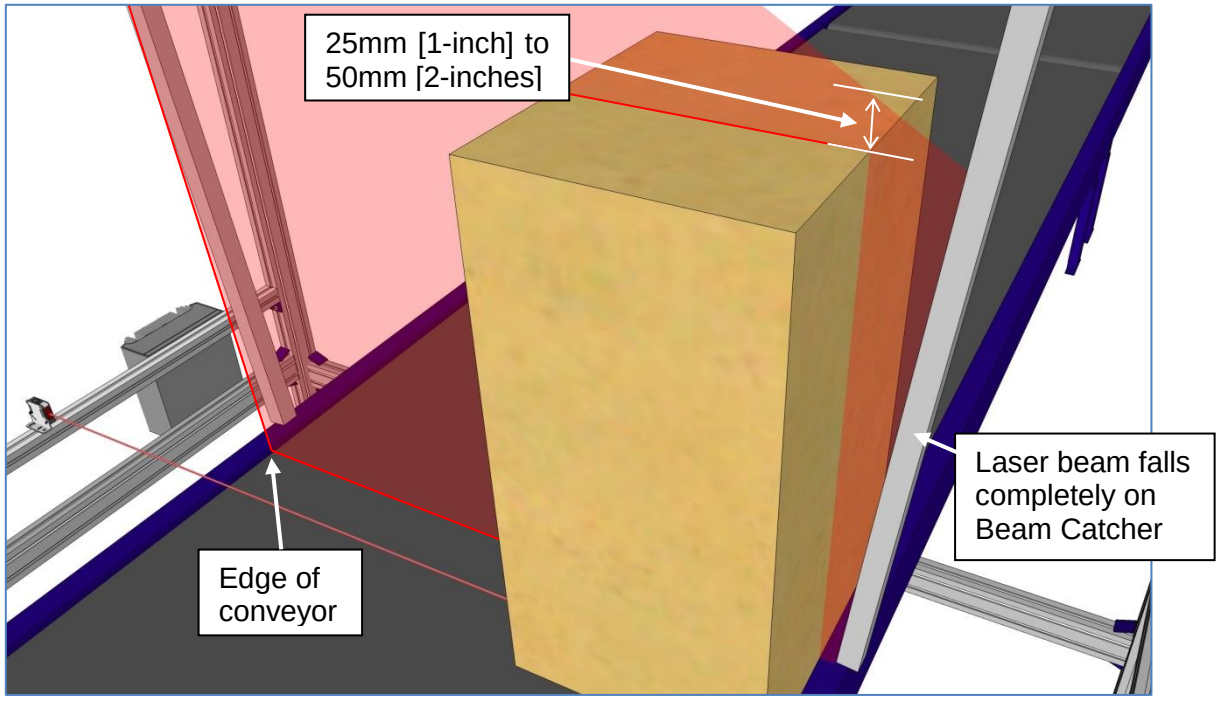


Figure 21: Laser Beam Alignment

5. Moving on to HEAD2, place the tallest box defined by the application on the side of the belt furthest from HEAD2.

6. Change the **Field of View** of HEAD2 to 20, and click **Update**.

7. Increase the **Field of View** of by 10-degree increments until the beam spans across the dimensioning area from just beyond the top of the box to just beyond the edge of the conveyor below HEAD2.

8. Then, make small adjustments to the **Field of View** and **Angle Offset** for HEAD2 until the laser beam covers the dimensioning area. The left side of the laser beam should extend approximately one inch beyond the top surface of the box, and the right side of the laser beam should end at the edge of the conveyor. Make sure the left side of the laser beam falls completely on the beam catcher.

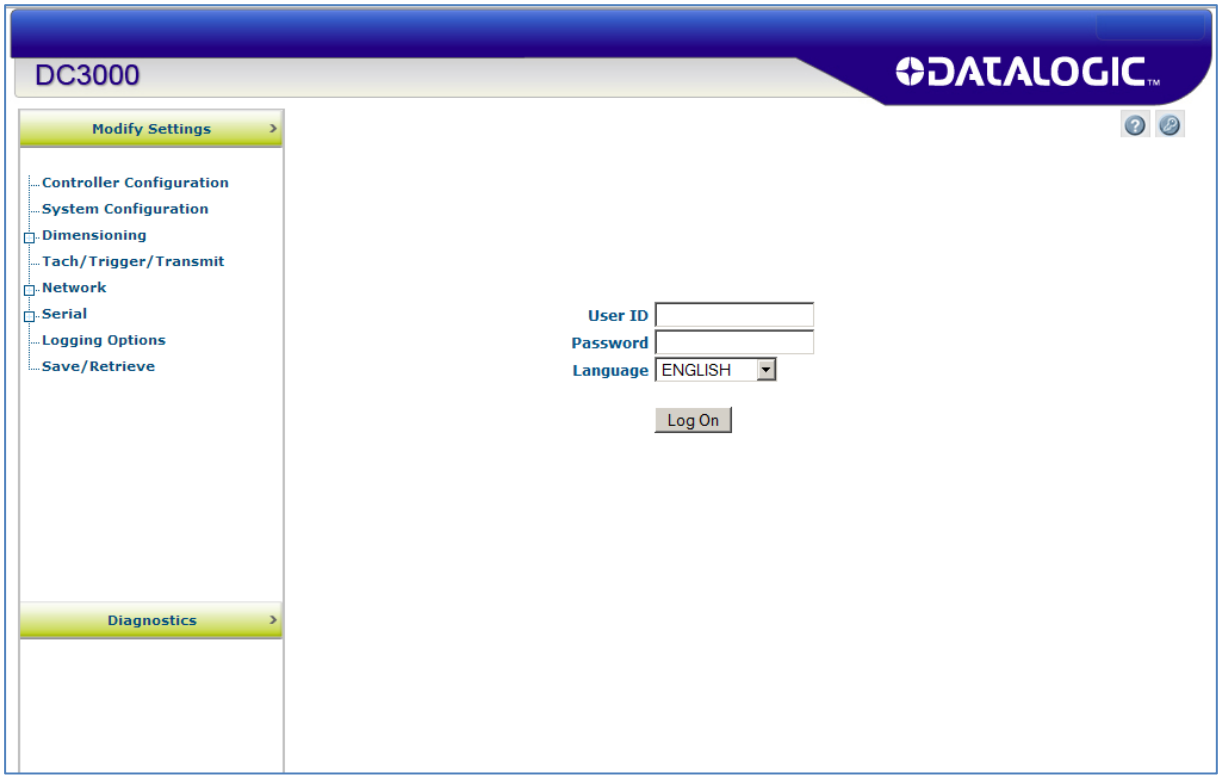
CONFIGURE THE SYSTEM USING THE DC3000 USER INTERFACE

1. Turn on the DC3000 Dimensioning Controller.

2. Connect your laptop computer to the DM3610 HEAD1, HOST port using either the CAB-ETH-M0x M12-IP67 ETHERNET CABLE or CBL-1534-0.2 ADAPT.CABLE ETH M12-TO-RJ45F.

NOTE: If the DC3000 is equipped with a keyboard and mouse, the DC3000 User Interface can be accessed by opening a browser on the DC3000 and entering an IP address of 192.168.3.70.

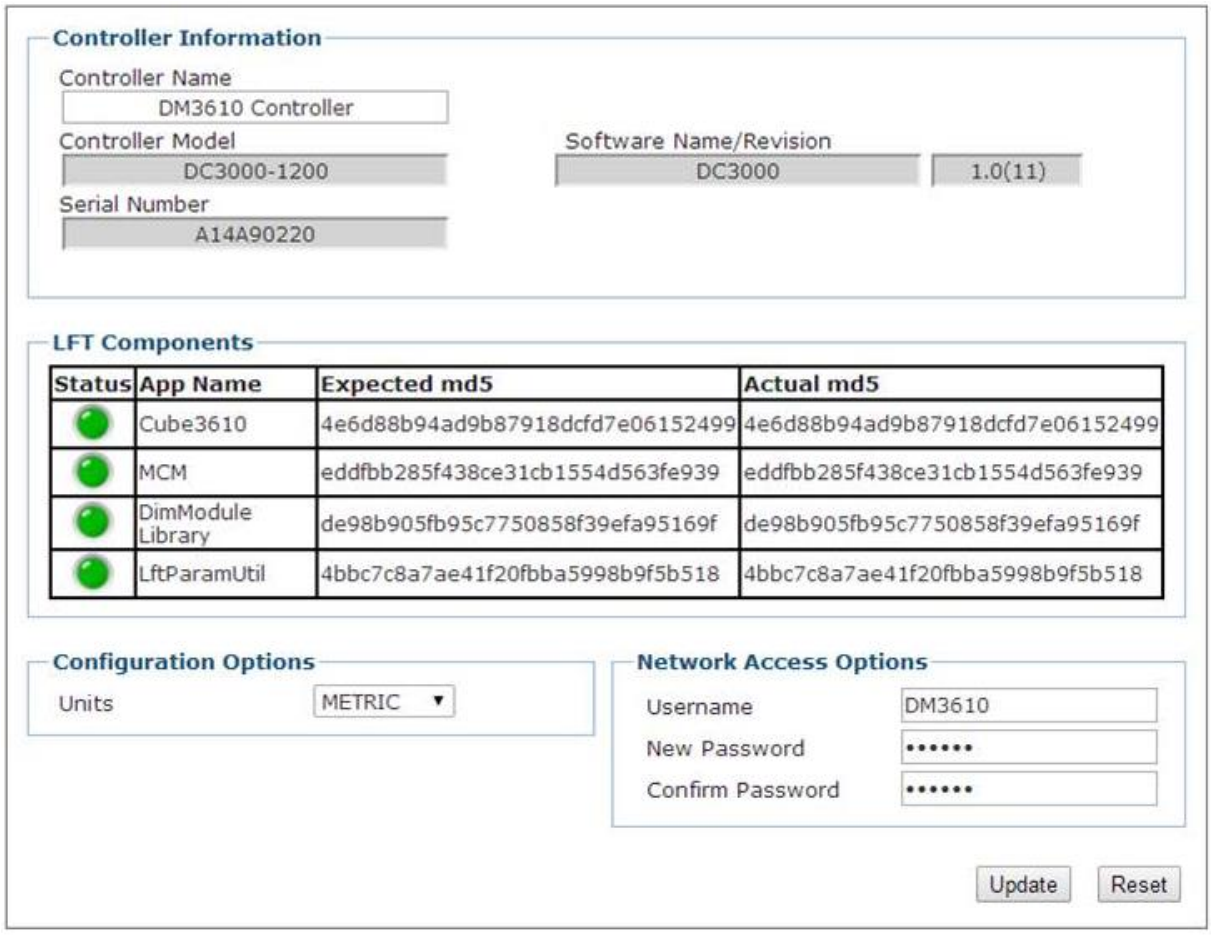
3. Open a browser and enter an IP address of 192.168.3.70. The **DC3000 User Interface** opens.



4. Log on to the DC3000 User Interface. The default **User ID** is DM3610, and default **Password** is DM3610.

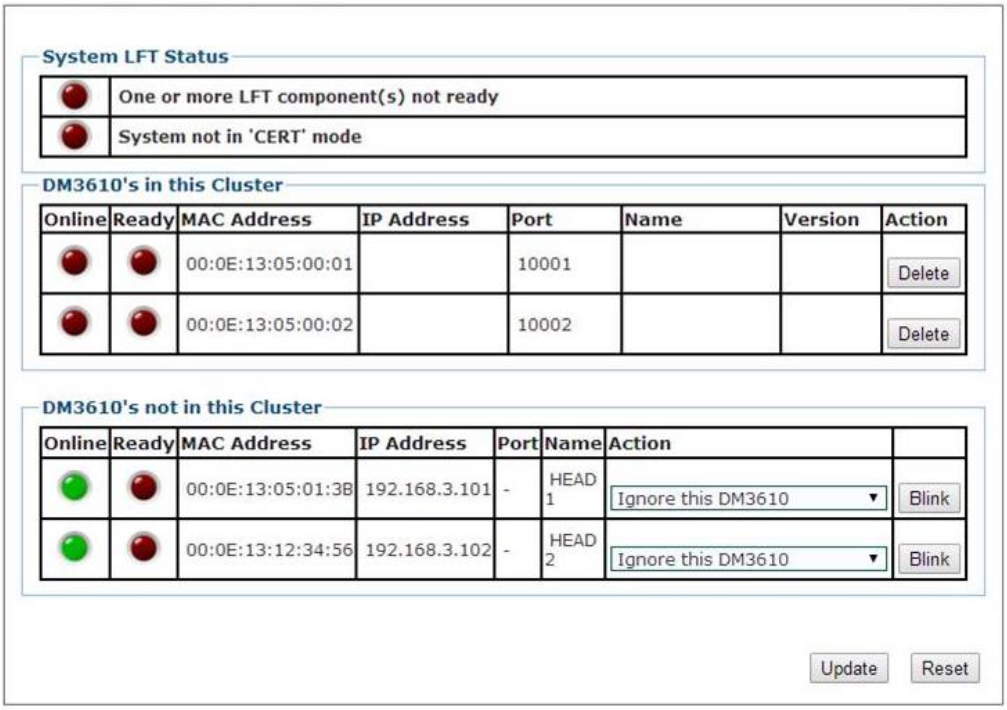
NOTE: For a detailed description of the DC3000 User Interface, *see Two-Head Dimensioning Reference Manual chapter 4*.

5. From the menu tree under **Modify Settings,** select **Controller Configuration.** The **Controller Configuration** window opens.



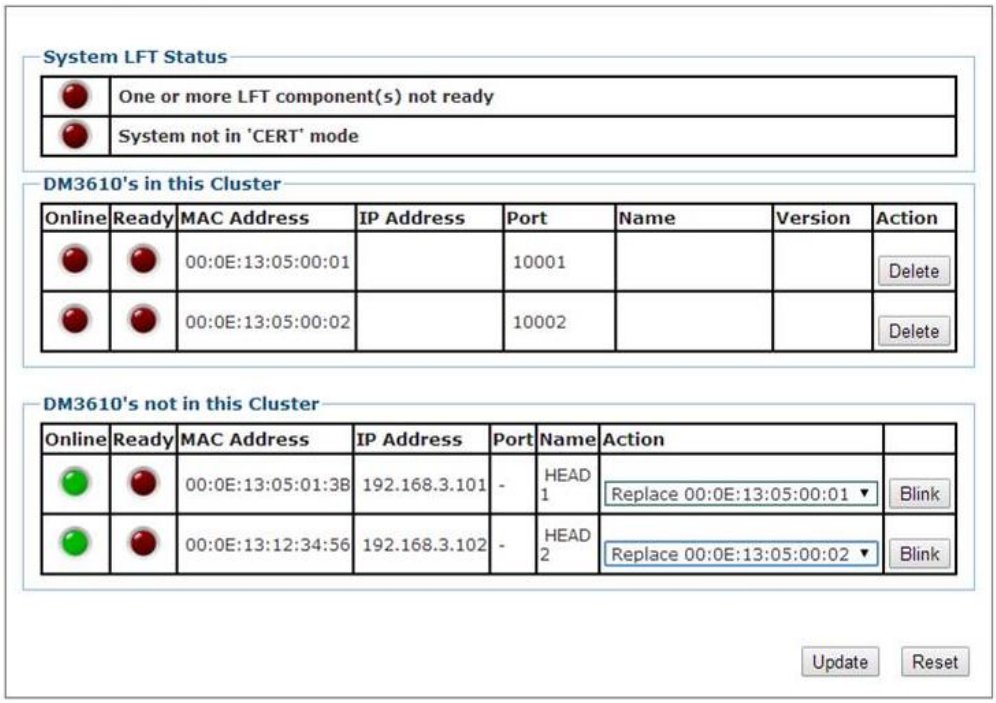
6. Make sure **Controller Model** and **Software Name/Revision** are correct for your application.

7. In the menu tree under **Modify Settings**, select **System Configuration**. The **System Configuration** window opens.

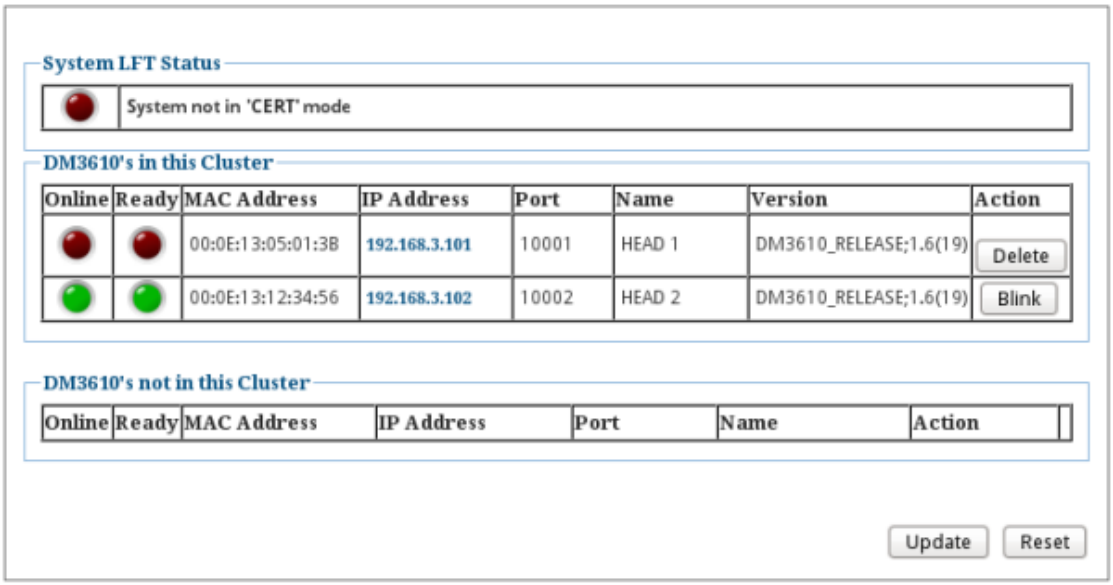


The DC3000 System Configuration window identifies two separate DM3610 fields, **DM3610's in this Cluster** and **DM3610's not in this Cluster**. The **DM3610's in this Cluster** field identifies DM3610's that are connected to the Multi-Headed systems network. The **DM3610's not in this Cluster** field identifies units that have been located but have not yet been included into the Multi-Headed system network.

8. In the **Action** drop-down list of the **DM3610's not in this Cluster** section, select **Replace** for HEAD1 and HEAD2.

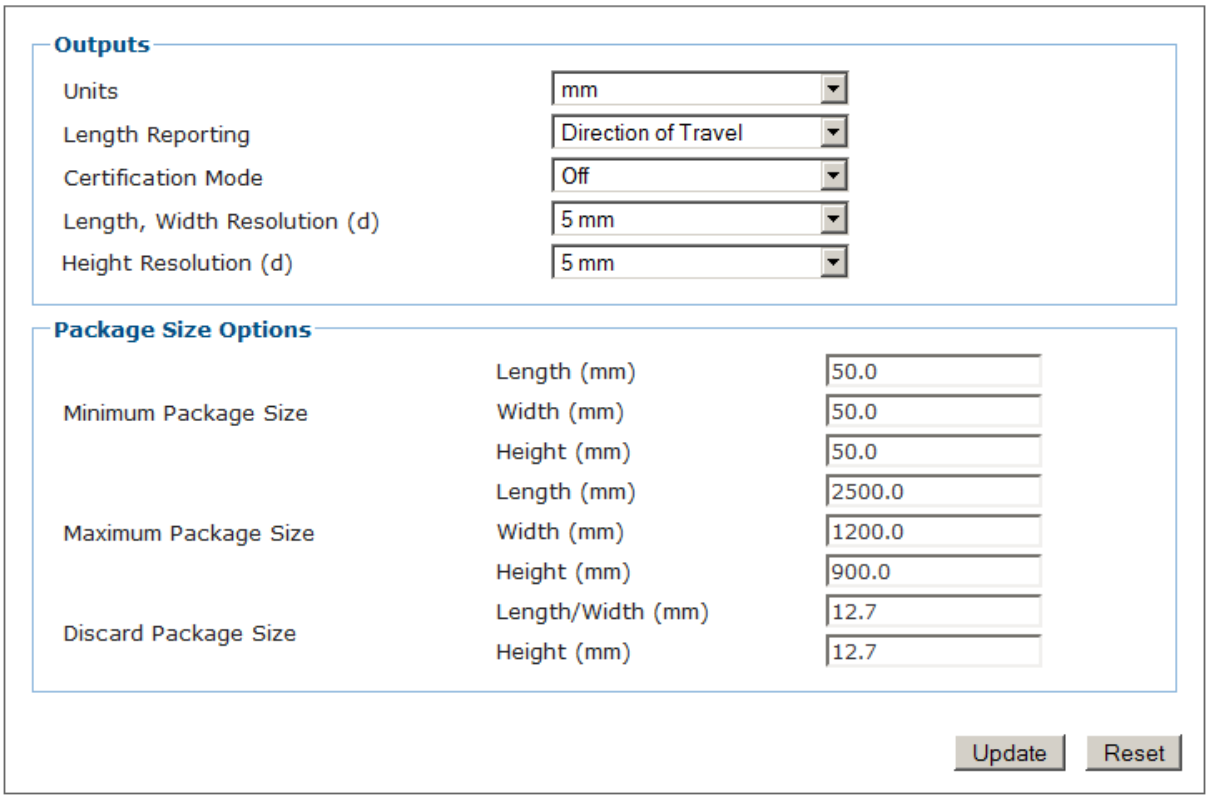


9. Click **Update**. The HEAD1 and HEAD2 should now have replaced the placeholder listed under DM3610's in this cluster.



DC3000 Dimensioning Settings and Calibration (DC3000 User Interface)

1. In the menu tree under **Modify Settings**, select **Dimensioning | Settings**. The **Dimensioning | Settings** window opens.



2. Under **Outputs**, make sure **Certification Mode** is set to **Off**.

3. Adjust the settings in **Dimensioning | Settings** to match your applications requirements (Min/Max package size, units, and etc.) *(see Two-Head Dimensioning Reference Manual, chapter 4).*

NOTE: Be sure to turn **Certification Mode** back **On** after calibration in Legal for Trade applications in both the DC3000 Dimensioning Controller and DM3610 dimensioning heads.

4. Lay pieces of white paper across the conveyor under the laser lines to avoid any irregularities in the conveyor belt from affecting the data.

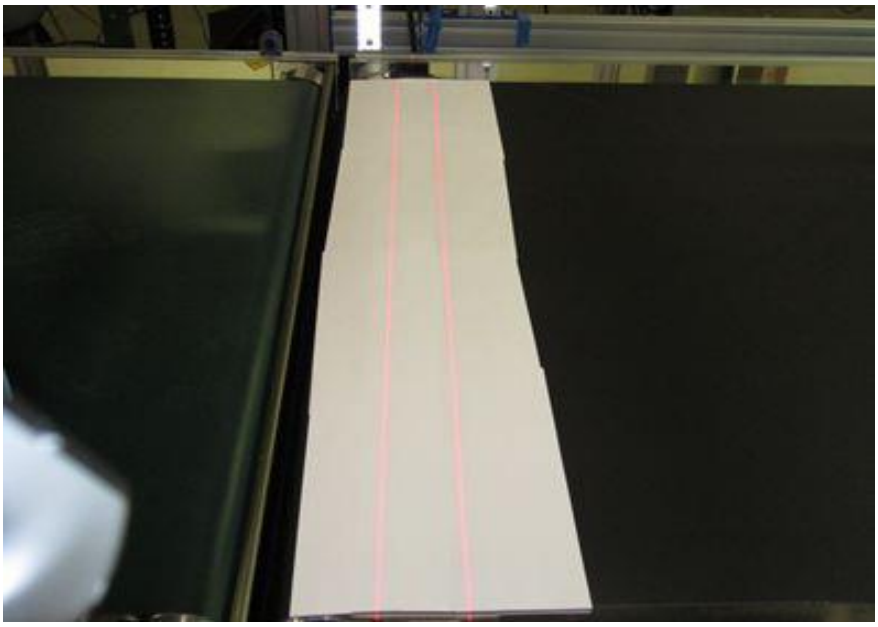
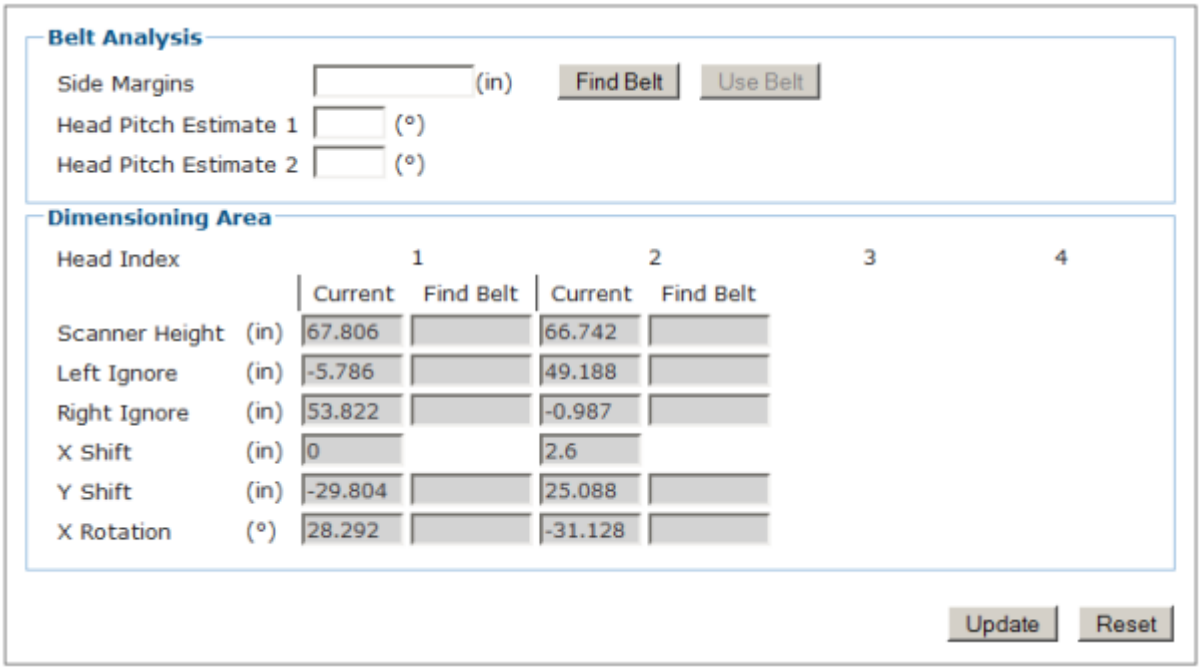


Figure 22: Paper laid across conveyor

5. In the menu tree under **Modify Settings**, select **Dimensioning | Calibration**. The Calibration window opens.



6. As applicable, enter a width of the side margins used to create transition on the outer edge of the scanning area. (*see Two-Head Dimensioning Reference Manual, chapter 4*).

NOTE: Side margins of equal width are used to create transitions on the scan line when there are no side rails or edge transitions.

If the spacers are placed inside the belt width, the spacer width must be entered into the **Side Margins** text field. If the spacers are placed outside the edge of the belt, or if side rails are present, a "0" must be entered into the **Side Margins** text field for the spacer width.

IMPORTANT: Only one side margin is placed in the laser beam for each DM3610. One in the laser beam of HEAD1 at the far edge of the conveyor, and one for HEAD2 at the far edge of the conveyor, as shown in the illustrations below. Each side margin should only intersect one laser.

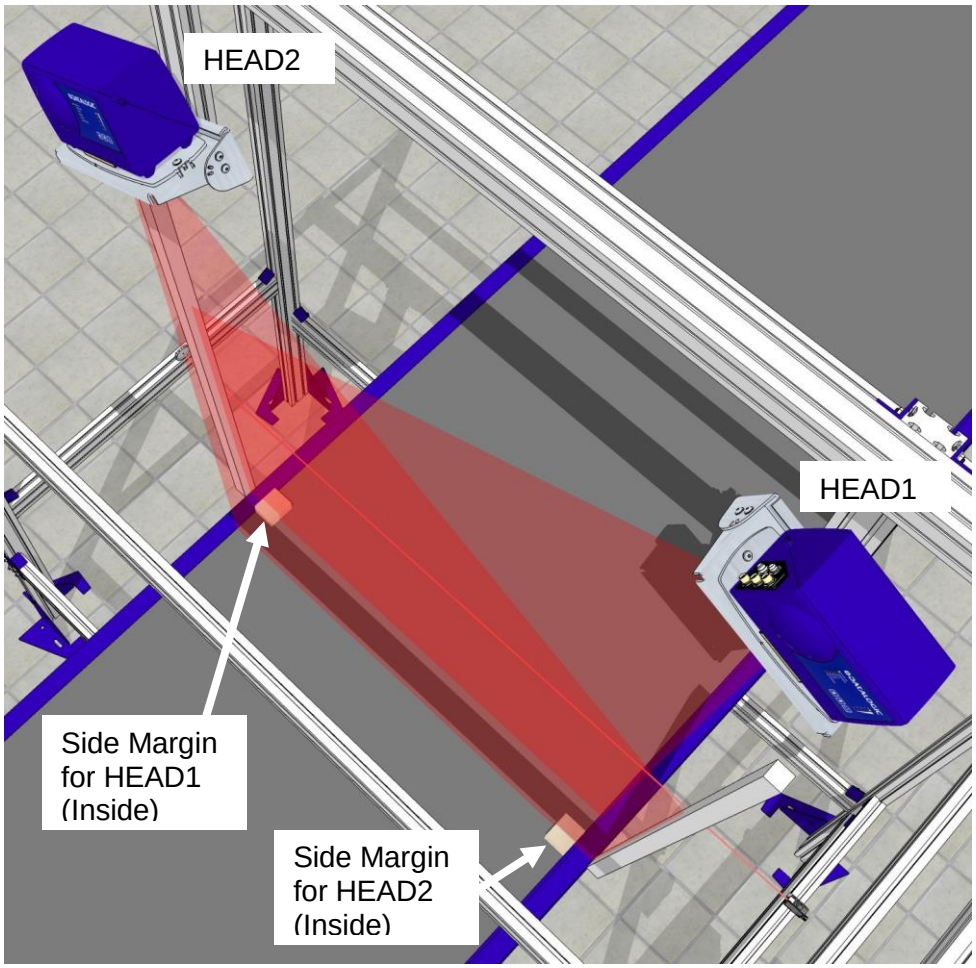


Figure 23: Spacer placement (INSIDE)

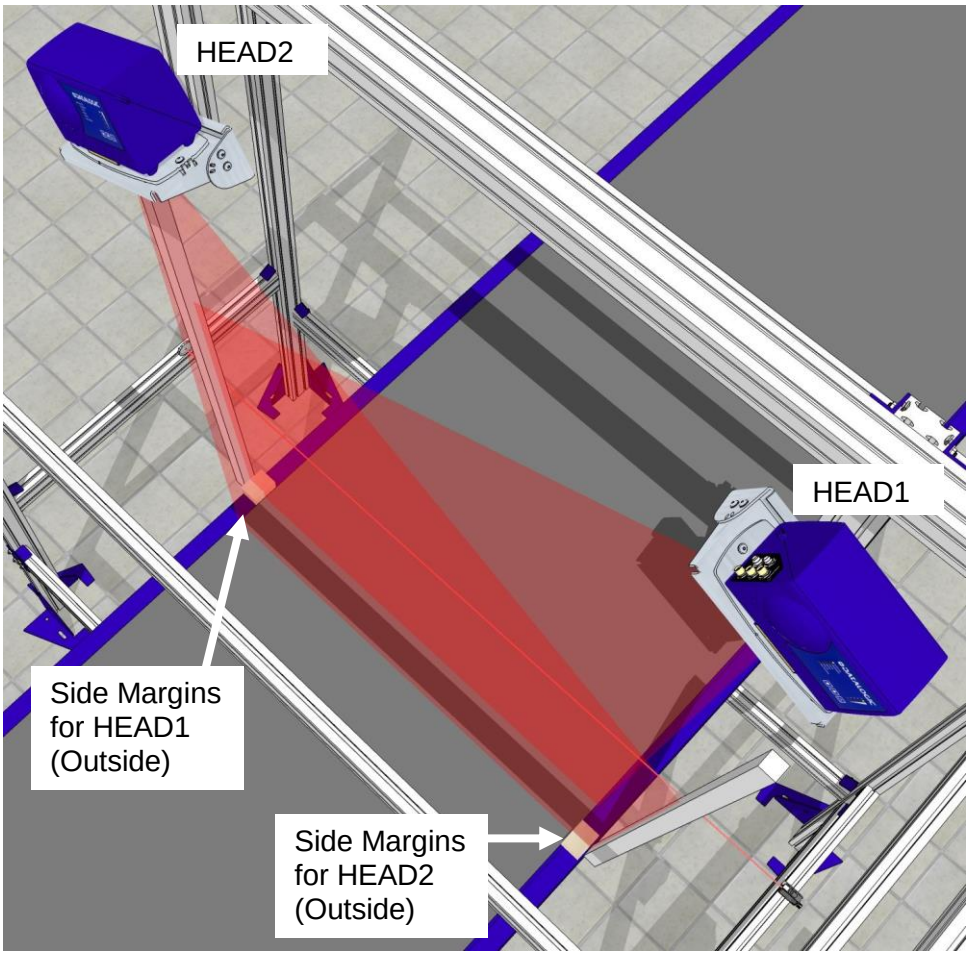
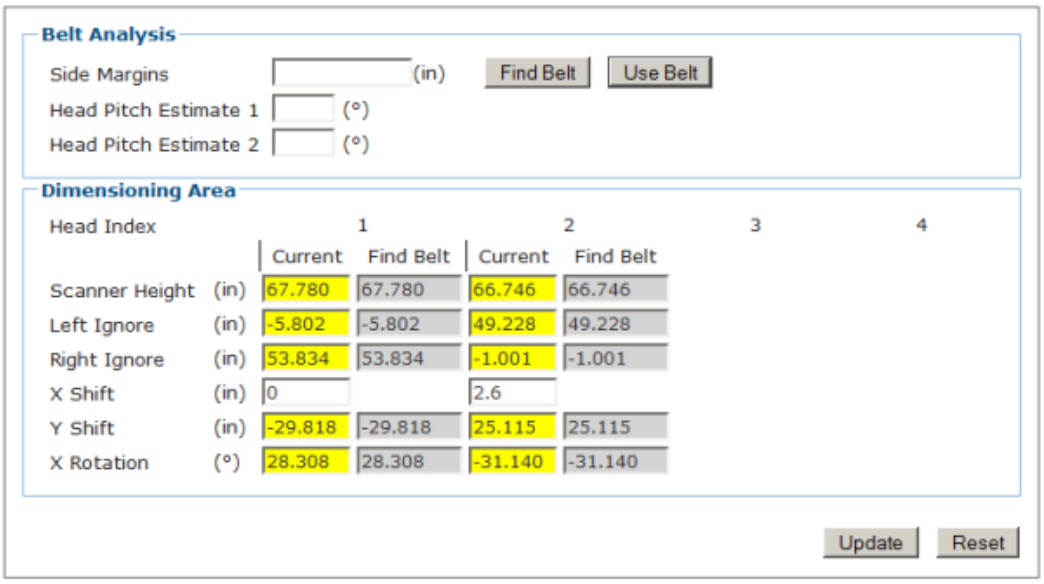


Figure 24: Spacer placement (OUTSIDE)

7. Enter **Head Pitch Estimate 1** (HEAD1) and **Head Pitch Estimate 2** (HEAD2) based on the angles from the application specifications. The **Head Pitch Estimate** helps each head differentiate the conveyor bed from the beam catcher.

8. Click **Find Belt**. Dimensioning parameters are automatically loaded into the **Dimensioning Area**.



9. Click **Use Belt**. The **Find Belt** parameters are accepted.

10. Enter 0.000 for the **X Shift** of HEAD1.

11. Measure the **X Shift** distance between the scan lines from HEAD1 to HEAD2. This number will be positive.

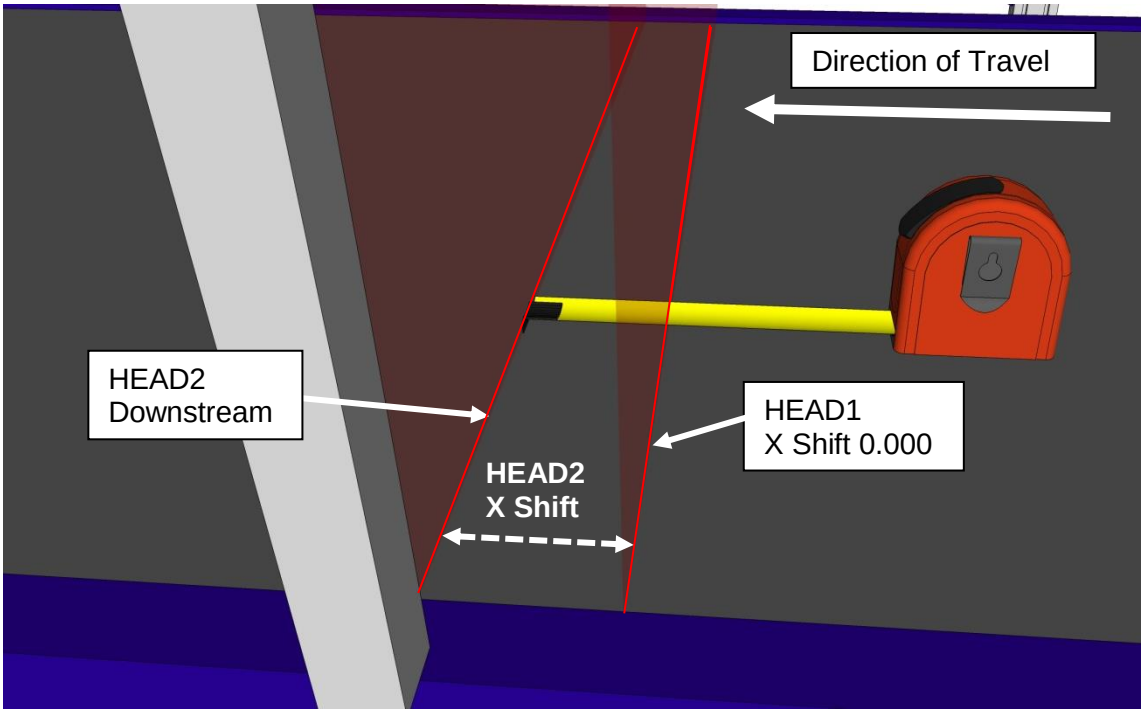


Figure 25: X Shift Measurement

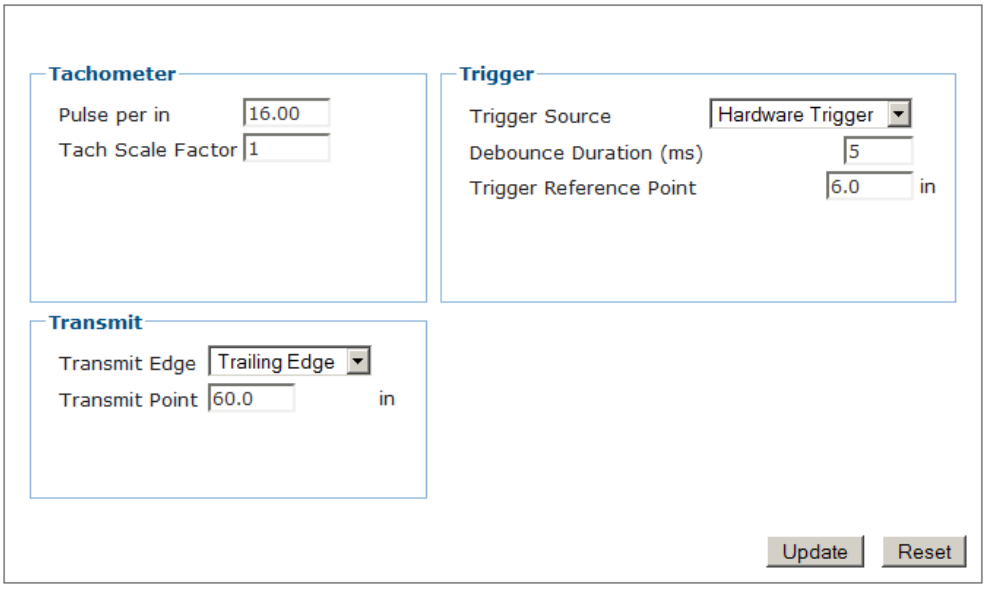
12. Enter the measured distance between the laser lines in the **X Shift** for HEAD2. This number will be positive.

13. Click **Update**.

Tach/Trigger/Transmit (DC3000 User Interface)

Use **Tach/Trigger/Transmit** to set up the tachometer source and trigger source. A range of settings are definable based on use of hardware or software sources *(see Two-Head Dimensioning System Reference Manual, chapter 4).*

1. In the menu tree under **Modify Settings**, select **Tach/Trigger/Transmit**. The **Tach/Trigger/Transmit** window opens.



2. As applicable, measure the distance from the photoelectric sensor and the scan line of HEAD1, and enter this measurement in the **Trigger Reference Point** text field. Use a box set just along the photoelectric sensor laser to aid in measuring.

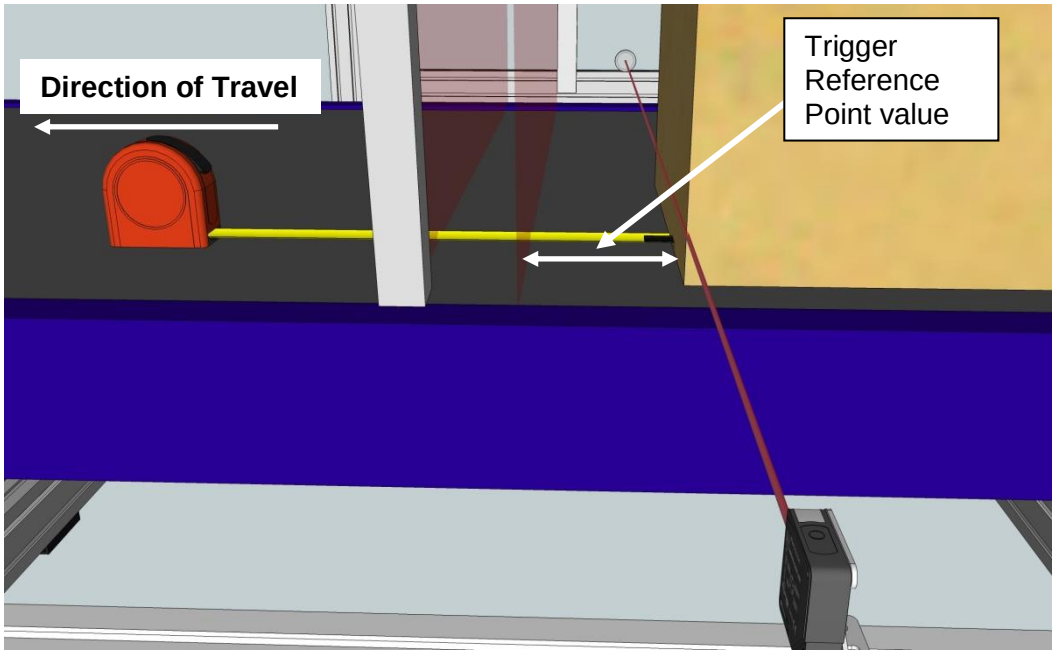


Figure 26: Trigger Reference Point measurement

3. Click **Update**.

4. In **Modify Settings | Tach/Trigger/Transmit**, make sure:

    - **Trigger Source** is set to **Application Specifications**
    - **Pulse per in [cm]** (16ppi [6.4 pulses per cm] or 20ppi [8 pulses per cm] should be set to match the tachometer switch setting

NOTE: The trigger reference point is in reference to HEAD1 regardless of where HEAD2 is located (upstream or downstream).

5. Click **Update** when you have finished making changes.

DYNAMICALLY CALIBRATE THE SYSTEM

After you have set up the dimensioning settings and calibration in the DC3000 User interface, you must check the accuracy of the system by running test boxes through the system. Dimensions returned when a box is run through the system must fall below the outside tolerance required by your application.

Example: If your application calls for a tolerance of 0.2 inches in Width, Length, or Height, you must calibrate your system until the values returned fall below 0.2 inches. In other words, a value of +0.19 inches oversize may be acceptable, while a value of +0.21 is not.

To Dynamically Calibrate the Dimensioning System:

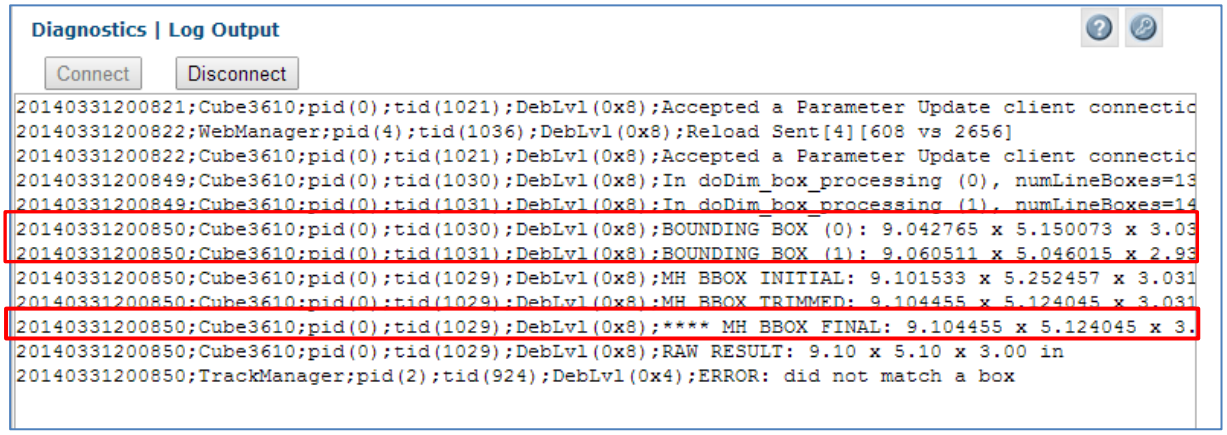
1. If you do not already have it running, open the **DC3000 User Interface** in a browser and log on as explained previously.

2. From the menu tree of the under **Diagnostics**, select **Log Viewer**. The **Log Viewer** window opens.

3. Turn on the conveyor and run a test box.

4. Check the results in **Diagnostics | Log Viewer.**

   The MH BBOX FINAL results show the calculated data from the scan information for HEAD1 and HEAD2. This number should match the length, width and height of the test box (within the system tolerance). If the length doesn't fall within tolerances:



- Check the length results of the individual heads. These are shown in BOUNDING BOX (0) (HEAD1) and BOUNDING BOX (1) (HEAD2). If the length of both heads is outside of tolerance, adjust the Tach Scale Factor in **Modify Settings | Tach/Trigger/Transmit** in small increments, and run test boxes until the length falls within system tolerances. If only one of the heads is out of tolerance, check the physical mounting of the dimensioners.

  For example: If you notice that the length (in the direction of travel) of your package is too short and you have a tachometer pulse of 16 pulses per inch, enter a Tach Scale Factor of less than 1.0. If you enter 0.97 your effective pulses per inch become 15.52 pulses per inch. If, however, your package is too long, enter Tach Scale Factor greater than 1.0. Adjust by small increments.

- If the length of the individual heads is within system tolerance but the length of the MH BBOX FINAL is out of tolerance, adjust the X Shift in **Modify Settings | Dimensioning | Calibration** by small increments. Run test boxes and make adjustments until the length falls within system tolerance. If the length is too long, reduce the absolute value of the X Shift slightly. If the length is too short, increase the absolute value of the X Shift slightly.

- If the width of the MH BBOX FINAL is out of tolerance, adjust the Y Shift for HEAD1 in the **Modify Settings | Dimensioning | Calibration** (DC3000 User Interface) by small increments. Run test boxes and make adjustments until the width falls within system tolerance.

After the calibration process has been completed, save parameters from each DM3610 and the DC3000 Dimensioning Controller to the laptop computer. This is done using **Modify Settings | Save/Retrieve** in DM3610 User Interface and DC3000 User Interface.

IMPORTANT: Be sure to turn **Certification Mode** back **On** in both the DC3000 Dimensioning Controller and the DM3610 dimensioning heads after calibration has been completed in Legal for Trade applications.

DATALOGIC

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