

DataMan Setup Tool Lab Book

5.6.0 SR1

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Get Connected

EXPECTED OUTCOMES:

You will use the DataMan Setup Tool software installed on a laptop/PC to:

- Become familiar with the Setup Tool's Property list and Parameters.
- Identify and Change IP addresses
Connect to a Reader

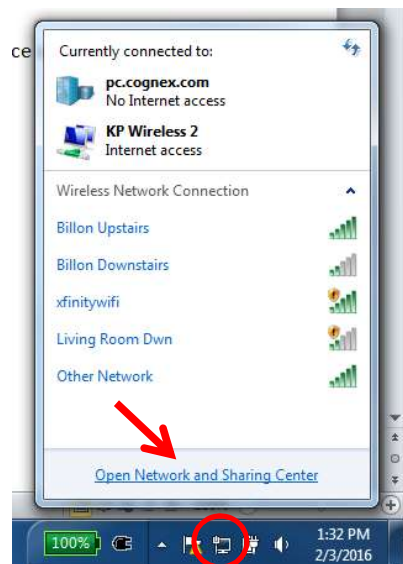
FUNCTIONS USED: Setup tool, Connect to Reader, Menu settings.

GETTING CONNECTED - Changing IP addresses and Names

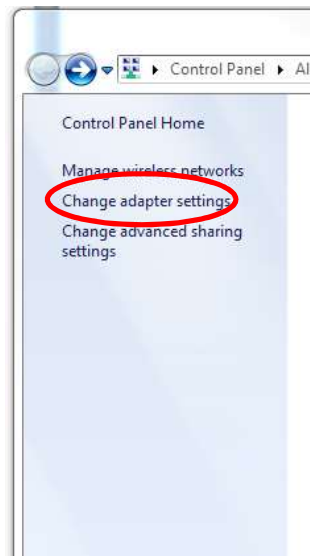
PROCEDURE:

1. Set a static IP address on your Computer NIC

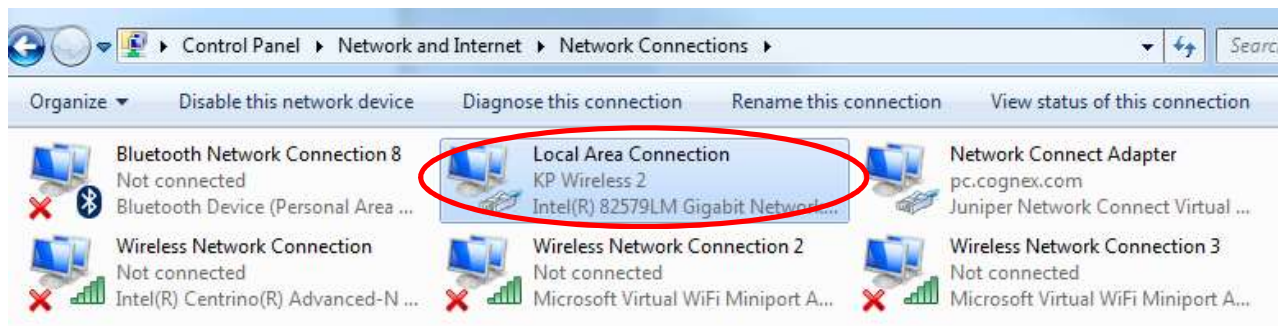
- Open the Network and Sharing Center



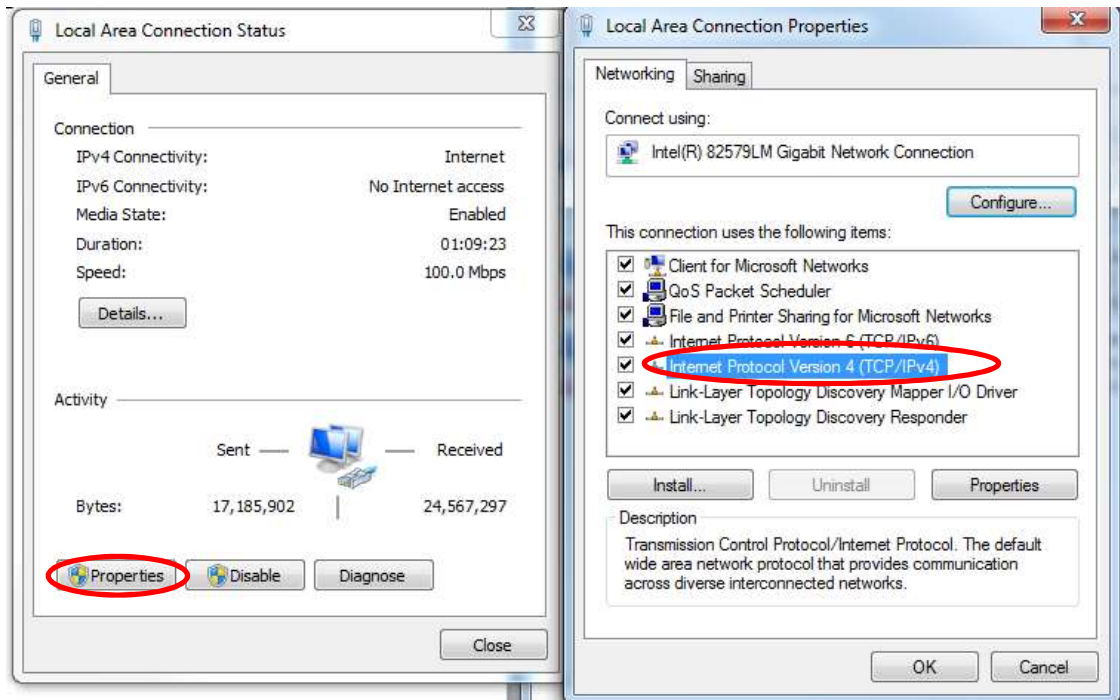
- Select - Change Adapter Settings



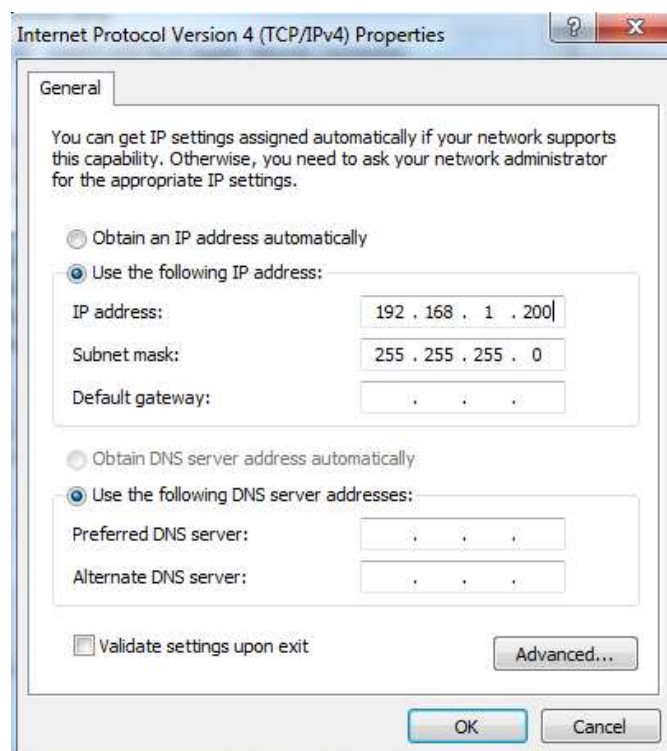
- Select – Local Area Connection



- Select – Properties
- Double Click – Ipv4 Properties



- Apply the Static IP Settings shown below and click OK

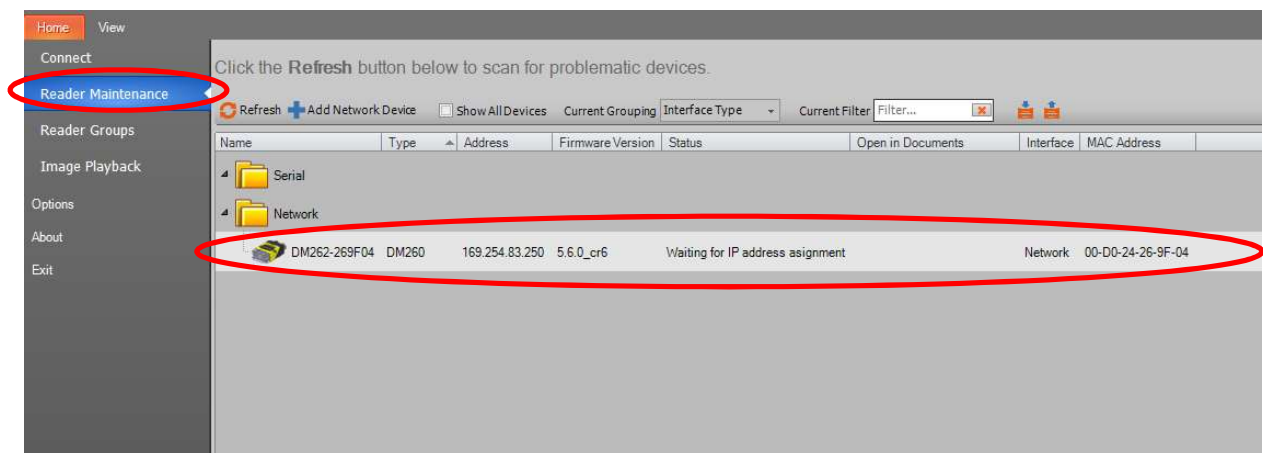


2. Hard Reset your DataMan reader

- Disconnect Power
- Hold the trigger button down while reconnecting power and keep the button held until the reader beeps 6 times.
 - i. Your reader is now back to Factory Default settings – DHCP Address mode

3. Launch the DataMan Setup Tool v5.6.0 SR1.

- Notice that on the Connect screen, your reader is discovered, but its status is “Waiting for IP address assignment”. This is because the reader is in DHCP mode by default, and you have just set a static IP address on your computer. If your computer was set to DHCP then it would assign an address to the reader. However, this is not the preferred method to connect, as the DHCP assignment is not robust, and can cause issues with connecting after hibernation, etc.
- Assign a Static IP Address to your reader. Click the Reader Maintenance Tab and Highlight the Reader



- On the right side of the screen, select “Use Static IP Address” and enter the network settings as shown below. Then Click “Apply”

Network Settings

☐ Use DHCP Server
☒ Use Static IP Address

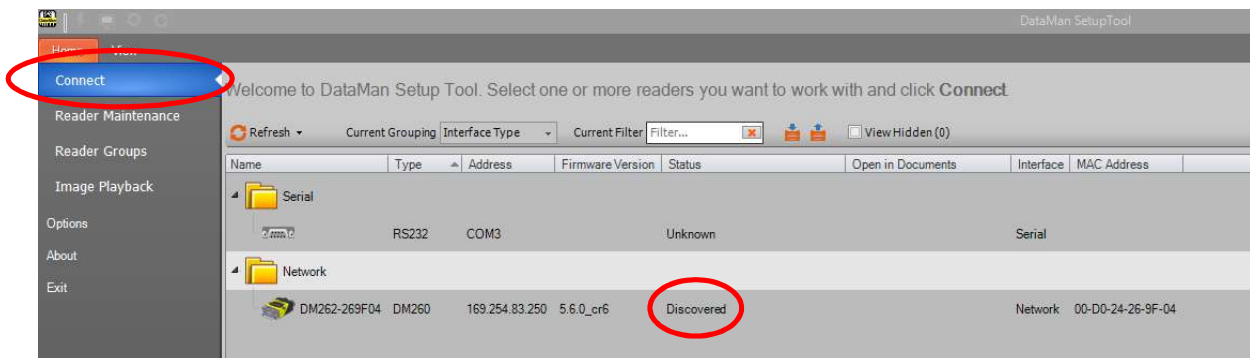
IP Address: 192.168.1.201
 Subnet Mask: 255.255.255.0
 Default Gateway: 0.0.0.0

Authenticate

Username: admin
 Password:

Apply

- The reader will now apply the new settings and reboot. Return to the Connect menu and wait for the reader to be re-discovered. You may need to click the Refresh button. When the reader is identified it is now in Discovered status, and you are now able to connect.



Trigger Modes

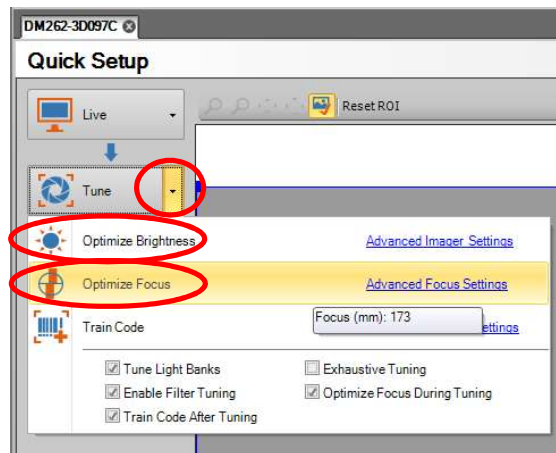
EXPECTED OUTCOMES:

You will use the Reader/DataMan 260 Series to explore different trigger types

You will learn the options for re-read delays

PROCEDURE:

1. Launch the DataMan Setup Tool
2. Connect to your DataMan **260 Series Reader with 6.2mm Liquid Lens**
3. Place the Ace of Hearts card in the field of view.
4. Optimize Brightness and Optimize Focus by clicking both of these options within the Tune sub-menu.



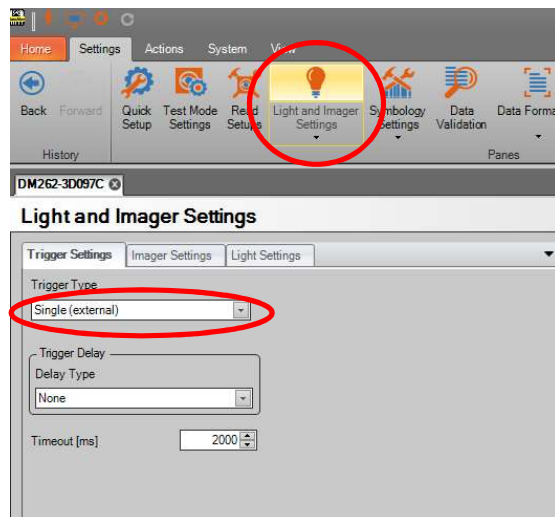
5. **There are 2 ways to trigger the reader from the Setup Tool Software**

- Trigger Button in the top of the Application ribbon



- Pressing the CTRL+T keyboard sequence – DataMan Setup Tool must be active window

6. Although the trigger modes are available in the Quick Setup menu, we will explore them in the Light and Imager Settings because we will use some of the additional advanced option displayed there.



Demonstrate the below trigger modes using the Ace of Hearts demo card.

7. Set the reader to Single (External) Trigger Mode

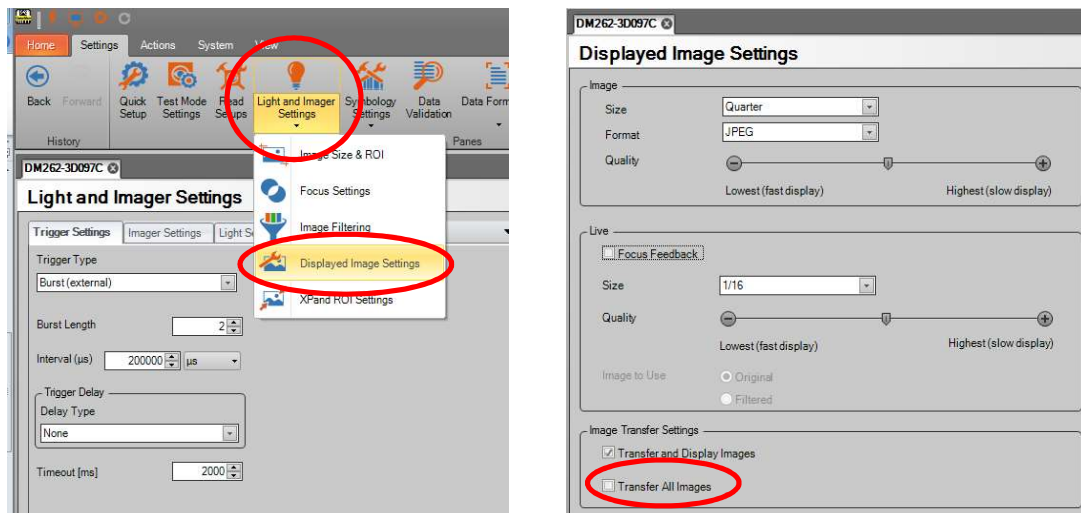
- Takes a single image
 - Uses Manual Exposure
 - Trigger Delay – delays the start of the trigger by a specific amount of time or distance (requires pulse encoder)
 - Timeout Value – decoder quits at this timeout even if decode has not completed (timeout must be higher than longest decode time for the code). Timeouts are useful if there is only a certain amount of time allowed between triggers, you will set this timeout to make sure that the reader completes the trigger before the next one receives.
- Press the trigger and notice that it only acquires one image per trigger
 - Set the Delay Type to Time and input a value of 1,000ms
 - Trigger the reader and notice that it delays 1 second before acquiring
 - Change the start delay back to 0

8. Set the reader to Continuous (External) Trigger Mode

- Continuously reads while trigger signal is active
 - Interval – Time between acquisitions, also acts as timeout
 - Delay Type – Possible to delay start of acquisition or extend length of acquisition based on the trigger signal
- Hold down the trigger and move a code through the FOV
 - Notice that once the reader reads the code the string is output and the trigger cycle ends.
 - Change the Interval time to 50,000us. Notice how much faster the reader acquires between images.
 - Set the interval time to 0us. Notice that the value updates to 20,250. This is because that is the max frame rate of the reader.
 - With the Interval of 20,250us, trigger the reader and attempt to read the code. If the code is not read then that is because the decode time is longer than 20,250us and the Interval needs to be increased.

9. Set the Reader to Burst (External) Trigger Mode

- Acquires multiple images first then decodes in sequence
 - Burst Length – Number of images to acquire
 - Interval – Time between acquisitions
 - Timeout – Maximum amount of time spent on each image
 - Used primarily when Continuous mode decode times are not fast enough for moving applications
 - Reader starts to decode queue immediately after first acquisition. If it decodes a code then it will not acquire the remaining images.
- Remove the code from the FOV.
 - Set the interval time to 1,000,000 us
 - Trigger the reader and notice that it acquires 2 burst images with default settings.
 - All images in a burst sequence can be viewed in the Results Display menu by Enabling “Transfer All Images” in the Light and Imager submenu Displayed Image Settings

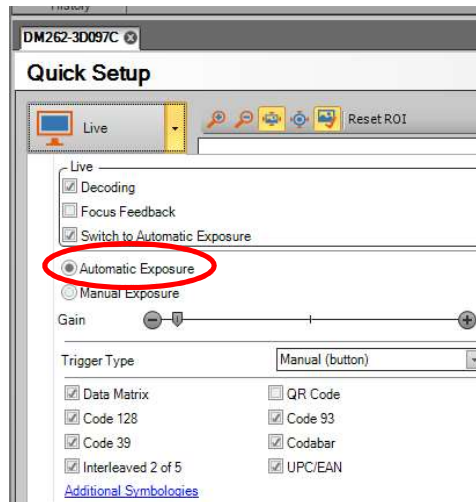


- The images in a Burst sequence can be viewed in the Results History window by expanding the + icon

Result History							
<div>Clear History</div> <div>Logging</div> <div>Customize</div>							
Result	Result Status	Arrival Time	Decode Time	Trigger Time	Symbology	Device Name	
<div>+ ACEHEARTS</div>	✓ Read	3:28:03.018 PM	38ms	2052ms	Code 128	DM262-3D097C	

10. Set the reader to Manual (button) Trigger Mode

- This trigger mode can be thought of like a handheld reader.
- Can utilize Auto Exposure – not for moving applications
- Must keep trigger held down to read
- Hold down the trigger button until it reads the Ace of Hearts code
- Change the Exposure to Auto-Exposure



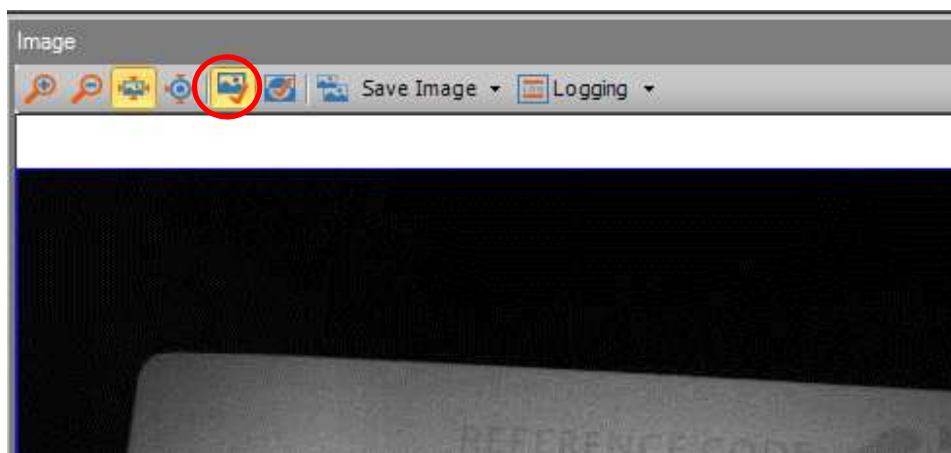
- Remove the barcode and move your hand closer and farther to the light while holding the trigger and notice the auto exposure taking place

11. Set the reader to Presentation (Internal) Trigger Mode

- Continuous reading
- Next acquisition is taken once previous image is decoded
- Not for moving applications
- Designed for Hand Presentation applications with a large variety of codes and backgrounds
- Place a code in the FOV and notice that it continuously reads
 - * There is an option to only read the barcode 1 time (demonstrated later in this lab).

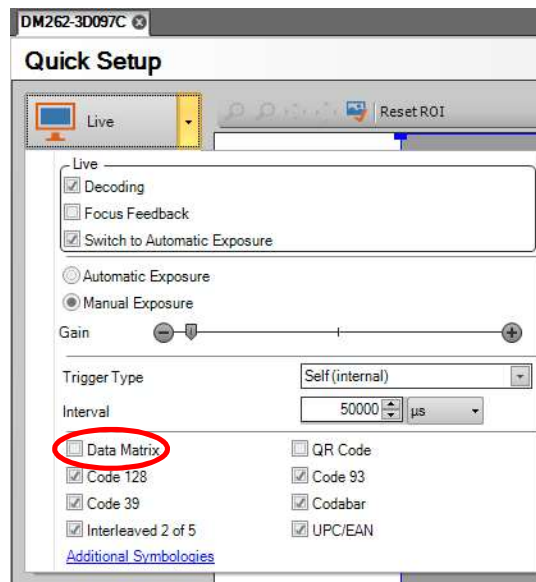
12. Self (Internal) Trigger Mode

- Continuous reading – no external trigger
- Interval – Time between acquisitions, also acts as timeout
- Good for moving applications without a trigger
- Set the interval time to 50,000 us
- Disable the Image Transfer

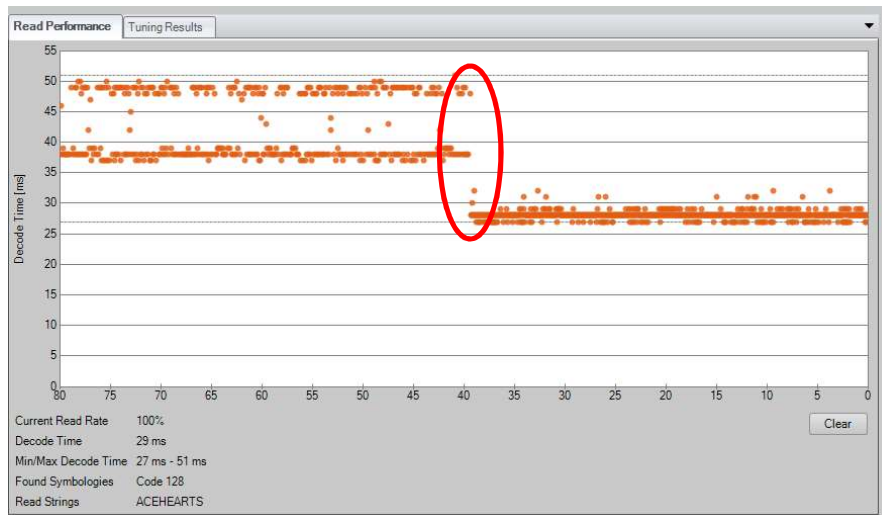


- Notice how much more quickly the reader is now reading

- Go to the Quick Setup Menu
- Disable the Data Matrix Symbology from the Live submenu.

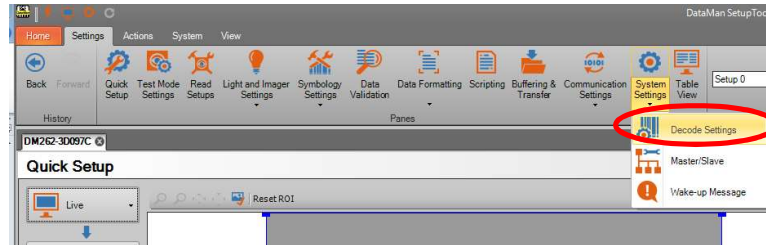


- Check out the decrease in decode times on the graph?!
 - Now you're speed readin'!!!



13. Re-Read Delays

- Navigate to the System Settings -> Decode Settings menu



- Read the Q&A Help menu items on the right side of the window to learn about each option
 - If not visible go to View -> Q&A
 - The **Never Read Same Code Twice** option suppresses the reporting of the same code string twice in a row and within a single trigger sequence. It is available for all trigger modes, e.g. in Multicode Reading. If **Never Read the Same Code Twice** is unchecked, the reader will re-read and re-transmit the same code after the specified **Code Re-Read Delay** (in milliseconds).
 - The **Delay Mode** option sets the code re-reading delay relative to either the first or the last read.
 - The **Code Re-Read Delay** (in milliseconds) option lets you specify the delay between read attempts. Specifying a non-zero value for this delay can help prevent data from overwhelming the device that is connected to your reader.
 - The **After First Read** delay starts timing after the first time a given code is read, and the timer will not reset. This means that a code may be re-read if the reader is triggering in a multiple-image mode such as continuous, and if the code is in front of the reader for an amount of time equal to or exceeding the **Re-Read Delay**.
 - **After Last Read** resets the timer every time a given code appears in an image. This means that the code will not re-read, as long as it stays in front of the reader. Only removing the code from the reader's field of view for a time equal to or exceeding the **Re-Read Delay** will cause the code to re-read.

14. Perform the below with your reader still in Self (Internal) trigger mode and with the code in the FOV

- **Enable the Never Read Same Code Twice Box**
 - Try to read the same code twice and notice that it will not do so unless another code is read in between
 - Place another card in the FOV and notice the read.
 - Place the Ace of Hearts back and notice that it will read it again.
 - The “Don’t Read Last N Codes” option can be used to increase the queue of subsequent reads
- **Disable Never Read Same Code Twice**
 - Change the delay mode to After First Read
 - Set the Re-read delay interval to 1000 (ms)
 - Leave the code in the FOV and notice that the reader outputs every 1s
- **Change the delay mode to After Last Read**
 - Leave the code in the FOV and notice that it will only output once
 - The code must be removed from the FOV for 1s before it will output again

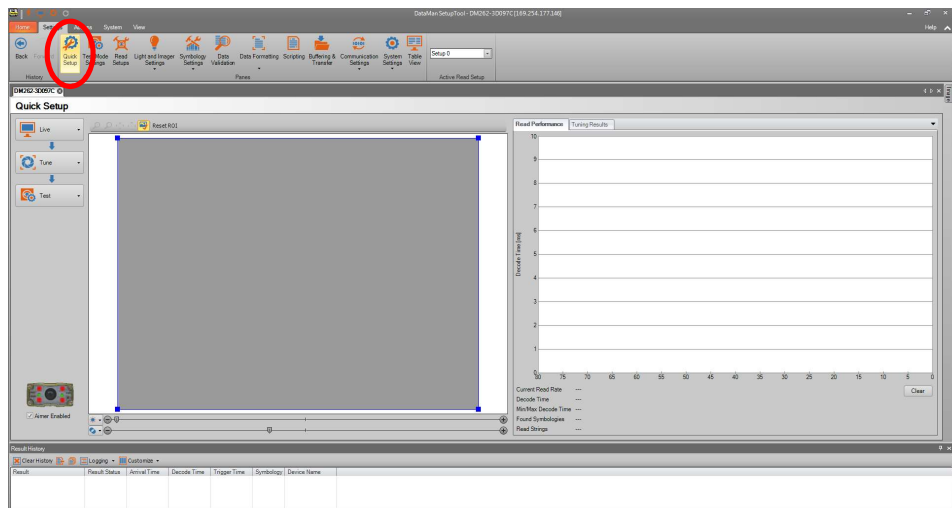
Tuning

EXPECTED OUTCOMES:

Demonstrate the capability of the reader to optimize settings with a single press of the Tune button

PROCEDURE:

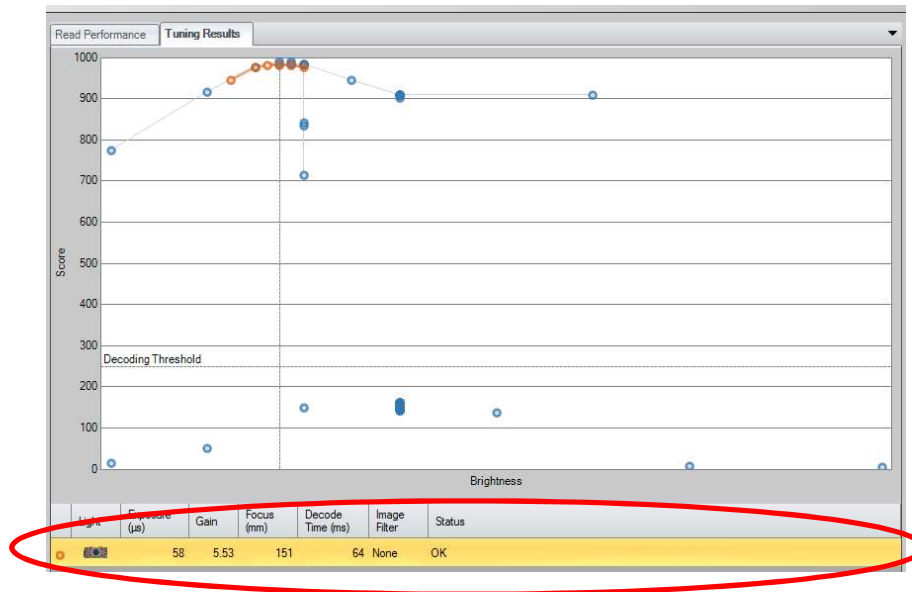
1. Connect your DataMan 260 Series Reader to the DataMan Setup Tool v5.6.0 SR1
2. Navigate to the Quick Setup menu



3. Enable Live mode and place the Power Grid demo plate in the FOV.



4. Take the reader out of Live mode.
5. Press the Tune button on the front of the reader for 1 second
 - You have discovered a hidden feature – Tapping the Tune button Toggles the Aimer Lights!! Did you notice how they are now off?
6. Press the Tune button again on the front of the reader for 1 second to re-enable the lights.
7. Now press and hold the “Tune” button on the back of the reader until it initiates the tune sequence - ~5 seconds. You will notice the LEDs flash. The reader will go through the following process.
 - Optimize Focus
 - Optimize Brightness
 - Cycle exposure values
 - Plot points on the graph
 - i. Dots above the horizontal line are good reads
 - ii. More dots higher on the graph are a sign of a robust algorithm!
 - When completed it will display and Automatically Apply the optimum settings



8. Trigger the reader to show that it can read the good code.
9. Cover all but one code to show that the Power Grid algorithm can easily read all of the damaged codes on the plate.
10. Set your Multicode value to (5) Data Matrix codes and trigger the reader to show it can read all of the codes on the same plate at the same time!

DM262-3D097C

Symbology Settings

General Multicode Training

Multicode Settings

Number of Codes

☐ Allow Partial Results

Data Matrix

Max. Number of Codes

QR Code / MaxiCode / Aztec Code

Max. Number of Codes

DotCode

Max. Number of Codes

1D / Stacked / Postal

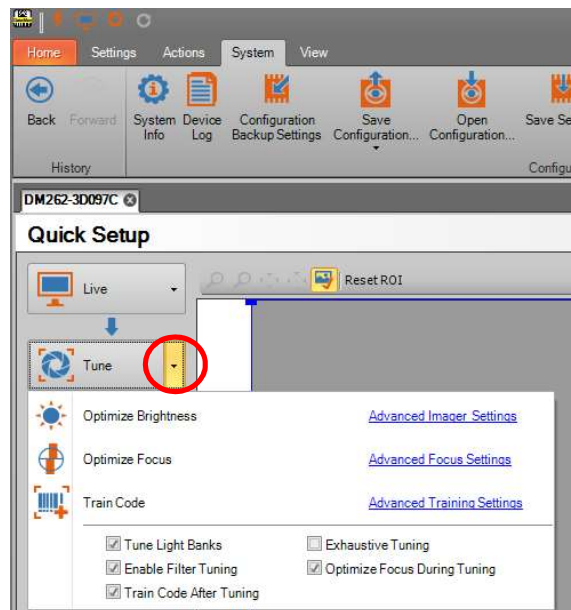
Max. Number of Codes

☐ Allow Identical 1D Symbols



Advanced Tuning Settings

1. Reset the reader configuration
2. Navigate to Quick Setup and open the Tune Submenu by clicking the down arrow



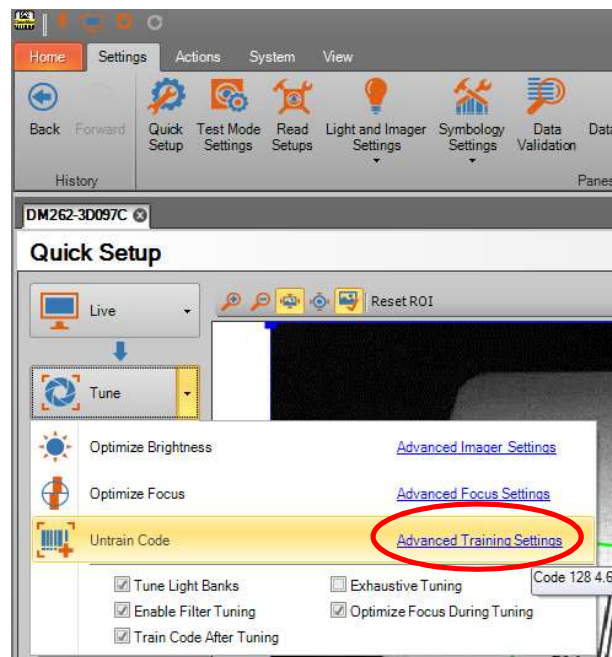
3. Notice that the Train Code After Tuning is Checked by Default
 - This feature trains on code properties such as
 - i. Symbology Type
 - ii. Pixels Per Module

- iii. 1D Orientation
- iv. 2D Grid Size
- Codes with properties that differ from the trained properties may not read

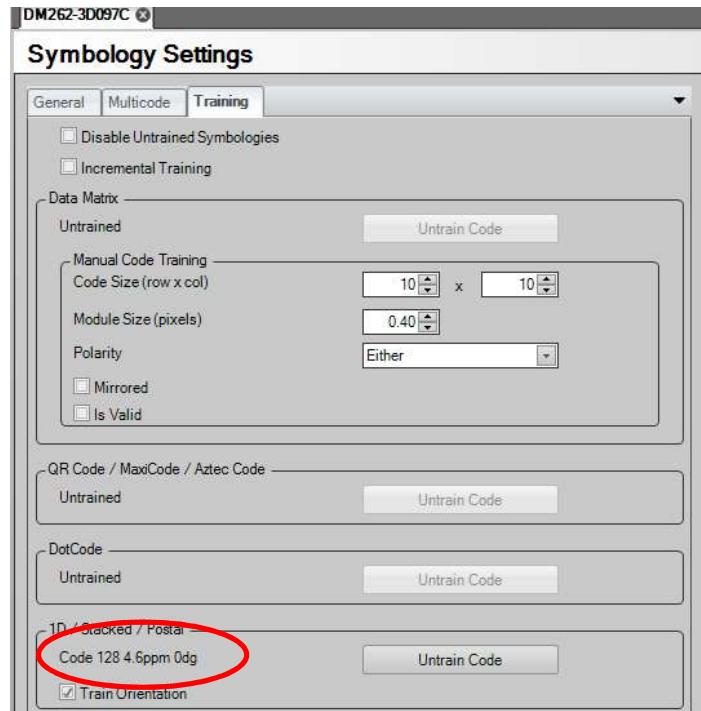
4. Tune the reader on the Ace of Hearts

5. Turn the code 90 degrees and trigger the reader.

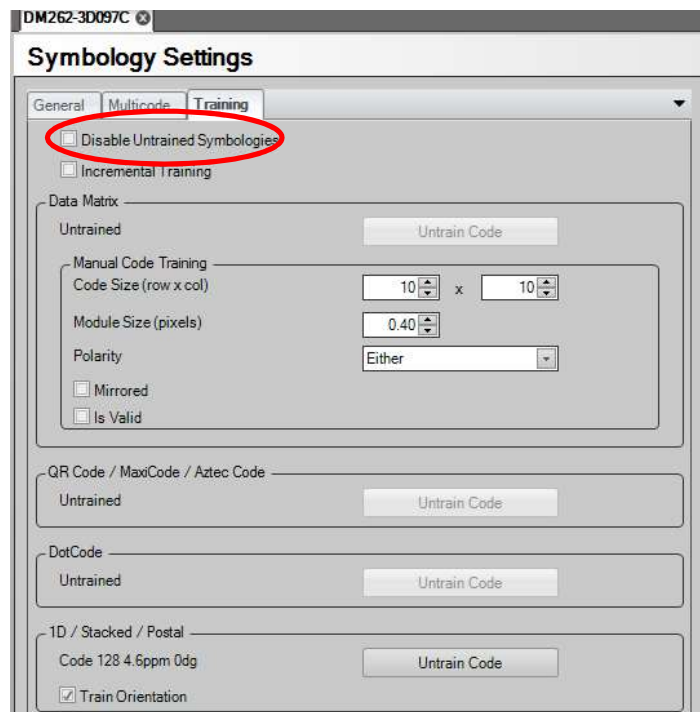
- Notice that the code did not read because the code was trained on a specific orientation.
- Expand the Live submenu
- Notice that all other symbologies are greyed out because the reader is trained on Code 128
- Move the code closer to the reader while triggering. Notice at some point it will not read because the ppm size is larger than the trained properties.
- Click on Advanced Training Settings in the Tune submenu to be taken to the Training properties page.



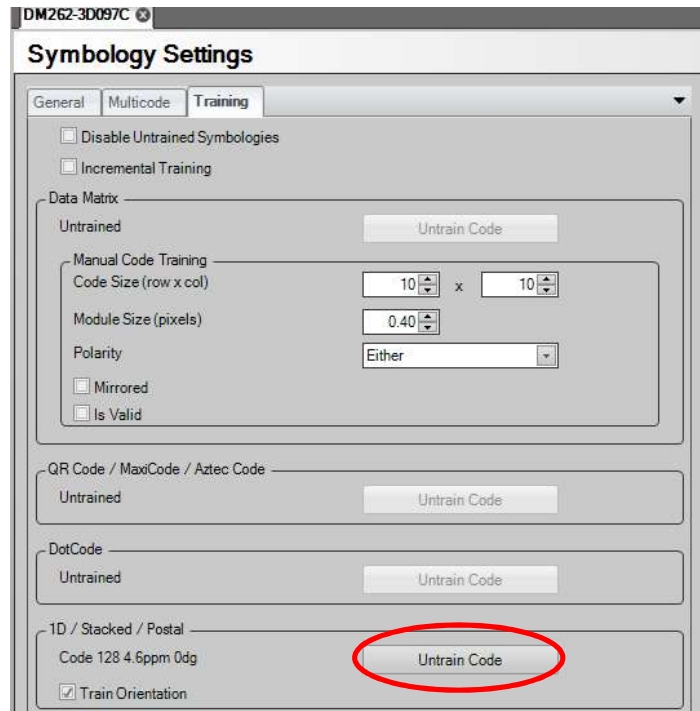
- Take note of the properties of your Trained 1D Code



- Un-Check Disable Untrained Symbolologies



- Can you now read the 2 of Diamonds? Yes
- Untrain the Code



- Can you now read the 1D code in any orientation? Yes
 - If you were to un-check Train Orientation prior to training then the orientation would not be trained
- Read the Q&A Help topics to learn more about the other training features

Other Advanced Tuning Topics:

- What happens if I select Tune Light Banks?
 - If you set **Tune Light Banks**, the device tunes the light banks. If you know which light settings you want to use, disable it, so the tuning doesn't overrule your preset.
- What happens if I select Exhaustive Tuning?
 - Selecting this option will **force** tuning the light banks. When Exhaustive Tuning is disabled, and the reader succeeds to read the code with the primary light setting (1st one in the sequence), it will stop to try other light bank combinations.
 - If Exhaustive Tuning is on, the reader will continue to try all combinations to look for the best one, no matter whether or not the first one succeeded.

- What happens if I select Enable Filter Tuning?
 - If **Enable Filter Tuning** is selected, the DataMan Setup Tool applies filters to the read image. The filter used in the successfully read is then shown in the Tuning Results pane under Image Filter.

Symbology Settings

EXPECTED OUTCOMES:

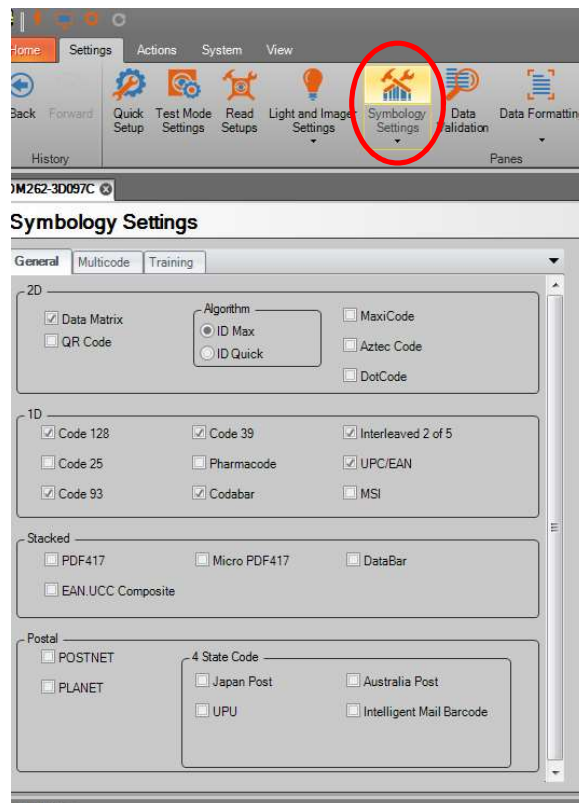
Filter out specific barcodes by symbology type and string length

Use extended mode for challenging codes

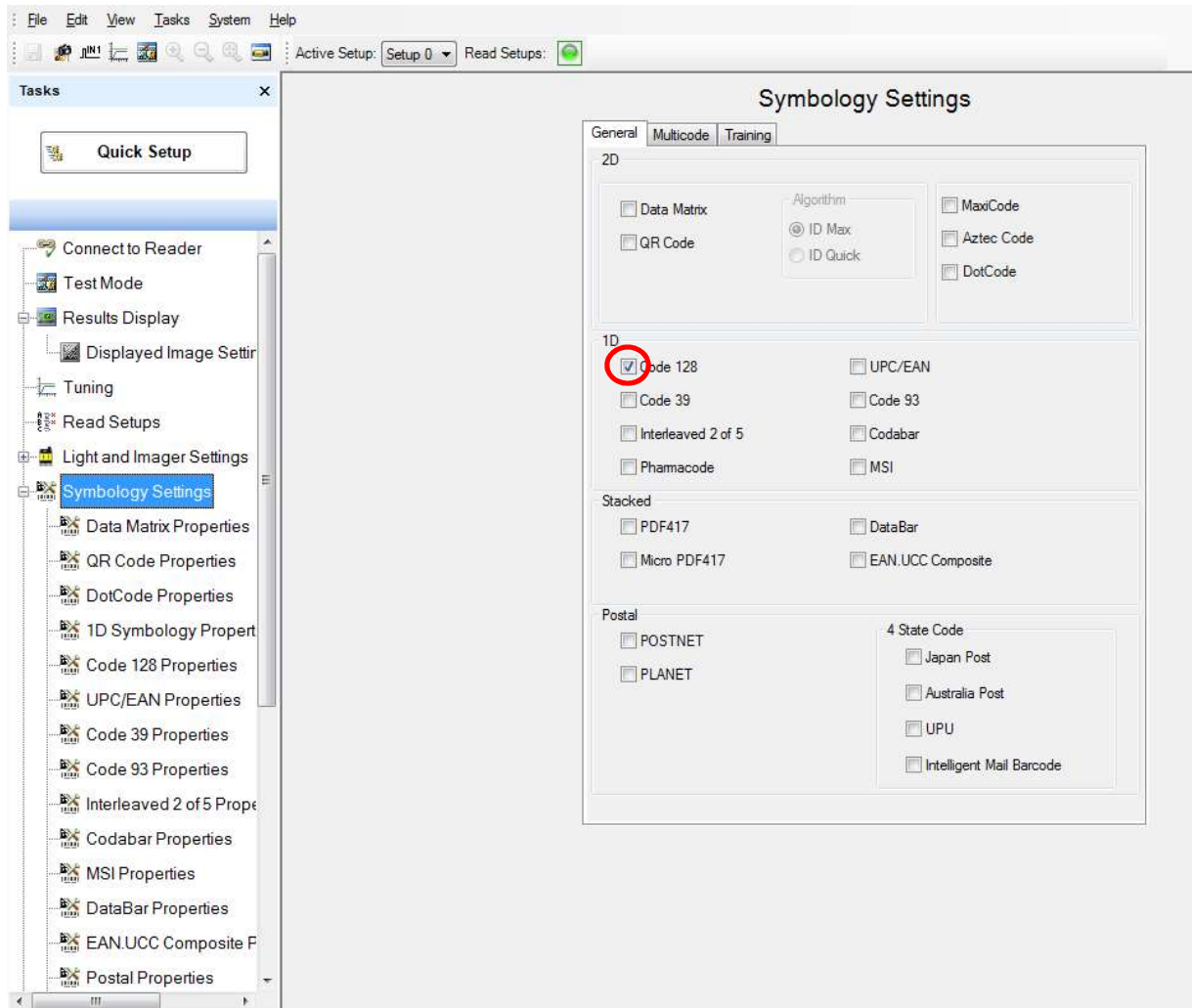
Read 2 codes in the FOV within the same trigger cycle

PROCEDURE:

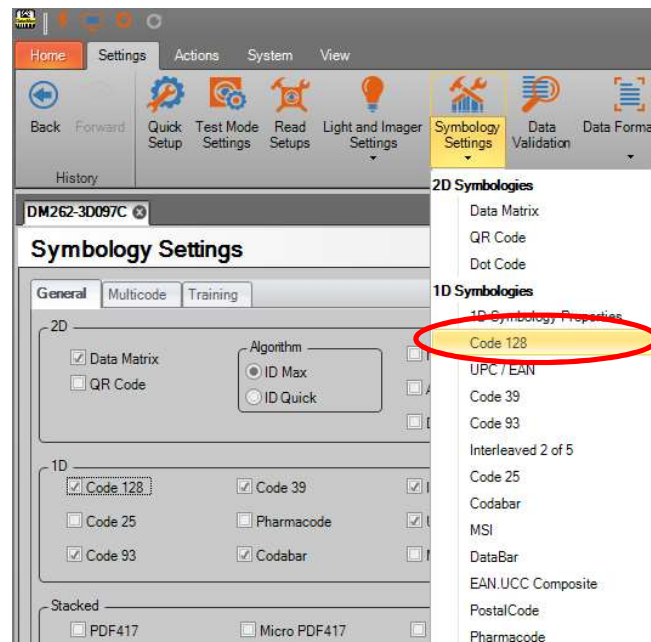
1. Connect your DataMan 260 Series Reader to the DataMan Setup Tool v5.6.0 SR1
2. Set the trigger mode to Single (External)
3. Optimize Brightness and Focus using the Ace of Hearts demo card
4. Navigate to the Symbology Settings menu



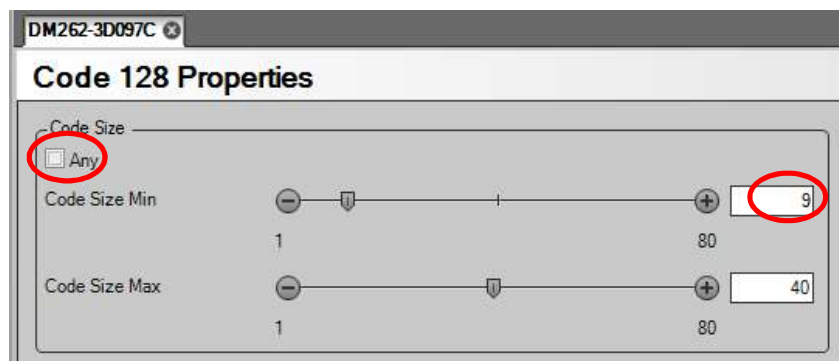
5. Toggle the Code 128 setting and trigger the reader to show that it can only read the Ace of Hearts when enabled



6. Go to the Code 128 Properties menu



7. Disable “Any” and set the Code Size Min to “9”

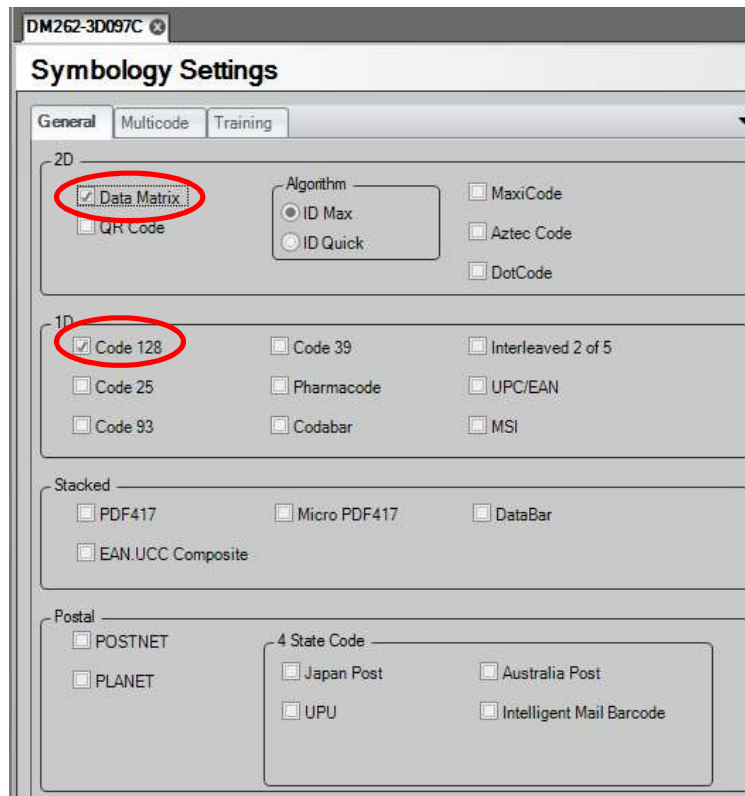


- The reader will not read any codes with a data string length of greater than 9 characters
- Confirm that the Ace of Hearts still is read, but that the King of Hearts cannot be read.

8. Change the Code Size Max to 10

- Confirm that the King of Hearts can now be read.

9. Enable the Data Matrix symbology



10. Place both the 2 of Diamonds and the Ace of Hearts in the FOV

11. Go to the Multicode Tab

- a. Set the total number of codes to 2
- b. Data Matrix max codes – 1
- c. 1D / Stacked / Postal max codes – 1

DM262-3D097C

Symbology Settings

General Multicode Training

Multicode Settings

Number of Codes

☐ Allow Partial Results

Data Matrix

Max. Number of Codes

QR Code / MaxiCode / Aztec Code

Max. Number of Codes

DotCode

Max. Number of Codes

1D / Stacked / Postal

Max. Number of Codes

☐ Allow Identical 1D Symbols

Sorting Priority

Data Matrix, QR Code, MaxiCode, Aztec Code, Barcode, DotCode

Image Order

Position (Top to Bottom)

Position (Left to Right)

Up

Reverse

Down

12. Trigger the reader, both codes are read



13. Try to read only the Ace of Hearts or 2 of Diamonds

- a. Notice that the reader is not reading because Allow Partial Results is not enabled

14. Enable Allow Partial Results to return any number of codes less than 2 in a single trigger cycle

DM262-3D097C

Symbology Settings

General Multicode Training

Multicode Settings

Number of Codes: 2

☒ Allow Partial Results

Data Matrix

Max. Number of Codes: 1

QR Code / MaxiCode / Aztec Code

Max. Number of Codes: 1

DotCode

Max. Number of Codes: 1

1D / Stacked / Postal

Max. Number of Codes: 1

☐ Allow Identical 1D Symbols

Sorting Priority

Data Matrix, QR Code, MaxiCode, Aztec Code, Barcode, DotCode

Image Order

Position (Top to Bottom)

Position (Left to Right)

Up

Reverse

Down

15. Try to read only the Ace of Hearts

- a. The reader will read the code and report only the Ace of Hearts

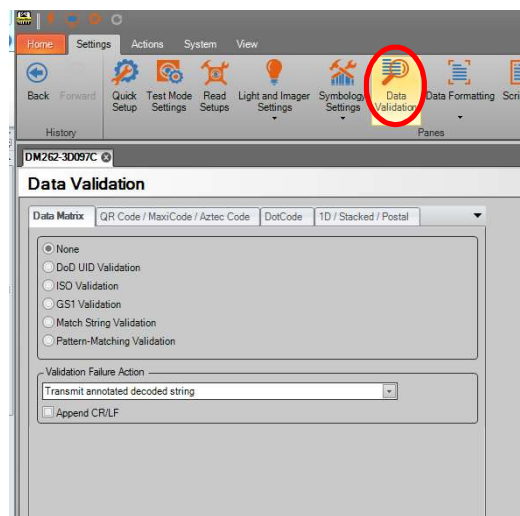
Data Validation

EXPECTED OUTCOMES:

Learn how to use the Data Validation functionality. Data Validation is used to confirm that the data encoded by a symbol is in the correct format for a particular company, industry or international standard.

PROCEDURE:

1. Connect your DataMan 260 Series Reader to the DataMan Setup Tool v5.6.0 SR1
2. Make sure Code 39 is enabled
3. Optimize Brightness and Focus the reader on the Ace of Clubs demo card
4. Navigate to the Data Validation menu



5. Read below to learn about ISO and GSI Validation

- **ISO Validation** - The ISO Validation feature is used to determine if a data string is correctly encoded according ISO 15434 syntax or ISO 15434 plus ISO 15418.

ISO 15434 confirms if the data string is encoded with the correct syntax which includes the evaluation of the 'non-printable' ASCII characters in the string such as

the message header, record separator, format code (For AI, DI or TEIs), group separators and end of transmission character.

ISO 15418 confirms if the data string is encoded with the correct Data Qualifiers for each Data Element. Depending on whether a manufacturer is using a AI, DI or TEI format, each Data Element (Manufacturer's EIN code, Part Number and Serial Number) is preceded by a specific code or 'Data Qualifier'.

- **GS1 Validation** - GS1 validation allows you to verify the syntax and semantics of symbols against the GS1 specification. The reader can validate the encoded data against a configurable string of identifiers.

By default, the reader validates the incoming symbol against the European Federation of Pharmaceutical Industries and Associations (EFPIA) format string:

Using GS1 validation, you can configure what the reader transmits when the data in a symbol does not pass verification, including a carriage return and line feed. The Detailed Results pane will display a PASS or FAIL for each symbol and list each application identifier in the symbol along with its accompanying data element.

6. Navigate to the 1D / Stacked / Postal Tab on the Data Validation Page and enable Match String Validation

The screenshot shows the 'Data Validation' configuration window for a device labeled 'DM262-3D097C'. The window has a tabbed interface with four tabs: 'Data Matrix', 'QR Code / MaxiCode / Aztec Code', 'DotCode', and '1D / Stacked / Postal'. The '1D / Stacked / Postal' tab is selected and highlighted with a red circle. Below the tabs, there are five radio button options: 'None', 'ISO Validation', 'GS1 Validation', 'Match String Validation', and 'Pattern-Matching Validation'. The 'Match String Validation' option is selected and highlighted with a red circle. Below these options, there is a 'Match String' text input field. Underneath, there is a checkbox labeled 'Increment/Decrement Numerical Component'. If checked, it reveals a sub-section with 'Start Position' (set to 0), 'Length' (set to 'Auto'), 'Step Size' (set to 1), and two checkboxes: 'Update on No Read' and 'Update on Validation Failure'. At the bottom, there is a 'Validation Failure Action' section with a dropdown menu set to 'Transmit annotated decoded string' and a checkbox for 'Append CR/LF'.

- Match String Validation enables you to specify an exact string to match against the string encoded by the symbol. Only symbols containing a string that matches the specified string will generate a Pass result.

7. Type the String “ACECLUBS” in the Match String Field.

DM262-3D097C

Data Validation

Data Matrix | QR Code / MaxiCode / Aztec Code | DotCode | 1D / Stacked / Postal

☐ None
☐ ISO Validation
☐ GS1 Validation
☒ Match String Validation
☐ Pattern-Matching Validation

Match String:

☐ Increment/Decrement Numerical Component

Start Position:
 Length: ☐ Update on No Read
 Step Size: ☐ Update on Validation Failure

Validation Failure Action:

☐ Append CR/LF

8. Trigger the Reader and notice see that it passes as “Valid” in the Results History

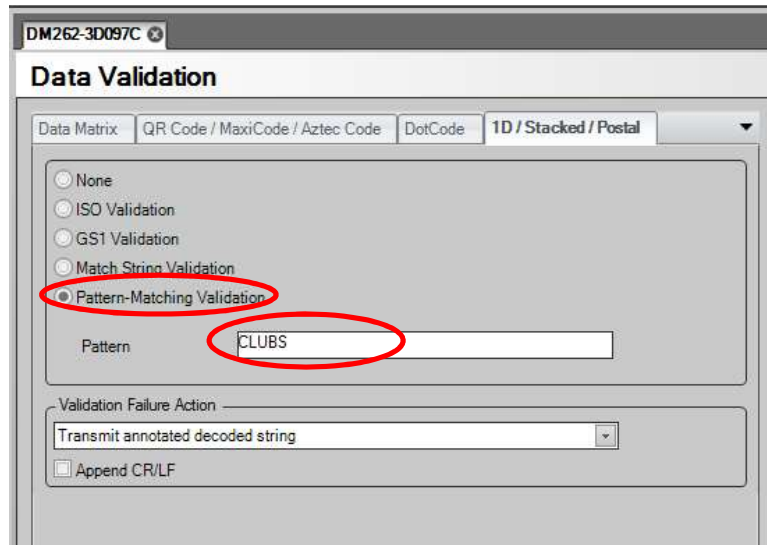
Result	Result Status	Arrival Time	Decode Time	Trigger Time	Symbology	Device Name
ACECLUBS	Valid	11:59:14.201	79ms	101ms	Code 39	DM262-3D097C
Validation Type: Match String Match String: ACECLUBS						

9. Try to read the King of Clubs and see what happens

10. Change the Match String to “aCECLUBS”. Is it Valid?

- a. No, because the Match String is case sensitive.

11. Enable Pattern-Matching Validation and type the Pattern “CLUBS”



- a. Pattern-Matching Validation enables a user to input a specific string of characters to confirm if they are present in the data string. For instance, a user could enter the pattern 17V which is used in DI formats to identify the manufacturer's Enterprise Identifier. If the characters 17V are present in the code, the reader will signal a pass for validation for that code. If the characters are not present, the reader will signal a failure for validation.

12. Trigger the reader on the Ace of Clubs. Is it Valid?

13. Now trigger the reader on the King of Clubs.

- Both codes are Valid because CLUBS is a subset of the string contained in both barcodes.

Calculate Mil Size

EXPECTED OUTCOMES:

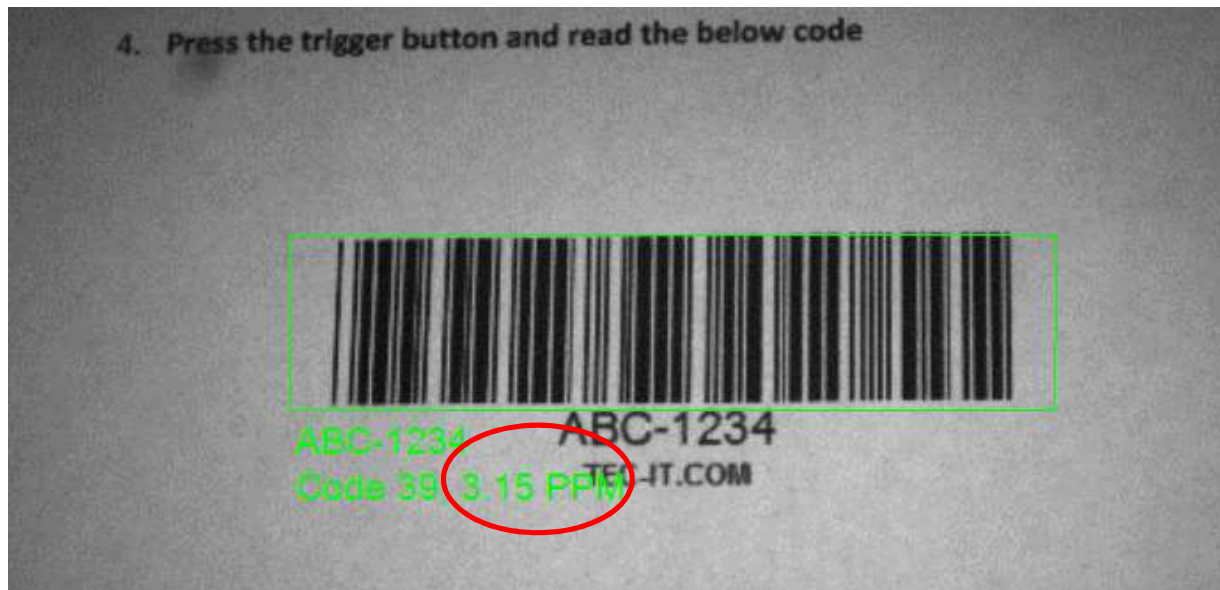
You will use the DataMan 262 Reader to calculate the mil size of a barcode.
You will then calculate the maximum FOV for that code size.

PROCEDURE:

1. Launch the DataMan Setup Tool
2. Connect to your DataMan 262 Reader
3. Adjust the mounting of the reader so that the horizontal FOV is the exact width of this paper with the below barcode in the center of the FOV – 8.5”
 - a. Put the reader in Live Display mode and move the reader closer or farther
4. Press the trigger button and read the below code



5. Note the PPM value reported in the result display.
 - a. This is the number of pixels in the minimum module



6. Calculate the mil size of the barcode

- a. Pixel Width = 8.5 (in) / Horizontal Pixels
- b. Mil Size = Pixel Width * PPM value = pixels per narrow bar * 1000
 - i. 8.5 (in) / 1280 pixels = .00664 (in) * 3.15 ppm = 0.0209 * 1000

= 21mil

Recommended Minimum mil sizes per code type:

1D Linear – 1.1 PPM

2D Printed – 2.5 PPM

2D Direct Part Mark – 4 PPM

7. Calculate the Maximum FOV with the 21 mil code for the DataMan 262

- a. ((Mil Size / 1000) / minimum recommended PPM) * Reader Pixels
- b. ((21 / 1000) / 1.0) * 1280

= 26.88 in Max FOV

- 8. BONUS – Test your algebra skills...what is the smallest 2D Printed Code that you could read with a DM260 reader with a 3.6" horizontal FOV?

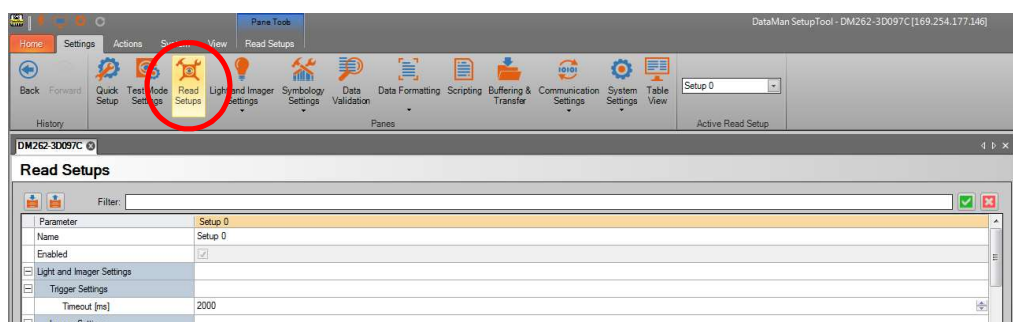
Read Setups

EXPECTED OUTCOMES:

Explore the Read Setups to allow for reading codes of different symbologies at varying distances.

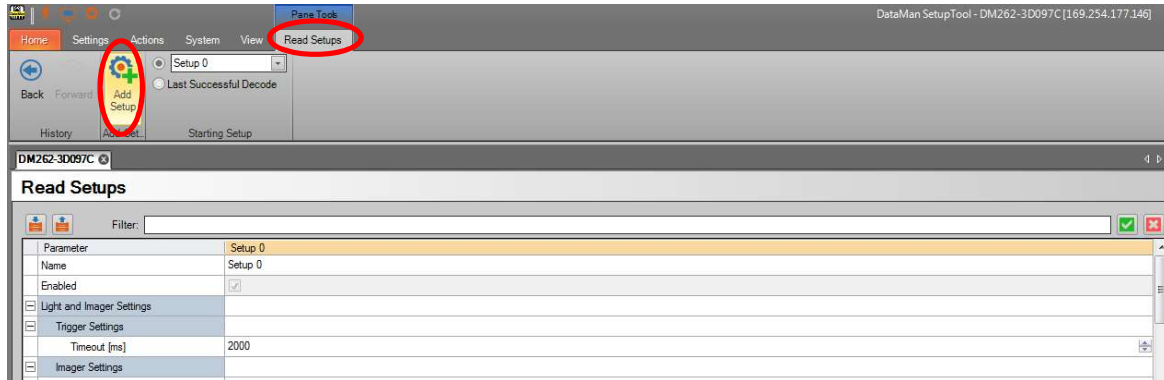
PROCEDURE:

1. Connect your DataMan 260 Series Reader to the DataMan Setup Tool v5.6.0 SR1
2. Tune your reader on the Ace of Hearts code
3. Change the trigger type to Single External
4. Enable only Code 128
5. Confirm that you can read the Ace of Hearts demo card on your desk
6. Navigate to the Read Setups Menu



7. Add a second Read Setup

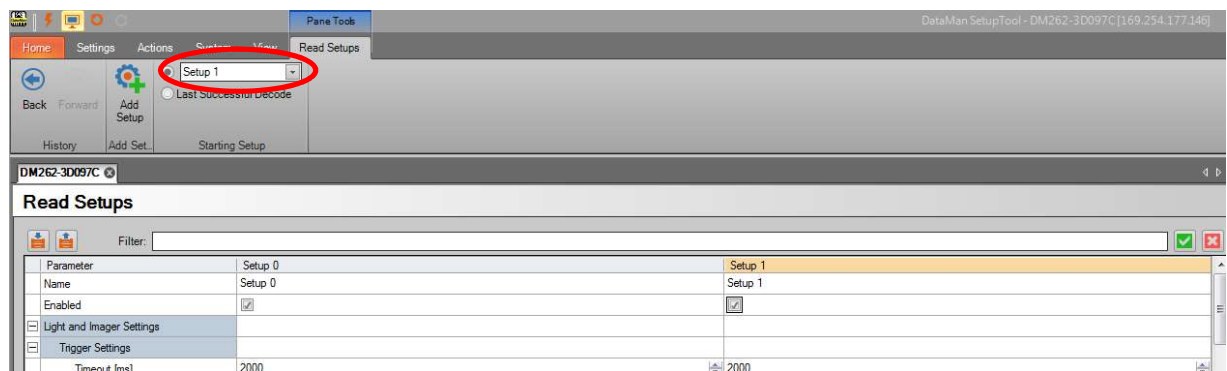
- Click on Add Setup - You have the option to use default values or copy values from the current setup
 - Select the “Copy Values from Setup 0”



8. Hold the 2 of Diamonds code about 2 inches from the lens of the reader and trigger

- Notice that the reader is now acquiring 2 images – one for each setup
- It is not able to read the 2 of Diamonds close to the lens.

9. Select Setup 1 as the active Setup in the Ribbon



10. Hold the 2 of Diamonds 2 inches from the reader and tune.

- The settings required to read the 2 of Diamonds at this distance will automatically be applied to Setup 1

11. Trigger the reader to confirm that the reader can now read both the 1D code at the desk level and the 2D code close to the lens

12. Change the trigger type to Self (Internal)

- a. The reader will now cycle through both read setups continuously

13. Read the Q&A Help topics to learn more about the read setups

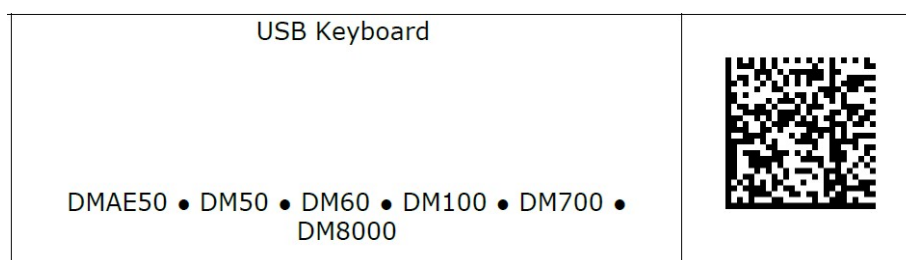
Reader/DataMan – Data Formatting 5.6.0 SR1

EXPECTED OUTCOMES:

Explore formatting the output data and NoRead strings using a DataMan 8050 USB handheld

PROCEDURE:

1. **Open a blank Excel spreadsheet on your computer and highlight a cell**
2. **Reset your DM8050 series handheld reader to factory defaults**
 - a. You can easily do this by holding down the trigger button before applying power to the reader
3. **Using your DM8050 series handheld reader, scan the Ace of Clubs barcode**
 - a. Did anything get input in to the Excel spreadsheet?
 - b. The answer is No if your reader is in USB Com mode. It may need to be converted to USB Keyboard mode. When in USB Keyboard mode, the reader will emulate a keyboard input, typing the decoded data string wherever the cursor is located on the screen.
4. **Scan the USB Keyboard code below**
 - a. This code is located in the Reader Configuration Codes document in the Help menu




- This code is used for corded readers only. If you are communicating through a Base Station via USB, there is a separate code for USB Keyboard for the Base Station
5. **Now, highlight a cell in the Excel spreadsheet and scan the Ace of Clubs card several times.**
 - a. Did it populate the cells?

	A	
1	ACECLUBS	
2		
3	ACECLUBS	
4		
5	ACECLUBS	
6		
7	ACECLUBS	
8		

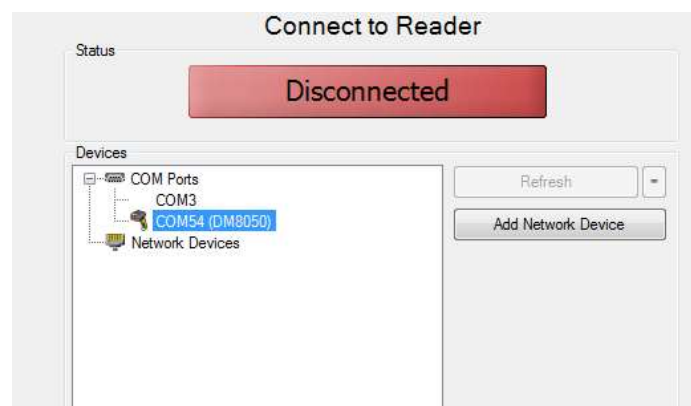
- Why did it skip a cell between scans? This is because the default data formatting includes both a <CR> and <LF> at the end of the string which Excel interprets as 2 <Return> commands.
- What if we don't want it to do this?

6. Open the DataMan 5.4.3 Setup Tool Software

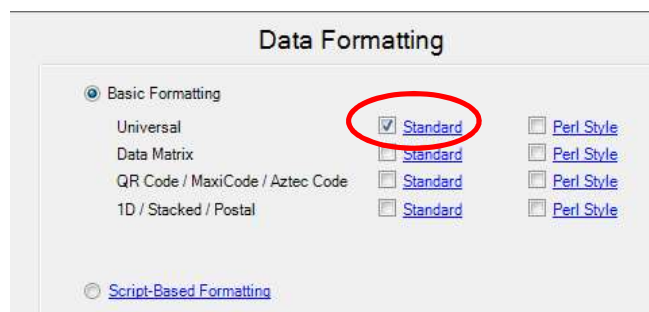
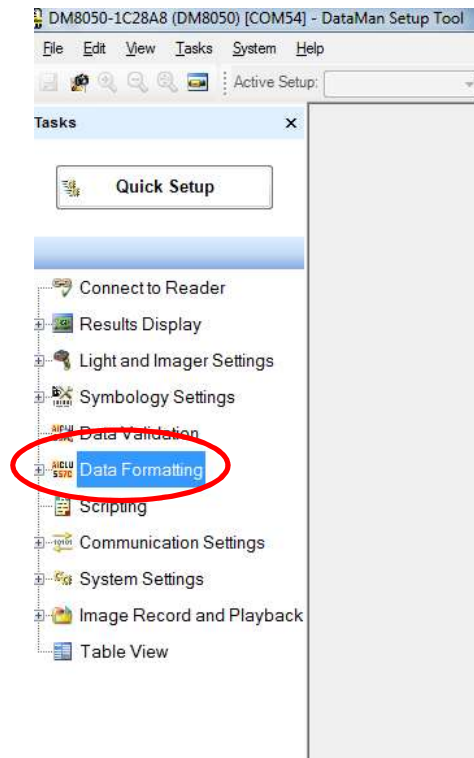
- Your reader cannot connect to the software in USB Keyboard mode. You will need to highlight the device and click on "Convert to USB-COM"
- Or, you can scan the USB-COM code:

	*USB-COM/RS-232
	DMAE50 • DM50 • DM60 • DM100 • DM700 • DM8000

7. When your reader is back in USB-COM mode, you can select it and click Connect



8. Navigate to the Data Formatting Menu and Check the box next to “Universal” → “Standard”



9. Click on the Standard Hyperlink

- a. Add the token "<Full string>"
- b. Type "\r" in the Terminating Text field
 - i. The "\r" translates only to <CR>

Standard Formatting

Data Matrix / QR Code / MaxiCode / Aztec Code / 1D / Stacked / Postal / Universal

Leading Text

Data

General / Validation

<Sub-string>
<Full string>
<Decode time>
<Trigger time>
<Symbology>
<CR/LF>

Set sub-string range

Add Remove

<Full string>

Terminating Text

\r

☐ CR/LF

Output Options

Delimiter: None

Multicode Delimiter: CR/LF

Test

10. Save the settings to the reader – System → Save Settings

11. Disconnect the reader from the DataMan Setup Tool and Scan the USB Keyboard code in Step #4.

12. Place your cursor in a cell in the Excel Spreadsheet and Scan the Ace of Clubs barcode a few times.

- a. Notice that it is no longer skipping a cell!

	A
1	ACECLUBS
2	ACECLUBS
3	ACECLUBS
4	ACECLUBS
5	ACECLUBS

13. Trigger the reader without a reading a barcode to generate a NoRead and notice the output sequence

- a. It is skipping a cell again!!
b. This is because the data formatting applies to a No-Read also because we created it in the “Universal” Tab. So, the reader is sending a blank string + <CR>.
c. What if we don’t want it to skip a cell during a NoRead?

14. Connect the reader to the DataMan Setup Tool using the process in Step #6.

15. Disable the Universal Formatting and re-create steps from #4 but this time in the “1D / Stacked / Postal” Tab

Data Formatting

☒ Basic Formatting

Universal ☐ Standard ☐ Perl Style

Data Matrix ☐ Standard ☐ Perl Style

QR Code / MaxiCode / Aztec Code ☐ Standard ☐ Perl Style

1D / Stacked / Postal ☒ Standard ☐ Perl Style

☐ Script-Based Formatting

16. Also add the Leading Text “Start_” and Terminating Text “_END\r” to the corresponding fields

Standard Formatting

Data Matrix / QR Code / MaxiCode / Aztec Code / **1D / Stacked / Postal** / Universal

Leading Text
Start_

Data
General / Validation

<Sub-string>
<Full string>
<Decode time>
<Trigger time>
<Symbology>
<CR/LF>

Set sub-string range
Add Remove

<Full string>

Terminating Text
_END\r

☐ CR/LF

Output Options
Delimiter: None
Test

17. Disconnect the reader from the DataMan Setup Tool and Scan the USB Keyboard code in Step #4.

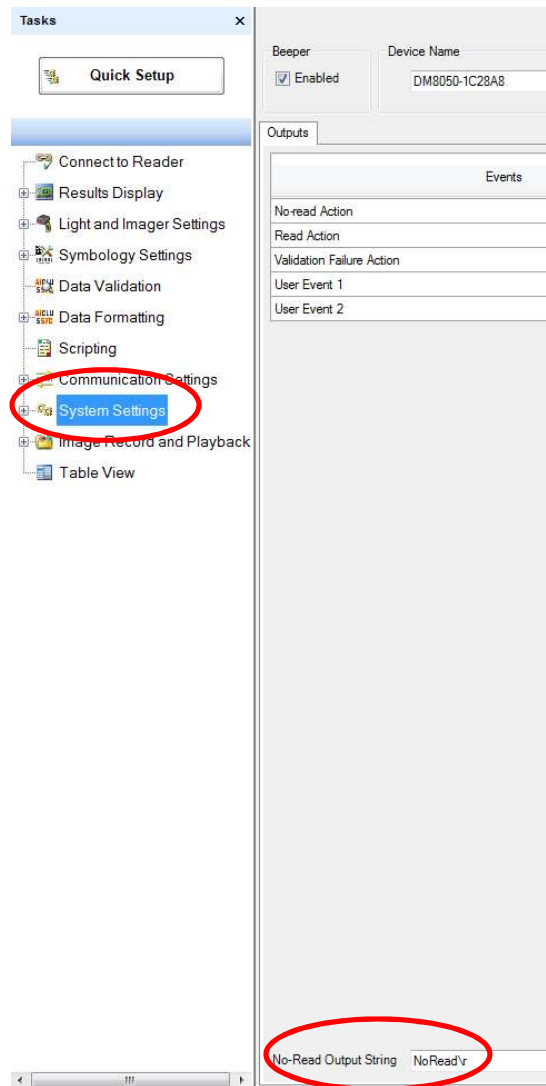
18. Place your cursor in a cell in the Excel Spreadsheet and Scan the Ace of Clubs barcode a few times and also create some NoReads

- Notice the new data formatting and that it is no longer skipping a cell for No-Read
- But, what if we want to define a specific NoRead string?

19. Connect the reader to the DataMan Setup Tool using the process in Step #6.

20. Define the No-Read string under System Settings → Outputs.

- Type “NoRead\r” into the No-Read Output String field



21. Set the reader back to USB Keyboard mode via Step #4 and create both a good read and NoRead

Scripting

Multiple Code Reading Demo

Challenge: Read codes close together on a box, making sure there are no double reads and output all the codes in one string.

Script Solution: This script allows the user to read 3 codes but holds the output until all 3 codes have been read. Then it outputs all 3 codes at once. If the same code is read twice the script will cause a data validation failure action and the user can continue scanning until 3 unique codes are read.

Comments: “Never read the same code twice” functionality in Setup Tool only applies to multi-code reading within a single trigger. To ensure the same code is not read on separate triggers a script is needed.

Scan Configuration Codes:

Here is an example to simulate scanning a box:

Reset to Factory Defaults:



Custom RPC:



Sample Codes:



```

// Read 3 codes but hold the output until the last code is read
var storedResults = [];

function onResult (decodeResults, readerProperties, output)
{
    if (decodeResults[0].decoded)
    {
        if (storedResults.indexOf(decodeResults[0].content) == -1)
        {
            // if decoded then add to storedResults
            storedResults.push(decodeResults[0].content);
        }
        else
        {
            // if the same code is scanned twice the reader will error
            output.events.system = Event.system.validationFailure;
        }
    }

    // if there are three storedResults
    if (storedResults.length >= 3)
    {
        // output all three
        output.content = storedResults.join(",");
        storedResults = [];
    }
    else
    {
        // output nothing if there are not 3 codes
        output.content = ""
    }
}

```

Multi-Match String Demo

Challenge: Match the code being read to a database of good codes. If the code is not within the database it should output an error.

Script Solution: This script has stored a database of known codes, and when a code is scanned it will compare it to the ones in the database. If the code matches then it is outputted, if not then it send a validation failure message. The codes stored are from the demo deck of cards: Ace of Hearts, Ace of Spades, and Ace of Diamonds. All of the other cards in your deck will fail.

Comments: DataMan supports Match String validation, but it only allows you to match 1 code. If more than 1 code is needed, then a script can be used. Also, many times PLC's will handle the data validation and check if a code matches one in a database. This script can be helpful when a PLC is not being used or when the user wants to store a small database within the reader itself.

Scan Configuration Codes:

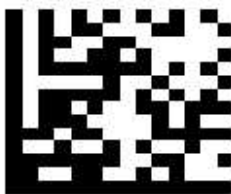
Reset to Factory Defaults:



Custom RPC:



Sample Codes: (The demo cards can also be used for this demo)



Good Match
Ace Hearts



Good Match
Ace Diamonds



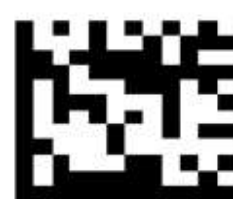
Good Match
Ace Spades



Bad Match
Ace Clubs



Bad Match
10 Diamonds



Bad Match
3 Clubs


```

//Validate code against an array of known valid codes (database of codes)
// In this case the Ace of Diamonds, Spades, ands Hearts are good;
//any other card will fail
var match_strings = [
    "ACEHEARTS",
    "ACEDIAMONDS",
    "ACESPADES"
];

function onResult (decodeResults, readerProperties, output)
{
    if (decodeResults.length == 1 && decodeResults[0].decoded)
    {
        if (match_strings.indexOf(decodeResults[0].content) < 0)
        {
            output.events.system = Event.system.validationFailure;
            output.content = "";
        }
    }
}

```

Match Two And Output Demo

Challenge: Confirming that two codes being read one after the other match.

Script Solution: This script will save the first code read then compare the second code read to the first code. If they match then it is a good match and the reader will output the data. If they do not match, then a validation failure action occurs.

Comments: This script can be useful for matching products, for example making sure the product's barcode and the 2-D code on the box match.

Scan Configuration Codes:

Reset to Factory Defaults:



Custom RPC:



Sample Codes: (The demo cards can also be used for this demo)



Ace Clubs



10 Diamonds



3 Clubs



ACECLUBS



10Diamonds



3CLUBS

```

// This script will save the first code read then compare the second code to the first
// If the codes match then it is good, if not then it fails
var match_string = "";
var compareResults = false;

function onResult (decodeResults, readerProperties, output)
{
    var result = decodeResults[0];

    // check if current read is for comparing or just storing
    if(compareResults)
    {
        compareResults = false;
        // compare result to saved match string
        if(result.content == match_string)
        {
            // good
            output.content = "Good Match: " + result.content;
        }
        else
        {
            // did not match
            output.events.system = Event.system.validationFailure;
            output.content = "No Match";
        }
    }
    else
    {
        // store the current read for comparison later
        match_string = result.content;
        output.content = "Saved <" + result.content + "> to match next read";
        compareResults = true;
    }
}

```

Switch from DM8050X to DM8050

EXPECTED OUTCOMES:

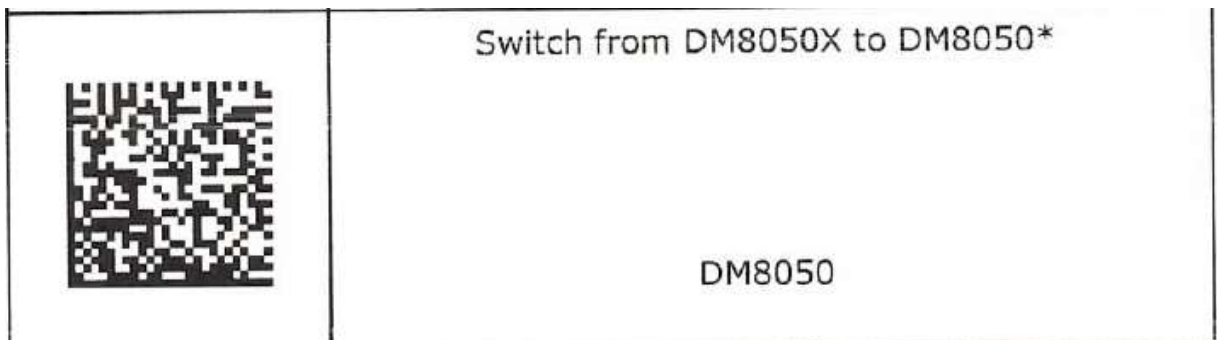
You will learn how to convert your DataMan 8050X demo reader to emulate both 8050X and 8050 models.

PROCEDURE:

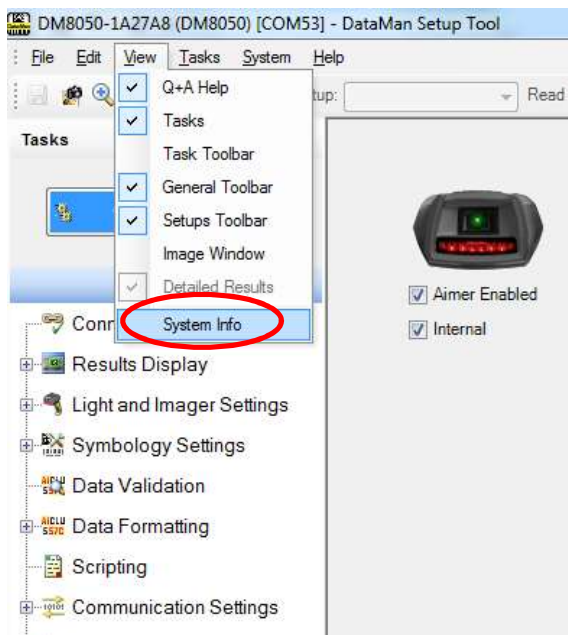
22. Connect your DataMan 8050X Reader to the DataMan Setup Tool v5.4.3

23. Scan the below code to convert from DM8050X to DM8050.

- a. Your Reader will automatically reboot

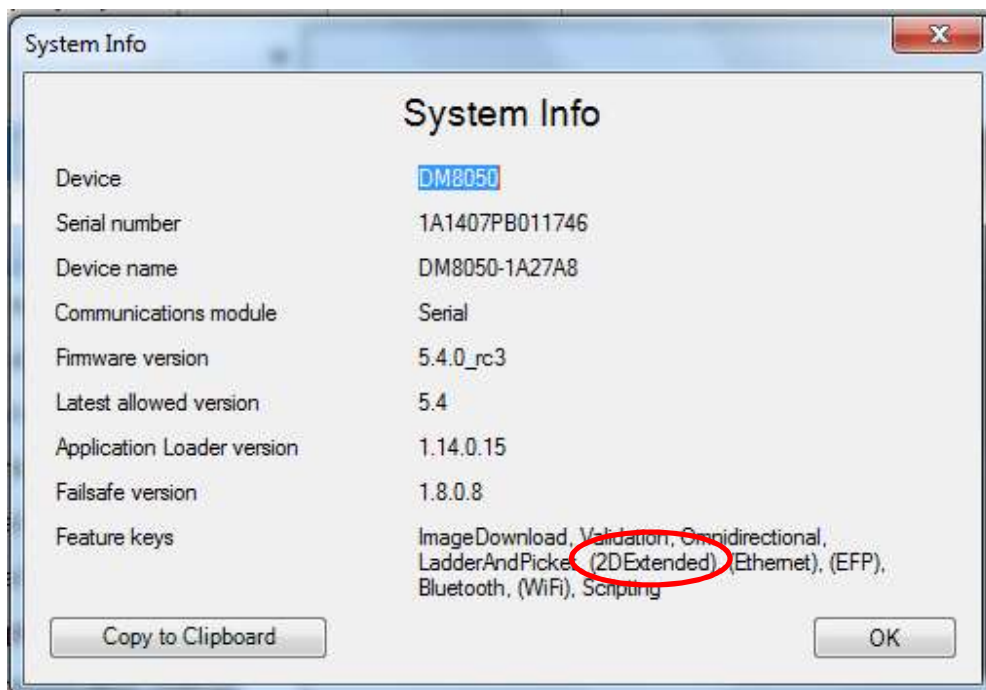


24. When reconnected to the reader go to View -> System Info to view the reader properties.

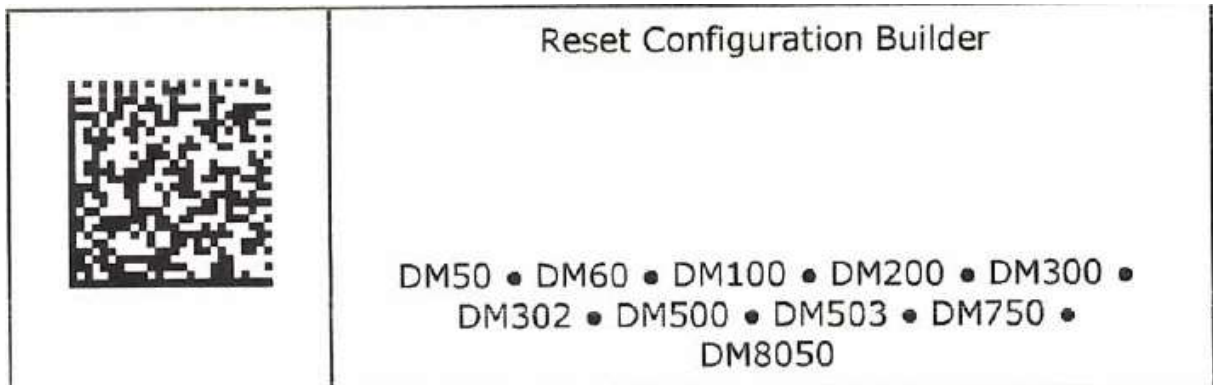


25. Confirm that the 2D Extended Mode is (Disabled).

a. Feature Keys in “()” Indicate available but disabled features



26. Scan the below Reset Config Builder Code to reset it to DM8050X default



27. Log back into the reader system info and confirm that the 2D Extended feature is now enabled.

Custom Default Settings

(All DataMan platforms running 5.2 or later firmware)

Using Reader Programming Codes



LOCK: save current reader settings as new custom default settings
(requires reboot to get activated)



UNLOCK: remove custom defaults and return to Cognex factory defaults
(Resets to Cognex factory defaults and automatically reboots)

Using DMCC

||>CONFIG.SAVE-DEFAULTS (LOCK)

||>DEVICE.DEFAULT-MFG (UNLOCK)

Setup Tool Indication

