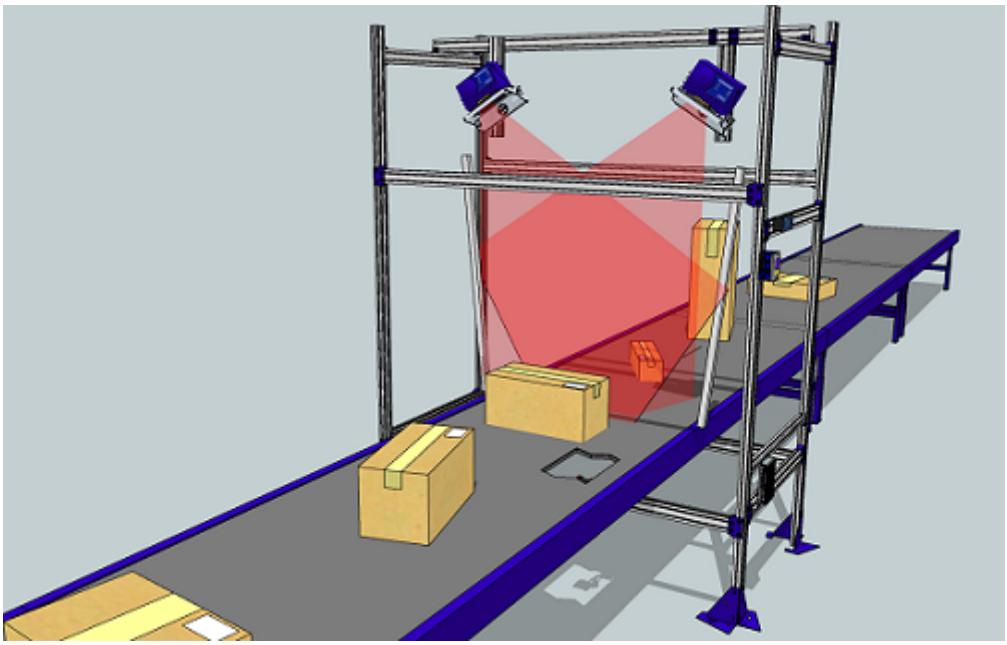
DC3000

PRODUCT INSTALLATION AND REFERENCE GUIDE



Two Head Dimensioner

DATALOGIC

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Software Version

This manual refers to software version 1.4.16 and later.

Patents

See www.patents.datalogic.com for patent list.

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PREFACE

ABOUT THIS MANUAL

This Product Reference Guide (PRG) is provided for users seeking advanced technical information including connection, programming, maintenance and specifications. Other publications associated with this product can be downloaded free of charge from the website listed on the back cover of this manual.

Manual Conventions

The following conventions are used in this document:



This symbol draws attention to details or procedures that may be useful in improving, maintaining, or enhancing the performance of the hardware or software being discussed.



This symbol identifies a hazard or procedure that, if incorrectly performed, could cause personal injury or result in equipment damage. It is also used to bring the user's attention to details that are considered IMPORTANT.



This symbol alerts the user they are about to perform an action involving possible exposure to laser light radiation.



This symbol alerts the user they are about to perform an action involving, either a dangerous level of voltage, or to warn against an action that could result in damage to devices or electrical shock.



This symbol identifies a procedure that requires you take measures to prevent Electrostatic Discharge (ESD) e.g., use an ESD wrist strap. Circuit boards are most at risk. Please follow ESD procedures.

SUPPORT THROUGH THE WEBSITE

Data logic provides several services as well as technical support through its website. Log on to **www.datalogic.com**.

For quick access, from the home page click on the search icon , and type in the name of the product you're looking for. This allows you access to download Data Sheets, Manuals, Software & Utilities, and Drawings.

Hover over the Support & Service menu for access to Services and Technical Support.

REFERENCE DOCUMENTATION

The documentation related to the DC3000 Controller is listed below:

- CBX Connection Box Installation Manuals
- AS1 Area Scan Reference Manual
- AV7000 Linear Camera Reference Manual
- DM3610 Product Reference Guide
- Remote Display Installation Guide

WARRANTY

Datalogic warrants that the Products shall be free from defects in materials and workmanship under normal and proper use during the Warranty Period. Products are sold on the basis of specifications applicable at the time of manufacture and Datalogic has no obligation to modify or update Products once sold. The Warranty Period shall be **two years** from the date of shipment by Datalogic, unless otherwise agreed in an applicable writing by Datalogic.

Datalogic will not be liable under the warranty if the Product has been exposed or subjected to any: (1) maintenance, repair, installation, handling, packaging, transportation, storage, operation or use that is improper or otherwise not in compliance with Datalogic's instruction; (2) Product alteration, modification or repair by anyone other than Datalogic or those specifically authorized by Datalogic; (3) accident, contamination, foreign object damage, abuse, neglect or negligence after shipment to Buyer; (4) damage caused by failure of a Datalogic-supplied product not under warranty or by any hardware or software not supplied by Datalogic; (5)any device on which the warranty void seal has been altered, tampered with, or is missing; (6) any defect or damage caused by natural or man-made disaster such as but not limited to fire, water damage, floods, other natural disasters, vandalism or abusive events that would cause internal and external component damage or destruction of the whole unit, consumable items; (7) use of counterfeit or replacement parts that are neither manufactured nor approved by Datalogic for use in Datalogic-manufactured Products; (8) any damage or malfunctioning caused by non-restoring action as for example firmware or software upgrades, software or hardware reconfigurations etc.; (9) loss of data; (10) any consumable or equivalent (e.g. cables, power supply, batteries, etc.); or (11) any device on which the serial number is missing or not recognizable.

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PATENTS

See **www.patents.datalogic.com** for patent list.

This product is covered by one or more of the following patents:

Utility patents: US9625709.

COMPLIANCE

Electrical Safety

This product conforms to the applicable requirements contained in the European Standard for electrical safety EN-60950 at the date of manufacture.

Laser Safety

The following information is provided to comply with the rules imposed by international authorities and refers to the correct use of the DM3610 dimensioner.

Standard Regulations

The dimensioner uses a low-power laser diode. Avoid staring at the beam as one would with any very strong light source, such as the sun.

Take care when installing the laser device to avoid inadvertent laser beam contact with the eye of an observer, including through reflective surfaces.

This product conforms to the applicable requirements of both EN60825-1 and CDRH 21 CFR1040 at the date of manufacture. The DM3610 uses a visible laser diode (red) 658 nm typical, Collimated < 1.5mR, <9.6mW peak power, <1.0mW Average power, Class 3R (IEC60825-1), Class II (CDRH 21CFR1040), in the dimensioning process.

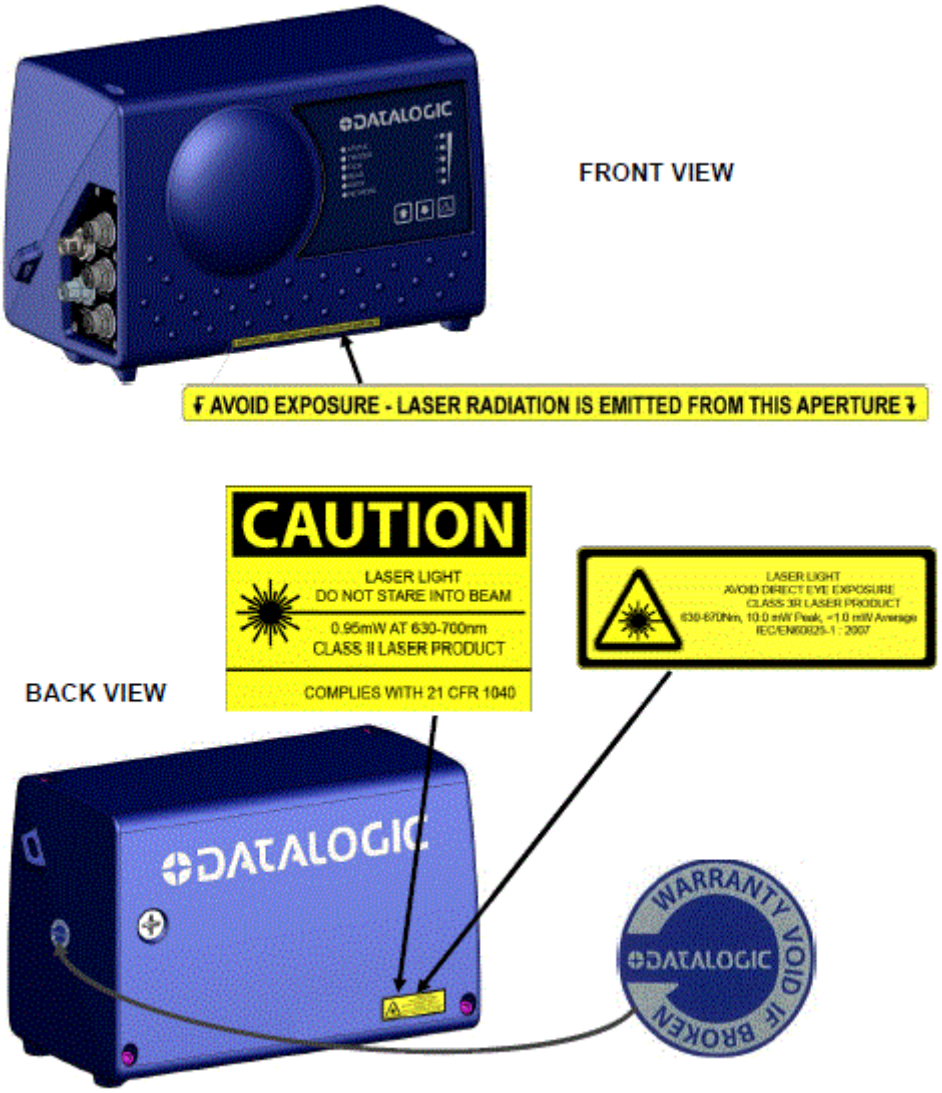
There is a safety device which allows the laser to be switched on only if the motor is rotating above the threshold for its correct scanning speed.

Dimensioner Warning Labels



Use of controls or adjustments or performance of procedures other than those specified herein may result in exposure to hazardous visible laser light.

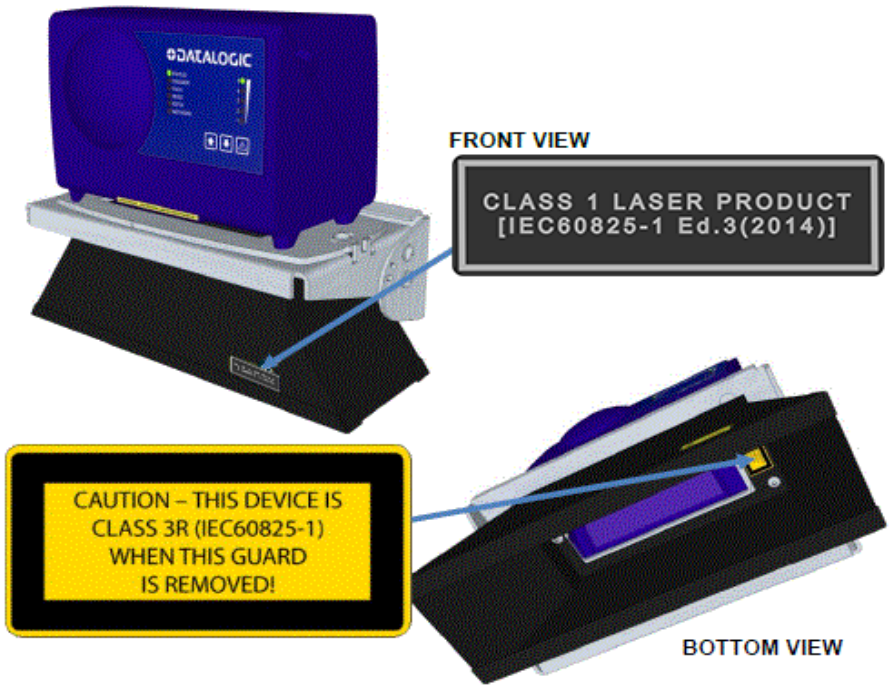
Warning labels indicating exposure to laser light and the device classification are applied onto the body of the dimensioner.



NOTE **Warning label used depends on specific product configuration.**

GFC-3610 Laser Guard Adapter Warning Labels

Additional warning labels indicating exposure to laser light and the device classification are applied onto the optional **GFC-3610 Laser Guard Adapter**.



LASER CAUTION

The DM3610 Dimensioning System is a Class 3R laser product without the GFC-3610 Laser Guard Adapter installed. Operators working around Class 3R laser products should follow safety precautions outlined in the IEC60825-1 laser safety standard for Class 3R laser products. By installing the adapter onto the DM3610 dimensioning system the laser product class is now Class 1. A Class 1 laser is safe under all conditions of normal use. This means the maximum permissible exposure (MPE) cannot be exceeded when viewing a laser with the naked eye. As a best practice rule, operators should always avoid direct eye exposure and minimize unintentional specular reflections to the laser beam whenever possible. The laser diode incorporated inside the DM3610 is a 630-670nm with a beam divergence of less than 1.5mRAD with a peak power of <8.5mW (GFC-3610 Laser Guard Adapter Installed) or <10mW (GFC-3610 Laser Guard Adapter uninstalled) and an average power of < 1.0mW.

NOTE

Warning label used depends upon specific product configurations.

LASER CAUTION

Disconnect the power supply when installing the device or during maintenance to avoid exposure to hazardous laser light.

There are no user serviceable parts inside the DM3610. Service should only be performed by Datalogic trained and certified technicians.

Power Supply

This product is intended to be installed by Qualified Personnel only.

The DC3000 and dimensioners are intended to be supplied by a UL/CE Listed power supply marked SELV (Separated Extra Low Voltage), output rated 24 VDC, minimum 4.0 Amp.

UL Listing

CE Compliance

CE marking states the compliance of the product with essential requirements listed in the applicable European directive. Since the directives and applicable standards are subject to continuous updates, and since Datalogic promptly adopts these updates, therefore the EU declaration of conformity is a living document. The EU declaration of conformity is available for competent authorities and customers through Datalogic commercial reference contacts. Since April 20th, 2016 the main European directives applicable to Datalogic products require inclusion of an adequate analysis and assessment of the risk(s). This evaluation was carried out in relation to the applicable points of the standards listed in the Declaration of Conformity. Datalogic products are mainly designed for integration purposes into more complex systems. For this reason it is under the responsibility of the system integrator to do a new risk assessment regarding the final installation.



This is a Class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

EAC Compliance

Customs Union:

The CU Conformity certification has been achieved; this allows the Product to bear the Eurasian mark of conformity.

Bureau Of Indian Standards (BIS)

Self Declaration – Conforming to IS 13252 (Part 1):2010, R-41009288

FCC Compliance

Modifications or changes to this equipment without the expressed written approval of Datalogic could void the authority to use the equipment.

This device complies with PART 15 of the FCC Rules. 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 which may cause undesired operation.

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his/her own expense.

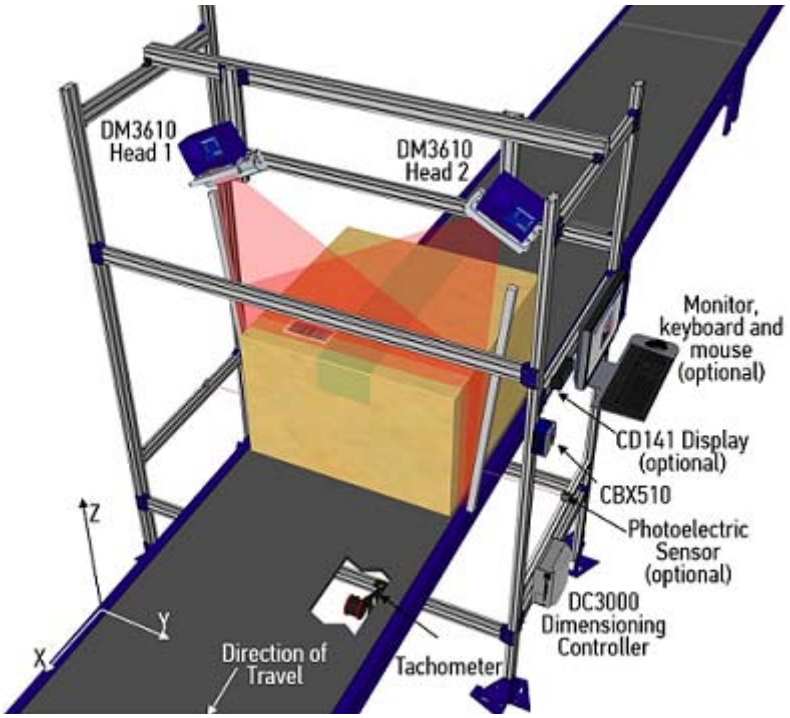
CHAPTER 1
INTRODUCTION

SYSTEM OVERVIEW

A Two-Head Dimensioning System consists of a DC3000 Controller and two DM3610 heads strategically positioned above a material transport system. Its primary purpose is to report the dimension (length, width, and height) of each parcel conveyed by the transport system. The parcels are scanned while in motion; the DM3610's transmit the scan data via Ethernet to the DC3000 Controller; and the Controller computes the dimension results.

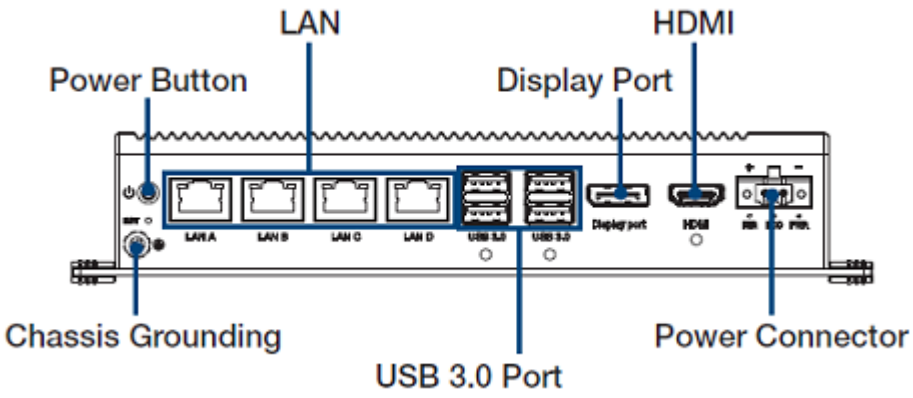
A DM3610 head is a complex opto-electrical measurement instrument. When deployed as a standalone device, it is solely responsible for computing parcel dimensions. But, in the Multi-Head Dimensioning System, it is the DC3000 Controller that computes parcel dimensions, and the DM3610's role is to continuously scan its field of view and measure and transmit distance or "range" data to the Controller. Input from a contact tachometer, typically mounted on the underside of the conveyor, is incorporated by the DC3000 to define the x coordinate of its scan data.

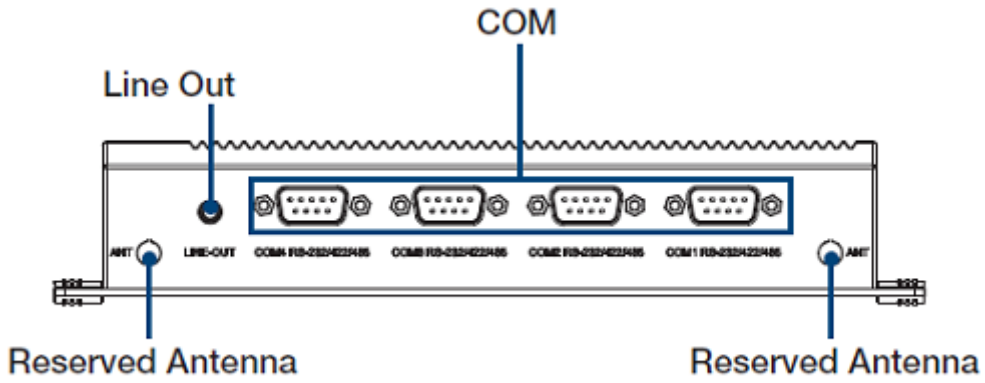
The typical system components are shown in the diagram below:



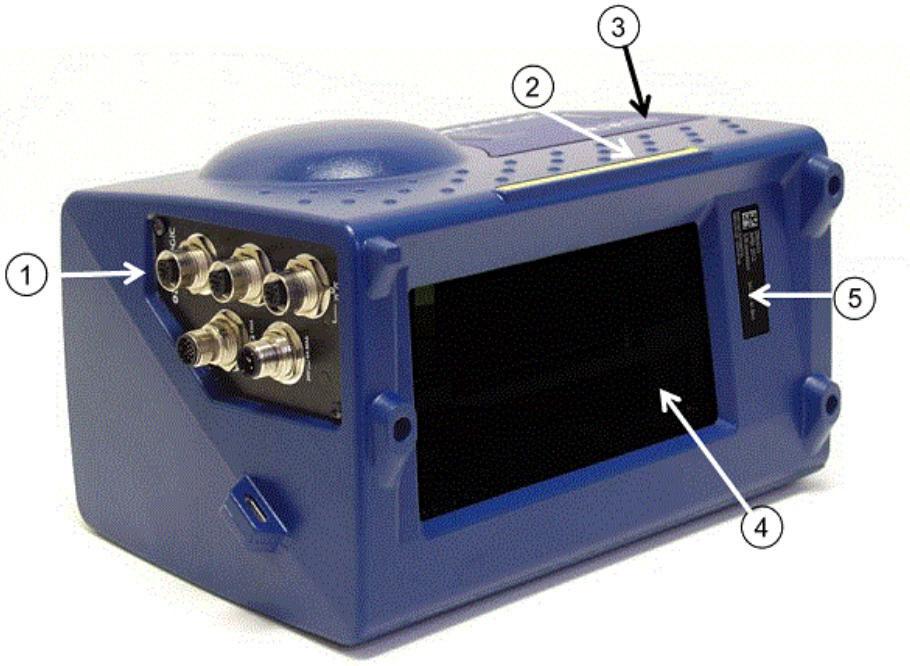
DC3000 DIMENSIONING CONTROLLER



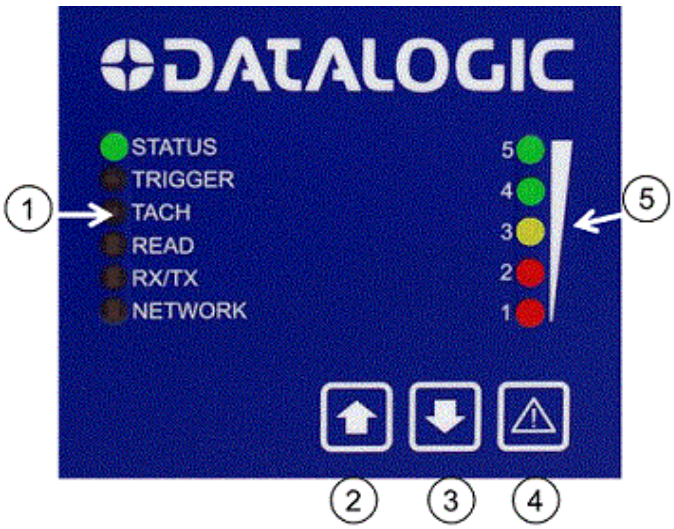




DM3610 Dimensioner



1 Connector Panel
2 Laser Safety Label
3 Control Panel
4 Laser Exit Window
5 Serial Number Tag



1 LED Status Indicators
2 Restore Button
3 Backup Button
4 Recovery Mode Button
5 Dimishing Status LEDs



1 I/O
2 Power 24V---4AMax
3 Host
4 Ethernet Port 1
5 Ethernet Port 2

Standard DC3000 Solutions

Datalogic offers several DC3000 Solutions to make it easy for you to order and purchase exactly what you need for your Two Head Dimensioning system.

Part Number	Description
Components	
032702650	DC3000-2000 DIM Controller STD
932702140	$DMS200-100 2HD SOLU STD
DMR100001-20060800	DMS200-100 2HD SOLU STD
DMR100001-20060800	DMS200-100 2HD SOLU STD
Components	
932702660	DC3000-2100 DIM Controller NTEP
932702170	$DMS200-110 2HD SOLU NTEP
DMR110002-20060800	DMS200-110 2HD SOLU NTEP
DMR110002-20060800	DMS200-110 2HD SOLU NTEP
Components	
932702670	DC3000-2200 DIM Controller OIML
932702160	$DMS200-120 DIM SOLU 2HD SING OIML
932702162	$DMS200-121 2HD SOLU SING OIML MOD D
932702190	DMS200-12X DIM SOLU 2HD SING OIML/MID
DMR120003-20060800	DMS200-120 DIM SOLU 2HD SING OIML
DMR130003-20060800	DMS200-1212HD SING OIML MOD D
DMR120003-20060800	DMS200-120 DIM SOLU 2HD SING OIML
DMR130003-20060800	DMS200-121 2HD SING OIML MOD D
DMR150003-20060800	DMS2000-12X 2HD SING OIML/MID MOD F
Components	
932702680	DC3000-2300 DIM CONTROLLER MC
93A101032	WebSentinel Plus Server

DATALOGIC PHOTOELECTRIC SENSOR

The optional **Datalogic Photoelectric Sensor** is used in DM3610 systems to detect the presence of an item in the dimensioning area.

The photoelectric sensor is used in systems where the packages are separated by an open space between the trailing edge of one package and the leading edge of the next. The photoelectric sensor enables a programmable transmit point at a defined distance from the sensor. Without the photoelectric sensor, the DM3610 can be run in continuous trigger mode where the transmit point is referenced from the DM3610 scan line. (see“Modify Settings | Tach/Trigger/Transmit” on page 77).

Depending on the application, these devices may need to be configured differently. While the photoelectric sensor and tachometer work well with belt conveyors, a special configuration is needed for tilt-tray and cross-belt sorter applications. A sample sensor is shown below.



TACHOMETER

The tachometer provides a continuous pulse to the system, which provides feedback on conveyor speed and can be used to help track the package position along the length of the conveyor. A tachometer is required for certified systems, but is optional for non-certified. For non-certified systems, an internal *tach* signal can often be used.



CBX INDUSTRIAL CONNECTION BOX

CBX Series are industrial connection boxes that can be used to connect the external display, tachometer, photoelectric sensor, serial devices, relays, or other peripherals. The CBX510 is used with DC3000 - DM3610 systems.



REMOTE DISPLAY

In all legal-for-trade applications, the DM3610 certified dimensioning system is required to have at least one remote display per site for inspection purposes. The number of displays required per site varies according to certification type.

The Datalogic CD141 Remote Display is a 2 line x 20 character display. The display shows the dimensions for the most recent two boxes (with the most recent box on the lower line). The display shows:



Legend:

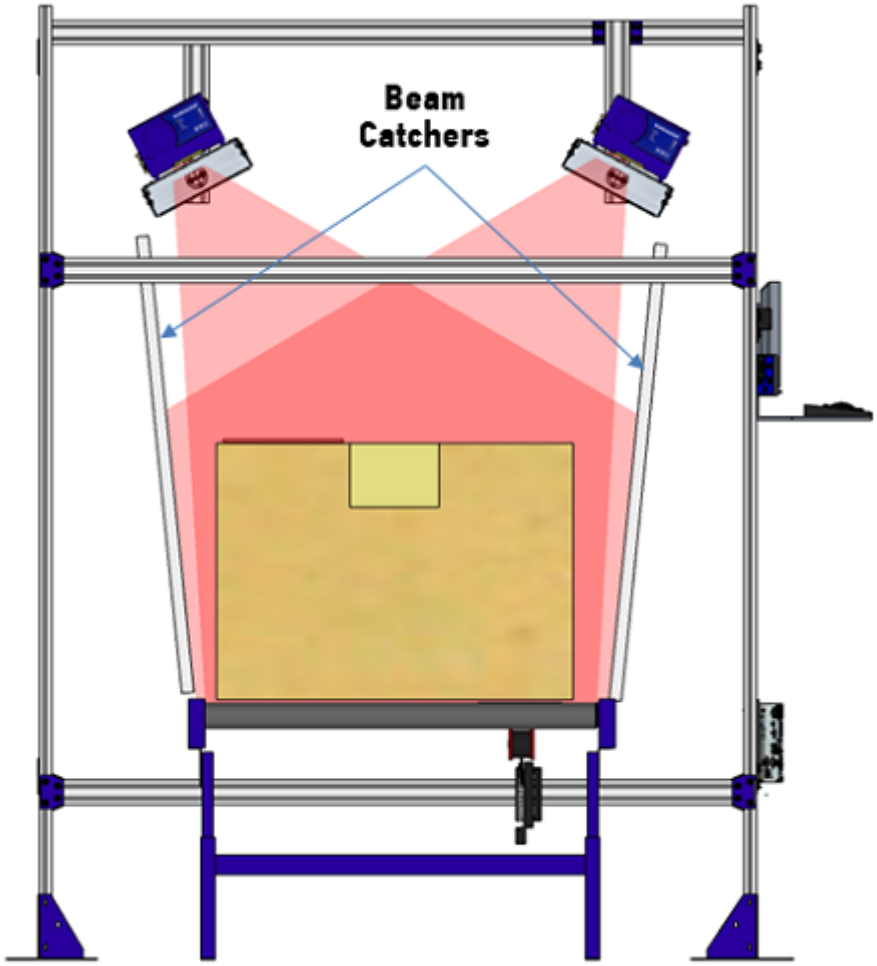
- **BOX** displays box number (0 to 9)
- **L** displays the length
- **W** displays the width
- **H** displays height
- **UNITS** displays Metric (mm) or Imperial (in) dimension units used

BEAM CATCHERS

Datalogic provides accessories called “beam catchers” to assist in keeping the laser beams inside the application area.

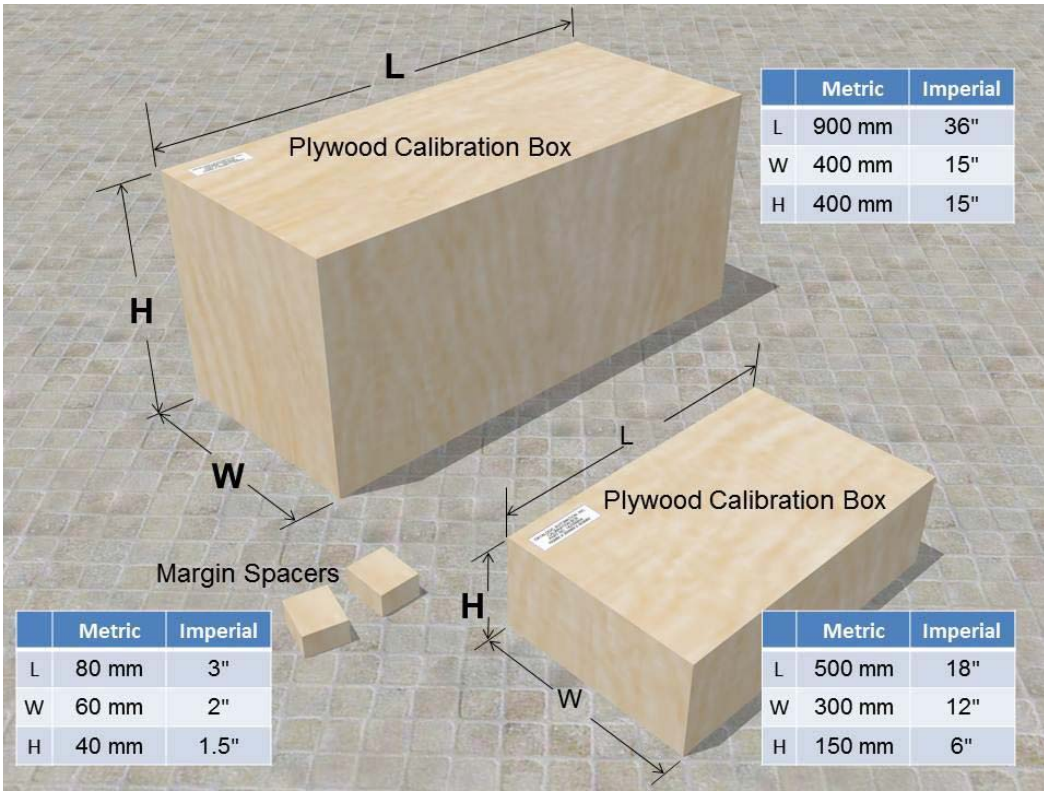
Problems may arise when the dimensioner can see remote stray objects at the sides of the conveyor belt, or can see remote stray objects through gaps in the conveyor.

Distances to those stray objects will be mapped inside the legitimate 2.4m range of the device. Points of stray objects intermingle with points of legitimate scanned objects, causing confusion. The problem is exacerbated by the small amplitude of stray object reflections, leading to huge noise in the measured distances. The proper way to avoid reflections from the stray objects is to use “beam catchers”. These are just obstacles which limit distances the Dimensioner laser light can travel to less than 2.4 meters.



CALIBRATION BOXES

The DC3000/DM3610 system requires at least one set of calibration boxes, which aid in system setup and calibration. Two boxes and two margin spacers come with the system in calibration kits in your choice of Metric or Imperial configuration and in the following sizes:



	Metric	Imperial
L	900 mm	36"
W	400 mm	15"
H	400 mm	15"

	Metric	Imperial
L	80 mm	3"
W	60 mm	2"
H	40 mm	1.5"

	Metric	Imperial
L	500 mm	18"
W	300 mm	12"
H	150 mm	6"

For information on using this kit for calibration, see DM3610 Dimensioner Calibration in Chapter 5 of the DM3610 Reference Guide.

WHAT YOU NEED TO KNOW ABOUT YOUR APPLICATION

To assure you get optimal performance out of your DC3000 and DM3610 Dimensioning System, it must be installed to meet the complete needs of your application. Therefore, take the time to know the details of your application. The better you know your application, the easier it is to apply the DM3610's capabilities to meet your application's requirements.

Below is what you will need to know before you can begin installation:

Conveyor Specifications

- Conveyor type: Belt, tilt-tray, cross belt, other?
- What is the conveyor width?
- What is the conveyor speed?
- Does conveyor speed vary or is it constant?
- Will bar code scanning also take place?
- Where is the dimensioning area to be located on your conveyor?

Product and Dimensioning Specifications

- Are the packages being transported always singulated (not touching) or non-singulated (possibly touching)?
- Are products always cuboidal (box shaped), non-cuboidal (irregular shaped), side-by-side or is there a mixture?
- Is side-by-side object dimensioning (non-singulated) required?
- How many different product sizes may be involved?
- Are products justified: toward/away from dimensioner/reader, centered, or variable?

Application Specifications

- What will be done with the dimensioning information?
- How will this information be used in your application?
- What are your communication requirements?

CHAPTER 2
MECHANICAL INSTALLATION



The DM3610 and DC3000 contain electronics that may be affected by electrostatic discharge (ESD). To prevent personal injury or damage to the unit, please follow the safety precautions and warnings found in this manual. Failure to follow these precautions may void your warranty.

PREPARING FOR MECHANICAL INSTALLATION



The application-specific drawings and documents provided by Datalogic supersede any contradictory content in this manual.

Before mounting any components, please do the following:

- Read all instructions before beginning your installation.
- Define and confirm the accuracy of your application's requirements and structure position, especially the height of the conveyor from the floor.
- Review all installation-specific drawings provided with your equipment.
- Review and plan the mechanical installation of all devices used in your application.
- Be sure to allow adequate clearance for maintenance.
- Review and plan the power requirements for your application.
- Check the contents of the shipping cartons against the packing list.
- Record all product serial numbers.
- Route wires carefully to reduce or minimize electrical noise. When power and communication wiring must cross, make their intersection perpendicular.
- Proper grounding limits the effects of noise due to Electromagnetic Interference (EMI).
- Consider where you are mounting the various devices and the cabling requirements for each.



Refer to the Reference Documentation for details on connecting your DM3610 dimensioner to other devices in the system.

INSTALLATION SEQUENCE

To complete mechanical installation and setup, you must:



Everything should be MECHANICALLY INSTALLED before performing any ELECTRICAL INSTALLATION. See Chapter 3 for electrical installation details.

- Review the details of your application's requirements
- Erect mounting structure or other supporting structures
- Determine and mark the Universal Mounting Brackets (UMB) locations
- Mount the UMB Mounting Plates to the UMBs (if not already installed)
- Mount the UMBs to the mounting structure
- Change the default parameters for each DM3610 in the system to include a unique name, IP Address, and other parameters ("IP Address Discovery" on page 58)
- Mount the DM3610 dimensioners to their UMBs
- Mount the CBX510 connection box to the mounting structure
- Mount the DC3000 Controller to the mounting structure
- Mount the photoelectric sensor to the mounting structure (optional)
- Mount the tachometer to the mounting structure (optional)
- Mount the Remote Display to the mounting structure (required for Legal-for-Trade installations, dependent on requirements)
- Mount Power Supplies
- Complete electrical installation ("Electrical Installation" on page 36)
- Align the DM3610 dimensioners for proper operation
- Adjust Tilt, Pitch and Skew
- Adjust Field of View and Angle offset
- Calibrate the DM3610 dimensioners ("Dimensioning Setup and Calibration" on page 133)
- Configure the DC3000 Controller ("Configure the System Using the DC3000 User Interface" on page 139)
- Set Tach/Trigger/Transmit
- Perform Dynamic Calibration ("Dynamic Calibration" on page 147)
- Check system operations

MECHANICAL INSTALLATION



The application-specific drawings and documents provided by Datalogic supersede any contradictory content in this manual.

Because the DM3610 is a measuring device, calibration and proper usage of this device are necessary for proper operation. It is therefore essential that the unit be mounted exactly as detailed on your application specific drawing to retain proper calibration. The critical parameters are:

- Minimal vibration of unit on mounting structure - any movement of the DM3610 due to vibration/swaying of the mounting structure will directly impact the dimensioning accuracy.
- Mounting height above the conveyor.
- The DM3610 scan line must be perpendicular to conveyor travel.
- If used, the photoelectric sensor's beam path must be parallel to the DM3610 scan line.

- Tachometer assembly mounted on the same conveyor belt that the DM3610 scan line is on, to insure proper speed indication
- The DM3610 scan line should be located at least 7 - 8 cm [3 inches] away from any other scan pattern on the conveyor belt, to eliminate the possibility of reflections interfering with dimensioning accuracy.

DIMENSIONS AND CLEARANCES

The overall dimensions of the DM3610 are provided in Chapter 1, Introduction and 8, Technical Features. The DM3610 is a sealed, unventilated unit. Mounting the unit with 300 mm [12”] of clearance (front, top, and sides) is recommended for ease-of-access and cooling.



For installation, maintenance and service reasons, approximately 300 mm (12 inches) of clearance is recommended.

Physical Support Requirements

For details on the weight of the DM3610, see Chapter 8, Technical Features. Multiple-head systems may include further details on the physical support requirements with any application-specific documentation provided.

Vibration Limitations

The DM3610 is designed and tested to withstand continuous sine wave vibrations between 10 and 500 hertz (limited to a displacement of 0.40 mm [0.0157 inches] for frequencies between 10 and 50 Hz and limited to 2 G acceleration for frequencies between 50 and 500 Hz).

General Mounting Guidelines

It is important that you follow these general precautions when installing, setting up, operating, maintaining, troubleshooting, or replacing any Datalogic products, parts or related equipment.



The DM3610 uses a visible laser diode (red) 658 nm typical, Collimated < 1.5mR, <9.6mW peak power, <1.0mW Average power, Class 3R (IEC60825-1), Class II (CDRH 21CFR1040), in the dimensioning process. Avoid staring at the laser light source. While laser light does not constitute a health hazard, staring at the laser for prolonged periods could result in eye damage.

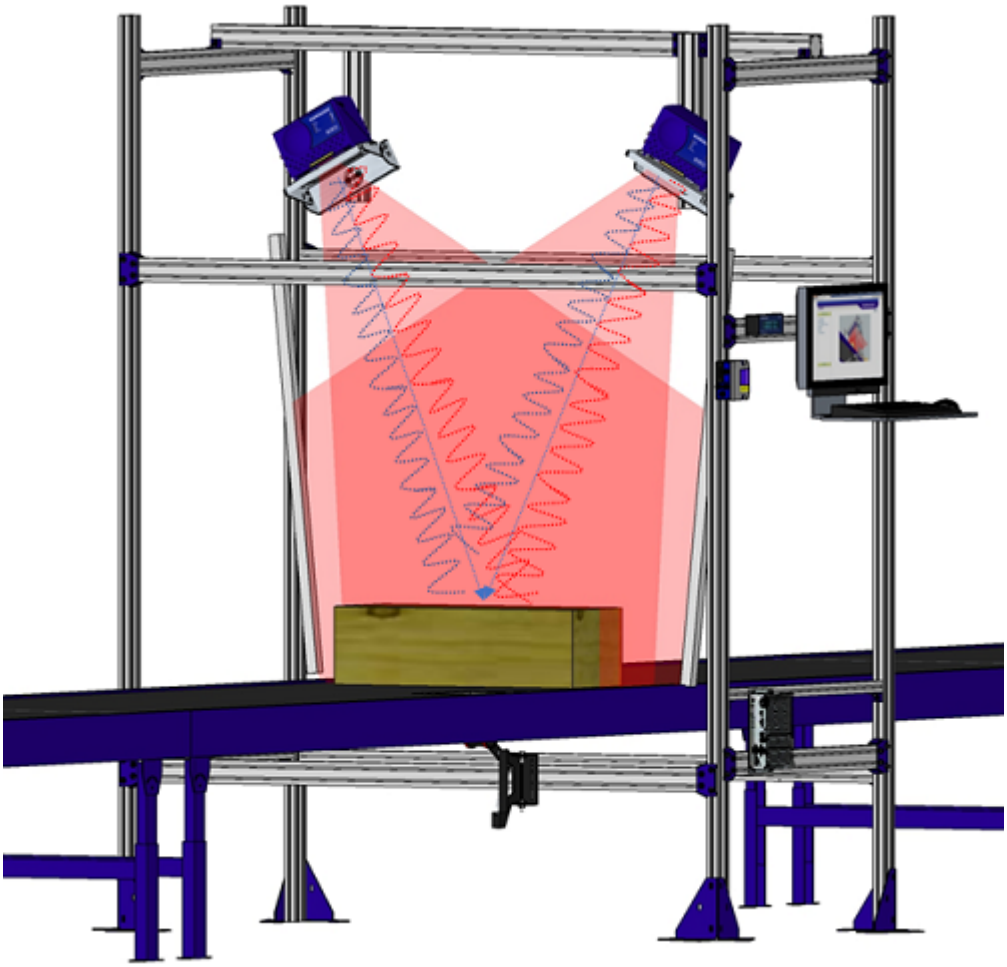
As you plan and install your DM3610 dimensioning system application, be sure to keep the following guidelines in mind:

- All mounting structure assembly and equipment installation can be performed by one installer.
- Determine the proper orientation and position of the DM3610.
- Leave adequate clearances (approximately 300 mm [12 inches]) for wiring.
- Route wires carefully to reduce or minimize electrical noise. When power and communication wiring must cross, make their intersection perpendicular.

- Proper grounding limits the effects of noise due to Electromagnetic Interference (EMI).

CONVEYOR CONSIDERATIONS

In the process of dimensioning a package, the DM3610s are measuring the distance between the package and themselves. Therefore, any motion of the package other than that in the conveyor direction will impact dimensioning accuracy. Consider the following:



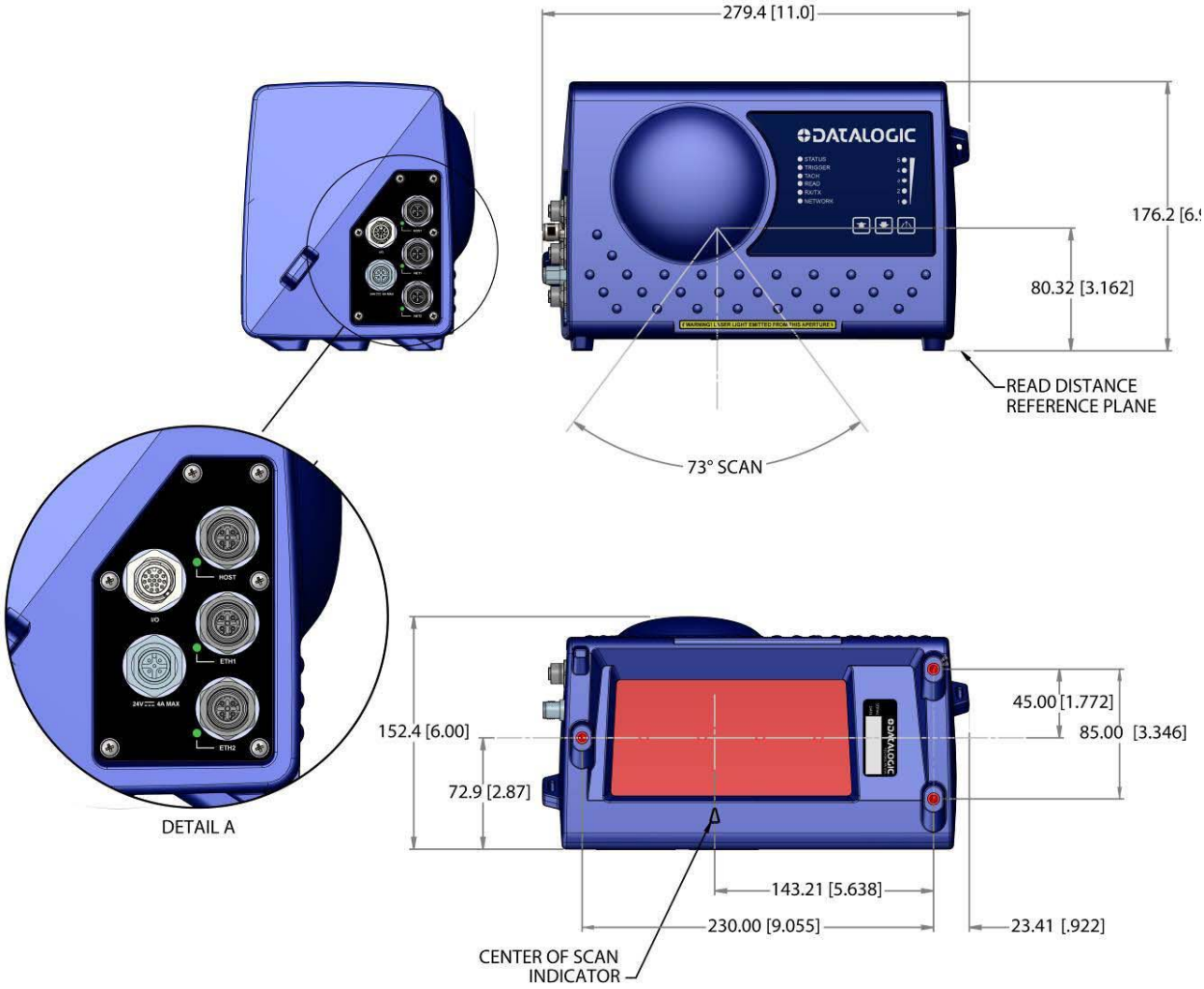
- Make sure the DM3610s are mounted at least 300 mm [12 inches] plus the longest box away from any belt transitions. This applies to both packages entering and leaving the system. This means the DM3610s requires a conveyor belt length of at least 600 mm [24 inches] plus twice the longest box to ensure box stability under the system.
- The DM3610s should be placed so packages are not sliding accelerating/decelerating when they pass under the scan line.
- Belt seams that elevate packages above the normal belt surface will impact dimensioning accuracy.

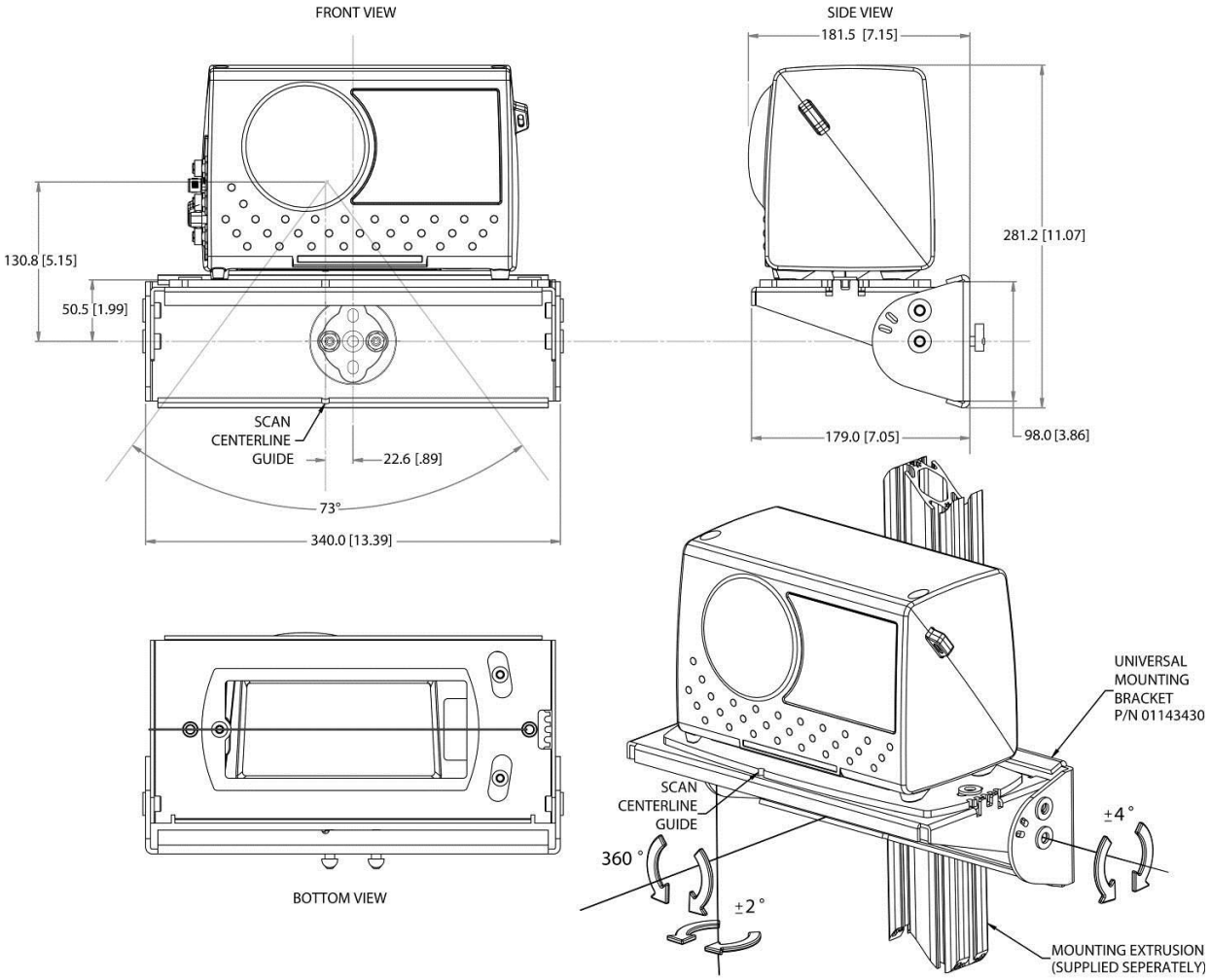
MOUNTING STRUCTURE CONSIDERATIONS

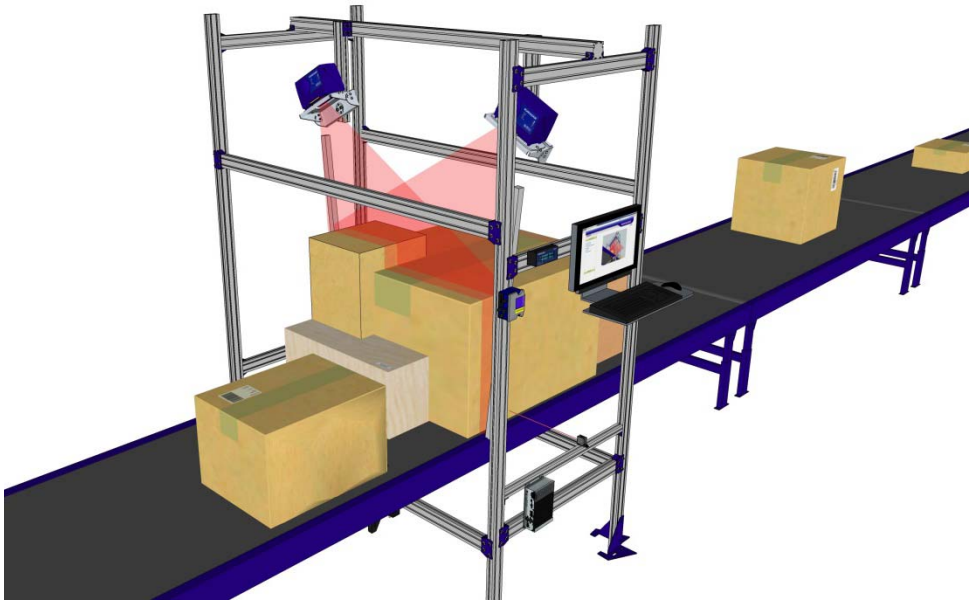
Your first task is to mount your DM3610 unit. You can provide your own mounting structure or Datalogic can design one for you. We recommend using a Datalogic mounting structure for standard applications.

Your mounting structure must provide the following capabilities:

- It is adjustable enough for you to move your DM3610 units to the optimum position for proper dimensioning.
- It is able to hold 16 kg [36 lbs] (three times the weight of the DM3610).
- It allows a technician access to the DM3610s while it is mounted.
- It must be as vibration free as possible so as not to affect the dimensioning accuracy.
- It is constructed of steel or aluminum.
- It provides approximately 300 mm [12 inches] minimum clearance on all sides. This clearance is necessary to provide proper ventilation, allow access to all panels of the DM3610, and allow room for proper servicing.




FRONT VIEW
SIDE VIEW
181.5 [7.15]
281.2 [11.07]
130.8 [5.15]
50.5 [1.99]
SCAN
CENTERLINE
GUIDE
22.6 [.89]
73°
340.0 [13.39]
179.0 [7.05]
98.0 [3.86]
BOTTOM VIEW
UNIVERSAL
MOUNTING
BRACKET
P/N 01143430
SCAN
CENTERLINE
GUIDE
360 °
±2 °
±4 °
MOUNTING EXTRUSION
(SUPPLIED SEPERATELY)



Mounting the Dimensioner with the Standard Universal Mounting Bracket (UMB)

The Standard Universal Mounting Bracket (UMB) allows you to install and make fine adjustments to the position of the DM3610. The bracket assembly includes the UMB, UMB Mounting Plate, and UMB Mounting Disk.

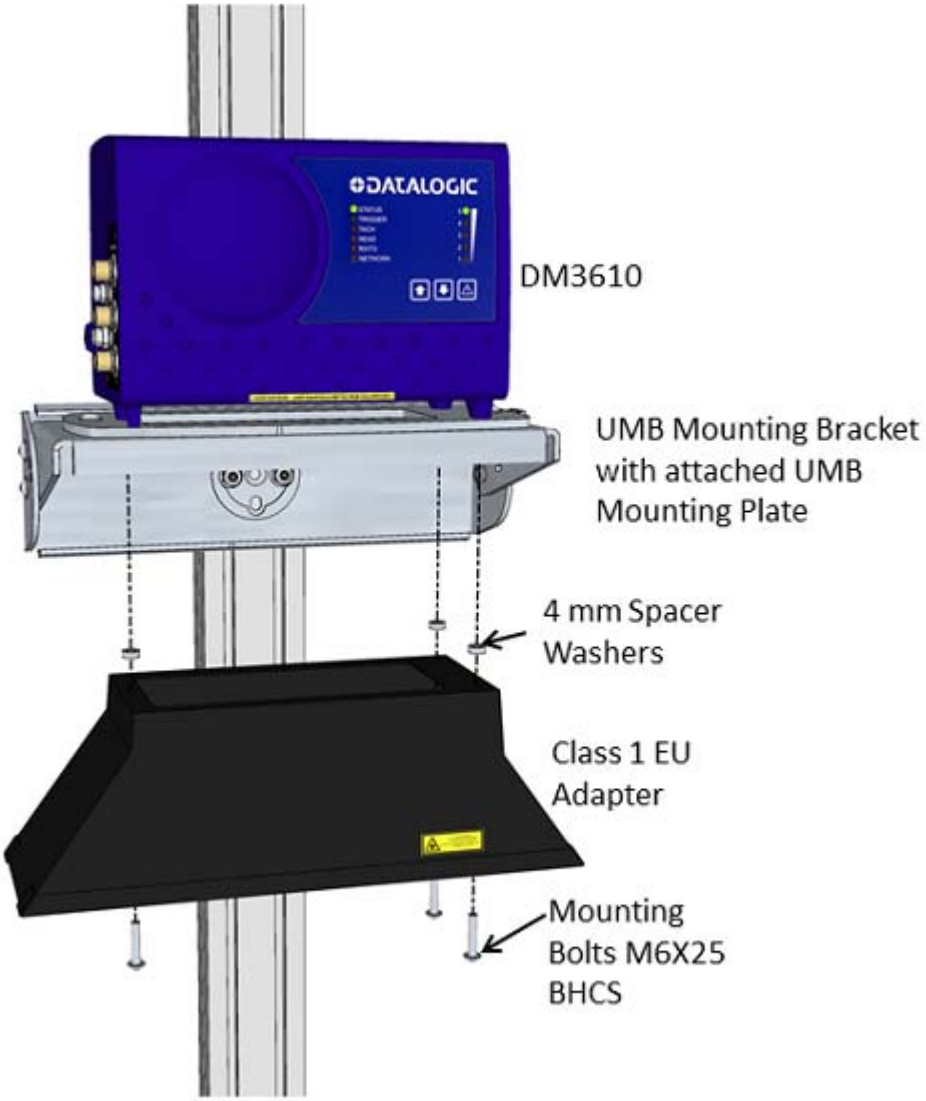


1. Mount the UMB Mounting Plate to the UMB, if it has not yet been attached.
2. Mount the UMB to the mounting structure using the UMB Mounting Disk and hardware provided. Hardware is provided for standard Bosch or 80/20 mounting structure extrusion.
3. Mount the DM3610 to the UMB Mounting Plate and UMB.

Mounting the Optional GFC-3610 Laser Guard Adapter

The optional GFC-3610 Laser Guard Adapter is mounted below the standard and multi-head style UMB Mounting Brackets.

When mounting the GFC-3610 Laser Guard Adapter to the standard UMB, the mounting bolts included with the GFC-3610 Laser Guard Adapter pass through the adapter, spacers (included with adapter), UMB mounting plate, and into the mounting holes on the bottom of the DM3610, as shown below.



NOTE

The bolts and washers provided with the DM3610 should be replaced with those provided with the GFC-3610 Laser Guard Adapter.

TYPICAL TWO-HEAD APPLICATION INSTALLATIONS

You must mount the following components of the two-head dimensioning system before you power it on:

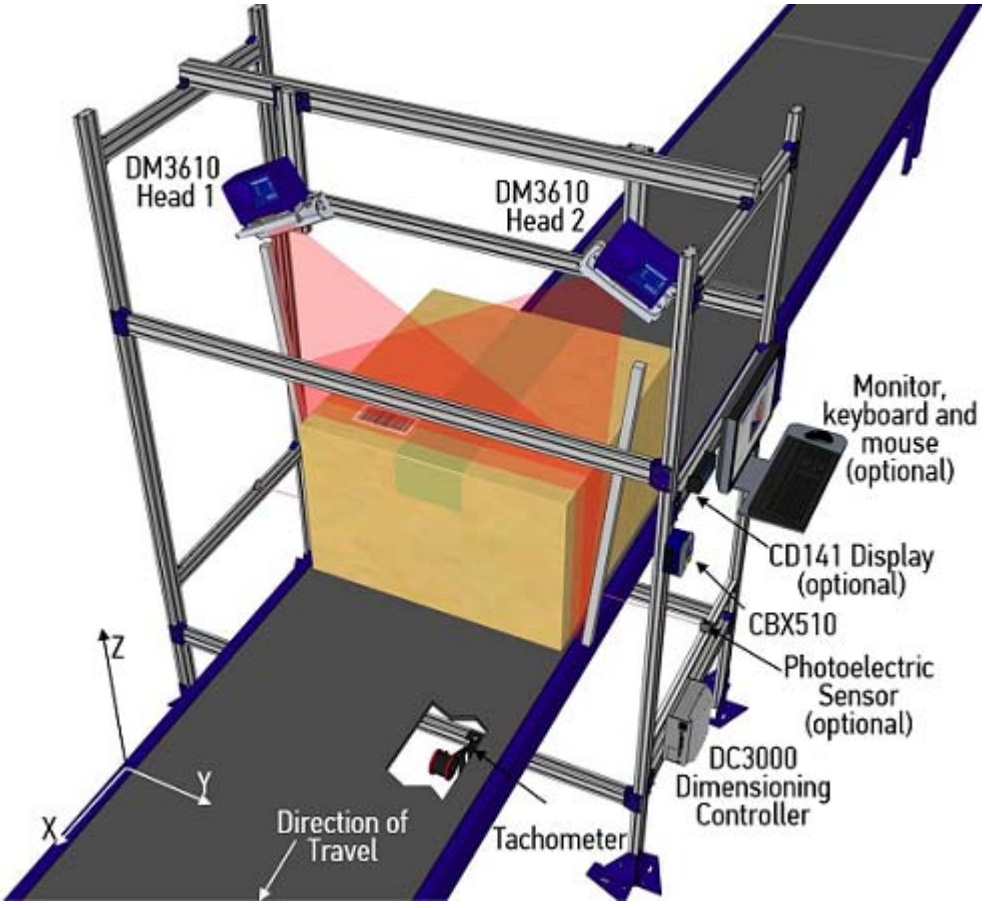
- Universal Mounting brackets and DM3610 dimensioners
- DC3000 Controller
- CBX510 Connection Box
- Tachometer (if used)
- Photoelectric Sensor (if used)

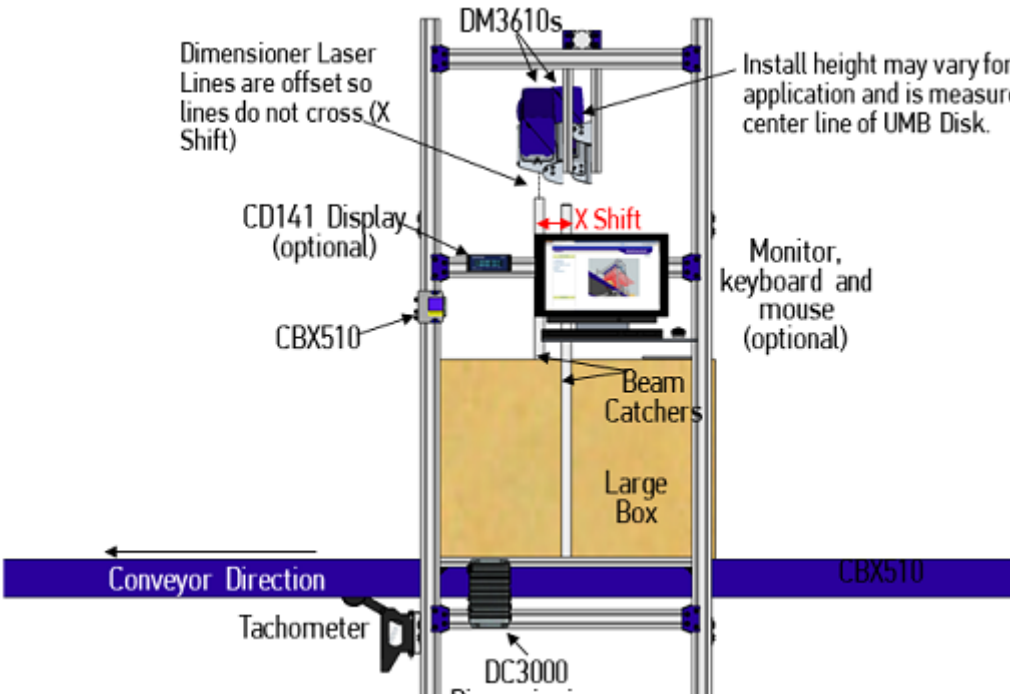
NOTE

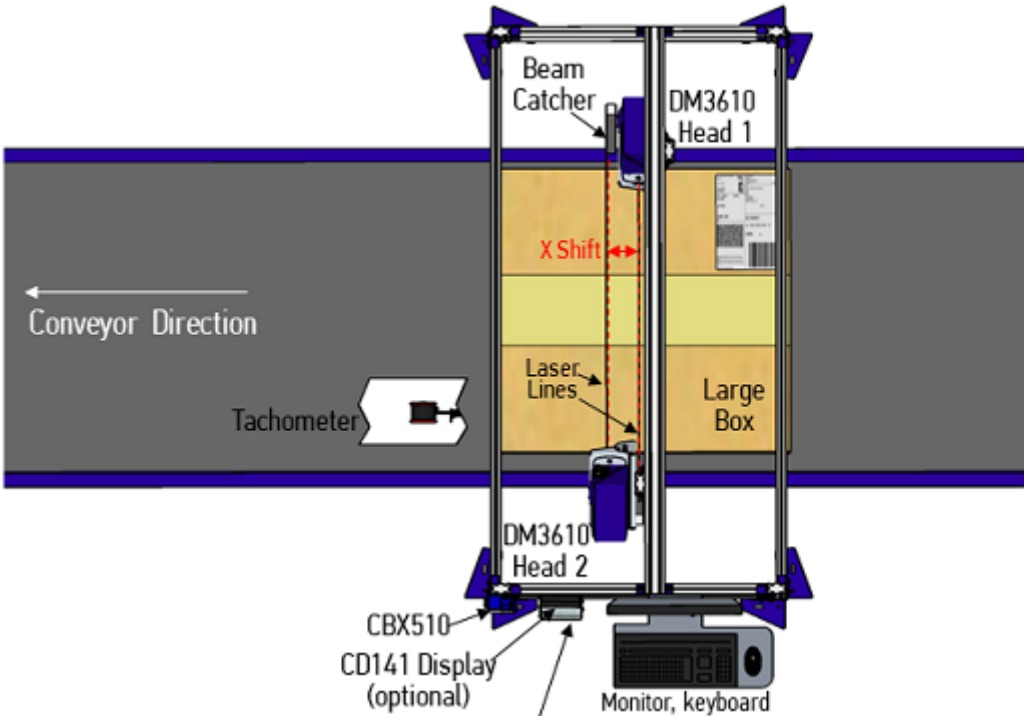
A photoelectric sensor is typically used for DM3610 singulated, nontouching applications. The photoelectric sensor is an object-sensing trigger device. A tachometer is used to measure conveyor speed. (Your installation may use other devices.) A photoelectric sensor is not required for DM3610 applications unless your system requires a defined transmit point.

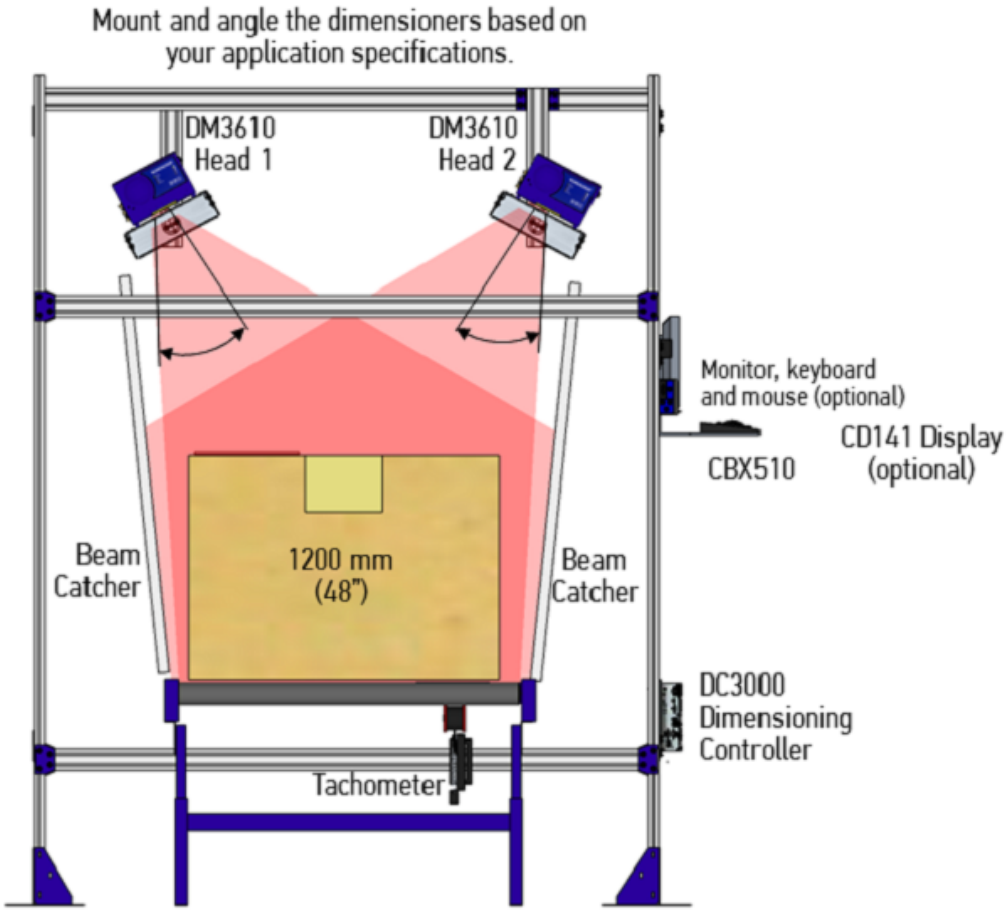
Two-Head Application

Typical two-head applications include two dimensioners positioned towards each side edge of the conveyor and angled in toward the center line of the conveyor. The dimensioners are offset along the X-axis to avoid cross interference of the laser lines.




DM3610s
Dimensioner Laser Lines are offset so lines do not cross (X Shift)
Install height may vary for application and is measur center line of UMB Disk.
CD141 Display (optional)
X Shift
Monitor, keyboard and mouse (optional)
CBX510
Beam Catchers
Large Box
Conveyor Direction
CBX510
Tachometer
DC3000


Beam Catcher
DM3610 Head 1
X Shift
Conveyor Direction
Laser Lines
Large Box
Tachometer
DM3610 Head 2
CBX510
CD141 Display (optional)
Monitor, keyboard



MOUNTING STRUCTURE ASSEMBLY

When using the standard mounting structure provided by Datalogic, assemble as defined in the application information provided with the structure.

NOTE

This manual addresses DC3000 and Dual Headed DM3610 installation. The information provided here may be superseded by any application specific drawings provided by Datalogic.

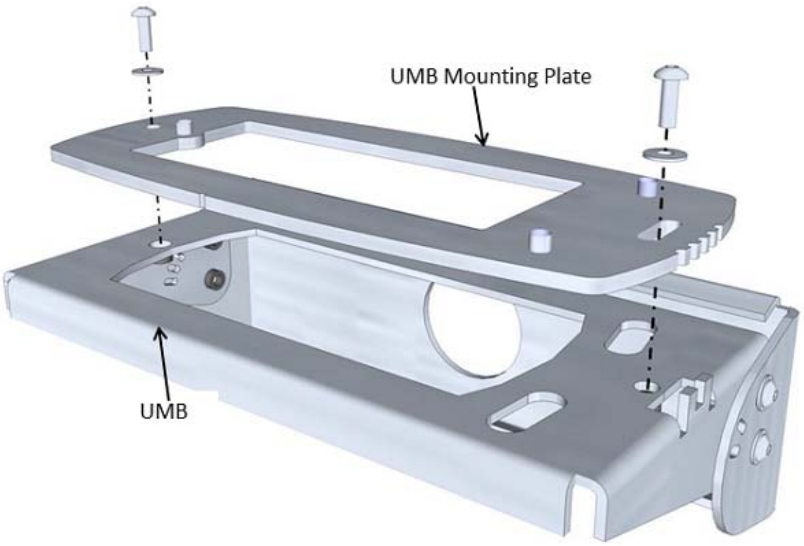
Depending on your specific installation, beam catchers may be needed to avoid false dimensioning data points.

Prepare the Mounting Structure and Universal Mounting Brackets

1. In standard installations, the DM3610 Universal Mounting Bracket (UMB) is mounted to a short upright mounting support (from mounting structure extrusion).

2. Using a tape measure and marker or pencil, make an installation mark on the upright where the center of the Universal Mounting Bracket (UMB) disks will be located. Base your installation marks on application drawings provided with your system if available.

3. If the UMB Mounting Plates are not yet attached to the UMB for each dimensioner, attach them now with the screws provided.

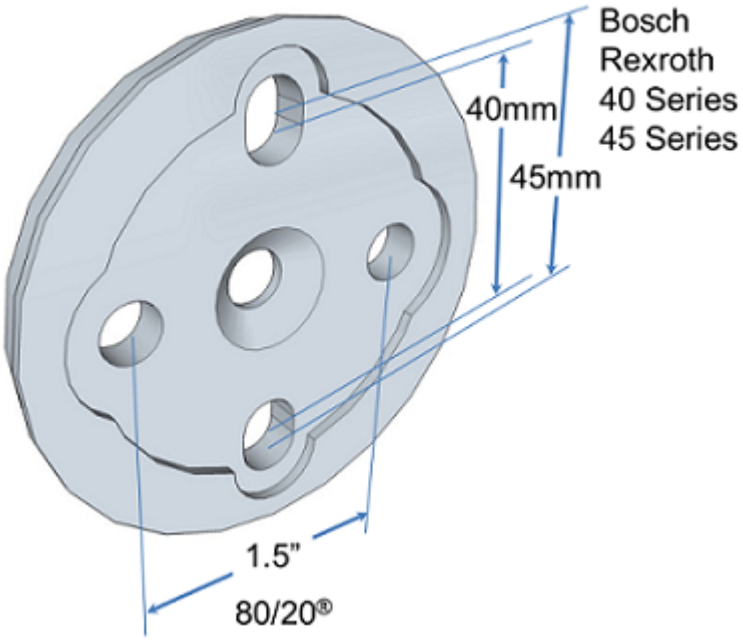


Mounting the UMBs

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.

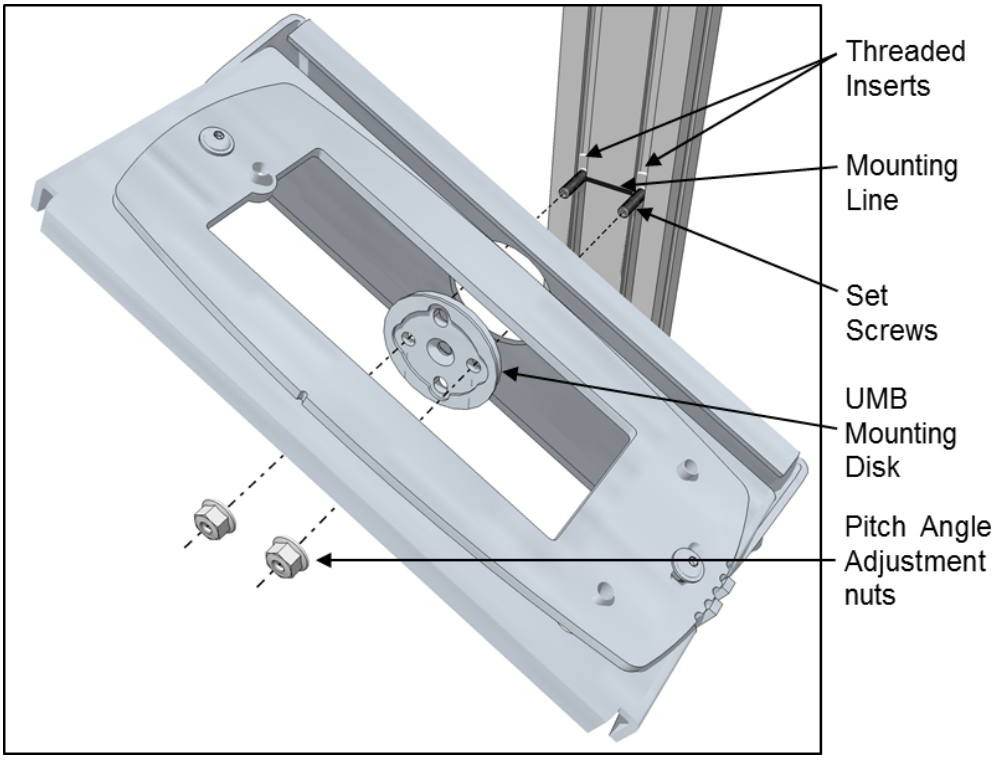
3. The UMBs are fastened to the mounting structure with the UMB Mounting Disks, threaded inserts, set screws, and matching nuts. Place the threaded inserts into the mounting extrusion tracks one at a time and secure them at the mounting mark with the set screws provided.

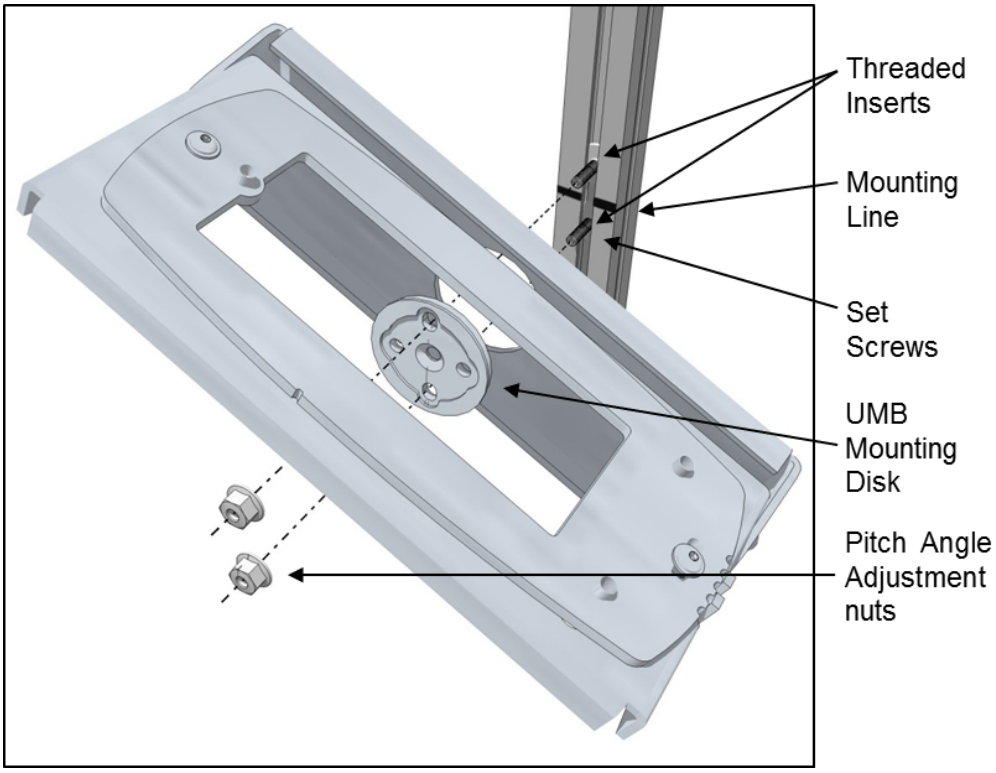


NOTE

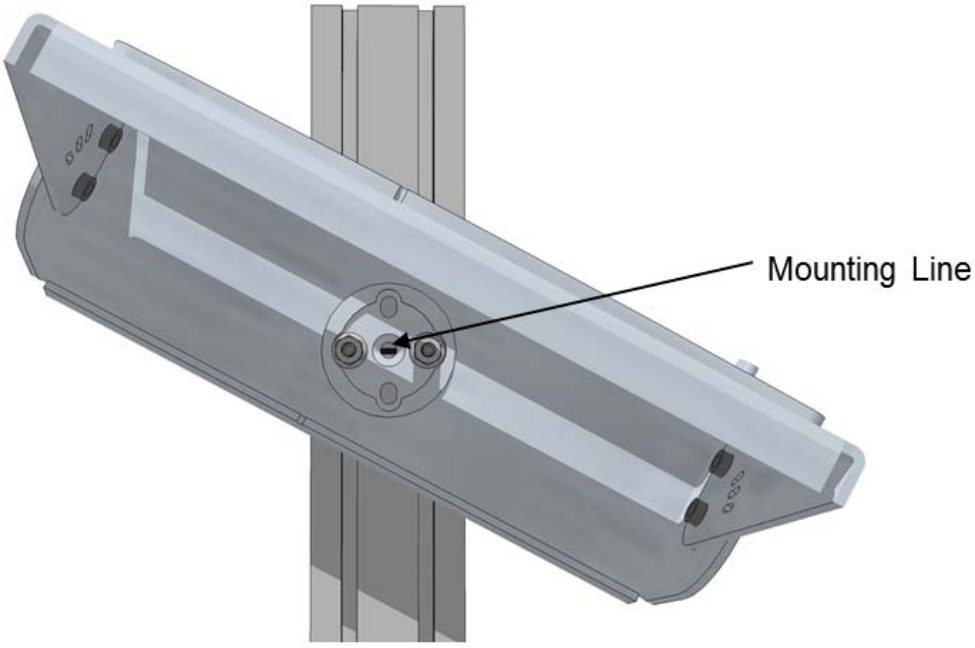
The UMB Mounting Disks are designed for installation to the T-slots of both Bosch Rexroth (40 and 45 series) and 80/20 1.5 inch aluminum extrusion.

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

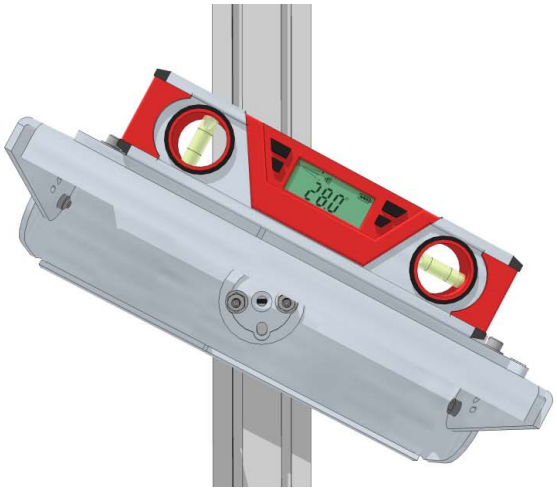




4. Adjust the UMB so that the installation mark is at the center slot of the UMB Mounting Disk, and then secure the mounting disk and bracket with the pitch angle adjustment nuts.



5. 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.



6. 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-Configuring 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**, followed by **HEAD2**, and etc.

To change the DM3610 parameters and mount the dimensioner (repeat for each system dimensioner):

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

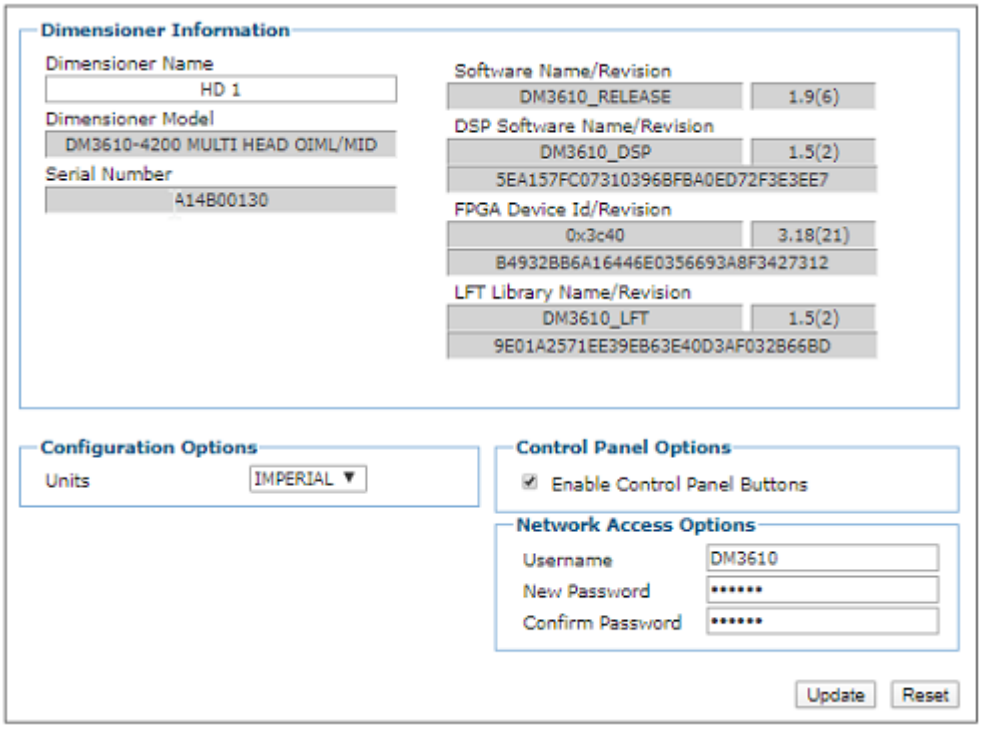
2. You must configure your PC's IP Address to be in the same network as the DM3610's IP Address (example: 192.168.3.1). Set the Netmask to 255.255.255.0 and the Gateway to 0.0.0.0. Connect your laptop computer to the DM3610 HOST port using either the CAB-ETH-M0x M12-IP67 ETHERNET CABLE or CBL-1534-0.2 ADAPT.CABLE ETH M12-TO-RJ45F.

3. Open a browser on the laptop computer, and type in the default IP address of 192.168.3.100. The **DM3610 User Interface** opens in the browser window.



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.

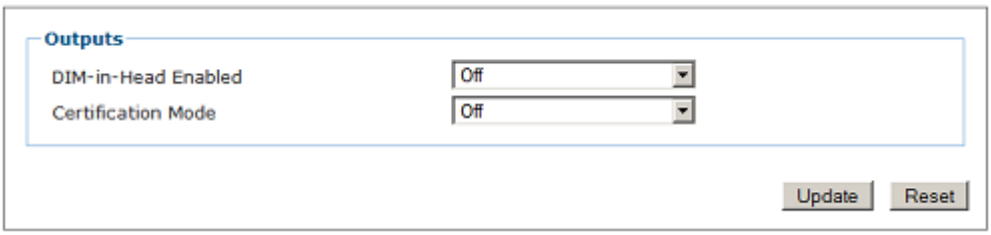


6. Confirm the following items:
   - Dimensioner Model should be **MULTI HEAD**
   - Software revision should be **1.8** or GREATER.

7. Enter a unique name for the dimensioner in the **Dimensioner Name** field. The master DM3610 should be named **"HEAD1"** (HD1 in this example) (this dimensioner will be mounted to the left looking downstream), the next DM3610 **"HEAD2."**

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.**

WARNING

Your must turn Certification Mode back on after calibration is completed.

11. Click **Update**.

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



See "DM3610 Head Tach/Trigger/Transmit Setup for Dual Headed System" on page 82

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

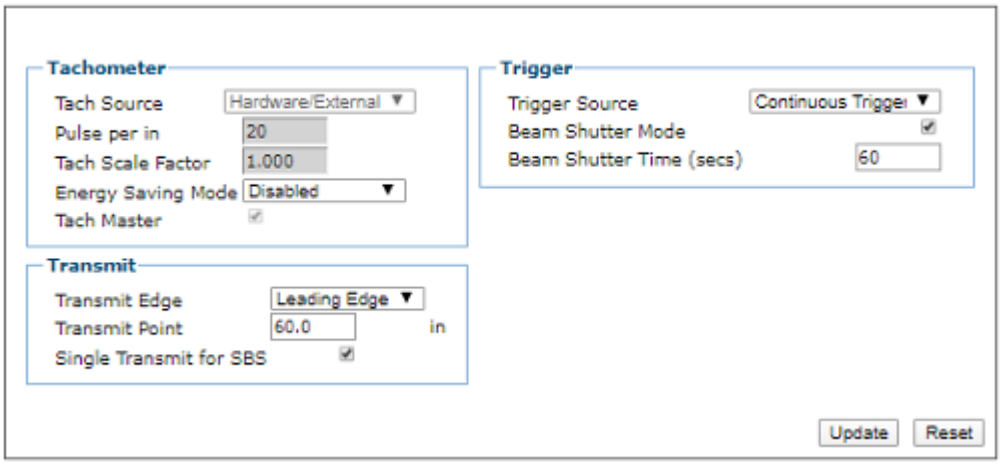
14. Set the **Pulses per in [cm]** to match the application tachometer setting.

Pulses Per Inch	Pulses Per cm
16	6.3
20	7.9

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

16. Set the **Transmit Edge** to **Leading or Trailing** based upon the configuration of your application**.**

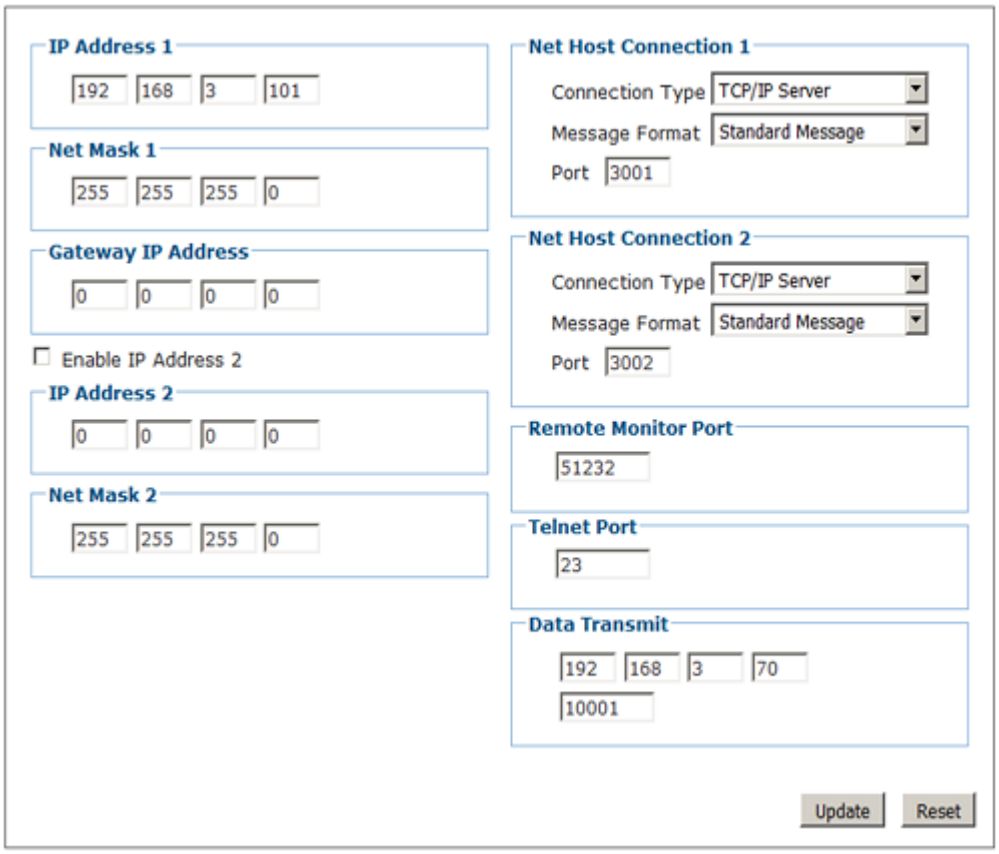
17. Set the **Transmit Point** based upon the configuration of your application.



18. **(FOR HEAD1 ONLY)** Select the **Tach Master** check box to make this DM3610 the system master dimensioner.

19. Click **Update**.

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



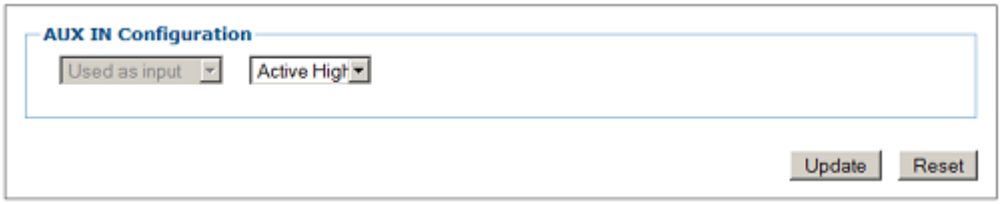
21. Adjust the parameters for each head as shown in the table below. Click **Update** to save the parameters.

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 Check-box (Tach sync source)	HEAD1 is always the master, and this selection is found in **Modify Settings | Tach/Trig-ger/Transmit.**	

22. In the tree menu under **Modify Settings,** navigate to **Serial | Port N.** The **Serial Main/Port N** window opens.



23. Under **Message Format,** select the **Legal for Trade Display** from the drop-down list**.**
24. Click **Update**.
25. If relays are required, set those up for each DM3610, using the DM3610 e_genius interface.
26. In the tree menu under **Modify Settings**, select **Relay**. The **Relay** window opens.



27. 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.
28. To determine the correct state, open the **Diagnostic > Monitor** window, block the photoeye and check the trigger LED. It should go on when the photoeye is blocked. Click **Update**.
29. Power down the DM3610.

Repeat the previous configuration steps for each dimensioner in the system.

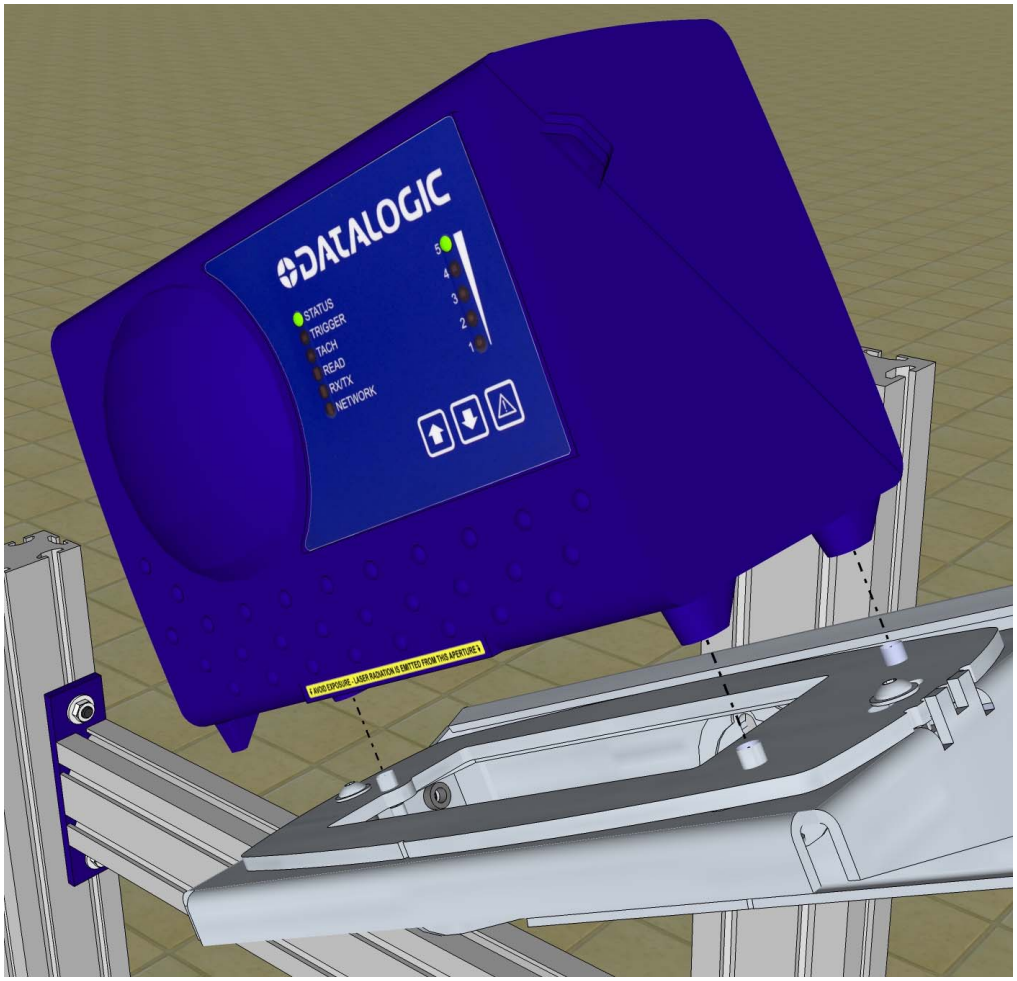
Install the DM3610 Dimensioners

1. 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.

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.

NOTE

The front display panel of the DM3610 should be facing upstream.



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.

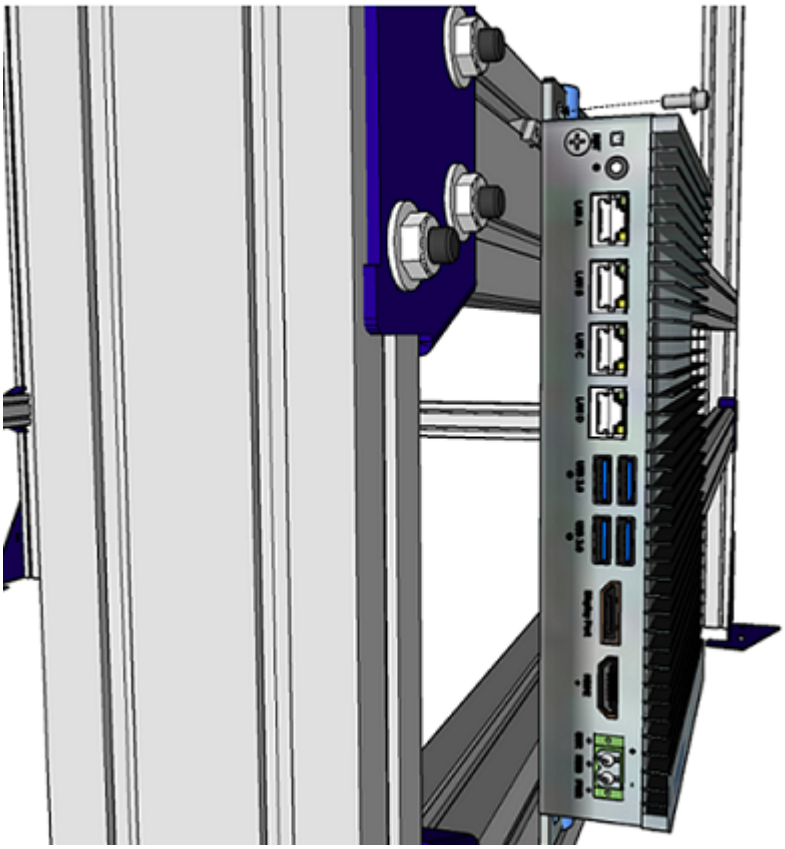


NOTE

When viewing from conveyor downstream, in standard configuration the connector panel will be facing to the RIGHT side of the conveyor.

Mounting the DC3000 Controller

Mount the Controller firmly to the mounting structure with T-bolts in a location to facilitate easy access to wiring. There are four mounting holes.

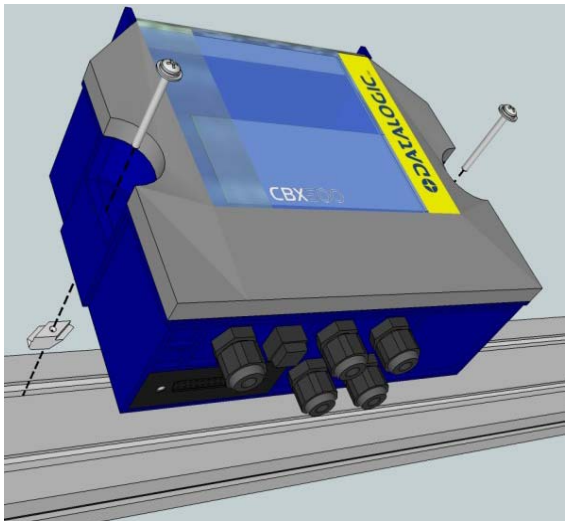


Mounting the CBX Connection Box

CBX Series industrial connection boxes can be used to connect the DM3610 dimensioners to the external peripherals.

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

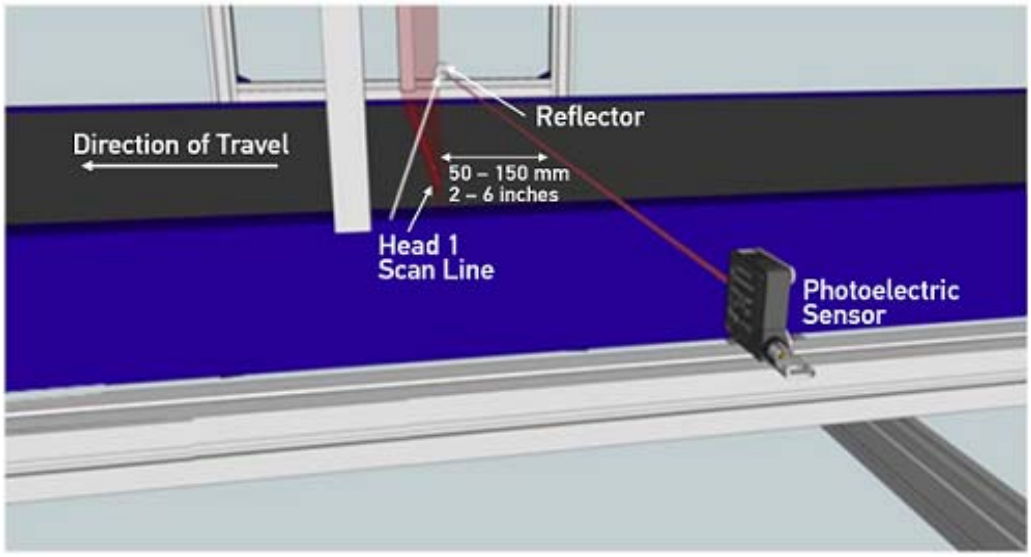
When mounting CBX to a fixed surface, the stencil included in the package can be used to drill the appropriate mounting holes.



Mounting the Datalogic Photoelectric Sensor

The standard DM3610 hardware trigger is a Datalogic photoelectric sensor. It works by emitting a light beam that is returned by a simple reflector. When a package breaks the path of light, the trigger signal is activated.

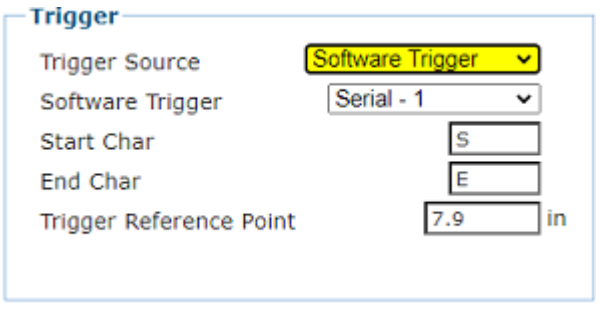
In order for photoelectric sensor to work properly, make sure the following things are done when mounting the trigger photoelectric sensor.



NOTE

Mounting supports may differ from the extrusion shown in the image above.

- Mount the photoelectric sensor so it is parallel to and 50 to 150mm [2 to 6] inches upstream from the Head 1 DM3610 laser.
- The distance from the photoelectric sensor to the DM3610 laser line must be entered in the **Modify Settings | Tach/Trigger/Transmit** window of the User Interface in the Trigger Reference Point text field. See Chapter 4, User Interface.

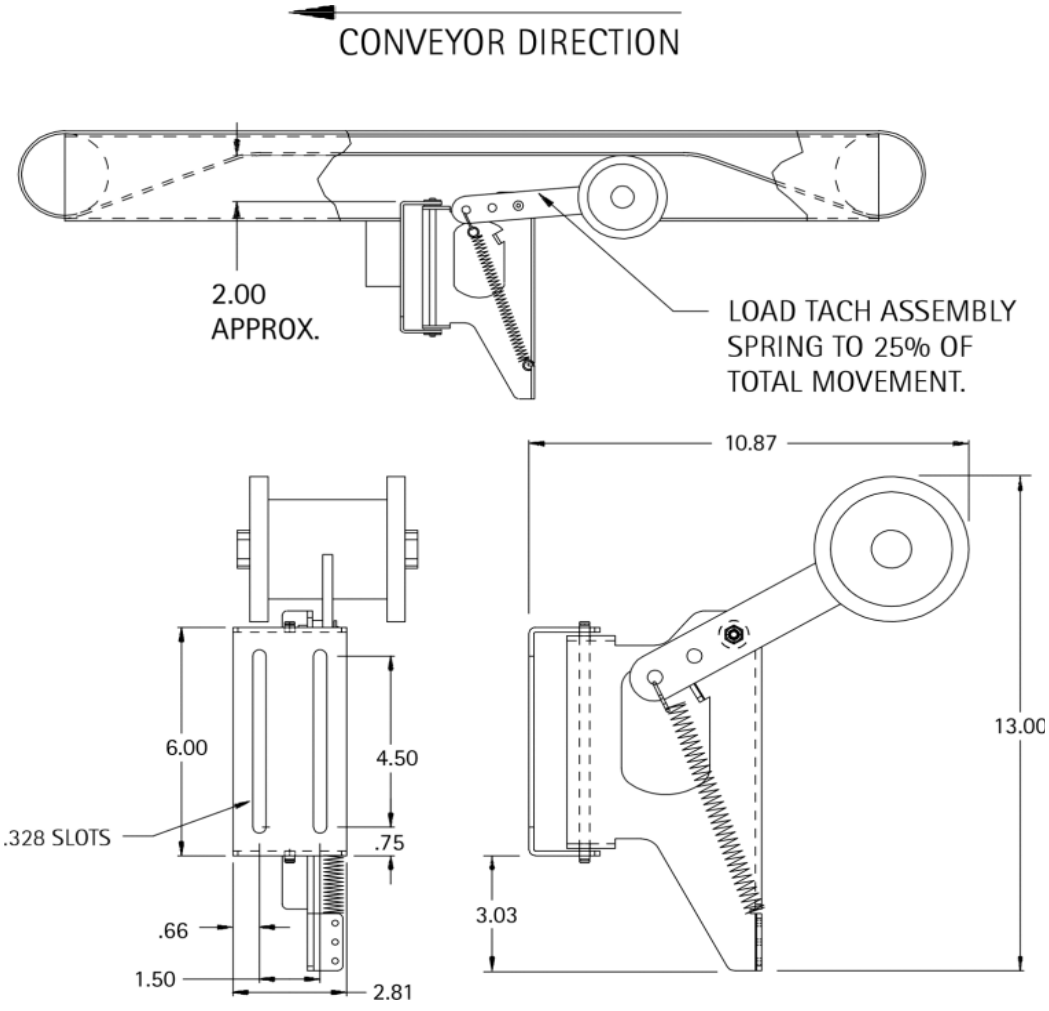


- Mount the reflector directly opposite the emitter on the other side of the conveyor.
- The emitter must be mounted so the light exit window is perpendicular to the conveyor, facing the reflector.
- Mount the reflector perpendicular to the conveyor, facing the emitter.

Mounting the Tachometer

The tachometer (tach) outputs a set number of pulses for each wheel rotation. This tells the DM3610 the precise conveyor speed, allowing it to determine the exact package position. Because the exact layout of many conveyors is unique, it is impossible to give exact directions for tachometer mounting. Follow the guidelines below as closely as possible:

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



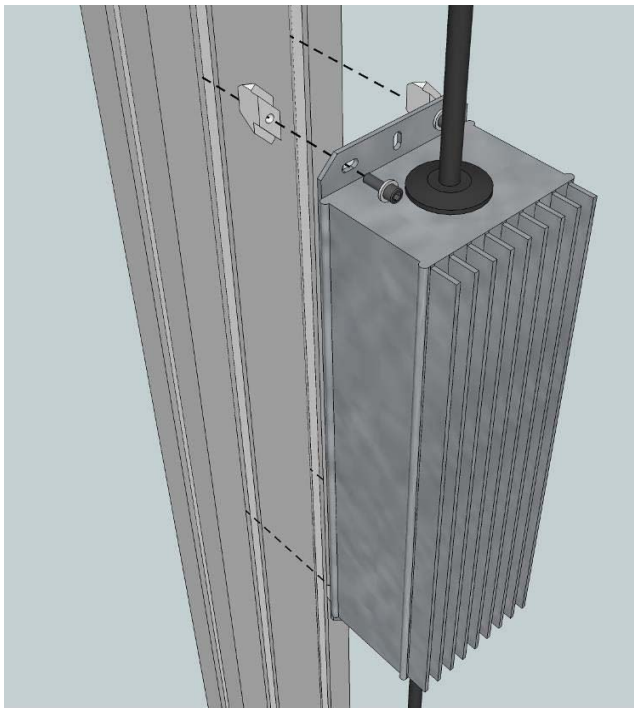
Mounting the Remote Display

The remote display should be mounted for easy visibility. It is used to display DM3610 certification mode data (box length, width, height) in both inches and centimeters. Interconnections to the DM3610 are covered in Chapter 3, Electrical Installation.



Mounting the Power Supply

In a DC3000 Dual Head System there are three power supplies. Mount each power supply in a location on the structure where its cables can reach the DC3000 or DM3610 and a power source. Secure the power supply to the mounting structure using the supplied hex screws and drop-in T-nuts as shown below.



CALIBRATION AND SETUP

After the DC3000/DM3610 dimensioning system has been installed, it must be calibrated and configured for precise package dimensioning. See Chapter 5, Dimensioning Calibration for complete procedures.

CHAPTER 3
ELECTRICAL INSTALLATION



This equipment contains electronics that may be affected by electrostatic discharge (ESD). To prevent personal injury or damage to the unit, please follow the safety precautions and warnings found in the introduction of this manual. Failure to follow these precautions may void your warranty.



Electrical Installation by Qualified Service Technicians Only! A trained technician must perform any procedures involving potential exposure to high voltage electricity. Do not attempt to perform any electrical installation procedures unless you are a trained technician. Failure to follow these precautions may void your warranty.

PREPARING FOR ELECTRICAL INSTALLATION

Before mounting any components, please do the following:

- Read all instructions before beginning your installation.
- Observe all electrical safety requirements discussed in the Introduction to this manual.
- Define and confirm the accuracy of your application's requirements.
- Review all installation-specific drawings.
- Review and plan the power requirements for your application.
- Review and plan the communications requirements for your application.



The content of this manual may be superseded by any customer-specific documentation provided by Datalogic. Before proceeding with any installation procedures, be sure to review ALL documentation, especially content that contains details specific to your installation.

INSTALLATION SEQUENCE



Everything should be MECHANICALLY INSTALLED before performing any ELECTRICAL INSTALLATION. See chapter 2 for mechanical installation details.

If your system requires custom-length cables or other special wiring, documentation specific to these requirements has been provided in your shipment. This special documentation supersedes any contradictory content in this manual.

To reduce the possibility of damage to the unit, check all cabling between the DM3610 and other devices for accuracy.

To install a DC3000 Controller and two DM3610 Dimensioners, follow this sequence:

- Complete mechanical installation *(as outlined in Chapter 2.)*
- Complete electrical installation.(See wiring illustrations provided in this chapter.)
- Observe all electrical safety requirements outlined in this chapter.
- Ground the mounting structure to protective earth (PE) ground.
- If used, wire the photoelectric sensor (or other trigger) to the CBX.
- Wire the tachometer to the CBX (if used).
- Wire serial ports to the CBX if needed.
- Connect the M12 end of the Ethernet cable to the DC3000 HOST port and network switch as required by your application.
- Wire the Remote Display to the CBX (if used).
- Connect the DM3610 to its power supply
- Connect the power supply to the power source.
- Setup / check DM3610 operations *(See Chapter 5.)*
- Connect each DM3610 to the DC3000
- Connect the DC3000 to the host.

Installation Guidelines and Precautions

It is important that you follow these general precautions when installing, setting up, operating, maintaining, troubleshooting or replacing any Datalogic products, parts or related equipment. As you plan and install your DC3000 and DM3610s, be sure to keep the following guidelines in mind:

- Determine the DM3610 is in the proper location as outlined in *Chapter 2.*
- Leave adequate clearances (approximately 300 mm [12 inches]) for wiring.
- Route wires carefully to reduce or minimize electrical noise.
- When power and communication wiring must cross, make their intersection perpendicular. Avoid running power and data wiring parallel to each other. If possible, maintain one of the following separations between the power and data wiring:
  - 300 mm [12 inch] gap
  - use steel conduit and 25 mm [1 inch] gap
  - 6.5 mm [0.25 inch] of aluminum



To assure no ESD damage will occur, be sure to observe the precautions outlined in the introduction to this manual.



When planning your installation wiring, remember all power connections must be quick-disconnect. For PERMANENTLY CONNECTED EQUIPMENT a readily accessible disconnect device must be incorporated in the building installation wiring. For PLUGGABLE EQUIPMENT the socket-outlet must be installed near the equipment and must be easily accessible.



Ground the mounting structure to safety ground (protective earth ground (PE)). See wiring recommendations for safety ground.

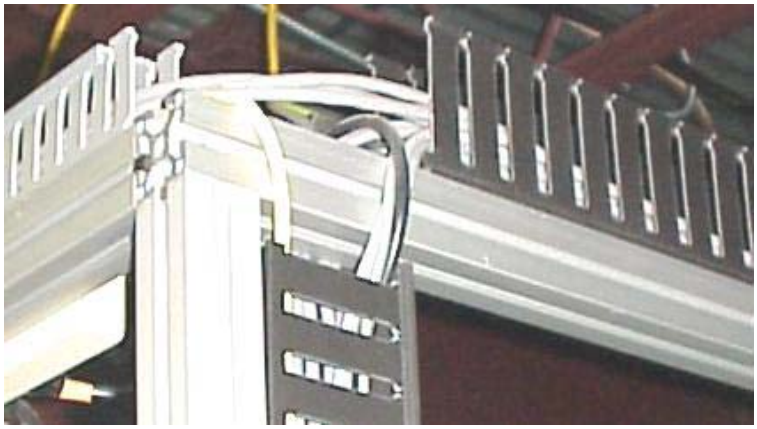
DM3610 Connector Panel

After completing mechanical installation, use this section to properly wire your DC3000 and DM3610s for optimal performance in your application. DM3610 wiring connections are made to the connector panel and through the CBX connection box (connected to the I/O port of the DM3610). The DC3000 is connected to Head 1 DM3610. In most dimensioning applications, the cable connections to the DM3610 will include:

1. I/O (Connects directly to the 25-pin D type connector on the CBX100)
2. POWER 24V - - - 4A MAX (Power)
3. HOST (Host Computer)
4. ETH 1 (Ethernet)
5. ETH 2 (Ethernet)



Route wiring to the DM3610's connector panel through the wiring channels (if available) on the Datalogic mounting structure when running interconnecting cables between other devices and the dimensioner.



Connect Communication and Power Cables to the Installation



DO NOT connect the power supply to a power source until after all wiring connections have been made to the DM3610 and CBX device.

Connect all communication cabling for the DM3610s as explained in this chapter and Chapter 3 of the DM3610 Product Reference Guide, Electrical Installation, including:



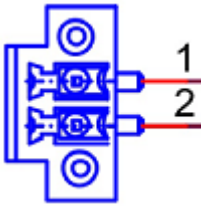
- Communications and power supply connections to the DM3610s
- Ethernet connection to the DC3000 Controller
- Connections to the CBX box
- Connections to the photoelectric sensor
- Connections to the tachometer
- Connections to a remote display
- Serial communications if necessary

After the communications cables have been connected, connect the power supply cable to the DC3000 and then attach the power supply to the power source.

Power Connector Pin-Out Table

A recommended power supply and cabling is available either as an accessory or included in the Dimensioning Solution kit. However, if your installation requires custom power supply wiring, the pin-outs of the unit power connector are provided below for your convenience.

DC3000 Power Connector Pin-outs



Pin	Signal	Description
1	Power-In V+	10～36Vdc
2	Power-In V- (GND)	10～36Vdc

Power Connections

HIGH VOLTAGE

While performing the following wiring connection procedures, be sure to follow all safety procedures regarding high-voltage as outlined in the introduction to this manual. No power should be applied to any device until all wiring is completed and checked for accuracy.

WARNING

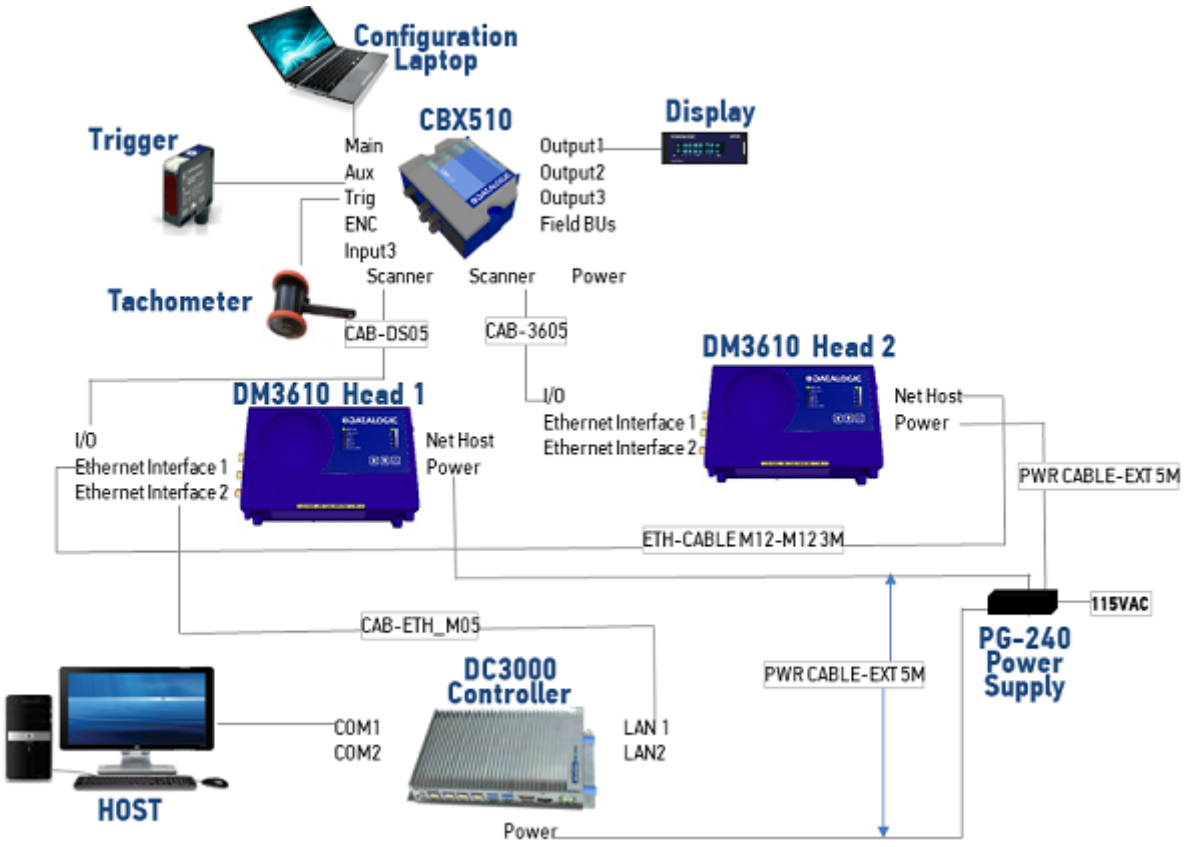
When planning your installation wiring, remember all power connections must be quick-disconnect.

The socket-outlet must be installed near the DC3000 and DM3610s. The outlet must be a readily accessible disconnect device.

IMPORTANT

Ground the DC3000 and DM3610s to safety ground (protective earth ground (PE)). See wiring recommendations for safety ground.

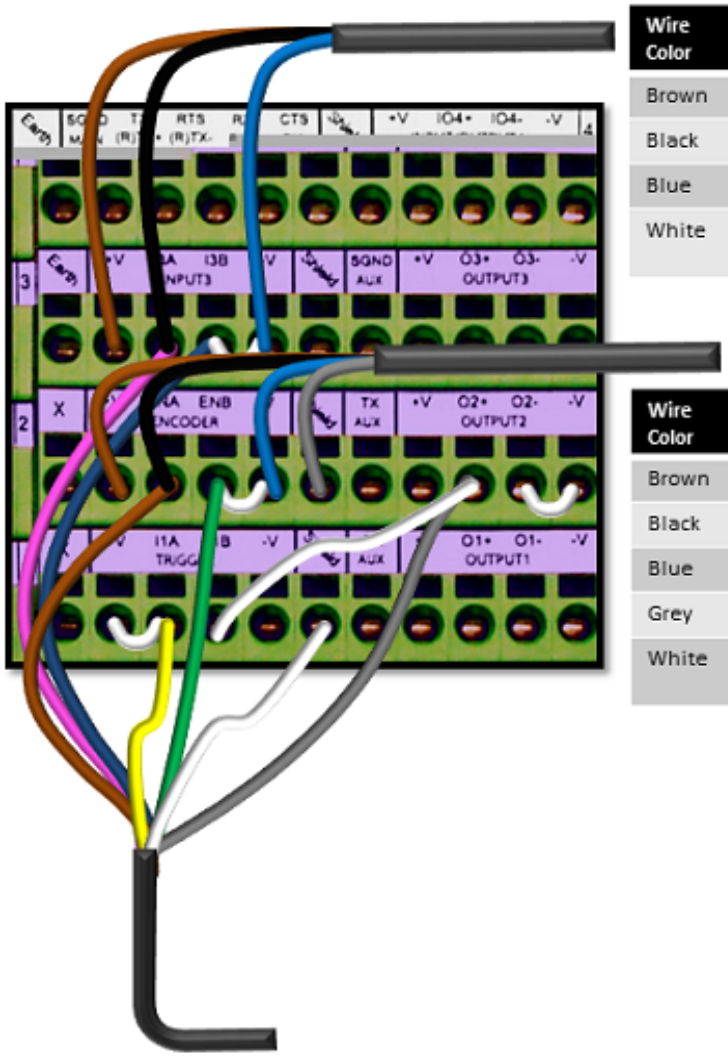
The system requires a CBX510 Connection Box. The CBX510 comes pre-wired for tach and trigger connections, while the DC3000 provides connections to the Host Network. The DC3000 includes the User Interface and backup/Alibi storage.



CBX510

Your CBX510 comes pre-wired for the DC3000/Two Head DM3610 configuration as shown below. Please verify that the CBX510 connection box is configured for the application as follows:

CBX 510 Interior Diagram



Wire Color	Trigger
Brown	+V
Black	I3A
Blue	-V
White	Jumper I3B -V

Wire Color	
Brown	+V
Black	ENA
Blue	-V
Grey	Shield
White	Jumper ENB -V

Wire Color	TRG/ENC/ IN3/OUT2
Pink	I3A
Blue	I3B
Brown	ENA
Yellow	I1A
Green	ENB
White	Shield
Grey	O2+
White (jumper)	+V I1A
White (jumper)	I1B O2+
White (jumper)	-V O2-

If for any reason you need to re-wire the unit, the wiring connections are provided in the following sections of this chapter.

Wiring Into the CBX510 Connection Box



DO NOT connect a separate power source to the CBX510 connection box. The CBX510 receives its power through its connection to the DM3610 Dimensioner (HEAD1). Connecting a separate power source will be detrimental to the system operation.

Loose-lead cables must pass through the water-tight seals in the base of the CBX510 connection box. Insert the cables allowing enough slack for the individual wires to reach the appropriate pin block connectors. Securely tighten the water-tight seals after the cables have been inserted.

Insulation on individual wires should be removed to expose 13 mm (0.5 inch) of bare metal before inserting into the in block.



If you are terminating more than one wire in a single terminal, cut off any tinned ends and twist the wires together before inserting them into the terminal.

Photoelectric Sensor Connections to CBX510

Multi-head dimensioning applications may use a Datalogic photoelectric sensor as a trigger device. The photoelectric sensor is wired directly into the CBX510 terminal block.

If your application uses a trigger other than the one specified by Datalogic, follow the appropriate wiring diagram to assure proper wiring.



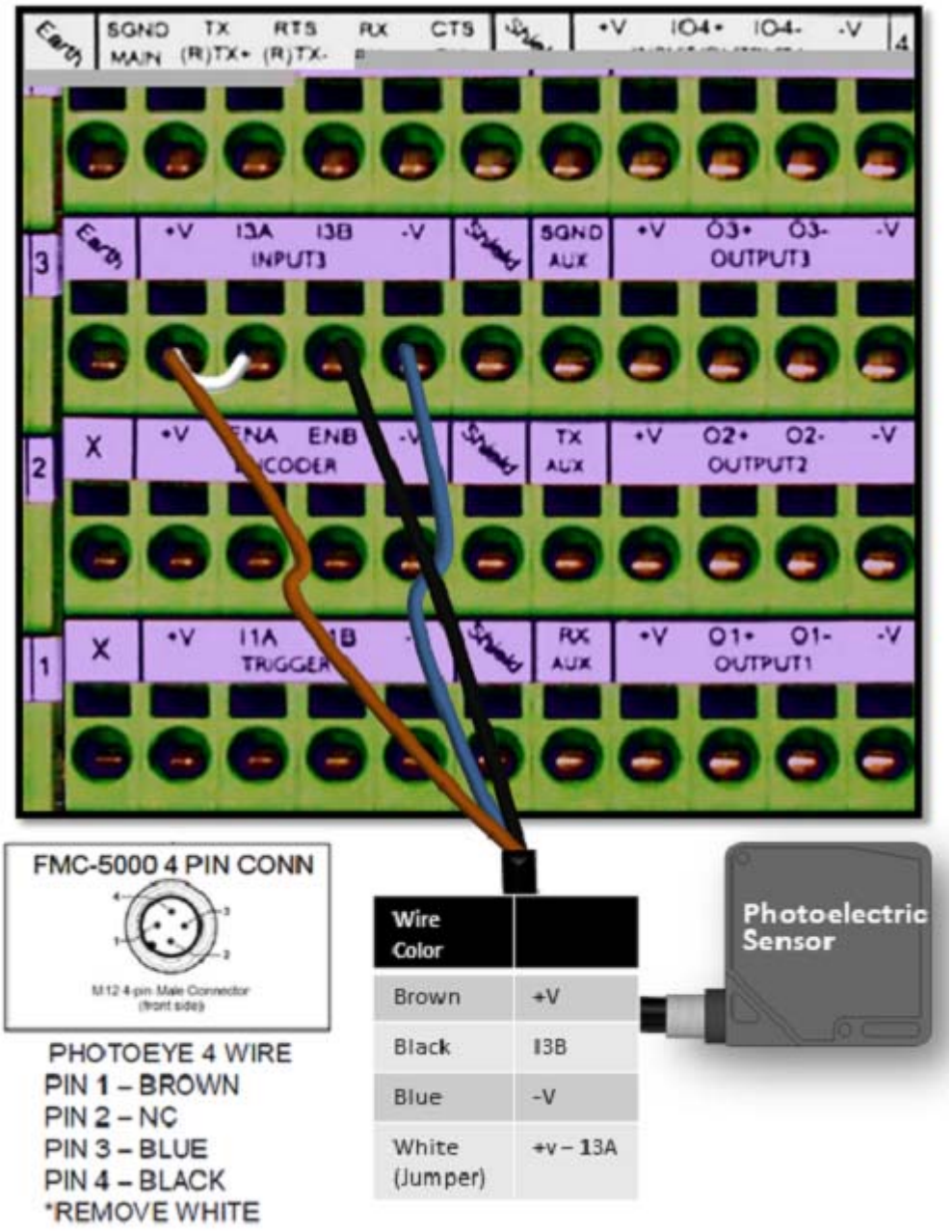
You must use shielded interface cables with this product. To maintain FCC compliance, the cable shield must make a 360-degree connection to the shielded mating connector.



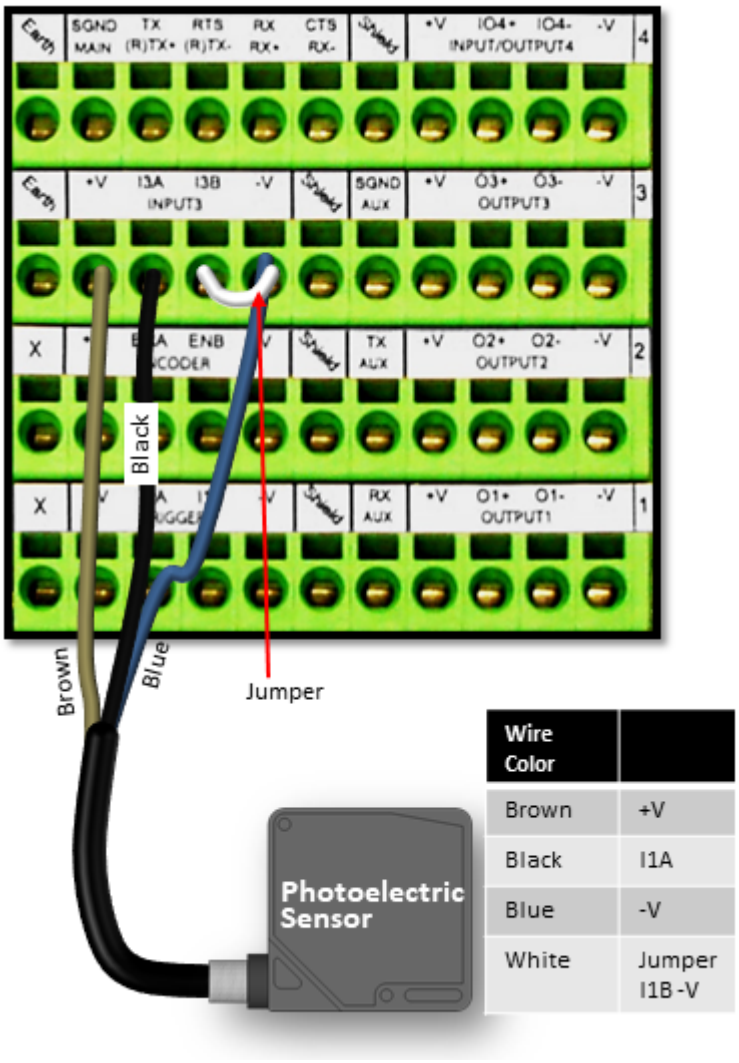
To confirm the photoelectric sensor is functioning properly, watch the TRIGGER LED in the CBX and also on the camera while the photoelectric sensor's beam is blocked. The Datalogic photoelectric sensor also includes a status LED.

The following diagrams illustrate standard recommended wiring of the Photoelectric Sensor to the CBX510 terminal block.

Photoelectric Sensor to CBX510 (NPN)



Photoelectric Sensor to CBX510 (PNP)



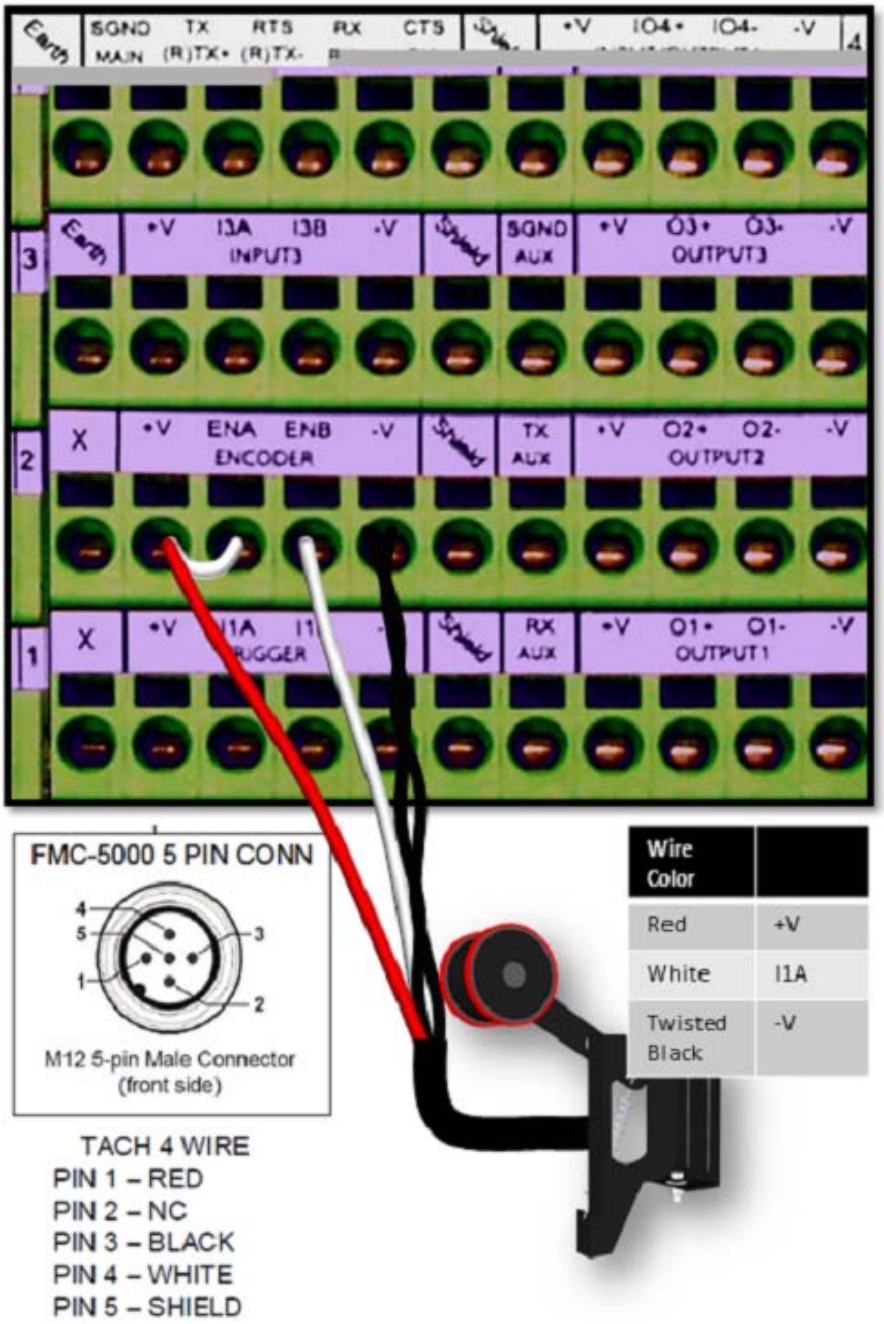
Wire Color	
Brown	+V
Black	I1A
Blue	-V
White	Jumper I1B -V

Encoder/Tachometer Wiring to CBX510

DM3610 applications over a conveyor belt use an accessory tachometer and mounting kit. Use the cable provided with the tachometer to connect to the CBX510 terminal block as shown below.

NOTE **In some applications a wheel tachometer cannot be used. In those cases, a PDB100 tach generator can be used.**

Encoder/Tachometer Wiring for NPN Output to CBX510



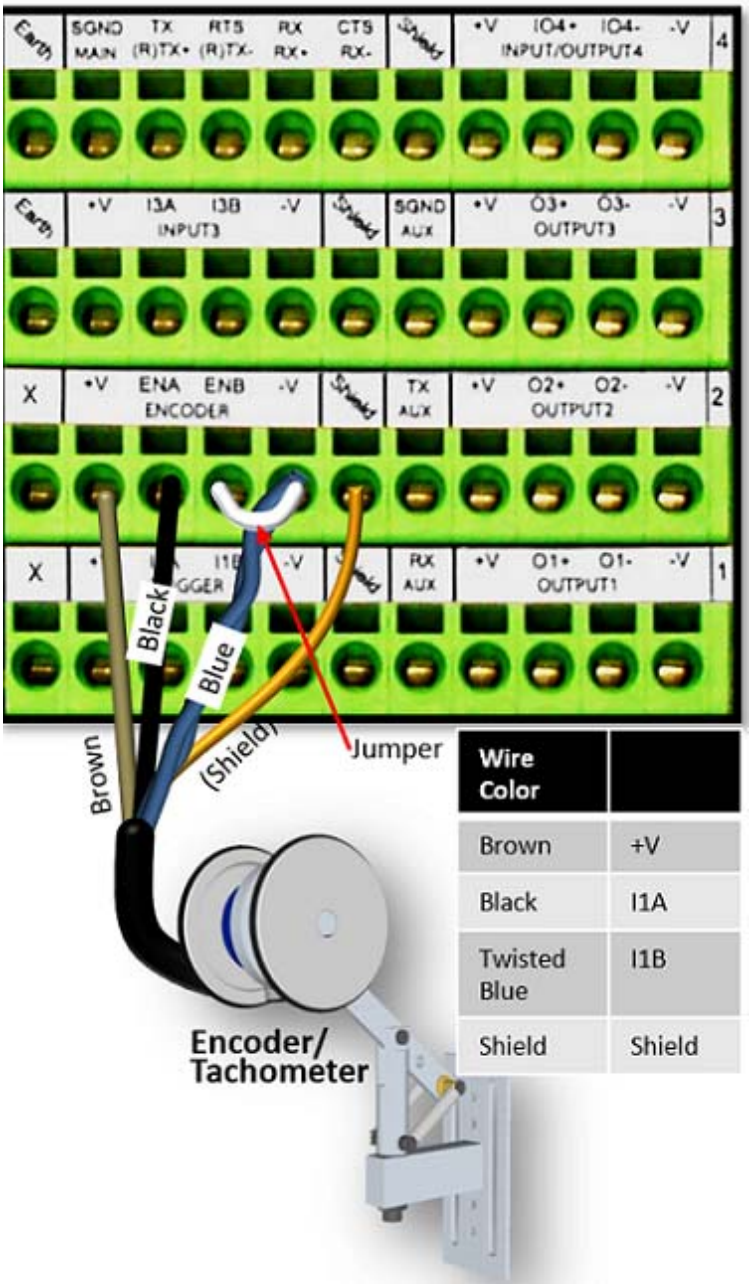
NOTE **Some Photocraft tachometers may have a different color coding:**

(+V) Red or White/Orange

(Signal) White or White/Blue

(Ground) Black or **Orange/White**

Encoder/Tachometer Wiring for PNP Output to CBX510



NOTE

Some Photocraft tachometers may have a different color coding:

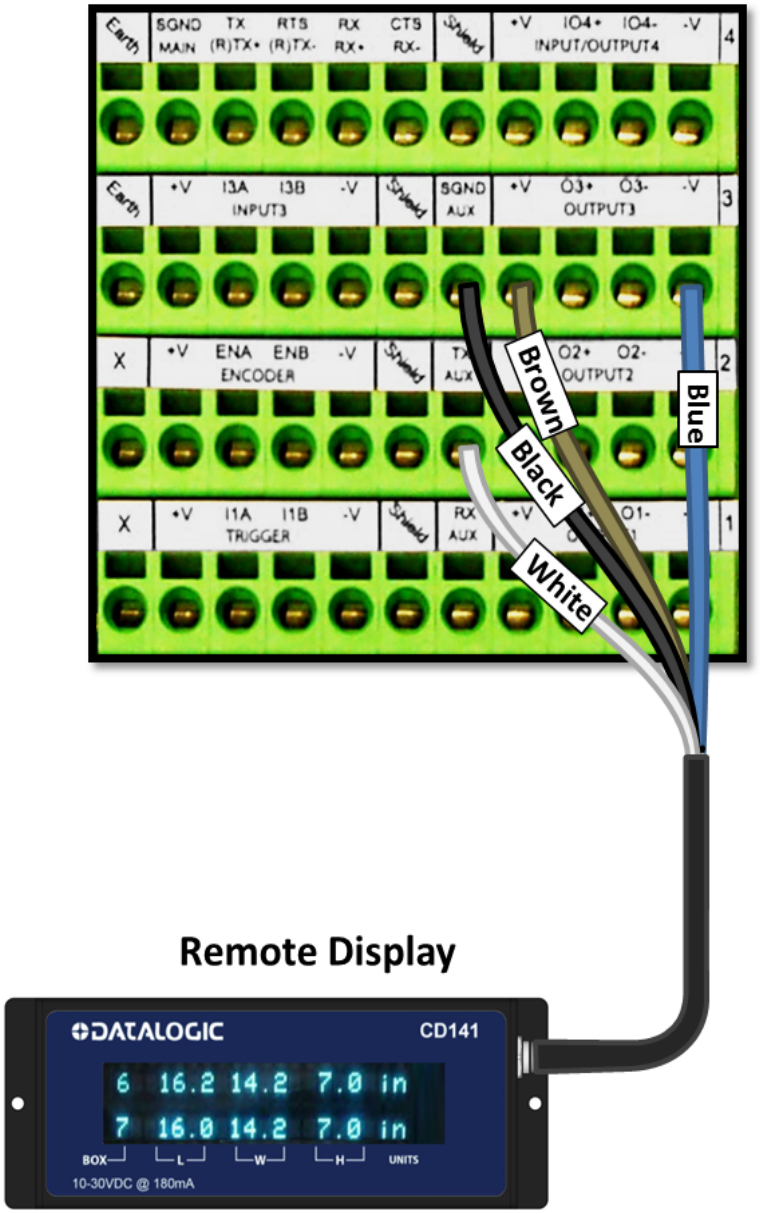
(+V) Red or White/Orange

(Signal) White or White/Blue

(Ground) Black or **Orange/White**

Remote Display Wiring

In some Legal-for-trade applications, a CD141, 40 character remote may be required. Use the cable provided with the remote display to connect to the CBX510 terminal block as shown below.

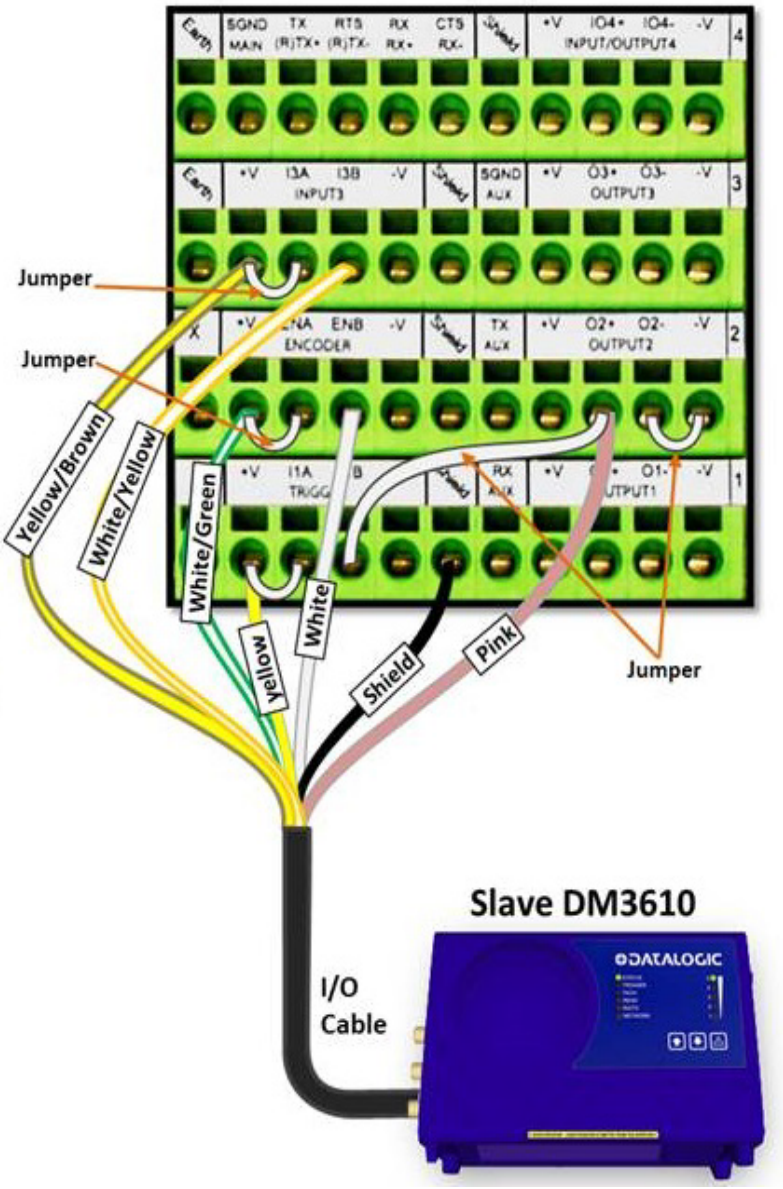


Wiring to a slave DM3610

The Master DM3610 Dimensioner receives Tach/Trigger signals through its main I/O cable connected to the CBX510. Slave DM3610 units, however, must be connected to the M12 connection on the CBX510.

In case, rewiring is required, the following diagram illustrates recommended I/O wiring for slave DM3610s to the CBX510 connection box.

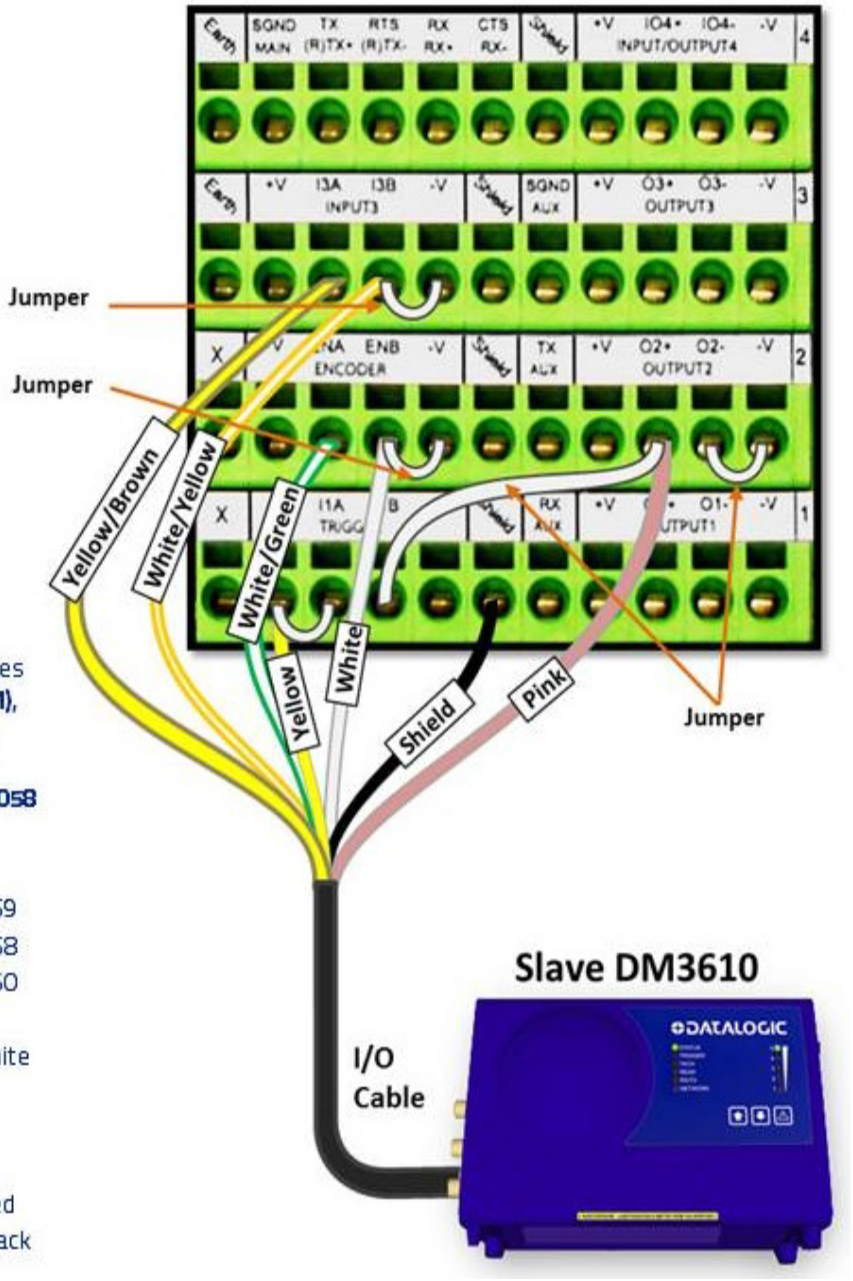
Slave DM3610 NPN



NOTE: Colors are shown for cables **93A050076 (3M)**, **93A050077 (5M)**, and **93A050078 (10M)**, but some installations or spares may use cables **93A050059**, **93A050058 (1M)**, or **93A050060 (5M)**. See the color key below:

93A050076	93A050059
93A050077	93A050058
93A050078	93A050060
Yellow/Brown	Black/White
White/Yellow	Blue
White/Green	Grey
Yellow	Orange
White	Green/Red
Pink	Green/Black

Slave DM3610 PNP



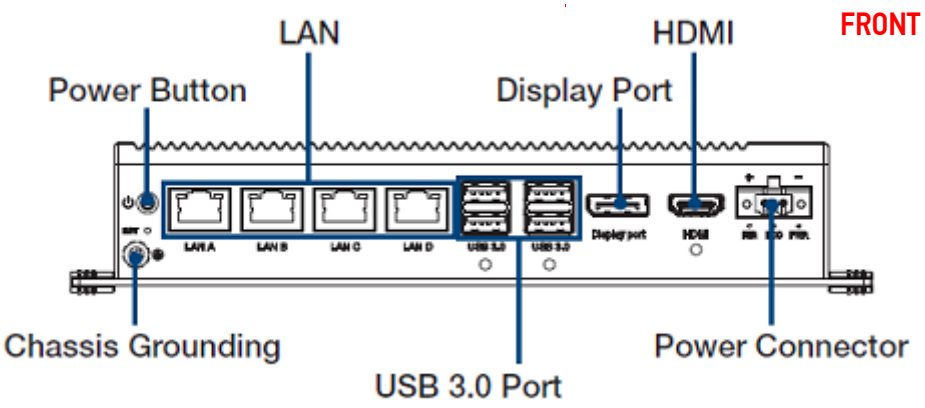
NOTE: Colors are shown for cables **93A050076 (3M), 93A050077 (5M),** and **93A050078 (10M),** but some installations or spares may use cables **93A050059 (3M), 93A050058 (1M),** or **93A050060 (5M).**
See the color key below:

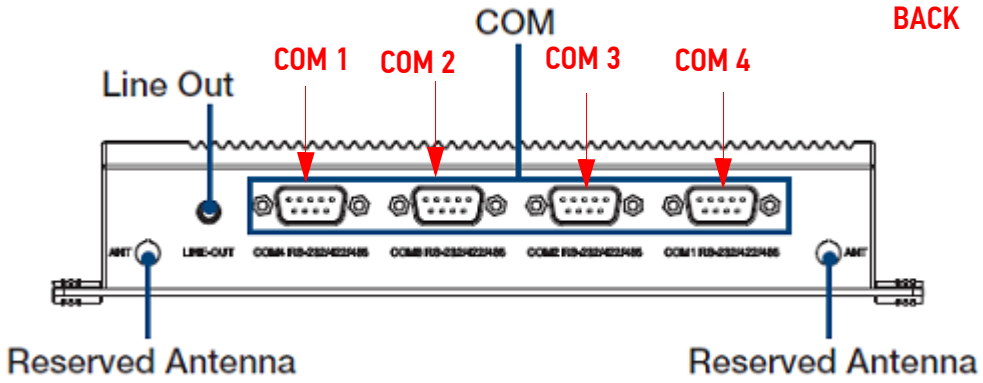
93A050076	93A050059
93A050077	93A050058
93A050078	93A050060
Yellow/Brown	Black/White
White/Yellow	Blue
White/Green	Grey
Yellow	Orange
White	Green/Red
Pink	Green/Black

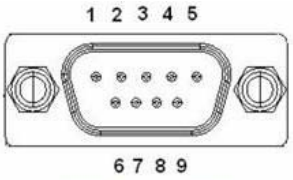
Serial Communication Wiring Through DC3000 Dimensioning Controller

The dimensioning system provides serial RS-232/422 communications to other devices through the DC3000 Dimensioning Controller.

There are four D-sub- 9-pin connector on the back panel that provide serial communication.







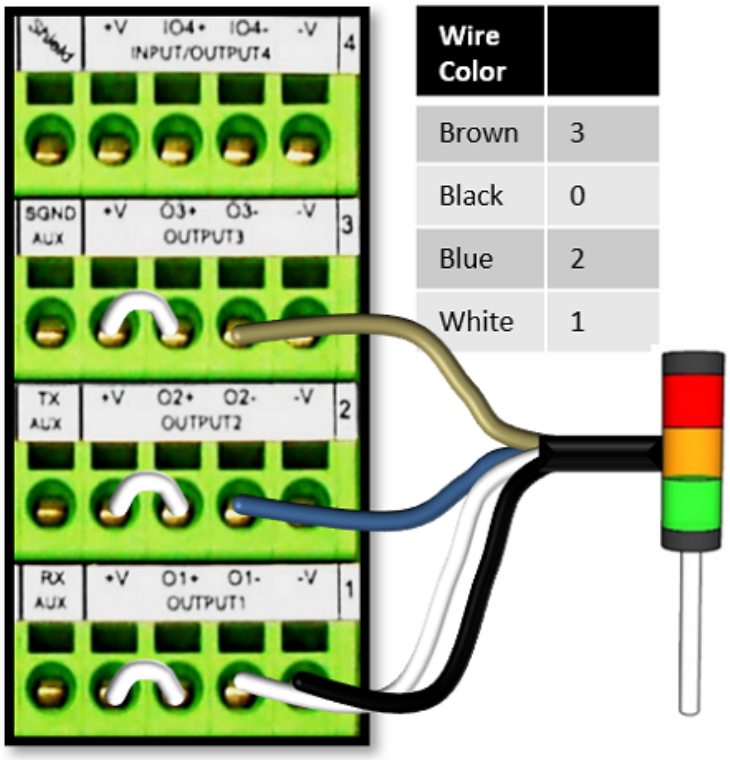
Pin	RS-232 Signal Name	RS-422 Signal Name
1	DCD	Tx-
2	RxD	Tx+
3	TxD	Rx+
4	DTR	Rx-
5	GND	GND
6	DSR	NC*
7	RTS	NC*
8	CTS	NC*
9	RI	NC*

*NC represents "No Connection".

- RS232 provides point-to-point communications at distances up to 15 meters (50 feet).
- RS422 provides point-to-point communications at distances up to 1200 meter (3940 feet).

Connecting a Stack Light

When using a tri-color stack light it must be wired as follows:



Wire Color	
Brown	3
Black	0
Blue	2
White	1

Connecting A PC to the DM3610 Host Port

During initial setup, a PC (laptop) may be connected to Head 1 DM3610 with an M12 to RJ45 cable. Screw the M12 connector to the HOST port of the DM3610 and plug the RJ45 into the Ethernet port of your PC. If the HOST port is in use, ETH 1 or ETH 2 ports can be used. For information on connecting to the DM3610 User Interface, see the DM3610 Product Reference Guide.

CHECK DC3000 INSTALLATION

After completing the installation of your two -head dimensioning system:

- Confirm that the DM3610's, DC3000 Controller, and CBX510 have been properly installed mechanically and electrically. Use the Installation Sequence at the beginning of this chapter and your application specifications to check your installation.
- All interconnections should match the application drawings. (These drawings are superseded by any customer-specific documentation provided by Datalogic.)

The next step is to configure the parameters to meet the needs of your application. Details on using the DC3000 User Interface are provided in Chapter 4.

CHAPTER 4
USER INTERFACE

GETTING STARTED

The DM3610 Dimensioners and DC3000 Controller are designed for ease-of-setup. Both the DM3610 and DC3000 User Interfaces are browser-based applications where you will define operating parameters, determine dimension quality, construct output messages, and view diagnostics. Both User Interfaces enable you to easily configure, fine-tune, and monitor your device operations.

With a Two-Head system, Head 1 is connected to Head 2 and the DC3000 Controller. You can access the user interface by its IP address. See the DM3610 Product Reference Guide for DM3610 user interface details.

Prerequisites

Before setting up your devices you will need the following:

Computer:	Laptop
Browsers:	Internet Explorer 8 (or later) Firefox 18.0 (or later) Chrome 24.0.1312 (or later)
Java:	Version 7, Update 9 (or later)

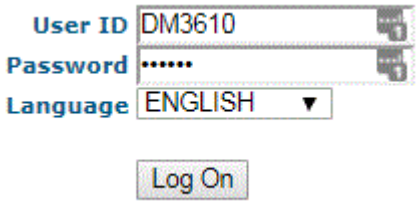
Starting the User Interface

To access the DC3000 or DM3610 User Interfaces follow these steps:

1. Connect your computer to the Host port of Head 1 DM3610.
2. Turn on your computer.
3. Configure your PCs IP Address to be in the same network as the DC3000's and DM3610's.

Example: If the DM3610's IP Address is 192.168.3.101 the other DM3610 will be 192.168.3.102 and your DC3000 will be 192.168.3.70, set your PC's IP Address to 192.168.3.1 (make the last octet different than the DC3000's last octet).

4. Open a web browser and enter the IP address for your DC3000 unit. If the correct IP address is entered, the DC3000 Login screen will appear The default IP address for all DC3000 units is: 192.168.3.70.

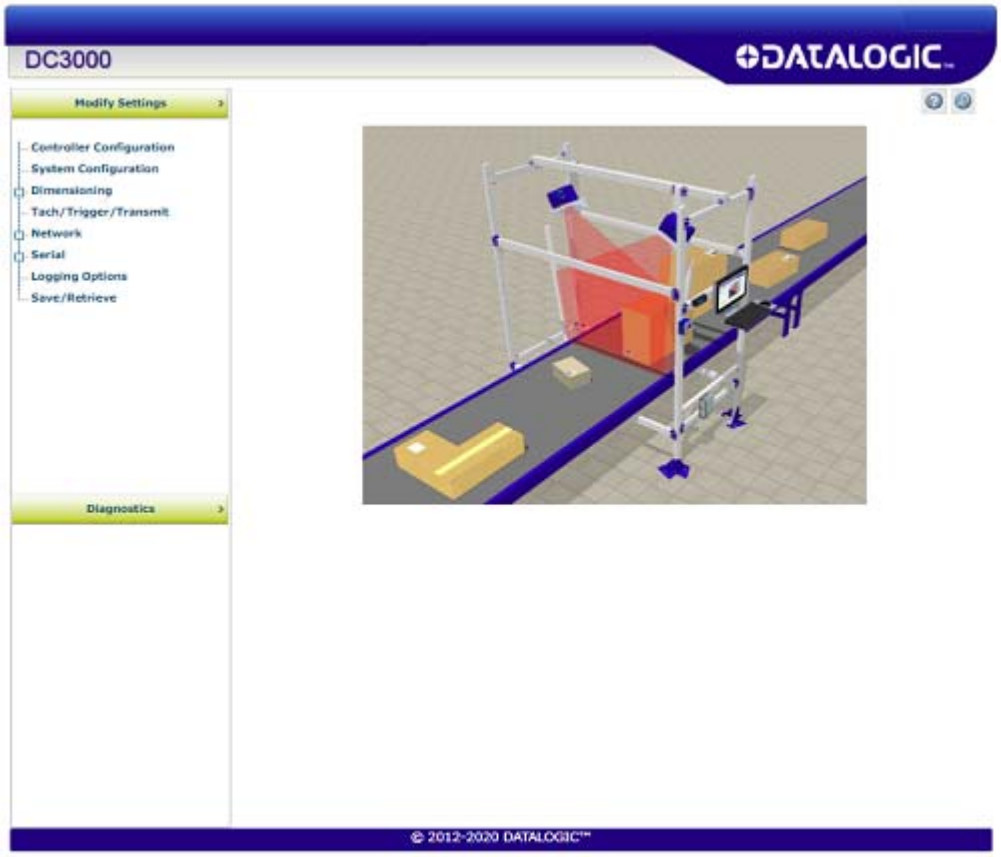


5. Enter the **User ID: DM3610** and **Password: DM3610** for your system in the fields provided.

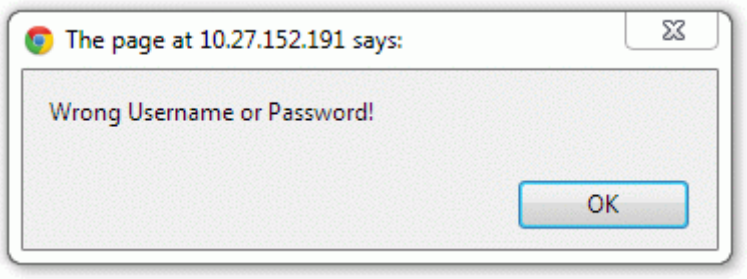
6. Select a language from the **Language** drop-down list.

7. Click **Log On.**

If the **user name and password are valid**, the application enables all functions available to the user and displays the main window.



If the **user name and password are not valid**, the application displays a results box with the message, “Wrong User Name or Password!” Click **OK** to return to the Log On window and enter the correct user name and password.



To log out of the DC3000 User Interface:

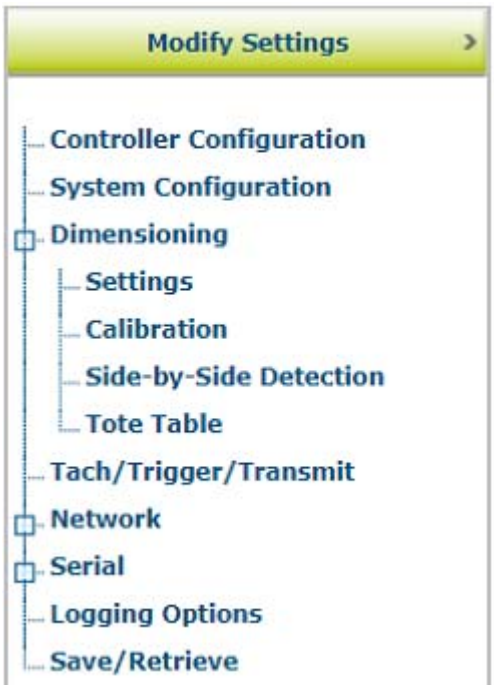
Click at the upper right corner of the User Interface window to Log Out. When logged out, the **Log On** window will appear.



USER INTERFACE BASICS

User Interface Menu Tree

The functions that you can select are displayed in a menu tree on the left–hand side of the User Interface. The function list is organized much like the hierarchy of a file system, where you can expand items that begin with a plus sign (+) to further sub–levels until you find a function of interest.





Sub–levels appear indented below the items from which they are expanded. Items that are expanded are preceded by a minus sign (–). You can expand no further when an item displays neither a plus or minus sign.

The User Interface menu tree appears with no items expanded. Click the folders to display the active window for the setup function and/or expand the folders to view any additional setup features.

Getting Help

The **User Interface** provides complete online help. To display help for a current window:

1. Click the Help icon  displayed at the top right of the screen. A help window appears, providing you with information and an index of topics associated with the current application window.



2. Click on a topic of interest to display more detailed information.

You can use the menus or buttons in the help window to navigate to other topics of interest, or from the **File** menu in the help window, you can choose **Exit** to quit from Help.

MODIFY SETTINGS

Use the **Modify Settings** menu selections during initial setup to configure your DC3000. If necessary you can later make modifications to the configuration using the same menu selections.

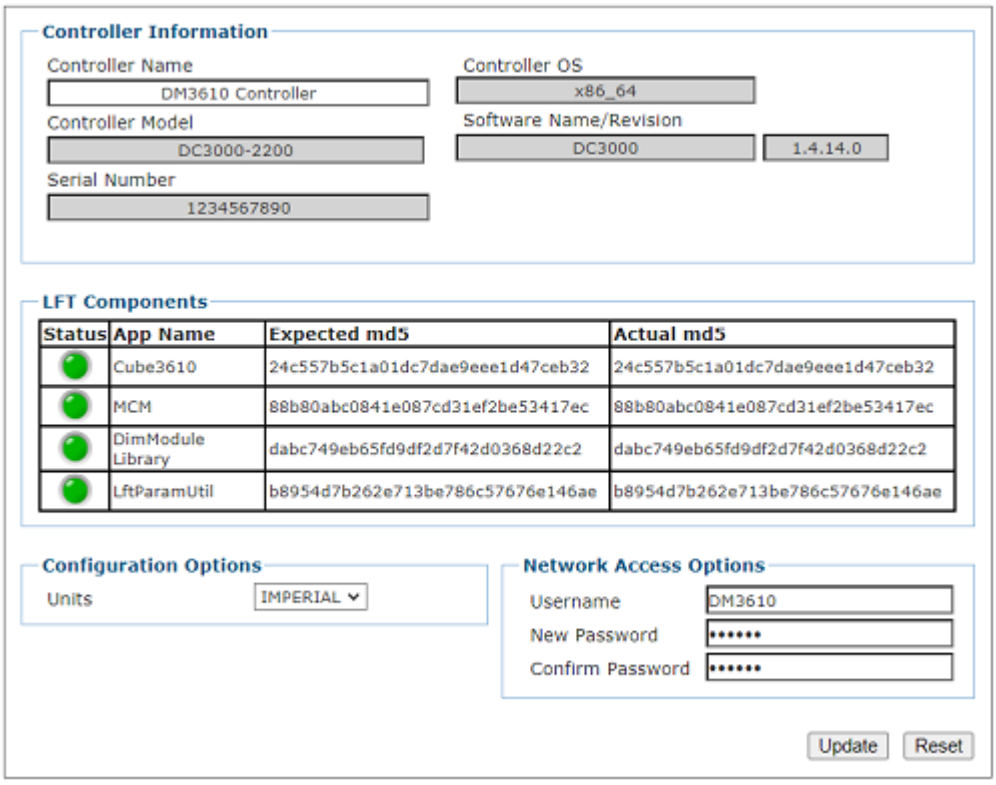
- “Modify Settings | Controller Configuration” on page 59
- “Modify Settings | System Configuration” on page 61
- “Modify Settings | Dimensioning” on page 63
- “Modify Settings | Tach/Trigger/Transmit” on page 77
- “Modify Settings | Tach/Trigger/Transmit DM3610 Heads” on page 80
- “Modify Settings | Network” on page 84
- “Modify Settings | Serial” on page 100
- “Modify Settings | Logging Options” on page 113
- “Modify Settings | Save / Retrieve” on page 114

MODIFY SETTINGS | CONTROLLER CONFIGURATION

Use **Controller Configuration** to identify and configure the Two-Head Dimensioning system controller. This function includes access to dimensioner information, as well as configuration options (scan rate, control panel and network access).

To set the Controller configuration:

1. In the menu tree under **Modify Settings**, click **Controller Configuration**. The **Controller Configuration** window opens.



2. Enter the Controller Name in the form as described below.

Dimensioner Information

Controller Name

Enter a user-defined DC3000 Controller name (up to 15 characters). This is useful to identify multiple controllers within the same building or application.

Controller Model

Displays the controller model (DC3000-1200, etc.)

Serial Number

Displays the 9 character Datalogic serial number of the DC3000 to which the user interface has established a connection.

Controller OS

Specifies the Controller Operating System.

Software Name/Revision

Displays the name and revision number of the DC3000 controller application software.

LFT Components

Displays the status, name, expected md5 (checksum), and actual md5 (checksum) of the included Legal For Trade (Certified Dimensioning) components.

Status

Green = No errors and ready to read

Gray = Unit not connected

Yellow = Warning present

Red = Error

Configuration Options

Units

Select **Imperial** or **Metric** from the drop-down list. This setting affects the user interface only and not the dimensioning output. To change the dimensioning output, see **Modify Settings | Dimensioning | Settings**.

Network Access Options

Use these fields to change the unit's user name and password.

User-name

Enter a new user name.

New Password

Enter a new password.

Confirm Password

Enter the new password again.

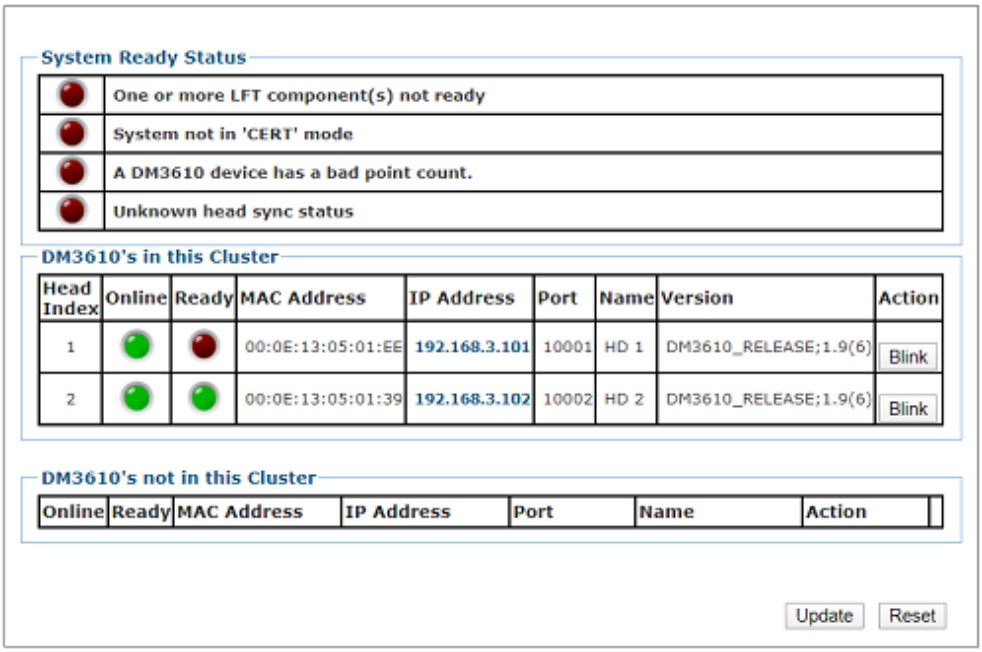
3. When you have finished making changes, click **Update** to save or click **Reset** to revert to the previously saved values.

Modify Settings | System Configuration

System Configuration displays system status and can be used to add or remove system dimensioners.

To set the System Configuration:

1. In the menu tree under **Modify Settings,** click **System Configuration**. The **System Configuration** window opens.



NOTE

If you access this page while the system is still in the process of starting up, the following message will display.



2. View status or enter the appropriate information in the form as described below.

System Ready Status

This display indicates the READY status of the system and error messages if issues exist.

DM3610's in this Cluster

This display indicates the DM3610 dimensioners that are connected to the system. Each dimensioner's Head Index number, Online status, Ready status, MAC Address, IP Address, Port Number, Name, and software Version are displayed. At least one Dimensioner is listed here all the time, even if it is just a placeholder.

NOTE

Head 1 should be the first DM3610 listed. It must have Port #10001. Head 2 must have port #10002. These Port numbers are entered in the individual DM3610's.

To identify the dimensioners listed, click Blink. When clicked, that dimensioners LED bar graph will blink five times.

DM3610's not in this Cluster

NOTE

We recommend only trained technicians should remove a DM3610 from a cluster. Contact Datalogic Tech Support.

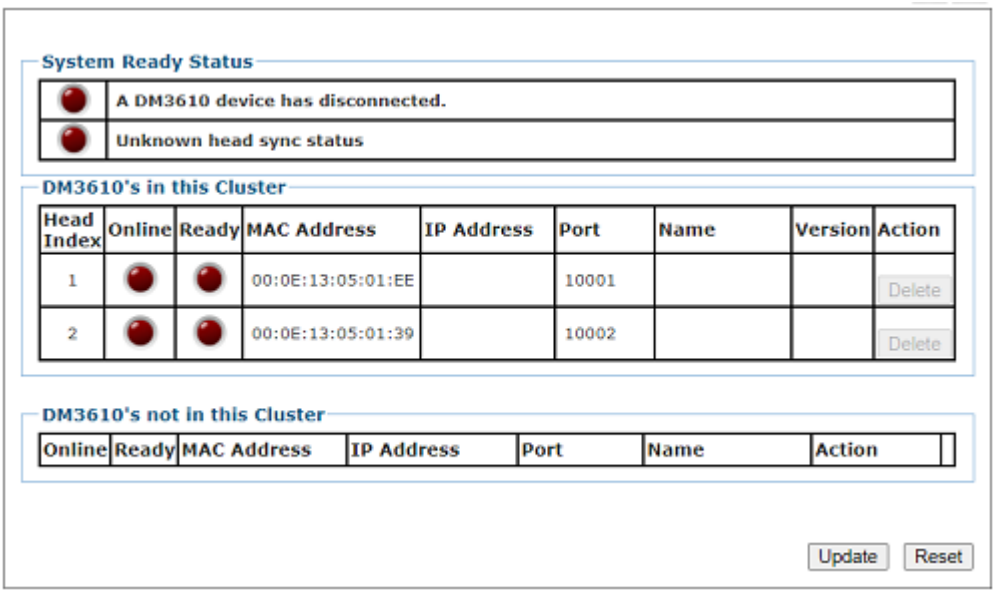
This displays any DM3610's no t yet connected to the system.

To Remove a Dimensioner from the System

WARNING

This should only be done if a Datalogic Support person recommends it and is able to assist.

Disconnect a dimensioner's cables. The Action column in the disconnected dimensioner's line displays a **Delete** button. Click **Delete**.



To Replace a Dimensioner in the System

There are several steps to this process, see "Replacing a DM3610 in a Dual Head Installation" on page 158 To Add a Dimensioner to the System.

NOTE

We recommend only trained technicians should remove a DM3610 from a cluster. Contact Datalogic Tech Support.

Connect a dimensioner's cables to the system. The dimensioner information is displayed in DM3610's not in this Cluster. Under Action, select Add to Cluster as New from the drop-down list of the dimensioner you want to add. The new dimensioner's information is added in a new line under DM3610's in this Cluster.

3. When you have finished making changes, click **Update** to save or click **Reset** to revert to the previously saved values.

MODIFY SETTINGS | DIMENSIONING

Use the **Modify Settings | Dimensioning** menu selections to setup and calibrate the DC3000 for certified or non-certified installations.

The menu selections include:

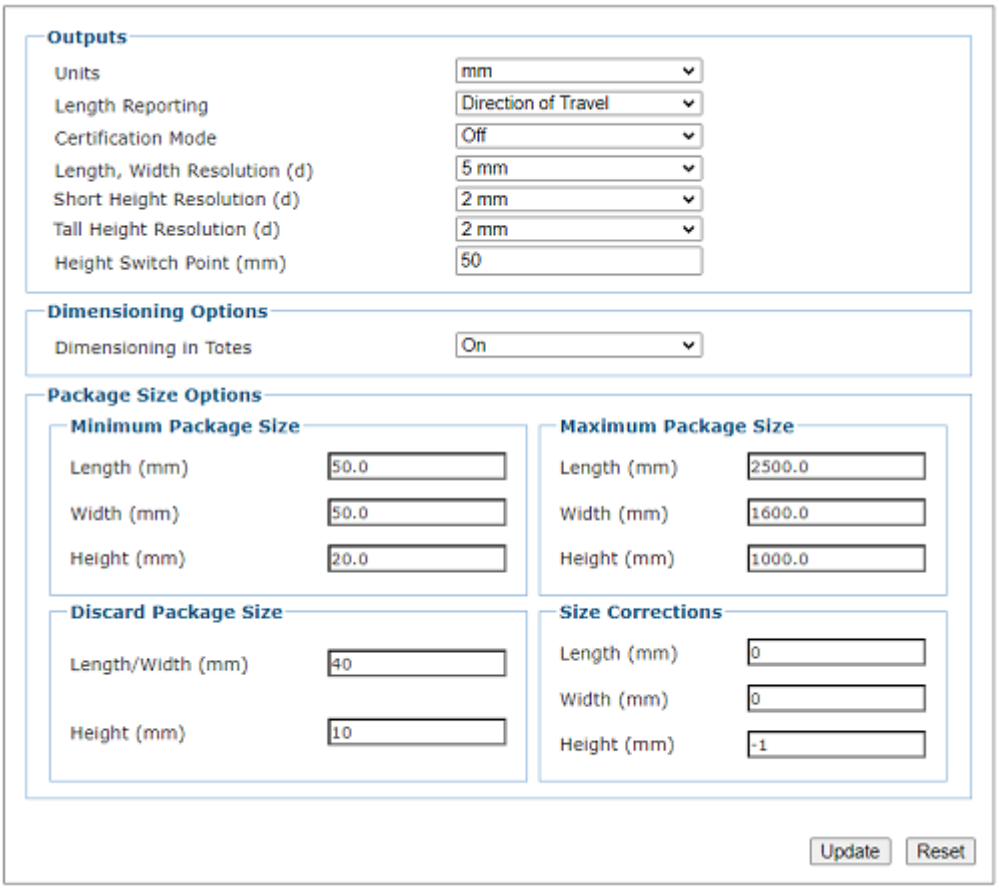
- “Modify Settings | Dimensioning |Settings” on page 64
- “Modify Settings | Dimensioning |Calibration” on page 67
- “Modify Settings | Dimensioning |Side-by-Side Detection” on page 70
- “Modify Settings | Dimensioning |Tote Table” on page 75

Modify Settings | Dimensioning |Settings

Use the **Dimensioning | Settings** to turn certification mode on or off, set dimension resolution, and define package size requirements.

To adjust the settings of the dimensioner:

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



2. Enter the appropriate information in the form as described below.

Outputs

Units

Select **inch** or **mm** from the drop-down list. Once the window is updated, the dimensions displayed on this window will be displayed in the unit type selected.



Changing the units on this window will not affect other windows in this user interface. To change the measurement units globally for the interface, see Modify Settings | Configuration. To change the measurement units transmitted to the host, see Network or Serial | Message.

Length Reporting

Select **Longest Side, Direction of Travel,** or **Descending order** from the drop-down list to define the “Length” of parcels in the system.

Longest Side: The system assigns the length as the larger of the two parcel measurement axes that are parallel to the surface of the conveyor. The height is the measurement axis that is perpendicular to the conveyor surface.

Direction of Travel: The "length" will always be defined as that parallel with the package direction of travel on the conveyor.

Descending Order: The "length" is the largest value, then width, and the smallest value is height. This definition results in the same L, W, H assignment of the measurements regardless of the parcel’s orientation when measured.

Certification Mode

Select **On** or **Off** from the drop-down list. Turn certification mode on for certified / Legal-for-Trade applications. Turning certification mode on causes many of the input fields in the Dimensioning Settings, **Dimensioning Calibration, Configuration,** and **Tach/Trigger** windows to be grayed out.



Only available with Legal For Trade certified DM3610's. It is identified in the Configuration | Dimensioner Model.

Understanding Resolutions

The purpose of the Short/Tall Resolution split is to provide for the higher resolution at lower package heights.

The options for both **Short and Tall Height Resolutions** are either in metric or imperial depending on the Dimensioning Units your system uses.

If **Short Height Resolution and Tall Height Resolution** are set to 0.1 inches, measurements are given at those intervals: 1.2 inches, 1.3 inches, 1.4 inches, 1.5 inches, and so on. But if it is set to 0.2 inch, measurements are given at those intervals: 2.4 inches, 2.6 inches, 2.8 inches, 3.0 inches, and so on.

If it is set to 2 mm, measurements are given at those intervals: 20 mm, 22 mm, 24mm, 26 mm, 28 mm, and so on. But if it is set to 5mm, measurements are given at those intervals: 50 mm, 55 mm, 60 mm, 65 mm, 70 mm, and so on.

Resolution (d) also impacts the minimum package size.

For NTEP systems, the minimum size is 12 x 'd'. So, if Short Height Resolution (d) is 0.1 inch, the Minimum Package Height is 1.2 inch. If Short Height Resolution (d) is 0.2 inch, the Minimum Package Height is 2.4 inch.

For OIML systems, the minimum size is 10 x 'd'. So, if Short Height Resolution (d) is 2 mm, the Minimum Package Height is 20 mm. If Short Height Resolution (d) is 5 mm, the Minimum Package Height is 50 mm.

Short Height Resolution (d) must be less than or equal to Tall Height Resolution (d). You will get a warning if it is not so.

Length, Width Resolution (d)

Select the dimensioning length/width resolution from the choices provided in the drop-down list. Dimension (d) represents the smallest interval between two consecutive values used in the dimension calculations. For NTEP, the minimum object dimension that may be reported is 12 x d. For OIML, the minimum object dimension reported is 10 x d.

Short Height Resolution (d)

Select the dimensioning short height resolution from the choices provided in the drop-down list. Options are:

0.1"	(10mm)
0.2"	(20mm)
0.5"	(5mm)
	(2mm)

Tall Height Resolution (d)

Select the dimensioning height resolution from the choices provided in the drop-down list. Options are:

0.1"	(10mm)
0.2"	(20mm)
0.5"	(5mm)
	(2mm)

Height Switch Point

Enter a value in inches or millimeters, that specifies at what height the resolution switches from Short Height Resolution to Tall Height Resolution.

Dimensioning Options

Dimensioning in Totes

Select from the drop-down to enable or disable **Dimensioning in Totes**. Once this option is enabled, the DC3000 will reveal another menu option “Tote Table.” The system uses these dimensions to dimension items inside totes, by ignoring the transitions that are the edge of the tote and provides dimensions of the packages inside the tote.



These dimensions will NOT be legal-for-trade. Two NoDim reasons have been added for this: NODIM_BOX_IN_TOTE and NODIM_BOX_EMPTY_TOTE. Their numeric values are 15 and 16, respectively.

Package Size Options

Minimum Package Size:
Length (mm)/(inch)
Width (mm)/(inch)
Height (mm)/(inch)

Enter the minimum package size length, width, and height in inches or millimeters as indicated. Any package below these minimums will be designated as a NoDim. Minimum units must be greater than the (d) value.

This value is associated with certified dimensioning. The min is = to d x (length, width resolution) and d x (height resolution) and d x (height resolution (D). These two items are found under output options.

Maximum Package Size
Length (mm)/(inch)
Width (mm)/(inch)
Height (mm)/(inch)

Enter the maximum package size length, width, and height in inches or millimeters as indicated. Any package above these maximums will be designated as a NoDim.

Discard Package Size
Length/Width (mm)/(inch)
Height (mm)/(inch)

Enter the minimum length/width and height below which a dimension result will be ignored. This accounts for possible anomalies on the belt surface.

Size Correction
Length (mm)/(inch)
Width (mm)/(inch)
Height (mm)/(inch)

Enter Length, Width, and/or Height adjustment values in the fields provided. This option allows the user to make small adjustments (plus or minus) to the length, width, and height of the dimension results. This is helpful if the system is, for example, always measuring a little short in height and you want to tack on 2.5mm [0.1 inch] or so to better “center” the results.

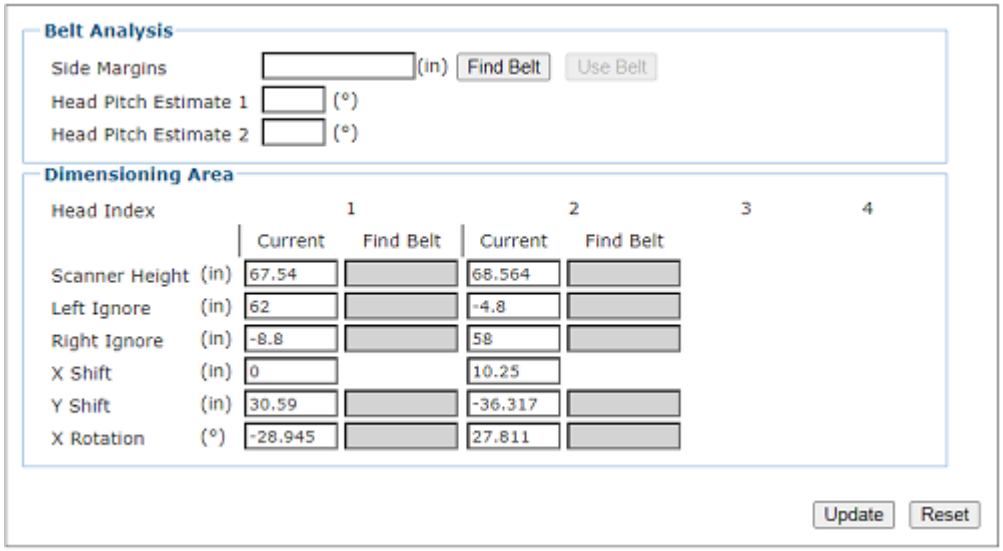
3. When you have finished making changes, click **Update** to save or click **Reset** to revert to the previously saved values.

Modify Settings | Dimensioning |Calibration

Use the **Dimensioning | Calibration** window to calibrate an installed DC3000 and dimensioners.

To calibrate the dimensioners:

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



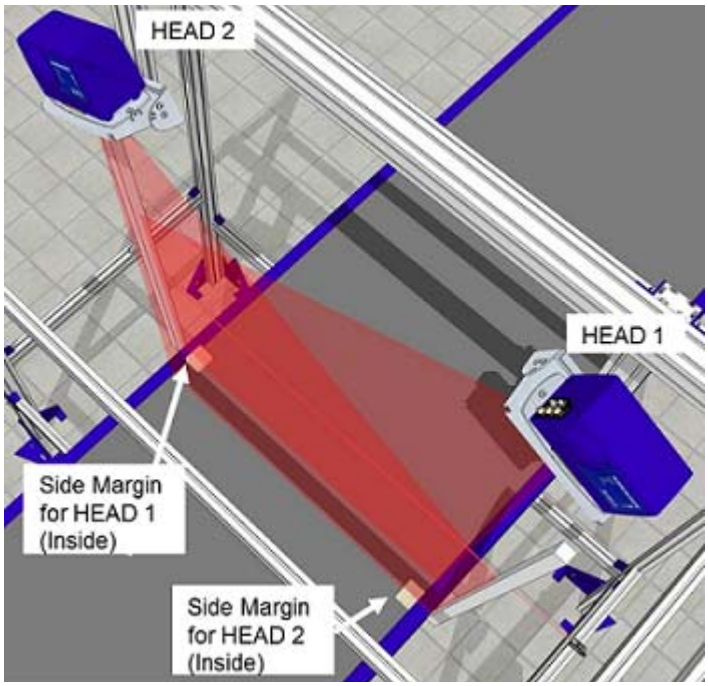
2. Enter the appropriate information in the form as described below.

Belt Analysis

Side Margins

Side margins equal the width of spacers (wooden blocks shown in the drawing below) that help the dimensioner find the edges of the conveyor belt. Side margins are used if there is no transition along the side of the conveyor.

If the spacers (shipped with your DM3610) are placed inside the belt width, the spacer width must be entered into the **Side Margins** text field. For example, if 3-inch spacers are used, the **Side Margins** field value must be 3. The spacers must be the same width. If the spacers can be 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. **See Chapter Five for details on procedural steps.**

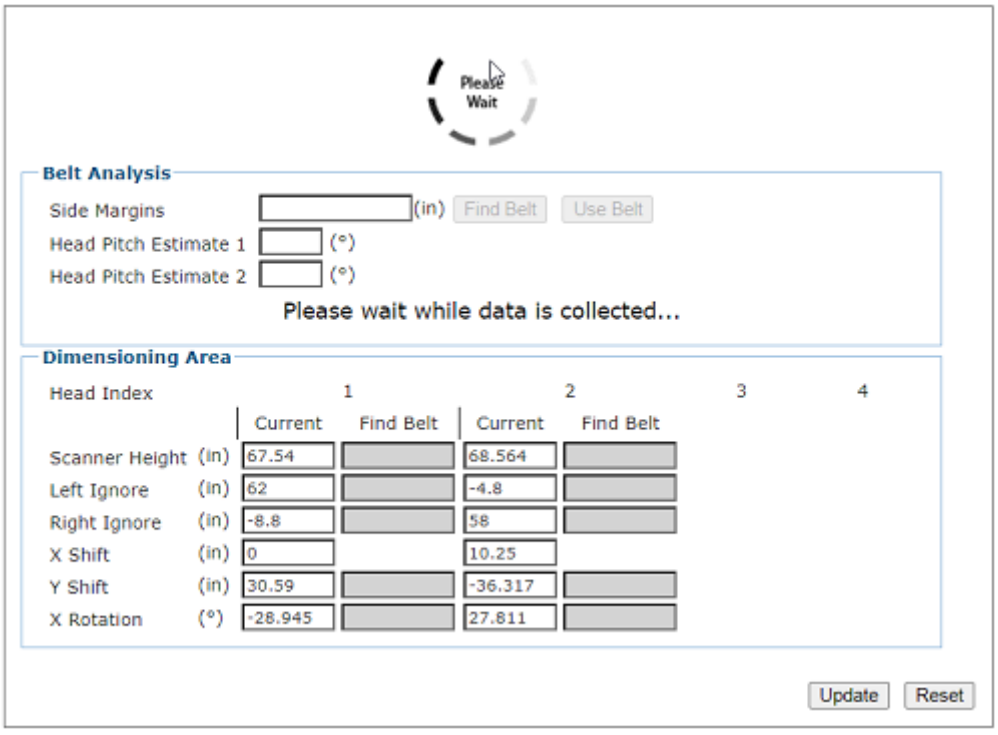


Head Pitch Estimate 1/2

Enter the estimated degree of pitch for Head 1 and Head 2 based on the tables from the application specifications. This is a positive degree integer for each head and helps each head differentiate the conveyor bed from the beam catcher.

Find Belt

Click Find Belt to automatically determine the scanner height, left ignore, and right ignore, X and Y Shift and X Rotation.



When Find Belt is clicked, the system calculates the dimensioner's position over the conveyor.

Use Belt

Click **Use Belt** to transfer the "found" or calculated values to the **Dimensioning Area** fields.

Dimensioning Area

Scanner Height

The distance from the scanner to conveyor belt surface. This is adjusted automatically with the Find Belt option.

Left Ignore

The distance from the center of the scan line to the left edge of the belt. Scan points beyond this distance will be ignored. This is adjusted automatically with the Find Belt option.

Right Ignore

The distance from the center of the scan line to the right edge of the belt. Scan points beyond this distance will be ignored. This is adjusted automatically with the Find Belt option.

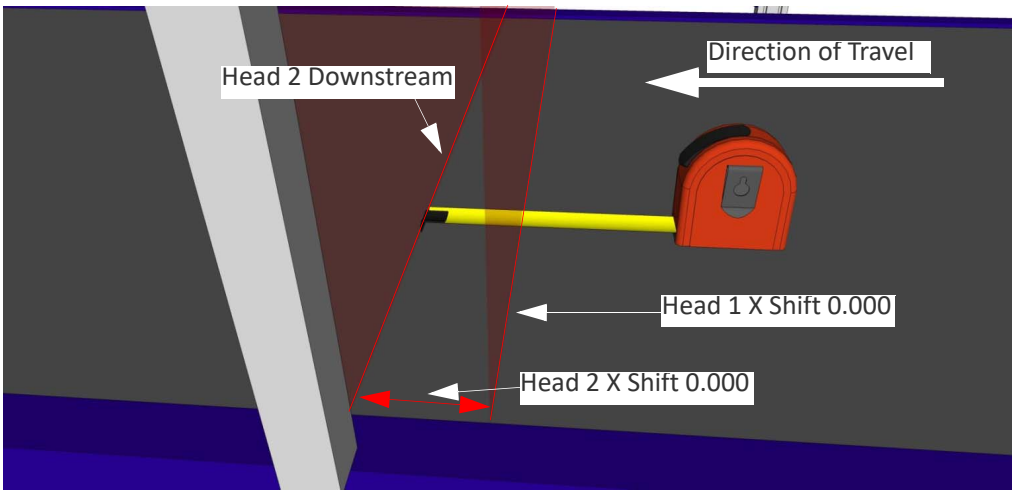
X Shift

Enter the measured distance on the belt from DM3610 Head 1 scan line to Head 2 scan line.

1. Enter 0.000 for the X Shift of HEAD1.

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

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



Y Shift

Indicates the DM3610 dimensioner’s position shift from center along the Y - axis.

X Rotation

Indicates the DM3610 dimensioner’s degrees of rotation on the X-axis.

3. When you have finished making changes, click **Update** to save or click **Reset** to revert to the previously saved values.

Modify Settings | Dimensioning |Side-by-Side Detection

Use the **Dimensioning | Side-by-Side** window to calibrate an installed DM3610 dimensioning system for better Side-by-Side Detection.

In a “singulated” material handling system, parcels are separated by at least the minimum spacing distance along the direction of travel; there is at most one parcel across the conveyor at any time; and therefore there is only one parcel present during a trigger cycle. A trigger is typically generated by a photoeye or a hardware signal from the sorter.

In a singulated system, a **Side-by-Side (SBS)** is an error condition in which these conditions are violated. The end-user wants to know when this happens (when their parcel flow has inadvertently become “non-singulated,” as it can lead to lost product), and our systems can tell them this by means of an SBS indicator in the Serial or Ethernet “host message.”



The Dimensioner is capable of side-by-side detection and there are standard settings which allow it to be configured to accommodate most conditions. However in some systems, packages are such that optimum performance is not achieved. The parameters defined in Side-by-Side Detection/Advanced Settings are intended for “Datalogic engineering” use only to better configure your system. If you experience difficulties with Side-by-Side Detection, we recommend you contact Datalogic Technical Support to help you resolve the issue.

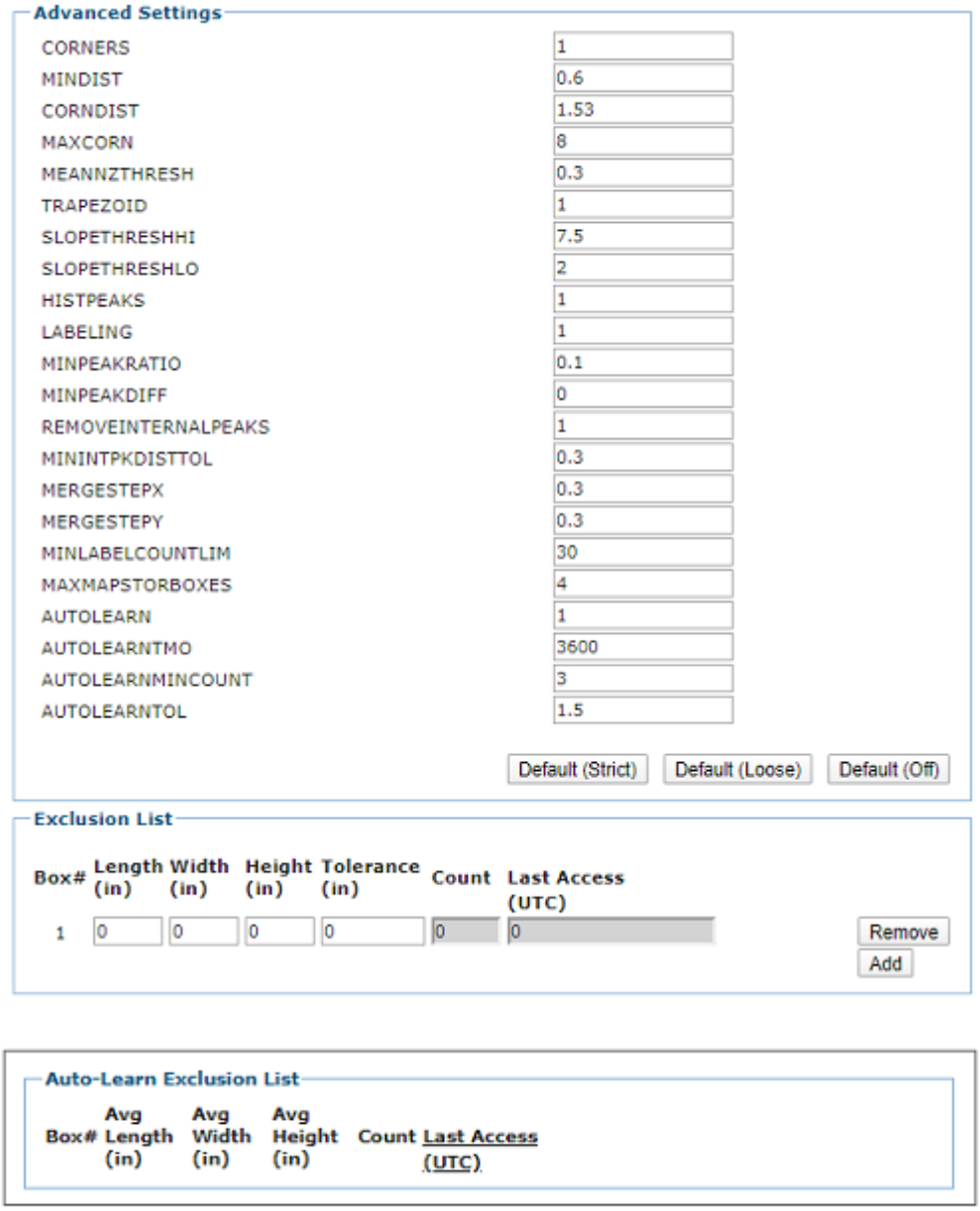
It is much more difficult to make SBS determinations when two (or more) parcels are touching or nearly touching. By enabling “Advanced Settings” in the **Dimensioning | Side-by- Side Detection** e-Genius page, various additional/non-default methods (e.g. corner counting, histogramming, etc.) can be enabled to help aid in making SBS determinations.

The parameters defined under Advanced Settings are intended for “Datalogic Engineering” use only. The details of these settings are outside the scope of this document. There are, however, various “Default” options that can start you off in the right direction:

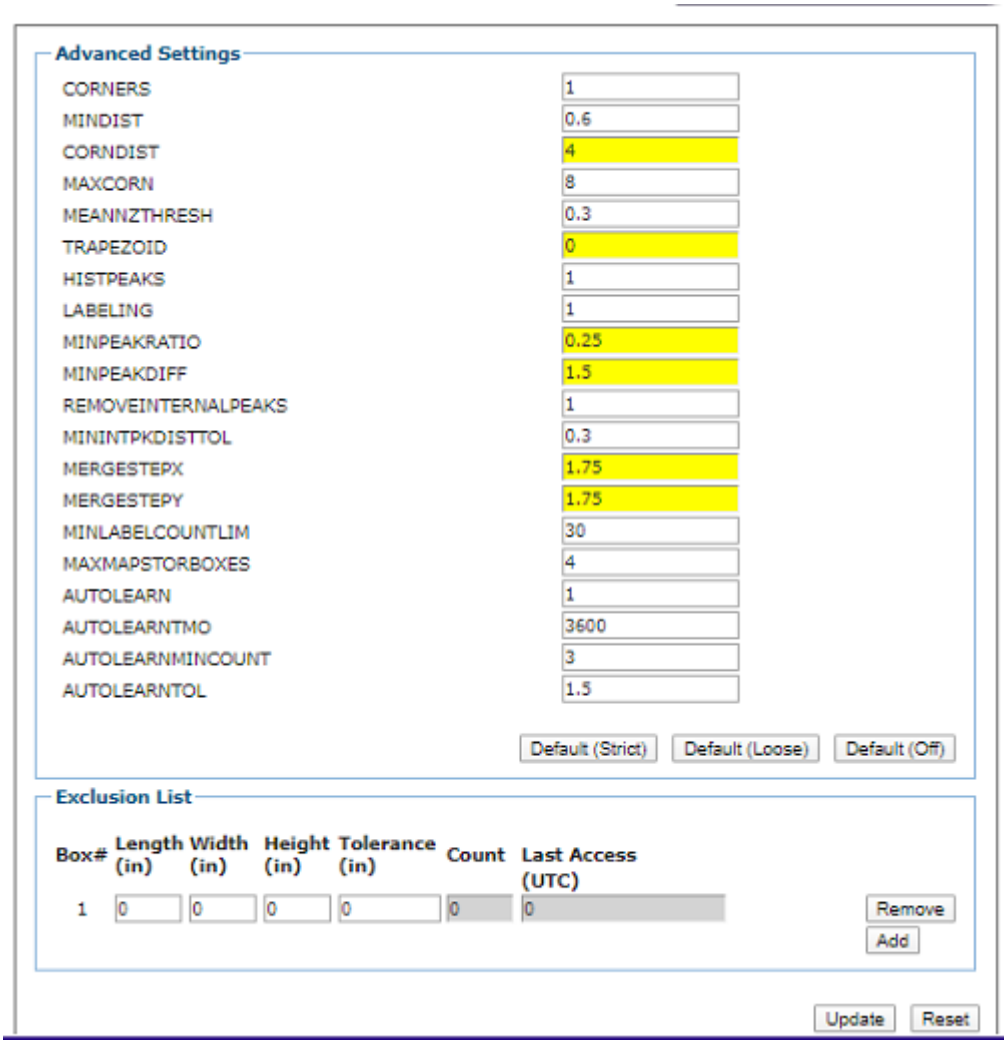
Default (Strict): enables advanced SBS settings that aim to detect SBS conditions with minimal gap, height differential, and shift/offset. This is a good starting point if the parcels in your application are “good cuboidals” only. See“DC3000 Side-by-Side Detection” on page 176 for more details.

1. In the menu under **Modify Settings,** navigate to **Dimensioning | Side-by-Side Detection**. The **Side-by-Side Detection** window opens.

Default (Strict) options are shown below:



Default (Loose): enables advanced SBS settings that aim to detect SBS conditions, while minimizing false positives. This is a good starting point if the parcels in your system are more diverse, i.e. not only good cuboidals.





Default (Off): disables all advanced SBS settings.

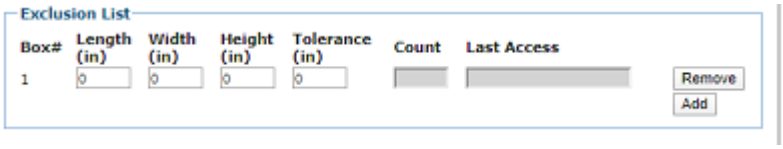
Exclusion List

In the Side-by-Side settings window, the system allows you to populate an **Exclusion List** with known parcel sizes. Any parcel within the "tolerance" of these sizes will not be subject to the various SBS checks. This can be very useful if certain parcels frequently cause false positives, e.g. certain "L-shaped" boxes.

A similar Exclusion List is available in the AV7000 camera system, but by barcode content instead of parcel size.

Up to 25 entries can be made in this table. To be a valid entry, Tolerance must be greater than zero, and one or more of Length, Width, or Height must be greater than zero.

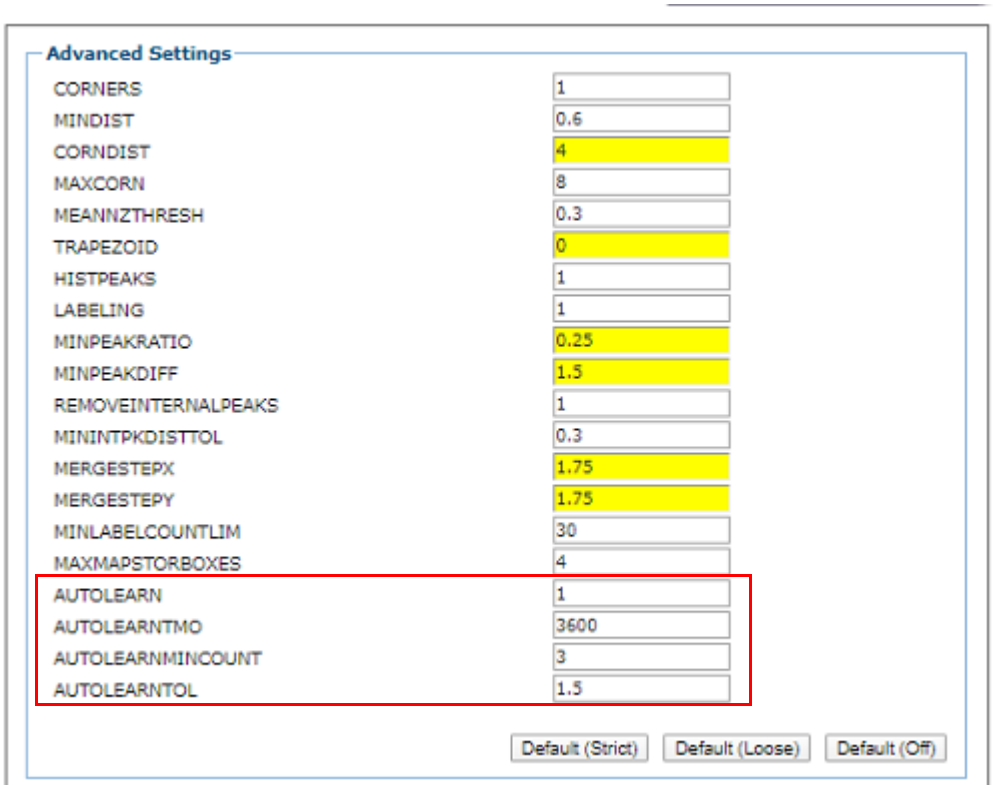
Only when all entries are valid will the web-page provide room at the end of the list for the addition of a new entry.



Auto Learn Exclusion List

When enabled, the system will maintain an in-memory table of past SBS determinations, adding to, refining, and deleting from this table on-the-fly. When table entries exceed a certain count, future SBS determinations of parcels within tolerance of that entry's size will be negated. Entries will expire if they are unused after a configurable time period.

The purpose of the Auto-Learn function is to allow the system to automatically recognize when something is awry, e.g. it is repeatedly falsely flagging SBS on parcels of a certain size. For example, imagine a shipment of L-shaped vacuum cleaner boxes was being conveyed. To avoid diverting / recirculating every such box, the Auto-Learn functionality would allow the system to learn and recognize the condition after, say, the first three false positives.



AUTOLEARN Settings

AUTOLEARN

Enter (1) to enable or (0) to disable the Auto-Learn functionality

AUTOLEARNTMO

Enter the amount of time, in seconds, an entry in the Auto-Learn table must be unused before being deleted.

AUTOLEARNMINTCOUNT

Enter the number of times a certain size parcel must be flagged as SBS before it SBS determinations on parcels of this size will be negated.

AUTOLEARNTOL

Enter the tolerance, in inches, by which parcel sizes are associated with an existing entry in the Auto-Learn table.



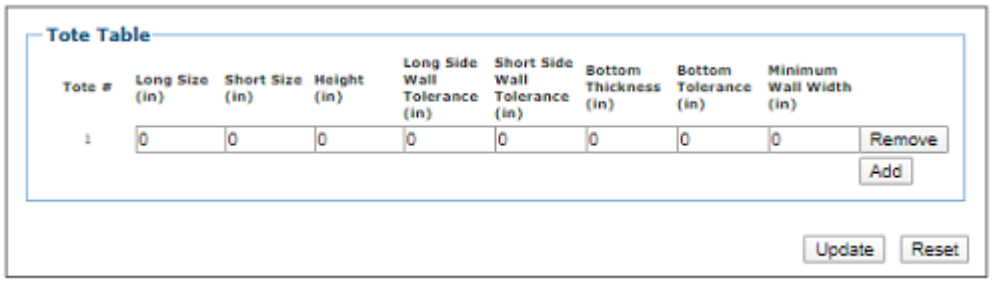
2. When you have finished making changes, click **Update** to save or click **Reset** to revert to the previously saved values.

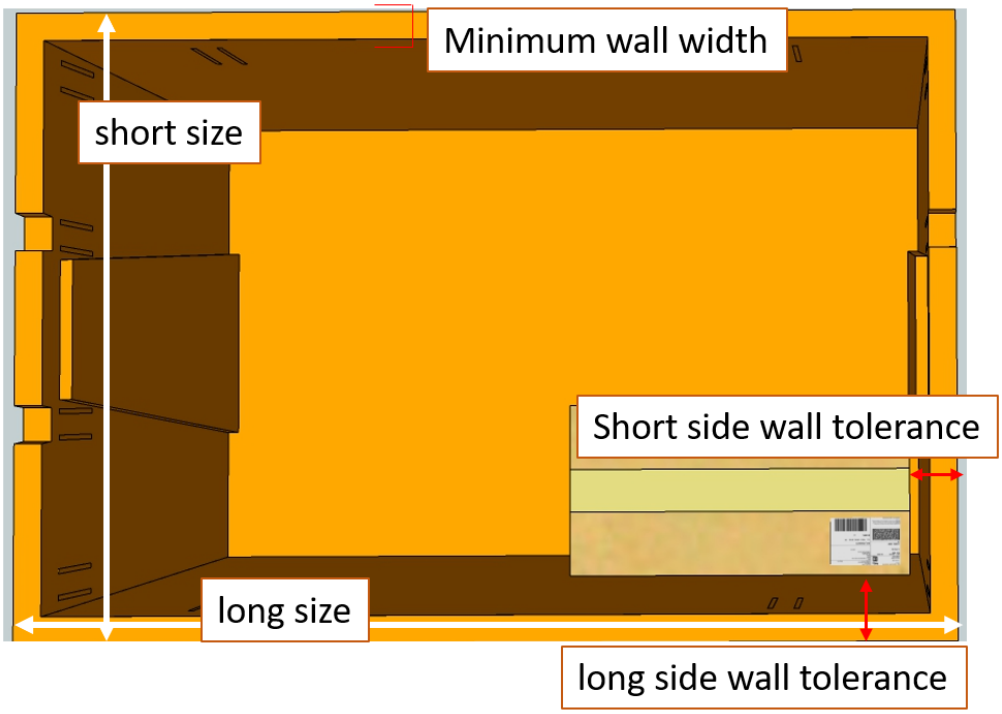
Modify Settings | Dimensioning |Tote Table

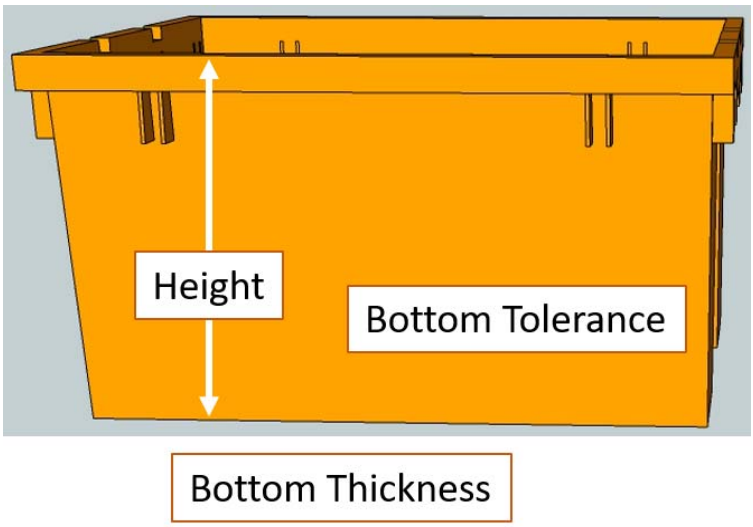
If Dimensions in Totes is enabled In the Dimensioning Settings window, the Tote Table is revealed.

1. In the menu under **Modify Settings,** navigate to **Dimensioning | Tote Table**. The **Tote Table** window opens.

2. Enter characteristics of known-size totes and the system can dimension items inside those totes.







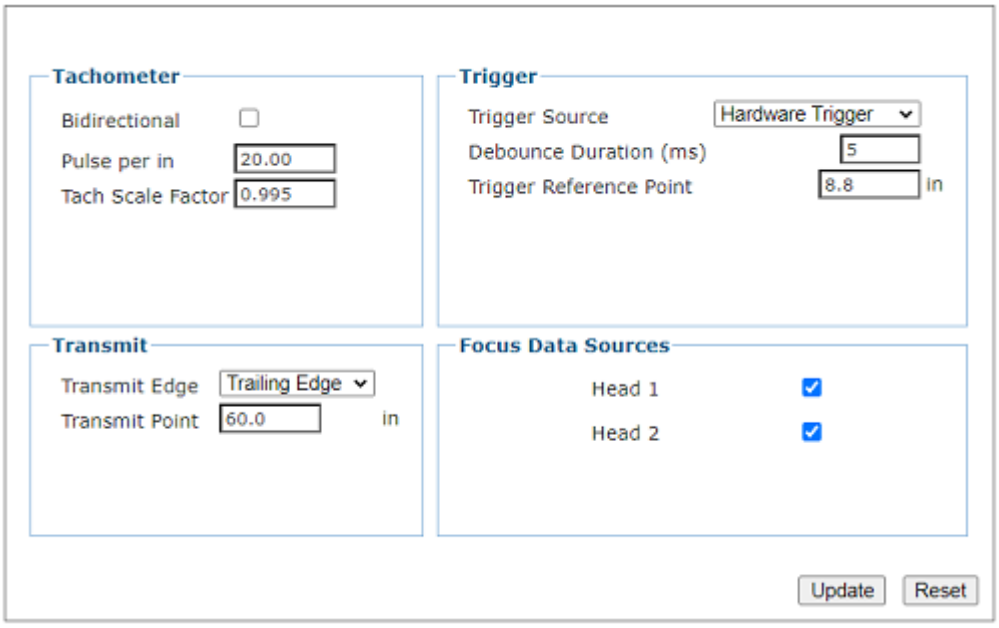
3. When you have finished making changes, click **Update** to save or click **Reset** to revert to the previously saved values.

Modify Settings | Tach/Trigger/Transmit

Use Tach/Trigger/Transmit to set up the DC3000 tachometer and trigger source. A range of settings are definable based on your use of hardware or software resources.

To set up tachometer and trigger sources:

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

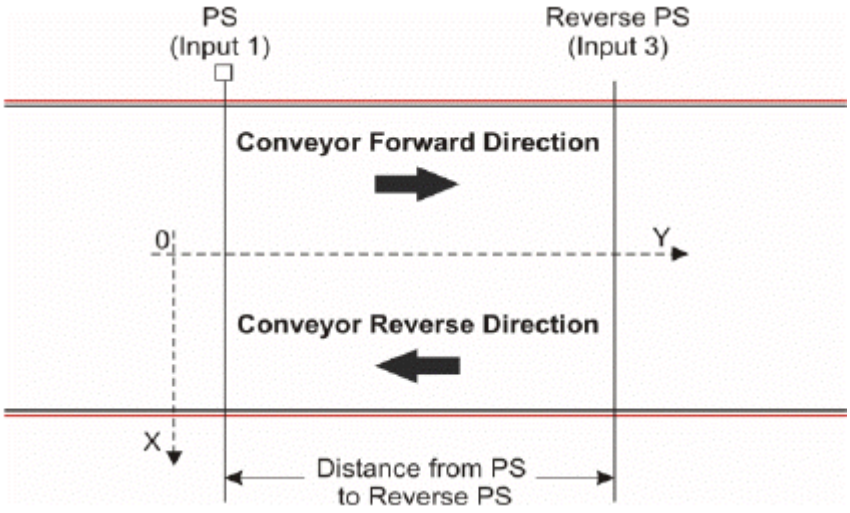


2. Enter the appropriate information in the form as described below.

Tachometer

Bidirectional

Select the check-box if your system is a “bidirectional” system, where the conveyor can go forward or reverse.



Pulse per cm [in]

Enter the number of tachometer pulses used per cm [in] traveled.

Pulses Per Inch	Pulses Per cm
16	6.3
20	7.9

Tach Scale Factor F/R

Enter a Tach Scale Factor to calibrate the tachometer actual to expected tachometer pulses/ inch or cm.

Options for forward “F” and reverse “R” appear when Bidirectional is selected. When Bidirectional is not selected, just one “Tack Scale Factor” appears.

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.

Trigger

Trigger Source

Select Hardware Trigger, Software Trigger, or Continuous Trigger from the drop-down list.

If Hardware Trigger

Hardware trigger can come from either a photoelectric sensor, or a 24V DC contact closure.

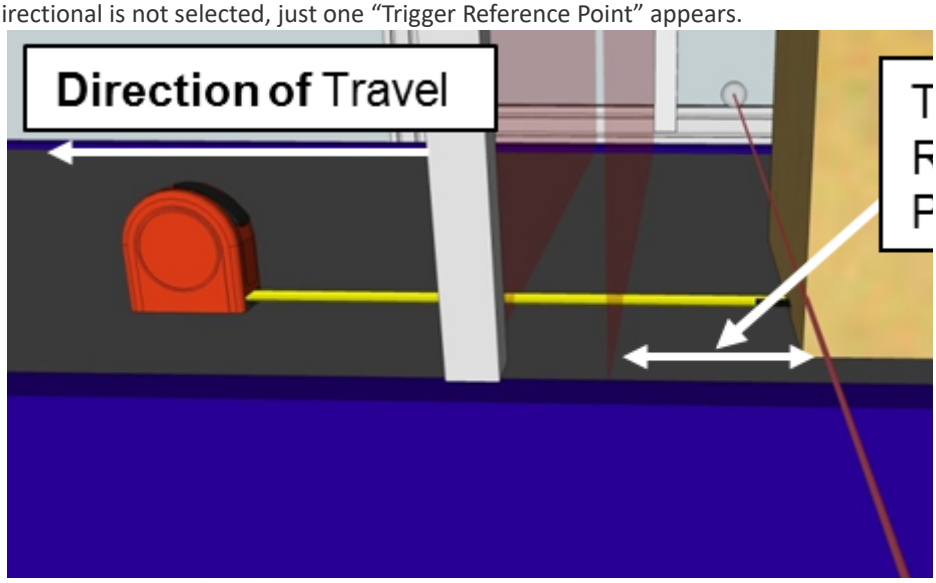
Debounce Duration (ms)

Enter the minimum number of milliseconds required for detection of a change in the hardware trigger status. If not set correctly, the DM3610 could receive false triggers.

Trigger Reference Point F/R

Enter the distance from your trigger source to the DM3610 laser scan line.

Options for forward “F” and reverse “R” appear when Bidirectional is selected. When Bidirectional is not selected, just one “Trigger Reference Point” appears.



If Software Trigger

Software Trigger

Select Net - 1, Net - 2, Serial -1, Serial-2, or Serial-3 from the drop-down list. The software trigger can be any “host port” either serial or network based.

Start Char

Define the ASCII characters that, when received, will start trigger for the reader.

End Char

Define the ASCII characters that, when received, will end trigger for the reader.

Trigger Reference Point F/R

Enter the distance from your trigger source to the DM3610 laser scan line. Options for forward “F” and reverse “R” appear when Bidirectional is selected. When Bidirectional is not selected, just one ‘Trigger Reference Point” appears.

If Continuous Trigger

When selected, the dimensioner is always in trigger mode and immediately transmits the dimensions of any package seen.



Due to various processing time requirements, the transmit time will vary in continuous mode.

Transmit

Transmit Edge

Select Leading Edge or Trailing Edge. Specifies which edge of the package (leading or trailing) is used to reference the transmit point.

Transmit Point F/R

The point at which dimension data is transmitted. Defines the number of inches or centimeters after the specified edge of the package passes the trigger before data transmission occurs. Options for forward “F” and reverse “R” appear when Bidirectional is selected. When Bidirectional is not selected, just one Transmit Point appears.

Focus Data Sources

Head 1/Head 2

Click the check-box to indicate which DM3610 the focus data is coming from.

3. When you have finished making changes, click **Update** to save or click **Reset** to revert to the previously saved values.

Modify Settings | Tach/Trigger/Transmit DM3610 Heads

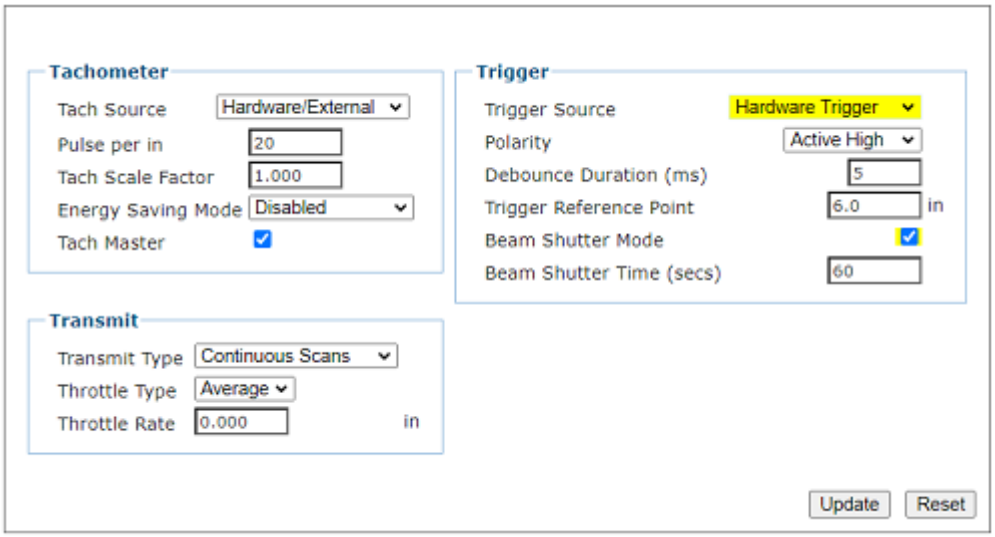
The Tach/Trigger/Transmit options for a DM3610 unit connected to a DC3000 as part of a Two Head system are different. A range of settings are definable based on use of hardware or software sources.



These explanations are for the DM3610s.

To set up tachometer and trigger sources:

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



2. Enter the appropriate information in the form as described below.

Tachometer

If Tach Source is Hardware External

Pulse per cm [in]

Enter the number of tachometer pulses used per cm [in] traveled.

Pulses Per Inch	Pulses Per cm
16	6.3
20	7.9

Tach Scale Factor

Enter a Tach Scale Factor to calibrate the tachometer actual to expected tachometer pulses/inch or cm.

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.

Energy Saving Mode

Select **Disabled, Turn Off Laser,** or **Turn Off Motor** from the drop-down list. If **Turn Off Laser** or **Turn Off Motor** are selected, the command will be executed after a specified number of seconds (see below).

Energy Saving time (secs)

If **Energy Saving Mode** is enabled, enter the number of seconds the scanner should wait after the conveyor stops before it turns off the laser or motor as specified by the Energy Saving Mode selection.

Tach Master

Select the check-box to indicate if this is the Master DM3610. De-select it if this is not the Master DM3610.

Transmit

Transmit Type

Click the drop-down to select from the following. Specifies what is used by the system to reference the transmit point.

No Transmit: Select when no scan line data is transmitted

Continuous Scans: Select when every scan line is transmitted

CAUTION

This mode should only be used for controller-based dimensioning. The high-throughput can have adverse effects on the system and/or diagnostic utilities.

Trigger Based Scans: Select when scan lines are transmitted at a slow rate, but when a trigger source is active scan lines are sent at the full rate.
Calibration Scans: When selected, this behaves like Trigger Based Scans but provides additional debugging capability to an advanced user.
Averaged Scans: select when Trigger Based Scans is needed to transmit averages scan line data over time. This mode is useful when using Diagnostics | DimView as it smooths away image noise.

If Continuous Scans has been selected:

Throttle Type

Select **Discard** or **Average** from the drop-down. Throttle Type dictates whether those skipped scans are simply discarded, or whether they are averaged together into the scanline that is transmitted.

Throttle Rate

Specify the minimum distance between scanlines that are transmitted, in centimeters or inches. 0 means scanlines will be transmitted at the full rate.

If Calibration Scans has been selected:

Facet (0..5, 6=all)

Facet provides additional debugging capability by sending scan line data from a particular mirror wheel facet.

Trigger

Trigger Source

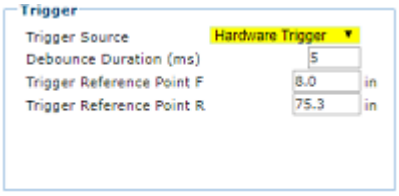
Select **Hardware Trigger, Software Trigger,** or **Continuous Trigge**r from the drop-down list.

Hardware Trigger

Hardware trigger can come from either a photoelectric sensor, or a 24V DC contact closure.

IF HARDWARE TRIGGER

An actual photoelectric sensor is used as the trigger.



Polarity

Select **Active High** or **Active Low** from the drop-down list.

Active High: The trigger is active when the input signal is high

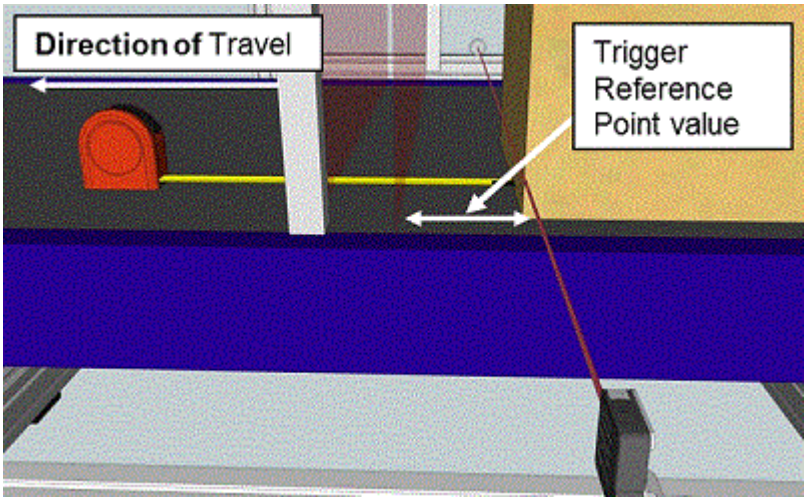
Active Low: The trigger is active when the input signal is low.

Debounce Duration (ms)

Enter the minimum number of milliseconds required for detection of a change in the hardware trigger status. If not set correctly, the DM3610 could receive false triggers.

Trigger Reference Point

Enter the distance from your trigger source to the DM3610 laser scan line.



Beam Shutter Mode

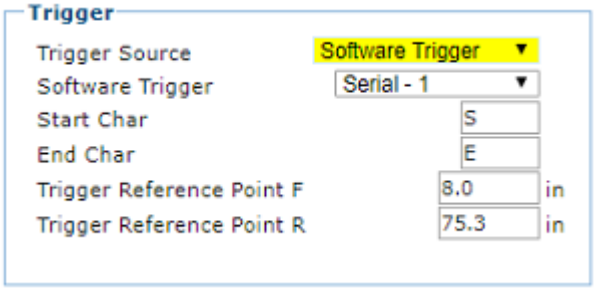
Select the check box to enable. The Beam Shutter option can be used to increase the overall laser diode life when used in high ambient temperature applications (over 35° C); reduce power consumption; and to turn off the laser for safety purposes.

Beam Shutter Time (secs)

Enter the number of seconds to wait after the last trigger cycle before shutting off the laser beam. Click the check-box to enable. The Beam Shutter option can be used to increase the overall laser diode life when used in high ambient temperature applications (over 35° C); reduce power consumption; and to turn off the laser for safety purposes.

IF SOFTWARE TRIGGER

Software messages are received to indicate start and end of trigger.



Software Trigger

Select Host - 1, Host - 2, Net - 1, or Net - 2 from the dropdown list. The software trigger can be any “host port” either serial or network based.

Start Char

Define the ASCII characters that, when received, will start trigger for the reader.

End Char

Define the ASCII characters that, when received, will end trigger for the reader.

Trigger Reference Point

Enter the distance from your trigger source to the DM3610 laser scan line.

Beam Shutter Mode

Select the check box to enable. The Beam Shutter option can be used to increase the overall laser diode life when used in high ambient temperature applications (over 35° C); reduce power consumption; and to turn off the laser for safety purposes.

Beam Shutter Time (secs)

Enter the number of seconds to wait after the last trigger cycle before shutting off the laser beam.Click the check-box to enable. The Beam Shutter option can be used to increase the

overall laser diode life when used in high ambient temperature applications (over 35° C); reduce power consumption; and to turn off the laser for safety purposes.

IF CONTINUOUS TRIGGER

When selected, the dimensioner is always in trigger mode and immediately transmits the dimensions of any package seen.



Due to various processing time requirements, the transmit time will vary in continuous mode.

Beam Shutter Mode

Select the check box to enable. The Beam Shutter option can be used to increase the overall laser diode life when used in high ambient temperature applications (over 35° C); reduce power consumption; and to turn off the laser for safety purposes.

Beam Shutter Time (secs)

Enter the number of seconds to wait after the last trigger cycle before shutting off the laser beam.Click the check-box to enable. The Beam Shutter option can be used to increase the overall laser diode life when used in high ambient temperature applications (over 35° C); reduce power consumption; and to turn off the laser for safety purposes.

Extends

Extend Front

Scan lines will be sent at the full rate this many inches before the front of the package crosses the scan line.

Extend Back

Scan lines will return from full rate to slow/nominal rate this many inches after the back of the package passes the scan line.

3. When you have finished making changes, click **Update** to save or click **Reset** to revert to the previously saved values.

MODIFY SETTINGS | NETWORK

Use The **Network** menu selection during initial setup to configure your DC3000 network settings. If necessary you can later make modifications to the controller's configuration and message format using the same menu selections.

- "Modify Settings | Network | Settings" on page 85
- "Message Definition #N" on page 90

Definitions:

IP Address - An IP address specifies a unique host ID for the reader on a particular TCP/IP network. Consult your network administrator for a valid IP address for the reader.

Net Mask - A netmask modifies a standard IP address into subnets. A default class C net mask should be valid in most cases (either 255.255.255.0 or 255.255.240.0).Consult your network administrator for the net mask value.

Gateway IP Address - A gateway allows the reader to reach other systems not on the local network and remote systems to reach the reader. If the reader requires external connectivity, consult your network administrator for a valid gateway address.

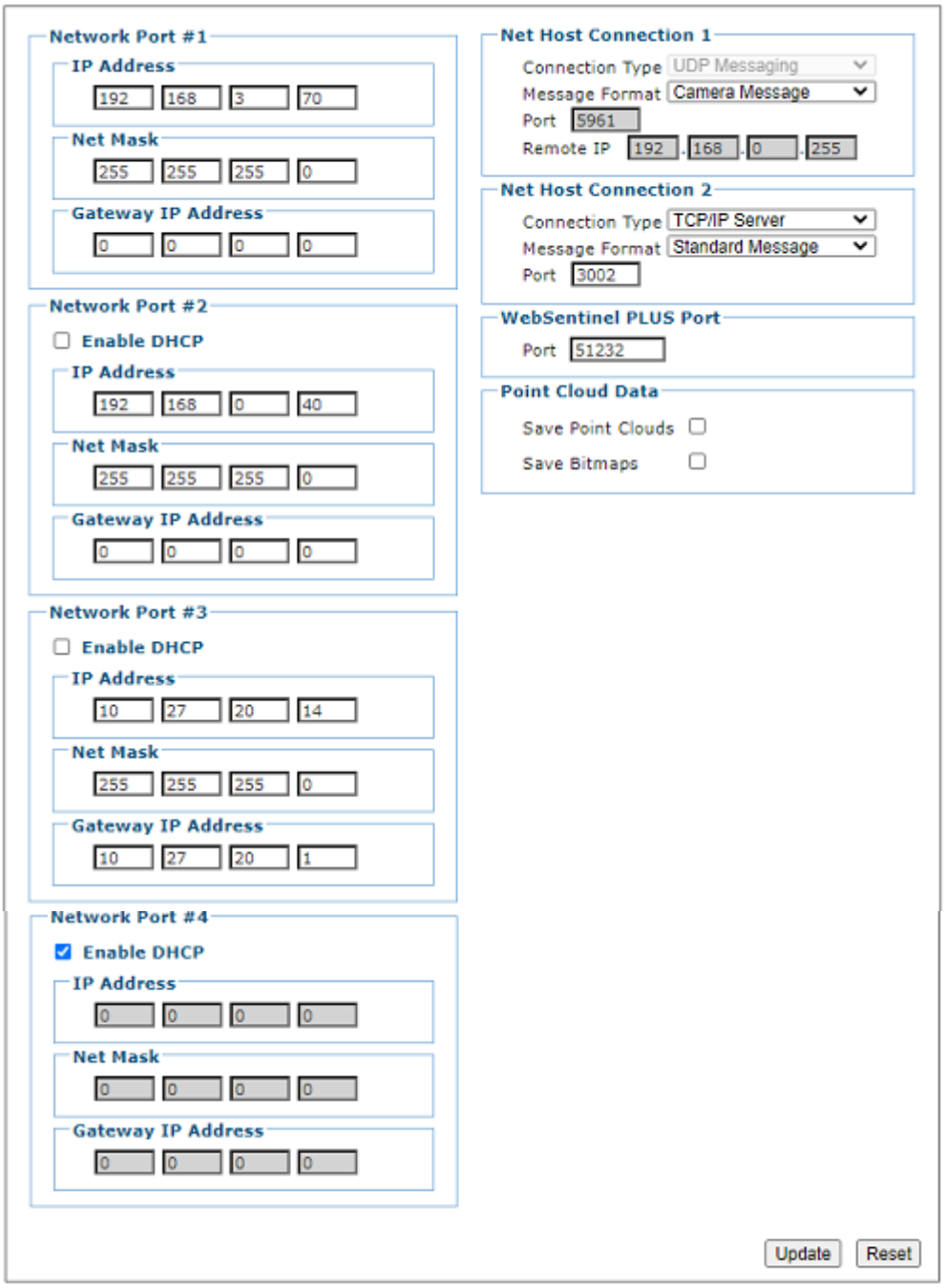
Modify Settings | Network | Settings

Use the **Modify Settings | Network | Settings** to specify network settings (including the IP address) for two separate network message outputs.

Net Host Connection 1 and **Net Host Connection 2** define network message configuration for two separate message output formats. The **Connection Type** and **Message Format** for each port can be set independently. Message formatting setup is the same for the host connections and serial ports.

To adjust the network settings of the dimensioner:

1. In the tree menu under **Modify Settings**, navigate to **Network | Settings**. The **Settings** window opens.



2. Enter the appropriate information in the form as described below.

Network Port #1

IP Address

An IP address specifies a unique host ID for the reader on a particular TCP/IP network. Consult your network administrator for a valid IP address for the reader.



If you choose to enable a second IP address, the local IP address must be entered in the IP Address 1 text fields. The Host IP address must then be entered in the IP Address 2 text fields. This is because the Gateway Address is associated with IP address 2.

Net Mask

A net mask modifies a standard IP address into subnets. A default net mask should be valid in most cases (255.255.255.0). Consult your network administrator for the net mask value.

Gateway IP Address

A gateway allows the reader to reach other systems not on the local network and remote systems to reach the reader. If the reader requires external connectivity, consult your network administrator for a valid gateway address.

Network Port #(n) Ports 2 - 4

Enable DHCP

Select this box to enable DHCP (Dynamic Host Configuration Protocol for Network Port #2).The system gets the IP Address, Net Mask, and Gateway IP Address from a DHCP server. When selected, the manual entry fields for Network Port #2 are disabled. When you click the Refresh button the DC3000 releases and renews the DHCP lease.



It may take a few moments for this to complete after which you may Reload the page (F5) to see the new DHCP Configuration.

IP Address

Enter an IP address for this network connection.



If you choose to enable a second IP address, the local IP address must be entered in the IP Address 1 text fields. The Host IP address must then be entered in the IP Address 2 text fields. This is because the Gateway Address is associated with IP address 2.

Net Mask

Enter a secondary Net Mask for the unit.

Gateway IP Address

A gateway allows the reader to reach other systems not on the local network and remote systems to reach the reader. If the reader requires external connectivity, consult your network administrator for a valid gateway address.

Net Host Connection (n)

Select a connection type from the drop-down list:

TCP/IP Server: As a TCP/IP server, a Port # must be specified. In this case it is the TCP/IP client's responsibility to initiate a connection. TCP/IP Client: As a TCP/IP client, aside from the Port #, the Remote IP Address of the TCP/IP server which is to receive messages must be specified.

When used, a **Reconnect Time** must be entered in the field provided. The **Reconnect Time** specifies the interval (in seconds) at which the reader attempts to establish a connection.

A remote IP address must also be entered in the fields provided.

UDP Messaging (User Datagram Protocol): In some instances, it may be desirable to use a connection-less UDP message to send data. In this case, only the Port # and Remote IP Address of the receiver need to be specified. When used, a remote IP address must also be entered in the fields provided.

Message Format

Select a Message Format from the drop-down list:

Custom Message: This selection may only be available when custom dimensioner software has been developed and installed for your system by Datalogic.

When Custom Message is selected, the parameters of the Message Definition tab may be modified to satisfy the application communication parameters; however, some of the parameters may be hard coded and will not effect the application. Refer to the custom software notes to identify these parameters.

Standard Message: When the Standard Message is selected the message formats found on the Message Definition page will be used. These parameters are grayed out on this page and are not configurable.

When Standard Message is selected, no user input is permitted in the Message Definition #n window. The fields will be grayed out.

User Defined Message: This selection allows the user to define messages used. Messages can be defined in the Message Definition #*n* window.

Camera Message: This selection is intended to ease set-up of tunnels containing AV500/900 and AV7000 Cameras and DM3610 Dimensioners. This feature is built around a camera message that is sent from a DM3610 to an AV500/900 and AV7000 camera. **Camera Message** sets the **Connection Type, Port** (5961), and **Remote IP** to broadcast the camera message out of Network Port #2.

When Camera Message is selected, the Connection Type is set to UDP Messaging, and no user input is permitted in the Message Definition #n window with the exception of Protocol Index.

Datalogic Message: This selection is intended to ease set-up of tunnels containing DM3610 Dimensioners and other Datalogic devices, e.g. the SC5000 controller. The message content is the same as the Camera Message, but selecting Datalogic Message gives you the freedom to set the Connection Type, Port, etc.

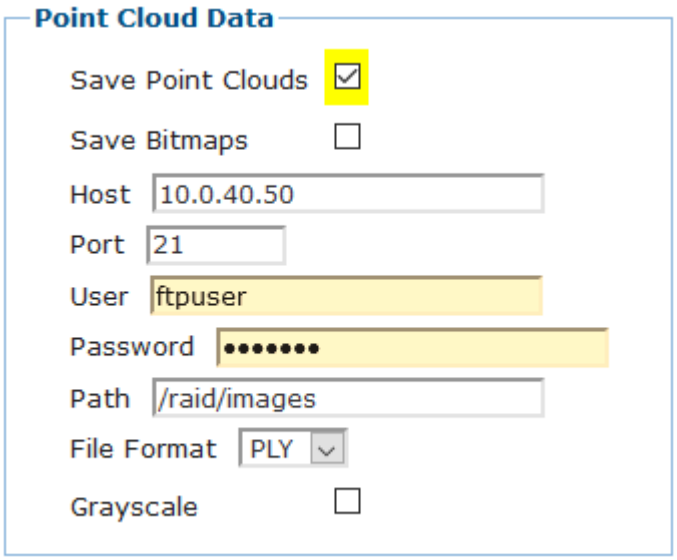
When Datalogic Message is selected, no user input is permitted in the Message Definition #n **window with the exception of Protocol Index. However, unlike the Camera Message, the Connection Type is configurable.**

WebSentinel PLUS Port

Datalogic's WebSentinel PLUS product may connect to this port to receive diagnostic and statistical information from the DM3610. Enter the port address.

Point Cloud Data

Save Point Clouds: Click the check-box to save the Point Cloud data.



Save Bitmaps: Click the check-box to save the Bitmap data. If selected, BMP files one per DM3610, will be saved to the FTP server. These are grayscale bitmaps, with the color of each pixel being a grayscale value based on the amplitude of the return light. Each pixel represents a scan point within a scan line.

Host: Enter the IP Address of the Host where the data will be stored.

Port: Enter the port number.

User: Enter the Username.

Password: Enter the Password.

Path: Enter path where point cloud or bitmap data is to be stored

File Format: Select the appropriate format for you files; PCD, PLY. Refer to the information at the links listed below for more information.

https://en.wikipedia.org/wiki/PLY_(file_format)

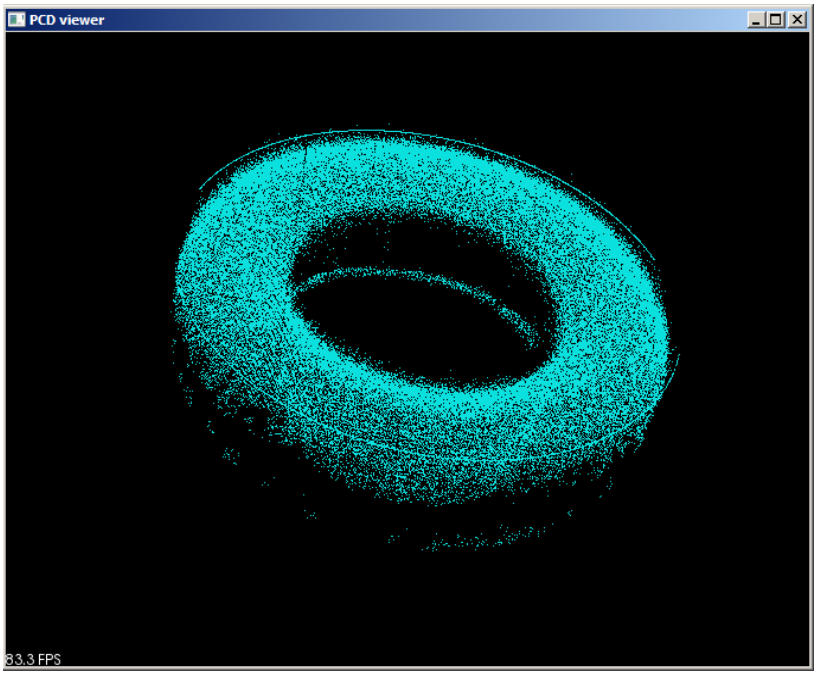
https://en.wikipedia.org/wiki/Point_Cloud_Library

Grayscale:

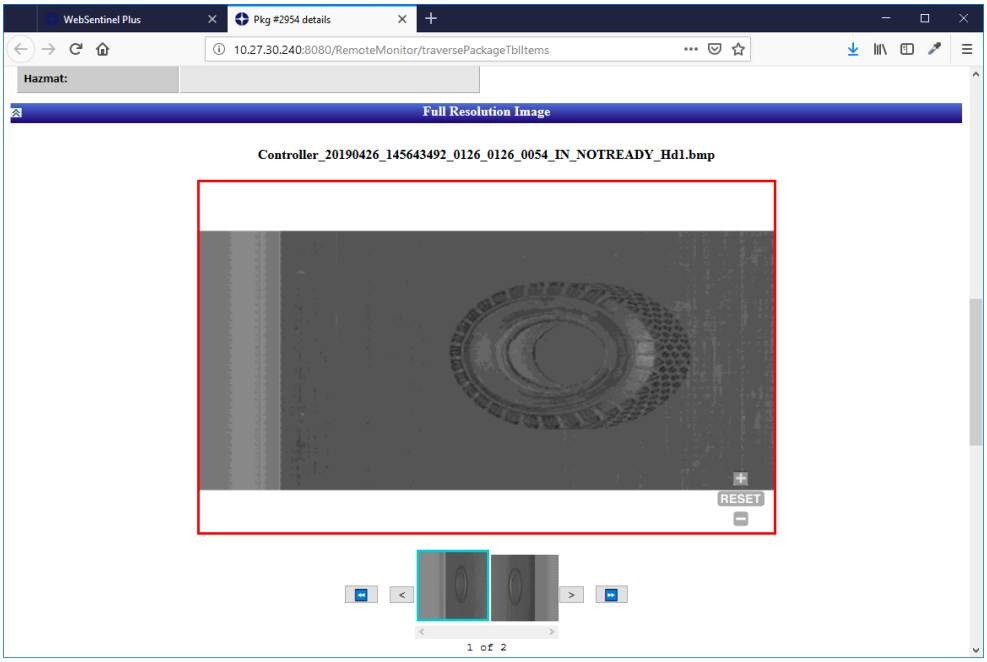
The point cloud of each parcel is transmitted to an FTP Server. If grayscale is selected, the color of each point is included in the point cloud file. The color is a grayscale value based on the amplitude of the return light.

The Point Cloud Library provides a “PCD viewer” application that can be used to view these files. View information here for more details on point clouds: http://pointclouds.org/documentation/tutorials/pcd_file_format.php

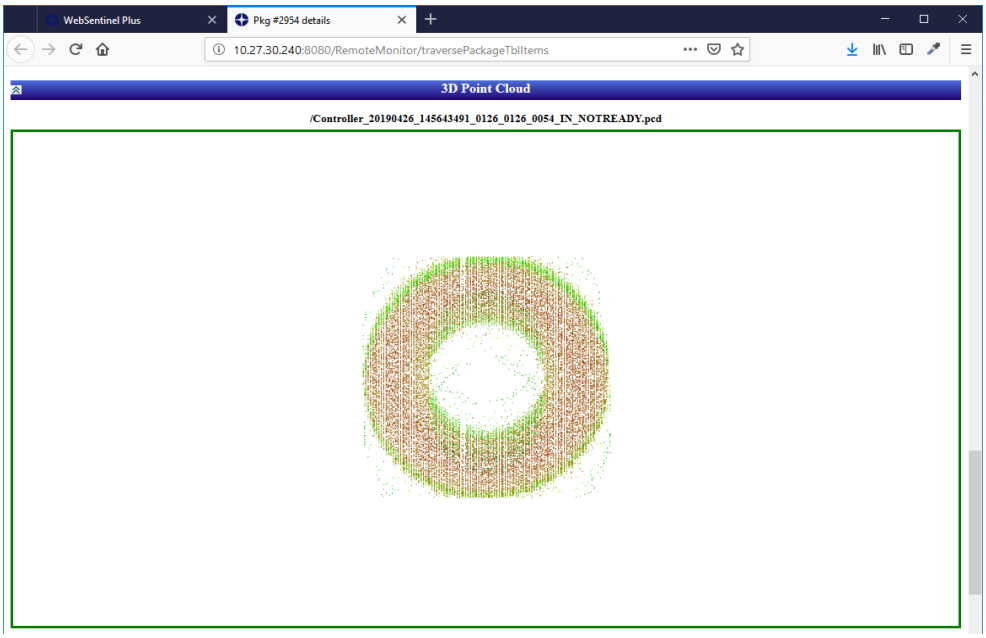
Here is an example of what a tire looks like using Point Cloud Data.



Example BMP file



Example PCD file rendered by WebSentinel PLUS



Telnet Port

Enter a Telnet port ID. Telnet is a network protocol that allows a user on one computer to log on to another computer remotely.

Data Transmit

When DIM-in-Head Enabled is set to Off in Modify Settings | Dimensioning | Settings scan line data can be sent to this IP address and port for use in dual headed configurations. The data is sent to the DC3000 where the DC3000 provides length, width and height to the host. The various modes of this data transmission can be set using the Transmit Type selection on the Tach/Trigger/Transmit page.

NOTE

The Data Transmit IP Address must be kept at its default of 0.0.0.0 if you do not need to transmit scan line data for off-line analysis and troubleshooting.

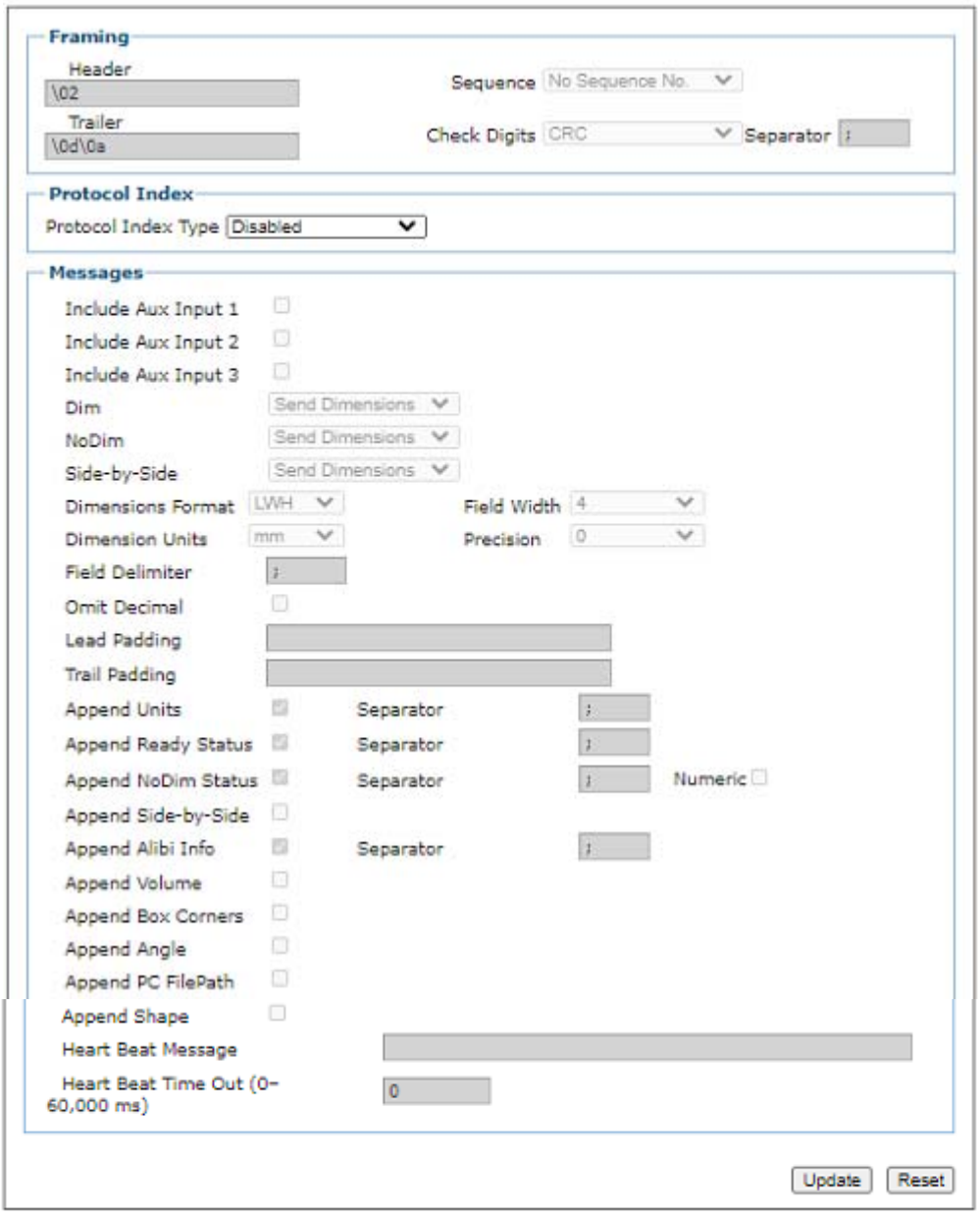
3. When you have finished making changes, click **Update** to save or click **Reset** to revert to the previously saved values.

Message Definition #N

Use the **Modify Settings | Message Definition #n** to define messages when User Defined Messages has been selected in the Network Settings window. Available user interaction with this form will vary depending on the Message Format selected in **Modify Settings | Network | Settings.**

To define the appearance of dimensioner messages:

1. In the tree menu under **Modify Settings**, navigate to **Network | Message Definition #n.** The **Message Definition #n** window opens.

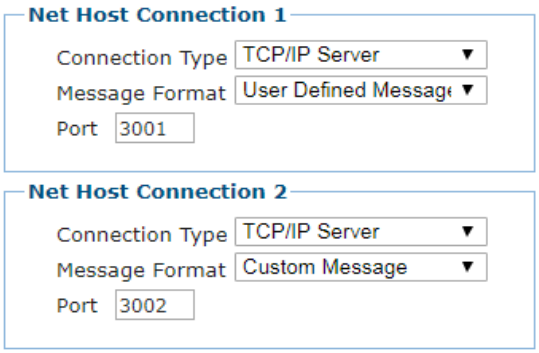


2. Enter the appropriate information in the form as described below.

NOTE

When Standard is selected in Modify Settings | Serial | Port #n, the system uses a message format as defined by the standard software. When selected, most input fields will be grayed out and the parameters shown will be used.

When Custom Message is selected, the parameters of the Message Definition tab may be modified to satisfy the application communication parameters; however, some of the parameters may be hard coded and will not effect the application. Refer to the custom software notes to identify these parameters.



Framing

Define the message framing.

The Header and trailer must match the source header and trailer.

Header

Enter a character string for the header (ASCII or Hex). These characters will be sent at beginning of every message. Up to 25 characters are allowed.

Trailer

Enter a character string for the trailer (ASCII or Hex). These characters will be sent to terminate every message.

Sequence

Select **No Sequence No., 1 Digit Sequence No., 2 Digit Sequence No.,** or **3 Digit Sequence No.** from the drop down list. When a digit sequence is selected, a sequence number consisting of the specified number of digits is inserted just after the header. Enter a character that will separate the sequence number from the start character. The Separator is the delimiter found after the sequence number.

Check Digits

Select **BCC** or **CRC** from the drop-down list. When enabled, a two-character hexadecimal check character is inserted just prior to the trailer.

Separator

Enter a character to use as a separator before the Check Digits.

Protocol Index/ Aux Message

Protocol Index is used to get a message from external equipment. External equipment may be third party equipment, such as a scale or sorter or a Datalogic product. The message can then be attached to the message output from the dimensioner system.

Type

Select **Disabled, Fixed Length, Variable Length**, or **Length in Message** from the drop-down list.

Disabled: Protocol Index functions are not displayed.

Fixed Length: The Protocol Index string has a fixed length specified in the Length field.

Variable Length: The length of the Protocol Index string received by the dimensioner system is variable.

Length in Message: The first byte after the Header indicates the length of the Protocol Index string received by the dimensioner system.

Length

Enter the number of characters expected when **Fixed Length** is selected.

Header

Enter a Header to be defined and transmitted as a block preceding the Protocol Index string sent by the Host.

NOTE

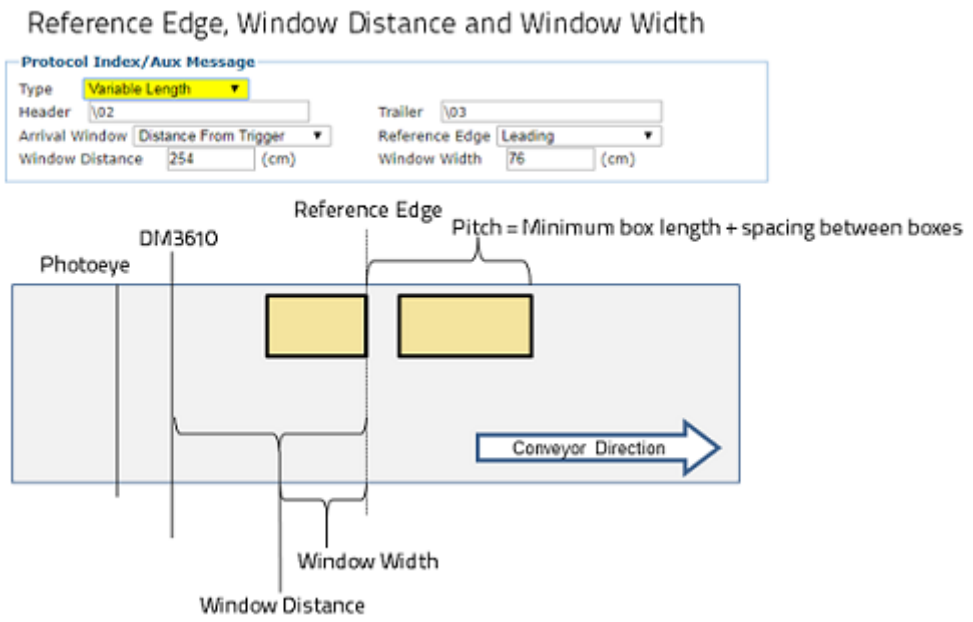
All Protocol Index Type selections must include a header.

Trailer

Enter a Trailer to be defined and transmitted as a block following the Protocol Index string sent by the Host.

NOTE

If Variable Length is selected as the Protocol Index Type, it must include a trailer. A trailer is not necessary for the other selections. If Fixed Length or Length in Message include an optional Trailer and it does not occur in the correct place, the received string is discarded.



Arrival Window

Select **While in Trigger, Distance from Trigger,** or **Distance from Scan Line** from the drop-down list.

While in Trigger: The Protocol Index string must arrive while the trigger is active (e.g. while the photo-eye is blocked).

Distance from Trigger: The Protocol Index string must arrive during a window relative to the trigger source, e.g. photo-eye (reference edge, window distance, and window width are configurable).

Distance from Scan Line: The Protocol Index string must arrive during a window relative to the scan line (reference edge, window distance, and window width are configurable).

Reference Edge

Select **Leading** or **Trailing** from the drop-down list when **Distance from Trigger** or **Distance from Scan Line** selections are used.

Window Distance

Enter the distance (cm [in]) from the Arrival Window's reference point (i.e. Trigger or Scan Line) to the desired location of the arrival window (receiving point) for the **Protocol Index** string. This is used together with the **Window Width** parameter to assign the **Protocol Index** information to the correct package.

Window Width

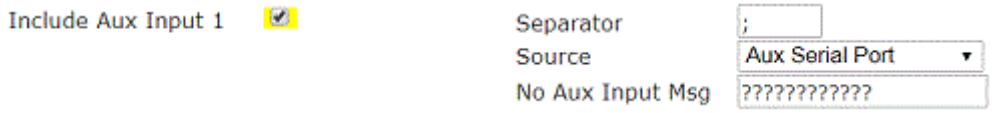
Enter the smallest possible distance (cm [in]) between system packages in the field provided when **Distance from Trigger** or **Distance from Scan Line** selections are used. Specifies the length that an electronic window opens to receive the protocol index message. This specifies the minimum distance between two consecutive packages. It is used to compensate for imprecision in the Distance from Protocol Index to Trigger Source (Window Width) by virtually lengthening the package. This parameter implies that if two consecutive packages are placed

on the conveyor at a distance less than the minimum, a **Protocol Index** assignment error will occur.

Messages

Include Aux Input 1, 2, or 3

These options identify the Protocol Index source and how its information appears in the DM3610 message.Select the check box(es) to enable. This will include a received protocol index message in this outgoing message. Additional inputs appear when enabled.



Separator

Enter a character to use as a separator before the Aux Input (Protocol Index message).

Source

Select **Serial Port 1, 2** or **3**, or **Network Port 1** or **2** from the drop-down list. This is the port through which the protocol index message is received.

No Aux Input Msg

Enter a filler message to replace the protocol index message (Aux Input) if none is received from the external device (i.e.: scale, etc.).

Dim

Select **None, Send Dimensions**, or **User Defined** from the drop-down list.

None: No dimension data is sent in the message.
Send Dimensions: This selection sends the package dimensions in the message.
User Defined: When selected, a text field is provided for entry of a user defined message.



No Dim

Select None, Send Dimensions, or User Defined from the drop-down list. In LFT applications the parcel may not meet the requirements for certification; however the unit may identify a dimension to the parcel. In this condition a measurement may be transmitted.

None: No dimension data is sent in the message.
Send Dimensions: This selection sends the package dimensions in the message. This is used in cert mode when non-cuboidal packages are measured (but do not meet cert mode requirements) and the dim data is still useful.
User Defined: When selected, a text field is provided for entry of a user defined message.

Side-by-Side

Select **None, Send Dimensions**, or **User Defined** from the drop-down list. This must be selected for a side-by-side message to be appended to the host message.

None: No dimension data is sent in the message.
Send Dimensions: This selection sends the package dimensions in the message.
User Defined: When selected, a text field is provided for entry of a user defined message.



Dimensions Format

The Length Reporting option under **Modify Settings > Settings >** determines which side is identified as the length. Select in what order you would like the Length, Width, and Height measurements to appear in the message L=Length / W=Width / H=Height.

Field Width

Select the field width of the minimal number of characters for length, width, and height from the drop-down list. 2 to 7 characters are available. If the value has fewer characters than the field width, it will be padded with zeros on the left.

For example:

If Precision is set at 1 (1 decimal place), field width is set at 5, and the Omit Decimal is not selected, the dimension is 12.3, then the returned value in the host message will be **012.3** If Precision is set at 2 (2 decimal place), field width is set at 7, and the dimension is 12.3, then the

returned value in the host message will be 012.3



The decimal place is considered a character.

Dimension Units

Select **in** (inches), **mm** (millimeters), or **cm** (centimeters) from the drop down list. This information is placed in the output message after the dimensioning data, if the append units box is selected.

Precision

Select 0, 1, or 2 from the drop-down list. This is the number of digits appearing after the decimal point.

Field Delimiter

Enter a character to be used as a delimiter between length, width, and height fields. A semicolon is often used to separate data.

Omit Decimal

Select this check box to remove the decimal point character from the message. Only the decimal point character is removed, and digits before and after the decimal point remain. This does not change the precision option.

Lead Padding

Enter characters to precede the length, width, and height field. If this box is selected, you must assume decimal position.

Trail Padding

Enter characters to follow the length, width, and height field.



For each "Append" check box, the information is included in the host message after the separator you define.

Append Units

Select the check box to enable. When checked, a Separator text field is revealed. Enter a separator character in the text field provided. A unit abbreviation (mm, cm, or in) will be appended after the separator.

Append Ready Status

Select the check box to enable. When checked, a Separator text field is revealed. Enter a separator character in the text field provided. **NOTREADY** or **READY** will be appended after the separator. **NOTREADY** does not indicate that this package result is not legal-for-trade, or under **Modify Settings > Dimensioning > Settings Certification** Mode is set to off.

Append NoDim Status

Select the check box to enable. When checked, a Separator text field is revealed. Enter a separator character in the text field provided. If the package is a NoDim, a reason code is appended after the separator.

For example:

NODIM_BOX_STACKED, NODIM_BOX_SIDES_TO_NOISY

A NoDim reason indicates that this package result is not legal-for-trade. If the **Numeric** check box is selected, the numeric equivalent of the NoDim Status will be appended. The numeric values are shown below.

Numeric	Error
1	NODIM_BOX_NODIM_UNKNOWN
2	NODIM_BOX_TOL_FAIL_LENGTH
3	NODIM_BOX_TOL_FAIL_WIDTH
4	NODIM_BOX_TOL_FAIL_HEIGHT
5	NODIM_BOX_WRITE_ALIBI_FAIL
6	NODIM_BOX_SAME_STORBOX_BAD
7	NODIM_BOX_StachED
8	NODIM_BOX_NO_HISTPEAKS
9	NODIM_BOX_BAD_HISTOGRAM
10	NODIM_BOX_PEAK_VS_BORDER
11	NODIM_BOX_PEAD_VS_INTERNAL
12	NODIM_BOX_POIN_COUNT_ERR
13	NODIM_BOX_TOO_FEW_SIDE_POINTS
14	NODIM_BOX_BAD_JAC_CHOL
15	NODIM_BOX_BAD_CHOL
16	NODIM_BOX_SIDES_TOO_NOISY
17	NODIM_BOX_SIDE_LEN_TOO_SHORT
18	NODIM_BOX_SIDE_LEN_TOO_LONG
19	NODIM_BOX_LONGEST_SIDES_ERR
20	NODIM_BOX_LONG_SIDE_VEC_ERR
21	NODIM_BOX_SHORT_SIDE_VEC_ERR
22	NODIM_BOX_MAX_COSINE
23	NODIM_BOX_MAX_COSINE2
24	NODIM_BOX_POINT_BORDER_DIST
25	NODIM_BOX_POINTS_NEAR_CORNERS
26	NODIM_BOX_SIZE_CORRECTION_ERROR
27	NODIM_BOX_SYSTEM_FAULT
28	NODIM_BOX_MULT_HISTPEAKS
29	NODIM_BOX_SHADOWED
30	NODIM_BOX_AT_BELT_EDGE
31	NODIM_BOX_AT_LINE_EDGE
97	NODIM_BOUNDING_BOX
98	NODIM_BOX_SIDE_BY_SIDE
99	NODIM_BOX_NO_DATA

Append Side-by-Side

Select the check box to enable. When checked, a Separator text field is revealed. Enter a separator character in the text field provided. If there is a side-by-side condition detected, “SBS” will be appended after the separator.

Append Alibi Info (Only shown in some Legal for Trade Models)

Select the check box to enable. When checked, a Separator text field is revealed. Enter a separator character in the text field provided. Alibi storage information is appended after the separator. Only shown in OIML applications.

Format:

`MM:MM:MM:SS:SS:SSYYYYMMDDhhmmss-nnnnnnnnnn`

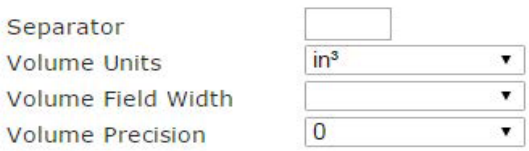
Where MM:MM:MM:SS:SS:SS is the MAC address, YYYYMMDDhhmmss is the date/time, and nnnnnnnnnn is the 10 digit sequence number.

Examples:

```
\020150;0100;0105;mm;READY;;00:0e:13:05:00:0720161121144823-
0000000001;5D3C
\020155;0100;0100;mm;READY;;00:0e:13:05:00:0720161121144831-
0000000002;7416
```

Append Volume

Select the check box to enable. When checked, Volume Units, Volume Field Width, and Volume Precision drop-down boxes are revealed.



Separator

Enter a separator character in the text field provided.

Volume Units

Select cubic Volume Units from the drop-down list. Selections include in^3 (inches cubed), ft^3 (feet cubed), cm^3 (centimeters cubed), and dm^3 (decimeters cubed).

Volume Field Width

Select a Volume Field Width of 2 to 8 from the drop-down list. This represents the number of characters available for the field width. If the value has fewer characters than the field width, it will be padded with zeros on the left.

Volume Precision

Select a Volume Precision of 0 to 3 from the drop-down list. This is the number of digits appearing after the decimal point.

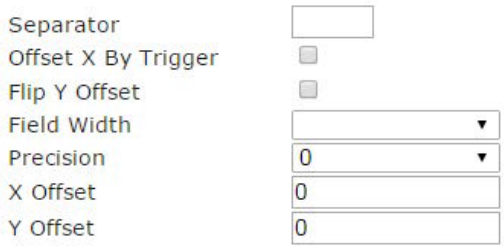
For example:

If **Volume Precision** is set at 1 (1 decimal place), **Volume Field Width** is set at 5, and the volume is 25.8 cm^3, then the returned value in the host message will be **025.8**

If **Volume Precision** is set at 2 (2 decimal place), **Volume Field Width** is set at 8, and the volume is 25.8 cm^3, then the returned value in the host message will be **00025.80**

Append Box Corners

Select the check box to enable. When checked, **Separator, Offset X By Trigger, Flip Y Offset, Field Width, Precision, X Offset,** and **Y Offset** selections are revealed.



Separator

Enter a separator character in the text field provided to be placed before each corner and before the angle (if selected).

Offset X By Trigger

Select the **Offset X By Trigger** check box to enable. (X is downstream)

When selected, a hardware or software trigger will indicate where the X position of the box corners begins.

If not selected, the X offset is indicated by the leading package corner (ie, the leading corner will be given an X value of 0 (zero) and all other package corners will be offset based on the leading corner).

Flip Y Offset

Select the **Flip Y Offset** check box to enable. (Y is across the conveyor)

When selected, this option changes which side of the system's origin point has positive Y coordinates and negative Y coordinates.

Field Width

Select a **Field Width** from the drop-down box. This represents the number of characters each corner has to display its value.

Precision

Select a **Precision** level from the drop-down box. This is the number of decimal places to display for each value.

X Offset

Enter the **X Offset** in the field provided. This is a constant distance (mm [in]) in the X direction (along the conveyor) added to each X package corner position.

Y Offset

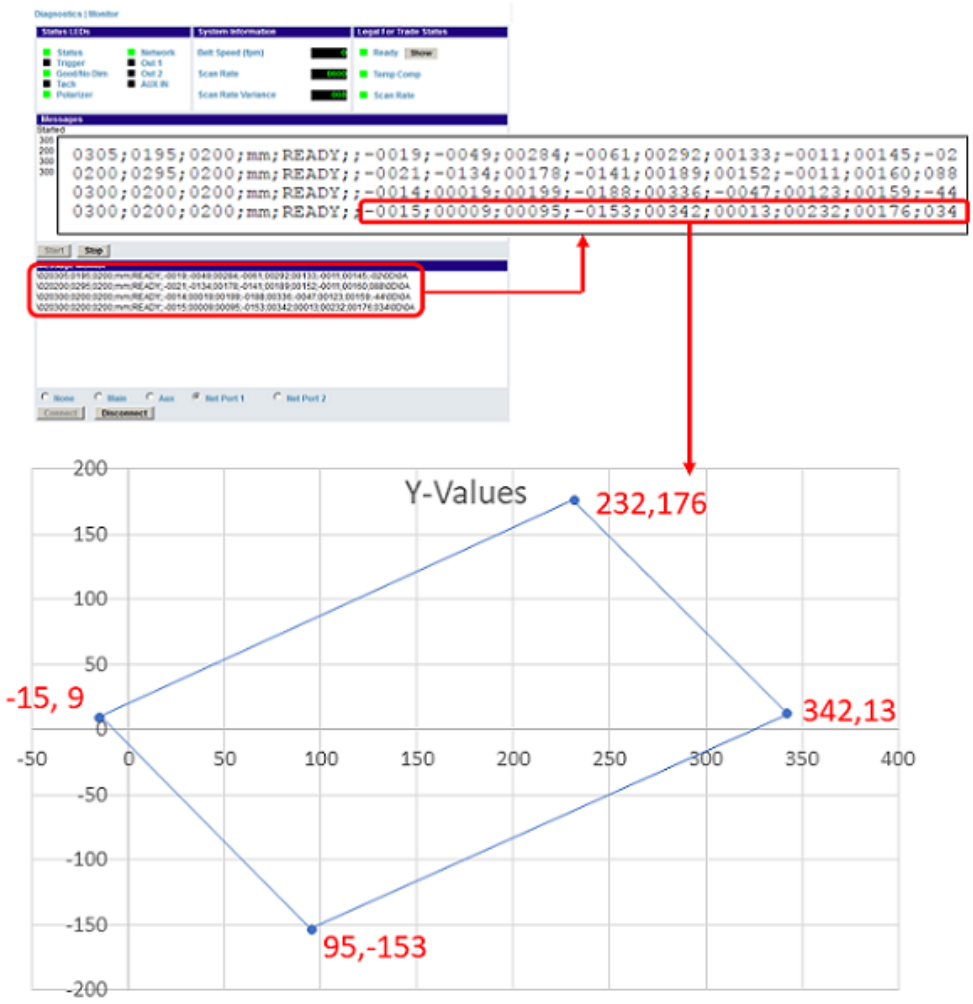
Enter the **Y Offset** in the text field provided. This is a constant distance (mm [in]) in the Y direction (across the conveyor) added to each Y corner position.

Append Angle

Select the check box to enable. When checked, Separator, Angle Terminal Side, Flip Angle Direction, and Angle Range selections are revealed.

Example:

For the example, we have inducted a 300x200x200mm box four times, at different angles. Per the messages, these angles were -2°, 88°, -44°, and 34°:



Separator

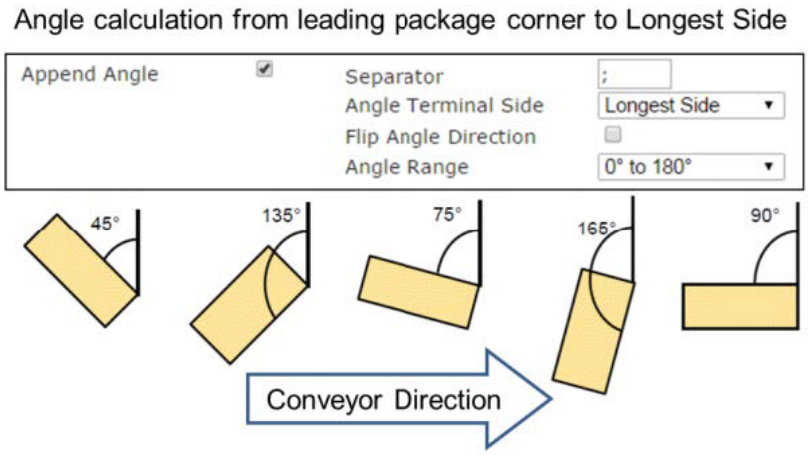


Enter a **Separator** character in the text field provided.

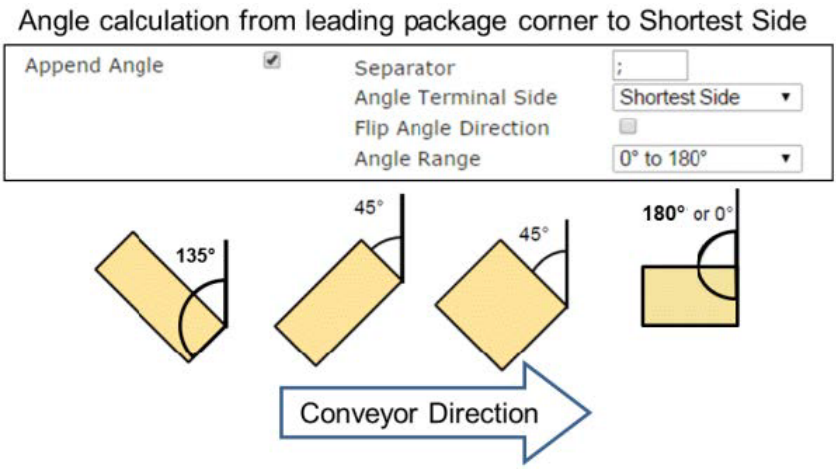
Angle Terminal Side

Select **Longest Side, Shortest Side,** or **Adjacent Side** from the **Angle Terminal Side** drop-down box. The angle will always be measured as the relation between one of the sides to the scan line.

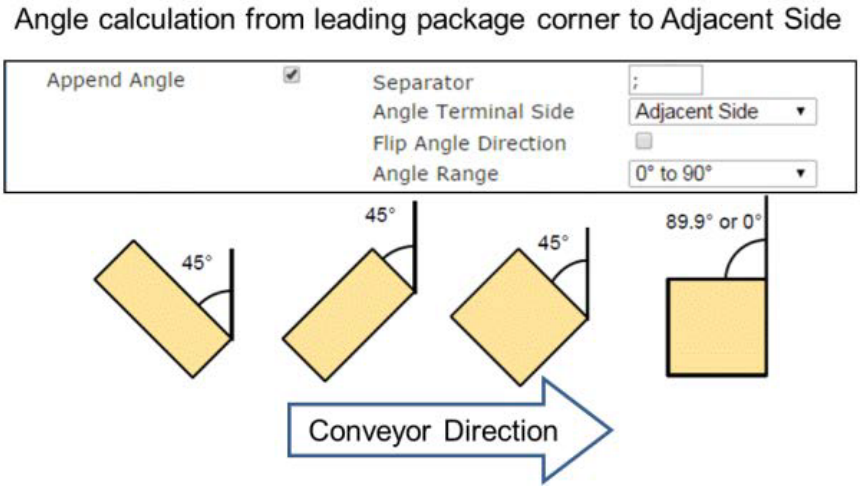
Longest Side: The measured angle is the corner that the longest side makes with the horizontal scan line.



Shortest Side: The measured angle is the corner that the shortest side makes with the horizontal scan line.



Adjacent Side: The measured angle is the corner that the counterclockwise side makes with the horizontal scan line.

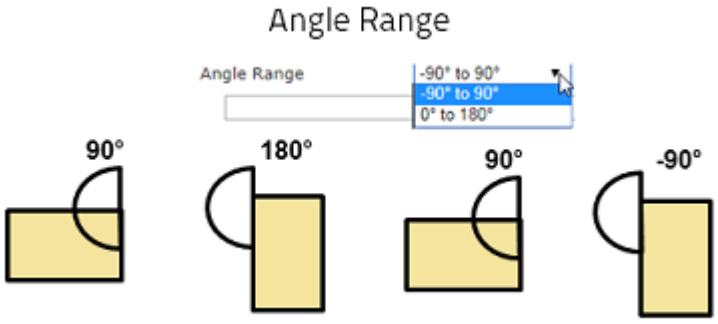


Flip Angle Direction

Select the **Flip Angle Direction** check box to flip the angle direction. When selected, the way the box is measured over the center of the belt is flipped 180 degrees.

Angle Range

Select an **Angle Range** from the drop-down box. This function dictates the range that the angles will be produced on.



Append PC File Path

Select the check box to enable. The file path will be included in the message.

Separator

Enter a **Separator** character in the text field provided.

Append Shape

Select the check box to enable. The shape identifier will be included in the message.

0=unknown
1=cubic
2=tire
3=circle
4=prism
5=cylinder
6=hexagonal prism
T=tote (when Dimensioning in Totes is enabled)

Separator

Enter a **Separator** character in the text field provided.

Heart Beat Message

Enter a heart beat message in milliseconds if desired. If no other message is sent for the time period specified in **Heart Beat Time Out,** the specified heart beat message string is sent.

NOTE

A time-out of zero disables the heart beat message.

Heart Beat Time Out (0-30,000 ms)

Enter an interval for heart beat time out in milliseconds.

0 = Disable Heart Beat Message,
1-30,000 = Delay before sending Heart Beat Message

3. When you have finished making changes, click **Update** to save or click **Reset** to revert to the previously saved values.

MODIFY SETTINGS | SERIAL

Use the Modify Settings | Serial to specify settings for the dimensioner. Port #1 and Port #2 define two serial connections for sending messages. The Connection Type and Message Format for each port can be set independently. Define two serial connections. You can define ports 1 and 2.

The menu selections include:

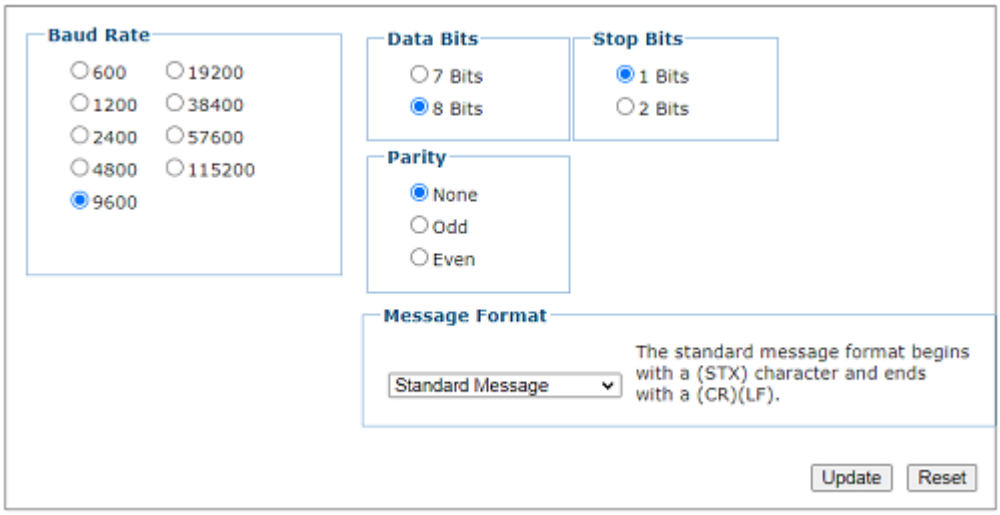
- “Serial | Port N” on page 101
- “Serial Message Definition #N” on page 103

Serial | Port N

Use the **Modify Settings | Serial | Port N** to define the format of messages the DC3000 sends.

To adjust the port settings of the DC3000:

1. In the tree menu under **Modify Settings,** navigate to **Serial | Port N.** The **Serial Port N** window opens.



2. Enter the appropriate information in the form as described below.

Baud Rate

Select a baud rate from the options provided (bits per second).

Data Bits

Select the number of data bits from the options provided (bits per character).

Stop Bits

Select the number of stop bits from the options provided.

Parity

Select a parity option of **None, Even,** or **Odd.**

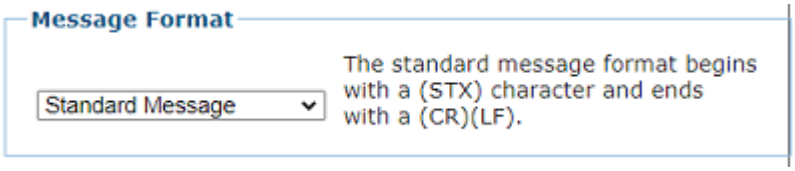
Message Format

Select a message format from the drop-down list:

- **Custom Message:** Custom messaging is enabled here if your application uses custom software.
- **Standard Message:** The standard message format begins with a (STX) character and ends with a (CR)(LF).

NOTE

When Standard Message is selected, no user input is permitted.



- **User-Defined Message:** Use the Message Definition #n form to specify your message format.
- **Datalogic Message:** Message format for compatibility with other Datalogic products.
- **No Messaging:** Port reserved for custom application.
- **Datalogic Message:** Select this option when sending focus data to other Datalogic products.

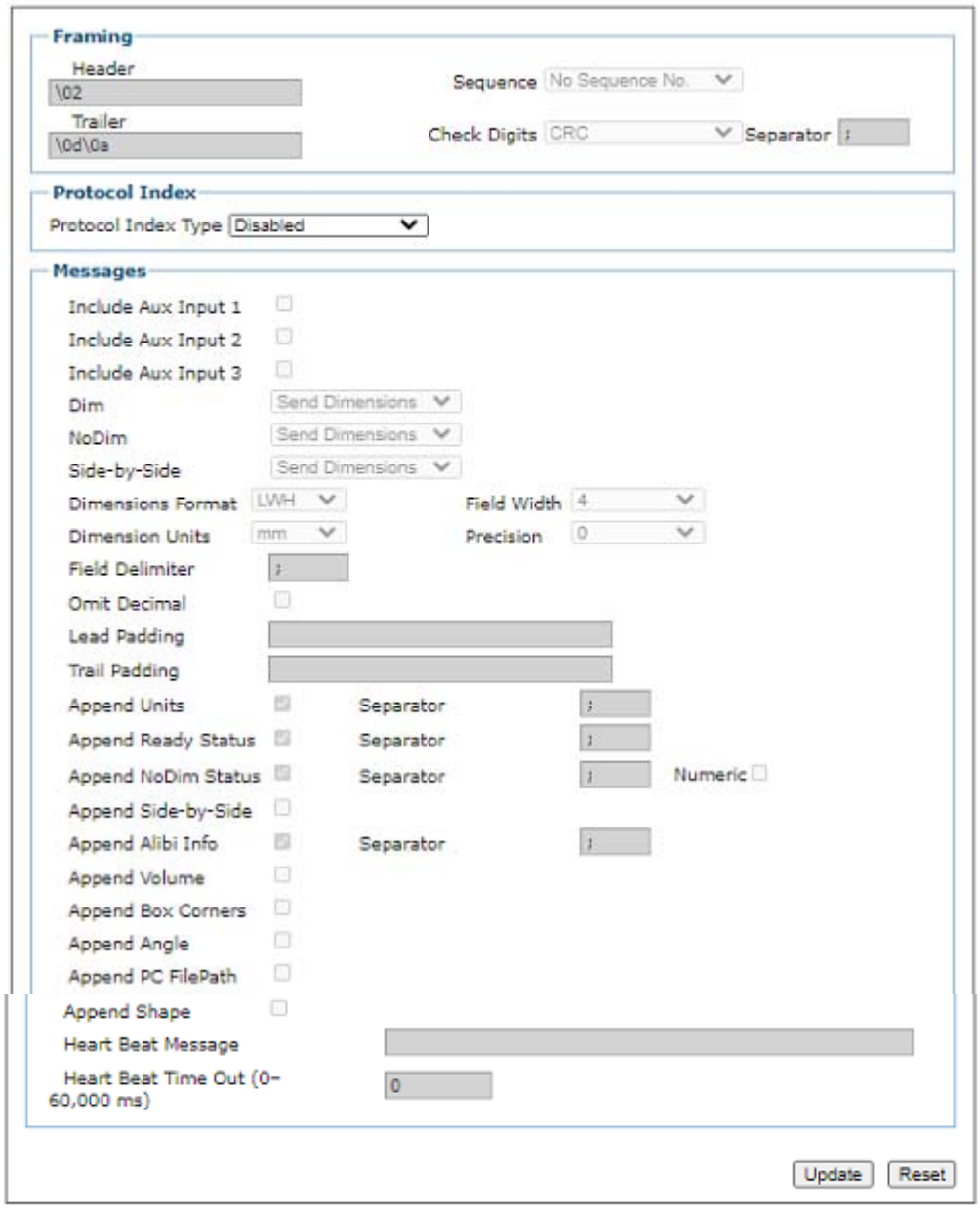
3. When you have finished making changes, click **Update** to save or click **Reset** to revert to the previously saved values.

Serial Message Definition #N

Use the **Modify Settings | Message Definition #n** to define messages when User Defined Messages has been selected in the Network Settings window. Available user interaction with this form will vary depending on the Message Format selected in **Modify Settings | Network | Settings.**

To define the appearance of dimensioner messages:

1. In the tree menu under **Modify Settings**, navigate to **Network | Message Definition #n.** The **Message Definition #n** window opens.

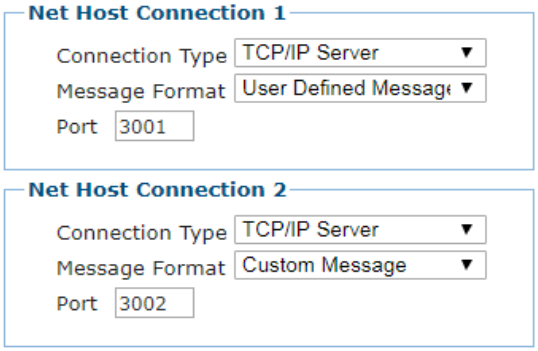


2. Enter the appropriate information in the form as described below.

NOTE

When Standard is selected in Modify Settings | Serial | Port #n, the system uses a message format as defined by the standard software. When selected, most input fields will be grayed out and the parameters shown will be used.

When Custom Message is selected, the parameters of the Message Definition tab may be modified to satisfy the application communication parameters; however, some of the parameters may be hard coded and will not effect the application. Refer to the custom software notes to identify these parameters.



Framing

Define the message framing.

The Header and trailer must match the source header and trailer.

Header

Enter a character string for the header (ASCII or Hex). These characters will be sent at beginning of every message. Up to 25 characters are allowed.

Trailer

Enter a character string for the trailer (ASCII or Hex). These characters will be sent to terminate every message.

Sequence

Select **No Sequence No., 1 Digit Sequence No., 2 Digit Sequence No.,** or **3 Digit Sequence No.** from the drop down list. When a digit sequence is selected, a sequence number consisting of the specified number of digits is inserted just after the header. Enter a character that will separate the sequence number from the start character. The Separator is the delimiter found after the sequence number.

Check Digits

Select **BCC** or **CRC** from the drop-down list. When enabled, a two-character hexadecimal check character is inserted just prior to the trailer.

Separator

Enter a character to use as a separator before the Check Digits.

Protocol Index/ Aux Message

Protocol Index is used to get a message from external equipment. External equipment may be third party equipment, such as a scale or sorter or a Datalogic product. The message can then be attached to the message output from the dimensioner system.

Type

Select **Disabled, Fixed Length, Variable Length**, or **Length in Message** from the drop-down list.

Disabled: Protocol Index functions are not displayed.

Fixed Length: The Protocol Index string has a fixed length specified in the Length field.

Variable Length: The length of the Protocol Index string received by the dimensioner system is variable.

Length in Message: The first byte after the Header indicates the length of the Protocol Index string received by the dimensioner system.

Length

Enter the number of characters expected when **Fixed Length** is selected.

Header

Enter a Header to be defined and transmitted as a block preceding the Protocol Index string sent by the Host.

NOTE

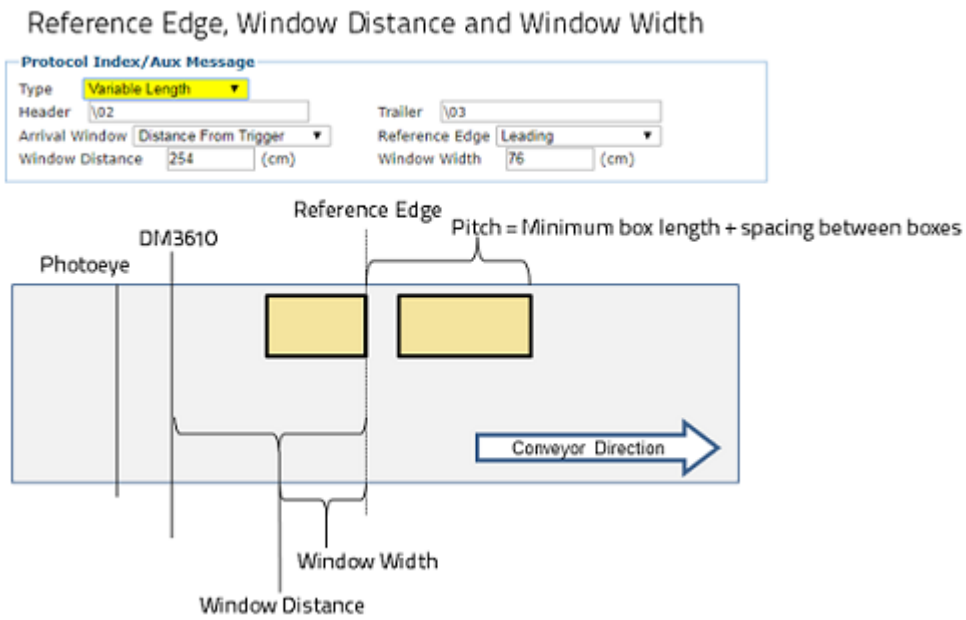
All Protocol Index Type selections must include a header.

Trailer

Enter a Trailer to be defined and transmitted as a block following the Protocol Index string sent by the Host.

NOTE

If Variable Length is selected as the Protocol Index Type, it must include a trailer. A trailer is not necessary for the other selections. If Fixed Length or Length in Message include an optional Trailer and it does not occur in the correct place, the received string is discarded.



Arrival Window

Select **While in Trigger, Distance from Trigger,** or **Distance from Scan Line** from the drop-down list.

While in Trigger: The Protocol Index string must arrive while the trigger is active (e.g. while the photo-eye is blocked).

Distance from Trigger: The Protocol Index string must arrive during a window relative to the trigger source, e.g. photo-eye (reference edge, window distance, and window width are configurable).

Distance from Scan Line: The Protocol Index string must arrive during a window relative to the scan line (reference edge, window distance, and window width are configurable).

Reference Edge

Select **Leading** or **Trailing** from the drop-down list when **Distance from Trigger** or **Distance from Scan Line** selections are used.

Window Distance

Enter the distance (cm [in]) from the Arrival Window's reference point (i.e. Trigger or Scan Line) to the desired location of the arrival window (receiving point) for the **Protocol Index** string. This is used together with the **Window Width** parameter to assign the **Protocol Index** information to the correct package.

Window Width

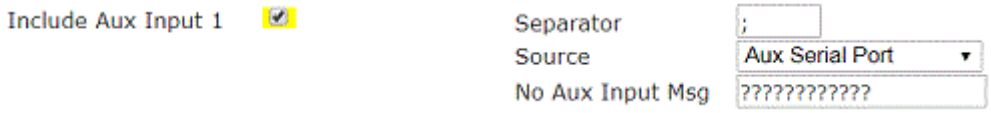
Enter the smallest possible distance (cm [in]) between system packages in the field provided when **Distance from Trigger** or **Distance from Scan Line** selections are used. Specifies the length that an electronic window opens to receive the protocol index message. This specifies the minimum distance between two consecutive packages. It is used to compensate for imprecision in the Distance from Protocol Index to Trigger Source (Window Width) by virtually lengthening the package. This parameter implies that if two consecutive packages are placed

on the conveyor at a distance less than the minimum, a **Protocol Index** assignment error will occur.

Messages

Include Aux Input 1, 2, or 3

These options identify the Protocol Index source and how its information appears in the DM3610 message.Select the check box(es) to enable. This will include a received protocol index message in this outgoing message. Additional inputs appear when enabled.



Separator

Enter a character to use as a separator before the Aux Input (Protocol Index message).

Source

Select **Serial Port 1, 2** or **3**, or **Network Port 1** or **2** from the drop-down list. This is the port through which the protocol index message is received.

No Aux Input Msg

Enter a filler message to replace the protocol index message (Aux Input) if none is received from the external device (i.e.: scale, etc.).

Dim

Select **None, Send Dimensions**, or **User Defined** from the drop-down list.

None: No dimension data is sent in the message.
Send Dimensions: This selection sends the package dimensions in the message.
User Defined: When selected, a text field is provided for entry of a user defined message.



No Dim

Select None, Send Dimensions, or User Defined from the drop-down list. In LFT applications the parcel may not meet the requirements for certification; however the unit may identify a dimension to the parcel. In this condition a measurement may be transmitted.

None: No dimension data is sent in the message.
Send Dimensions: This selection sends the package dimensions in the message. This is used in cert mode when non-cuboidal packages are measured (but do not meet cert mode requirements) and the dim data is still useful.
User Defined: When selected, a text field is provided for entry of a user defined message.

Side-by-Side

Select **None, Send Dimensions**, or **User Defined** from the drop-down list. This must be selected for a side-by-side message to be appended to the host message.

None: No dimension data is sent in the message.
Send Dimensions: This selection sends the package dimensions in the message.
User Defined: When selected, a text field is provided for entry of a user defined message.



Dimensions Format

The Length Reporting option under **Modify Settings > Settings >** determines which side is identified as the length. Select in what order you would like the Length, Width, and Height measurements to appear in the message L=Length / W=Width / H=Height.

Field Width

Select the field width of the minimal number of characters for length, width, and height from the drop-down list. 2 to 7 characters are available. If the value has fewer characters than the field width, it will be padded with zeros on the left.

For example:

If Precision is set at 1 (1 decimal place), field width is set at 5, and the Omit Decimal is not selected, the dimension is 12.3, then the returned value in the host message will be **012.3** If Precision is set at 2 (2 decimal place), field width is set at 7, and the dimension is 12.3, then the

returned value in the host message will be 012.3



The decimal place is considered a character.

Dimension Units

Select **in** (inches), **mm** (millimeters), or **cm** (centimeters) from the drop down list. This information is placed in the output message after the dimensioning data, if the append units box is selected.

Precision

Select 0, 1, or 2 from the drop-down list. This is the number of digits appearing after the decimal point.

Field Delimiter

Enter a character to be used as a delimiter between length, width, and height fields. A semicolon is often used to separate data.

Omit Decimal

Select this check box to remove the decimal point character from the message. Only the decimal point character is removed, and digits before and after the decimal point remain. This does not change the precision option.

Lead Padding

Enter characters to precede the length, width, and height field. If this box is selected, you must assume decimal position.

Trail Padding

Enter characters to follow the length, width, and height field.



For each "Append" check box, the information is included in the host message after the separator you define.

Append Units

Select the check box to enable. When checked, a Separator text field is revealed. Enter a separator character in the text field provided. A unit abbreviation (mm, cm, or in) will be appended after the separator.

Append Ready Status

Select the check box to enable. When checked, a Separator text field is revealed. Enter a separator character in the text field provided. **NOTREADY** or **READY** will be appended after the separator. **NOTREADY** does not indicate that this package result is not legal-for-trade, or under **Modify Settings > Dimensioning > Settings Certification** Mode is set to off.

Append NoDim Status

Select the check box to enable. When checked, a Separator text field is revealed. Enter a separator character in the text field provided. If the package is a NoDim, a reason code is appended after the separator.

For example:

NODIM_BOX_STACKED, NODIM_BOX_SIDES_TO_NOISY

A NoDim reason indicates that this package result is not legal-for-trade. If the **Numeric** check box is selected, the numeric equivalent of the NoDim Status will be appended. The numeric values are shown below.

Numeric	Error
1	NODIM_BOX_NODIM_UNKNOWN
2	NODIM_BOX_TOL_FAIL_LENGTH
3	NODIM_BOX_TOL_FAIL_WIDTH
4	NODIM_BOX_TOL_FAIL_HEIGHT
5	NODIM_BOX_WRITE_ALIBI_FAIL
6	NODIM_BOX_SAME_STORBOX_BAD
7	NODIM_BOX_StachED
8	NODIM_BOX_NO_HISTPEAKS
9	NODIM_BOX_BAD_HISTOGRAM
10	NODIM_BOX_PEAK_VS_BORDER
11	NODIM_BOX_PEAD_VS_INTERNAL
12	NODIM_BOX_POIN_COUNT_ERR
13	NODIM_BOX_TOO_FEW_SIDE_POINTS
14	NODIM_BOX_BAD_JAC_CHOL
15	NODIM_BOX_BAD_CHOL
16	NODIM_BOX_SIDES_TOO_NOISY
17	NODIM_BOX_SIDE_LEN_TOO_SHORT
18	NODIM_BOX_SIDE_LEN_TOO_LONG
19	NODIM_BOX_LONGEST_SIDES_ERR
20	NODIM_BOX_LONG_SIDE_VEC_ERR
21	NODIM_BOX_SHORT_SIDE_VEC_ERR
22	NODIM_BOX_MAX_COSINE
23	NODIM_BOX_MAX_COSINE2
24	NODIM_BOX_POINT_BORDER_DIST
25	NODIM_BOX_POINTS_NEAR_CORNERS
26	NODIM_BOX_SIZE_CORRECTION_ERROR
27	NODIM_BOX_SYSTEM_FAULT
28	NODIM_BOX_MULT_HISTPEAKS
29	NODIM_BOX_SHADOWED
30	NODIM_BOX_AT_BELT_EDGE
31	NODIM_BOX_AT_LINE_EDGE
97	NODIM_BOUNDING_BOX
98	NODIM_BOX_SIDE_BY_SIDE
99	NODIM_BOX_NO_DATA

Append Side-by-Side

Select the check box to enable. When checked, a Separator text field is revealed. Enter a separator character in the text field provided. If there is a side-by-side condition detected, “SBS” will be appended after the separator.

Append Alibi Info (Only shown in some Legal for Trade Models)

Select the check box to enable. When checked, a Separator text field is revealed. Enter a separator character in the text field provided. Alibi storage information is appended after the separator. Only shown in OIML applications.

Format:

`MM:MM:MM:SS:SS:SSYYYYMMDDhhmmss-nnnnnnnnnn`

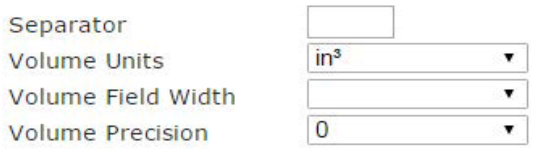
Where MM:MM:MM:SS:SS:SS is the MAC address, YYYYMMDDhhmmss is the date/time, and nnnnnnnnnn is the 10 digit sequence number.

Examples:

```
\020150;0100;0105;mm;READY;;00:0e:13:05:00:0720161121144823-
0000000001;5D3C
\020155;0100;0100;mm;READY;;00:0e:13:05:00:0720161121144831-
0000000002;7416
```

Append Volume

Select the check box to enable. When checked, Volume Units, Volume Field Width, and Volume Precision drop-down boxes are revealed.



Separator

Enter a separator character in the text field provided.

Volume Units

Select cubic Volume Units from the drop-down list. Selections include in^3 (inches cubed), ft^3 (feet cubed), cm^3 (centimeters cubed), and dm^3 (decimeters cubed).

Volume Field Width

Select a Volume Field Width of 2 to 8 from the drop-down list. This represents the number of characters available for the field width. If the value has fewer characters than the field width, it will be padded with zeros on the left.

Volume Precision

Select a Volume Precision of 0 to 3 from the drop-down list. This is the number of digits appearing after the decimal point.

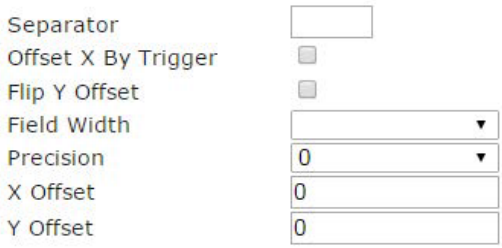
For example:

If **Volume Precision** is set at 1 (1 decimal place), **Volume Field Width** is set at 5, and the volume is 25.8 cm^3, then the returned value in the host message will be **025.8**

If **Volume Precision** is set at 2 (2 decimal place), **Volume Field Width** is set at 8, and the volume is 25.8 cm^3, then the returned value in the host message will be **00025.80**

Append Box Corners

Select the check box to enable. When checked, **Separator, Offset X By Trigger, Flip Y Offset, Field Width, Precision, X Offset,** and **Y Offset** selections are revealed.



Separator

Enter a separator character in the text field provided to be placed before each corner and before the angle (if selected).

Offset X By Trigger

Select the **Offset X By Trigger** check box to enable. (X is downstream)

When selected, a hardware or software trigger will indicate where the X position of the box corners begins.

If not selected, the X offset is indicated by the leading package corner (ie, the leading corner will be given an X value of 0 (zero) and all other package corners will be offset based on the leading corner).

Flip Y Offset

Select the **Flip Y Offset** check box to enable. (Y is across the conveyor)

When selected, this option changes which side of the system's origin point has positive Y coordinates and negative Y coordinates.

Field Width

Select a **Field Width** from the drop-down box. This represents the number of characters each corner has to display its value.

Precision

Select a **Precision** level from the drop-down box. This is the number of decimal places to display for each value.

X Offset

Enter the **X Offset** in the field provided. This is a constant distance (mm [in]) in the X direction (along the conveyor) added to each X package corner position.

Y Offset

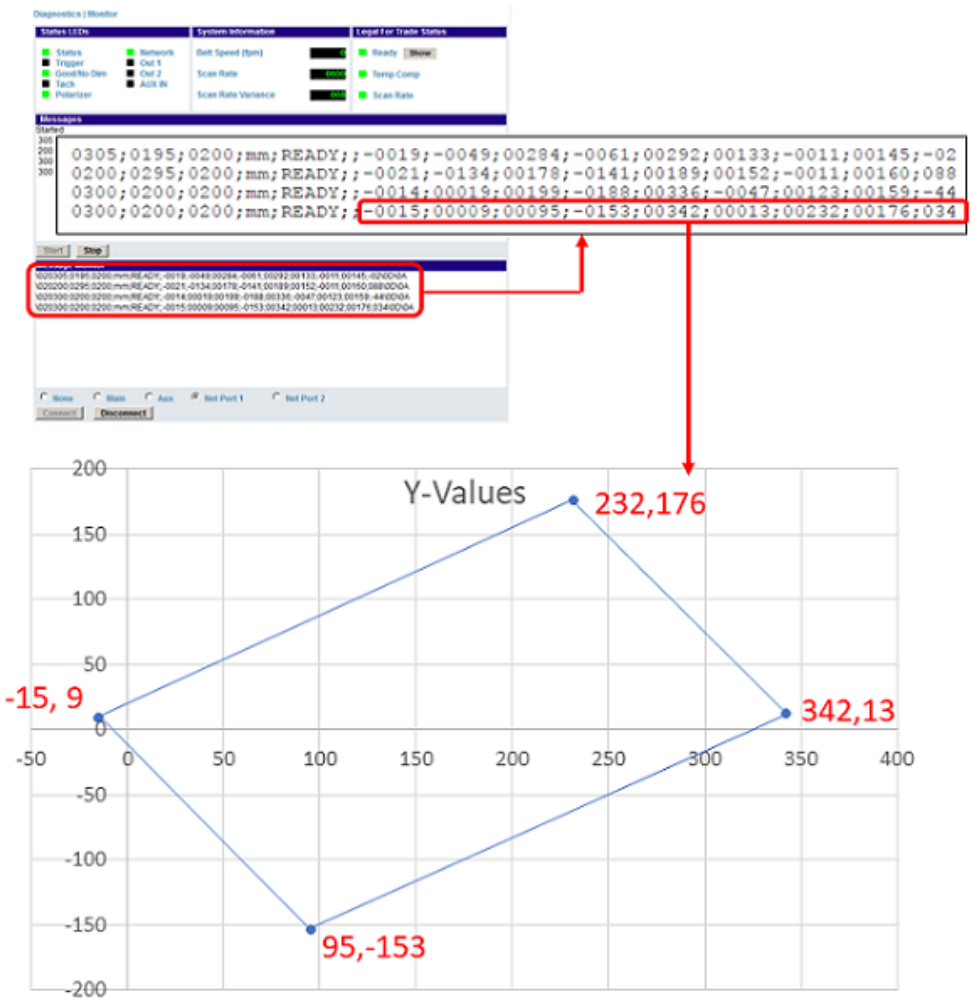
Enter the **Y Offset** in the text field provided. This is a constant distance (mm [in]) in the Y direction (across the conveyor) added to each Y corner position.

Append Angle

Select the check box to enable. When checked, Separator, Angle Terminal Side, Flip Angle Direction, and Angle Range selections are revealed.

Example:

For the example, we have inducted a 300x200x200mm box four times, at different angles. Per the messages, these angles were -2°, 88°, -44°, and 34°:



Separator

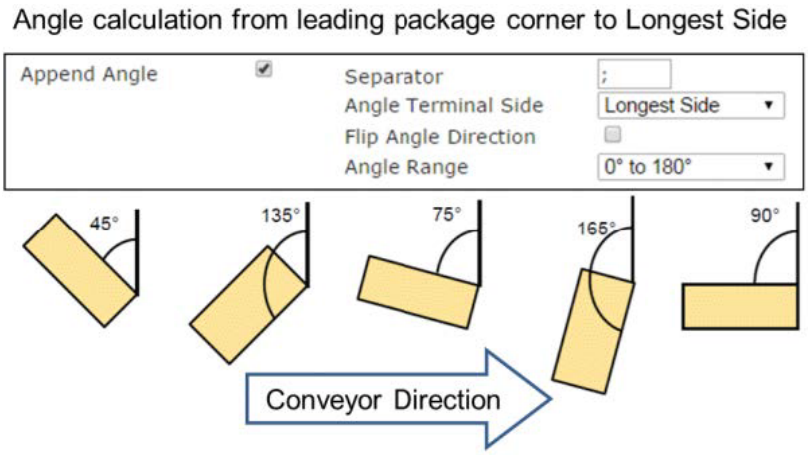


Enter a **Separator** character in the text field provided.

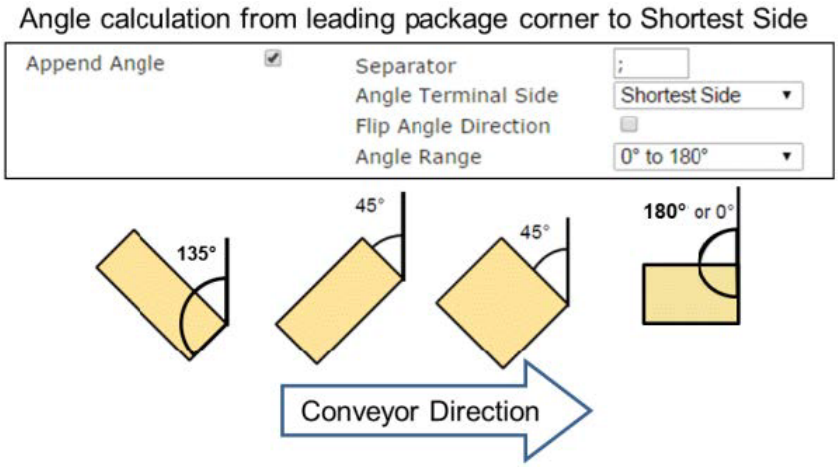
Angle Terminal Side

Select **Longest Side, Shortest Side,** or **Adjacent Side** from the **Angle Terminal Side** drop-down box. The angle will always be measured as the relation between one of the sides to the scan line.

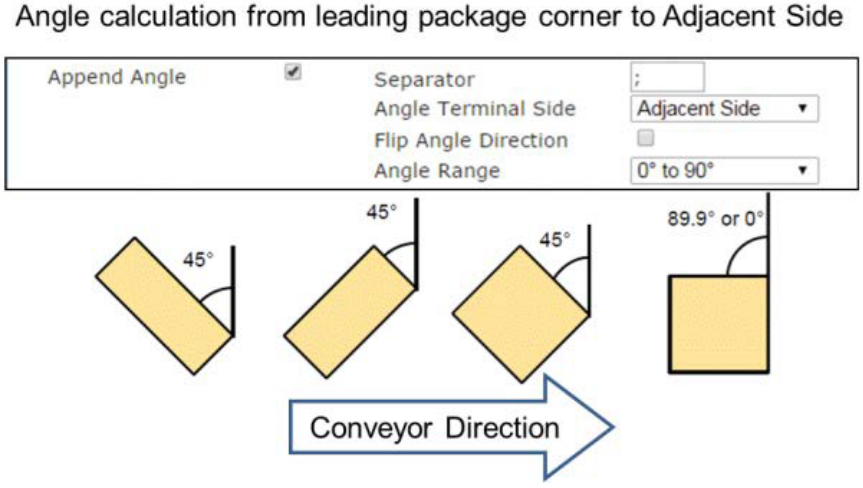
Longest Side: The measured angle is the corner that the longest side makes with the horizontal scan line.



Shortest Side: The measured angle is the corner that the shortest side makes with the horizontal scan line.



Adjacent Side: The measured angle is the corner that the counterclockwise side makes with the horizontal scan line.

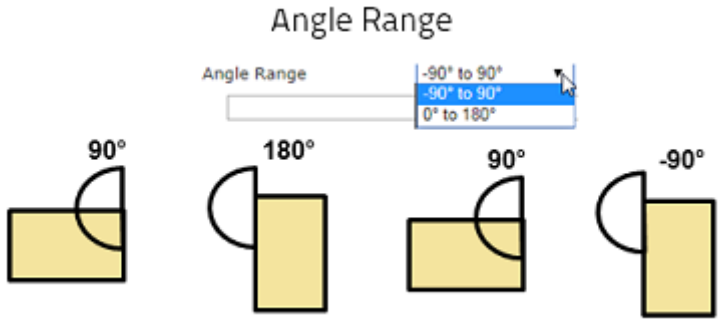


Flip Angle Direction

Select the **Flip Angle Direction** check box to flip the angle direction. When selected, the way the box is measured over the center of the belt is flipped 180 degrees.

Angle Range

Select an **Angle Range** from the drop-down box. This function dictates the range that the angles will be produced on.



Append PC File Path

Select the check box to enable. The file path will be included in the message.

Separator

Enter a **Separator** character in the text field provided.

Append Shape

Select the check box to enable. The shape identifier will be included in the message.

0=unknown
1=cubic
2=tire
3=circle
4=prism
5=cylinder
6=hexagonal prism
T=tote (when Dimensioning in Totes is enabled)

Separator

Enter a **Separator** character in the text field provided.

Heart Beat Message

Enter a heart beat message in milliseconds if desired. If no other message is sent for the time period specified in **Heart Beat Time Out,** the specified heart beat message string is sent.

NOTE

A time-out of zero disables the heart beat message.

Heart Beat Time Out (0-30,000 ms)

Enter an interval for heart beat time out in milliseconds.

0 = Disable Heart Beat Message,
1-30,000 = Delay before sending Heart Beat Message

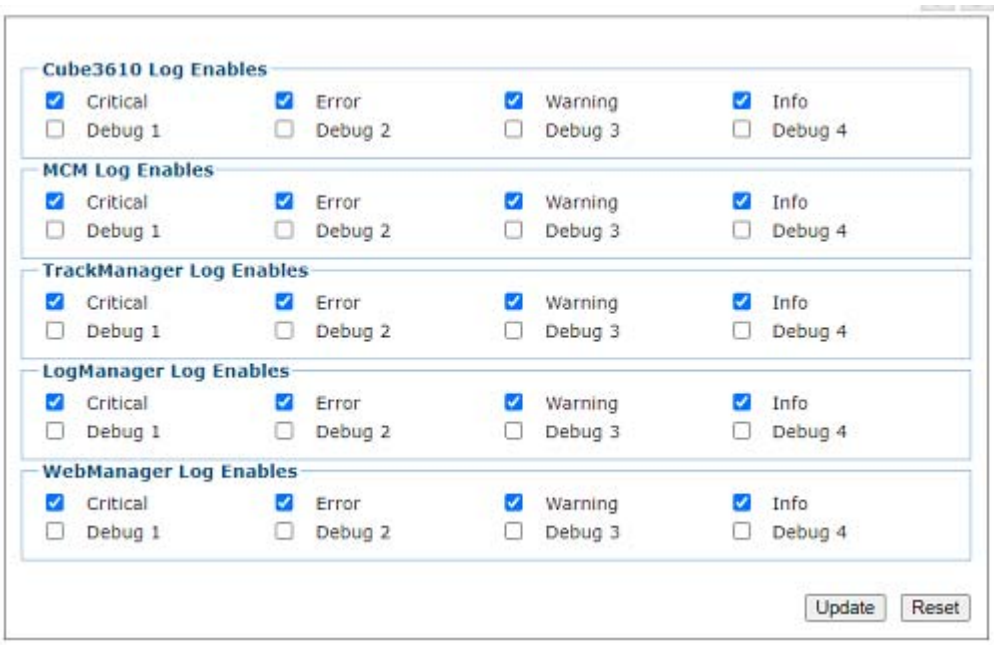
3. When you have finished making changes, click **Update** to save or click **Reset** to revert to the previously saved values.

MODIFY SETTINGS | LOGGING OPTIONS

Use the Logging Options to configure log output.

To configure the logs:

1. In the menu tree under Modify Settings, click Logging Options. The Logging Options window opens.



For each type of log, select options to determine how the log information is displayed. Select all that apply.

Cube3610 Log Enables

Critical, Error, Warning, Info, or Debug (1-4)

MCM Log Enables

Critical, Error, Warning, Info, or Debug (1-4)

Track Manager Log Enables

Critical, Error, Warning, Info, or Debug (1-4)

Log Manager Log Enables

Critical, Error, Warning, Info, or Debug (1-4)

Web Manager Log Enables

Critical, Error, Warning, Info, or Debug (1-4)



Changes to these settings should be avoided unless by Datalogic.

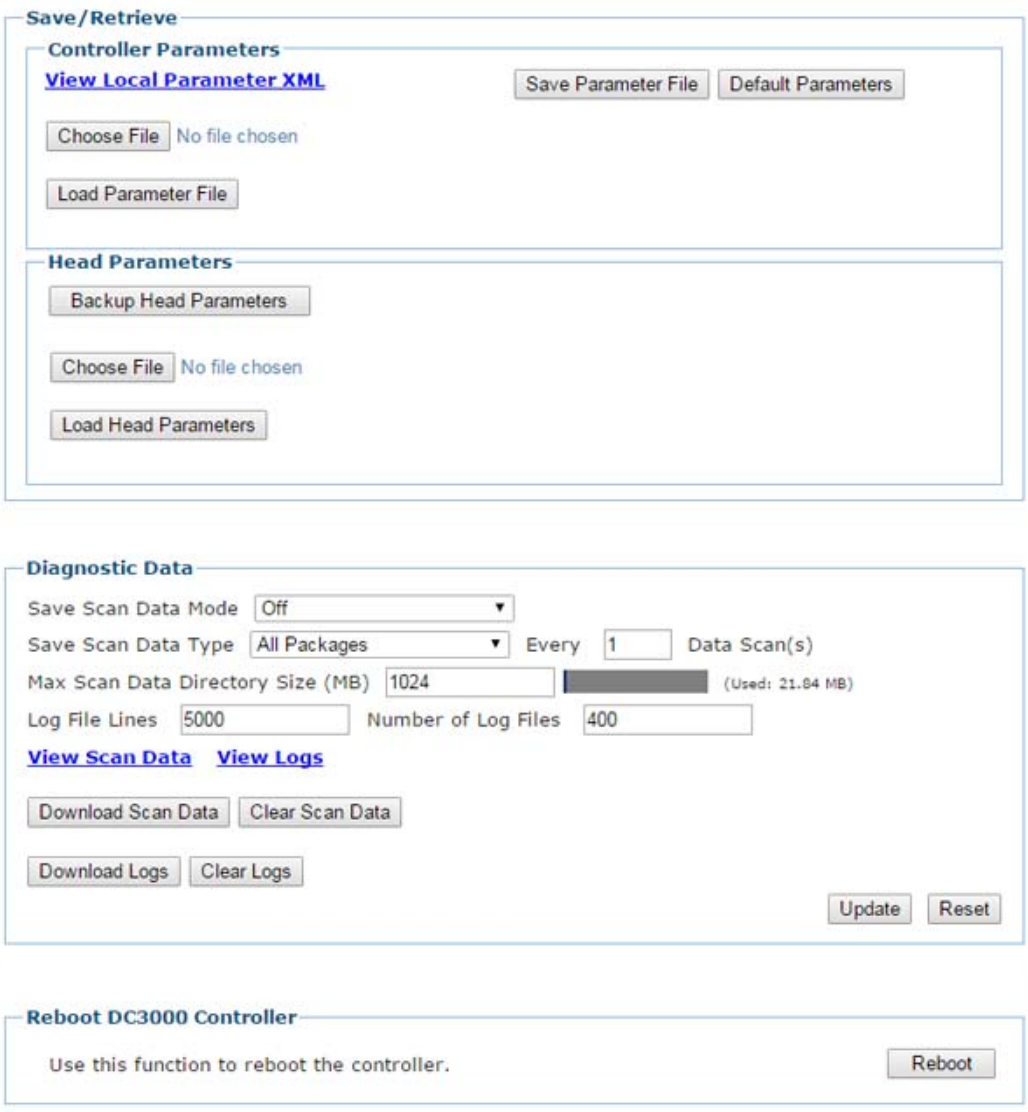
2. When you have finished making changes, click **Update** to save or click **Reset** to revert to the previously saved values.

Modify Settings | Save / Retrieve

Use **Save/Retrieve** to save all the settings to the dimensioner and backup the settings to the backup module and/or file.

To use the Save/Retrieve functions:

1. In the tree menu under **Modify Settings,** navigate to **Save/Retrieve.** The **Save/Retrieve** window opens.



2. Enter the appropriate information in the form as described below.

Save/Retrieve

Select an action and location (To or From) from the corresponding drop-down lists:

View Local parameter XML

Click the linked text to view the local XML (parameter) file. Below is an example.

```
▼<DM3610Config Version="808466992">
  <ParamRevLevel>8</ParamRevLevel>
 ▼<Application>
    <DebugLevel>3</DebugLevel>
    <SaveScanDataMode>48</SaveScanDataMode>
    <SaveScanType>1</SaveScanType>
    <MaxScanDirSizeBytes>100000000</MaxScanDirSizeBytes>
    <ScanDataDirPath>/opt/cube3610/scandata</ScanDataDirPath>
    <SaveScanDataSlop>0.0</SaveScanDataSlop>
    <FindBeltScanCnt>2000</FindBeltScanCnt>
    <FindBeltTmoMSec>6000</FindBeltTmoMSec>
  </Application>
 ▼<HostInterface>
    <Port>10000</Port>
    <IPAddress>192.168.3.50</IPAddress>
  </HostInterface>
 ▼<ScanServerClient>
    <Enable>0</Enable>
    <Port>20010</Port>
    <IPAddress>192.168.3.70</IPAddress>
    <IncludeCRC>1</IncludeCRC>
  </ScanServerClient>
 ▼<ExpectedBoxDimList>
    <Box1>36.0, 15.0, 15.0, 0.3</Box1>
    <Box2>18.0, 10.0, 10.0, 0.3</Box2>
    <Box3>18.0, 12.0, 6.0, 0.3</Box3>
    <Box4>24.0, 10.0, 10.0, 0.3</Box4>
    <Box5>12.0, 12.0, 2.4, 0.3</Box5>
    <Box6>34.5, 15.0, 15.0, 0.3</Box6>
    <Box7>18.0, 10.0, 10.0, 0.3</Box7>
    <Box8>24.0, 10.0, 10.0, 0.3</Box8>
    <Box9>0.0, 0.0, 0.0, 0.0</Box9>
    <Box10>0.0, 0.0, 0.0, 0.0</Box10>
```


Or, right click and select Save as or Save link as to save the XML file to your computer.

Save Parameter File

Click to download a copy of the current DC3000 parameter fie (DimModuelPrams.xml) to your computer.

Default Parameters

Use the Default parameters option to set the DC3000 back to factory defaults.

To load an XML file:

Click **Choose File** and select the file you wish to load from the a Windows Explorer window. Click **Load Parameter File** to load the selected file to the system.

Head Parameters

Backup Head Parameters

Click to download a zipped copy of the DM3610 head parameters. The zipped file will contain two files, a zipped copy of both DM3610's head parameters.

Example: headpam0.pam, headpam1.pam

To load the Head Parameters

Click **Choose File** and select the file you wish to load from the Explorer window. Click **Load Parameter File** to load the selected file to the dimensioner system.

Diagnostic Data

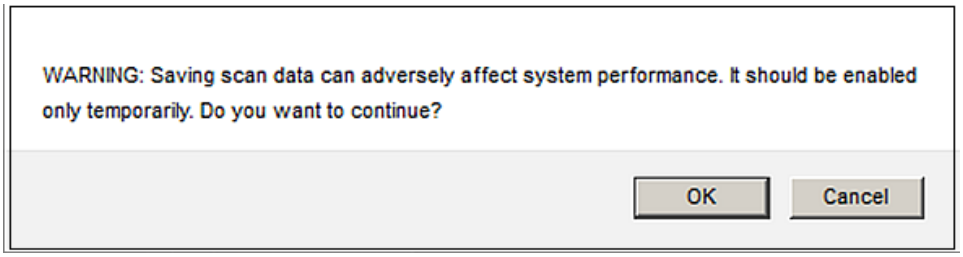
Save Scan Data Mode



This data is used by Datalogic engineers to diagnose potential problems.

Select **Off** or **On** from the drop-down list.

When **On** is selected, the following warning will appear upon Update:



Save Scan Data Type

This data is used by Datalogic engineers to diagnose potential problems.

Select **NoDim Packages** or **All Packages** or **Side-by-Side Packages** from the drop-down list for the type of data you wish to save.

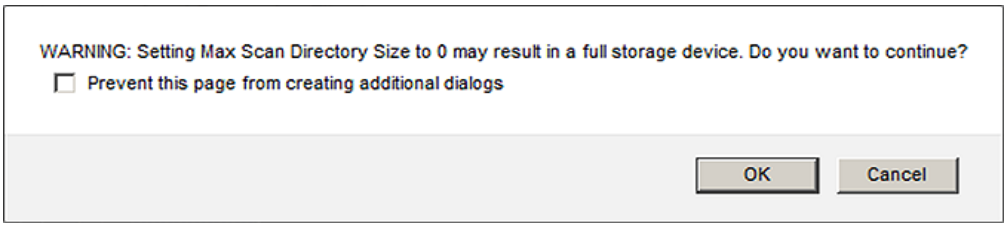
Every n Data Scan(s)

Enter the frequency of data to be saved in the text field, based on number of data scans. This is based on number of package inducts.

Example: If set to 3, the scan data for every 3rd package inducted that met the Scan Data Type criteria will be saved.

Max Scan Data Directory Size (MB)

Enter the maximum MBs you wish to allow for scan data storage. Enter 0 (zero) to allow unlimited storage. If set to 0 (zero), the following warning will appear:



Only execute this option under the direction of a Datalogic Software Engineer.

Log File Lines

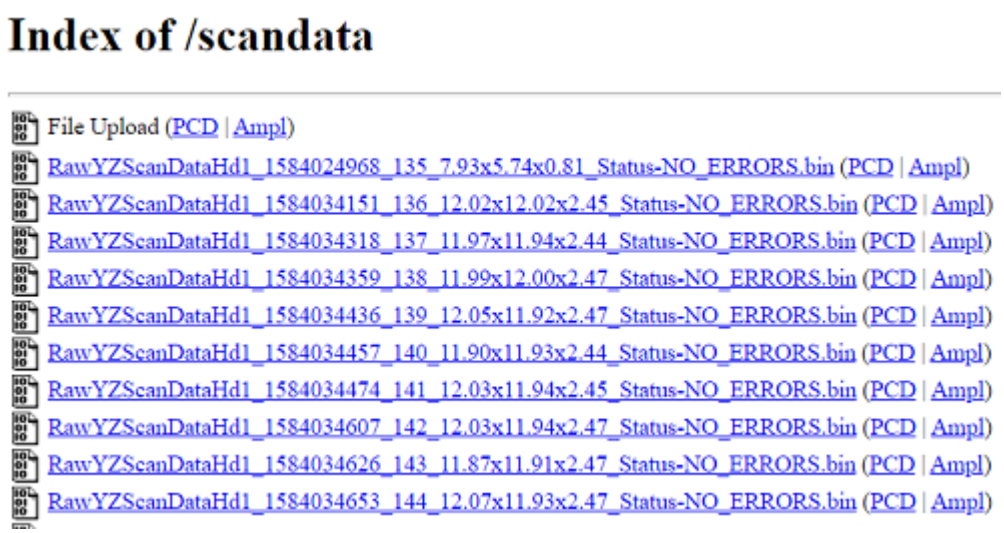
Enter the number of lines per Log File.

Number of Log Files

Enter the maximum number of Log Files to retain. When this number is exceeded, the oldest file will be deleted to make room for the new file.

View Scan Data

Click this link to display a list of available data files for download. Click a file to download it to your computer.



View Logs

Click this link to display a list of available log files for download. Click a file to download it to your computer.



Sample Log

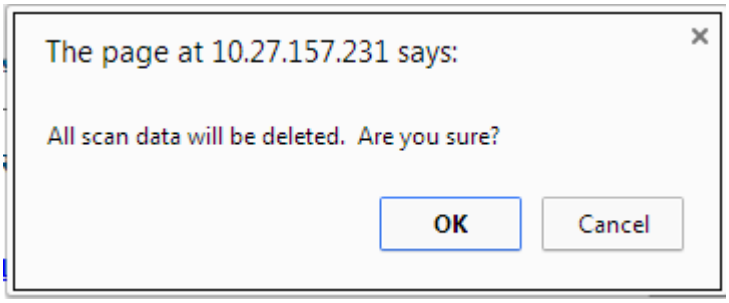
```
20200414110213.743;Cube3610;pid(0);tid(28397);DebLvl(0x4);waitingOnAllHeadsInSync_gater 609102000
20200414110218.744;Cube3610;pid(0);tid(28397);DebLvl(0x4);waitingOnAllHeadsInSync_gater 609105000
20200414110223.743;Cube3610;pid(0);tid(28397);DebLvl(0x4);waitingOnAllHeadsInSync_gater 609108000
20200414110228.743;Cube3610;pid(0);tid(28397);DebLvl(0x4);waitingOnAllHeadsInSync_gater 609111000
20200414110233.743;Cube3610;pid(0);tid(28397);DebLvl(0x4);waitingOnAllHeadsInSync_gater 609114000
20200414110238.742;Cube3610;pid(0);tid(28397);DebLvl(0x4);waitingOnAllHeadsInSync_gater 609117000
20200414110243.744;Cube3610;pid(0);tid(28397);DebLvl(0x4);waitingOnAllHeadsInSync_gater 609120000
20200414110248.744;Cube3610;pid(0);tid(28397);DebLvl(0x4);waitingOnAllHeadsInSync_gater 609123000
20200414110253.744;Cube3610;pid(0);tid(28397);DebLvl(0x4);waitingOnAllHeadsInSync_gater 609126000
20200414110258.744;Cube3610;pid(0);tid(28397);DebLvl(0x4);waitingOnAllHeadsInSync_gater 609129000
20200414110303.743;Cube3610;pid(0);tid(28397);DebLvl(0x4);waitingOnAllHeadsInSync_gater 609132000
20200414110308.743;Cube3610;pid(0);tid(28397);DebLvl(0x4);waitingOnAllHeadsInSync_gater 609135000
20200414110313.743;Cube3610;pid(0);tid(28397);DebLvl(0x4);waitingOnAllHeadsInSync_gater 609138000
```

Download Scan Data

Click this button to immediately download a compressed (zipped) folder containing all available Scan Data files.

Clear Scan Data

Click this button to clear (delete) all saved Scan Data files. A warning dialog appears. Click OK to clear the scan data, or click Cancel to return to the Save/Retrieve window.

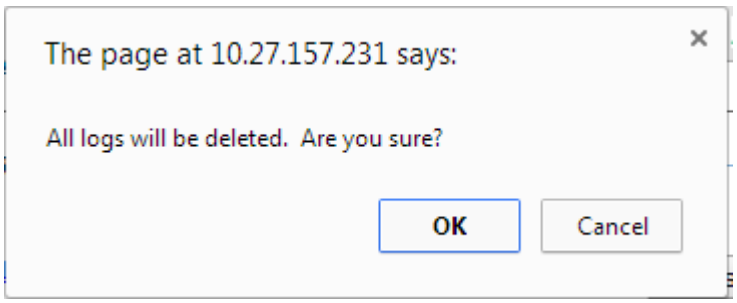


Download Logs

Click this button to immediately download a compressed (zipped) folder containing all available Log files.

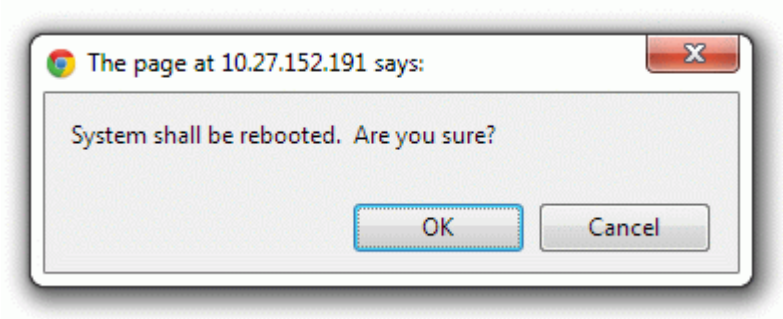
Clear Logs

Click this button to clear (delete) all saved log files. A warning dialog appears. Click OK to clear the logs, or click Cancel to return to the Save/Retrieve window.



Reboot DC3000

Click **Reboot** to re-initialize the system. A warning dialog appears. Click **OK** to reboot, or click **Cancel** to return to the Save/Retrieve window.



DIAGNOSTICS

Use the **Diagnostics** menu tree selections to monitor your dimensioning system performance, view system messages, update the DC3000 firmware, and access Online help.

The Diagnostic windows include:

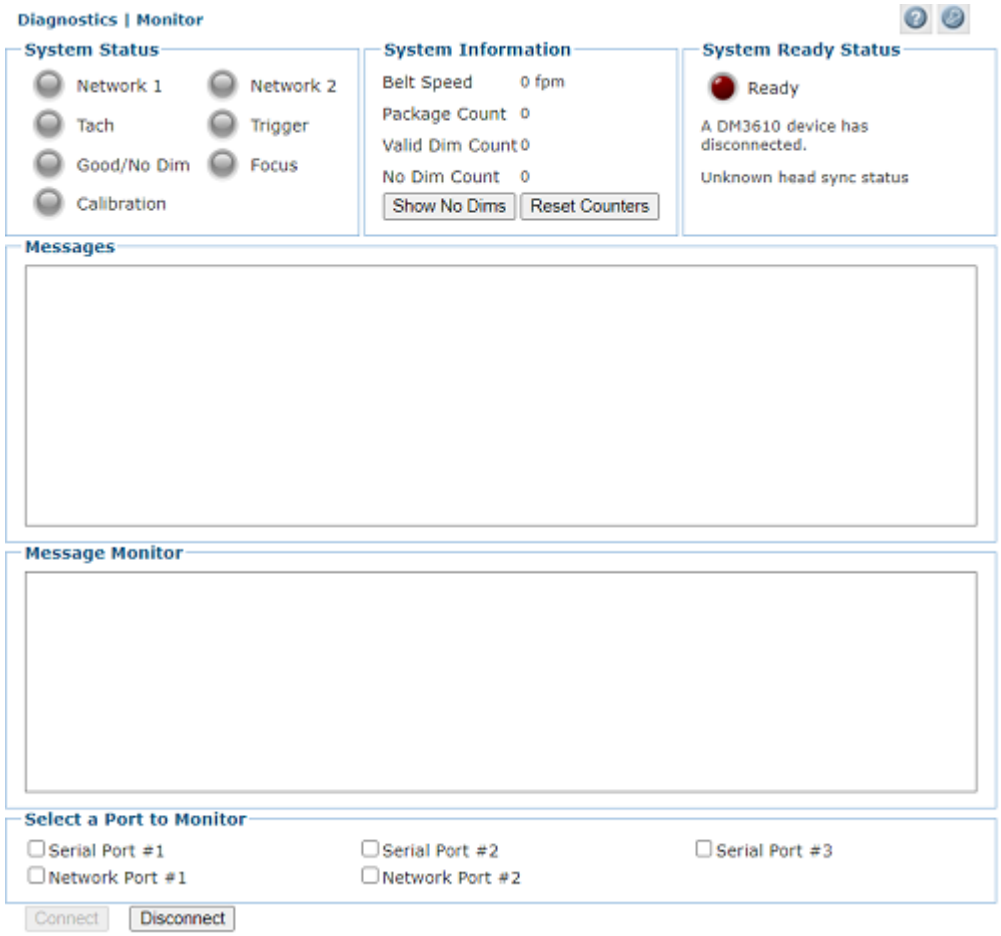
- “Diagnostics | Monitor” on page 120
- “Diagnostics | DimView” on page 123
- “Diagnostics | PointView” on page 126
- “Diagnostics | Log View” on page 128
- “Diagnostics | Audit and Alibi” on page 129
- “Diagnostics | Software Install” on page 130
- “Diagnostics | Help” on page 132

Diagnostics | Monitor

Use the **Diagnostics | Monitor** as the primary tool to monitor the dimensioner's operation and system information in real-time. Status indicators and vital statistics appear on a single screen, enabling you to effectively and efficiently detect and troubleshoot any problems that may occur.

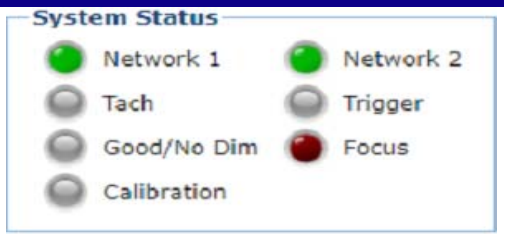
To View the Monitor:

1. In the tree menu under **Diagnostics**, click **Monitor.** The **Monitor** window opens.



2. View system information and interact with the Monitor as described below.

Status LEDs



Network 1/Network 2 – **GREEN** indicates connection to an active host. Blank/Gray indicates there is no active connection.

Tach – **GREEN** indicates the tachometer input. The LED is activated upon tachometer input regardless of tachometer source and indicates a non-zero belt speed. Since the DC3000 receives the Tach signal from the DM3610 there will be a slight delay between start of the conveyor and posting of green Tach LEDs.

Trigger – **GREEN** indicates the trigger input. The LED is activated upon trigger input regardless of trigger source (including software trigger.)

Good/No Dim – **GREEN** indicates a good (valid) dimension has been calculated.

RED indicates a a no-dim (or incomplete dimensioning data).

Focus – OFF if no "Focus Data Sources" have been checked in Tach/Trigger/Transmit.

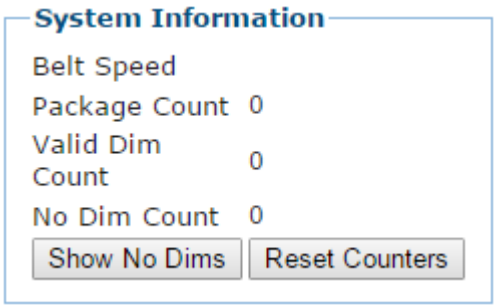
GREEN indicates camera focus is configured properly.

YELLOW indicates the computed focus data cannot reach the DM3610 before its Focus transmit Point.

RED indicates the DM3610 is designated as Tach Master and does not have a Serial Port set for Camera focus.

Calibration – Normally OFF. **RED** indicates a probable error and potential for poor calibration.

System Information



Belt Speed – The conveyor speed is displayed in feet per minute (fpm) or meters per second (m/s)

A **F(Forward) or R(Reverse)** direction indicator will appear in the Belt Speed field, if the system is bidirectional.

Package Count – Indicates the total number of packages that have passed through the system since last reset.

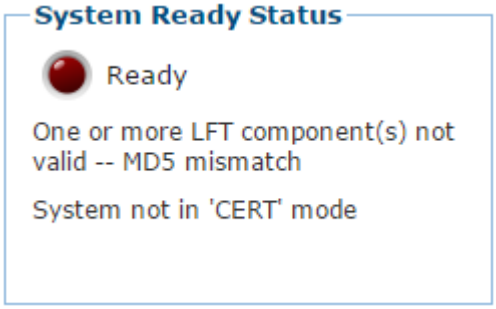
Valid Dim Count – Indicates the total number of valid package dimensions captured by the system since last reset.

No Dim Count – Indicates the total number of NO DIM packages passed through the system since last reset.

Show No Dims – Click to display a count of all the No Dim reasons in the Message area.

Reset Counters – Click to reset the counters above to zero (0) of the scan rate. When this settles at a lower value it indicates a stable scan rate.

System Ready Status



NOTE

In a non LFT unit the Ready LED will always be red; however, since it does not have the certification option, this has no negative effect on the unit.

Ready – **GREEN** indicates the system settings meet Legal for Trade requirements.

RED indicates that a system setting or performance does not meet Legal-for-Trade requirements. Click **Show** to display status details in the Message pane.

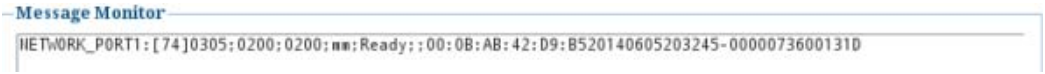
Messages

Displays diagnostic messages and dimension results.



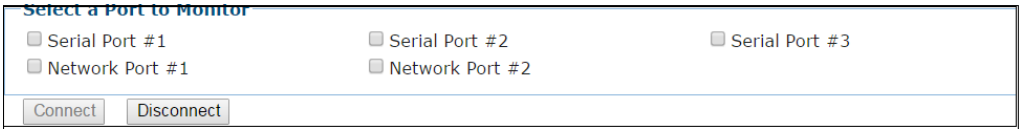
Message Monitor

Displays the outgoing host message from the port selected below.



Options Buttons

Select an option button for Non, Serial Port 1, Serial Port 2, Serial Port 3, Net Port 1, or Net Port2 to view messages for that connection.



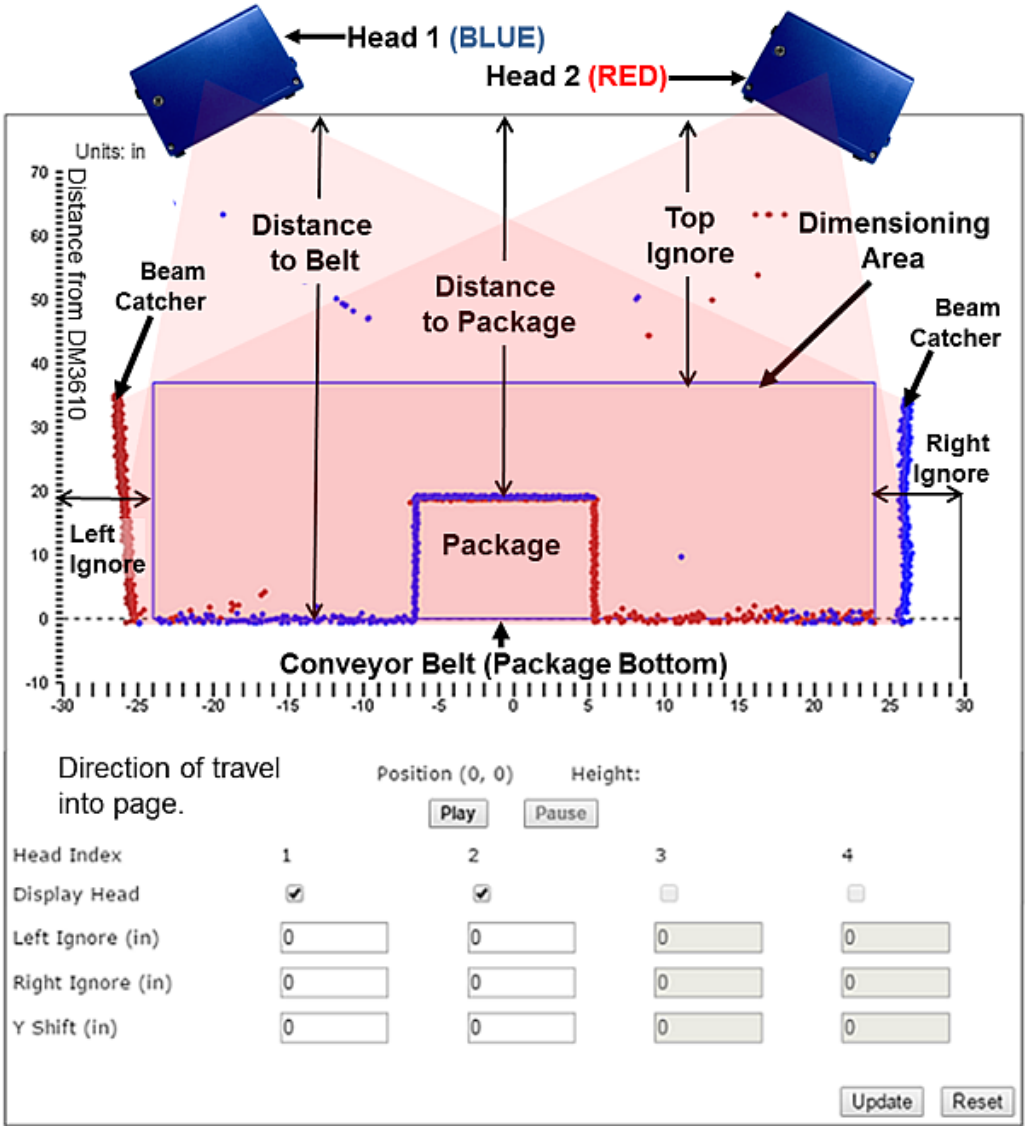
Connect/Disconnect

Click **Connect** to re-establish communications between the Monitor page and the DC3000.
Click **Disconnect** to terminate communications.

Diagnostics | DimView

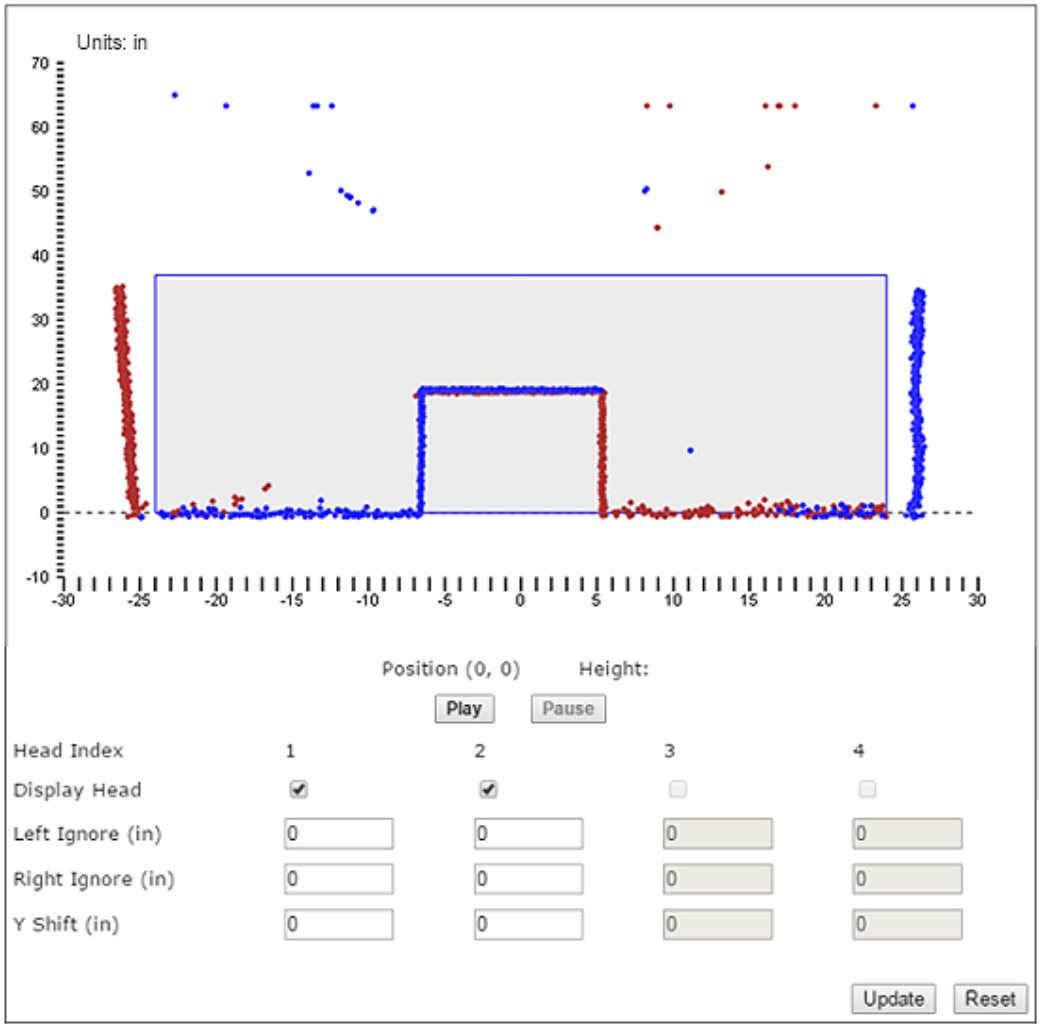
Use the **Diagnostics | DimView** to view a graphical representation of the dimension point information captured for a package. Dim View also allows you to adjust the Right and Left Ignores and Y Shift for each DM3610 head.

The **DimView** monitor is explained in the image below.



To view DimView:

1. In the menu tree under **Diagnostics**, click **DimView**. The **DimView** window opens.



2. Use the DimView controls to modify the view and performance as described below.

Play/Pause

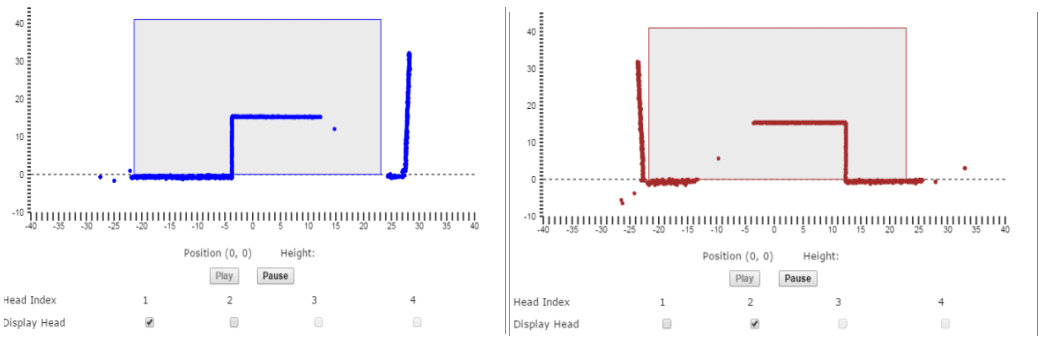
Click Play to view a live feed from the selected DM3610 heads.

Head Index

Displays the index number for each head.

Display Head

Select the check box below the Head Index number to select that head. Each head's data points are represented by a different color. More than one heads data points can be displayed at the same time.



Left Ignore / Right Ignore

Adjust the Left and Right Ignores as needed. This indicates the distance from the center of the

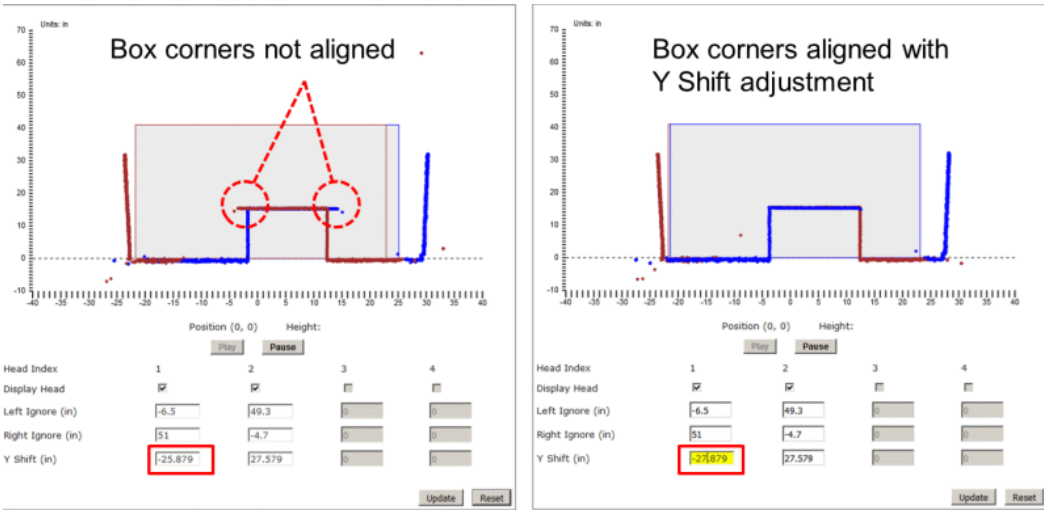
scan line to the left or right edge of the belt. Scan points beyond this distance will be ignored.

Left and Right Ignores can be validated and adjusted in Dim View to make sure the conveyor side pans or beam-catchers are not within the dimensioning area.

Y Shift

The Y Shift values are used to align multiple DM3610 scan lines across the belt.

In the example on the left below the Y Shifts are incorrect. The corners of a box placed in the scan lines are not aligned. The Y Shift of either Head can be adjusted to correct this misalignment, as shown on the right.



3. When you have finished making changes, click **Update** to save or click **Reset** to revert to the previously saved values.

Diagnostics | PointView

Use the **Diagnostics | Point View** page to view point cloud data of the most recent package to Pass under the dimensioners.

To view PointView:

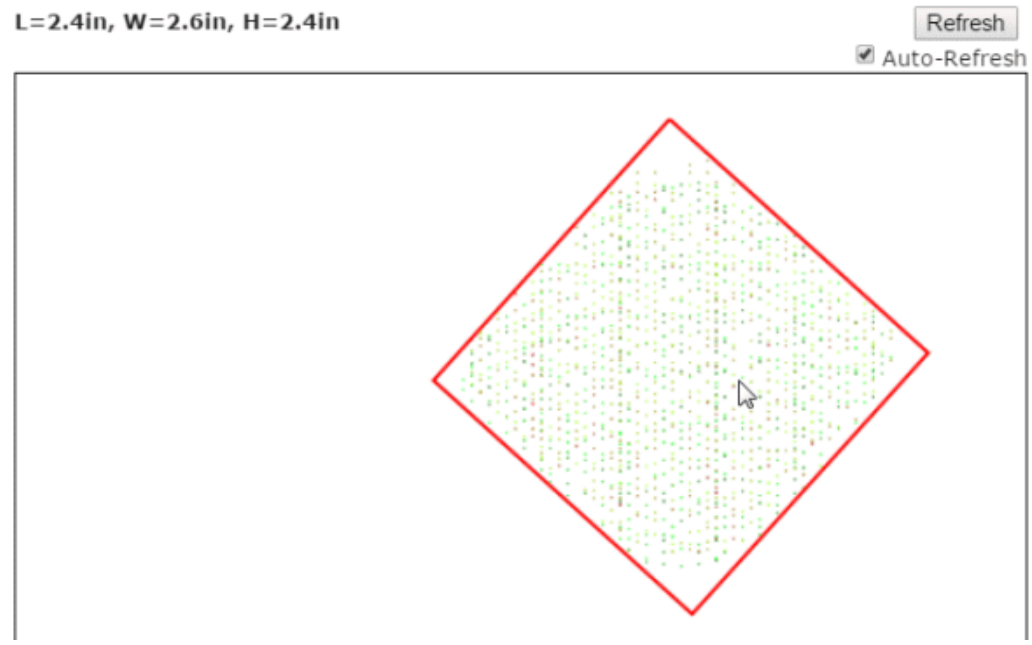
1. In the menu tree under **Diagnostics**, click **PointView**. The **PointView** window opens.



- The package **length (L)**, **width (W),** and **height (H)** are displayed at the top of the Point View window.
- When a package point cloud is initially loaded, a bounding box is shown in red around it.
- Click **Refresh** to reset and view the most recent point cloud.
- Select the **Auto-Refresh** check box to view the point cloud of each new package as It passes below the dimensioners.

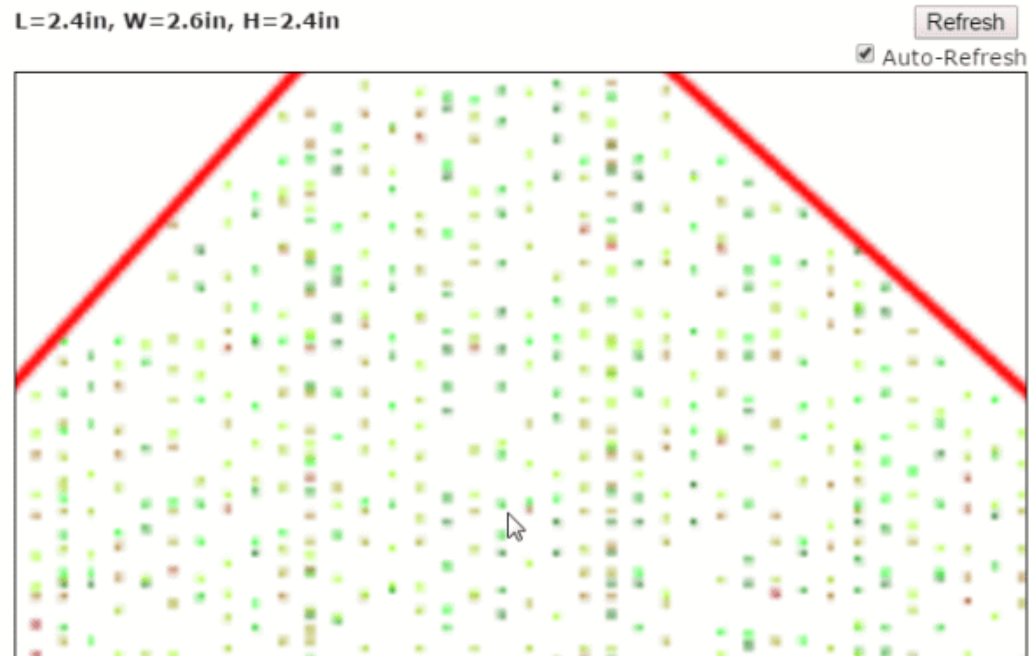
Use the following controls to manipulate a point cloud shown in Point View:

Control Action
Mouse Left Button
Click and drag to move the point cloud in any direction.



Mouse Wheel

Roll forward to zoom in.



Roll backward to zoom out.

Keyboard

Press arrow keys [←][↑][↓][→] to rotate the point cloud in the selected direction. Since only the top of the package is being displayed, the point cloud will be compressed as it moves away from the center of the window.

Hold down Ctrl and press the left arrow key [←] to rotate the point cloud about the Z axis in a counter-clockwise direction.

Hold down Ctrl and press the right arrow key [→] to rotate the point cloud about the Z axis in a clockwise direction.

Diagnostics | Log View

Use the **Diagnostics | Log Viewer** to review the performance logs saved by the dimensioner.

To View the Log Viewer:

1. In the menu tree under **Diagnostics,** click **Log Viewer.** The **Log Viewer** window opens.



2. Click **Connect** to re-establish communications between the LogView page and the DC3000.

3. Click **Disconnect** to terminate communications between the LogView page and the DC3000.

To use commands to view a log:

1. Enter a command in the Log Viewer Command field without using spaces (i.e., DISPCOUNTS, DISPMSGLOG, etc.)

2. Click **Send Command**.

3. **Log Viewer** displays the most current information for the log you requested.

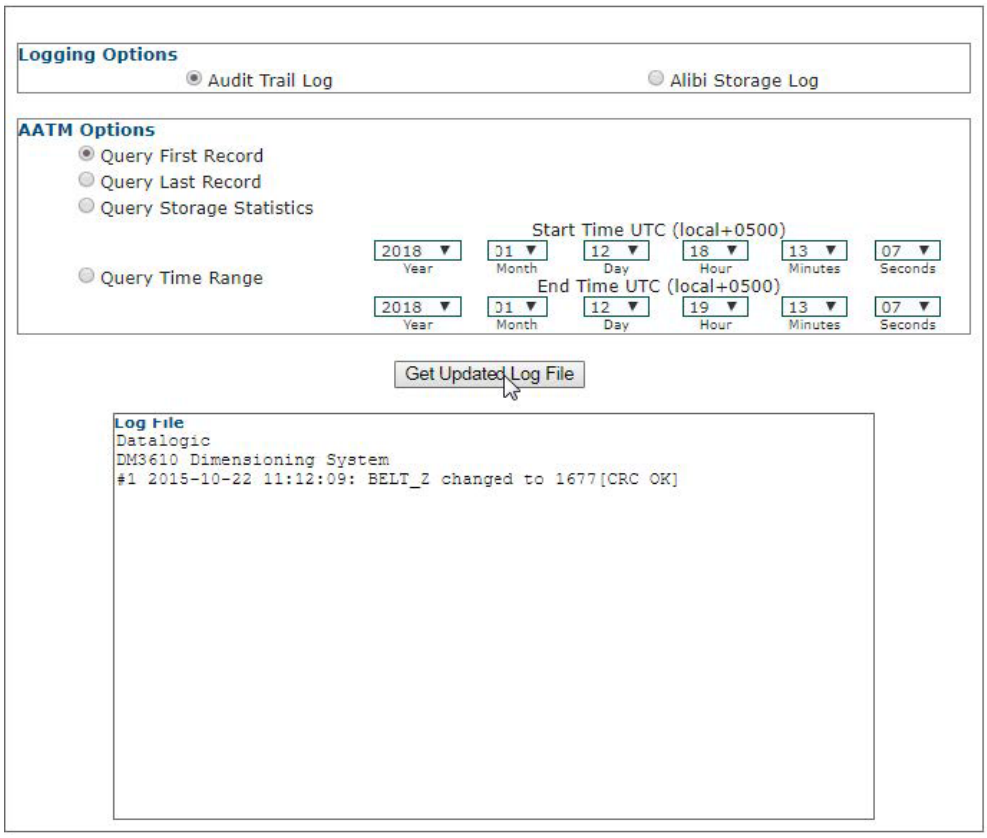
4. Click **Clear** to empty the **Log Viewer.**

Diagnostics | Audit and Alibi

Use **Audit and Alibi** to search for and view system audit trail and alibi logs.

To View Audit and Alibi:

1. In the menu tree under **Diagnostics**, click **Audit and Alibi.** The **Focus Audit and Alibi** window opens.



2. View system information and interact with the **Audit Alibi log**s as described below.

Logging Options (Dimensioning-specific)

Audit Trail Log Opens the Audit Trail Log for view in the Log File section of the screen. Results are scrollable. Audit Trail Log posts any menu changes that may affect certification. This allows the inspector to identify if someone tampered with the certification.

Alibi Storage Log Opens the Alibi Storage Log for viewing in the Log File section of the screen. Results are scrollable. Alibi Storage Log identifies parcel data.

AATM Options (Alibi and Audit Trail manager)

Query First Record: Displays the first record when selected.

Query Last Record: Displays the last record when selected.

Query Storage Statistics: Displays the storage space used and the remaining space available.

Query Time Range: Select a Start Time and End Time by defining the Year, Month, Day, Hour, Minutes and Seconds for each.



For accurate Alibi and Audit management, the dimensioner clock is set to GMT (Greenwich Mean Time) at the factory and should never be changed.

Get Update Log File

After making the desired selection from the option buttons, click **Get Update Log File** to view the log in the Log File area of the screen.

Diagnostics | Software Install

Use **Diagnostics | Software Install** to download software from or to install software to the DC3000 Dimensioning Controller.



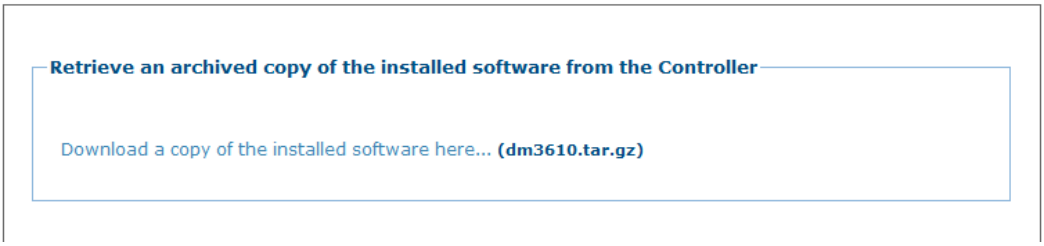
This function should only be performed under the guidance of Datalogic Technical Support.

To use the Software Install functions:

In the tree menu under Diagnostics, navigate to Software Install. The Software Install window opens.

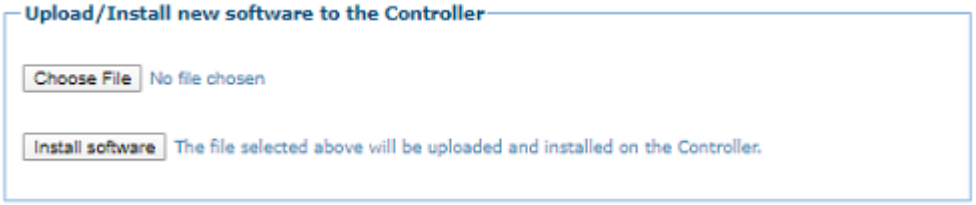
To Download a Copy of the Currently Installed Software:

Click on the ***.gz** file name linked in the top section of the **Software Install** window. Depending on your browser setup, the file will automatically download to the download folder, or an Explorer window will open allowing you to save the file to a folder on your PC.



To Upload Software to the DC3000:

1. Click **Browse** in the bottom section of the **Software Install** window. An Explorer window opens.



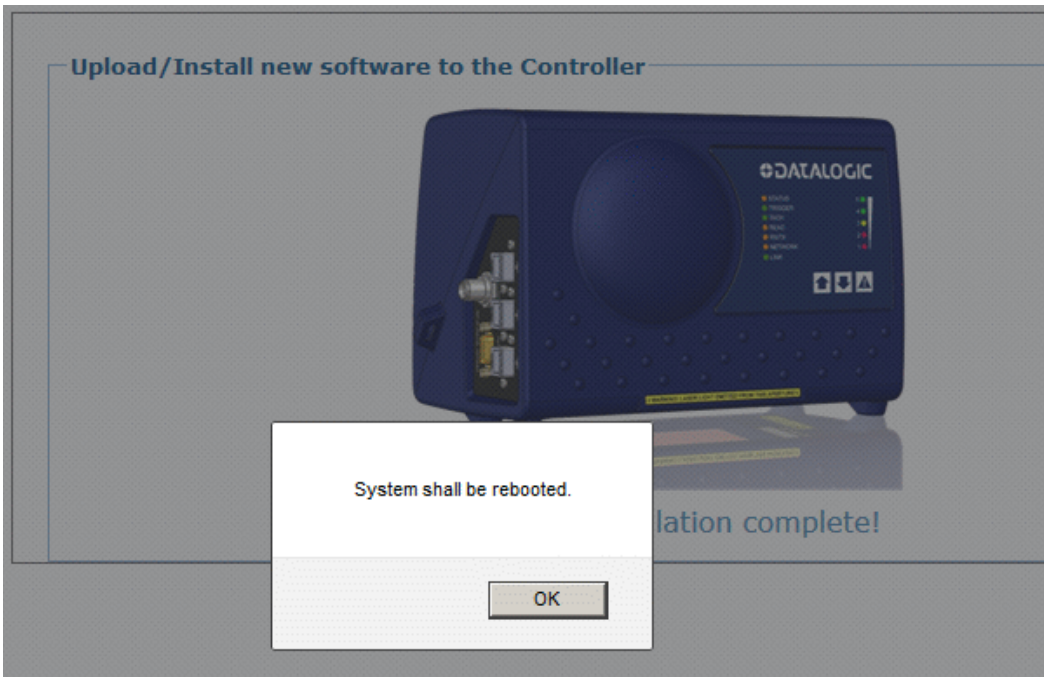
2. Navigate to the ***.gz** file software file you wish to install. When you have selected the file, its name will appear next to the browse button.



3. Click **Install Software**. A progress indicator appears.



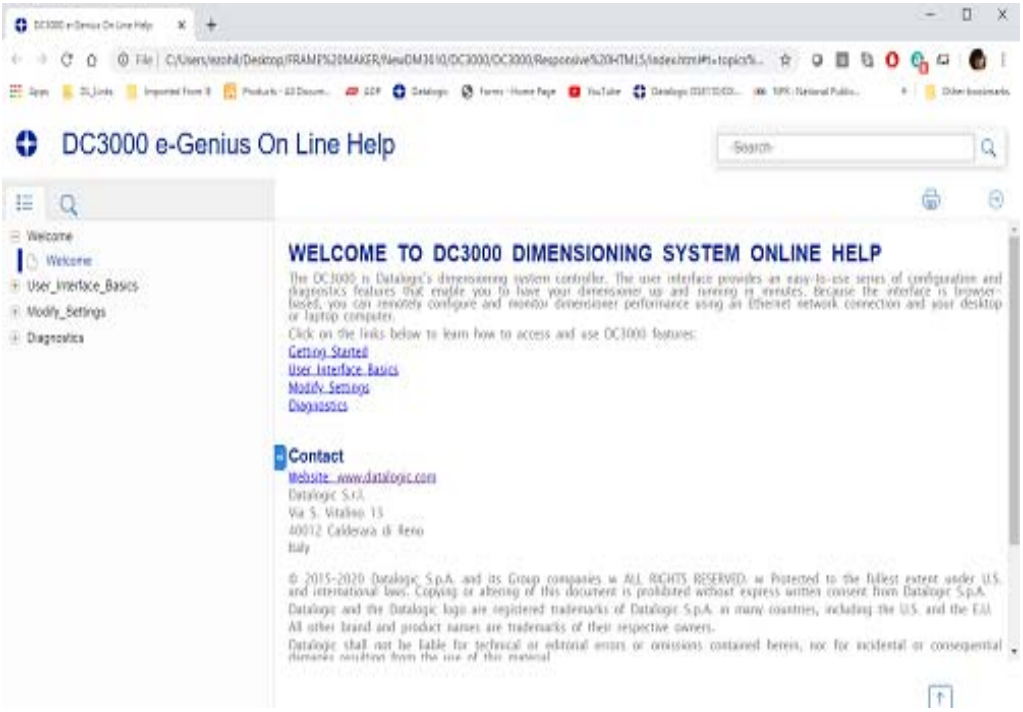
4. When the software has been installed, a **Software Installation Complete** window is displayed, and then a pop-up appears indicating the system will be rebooted.



5. Click **OK**.

Diagnostics | Help

Click **Diagnostics | Help** to open the full Online help system for the DC3000 User Interface. You can use the **Contents** and **Search** options of the Online help system to find information about and procedures for configuring and using the DC3000.



DIMENSIONING SETUP AND CALIBRATION

This chapter provides details on how to set up and calibrate a DC3000/DM3610 Two-Head Dimensioning System for normal operation and references several sections in this manual.



The procedures outlined in this chapter should only be performed by a Datalogic trained technician.

Training is available. See our website at www.datalogic.com.

SYSTEM SETUP

Install the structure, Universal Mounting Brackets (UMBs), DM3610 dimensioners, DC3000 Dimensioning Controller and other equipment as indicated in Chapter 2, Mechanical Installation.

Install the system cabling as described in Chapter 3, Electrical Installation.

When the equipment and cabling has been installed as described, apply power to the system.

ALIGNING DM3610 DIMENSIONING SYSTEM

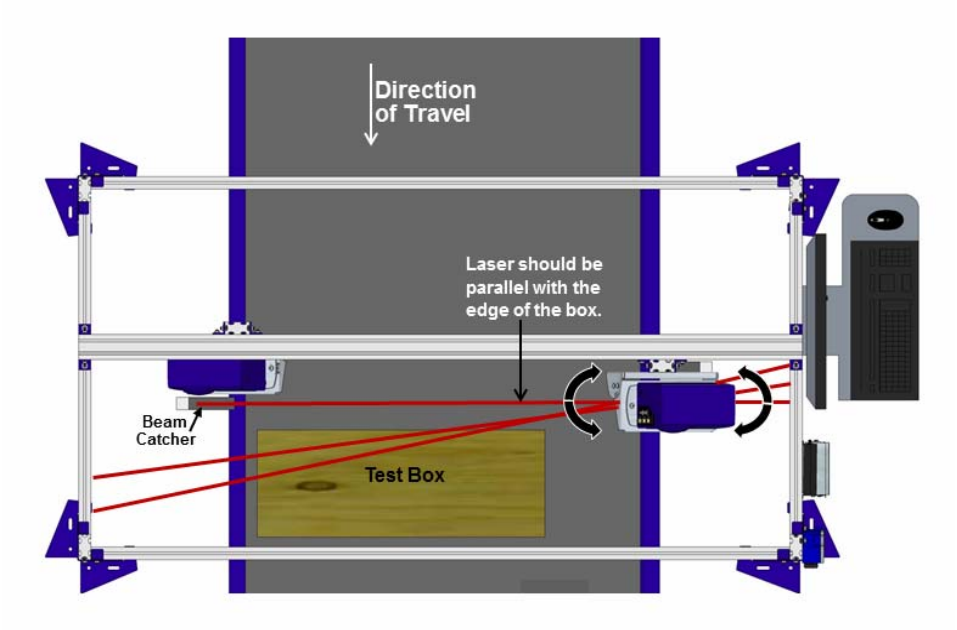
For the DM3610 to function properly and provide accurate dimensioning information, the unit must be carefully aligned.

ADJUST THE TILT, PITCH AND SKEW OF THE DM3610 DIMENSIONERS

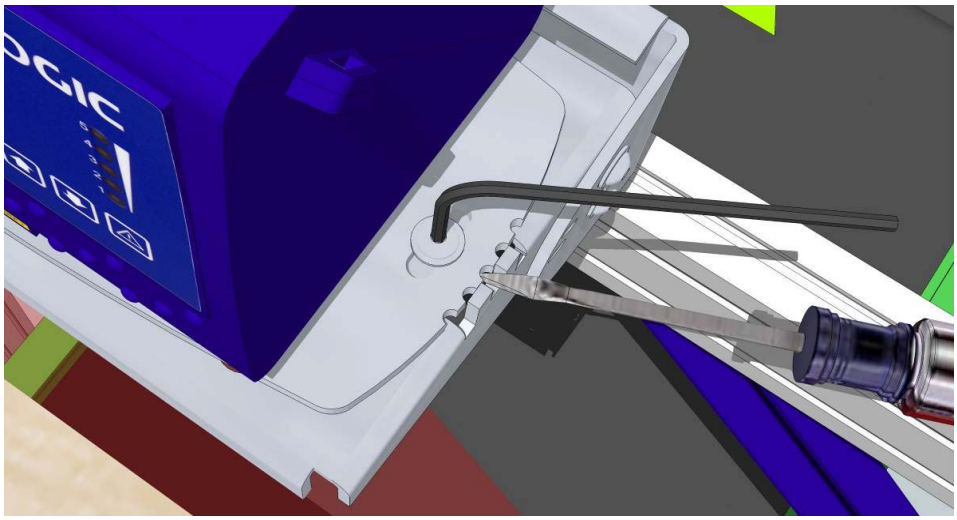
Adjust the Tilt

1. With the DM3610 dimensioners powered up and the lasers active, set the largest test box *(see **Calibration Boxes** in 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 the laser line 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.

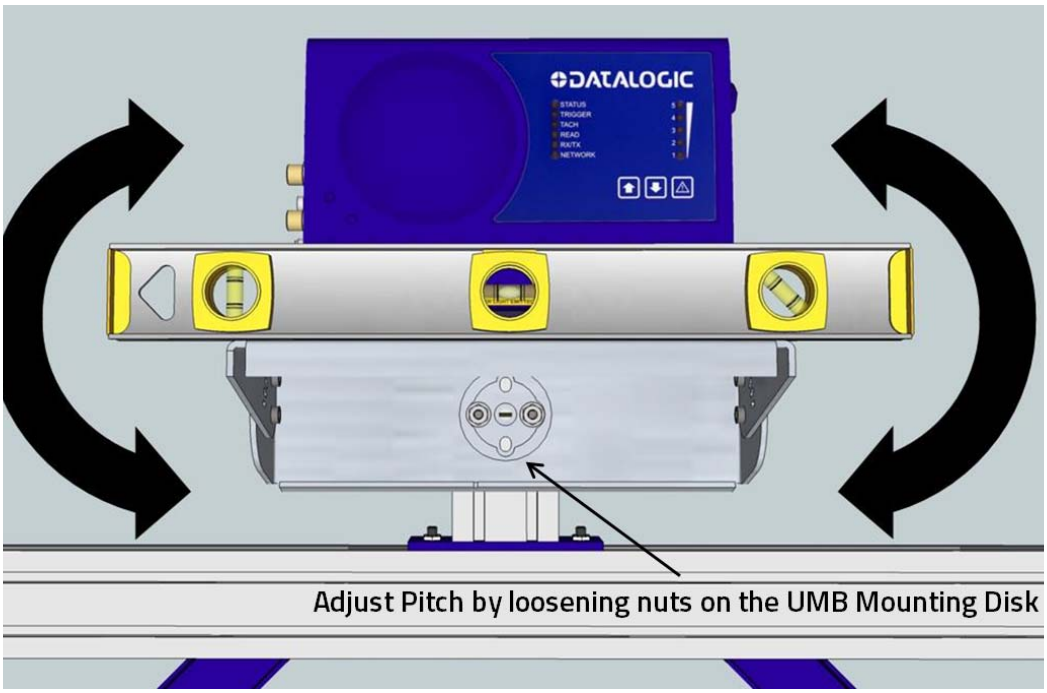


3. To adjust the laser tilt, loosen the screws securing the UMB Mounting Plate to the UMB and using a flathead screwdriver carefully pry the plate back and forth until the laser is exactly parallel to the edge of the test box. When adjusted correctly, tighten the UMB Mounting screws.



Adjusting the Pitch

1. Use a bubble level or angle meter to determine the angle of the conveyor surface.
2. Adjust the UMB so the DM3610 is set to the angle as specified in application specific mounting diagrams. This will allow the DM3610 to report the same dimensions whether the box is sent down the left or right side of the conveyor. This will be confirmed in a step later on in this document.



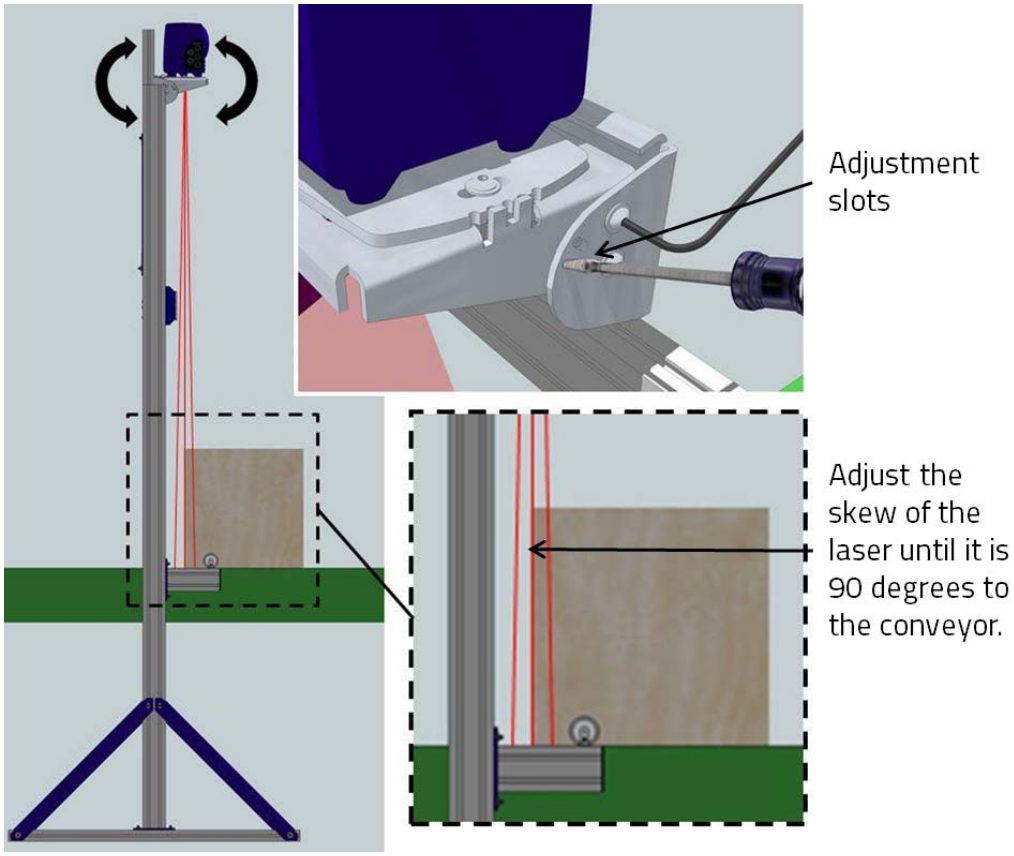
3. Slightly loosen the nuts on the UMB Mounting Disk on the UMB to adjust the pitch angle.

NOTE

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

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.



ELECTRONICALLY ALIGNING THE SYSTEM LASERS

Adjusting the FOV 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 Dimensioner 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.



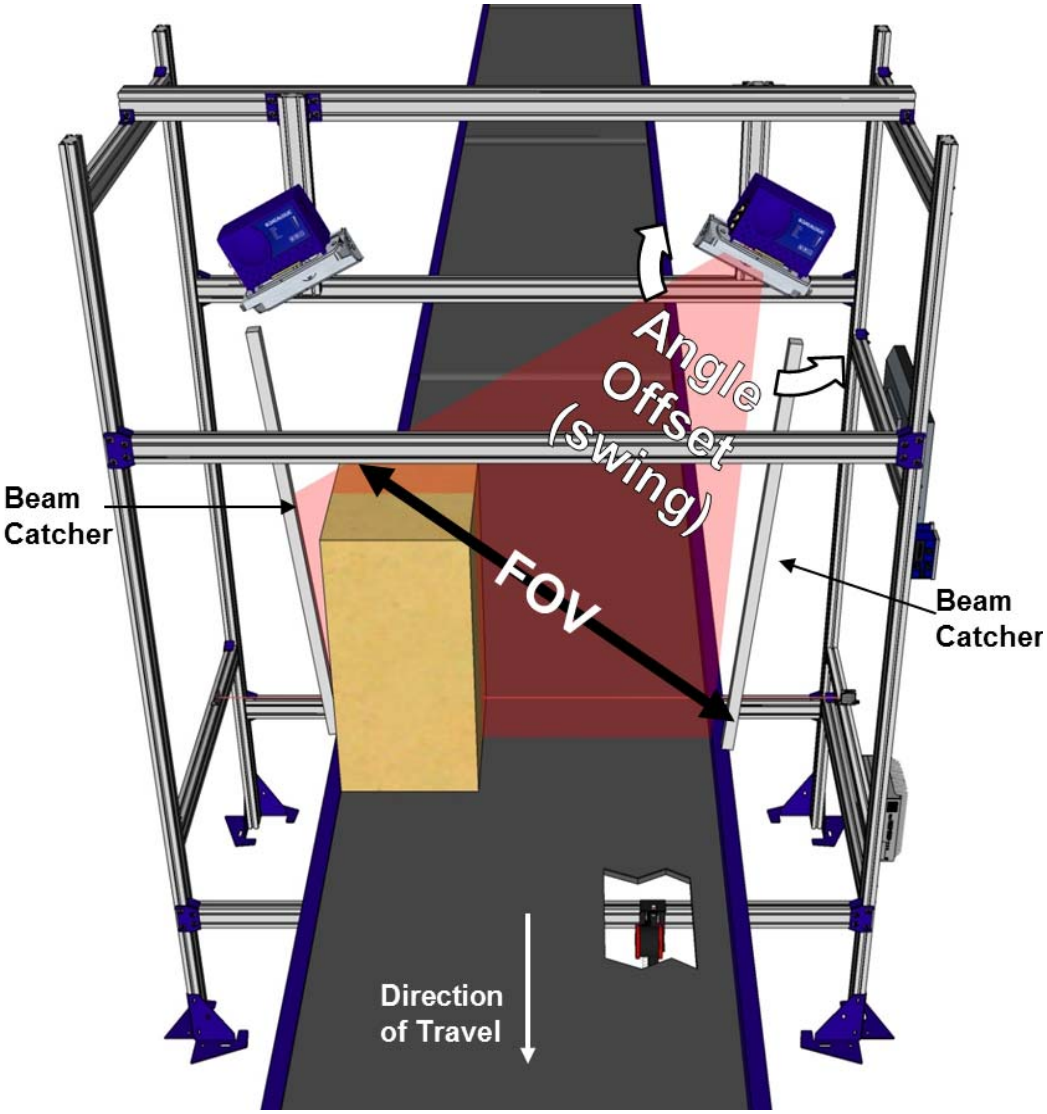
6. Adjust the three following parameters in the **DM3610 User Interface** for each dimensioner in **Modify Settings | Dimensioning | Calibration:**

7. Set **Scan Points** to **1000** (default) unless authorized by Datalogic. There are applications where conveyor belts are narrow and using the default of 1000 scan points is unnecessary and may increase computation time. You may want to reduce the number of scan points. For example, if you are using a standard 48” (121.92 cm) conveyor belt, use 1000 points, but if using a 24” (60.96 cm) belt 500 points is satisfactory.

8. **Field of View**: Adjust FOV to cover the tallest system boxes at edges of conveyor.

9. **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.

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 boxes and extend 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.



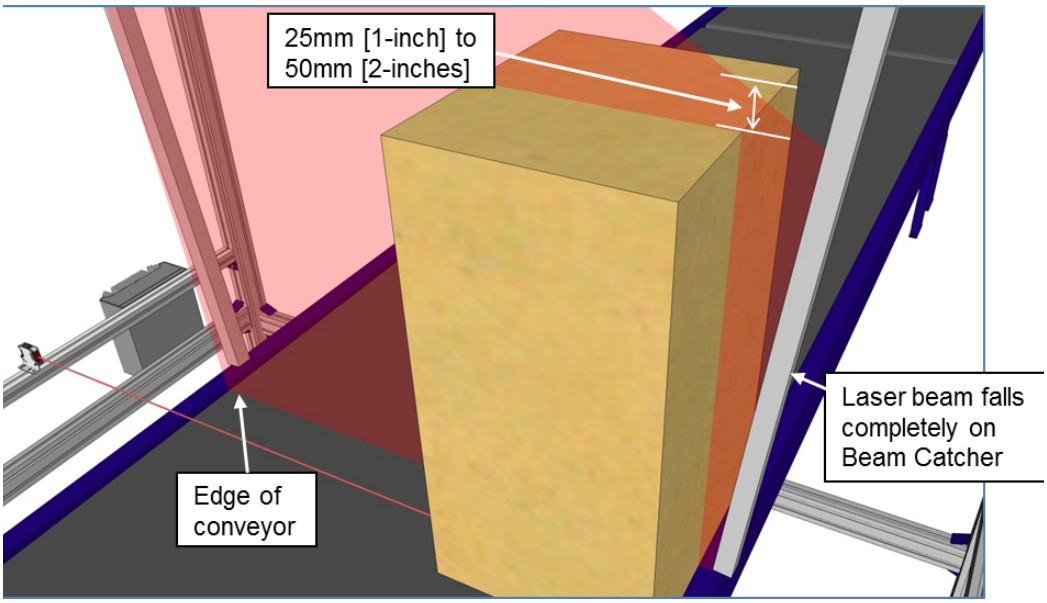
To adjust the Field of View and Angle Offset (Viewing Downstream):

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.



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

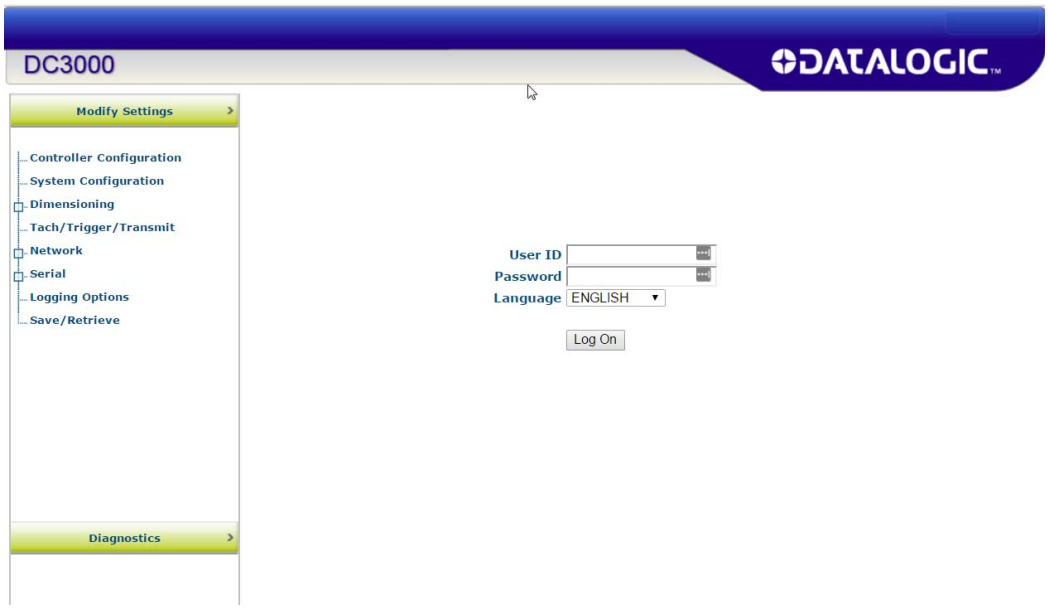
1. Turn on the DC3000 Dimensioning Controller.

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.



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.

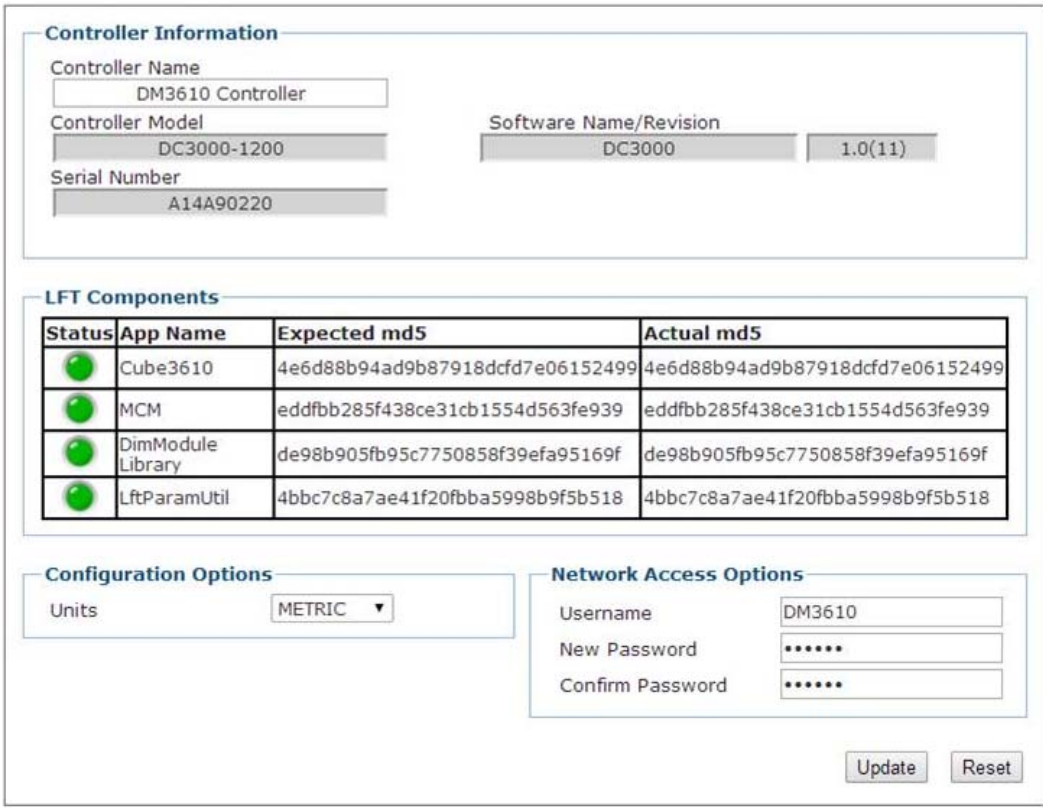


4. Log on to the DC3000 User Interface. The default **User ID** is DM3610, and default **Password** is DM3610.

NOTE

For a detailed description of the DC3000 User Interface, see Chapter Four.

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



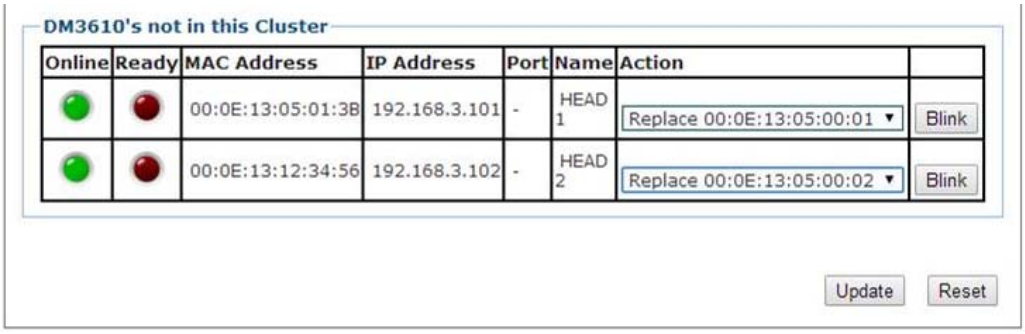
6. Make sure **Controller Model** and **Software Name/Revision** are correct for your application.

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.

In a defaulted DC3000 there are two heads in the DM3610's in this Cluster portion of the window. These two heads are placeholders within the software and not yet the real DM3610 dimensioners.

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

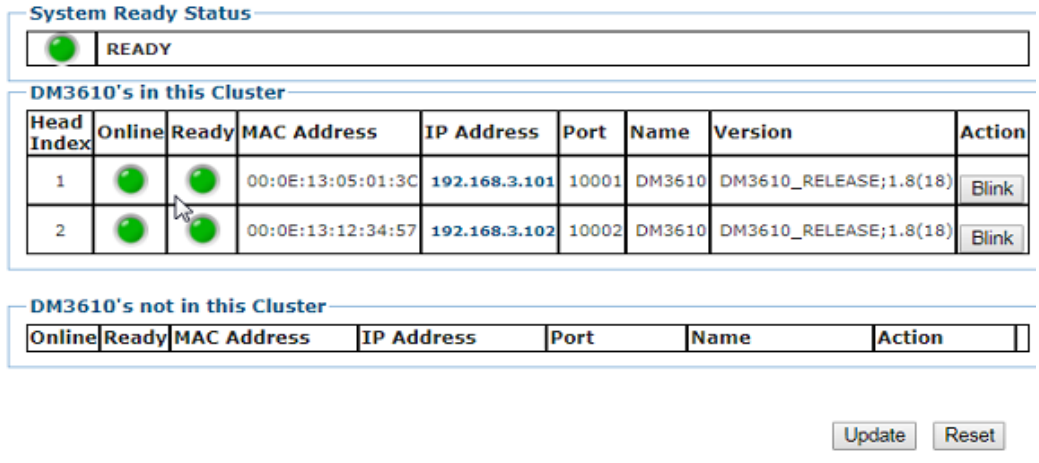


9. Blink (blinks the LEDs) the head to confirm Head 1 is mounted on the left upstream from Head 2 on the right.

10. Identify Head 1, then select replace.

11. Select the MAC Address of the placeholder for Head 1

Repeat steps 10 and 11 for Head 2.

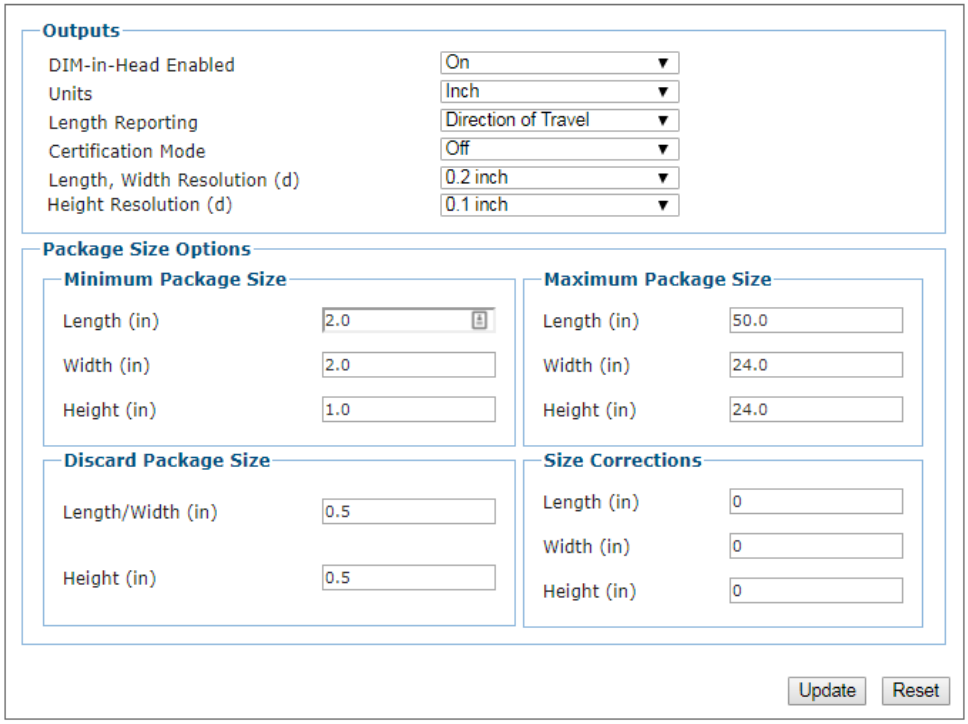


12. Click **Update**. The HEAD1 and HEAD2 should now have replaced the placeholder listed under DM3610's in this cluster.

DC3000 Dimensioning Settings and Calibration

(DC3000 User Interface)

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



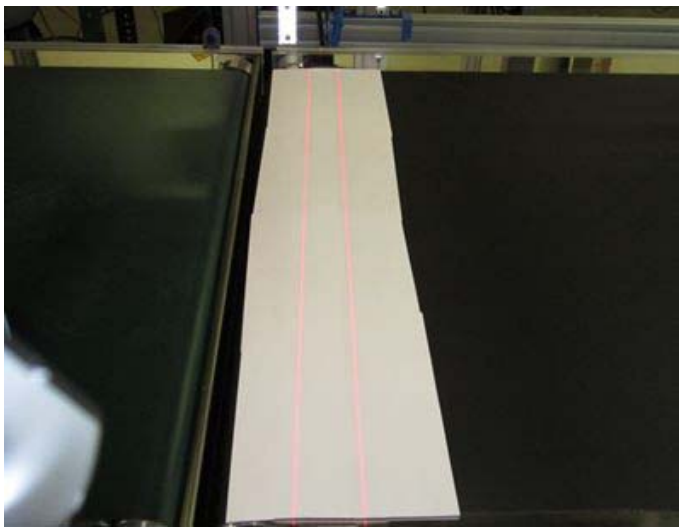
2. Under **Outputs**, make sure **Certification Mode** is set to **Off**.

3. Adjust the settings in **Dimensioning | Settings** to match your applications requirements (Min/Max package size, units, and etc.).

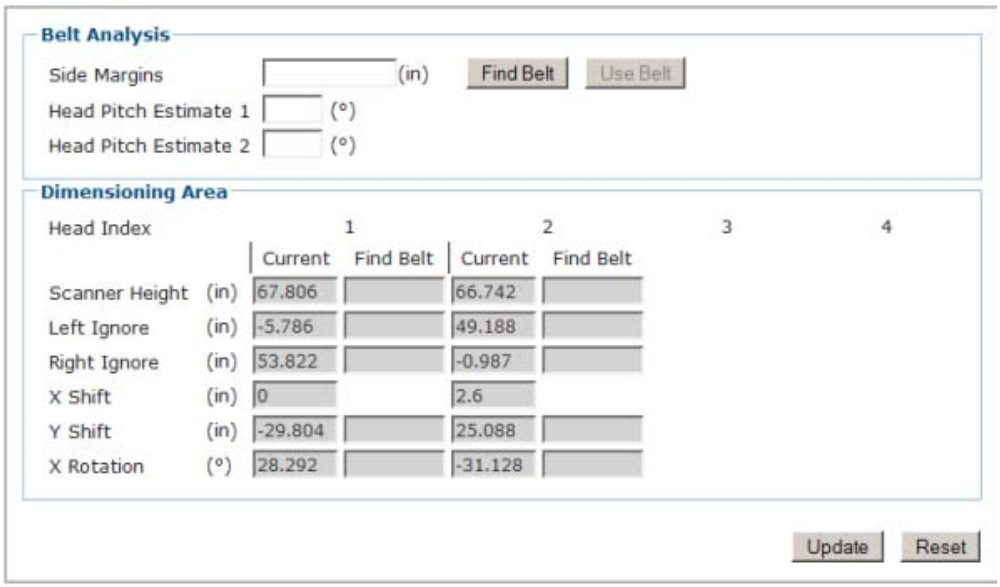
NOTE

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.



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



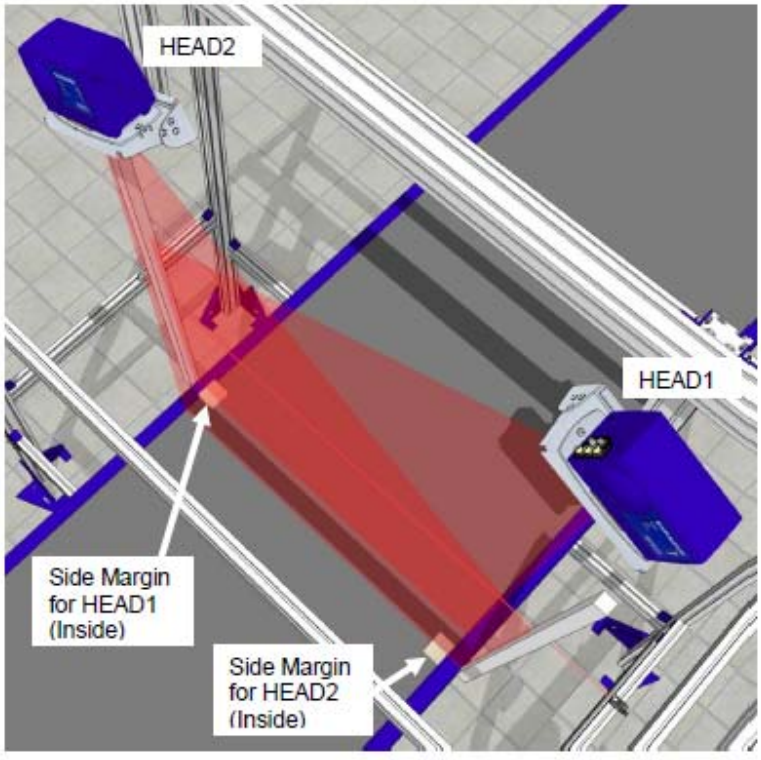
6. Enter a width of the side margins used to create transition on the outer edge of the scanning area.

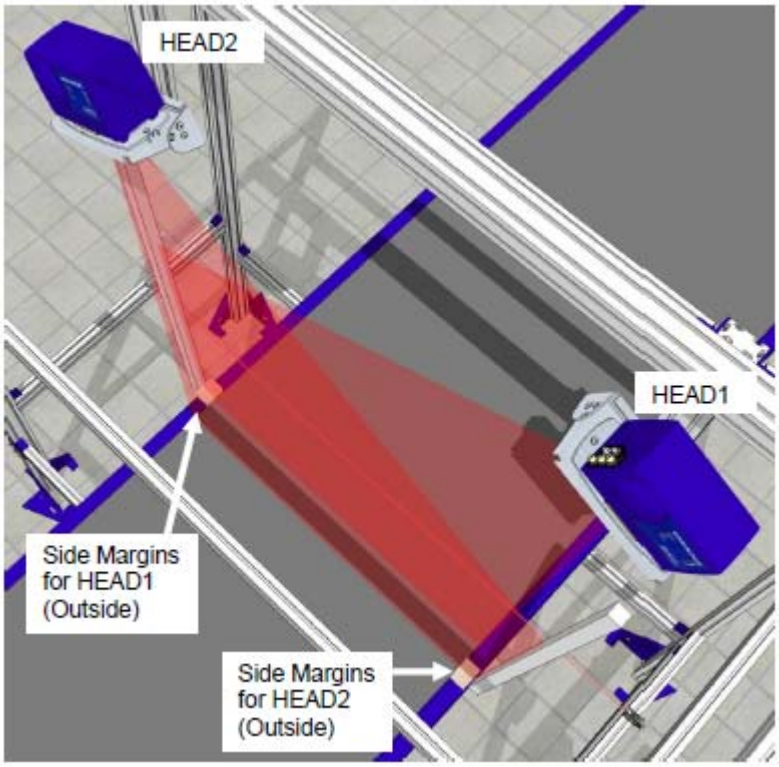
NOTE

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 filed. 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.

WARNING

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.



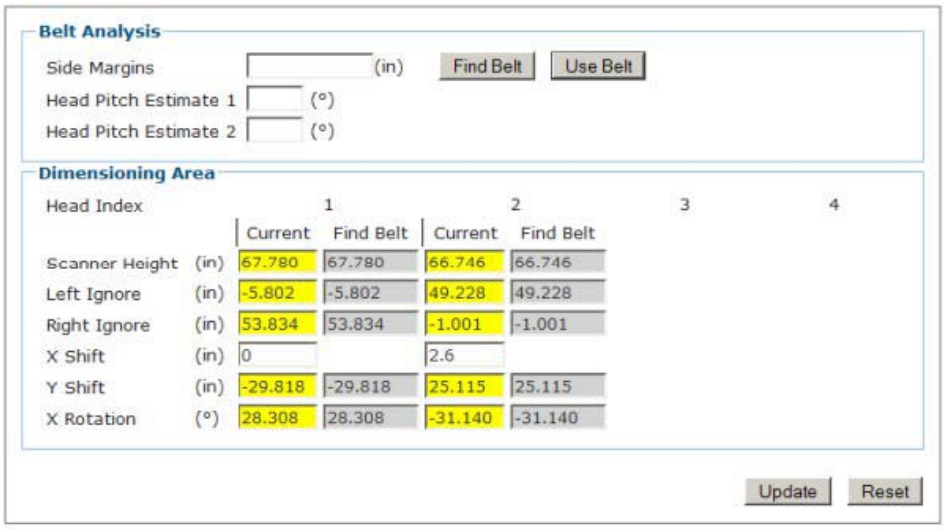


7. Measure the DM3610 mounting angle for each head and enter the value into the Head Pitch Estimate x field.

8. 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.



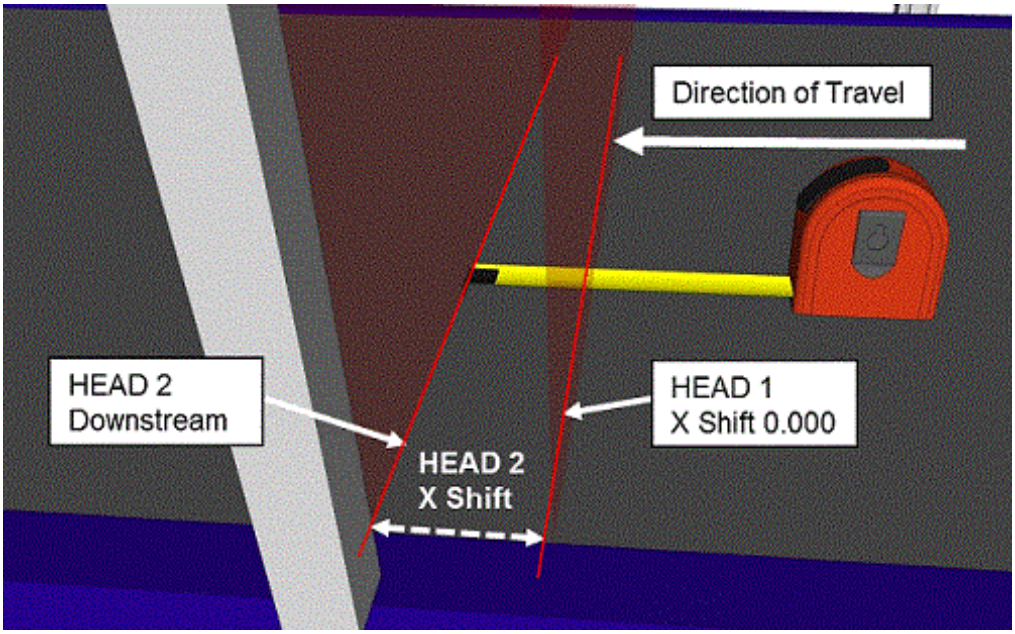
9. Click **Find Belt**. Dimensioning parameters are automatically loaded into the **Dimensioning Area**.



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

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

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



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

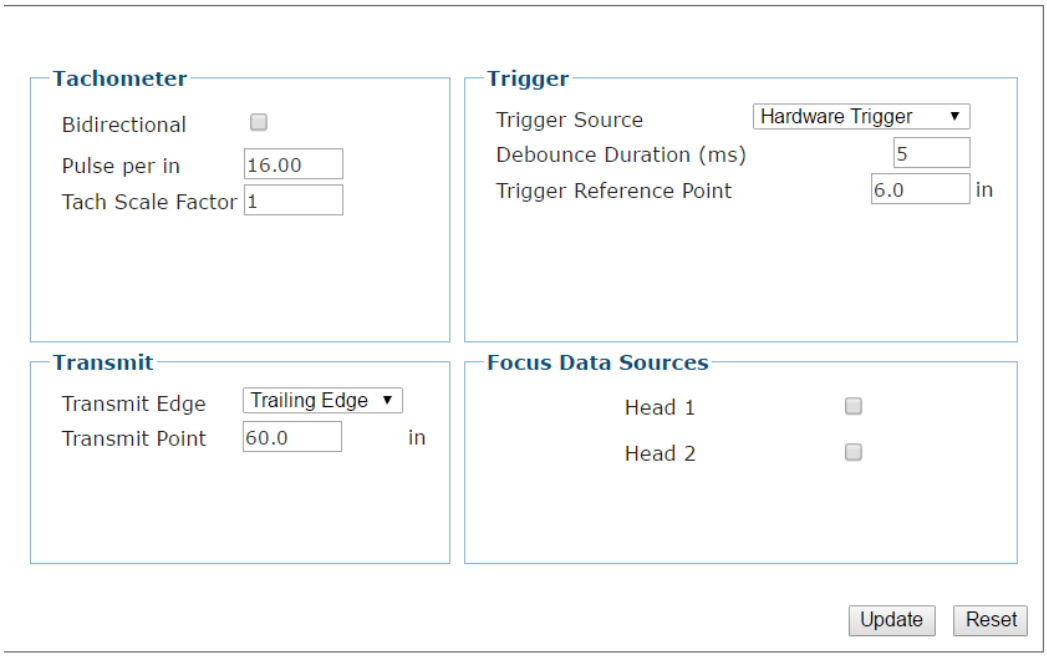
14. Click **Update**.

15. Finally, navigate to **Diagnostics | DimView** where you can view and refine the Left and Right Ignores and Y Shift using a real time data point view. See “Diagnostics | DimView” on page 123.

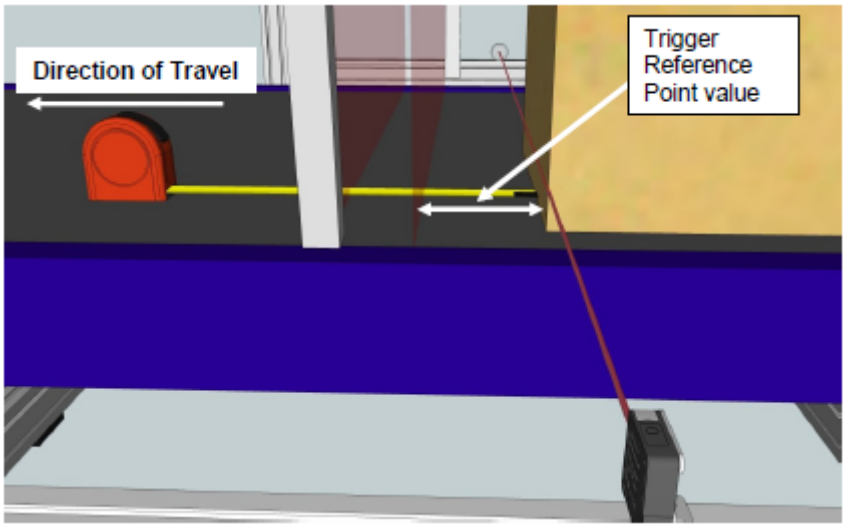
Tach/Trigger/Transmit (DC3000 User Interface)

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 “Modify Settings | Tach/Trigger/Transmit DM3610 Heads” on page 80).*

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



2. 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.



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.

DYNAMIC CALIBRATION

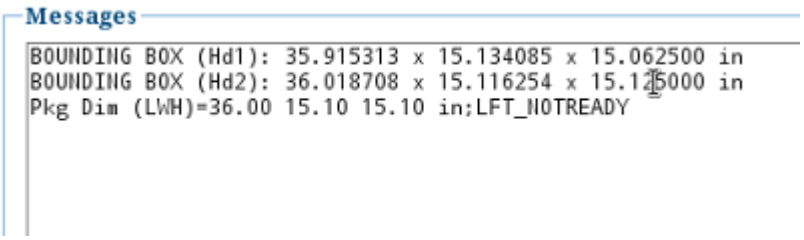
After you have set up the dimensioning settings and calibration in the DC3000 User interface, you must check the accuracy of the system by running test boxes through the system. Dimensions returned when a box is run through the system must fall below the outside tolerance required by your application.

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 may be acceptable, while a value of 0.21 is not.

However, during Datalogic calibration a wooden box is used and the dimensions should match the exact dimensions of the provided wooden box.

To Dynamically Calibrate the Dimensioning System:

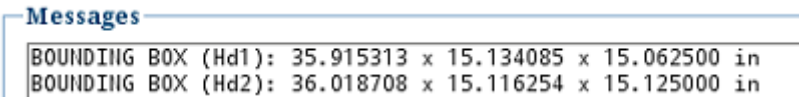
1. If you do not already have it running, open the **DC3000 User Interface** in a browser and log on as explained previously.
2. From the menu tree of the under **Diagnostics**, select **Log Viewer**. The **Log Viewer** window opens
3. Turn on the conveyor and run a calibration wooden box.
4. Check the results in the **Diagnostics | Monitor** window**.**



The results in the **Messages** area of the window show the calculated data from the scan information for Head 1, **BOUNDING BOX (Hd1)**, and Head 2, **BOUNDING BOX (Hd2)**. 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 (**BOUNDING BOX Hd1** and **BOUNDING BOX Hd2**). 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 and re-run the calibration of the head in question.



For example: If you notice that the length (in the direction of travel) of your package is too short, enter a **Tach Scale Factor** of less than 1.0. 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 head is within system tolerance, but the length of the **Pkg Dim** 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.

Pkg Dim (LWH)=36.00 15.10 15.10 in;LFT_NOTREADY

If the *width* of the **Pkg Dim** is out of tolerance, adjust the Y Shift for Head 1 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.

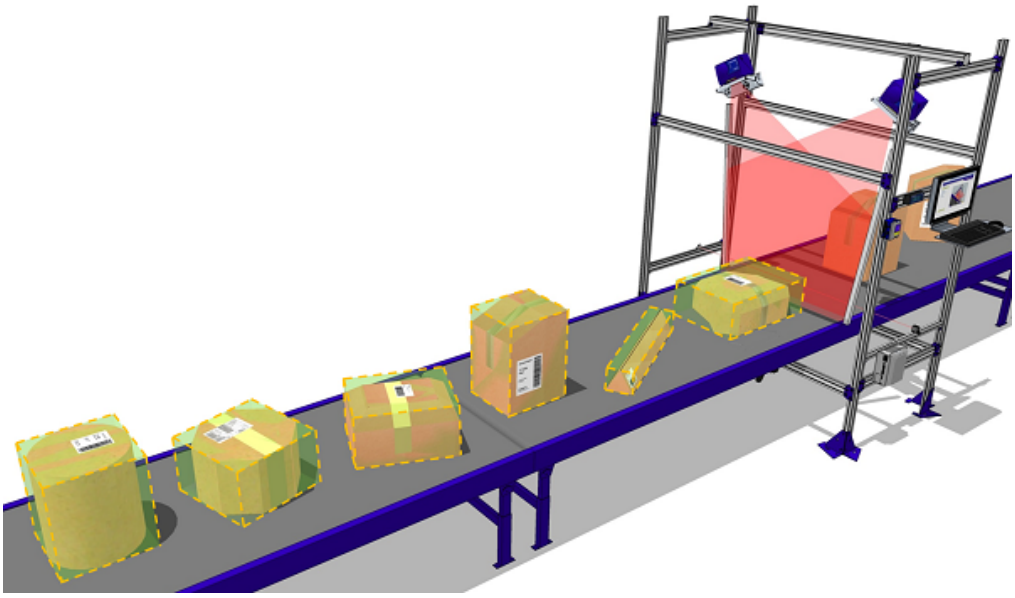
5. After the calibration process has been completed, save parameters from each DM3610 and the DC3000 Dimensioning Controller to the laptop computer. This is done using **Modify Settings | Save/Retrieve** in DM3610 User Interface and DC3000 User Interface.



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.

DIMENSIONING IRREGULAR-SHAPED PACKAGES

The DM3610 Two-Head Dimensioning System provides the dimensioning of irregular-shaped packages. When an irregular-shaped package (irregulars) passes through the dimensioning area, the system determines the smallest possible cuboidal dimensions of the package (length, width, and height) and creates a virtual bounding box around it. This is a very helpful in determining shipping or storage space needed for irregulars.



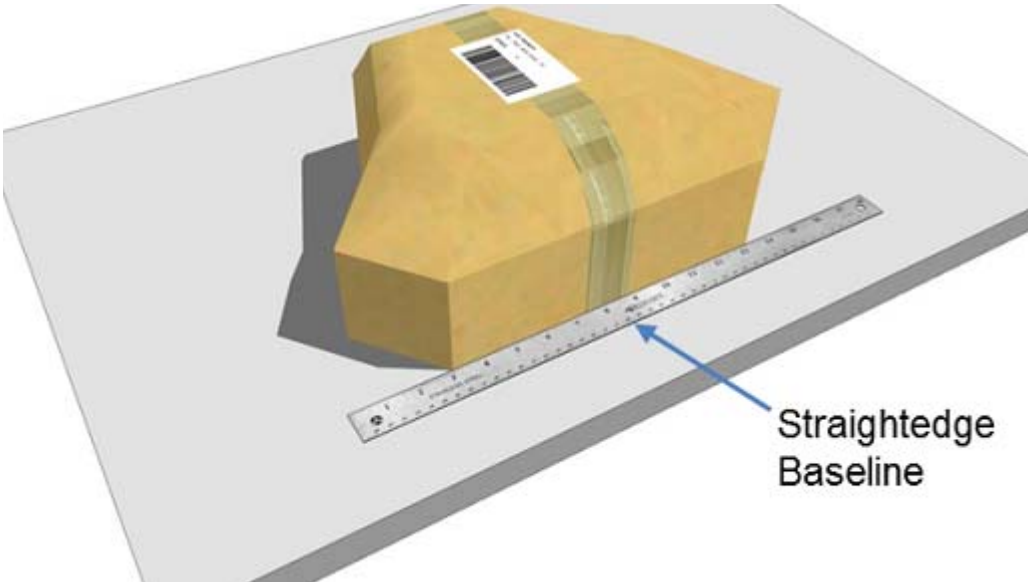
To check your system calibration for accuracy, you must determine the smallest cuboidal dimensions of an irregular-shaped test package, and then run the test package through the system to check the dimensioned results.

WARNING

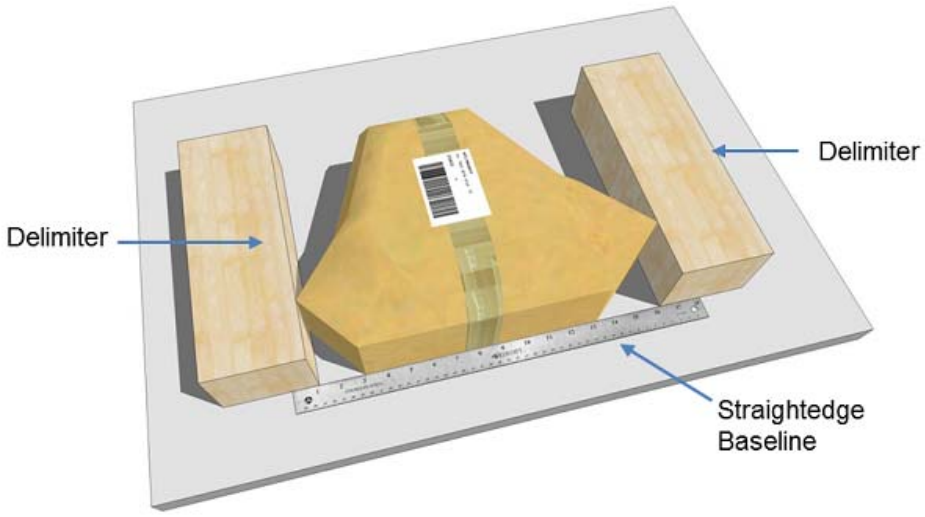
Since non-cuboidal parcels will be presented to the system differently with each pass, the results will vary slightly.

To determine the cuboidal dimensions of an irregular-shaped package:

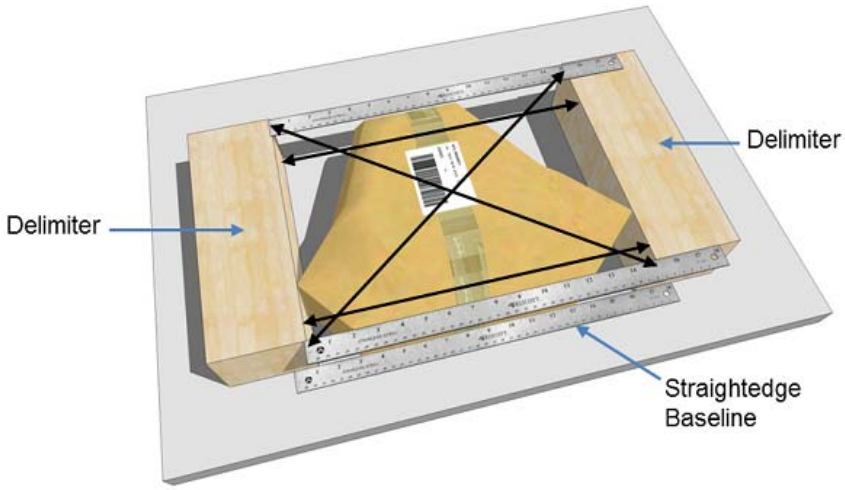
1. Place the test package on a flat surface.
2. Establish a baseline edge using a straightedge.



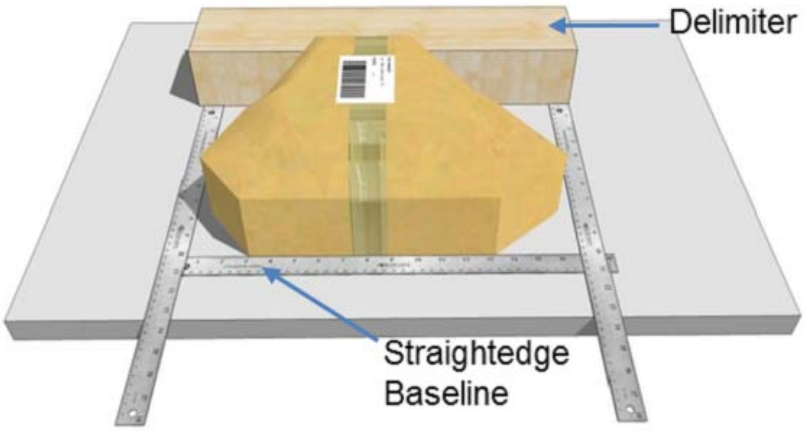
3. Place delimiters along the straightedge at the ends of the package. Two more straightedges can be used (preferable), or if necessary, accurate cuboidal boxes can be used. This determines the length (L) of the package.



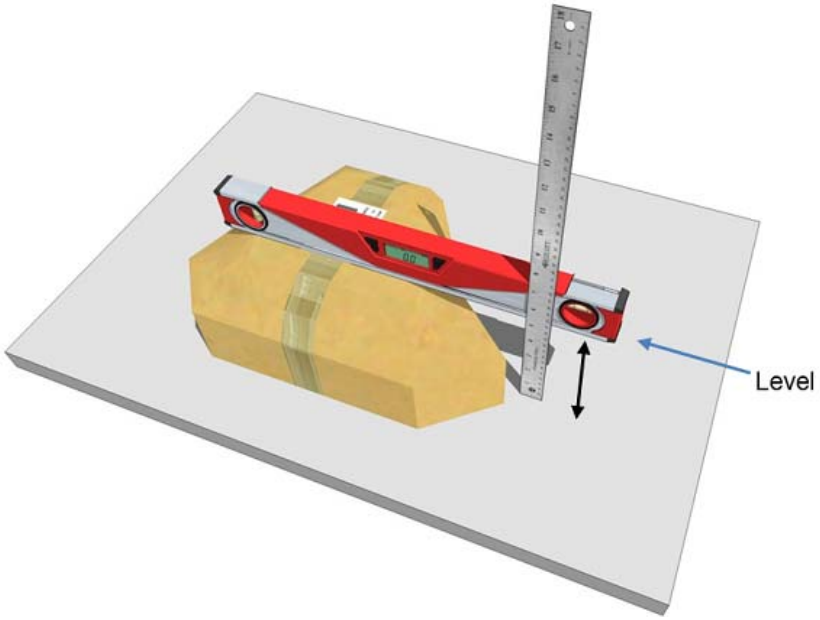
4. Place delimiters along the straightedge at the ends of the package. Two more straightedges can be used (preferable), or if necessary, accurate cuboidal boxes can be used. This determines the length (L) of the package.



5. Place a delimeter along the edge of the package opposite the basline straightedge. Measure from the ends of the delimiter to the straight edge to make sure it is parallel. The measurements must be equal. Again, measure diagonals and the distance between the straightedge and delimiter. This determines the width (W) of the package.



6. Next, use a level to determine the height (H) of the package. Rest one end of the level at the highest spot on top of the package, and then, when the bubble or digital readout indicates level, measure from the bottom of the level to the surface on which the package is resting.



7. When you have determined the length, width, and height for the cuboid needed to contain the shape, run the irregular box through the system and check the dimensioning system results against your results. The dimensioning system results should be similar to those determined by directly measuring. You can also compare the volume (L x W x H) of your measured dimensions against the volume of the measurements returned by the dimensioning system. If your dimensions differ greatly from those returned by the dimensioning system, recalibrate the system *(see "DC3000 Dimensioning Settings and Calibration" on page 142)* and compare the dimensions again.

NOTE

The cuboidal dimensions and volume may vary depending on what side of the package you use as the baseline against the straightedge. You may need to measure using different baseline edges to determine the smallest possible cuboidal dimensions.

The dimensioning system should always return results for the package's smallest possible cuboidal dimensions.

WARNING

It is important to calibrate the system with the controlled wooden box provided.

CHAPTER 6
MAINTENANCE

This chapter provides instructions for maintaining optimum performance during the life of your DC3000, DM3610 system. It provides specific information on:

- Maintenance Procedures
- Exterior Cleaning
- Mounting Hardware Checks
- Wiring Connection Checks



Shut down the DM3610 before performing this maintenance task. Do not stare into the DM3610's exit window at the laser light. Avoid direct eye exposure. The laser light level does not constitute a health hazard, however staring at the laser light for prolonged periods could result in eye damage.

Do not use any chemical on the DM3610 that is unsafe for plastics, such as benzene, acetone, or similar products. Before performing this maintenance task, be sure to shutdown the DM3610.

Tools and Materials Required

Item	Description
Soft-bristle brush	For cleaning the DM3610's exterior
Clean, soft cloths	For cleaning the DM3610's exterior
Cleaning solutions	Mild detergent solution for cleaning the DM3610's exterior. 70% denatured alcohol, 30% de-ionized water solution for cleaning exit window
Soft cotton swabs or lint-free cloth	Use to clean DM3610 reader's exit window **DO NOT use window cleaner on the DM3610 exterior window. It may leave a film on the window which can distort the signal. Use a mixture of 80% denatured alcohol and 20% water.**

Maintenance Tasks



Due to the complex and application-specific nature of dimensioning / certified dimensioning installations, the DM3610 must be setup and serviced by authorized technicians trained by Datalogic. The maintenance procedures in this chapter may be performed by an end user technician. Training is recommended if the end user intends to do more than the maintenance procedures provided in this chapter. There are no user serviceable parts within the DM3610 Dimensioner. DO NOT OPEN THE UNIT. Opening the DM3610 may void its warranty. CAUTION: Proceeding with any setup, calibration, or service procedures without proper training may void the warranty. Training is available. See our website at www.datalogic.com.

CAUTION: RISK OF EXPLOSION IF BATTERY IS REPLACED BY AN INCORRECT TYPE. PROPERLY DISPOSE OF USED BATTERIES.

Perform the maintenance tasks on an “as needed” basis to assure proper operation of the DM3610. Task schedule frequency depends upon the application environment conditions. It only requires a few minutes to complete each maintenance task.

Exterior Cleaning

The exterior cleaning procedure may be performed without removing the reader from the mounting structure.

1. Turn off the DM3610 by disconnecting the power source.
2. Clean the exterior (except the exit window) with a clean, soft-bristle brush. Be sure not to brush any dust, dirt, or debris onto the exit window.
3. Carefully remove any debris in or around the exit window.
4. Wipe the exterior (except the exit window) with a clean, soft cloth dampened slightly with a mild detergent solution.
5. The exit window should be cleaned after this task is completed.

Cleaning the Exit Window



Shut down the DM3610 before performing this maintenance task. Do not stare into the DM3610’s exit window at the laser light. Avoid direct eye exposure. The laser light level does not constitute a health hazard, however staring at the laser light for prolonged periods could result in eye damage.

Do not use any chemical on the DM3610 that is unsafe for plastics, such as benzene, acetone, or similar products. Before performing this maintenance task, be sure to shutdown the DM3610.

The exit window cleaning procedure may be performed without removing the reader from the mounting structure if it is possible to do so.

1. Turn off the DM3610 by disconnecting the power source.
2. Follow the exterior cleaning procedure before cleaning the exit window
3. Check the exit window surface for any dust, dirt, or smudges. If the window needs to be cleaned, proceed to Step 4.

4. Make a solution of seven parts denatured alcohol and three parts water.
5. Apply the cleaning solution to a cotton swab or lint-free cloth.
6. Apply the cleaning solution to the exit window.
7. Remove any streaks or remaining moisture from the exit window with a dry, soft, lint free cloth or lens paper.
8. Verify DM3610 operation.



Cleaning the Photoelectric Sensor

If your application uses the photoelectric sensor option as a hardware trigger, be sure to clean the photoelectric sensor periodically as outlined below.

1. Turn off the product transport.
2. Turn off the DM3610 by disconnecting the power source.
3. Clean the photoelectric sensor's lens using the denatured alcohol solution and a cotton swab or lens paper.
4. Clean the reflector using the denatured alcohol solution and a cotton swab or lens paper.
5. Verify photoelectric sensor operation.

Cleaning the Tachometer

If your application uses the tachometer option for tracking purposes, be sure to clean the tachometer wheels periodically as outlined below.

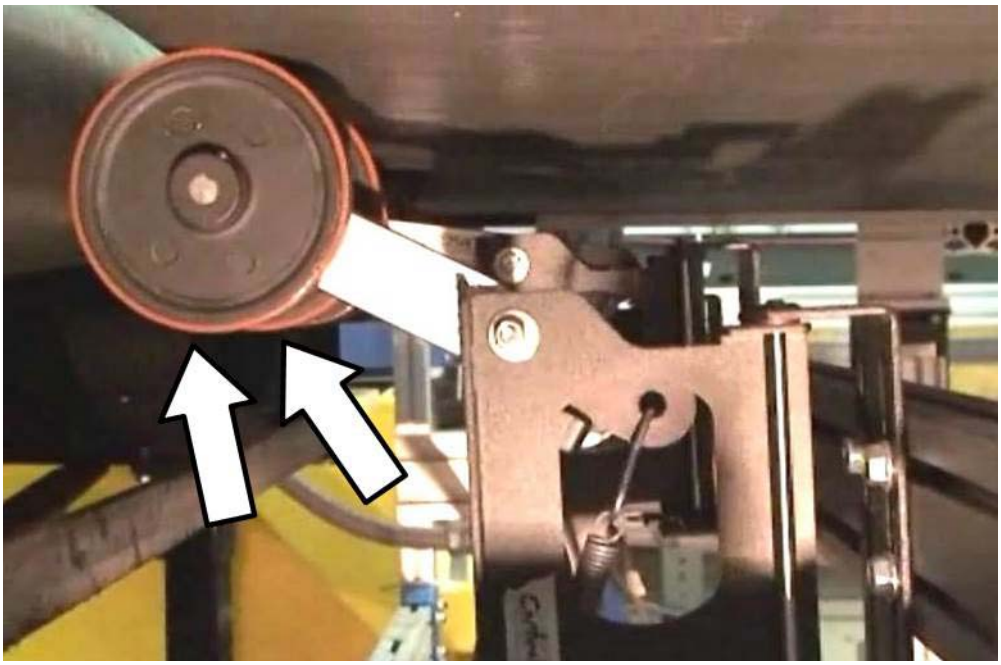


Buildup of material on the tachometer wheel my have a negative effect on the DM3610's reported product length.

1. Turn off the product transport.
2. Turn off the DM3610 by disconnecting the power source.
3. Using a clean, soft cloth, wipe the wheels of the tachometer clean using a mild detergent solution.

4. Before restarting the system, be sure the tachometer is making good contact with the product transport.

5. Verify tachometer operation.



Tighten Mounting Hardware

1. Check all DM3610 Dimensioners, CBX connection boxes, and power supply mounting hardware. Tighten as necessary. Do not over-tighten. Be sure not to disturb the equipment's alignment as it relates to the product transport.

2. Check the mounting hardware of the Photoelectric Sensor (if this option is being used). Tighten as necessary. Do not over-tighten.

3. Check the mounting hardware of the tachometer (if this option is being used). Tighten as necessary. Do not over-tighten.

Checking Dimensioning System Connections

Wiring connections to the DM3610 are made to the connector panel and CBX box. (See chapter 3, Electrical Installation.)

1. Check all wiring connections to the connector panel. Tighten any loose connections as necessary. Do not over-tighten.

2. Check all wiring connections to the CBX box. Tighten any loose connections as necessary. Do not over-tighten.

3. Check all cabling/conduit for signs of wear/damage. Repair/replace any damaged cable connections as necessary.

Verify DC3000 Operation

If after performing maintenance, the DC3000/DM3610 system continues to perform below the normal operations experienced with the system under normal daily conditions, contact Datalogic through the **Technical Support** page on our website at www.datalogic.com.

Verify Photoelectric Sensor Operation

1. Verify that the trigger LED in the CBX is functional.
2. Block the Photoelectric Sensor emitter beam to confirm it is aligned properly with the reflector.
3. Verify that the TRIGGER LED on DM3610 is green when photoelectric sensor beam is blocked.
4. If the photoelectric sensor's LED does not change status, adjust the photoelectric sensor so that it is properly aligned with the reflector.
5. If the TRIGGER LED on the DM3610 is not green when the photoelectric sensor's beam is blocked, check the cabling between the photoelectric sensor and CBX box for damage.

Verify Tachometer Operation

1. Verify that the tachometer LED in the CBX is functional.
2. Rotate the tachometer wheel.
3. The TACH LED on the DM3610's connector panel should flash indicating the tachometer is operational.
4. If the TACH LED does not flash when the tachometer wheel is rotated, check the cabling between the tachometer and the CBX510 for damage.

CHAPTER 7
TROUBLESHOOTING

TROUBLESHOOTING BASICS

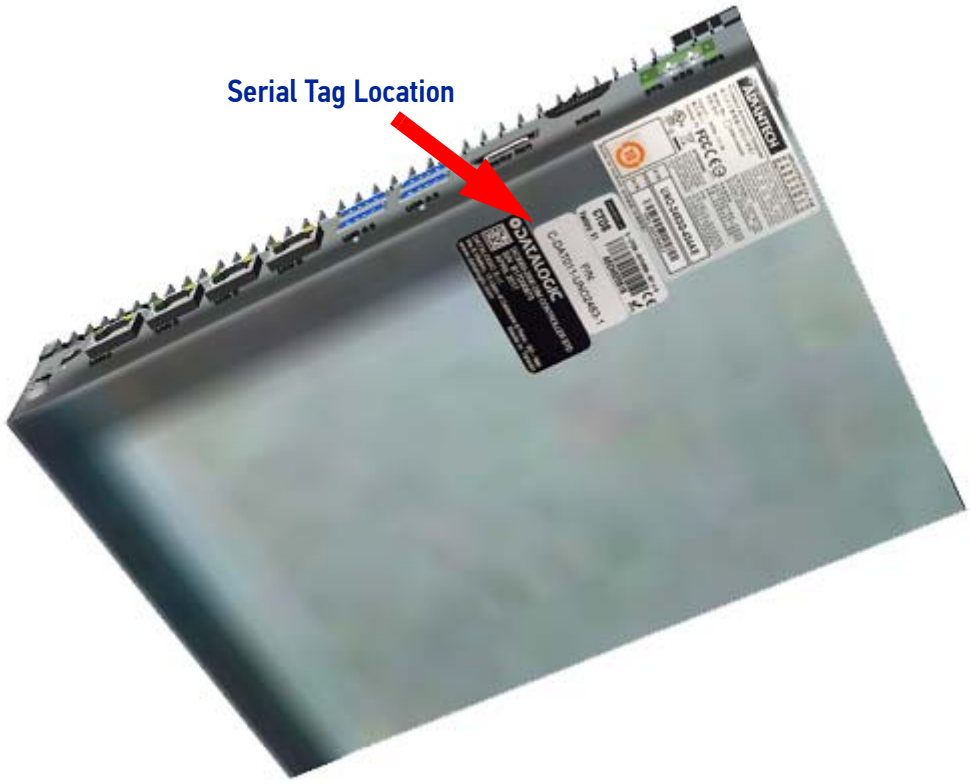
WARNING

Due to the complex and application-specific nature of dimensioning / certified dimensioning installations, operational deficiencies of the DM3610 must be diagnosed and serviced by a trained and authorized Datalogic technician.

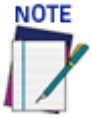
There are no user serviceable components or field replaceable units (FRUs) inside the DM3610. Training is available through specific Service Programs and Maintenance Agreements. See our website at www.datalogic.com.

NOTE

When contacting Datalogic Technical Support for help with a DC3000 Dimensioner, please be ready to share the unit serial number with the Datalogic technician. The unit's serial number tag is located on the bottom of the device, as shown below. Technical Support for Industrial Automation Products is available at www.datalogic.com



ERROR CODES AND RESOLUTIONS



The following error codes pertain to a DC3000 Dimensioning Controller using certified dimensioning. If the DC3000 is providing volume information only, some of these codes do not apply.

```
BOX_NODIM_UNKNOWN,          // Set if unknown error caused the NoDim
BOX_TOL_FAIL_LENGTH,        // Set if box tolerance check failed - length
BOX_TOL_FAIL_WIDTH,         // Set if box tolerance check failed - width
BOX_TOL_FAIL_HEIGHT,        // Set if box tolerance check failed - height
BOX_WRITE_ALIBI_FAIL,       // Set if attempt to write box results to Alibi
                            store failed
BOX_STACKED,                // Set if box is stacked with another box
BOX_LOW_FILL_RATE,          // Set if the bounding box fill rate is below our
                            threshold
BOX_TILTED_TOP,             // Set if the bounding box top is tilted
BOX_LOWNEARTILTEDTOP,       // Set if low box near tilted top box (possibly
                            shingled)
BOX_BADBAGZ,                // Set if ratio of good points used to calc bagZ and
                            points in the initial histo peak is < some threshold
BOX_BADBELTPTS,             // Set if there are significant belt points
                            underneath the top surface ("3D" bbox workaround)
MAX_NODIM_REASONS
```

REPLACING A DM3610 IN A DUAL HEAD INSTALLATION

This section describes how to replace a single DM3610 in a Dual Head Configuration.

“Replacing Head 1” on page 158

“Replace Head 2” on page 164



Use software version 1.3 for DC3000 and 1.8 for DM3610.

Replacing Head 1

Follow these steps to replace Head 1:

1. Disconnect all cables from the existing DM3610 Head 1. In most dimensioning applications, the cable connections to the DM3610 include:



1. I/O (Connects directly to the 25-pin D type connector on the CBX100)
2. POWER 24V - - - 4A MAX (Power)
3. HOST (Host Computer)
4. ETH 1 (Ethernet)
5. ETH 2 (Ethernet)

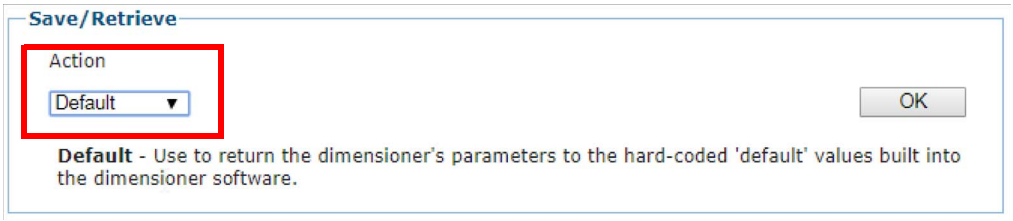
2. Install the replacement DM3610 in position and re-connect all of the cables, except ETH2 to the DC3000.

3. Connect the replacement DM3610 ETH2 to the PC and default the unit parameters.

Default the DM3610 parameters

To default the unit parameters, follow these steps:

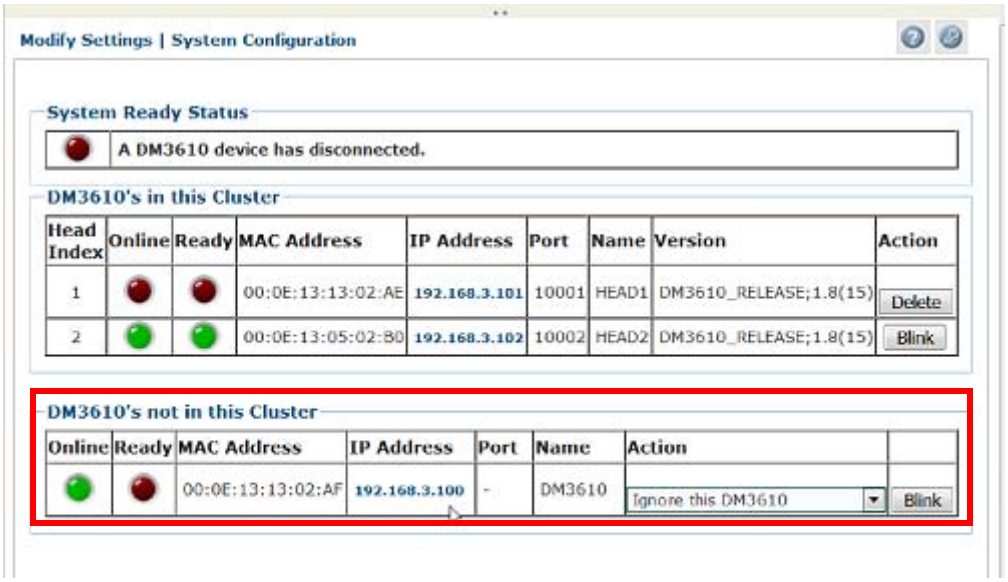
1. In the menu tree under **Modify Settings,** click **Save/Retrieve**.



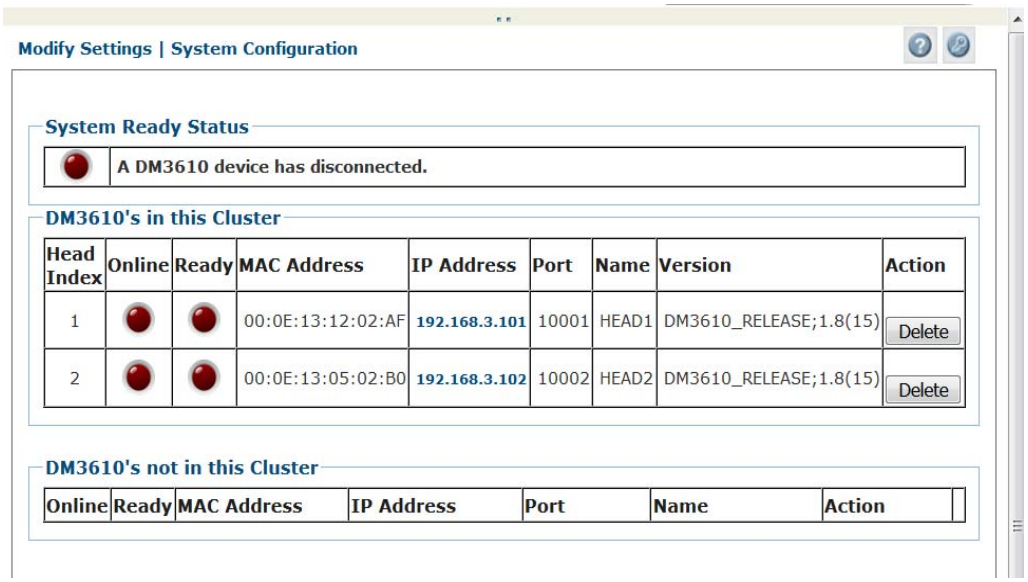
2. Select **Default** from the **Action** drop-down.

3. When the device has been defaulted, disconnect the replaced DM3610 from the PC and re-connect to the DC3000.

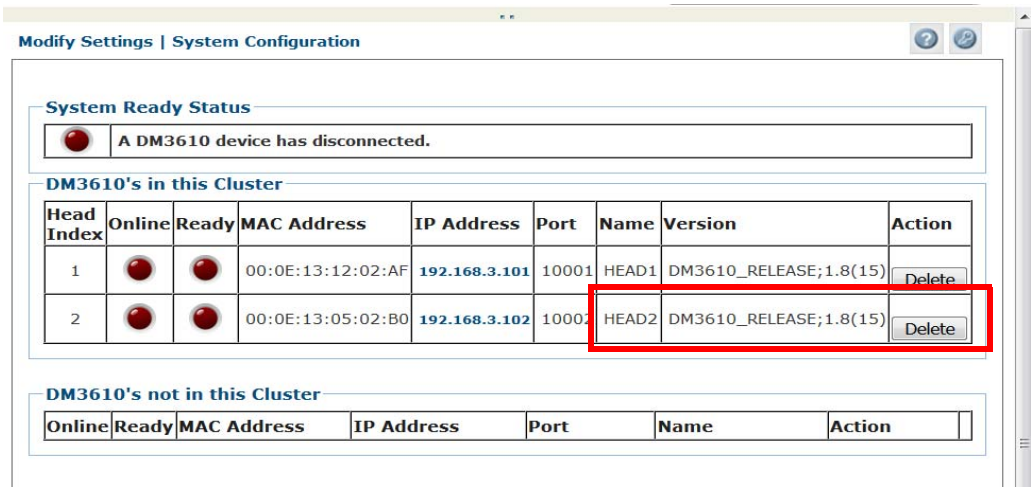
4. The replaced Head 1 is now identified in the **DM3610's not in this Cluster** section of the **System Configuration** window.



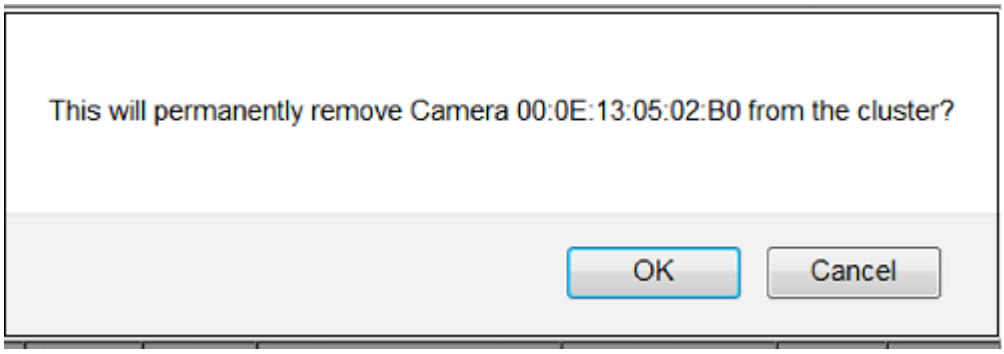
5. Disconnect power from Head 2 and view the **System Configuration** window.



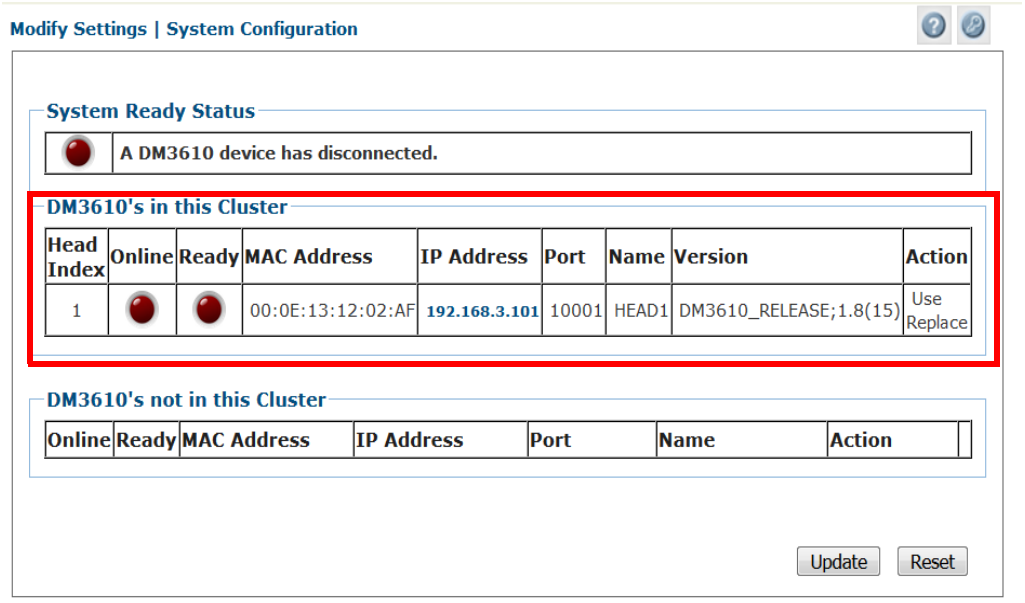
6. From the Head 2 **Action** drop-down, click **Delete** to delete it from the cluster.



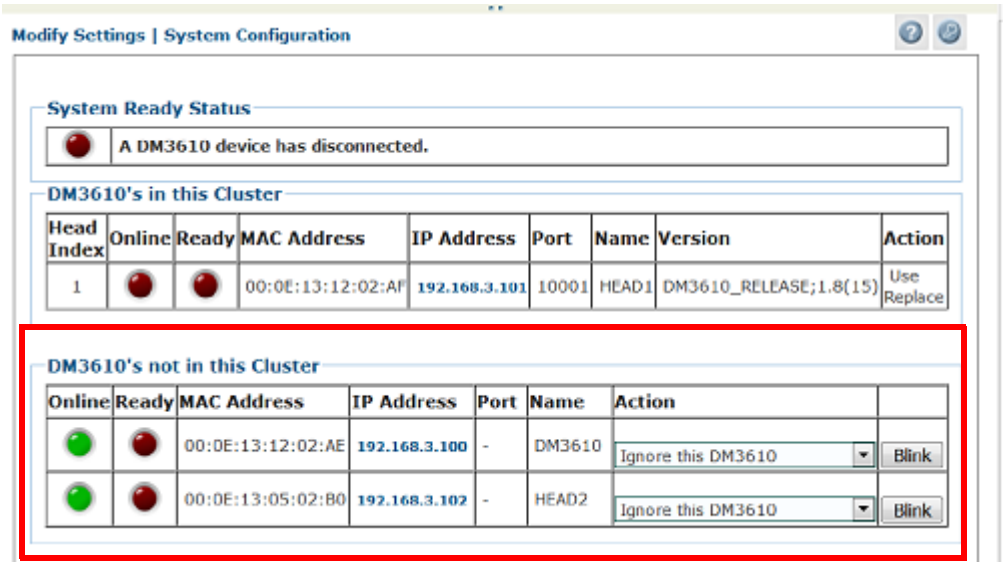
7. The following confirmation message appears.



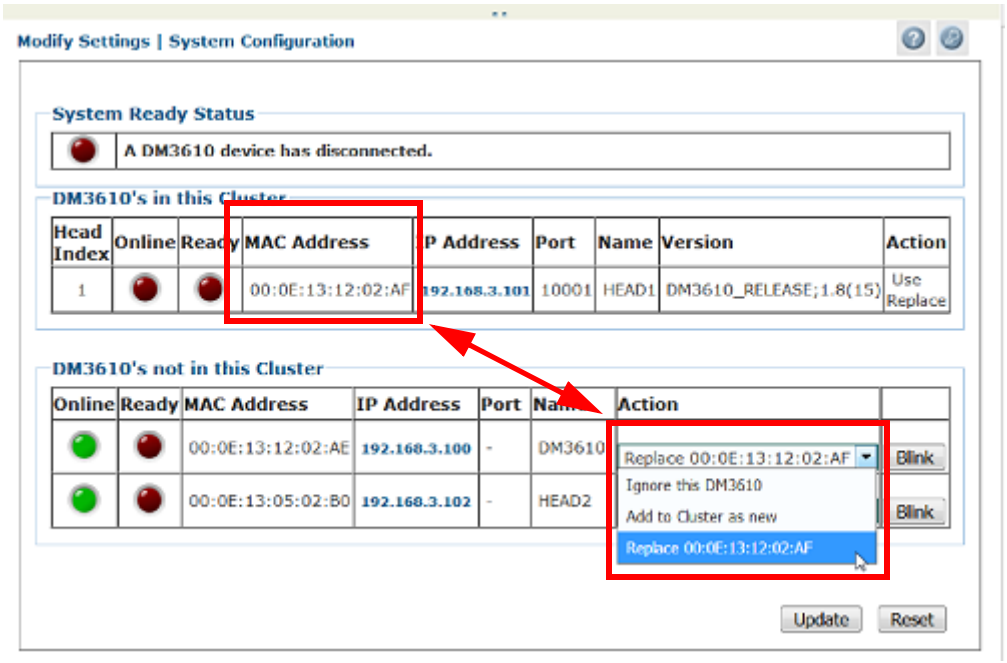
8. Click **OK** and Head 2 will no longer appear in this Cluster.



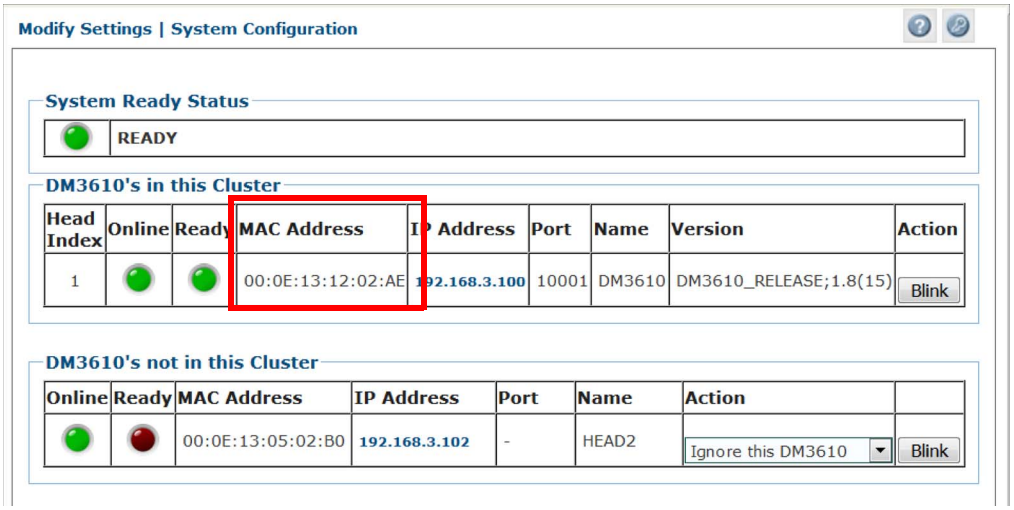
9. Re-connect power to the Head 2 DM3610. After Head 2 initializes both **Head 1**, identified as DM3610, and **Head 2** identified as Head 2 are shown as DM3610's **not in this Cluster.**



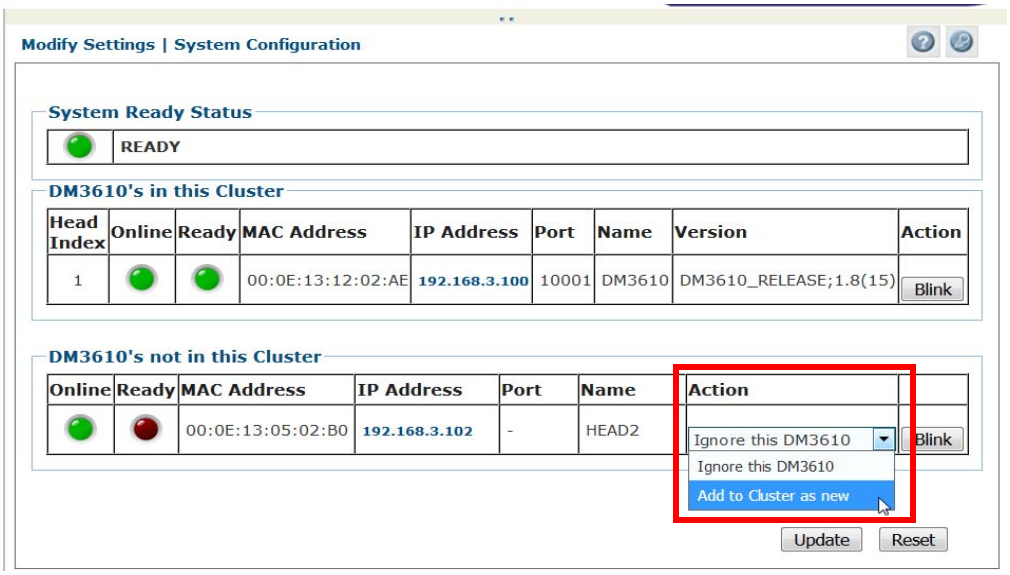
10. Under **DM3610's not in this Cluster** and the **Action** drop-down for Head1 (DM3610), select **Replace**. The MAC Address will be listed to verify what you are replacing.



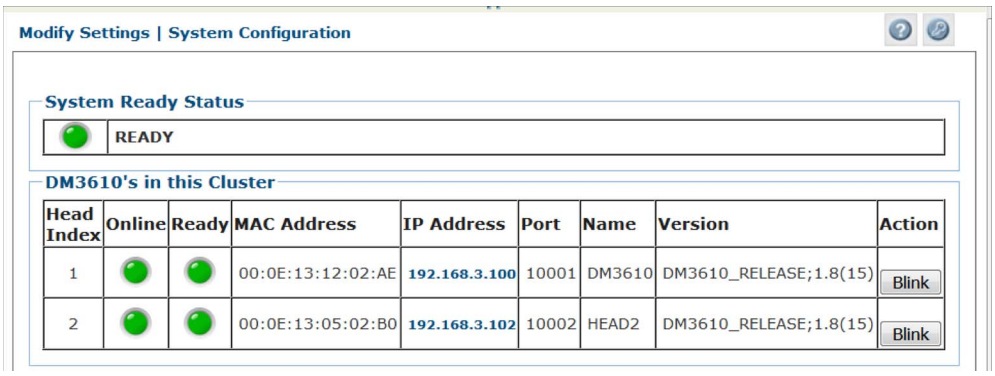
11. Head 1 has now been replaced in this cluster with what was Head 2.



12. Under **DM3610's not in this Cluster** and the **Action** drop-down for Head2, select **Add to Cluster as new**.



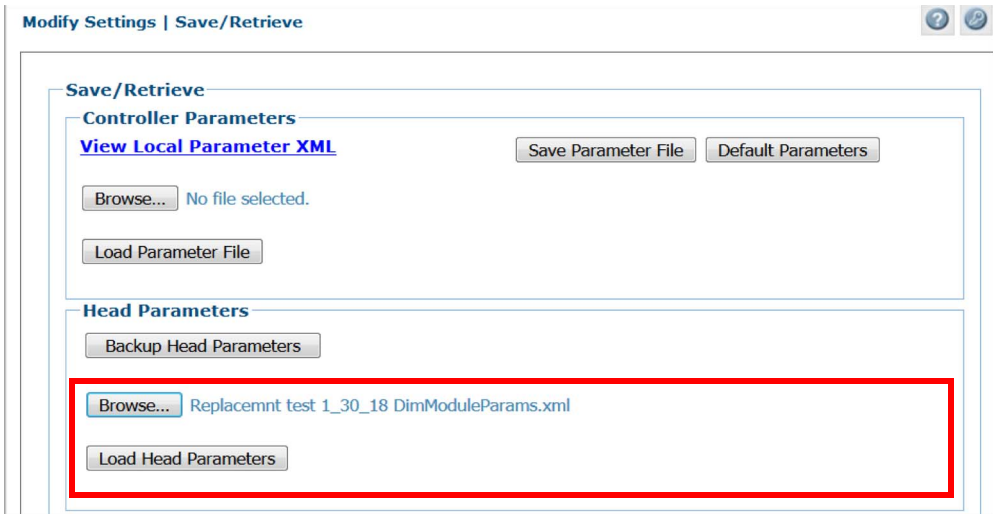
13. Both Head 1 and Head 2 are in this cluster and located in the correct positions. Next load the correct parameters.



Load the Head Parameters

Follow these steps to load the parameters:

1. Return to the **Modify Settings | Save/Retrieve** menu option.
2. Click **Browse (in 1.8.16 it says to choose file).** Select the folder where the parameter file is located and select the file.
3. **Click Load Parameter File**. It may take a little while for the DM3610 heads to reboot and use the new parameters. **Load the Head Parameters.**



4. When the parameter files have been loaded, reboot the DC3000.

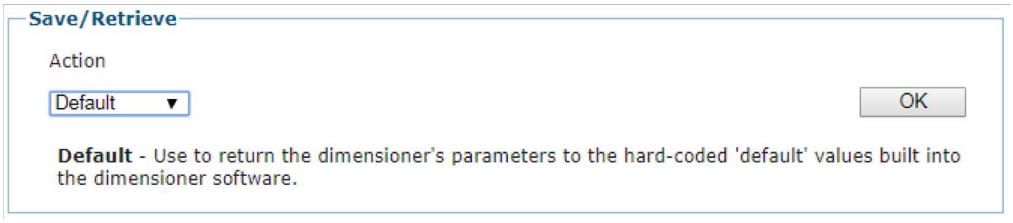
Replace Head 2

Follow these steps to replace Head 2:

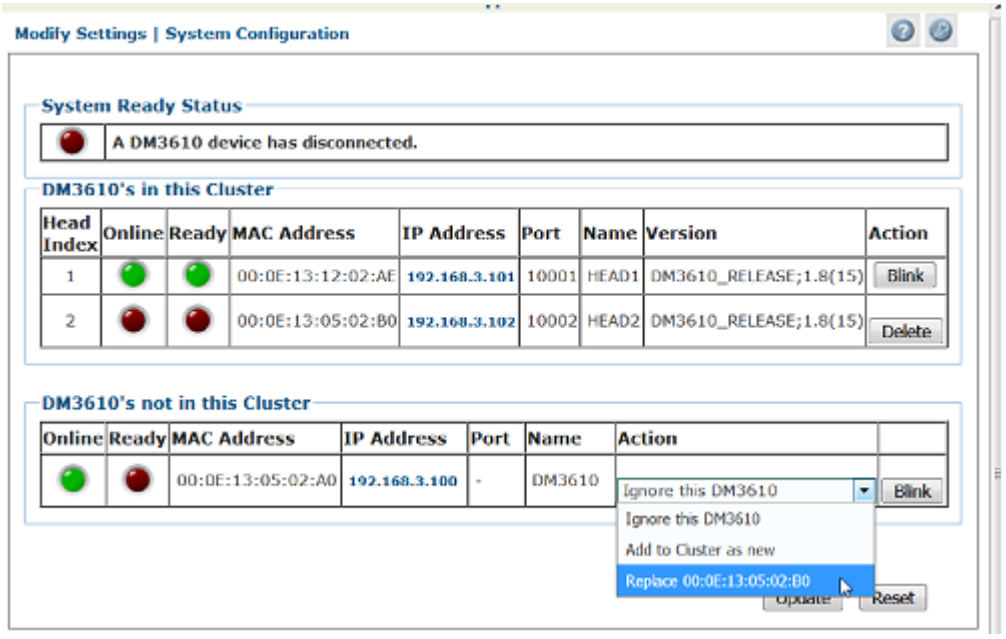
1. Disconnect all cables from the existing DM3610 Head 2. In most dimensioning applications, the cable connections to the DM3610 include:

    1. I/O (Connects directly to the 25-pin D type connector on the CBX100)
    2. POWER 24V - - - 4A MAX (Power)
    3. HOST (Host Computer)
    4. ETH 1 (Ethernet)
    5. ETH 2 (Ethernet)

2. Install the replacement DM3610 in position and re-connect all of the cables, except ETH2 to the DC3000.
3. Connect the replacement DM3610 ETH2 to the PC and default the unit parameters.



4. Disconnect the DM3610 from the PC and connect the spare DM3610 to the DC3000.
5. Navigate to **Modify Settings>System Configuration.**
6. From the **Action** drop-down, select **Replace**

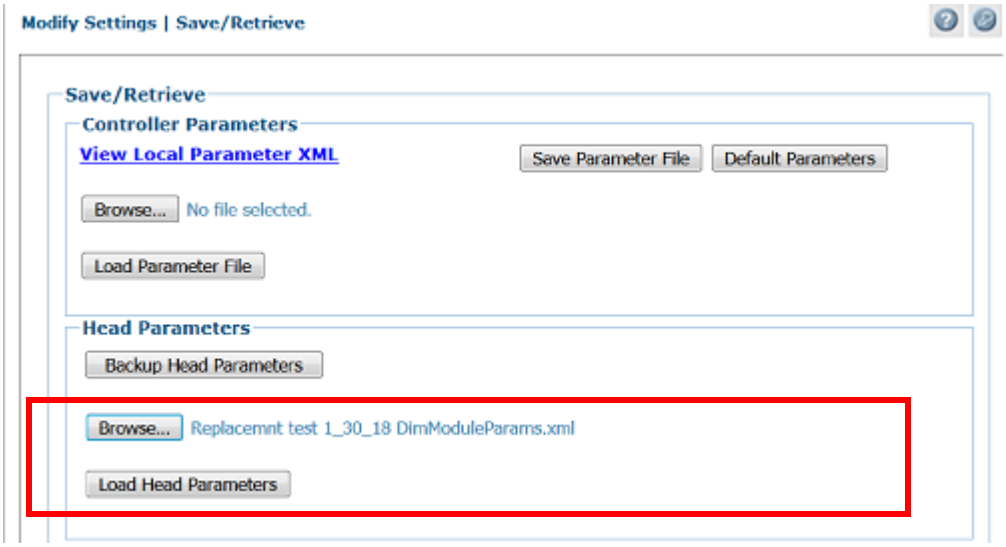


7. Head 1 and Head 2 are in the cluster and located in the correct positions. However, they do not have the correct parameters.

Load the Head Parameters

Follow these steps to load the parameters:

1. Return to the **Modify Settings | Save/Retrieve** menu option.
2. Click **Browse (in 1.8.16 it says to choose file).** Select the folder where the parameter file is located and select the file.
3. **Load Parameter File**. It may take a little while for the DM3610 heads to reboot and use the new parameters.



4. When the parameter files have been loaded, reboot the DC3000

Chapter 8
Technical Features

DM3610 DIMENSIONER FEATURES AND SPECIFICATIONS

ELECTRICAL FEATURES	
Power Requirements	24VDC +/- 10%
Power Consumption	19 W Average (75 W Max) based on 600 scans/second
Communication Interfaces	Ethernet (TCP/IP), RS232/ RS422 (RS485 for custom only)
Inputs	(1) Tachometer, (1) Trigger, (2) SW programmable general purpose
OPTICAL FEATURES	
Wavelength	Visible laser diode (red) 658 nm typical
Safety Class	Class 3R - IEC60825-1; Class 1 - CDHR with adapter
DIMENSIONING FEATURES	
Dimensioning Accuracy	
▪ NTEP/	± 0.20" for length and width and ± 0.10" for height
▪ OIML	± 5.0 mm for length, width and height
Conveyor Speeds	Up to 3.1 m/s [620 fpm]
Box Size (maximum)	L 2500 mm [98"] x W 1200 mm [48"] x H 900 mm [36"]
Box Size (minimum)	
▪ NTEP	L 2.4" x W 2.4" x H 1.2"
▪ OIML	L 60 mm x W 60 mm x H 30 mm
USER INTERFACE	
Status Indicators	LEDs - STATUS, TRIGGER, TACH, READ, RX/TX, NETWORK, DIMENSION STATUS INDICATORS
Keypad	3 keys
Programming	On board HTML web server interface
ENVIRONMENTAL FEATURES	
Temperature	Operating: 0° to 50° C [32° to 122° F] Storage: -20° to +70° C [-4° to +158° F]
Relative Humidity	10-90% non-condensing
PHYSICAL FEATURES	
Overall Dimensions	L 279 mm [11.0"] x W 152 mm [6.0"] x H 175 mm [6.9"]
Mounting Dimensions	L 340 mm [13.39"] x W 182 mm [7.15"] x H 281 mm [11.07"]
Weight	5.5 kg [12 lbs.]
Enclosure	IP 65, Aluminum
OPTIONS AND WARRANTY	
Options	Side-by-side package detection, irregulars, out-of-gauge detection
Service Options	Installation services and on-site training
Warranty	2-year limited, parts and labor

DC3000 CONTROLLER

ELECTRICAL FEATURES	
Power Requirements	24 V DC +/- 10% 53 W
Communication Interfaces	Ethernet 4 x RJ45 (TCP/IP), 4 x RS232/422/485
Inputs	4 x USB 3.0 compliant Ports
Video	1x HDMI, 1x DP

USER INTERFACE	
Programming	On board HTML web server interface

ENVIRONMENTAL FEATURES	
Temperature	Operating: -20° to 60° C [-4° to 140° F] Storage: -40° to +85° C [-40° to +185° F]
Relative Humidity	95% @40° C (non-condensing)

ENVIRONMENTAL FEATURES	
Overall Dimensions	L 224 mm [8.8”] x W 140 mm [5.6”] x H 40 mm [2.8”]
Weight	1.4 kg [3.09lb]
Enclosure	IP40

APPENDIX A: LEGAL FOR TRADE REQUIREMENTS

ABOUT THIS DOCUMENT

The DM3610 has been certified for legal-for-trade applications including:

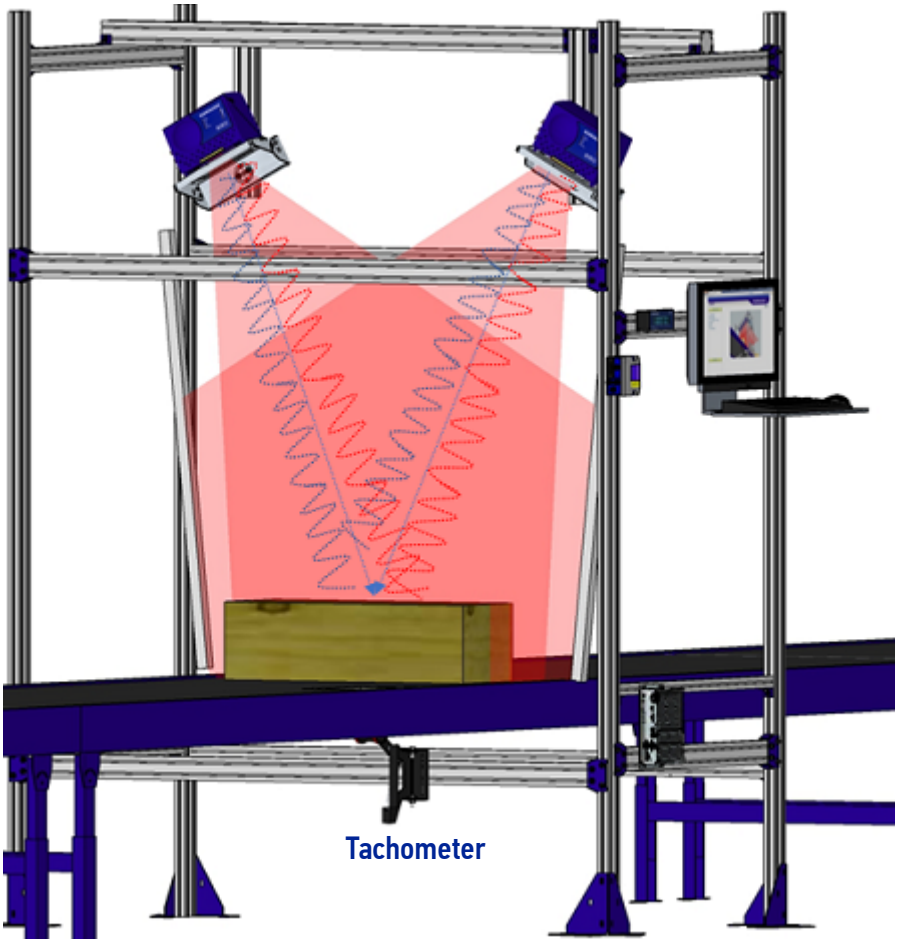
- NCWM/NTEP (National Conference on Weights and Measure)
- OIML R129 (International Organization of Legal Metrology)
- MID (Measuring Instruments Directive)
- Measurement Canada

This document outlines some system requirements for the DM3610 Dimensioner. The requirements outlined in this document include, but are not limited to the following:

- Object surfaces
- Object colors
- Object shapes
- Conveyor Types
- Conveyor Breaks
- Conveyor Speed
- System Mounting

HOW THE DM3610 WORKS

To find sizes of the scanned objects the DM3610 measures distances to points of an object surface. The distances are measured by calculating the time it takes for the laser light to go from the Dimensioner to the point on the scanned object surface, and back from that point to the Dimensioner.



The surface points of scanned objects are NOT being captured by a Dimensioner all at once, as by a camera. Like most laser scanners the DM3610 provides fast capture of only the intersection of the laser light plane with an object surface, which looks like a laser stripe on the object. Scanning of the complete object surface is provided by conveyor belt motion. Conveyor belt position is controlled by a mechanical tachometer, which reports to the Dimensioner. Therefore it is critical that the scanned object does not move relative to the conveyor belt. If for any reason scanned objects slip, jump or shake relative to the conveyor belt, then the Dimensioner has no way to know the exact position of the scanned object and the dimensions will be compromised.

These principles of operation, common to most dimensioners, result in limitations to what can be dimensioned and what the conveyor systems and mounting structures can be, as well as the surface properties of the scanned objects.

Encoder Requirements

The DM3610 system must have an encoder/tachometer, or other speed detector to measure the object velocity. The speed detector is part of the metro logically-relevant measurement chain. For LFT applications, use only devices indicated in the relevant certificate.

DM3610 SYSTEM REQUIREMENTS

Conveyor Limitations

The dimensioning system must be installed on a continuous flat section of belt conveyor.

The section of conveyor dedicated to an LFT dimensioning system must be at least 2.5 times the length of the longest parcel to be measured by the system. The conveyor belt should be supported by a steel pan or other mechanical structures such that the flatness is maintained. The system must be placed such that the longest parcel is fully supported by the appropriately flat conveyor for its full travel length through the dimensioning line(s).

We do not suggest the positioning of dimensioning systems where there are breaks in the conveyor, or transitions from one belt to the next. It is difficult to guarantee the complete mechanical requirements for these types of material handling systems. If the dimensioning system must be placed where these breaks exist, it is important for the two belts to be level and moving at the same speed. Uneven levels and inconsistent speeds can cause the object to move while the object is in the dimensioning area. Objects rotating, vibrating, swaying and slipping on the conveyor system and uneven transport surfaces reduce the accuracy and result in measured degradation of the DM3610 system.

Be aware that stops and starts of the conveyor can affect dimensioning performance too, e.g. if the objects on the conveyor rock, slide, or otherwise move in a different direction/speed from the conveyor stop/start.

DM3610 Mounting Requirements

The DM3610 mounting structure must be mounted on a solid platform/floor that does not vibrate or oscillate.

Particular attention has to be paid when the installation is on mezzanines whose structure is not rigid enough. A practical way to check for unacceptable vibration is to look for visible oscillation of the laser beam onto the conveyor surface.



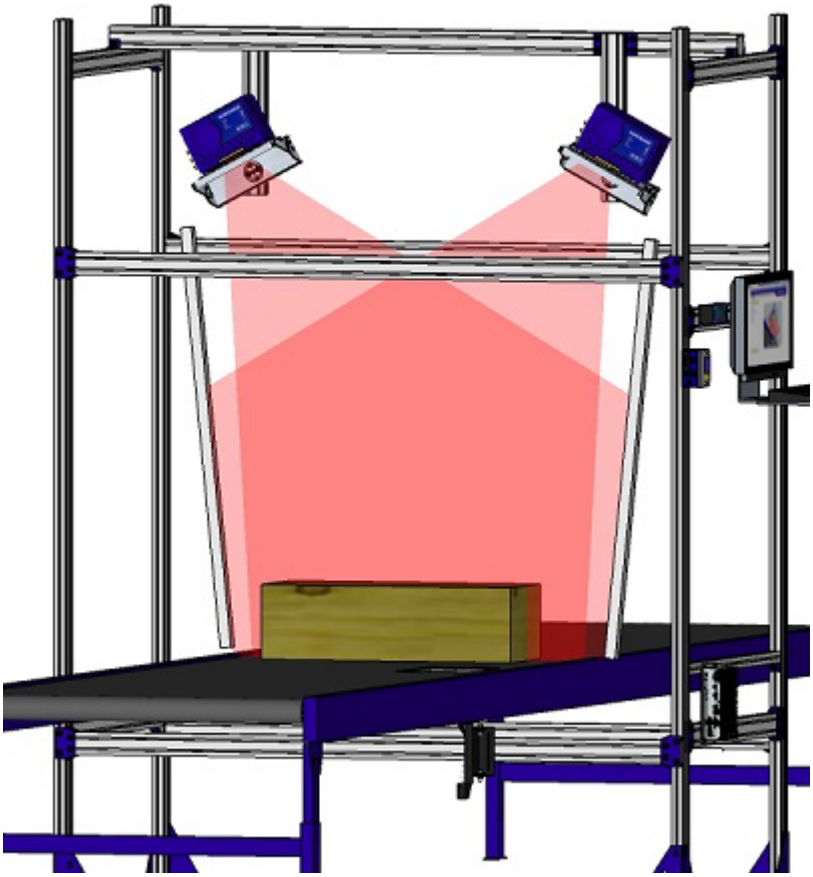
Beam Catchers

Another important requirement is to keep the laser beams inside the application area. Datalogic provides accessories called “beam catchers” to assist in containing the laser lines during system installation and operation.

The DM3610 uses a so-called “phase method” variation of the time-of-flight (TOF) approach, and therefore has an “unambiguous range of distances” equal to 2.4 meters. This means that any distance larger than this range will be measured by modulo of 2.4 meters.

Height and width of the objects dimensioned by our customers usually are less than this limit, and there are no problems. However, the problems arise when the dimensioner can see remote stray objects at the sides of the conveyor belt, or can see remote stray objects through gaps in the conveyor.

Distances to those stray objects will be mapped inside the legitimate 2.4m range. Points of stray objects intermingle with points of legitimate scanned objects, causing confusion. The problem is exacerbated by the small amplitude of stray object reflections, leading to huge noise in the measured distances. The proper way to avoid reflections from the stray objects is to use “beam catchers”. These are just obstacles which limit distances the Dimensioner laser light can travel to less than 2.4 meters. Dimensioner installation specialists must provide the appropriate “beam catchers.”

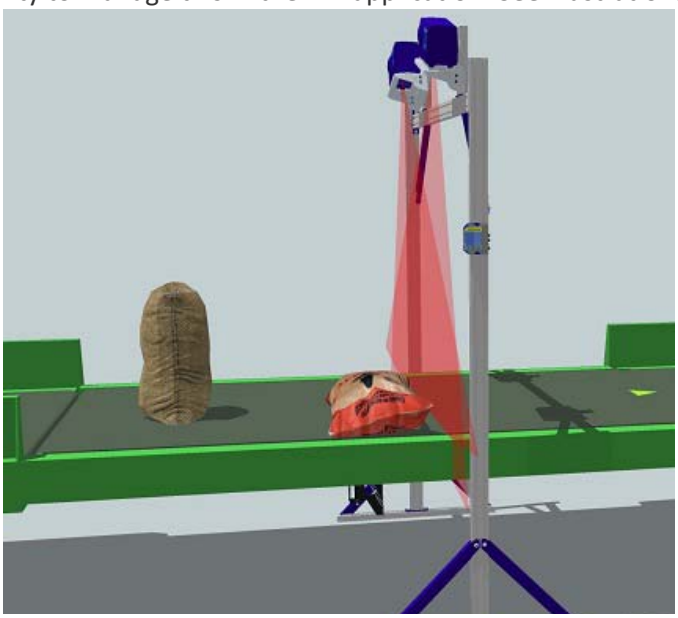


WHAT THE DM3610 CAN ACCURATELY MEASURE

DM3610 systems are able to measure Cuboidal (Single Head) and Irregular shaped objects (Double Head). Objects must be rigid. If they are not rigid, be aware that the dimension results may vary each time they are measured by the system. Objects must also be fully opaque, and within the DM3610’s minimum and maximum reflectivity limits.

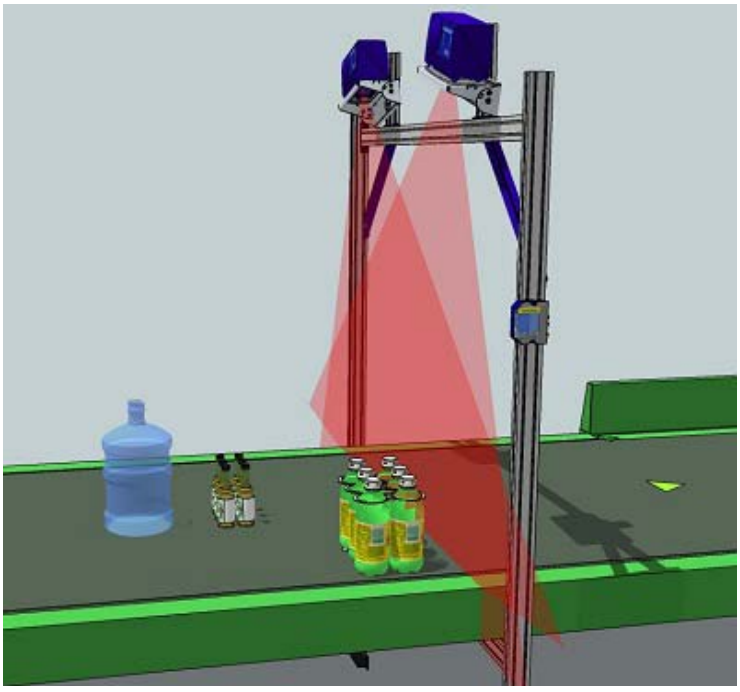
Non-Rigid Objects

The DM3610 can measure non-rigid objects, shipping bags for example. It is important to note that the dimension results will be inconsistent, changing depending on how the object is placed on the conveyor, the position of the bag's contents, etc. It is the operator's responsibility to manage this in the LFT application. See illustrations below.



Surfaces of Transparent Objects

As DM3610 dimensioning is based on finding object surface points by the reflection of laser light from a surface, transparent objects cannot be dimensioned properly. For example, an attempt to dimension a transparent bottle with transparent liquid inside would not be successful. In this case the laser light goes through the liquid inside the bottle, and reflects from the belt on which the bottle stands. Speed of light in the water is also slower than speed of light in the air, so the laser light travel time exceeds the laser light travel time to the belt through the air. The bottom of the bottle would appear to be below the belt on which the bottle stands. See illustrations below.



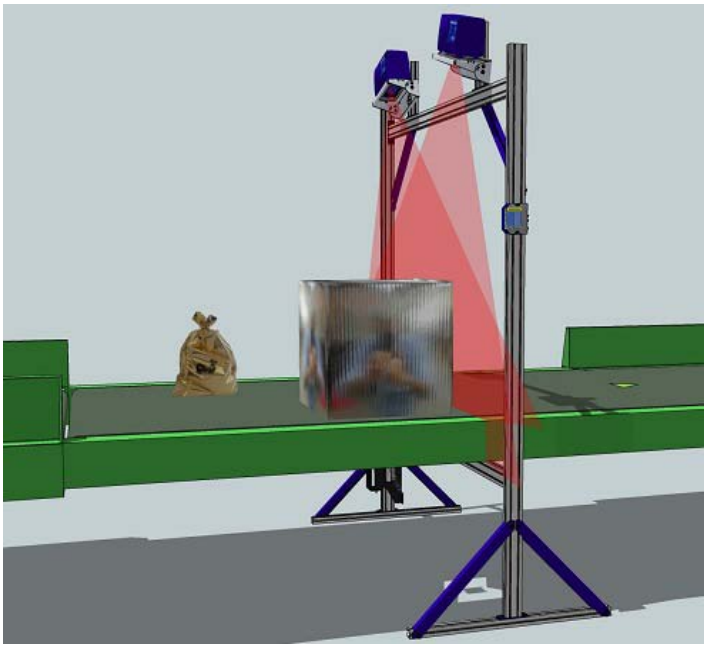
Mirror Like or Reflective Surfaces

Other materials that can have a negative effect on the dimensioning results are those that have surfaces with too much reflectivity.

If the Dimensioner's laser light hits a mirror-like surface, it is not necessarily reflected back to the Dimensioner, but can continue to travel further, until it hits some opaque object surface. Then the laser light goes back to the mirror-like surface, and from there it returns to the Dimensioner. In this case the Dimensioner is measuring the distance to that opaque surface, not the mirror like surface of the object to be dimensioned.

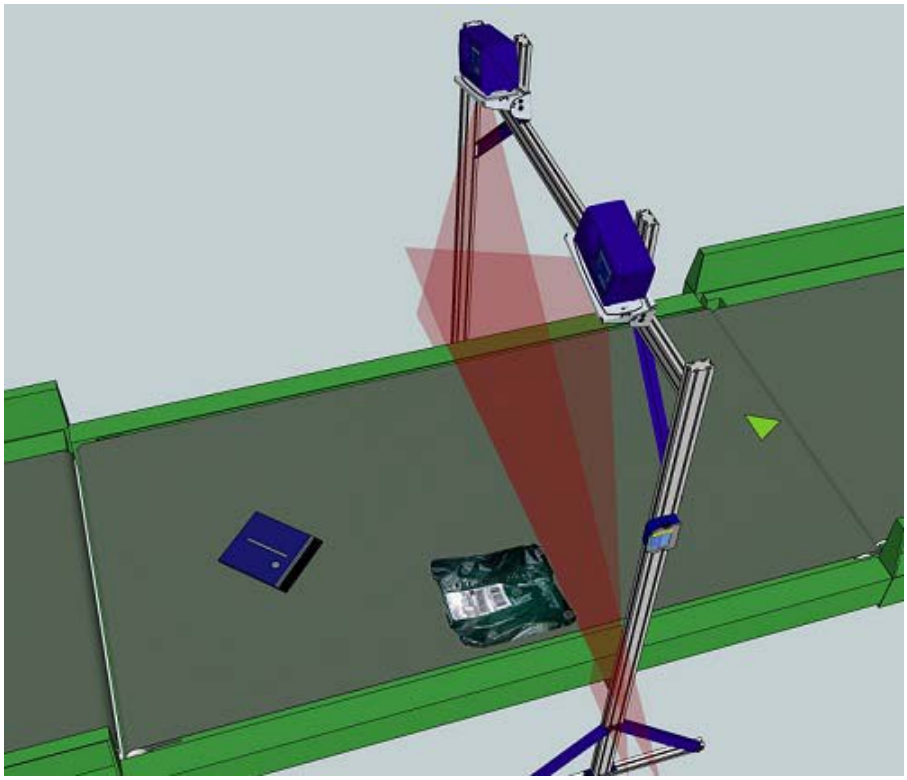
As stated by the DM3610's various LFT certificates, objects to be dimensioned must be opaque, which implies that not only transparent objects, but also highly-reflective objects may not be suitable for LFT measurement.

Mirrors themselves, cannot be scanned. Unfortunately, some objects, which are not considered mirrors, behave very much like mirrors. A prominent example of such an objects are shown here; a cube of corrugated aluminum and a shipping bag, both with shiny reflective surfaces. See illustrations below.



Dark, Blue and Green Surfaces

If the surface of an object is not reflective enough, it may also have a negative impact on the dimensioning results. Normal ambient light consists of red, green and blue components. The DM3610 uses a red laser to measure distances. Blue, green and black objects generally absorb, rather than reflect, that red laser light. Objects with reflectivity below 10% may not be suitable for LFT measurement. See illustrations below.



FINAL CONSIDERATIONS

Only when all the above requirements have been met will conditions be suitable for LFT applications.

When using the DM3610 for LFT applications, it is the responsibility of the user to observe all the applicable national laws. Datalogic can provide support with this, however this support does not substitute nor constitute legal advice.

It is the responsibility of the user to check local regulations and establish their internal Standard Operating Procedures (SOP) consistent and compliant with the national laws that allow LFT operation of the system in their region.

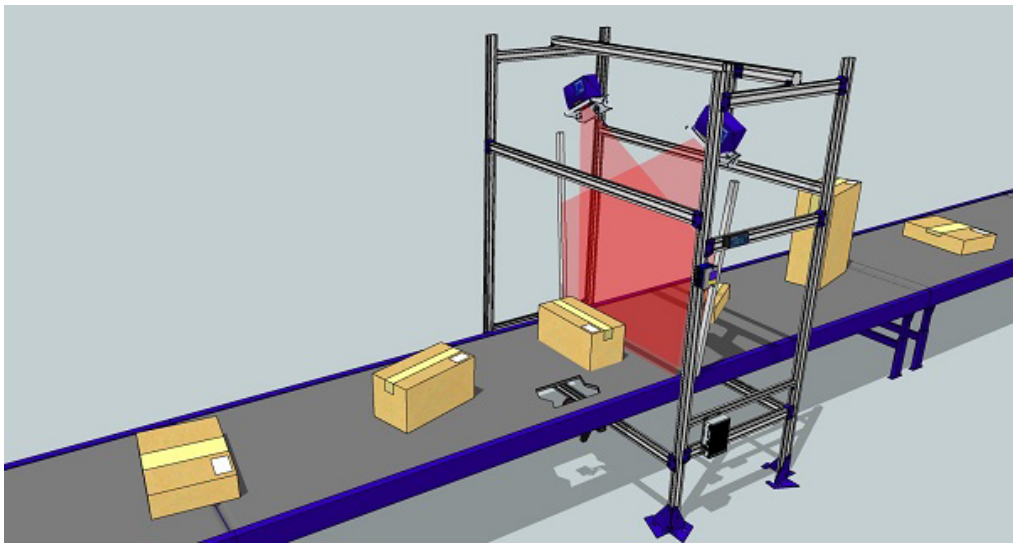
APPENDIX B: SIDE-BY-SIDE REQUIREMENTS

ABOUT THIS DOCUMENT

This document explains how to set up DC3000/DM3610 side-by-side detection and some of the operational requirements for side-by-side conditions within DM3610 applications.

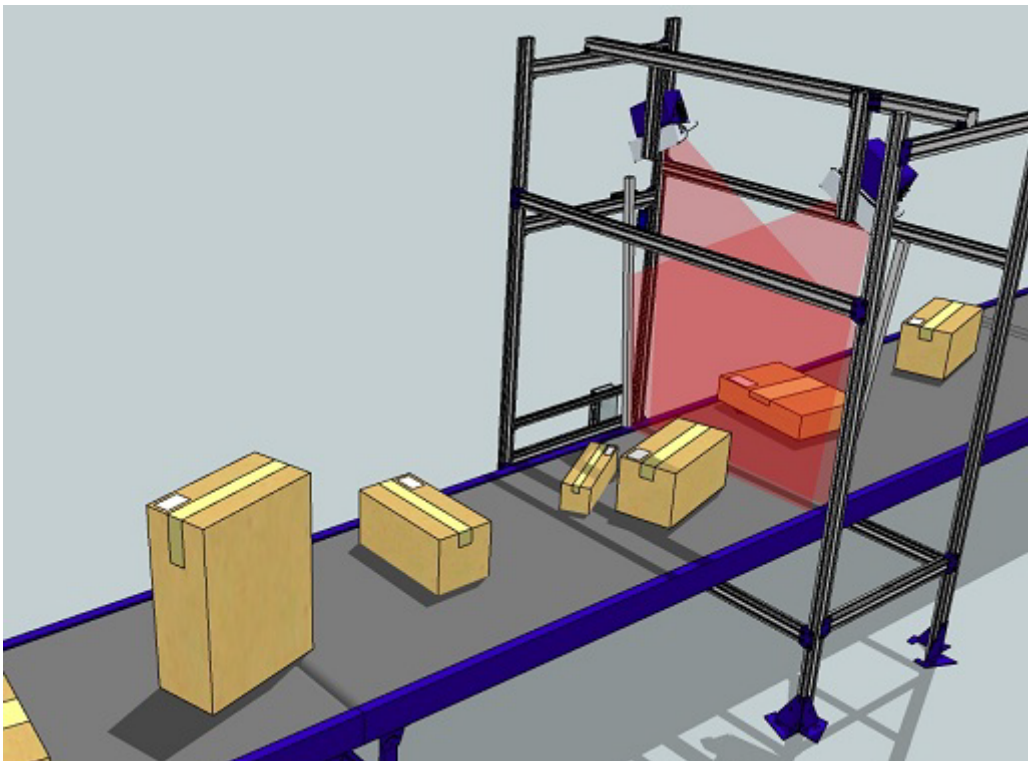
DC3000 SIDE-BY-SIDE DETECTION

In a “singulated” material handling system, parcels are separated by at least the minimum spacing distance along the direction of travel; there is at most one parcel across the conveyor at a time; therefore there is only one parcel present during a trigger cycle. A trigger is typically generated by a photoeye or a hardware signal from the sorter.



Typical DC3000 Application

In a singulated system, a **Side-by-Side** (SBS) is an error condition in which these conditions are violated. The end-user wants to know when this happens (when their parcel flow has inadvertently become “non-singulated”), and Datalogic systems can tell them this by means of an SBS indicator in the Serial or Ethernet “host message.”



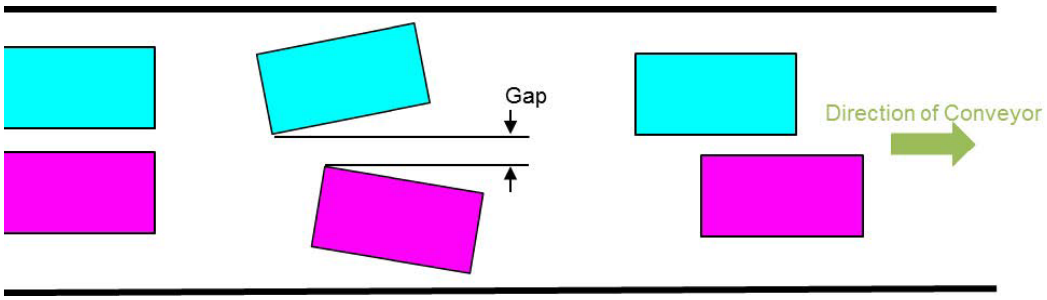
Example of a Side-by-Side Condition

How Side-by-Side Detection Works

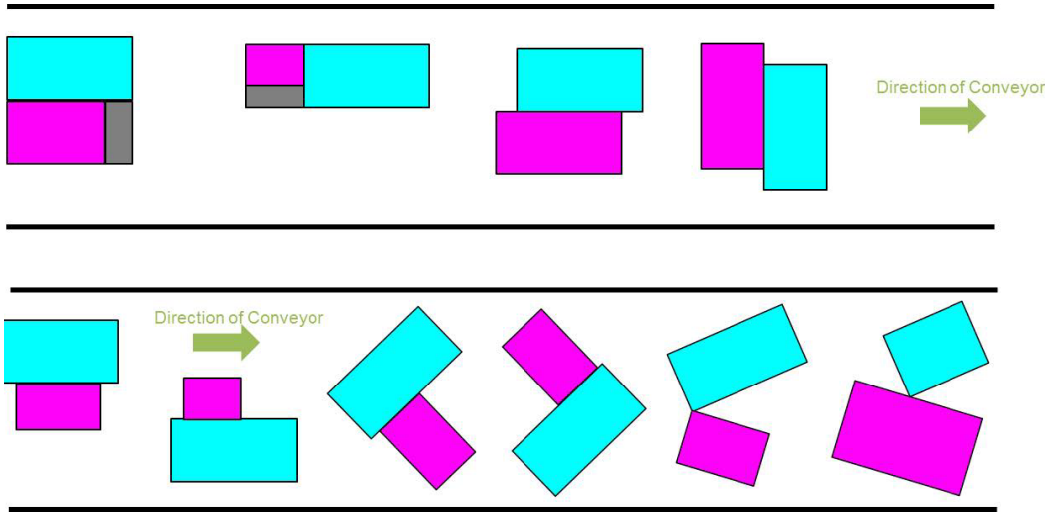
DM3610 Side-by-Side Detection relies on the parcels being “cuboidal” (or in some cases “near-cuboidal”).

SBS parcels can be identified in one of three ways:

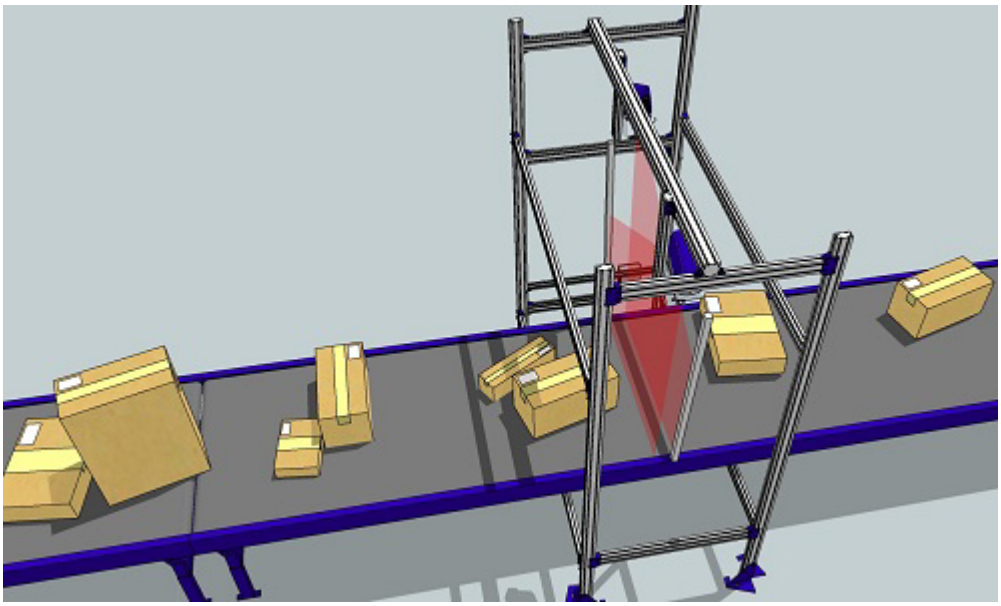
- If there is enough **GAP** between parcels
- If parcels are touching, is there a **SHIFT/OFFSET** between them
- If parcels are touching, is there a **HEIGHT DIFFERENTIAL**



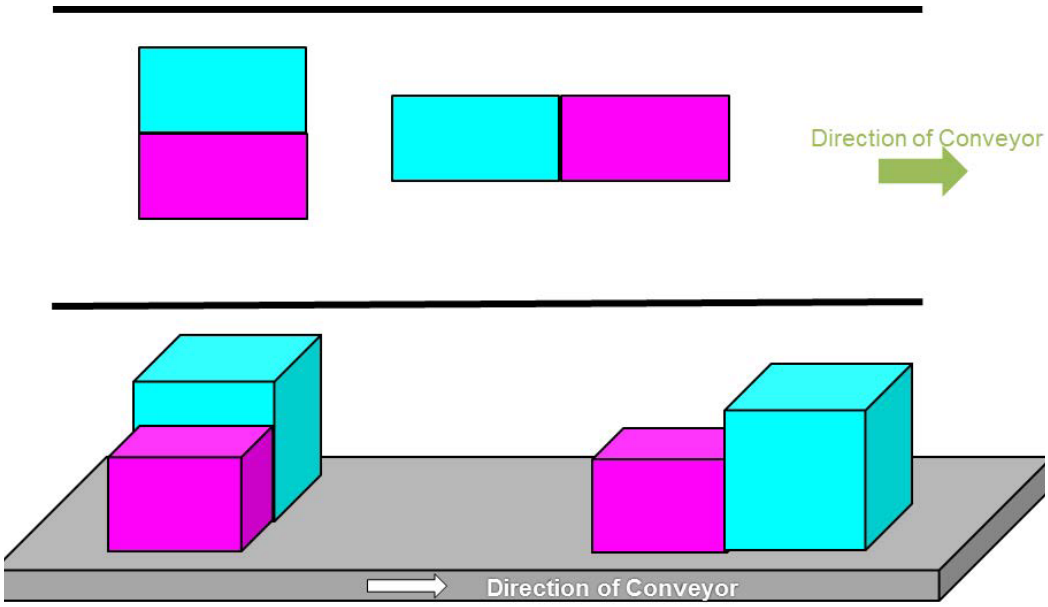
Examples of Gap



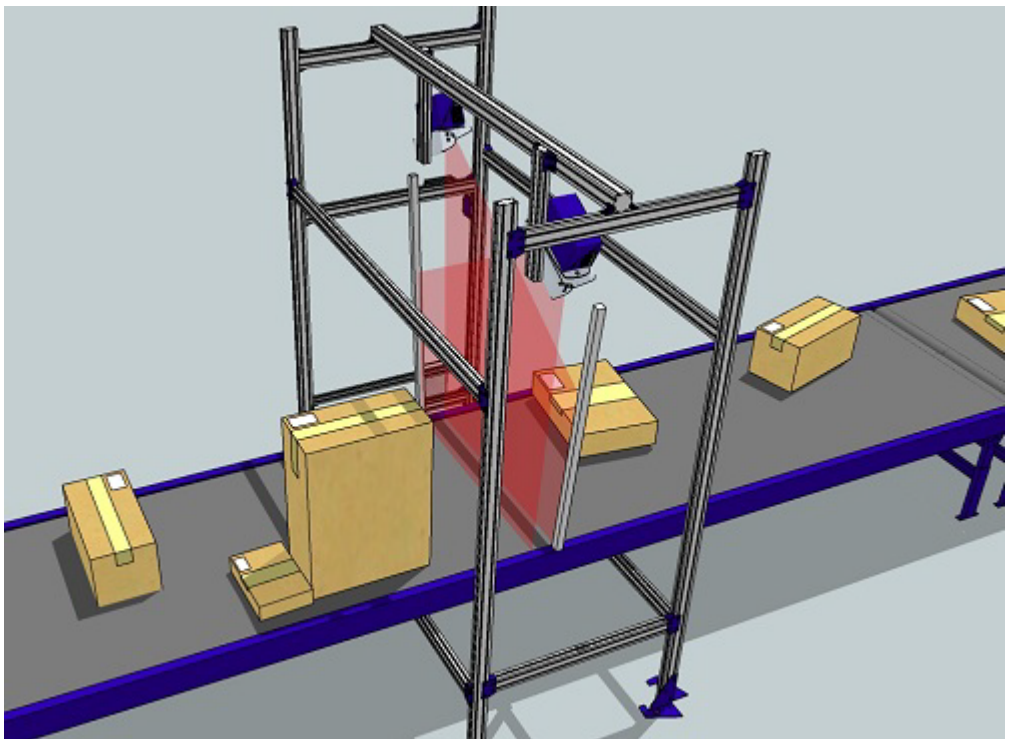
Examples of Shift/Offset



Example of Shift/Offset



Examples of Height Differential



Examples of Height Differential

NOTE

The amount of gap, height differential, or shift/offset needed to detect an SBS condition can vary, as there are infinite permutations of parcel sizes, positions, orientations, and shapes, along with environmental conditions. As such Datalogic makes no guarantees about exact numbers.

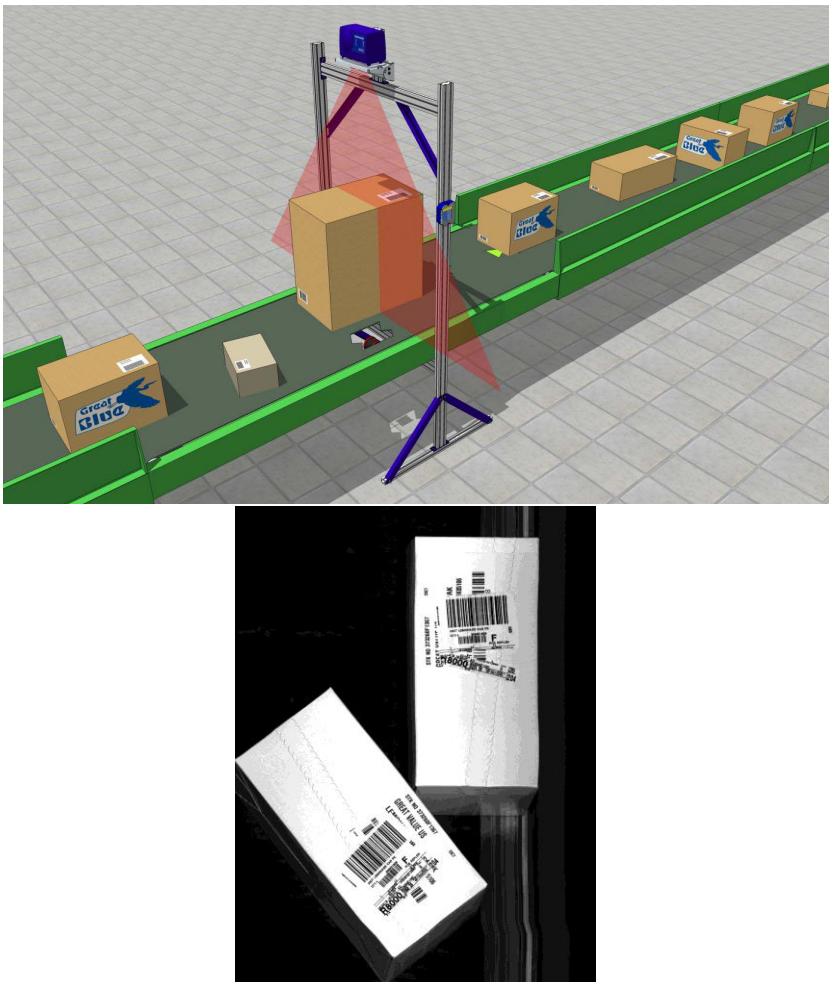
If there is little or no gap, height differential, or shift/offset, it is understood that there is nothing that can be done by the system. In these cases, the hope is that a multiple barcode read will indicate the problem to the end user.

LIMITATIONS OF USE

This appendix describes in detail the DC3000/DM3610's principles of operation and the necessary conditions for / limitations on accurate parcel dimensioning. These principles and conditions/limitations apply equally to accurate side-by-side detection. Some of these topics – parcel shape, reflectively and motion – are discussed below.

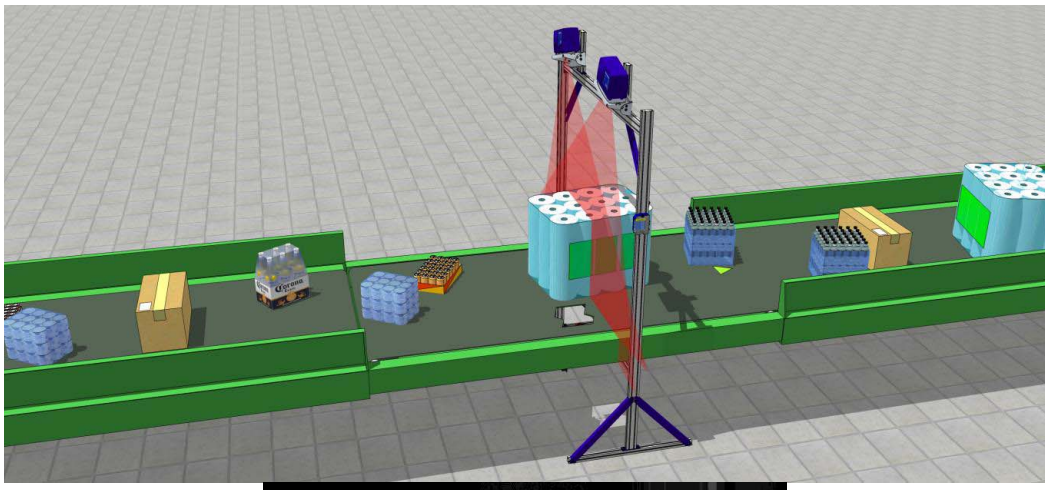
Parcel Shape

A "DIM-in-Head" system consists of a standalone DM3610 mounted over the center of the conveyor, with no rotation. The dimensioning computations and SBS determinations are done entirely within the DM3610, which is known as the "head." These systems are meant **for cuboidal parcels only**.



Examples of Cuboidal Parcels

The standard multi-head system (two *x*-rotated DM3610s and a DC3000 controller) was designed and certified for irregularly shaped parcels and, as such, can handle dimensioning and SBS condition determinations on **both cuboidal and "near-cuboidal" objects**, e.g. shrink-wrapped cases of "retail" items.

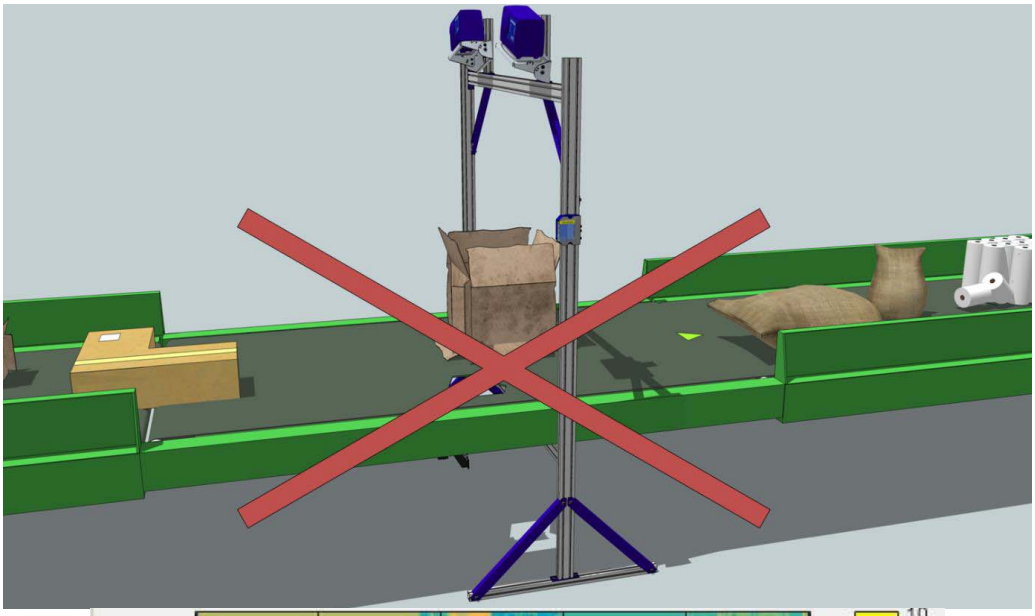


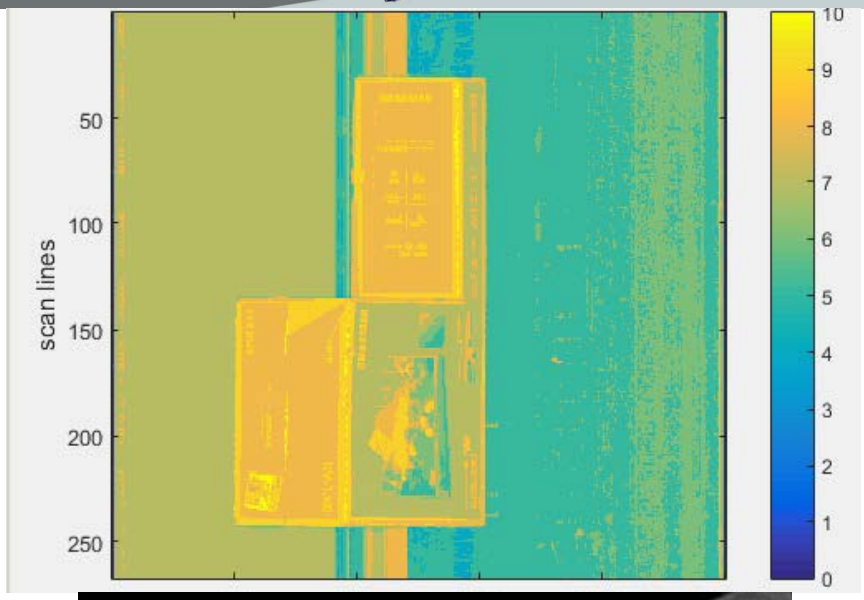


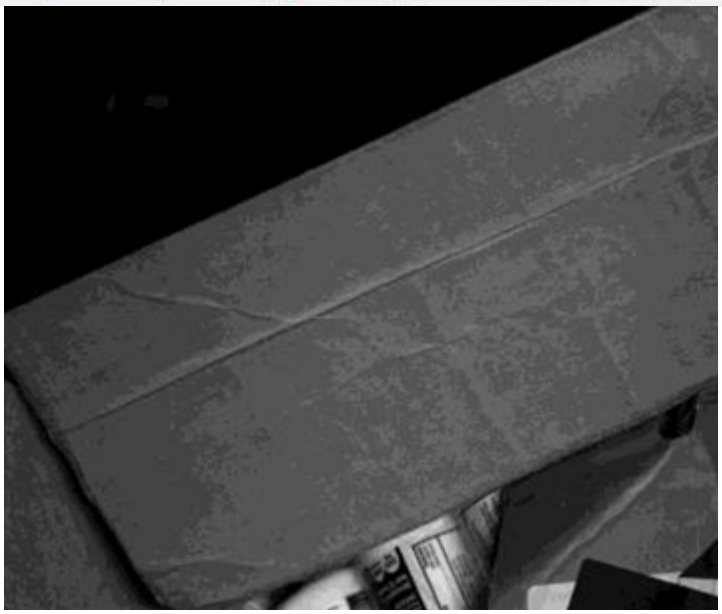
Examples of Non-Cuboidal Parcels

NOTE

This system can accurately make SBS determinations on “non-cuboidal” or “irregular” objects. Non-cuboidal/irregular objects can present as all manner of shapes that would confuse the SBS algorithms into flagging a false positive. Because of this they are not officially supported. Examples of Unsupported Parcels include but are not limited to Bags, partially Open or Open Boxes, Open Totes, Damages or Crushed Boxes, L-Shaped Boxes, etc.







Examples of Open and Damaged Parcels

NOTE

Even if the SBS determination is a false positive, there are many scenarios in which this could be viewed as a benefit. For example, this can serve as an indication of a damaged parcel that would otherwise go undetected.



False Positive Identify Loose Items or Damaged Parcels

Reflectivity

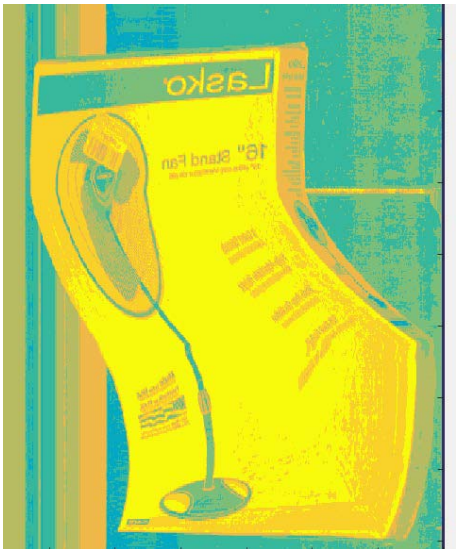
Very dark black, blue, or green parcels (too low reflectivity) and very shiny or mirror-like parcels (too high reflectivity) can negatively impact the performance of the SBS detection, causing false positives. It is also understood that performance on transparent parcels (e.g. sparsely decorated cases of water bottles) will vary and, in many cases, not work at all.



Examples of Parcels that are Too Reflective

Motion

Parcels must be conveyed in a consistent manner to prevent spinning/bouncing/sliding/slipping/shifting/rocking/rolling/wobbling while being scanned. Otherwise, determining parcel dimensions, as well as SBS conditions, can be negatively impacted.



What Motion looks like to DC3000/DM3610 System

SIDE-BY-SIDE DETECTION ACCURACY

Side-by-Side detections can be classified as one of the following:

- A **true positive** is one that detects a SBS condition when a SBS condition is present.
- A **true negative** is one that does not detect a SBS condition when a SBS condition is absent.
- A **false positive** is one that detects a SBS condition when a SBS condition is absent.
- A **false negative** result is one that does not detect a SBS condition when a SBS condition is present.

The goal is to maximize true positives/negatives while minimizing false positives/negatives. However, this is ALWAYS a balancing act, especially in certain environments/applications, e.g. those with very diverse parcel flow.

In some applications the desired minimum gap, height differential, or shift/offset is not always achievable. Or the “limitations of use” cannot be met in a certain application. Whatever the case may be, Datalogic personnel will work with you to maximize the performance of your system.

ADVANCED SETTINGS

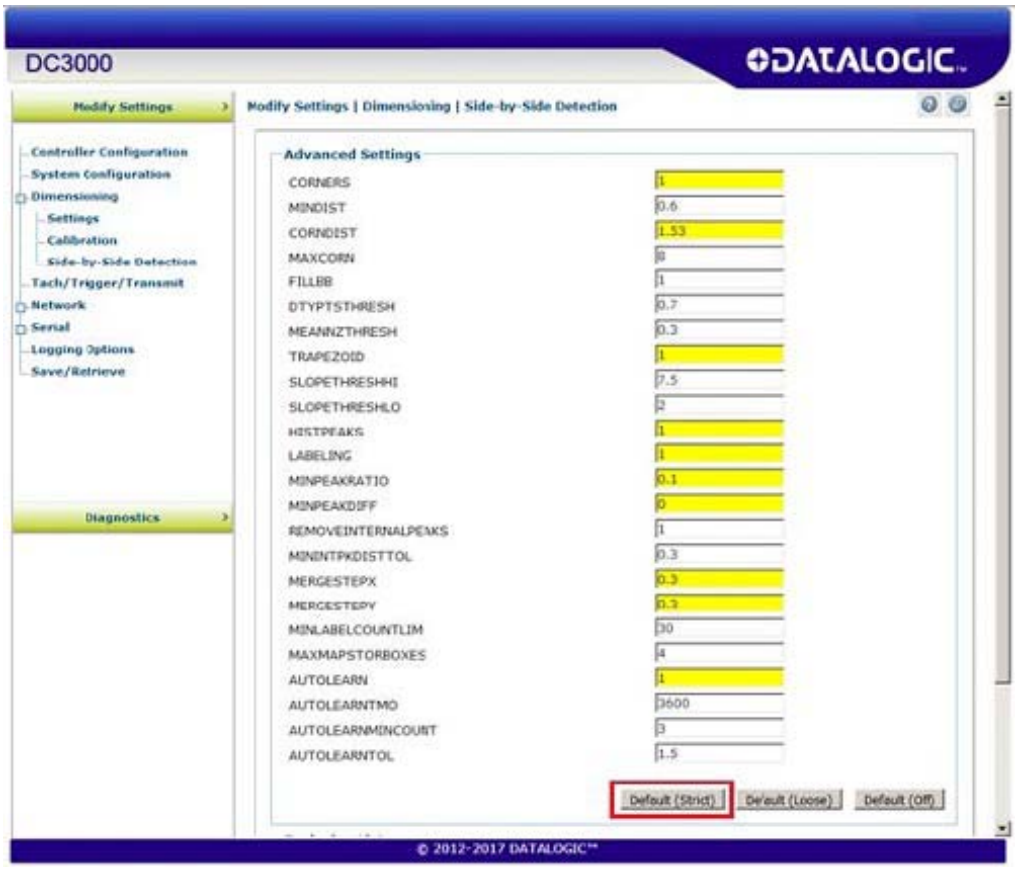
Distinguishing SBS conditions with non-touching, amply-spaced parcels can be done with no special settings.

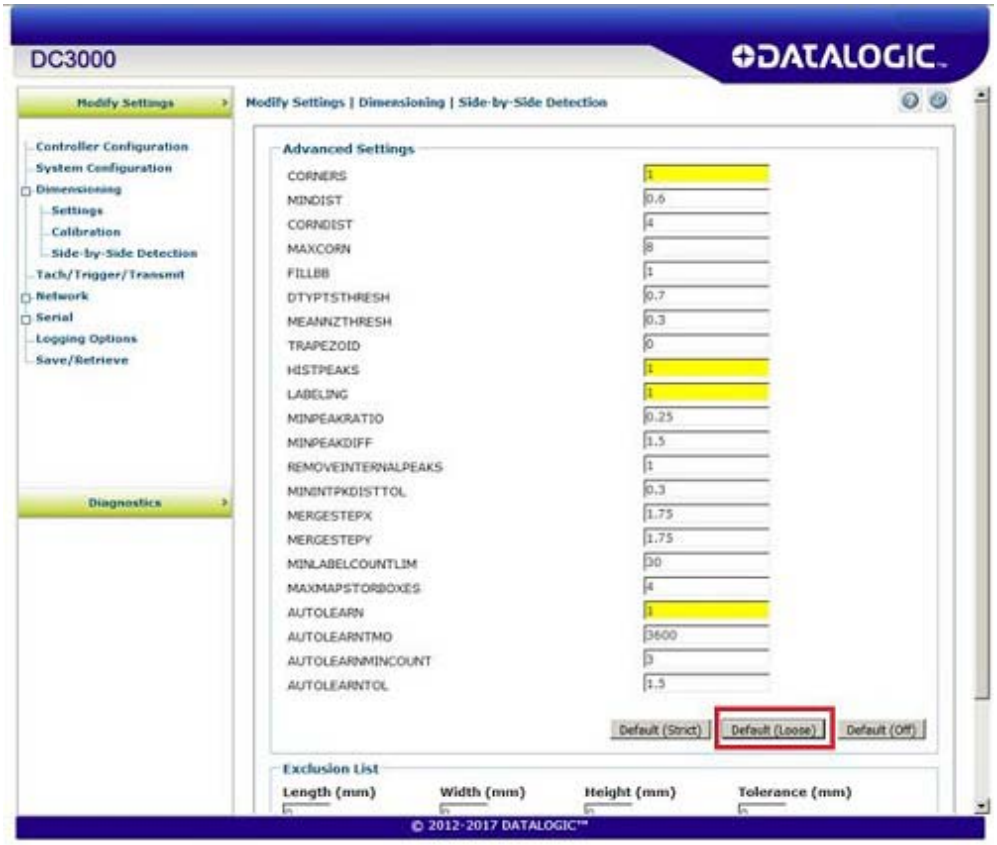
It is much more difficult to make SBS determinations when two (or more) parcels are touching or nearly touching. By enabling “Advanced Settings” in the **Dimensioning | Side-by-Side Detection** e-Genius page, various additional/non-default methods (e.g. corner counting, histogramming, etc.) can be enabled to help aid in making SBS determinations.

The parameters defined under Advanced Settings are intended for “Datalogic Engineering” use only. The details of these settings are outside the scope of this document. There are, however, various “Default” options that can start you off in the right direction:

- **Default (Strict):** enables advanced SBS settings that aim to detect SBS conditions with minimal gap, height differential, and shift/offset. This is a good starting point if the parcels in your application are “good cuboidals” only.
- **Default (Loose):** enables advanced SBS settings that aim to detect SBS conditions, while minimizing false positives. This is a good starting point if the parcels in your system are more diverse, i.e. not only good cuboidals.
- **Default (Off):** disables all advanced SBS settings.

The following e-Genius pages are the Default (Strict) and Default (Loose) settings for both the DC3000 (multi-head system).


DC3000
DATALOGIC
Modify Settings
Modify Settings | Dimensioning | Side-by-Side Detection
Controller Configuration
System Configuration
Dimensioning
Settings
Calibration
Side-by-Side Detection
Tach/Trigger/Transmit
Network
Serial
Logging Options
Save/Retrieve
Diagnostics
Advanced Settings
CORNERS 1
MINDIST 0.6
CORNDIST 1.53
MAXCORN 8
FILLBB 1
DTYPTSTHRESH 0.7
MEANNZTHRESH 0.3
TRAPEZOID 1
SLOPETHRESHHI 7.5
SLOPETHRESHLO 2
HISTPEAKS 1
LABELING 1
MINPEAKRATIO 0.1
MINPEAKDIFF 0
REMOVEINTERNALPEAKS 1
MININTPKDISTTOL 0.3
MERGESTEPX 0.3
MERGESTEPY 0.3
MINLABELCOUNTLIM 30
MAXMAPSTORBOXES 4
AUTOLEARN 1
AUTOLEARNTMO 3600
AUTOLEARNMINCOUNT 3
AUTOLEARNTOL 1.5
Default (Strict)
Default (Loose)
Default (Off)
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DC3000
DATALOGIC
Modify Settings
Modify Settings | Dimensioning | Side-by-Side Detection
Controller Configuration
System Configuration
Dimensioning
Settings
Calibration
Side-by-Side Detection
Tach/Trigger/Transmit
Network
Serial
Logging Options
Save/Retrieve
Diagnostics
Advanced Settings
CORNERS 1
MINDIST 0.6
CORNDIST 4
MAXCORN 8
FILLBB 1
DTYPTSTHRESH 0.7
MEANNZTHRESH 0.3
TRAPEZOID 0
HISTPEAKS 1
LABELING 1
MINPEAKRATIO 0.25
MINPEAKDIFF 1.5
REMOVEINTERNALPEAKS 1
MININTPKDISTTOL 0.3
MERGESTEPX 1.75
MERGESTEPY 1.75
MINLABELCOUNTLIM 30
MAXMAPSTORBOXES 4
AUTOLEARN 1
AUTOLEARNTMO 3600
AUTOLEARNMINCOUNT 3
AUTOLEARNTOL 1.5
Default (Strict)
Default (Loose)
Default (Off)
Exclusion List
Length (mm)
Width (mm)
Height (mm)
Tolerance (mm)
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Auto-Learn

Particular attention should be paid to the “AUTOLEARN” options of the DC3000’s Advanced Settings. When enabled, the system will maintain an in-memory table of past SBS determinations, adding to, refining, and deleting from this table on-the-fly. When table entries exceed a certain count, future SBS determinations of parcels within tolerance of that entry’s size will be negated. Entries will expire if they are unused after a configurable time period.

The purpose of the Auto-Learn function is to allow the system to automatically recognize when something is awry, e.g. it is repeatedly falsely flagging SBS on parcels of a certain size. For example, imagine a shipment of L-shaped vacuum cleaner boxes was being conveyed. To avoid diverting / recirculating every such box, the Auto-Learn functionality would allow the system to learn and recognize the condition after, say, the first three false positives.

This feature is not available in the DM3610 (“DIM-in-Head” system).

A similar Auto-Learn function is available in the AV7000 camera system, but by barcode content instead of parcel size.

Here are the AUTOLEARN settings:

- **AUTOLEARN**: enables (1) or disables (0) the Auto-Learn functionality
- **AUTOLEARNTMO**: the amount of time, in seconds, an entry in the Auto-Learn table must be unused before being deleted.
- **AUTOLEARNMINTCOUNT**: the number of times a certain size parcel must be flagged as SBS before it SBS determinations on parcels of this size will be negated.
- **AUTOLEARNTOL**: the tolerance, in inches, by which parcel sizes are associated with an existing entry in the Auto-Learn table.



Here is a quick example, using the settings shown above:

1. An 18x12x6in box is flagged as SBS. An entry in the Auto-Learn table is created.
2. Before an hour (3600 seconds) goes by, two more boxes within 1.5in of 18x12x6in are flagged as SBS. The table entry is updated.
3. From now on, all boxes within 1.5in of the 18x12x6in entry are NOT considered SBS.
4. After an hour (3600 seconds) goes by without flagging an ~18x12x6in box as SBS, the entry is cleared.

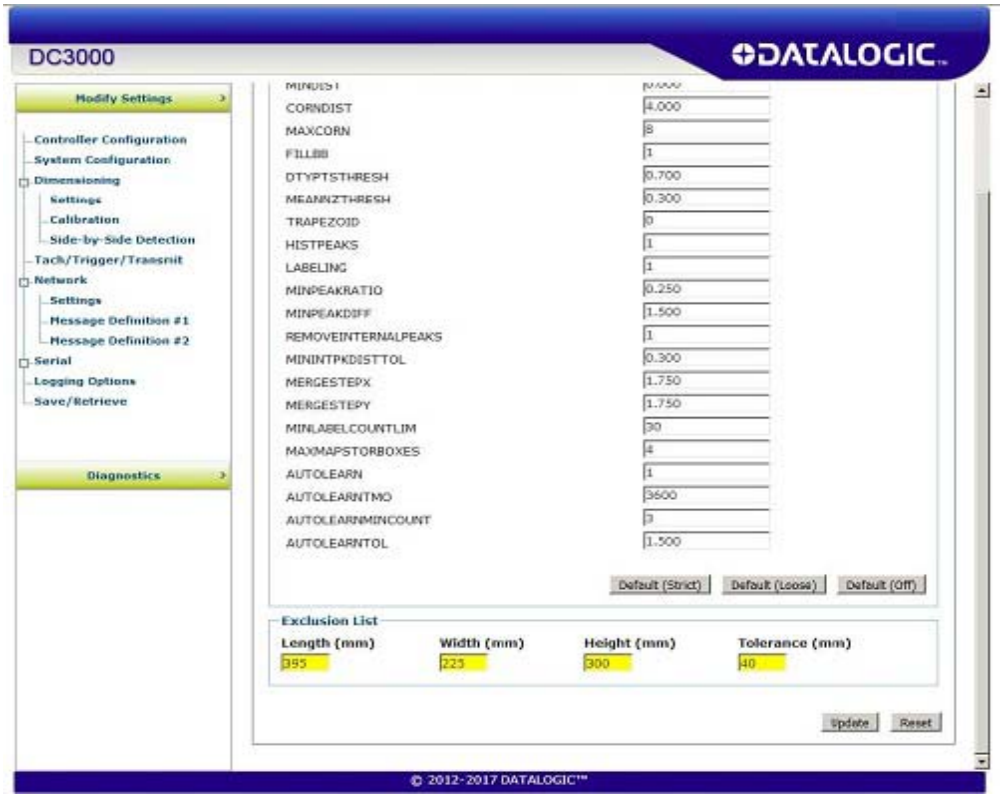
Exclusion List

Below the Advanced Settings, the DC3000 allows the user to populate an **Exclusion List** with known parcel sizes. Any parcel within the “tolerance” of these sizes will not be subject to the various SBS checks. This can be very useful if certain parcels frequently cause false positives, e.g. certain “L-shaped” boxes.

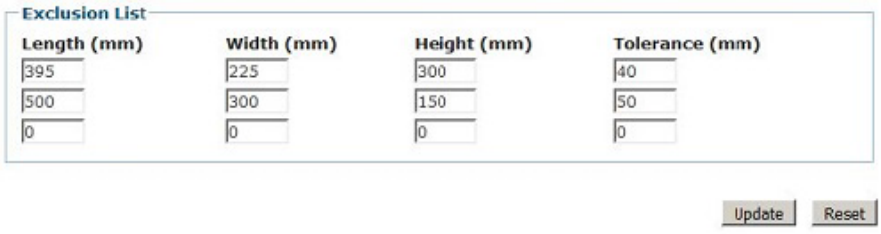
This feature is not available in the DM3610 (“DIM-in-Head” system).

A similar Exclusion List is available in the AV7000 camera system, but by barcode content instead of parcel size.

Up to 25 entries can be made in this table. To be a valid entry, Tolerance must be greater than zero, and one or more of Length, Width, or Height must be greater than zero.



Only when all entries are valid will the web-page provide room at the end of the list for the addition of a new entry.

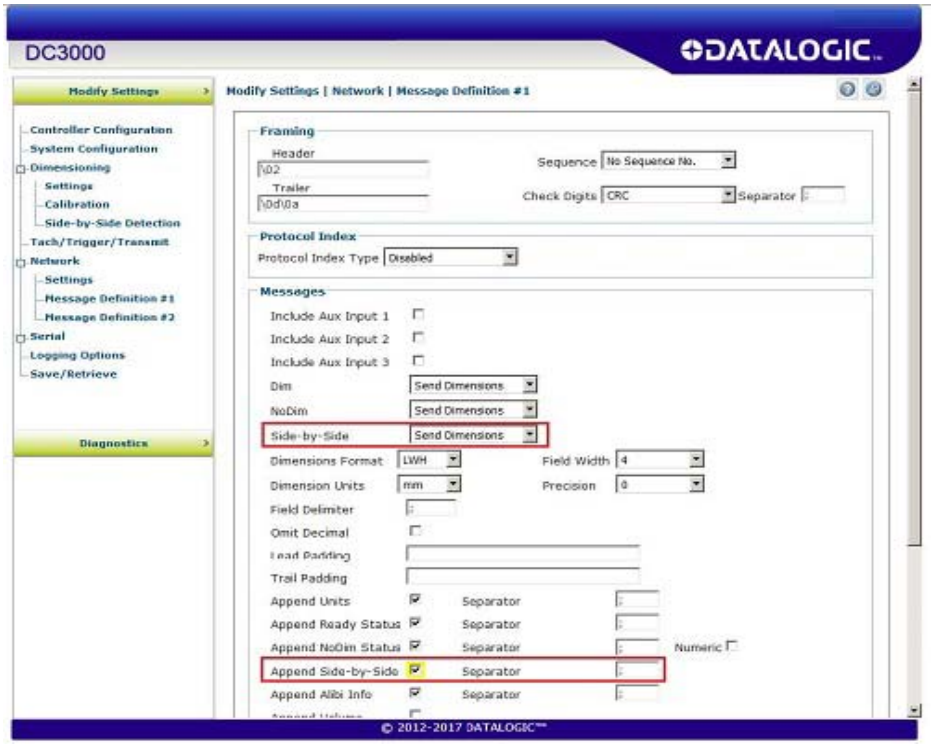


SIDE-BY-SIDE IN THE NETWORK/SERIAL MESSAGE

A SBS condition can be indicated to the end user in the “host message” transmitted by the DM3610/DC3000 system.

If the Message Format is set to **User Defined Message** for a Network or Serial port, the "**Side-by-Side**" field allows the user to replace the dimensions with a user-defined field, e.g. "!!!!,!!!!,!!!!"

Also, the "**Append Side-by-Side**" check-box can be checked so that, if there is a Side-by-Side condition detected, the indicator "**SBS**" will be appended after a (configurable) separator.



NOTE

The SBS indicator is also included, by default, within the "Camera Message" and "Datalogic Message" message formats that the DM3610/DC3000 system sends to other Datalogic devices, e.g. the AV7000 camera system or the SC5000 system controller.

SBS is also considered as a No Dim reason. If "Append NoDim Status" is checked, and a SBS condition is detected, NODIM_BOX_SIDE_BY_SIDE (or 98) will be appended to the message. However this will be hidden from the end user if another, higher-priority NoDim reason also occurred.

SAVING SCAN DATA FOR ALL SIDE-BY-SIDE PACKAGES

You can access **Modify Settings | Save/Retrieve** from the e-Genius menu, under "**Diagnostic Data**", and there is the ability to Save Scan Data for all SBS packages. To enable this, simply set **Save Scan Data Mode** to **On** and **Save Scan Data Type** to **Side-by-Side Packages**, and click **Update**. All SBS packages scan data will be saved to disk.

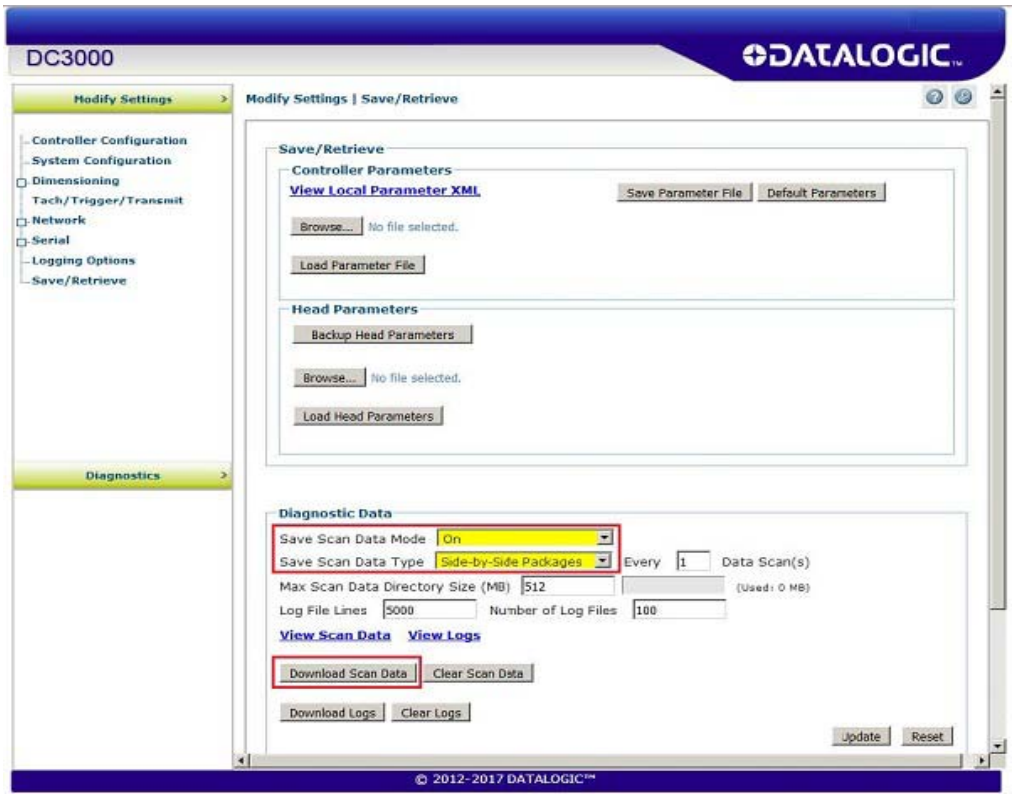
Click **Download Data** to collect a .zip file of this scan data, which can be sent to Datalogic Engineering for analysis.

Click **View Scan Data** link to access a visual of all the Side-by-Side conditions that were detected during the data collection period. Some examples are shown below.

NOTE

Save scan data can adversely affect system performance, and it should be enabled only temporarily.

This feature is not available in the single DM3610 (DIM-in-Head system).



Click **View Scan Data** link to access a visual of all the Side-by-Side conditions that were detected during the data collection period. Some examples are shown below.





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