

1. Please use this checklist to help you troubleshoot the critical components of the Cognex system.
2. If you complete the checklist, and an issue hasn't been resolved, please include a copy of this checklist to your support ticket to Cognex, along with any additional helpful information to Cognex's tech support.
3. For technical support, please contact the dedicated support line via phone or email.
 - For repairs, hot swaps and in warranty replacements, please email (ts.global@cognex.com) and include the following:
 - a) Serial number
 - b) Part number
 - c) Description of the issue
 - d) The site address/contact information

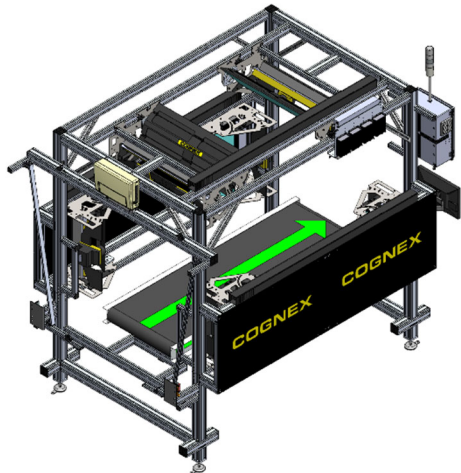
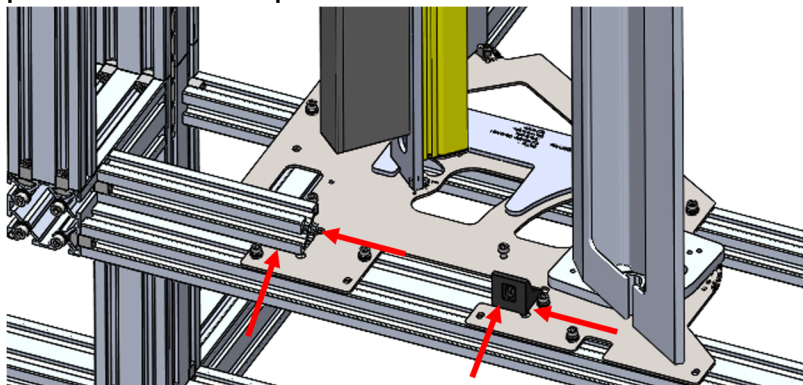
Verify the following steps in the order listed and check the box to acknowledge completion. Record information in the Notes column where requested.

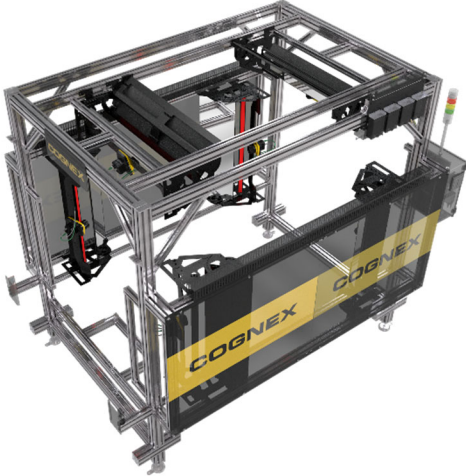
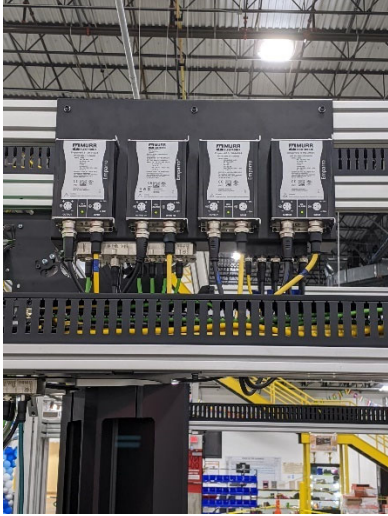
Cognex Modular Vision Tunnel with DataMan 580s

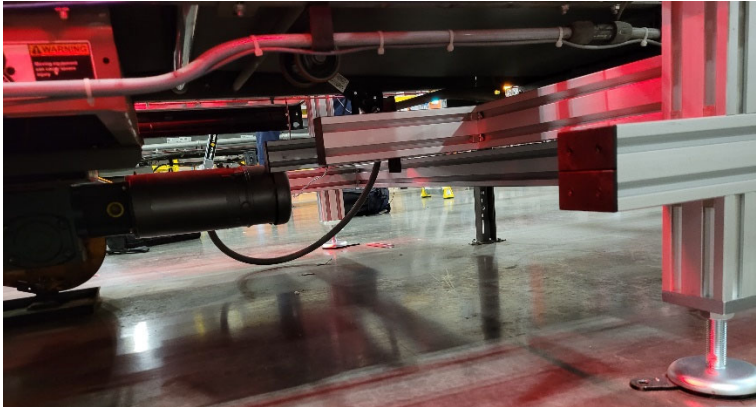
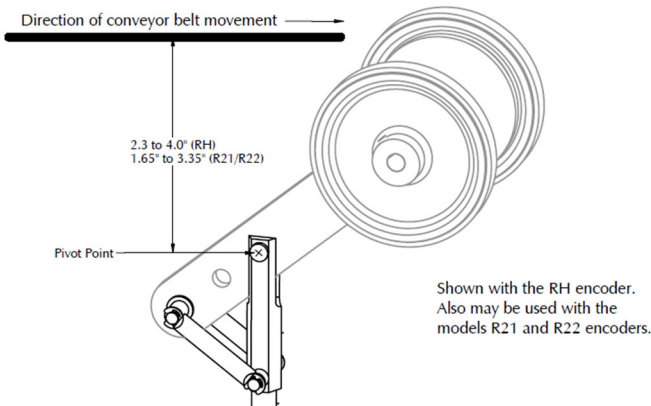
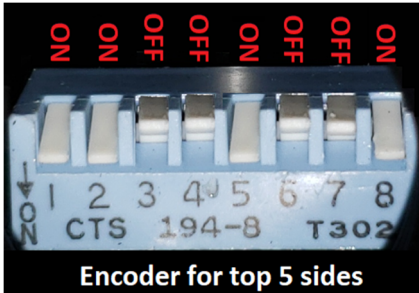
Troubleshooting and Maintenance

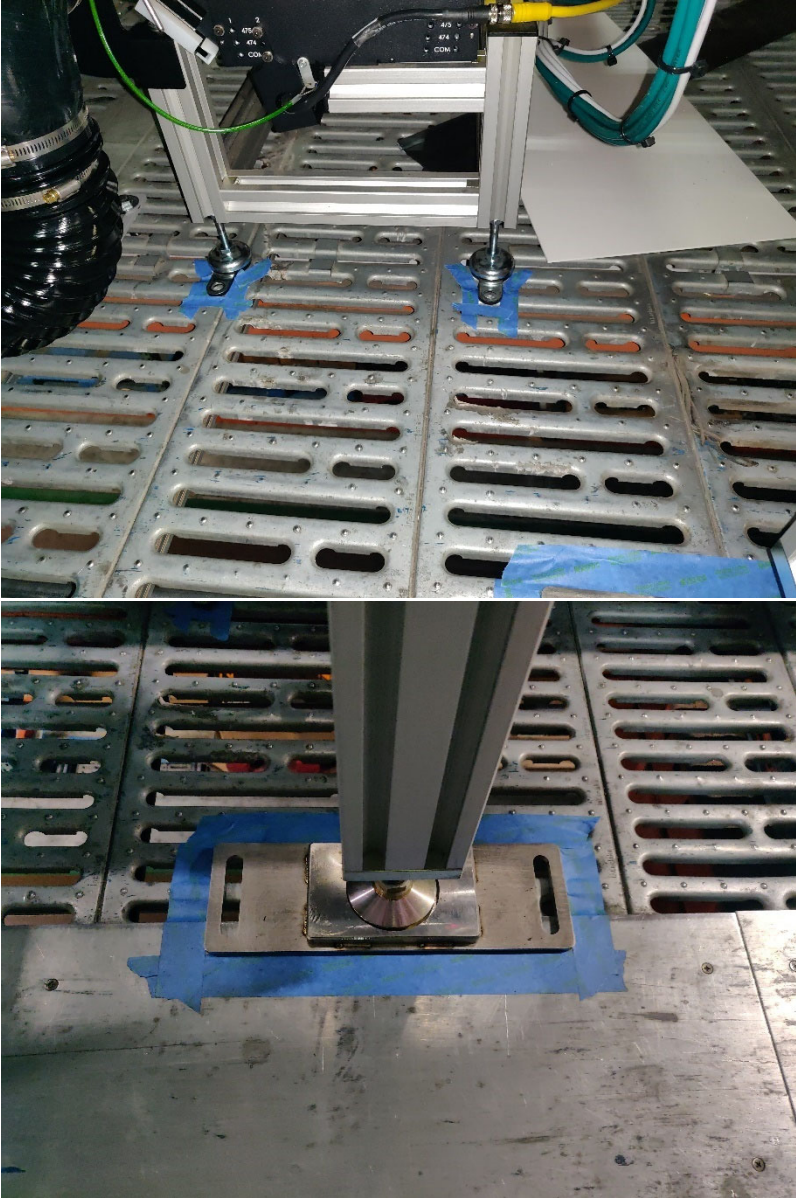
Maintenance			What's the main issue?		
Cleaning and operational upkeep					
			Accessories		
Mechanical	Electrical	EI Control Box	Network	CIO	Bottom Side/BSLS
Correct measurements	Checking power	.Net framework installation	Stack Light settings	Rotary Switches	BSLS
Encoder placement	Power wiring instructions	EI connection		Web Interface Login	DMBS DMBS Maintenance
Beam Blocker placement	Lighting cable instructions	Photo Eye instructions			Mettler Toledo Dimensioner
Reader, Light, or Hybrid Switch replacement	Tunnel Triggering				3DA-1000 Dimensioner

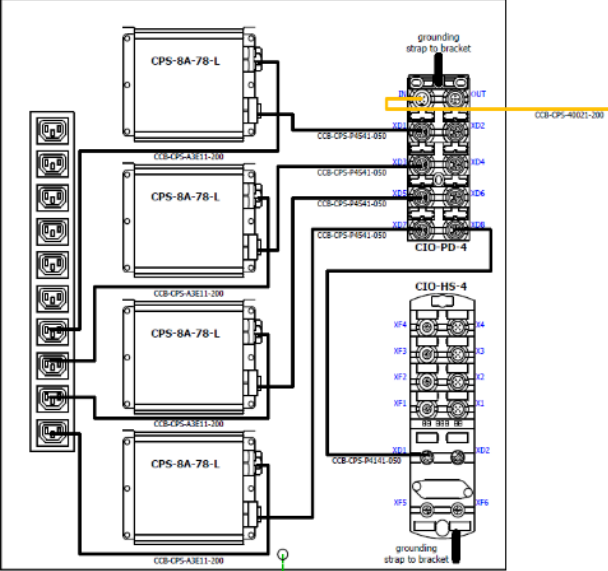
1 Mechanical

Mechanical Checklist		Potential Issue	Notes
i Note: Make sure the frame and assembly are in the correct positions and heights according to the original drawings.			
☐	Make sure the Cognex Tunnel is mounted physically per original design and all bolts tightened per specifications. 	Potential box strikes are the most common issue. If not tightened, vibration could cause readers to become misaligned.	A visual inspection can help identify damage or misalignment of parts. Look and compare the different components and note anything that is out of the ordinary.
☐	Ensure that all reader modules are fully seated on both ends at the points indicated in this picture. 	Bad or no reads.	

Mechanical Checklist		Potential Issue	Notes
☐	Check for loose bolts, leftover stickers on the framing, and end caps. 		
☐	Check that cables are plugged in correctly, flush, tightened down, and not in the FOV of any readers. 		

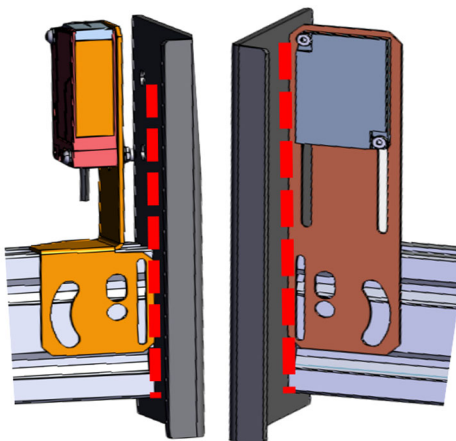
Mechanical Checklist		Potential Issue	Notes
☐	Encoder operational? Check Encoder, ensure its powered, triggering and not slipping.   Direction of conveyor belt movement → 2.3 to 4.0" (RH) 1.65" to 3.35" (R21/R22) Pivot Point Shown with the RH encoder. Also may be used with the models R21 and R22 encoders.	Common issues are: - Encoder bracket comes loose and encoder loses contact with the belt, which causes dragging issues. - Encoder is not tight against the belt and it is bouncing up and down. - Dip switch settings are not set correctly, which leads to erratic results - The tunnel will not trigger because there is no steady encoder signal while the belt is moving - Higher no-read count on the bottom-side. - Results are timing out or "No Code" received by the PLC. Dimensioner stops sending out dimensions: without encoder input the dimensioner cannot calculate length.	Encoders provide the following critical functions to Cognex Modular Identification Systems: 1. Allow the System to Delay the start of Trigger. 2. Allow the System to Delay sending the result. 3. Allow the Dimensioner to measure the length of the box. 4. Allow the Bottom Side Readers to perform the Image-Stitching process.
	Check that the Tri-Tronics encoder for the top 5 sides uses the correct dip switch settings.  Encoder for top 5 sides		

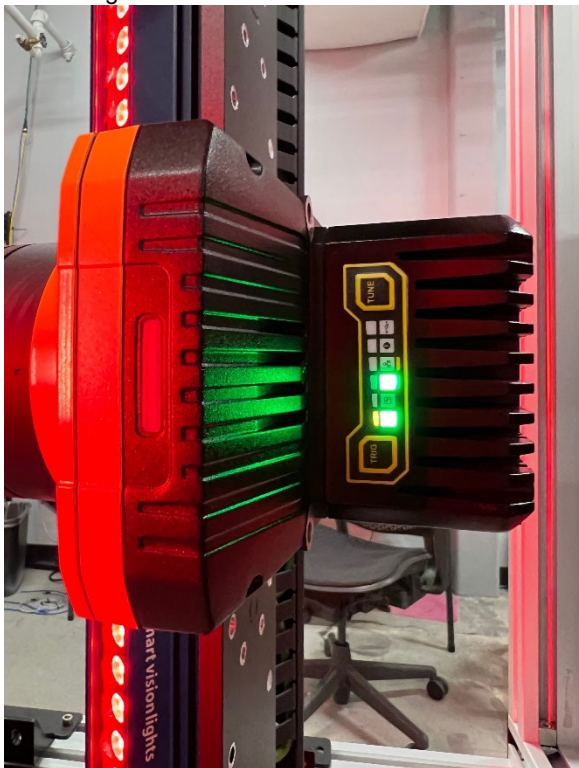
Mechanical Checklist		Potential Issue	Notes
☐	Has the system moved from the tape outlines? 	Bad or no reads.	Mark the area around the leveling feet with blue tape and with the bolting holes on the outside to ensure consistent positioning.

Mechanical Checklist	Potential Issue	Notes
For the CIO modules, check that the correct devices are plugged into the correct side. CIO-BASE-8A-4-B  Proper grounding is necessary for safety and to ensure proper operation. If mounted to an already grounded aluminium frame no further grounding is needed.		Visually inspect all the CIO components for damages.
Wipe down mirrors and glass.	Check that there are no smudges or dirt to obscure the field of view.	
Check that all cables are connected.		

Mechanical Checklist		Potential Issue	Notes
In the I/O Box, are all fans and vents open, working, and clear of debris? 	Check the I/O box for debris and blocked vents.	This ensures the network and power boxes do not get too hot and can function properly.	

2 Electrical

Electrical Checklist		Potential Issue	Notes
Photo eye (PE) operational? Check photo eye, ensure its powered, triggering, and aligned.  		There should always be a green light on indicating power and an orange light indicating a trigger. If the orange light doesn't change status when the PE is blocked from the reflector, please check alignment. Possible symptoms of PE failure include: 1) The reader lights will not turn on when the box passes by the scan tunnel. 2) The conveyor will stop after a large consecutive number of boxes that do not trigger. 3) If No Read images look legitimately readable but is flagged as No Read. 4) The PLC will sometimes report a No Code or No Scan Result. 5) Symptoms: Boxes are being assigned and diverted to the wrong chute. 6) Wrong photo-eye length can cause multicode and no-read issues. 7) Abnormally high multicode rate.	Troubleshooting the PE. Simple steps include: ✓ Check the PE lights for presence of power. If no power is present, check the cable for breakage. If cable is good, trace the wiring inside the I/O box. ✓ Check the PE status light for detection of an object. PE light should blink once when an object passes through. If not, check the alignment with the reflector. If there are multiple blinks per carton, there could be a mounting issue or box issue.

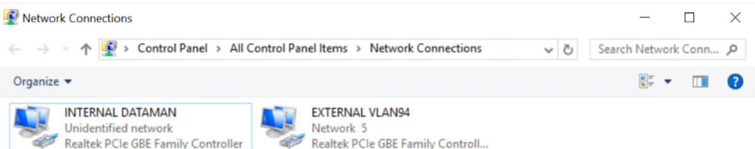
Electrical Checklist		Potential Issue	Notes
□	Is there power to Readers? Check to make sure the green power LED is lit on the back of each reader. 	If a reader doesn't seem to have power, but the hybrid switch is powered up, check the black cable and make sure: 1. It is connected correctly to each reader. 2. It is connected correctly to the I/O box. 3. No visible damage to the cable along the travel path. 4. Disconnect and connect again. 5. Replace the cable with a spare.	Please pay attention to the pins on the connector back of the reader as they might get bent/damaged with improper alignment. Do not use force, look for the right alignment and gently insert it. Bent pins are considered a misuse damage and are not covered under warranty.
	Is the lighting operational? Check lights on reader modules. 	If the light is off and the reader has power, do the following: 1. <i>Verify Connection:</i> Make sure the cable is plugged in correctly on both the light and the back of the reader. 2. <i>Reset Connection:</i> Unplug both cables and plug back in again. 3. Replace the cable with a spare.	There are different types of cameras based on the application.

Electrical Checklist		Potential Issue	Notes
	If you need to power cycle...		
		1. Turn the power off to the tunnel by pressing the power rocker switch under the cover on the PDU supply strip. 2. Wait 20 seconds. 3. Turn the power on by pressing the rocker switch under the cover on the PDU supply strip.	

Electrical Checklist	Potential Issue	Notes
Does the tunnel trigger when the PE changes state? <u>Tunnel not triggering when the photo eye changes state?</u> Quick tip: The 4 main components that effect tunnel triggering are: 1. Photoeye 2. Encoder 3. Primary Reader 4. I/O Box Quick tip: If you change the output delay from 'Distance' to 'none' and the tunnel triggers normally, then you have narrowed it down to an encoder issue.		

3 EI Control Box

3.1 RTM

RTM Checklist		Potential Issue	Notes
☐	Are the correct .NET frameworks installed?	DataMan Setup Tool and the Ignore Barcode software need different frameworks to work correctly.	The .NET frameworks should come with the config files, so make sure they're installed.
☐	Check the Ethernet adapter names in Network Settings. 	This helps identify the networks for troubleshooting.	Name the DataMan connection, INTERNAL DATAMAN . Name the Store/Tunnel connection, EXTERNAL VLAN94 .

3.2 EI

EI Checklist		Potential Issue	Notes
☐	Are both ports active for the EI box? 	You will not see the menu options if the network ports are not active.	

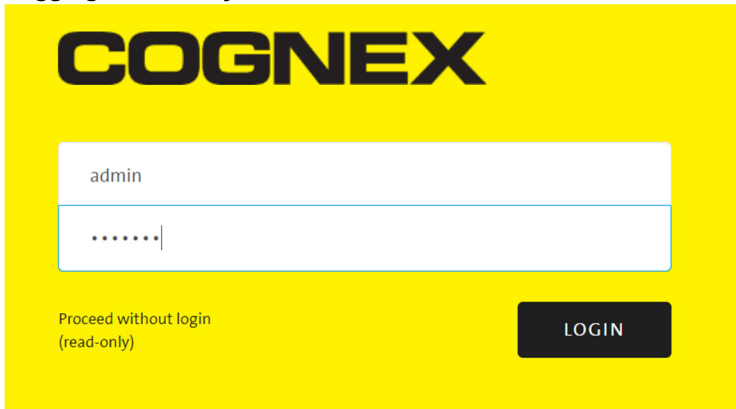
4 Network

Network Checklist		Potential Issue	Notes
☐	Check that the yellow network LED is lit on the back of each reader. 	If one or more readers doesn't have network connection LED lit, but the I/O box and reader are powered (previous steps), do the following: <i>Verify Connection:</i> 1. Check the teal cable and make sure: • It is Connected correctly to each reader. • It is connected correctly to the I/O box. • It has no visible damage to the cable along the travel path. 2. Disconnect both ends and connect again. 3. Replace the cable with a spare.	The tunnel has one master/primary camera. It receives communication from the other cameras and passes that output. All of those cameras need to be on the network in order to communicate to each other.

4.1 Stack Light

Network Checklist		Potential Issue	Notes
☐	Check the stack light.  	1. Red Light – No read	The Red light signals a no read.
		2. Green Light – Always on	The Green light will remain on while the panel is powered on.
		3. Blue Light – Good read	The Blue light signals a good read.
		4. White Light – Customizable LED	The White light is a customizable LED connected to Output 3 on the Primary reader.

4.2 CIO

CIO Checklist		Potential Issue	Notes
☐	Are the Hybrid Switch LEDs solid green? 	Errors with readers or communications.	
☐	Are the Rotary Switches on the Hybrid Switch set to 000? 		Set the dials to 000 .
☐	Logging in to the Hybrid Switch Web Interface 		Username: admin Password: private

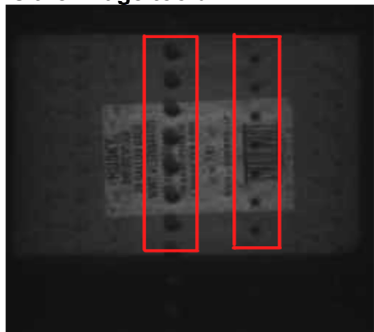
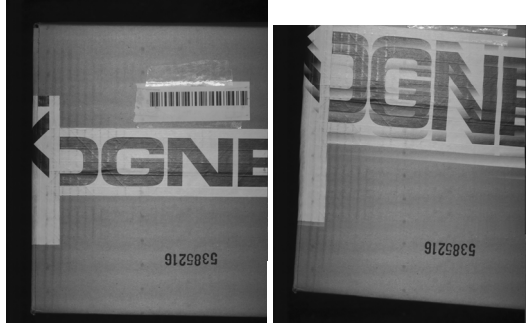
5 Accessories

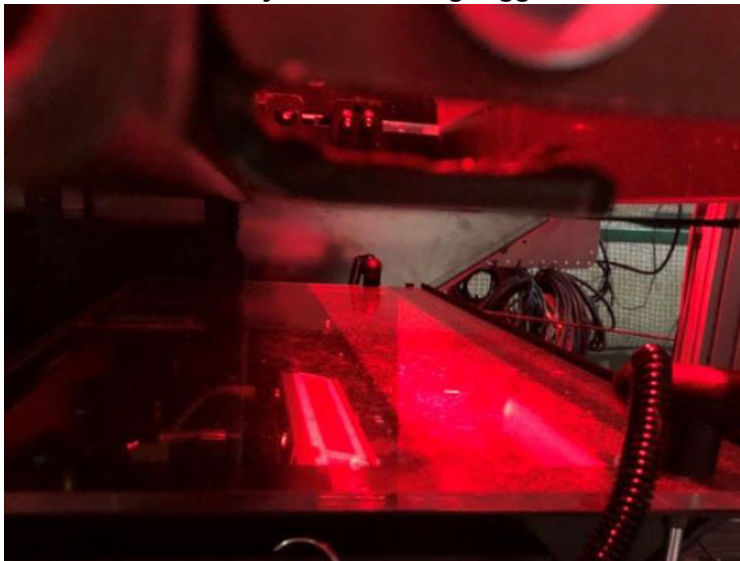
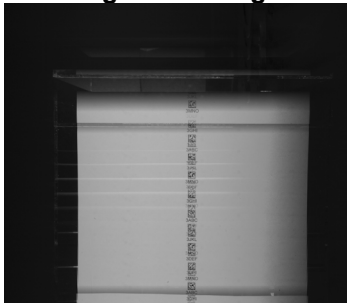
5.1 BSLS

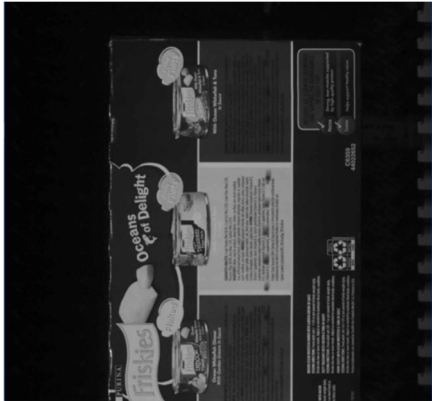
BSLS Checklist		Potential Issue	Notes
☐	To remote into the system... 	Trouble remoting into the system with your laptop or PC.	Get an external monitor or keyboard.
☐	If the readers are unfocused...	If the readers produce unfocused images, check the BSLS height.	
☐	If you have low read-rates...	If you get low read rates, check and clean the glass cover.	

5.2 DMBS

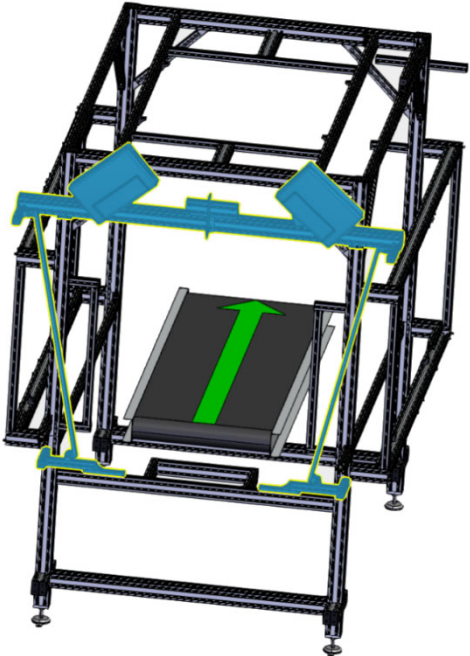
DataMan Bottom Side Checklist		Potential Issue	Notes
☐	Watch for the Waterfall effect. 	If the gapping belts are elevated, this can skew the Bottom Side calibration tests.	Keep the cardboard even and level to get the most-accurate test. Use a heavy package to keep the testing cardboard flat.
			

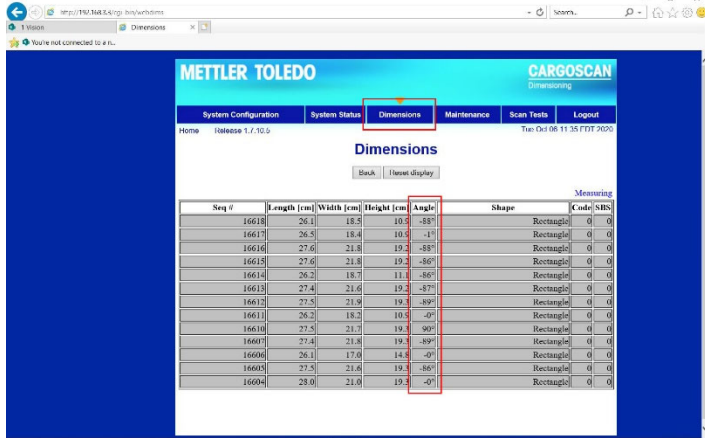
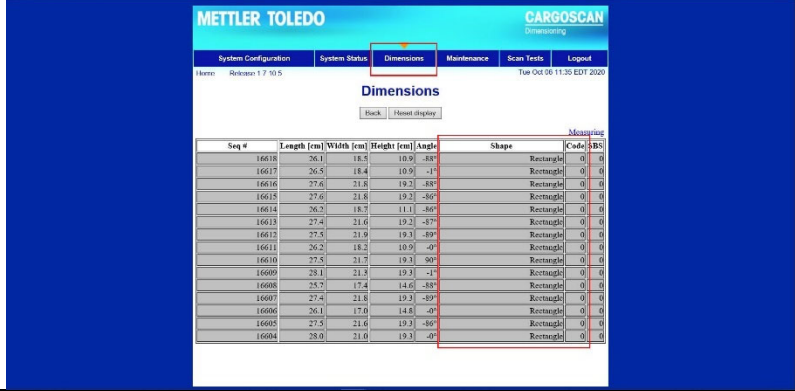
DataMan Bottom Side Checklist		Potential Issue	Notes
☐	Is the Image too dim? 	Repeated dim images or debris.	Clean the top cover, mirror, light, or lenses.
☐	Is the Image poorly stitched or have black lines? 	Black lines or poorly stitched images	Bolt the frame to the ground and confirm stitching and decoding are working well. Shift purple guidelines (FOV boundary) without changing slice height and confirm stitching and decoding are working well. Recalibrate.
☐	Are the Images blurry? 	Blurry or cut-off images	Check the reader interval that is set. Confirm the encoder resolution set on the reader matches the interval. Confirm the encoder dip switches are set correctly.

DataMan Bottom Side Checklist		Potential Issue	Notes
☐	Is the Bottom-Side system receiving trigger? 	- Check if the photo eye triggers correctly by blocking the photo eye. Make sure that the conveyor belt is running and that the top side red bar lights flash. - Check if the bar light connects to a reader via an M12 cable (CCB-M12XFLY-05). - Check if the Bottom-Side encoder (DMA-ENCODER-000) connects to an IO module.	Check if the red bar light on the Bottom-Side system is flashing as packages pass over. Stop the conveyor belt and reboot the reader.
☐	Are images stitching in wrong direction? 		Check the Application Parameters settings and select the correct option (either Upstream or Downstream).
☐	Is the Bottom Side Plexiglass Lens Covered? 		Clean or clear the plexiglass of any obstruction.
☐	Is the Bottom Side Motor Operational? 		If the motor is not working, it cannot blow debris off the plexiglass. Perform maintenance or notify the PM.

DataMan Bottom Side Checklist		Potential Issue	Notes
☐	Is the back of the box is cut off before the final image is captured? 	Reason 1: Decode timeout is set too high. Reason 2: Trigger delays are not set properly.	Check the decode timeout and set the value to 20ms less than the current decode timeout. The total extension of the trigger delay should be 1 encoder tick. In the image above, this would be 15.24 mm.

5.3 Mettler Toledo Dimensioner

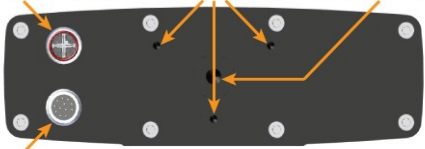
Dimensioner Checklist	Potential Issue	Notes
□ Are the dimensioners angled with the correct height? Are the laser lines overlapping so that there is one continuous line?  	The dimensioner will not dimension correctly. The tilt angle, height, distance, and dimensioner rotation are all factors that could affect dimensioning.	

Dimensioner Checklist		Potential Issue	Notes
☐	Are the angle measurements reading at approximately 90 or 0? 	This is under the Dimensions tab on the Mettler Toledo webpage.	This ensures a level dimensioner to the belt.
☐	Restarting the CPU.	If you're having issues with the dimensioner, go to the Settings and restart the CPU.	In the Mettler software settings, check the Start and Stop boxes. Click Apply and Save. On the Main page, click Restart the CPU.
☐	Is the Belt Direction setting correct? 	The Forward belt direction is... setting must be set to Away from Cover.	Click Adjust to apply this setting. You can verify if the dimensioner is dimensioning correctly by looking in the Dimensions tab. The dimensions will all have positive values, say rectangle, and have a 0 in the error code column.
☐	Are the box dimensions the Mettler Toledo reporting accurate to real life measurements?	If the dimensions are not consistent, or completely inaccurate – the two main causes could be: 1) inaccurate calibration or 2) improper encoder set-up.	

Dimensioner Checklist			Potential Issue	Notes	
□	Does the error code display a “0” in the error code column?			If there is a potential issue, an associated number under the error code column will be displayed.	List of common codes is displayed; the full list of codes is located on Page 141 of Mettler Dimensioner CSN950 MH Reference Manual.
	CSN950 CSN210 code	CS900 CS5200 code	Explanation		
	xxxxxxx1	xxx1	Object was outside measurement field on the right side		
	xxxxxxx2	xxx2	Object was outside measurement field on the left side		
	xxxxxxx4	xxx4	Object was too long to be measured		
	xxxxxxx8	xxx8	Object data found too late to be reported at a specific delay after object passed (currently not implemented)		
	xxxxxx1x	xx1x	Width is under minimum width defined by set-up		
	xxxxxx2x	xx2x	Length is over maximum length defined by set-up		
	xxxxxx4x	xx4x	Parcel in the shadow of another (at least 3 corners must be seen)		
	xxxxxx8x	xx8x	Object is recognized as a special type of tray (mousetrap) used to handle specially shaped objects		
	xxxxx1xx	x1xx	Height is below minimum height defined by set-up		
	xxxxx2xx	x2xx	Height larger than maximum height defined by set-up		
	Xxxxx4xx	x4xx	The objects match to a rectangular box is not as close to a cuboidal object as required.		

5.4 3DA-1000

Dimensioner Checklist		Potential Issue	Notes
□	Is the housing clean?	Bad or no reads.	use a small amount of mild detergent cleaner or isopropyl alcohol on a cleaning cloth. Do not pour the cleaner on the vision system housing.
			CAUTION: Do not attempt to clean any In-Sight product with harsh or corrosive solvents, including lye, methyl ethyl ketone (MEK) or gasoline.

Dimensioner Checklist		Potential Issue	Notes
☐	Is the image sensor clean? IR Projector 2D Camera IR Camera  Front View	Bad or no reads.	To remove dust from the outside of the image sensor windows, use a pressurized air duster. The air must be free of oil, moisture or other contaminants that could remain on the glass and possibly degrade the image. Do not touch the glass windows. If oil or smudges remain, use a cotton bud and alcohol (ethyl, methyl, or isopropyl) to clean the windows. Do not pour the alcohol on the windows.
☐	Are the lights working correctly? 		
☐	Are the cables connected correctly? IR Projector 2D Camera IR Camera  Front View  Side View  Top View (not to scale)  Rear View	Power or communications failure.	Check and tighten.

6 Maintenance

Recommended cleaning schedule:

- **Weekly:**
 - Check that the DataMan Bottom Side motor is running and that the plexiglass is clear of debris.
- **Monthly:**
 - Check for loose bolts.
 - Clean the readers with a lint-free cloth.
 - Remove dust and debris from dimensioner glass, mirrors, and readers.
 - Wipe the dimensioner glass, mirrors, photo eye, readers, and reflector with alcohol wipes (no solutions or formulas).
 - Check that the fans are running inside of the EI box.
 - Check the status indicators on the power supplies:



6.1 Replacing Readers



WARNING: Damage may occur unless power is disconnected any time you make physical changes to the tunnel. Cognex recommends removing the power cable prior to installation or removal of any components on the system.

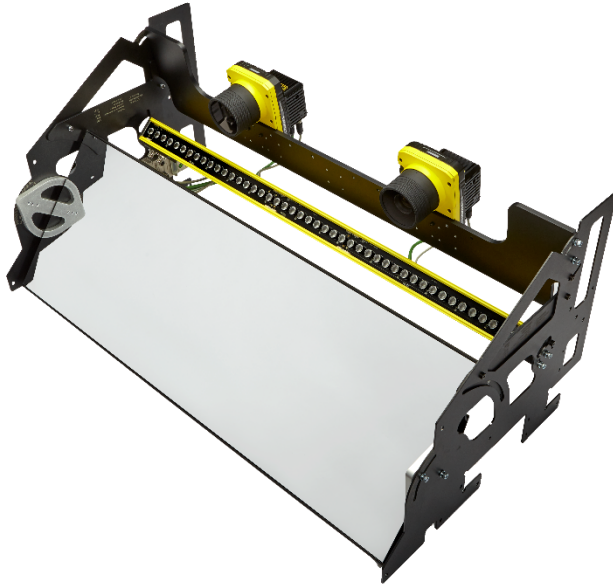


1. Disconnect cables from Reader.
1. Remove the three mounting screws.
2. Replace Reader with new unit.
3. Swap out SD Card.
4. Replace mounting screws.
5. Re-mount in **exact position** as before.
6. Connect cables.



NOTE: Swap out faulty readers **without** moving or changing reader positions, focus, or settings.

6.2 Replacing Lights



1. Disconnect cables from Light.
2. Remove the mounting screws.
3. Replace with new unit.
4. Replace mounting screws.
5. Re-mount in **exact position** as before.
6. Connect cables.

6.3 Replacing Hybrid Switches



1. Disconnect cables from Hybrid Switch.
2. Remove the mounting screws.
3. Replace with new unit.
4. Replace mounting screws.
5. Re-mount in **exact position** as before.
6. Connect cables.

6.4 Maintenance for DMBS

Inspection Areas	Procedure
Clean the top cover and mirror Inspect Daily	Remove the pin holding the cover in place for easier cleaning. Use Windex and a microfiber cloth. 
Clean the camera lens cover Inspect every 2 weeks	Use a feather duster to gently clean the lens cover. 
Clean the bar light Inspect every 2 weeks	Use compressed air to remove debris and dust from the bar light. 
Clean the blower air filter Inspect every 3 months	Unplug the motor from the power outlet. Use compressed air to clean the outside of the air filter. 