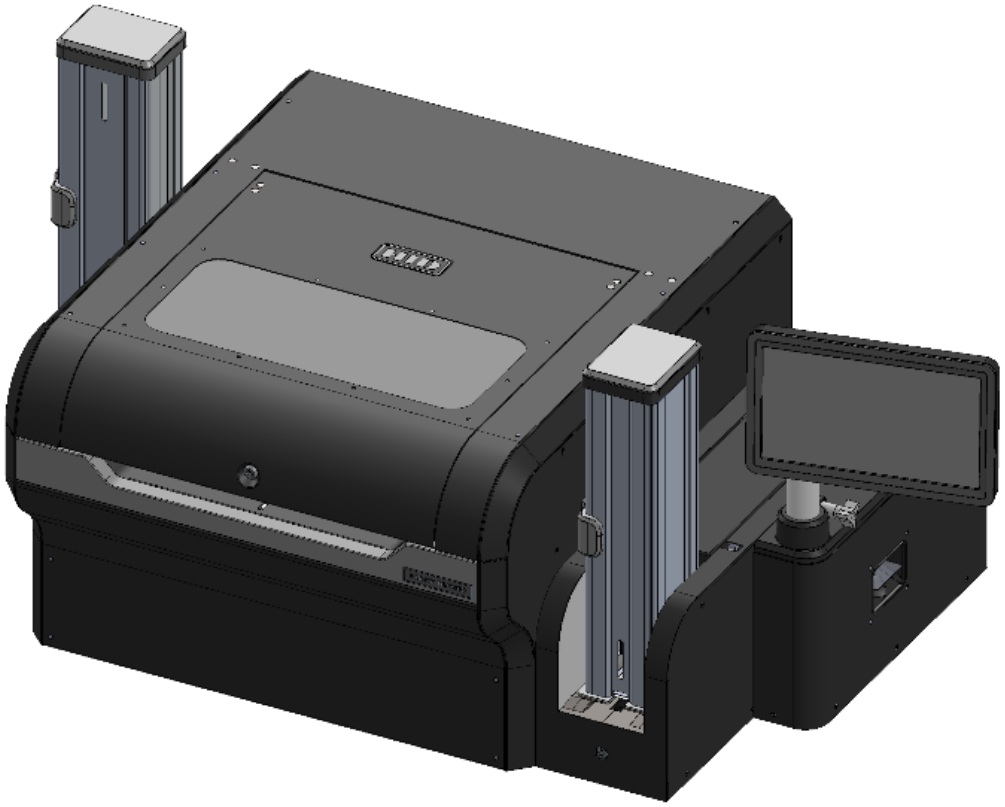
HID ELEMENT User Guide Draft



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1 HID ELEMENT Specifications

This section provides specific information on the Regulatory Compliances, Agency Listings, Technical Specifications, and Functional Specifications for the HID ELEMENT card printer.

1.1 Regulatory Compliance

Agency	Regulatory Compliance
UL	The card printer is listed under UL 60950-1 (2nd edition) Information Technology Equipment. **File Number: E145118**
CSA	The printer manufacturer has been authorized by UL to represent the card printer as CSA Certified under CSA Standard C22.2 No. 60950-1-07 2nd edition File Number: E145118
FCC	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 that may cause undesired operation. CAUTION: Any changes or modifications to this device not explicitly approved by the manufacturer could void your authority to operate this equipment. NOTE: 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 own expense.”
ISED	This device complies with Industry Canada license-exempt RSS standard(s). Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device. Le présent appareil est conforme aux CNR d’Industrie Canada applicables aux appareils radio exempts de licence. L’exploitation est autorisée aux deux conditions suivantes: (1) l’appareil ne doit pas produire de brouillage, et (2) l’utilisateur de l’appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d’en compromettre le fonctionnement.
CE	The card printer has been tested and complies with EN300-330, EN301-489, EN60950-1:2006 + A11:2009 + A1:2010 +A12:2011 + A2:2013, EN50581, and EN62479. Note: Based on this testing, the printer manufacturer certifies that the card printer

	complies with the following of the European Community and has placed the CE mark on the card printer: RED 2014/53/EU, ROHS 2015/863/EU
Emissions and Immunity Standards	FCC Part 15 Class A, RSS-GEN, RSS 210, CNS 13438, EN55032 Class A, EN55024, EN6100-3-2, EN6100-3-3, EN300-330, EN301-489, GB9254, GB17625
Safety Standards	UL 60950-1, 2nd Edition, 2019-05-09 (Information Technology Equipment - Safety - Part 1: General Requirements) CAN/CSA C22.2 No. 60950-1-07, 2nd Edition, 2014-10 (Information Technology Equipment - Safety - Part 1: General Requirements) IEC 60950-1:2005 (Second Edition); Am1:2009 + Am2:2013 EN 60950-1:2006 + A11:2009 + A1:2010 + A12:2011 + A2:2013 IEC62471

1.2 Safety messages – United States

Symbol	Critical Instructions for Safety Purposes
Danger: 	Failure to follow these guidelines results in personal injury or death. To prevent personal injury or death, reference the following safety messages before performing an operation: ▪ Always remove the power cord prior to performing repair procedures, unless otherwise specified. ▪ Ensure only qualified personnel perform these procedures.
ESD: 	This device is electro statically sensitive. Damage to the device may occur if it is exposed to static electricity discharges. To prevent damage, reference the following safety messages before performing an operation: ▪ Observe all established Electrostatic Discharge (ESD) procedures while handling cables in or near the circuit board and printhead assemblies. ▪ Always wear an appropriate personal grounding device. ▪ Always remove the ribbon and cards from the printer before making any repairs, unless otherwise specified. ▪ Remove jewelry and thoroughly clean hands before working on the printer.
Caution: 	This symbol warns of an electrical hazard that could result in personal injury or death.
Caution: 	For safety purposes, do not use Ethernet for a direct connection outside of the building.

1.3 Technical Specifications

HID® ELEMENT

UV Ink Printer System

FEATURES

Dual-Sided Printing	Standard
Warranty	Printer module and printheads: 12 months

UV INK PRINTER CHARACTERISTICS

Printing Type	UV Cured Inkjet
Card Material Types	PVC, Composite, and Polycarbonate (PC)
UV Ink Types	Yellow (Y)
	Magenta (M)
	Cyan (C)
	Black (K)
	Fluorescent (F)
	Clear Overlay (O)
	White (W)
Printing Resolution	Up to 1200 DPI
Printer Ink Channels	Up to 6
Ink Channel Configurations (Factory Set)	YMCKFO
	YMCKOO
	Other Ink Configurations are available via CPO (Custom Product Order)
Communication Interface	Ethernet LAN (printer system) / USB 2.0 (encoders)
Registration Capability	Camera Registration System (optional)
Printing Speed	Up to 300 single-sided cards per hour (@ 600 DPI)
Dimensions (UV ink printer/one input/one output)	18.5" H x 37.0" W x 24.5" D (470mmH x 940mmW x 622mmD)
Weight (UV ink printer/one input/one output)	96 lbs / 43.6 kg
Power Input	100-240 VAC, 6.0 A MAX, 50 Hz - 60 Hz
Operating Environment	60°F to 90°F (15°C to 32°C), 20% to 80% non-condensing humidity
Certifications	UL, CE, FCC Class-A

SYSTEM SECURITY STANDARDS

Locking Card Input Hopper	Yes
Locking Card Output Hopper	Yes
Lockable Printer Housing	Yes

SYSTEM COMMUNICATION STANDARDS

Supported Software Drivers	Windows® 7 / 10 / Server 2008 R2 / Server 2012 R2 / Server 2016

CARD STANDARDS

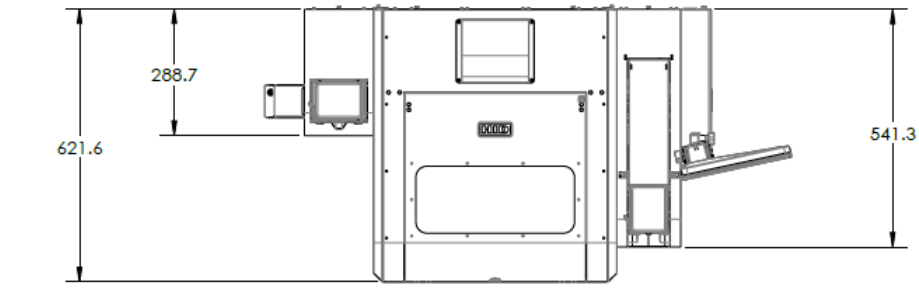
Card Size	CR-80 only
Card Input Capacity (1 Hopper)	400 cards (.030" / .762mm)
Multiple Input/Output Hopper Capability	Yes, up to 4 input and output modules (for a total capacity of up to 1600 cards)
Card Output Capacity (1 Hopper)	400 cards (.030" / .762mm)
Card Thickness	.030" (30 mil) / .762mm
Card Cleaning Station	Yes

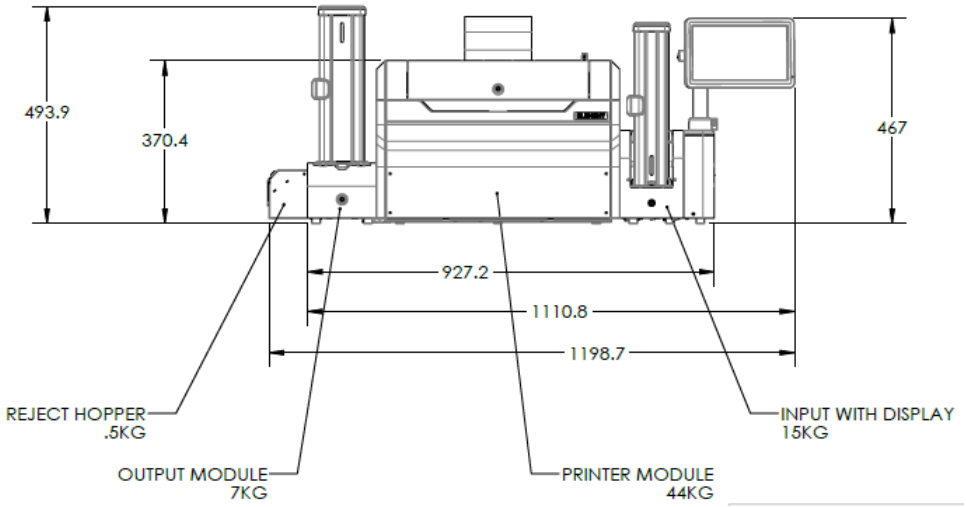
OPTIONS

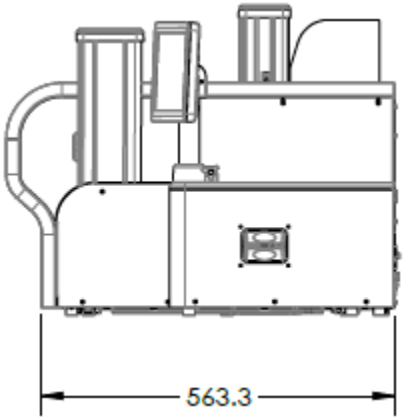
ISO Magnetic Encoding	Yes
Contact Smart Card Encoding	Yes
Contactless Smart Card Encoding	Yes
Camera Verification System	Yes
Third Party Encoder Module	Available via CPO (Custom Product Order)

1.4 Unit Layout and Functionality (General Configuration – shown with optional camera)

Dimensions in mm.







2 Important information: Please follow these recommendations.

2.1 Use caution when handling wet ink.

The printer has been designed so that a user will not come into contact with wet ink. Wet ink can cause skin sensitivies and/or other hazards (please see labelling on ink cartridges for more information). If a situation occurs in which wet ink is present, users must take precautions. Gloves should be worn to prevent contact with skin, and safety glasses should be used for eye protection.

Ink which has been cured and hardened does not present a safety risk.

2.2 The print carriage should be kept in the maintenance station when the printer is idle.

The liquid ink in the printer is kept in the printheads by a slight vacuum applied to the ink lines via a vacuum pump. If power is kept on, that vacuum prevents leakage of the the ink. However, in case power is inadvertently removed from the unit, we recommend that the printhead always be kept in the maintenance position when the unit is idle so that if there is a loss of vacuum, a any ink leakage will occur into the maintenance station, so it can easily be moved into the waste bottle.

System firmware will automatically bring the carriage to the maintenance position when the unit is idle. However, there are certain utilities which enable the user to move the carriage for manual maintenance, and if this is done, and the cover is left open, the carriage may not return to the maintenance position on its own.

The carriage will home itself and return to the maintenance position when the printer cover is closed. It will also home itself and return to the maintenance position when the unit is rebooted.

2.3 Power should be left on when the unit is idle.

As mentioned in section 1.1, ink is kept in the printheads through the use of a vacuum. It is necessary to keep the unit powered on so that this vacuum level can be monitored and maintained during idle periods to prevent ink leakage.

3 Setup and Installation

3.1 Selecting a good location

The following guidelines help to ensure optimal printing performance:

- Place the unit in a location with adequate air circulation and ventilation to prevent ink fume and internal heat buildup.
- Use the dimensions of the printer as a guideline for the minimum clearances to the unit.
- Provide a table or bench for the unit which is flat and stable to prevent vibration.
- Allow for adequate clearance above and behind the unit to accommodate the unit with its covers open. You will need access to the back of the unit to install module interface cables.
- Do not install this unit in an environment with acidic vapor. This could cause ink hardening on or in the head, resulting in poor print quality and missing nozzles.
- Do not install the unit near heat sources such as radiators.

3.2 Moisture condensation

If the unit is brought directly from a cold to a warm location or is placed in a very damp room, moisture may
condense inside the unit. Should this occur, if ink is added to the machine, there may be a chemical reaction between the water and ink, potentially causing clogging of the printhead nozzles.

Leave the unit unplugged in a warm, dry room for several hours before using to allow any moisture to evaporate.

3.3 Unpacking and Inspection

While unpacking the printer, inspect the carton to ensure that damage did not occur during shipping.

The printer includes 3 modules (Prime Input Module, Print Module, and Output Module), each of which are shipped in a separate box.

Caution: Lifting the print module must be done by 2 people.

Make sure that all supplied accessories are included with the unit:

- **Prime Input Module**
  - US/EU power cable
  - I2C Ribbon cable
  - Ethernet cable (12” for prime to input module)
  - Module alignment guide
  - Card input hopper
  - Cleaning Roller
  - Key for lock in input hopper

- **Printer Module**
  - Overspray Liner
  - Key for cover lock
  - (ethernet cable length – 36” for prime to printer?)

- **Output Module**
  - I2C Ribbon cable
  - Card output hopper
  - Module alignment guide
  - Key for lock in output hopper
  - Reject bin

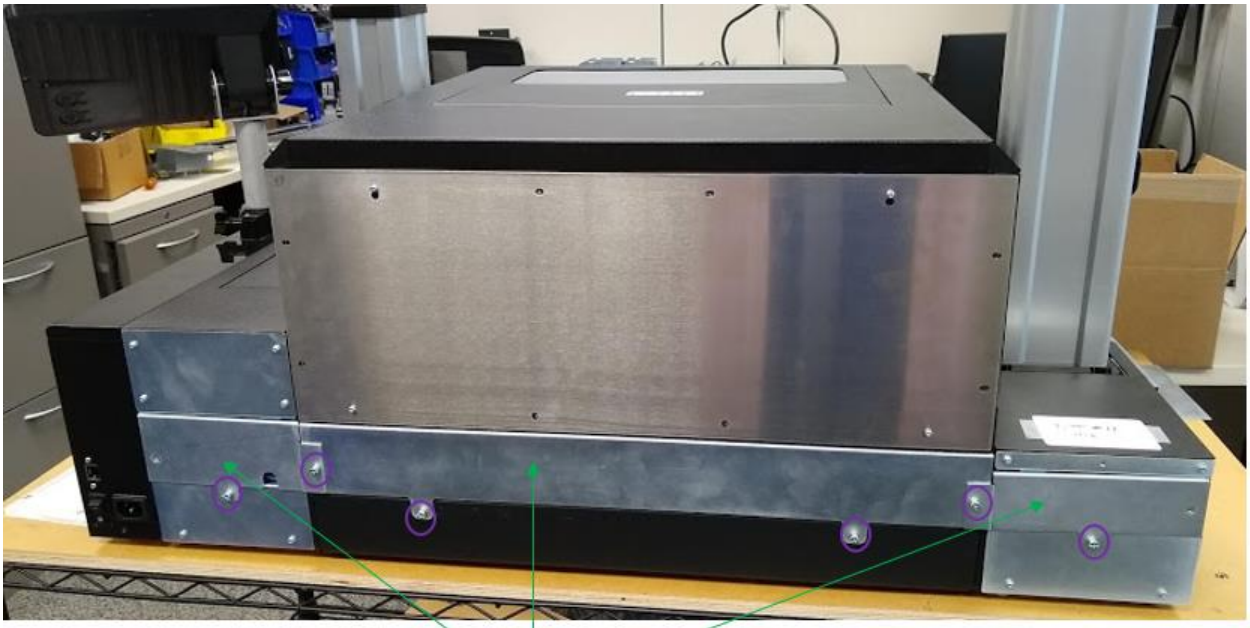
Make sure you have these accessories that are supplied separately:

- Ink Cartridges (YMCKOO or WWKKOO depending on the printer option)
- CR-80 Cards

3.4 Connecting Modules (General Configuration)

3.4.1 Removal of Electrical Channel Covers

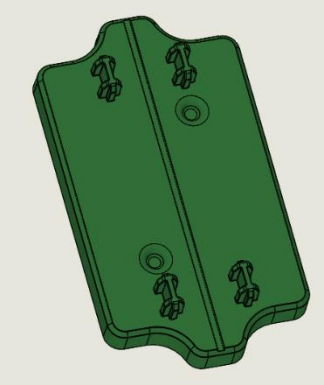
On the back of the each module, there is a channel which is intended to hold cables that connect various modules together, and each channel has a cover. For each module (input, printer, and output), remove its cable channel cover by unscrewing the fasteners circled in purple in the image below.



Cable Channel Covers

3.4.2 Module Alignment Guides

Module alignment guides are used between the input module, printer module, and output module to locate them relative to each other.



Module Alignment Guide

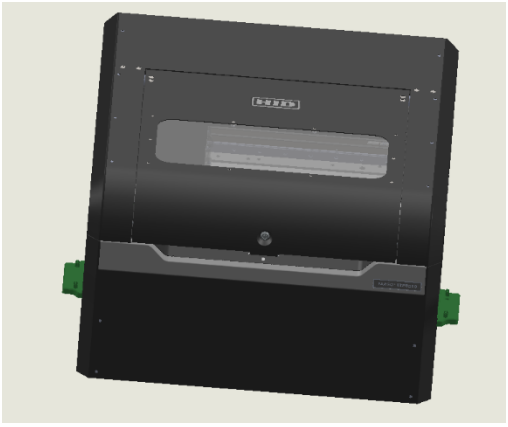
To connect the input, printer, and output modules:

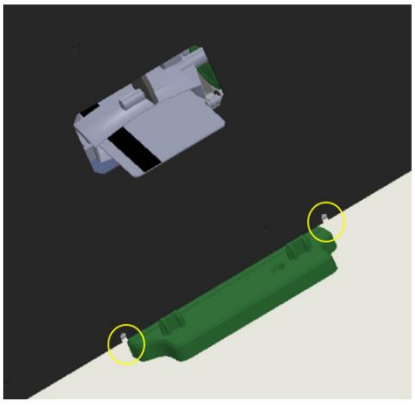
A. Place the printer module on the bench or table where it will be used

Caution: Lifting the print module must be done by 2 people.

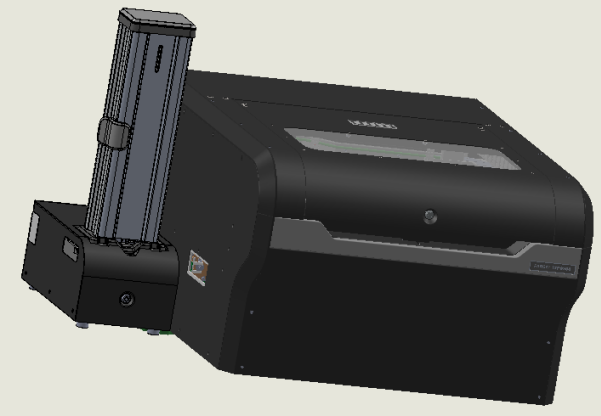
B. Place module alignment guides on the left and right side of the print module as shown in the images below. You will need to lift each edge of the print module in order to place the module alignment guides.

Note that the alignment guide is placed between the 2 notches circled in yellow. The printer baseplate has slots which the alignment guide pins fit into.

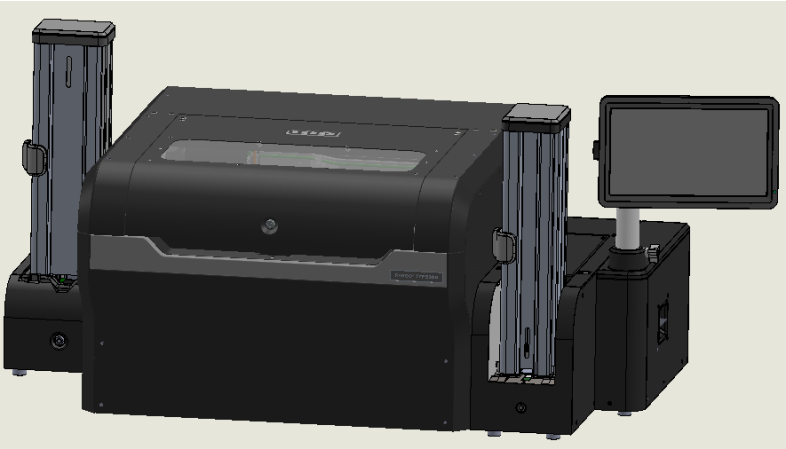




C. Place the output module to the left of the printer module, lining up the card path slots. Holes in the baseplate of the output module should line up with the posts on the module alignment guide.



D. Place the input module to the right of the printer module, lining it up with the module alignment guide as done previously.



3.5 Module to Module Electrical Connections

3.5.1 Ribbon Cables

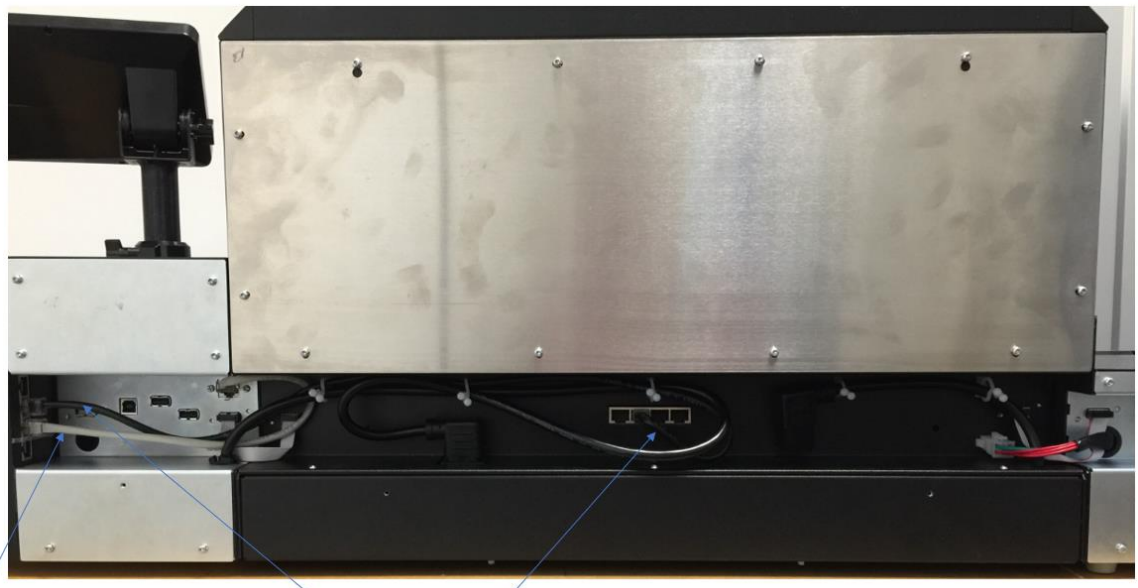
Ribbon Cable (A) should be installed from the input module to the printer module as shown in the photo below. Ribbon Cable (B) should be installed from the printer module to the output module.

(A) Ribbon Cable

(B)Ribbon Cable

3.5.2 Ethernet Cables

Install Ethernet Cable (C) from from one of the 4 ethernet ports aligned in a row in the input module to the ethernet ports on the right side of the input module . Install Ethernet Cable (D) from one of the 4 ethernet ports aligned in a row to one of the ethernet ports in the printer module. In both the input and printer module, any of the 4 ethernet ports will work.



(C) Input Ethernet Cable

(D) Input to Printer Ethernet Cable

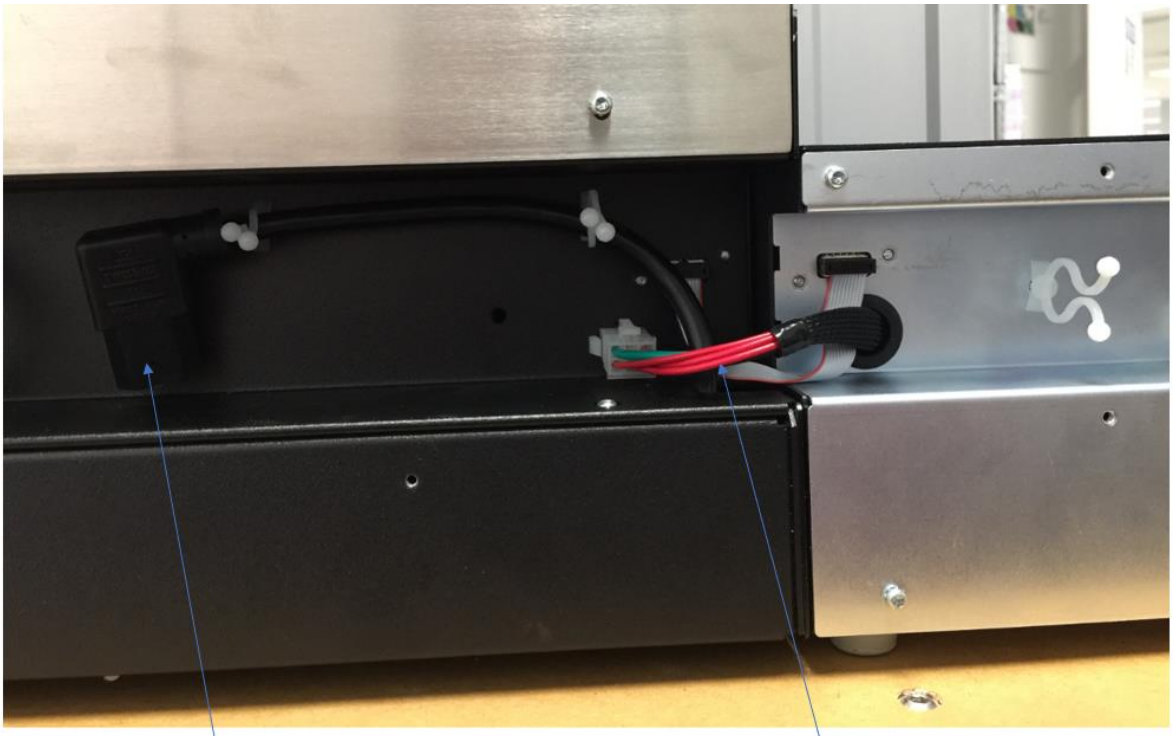
3.5.3 Power Cable from Input Module to Printer Module

The input module is shipped with an unplugged AC power cable E in the cable channel. Plug the end of this power cable into the power socket in the printer module. There may be more cable length than needed. Use the cable clips to organize the extra length.

(E) AC Power cable

3.5.4 Output stacker DC power to printer DC power out

The Output Module is shipped with a DC Power Cable (F) hanging loose. Plug this cable end into the matching socket of the Printer Module.



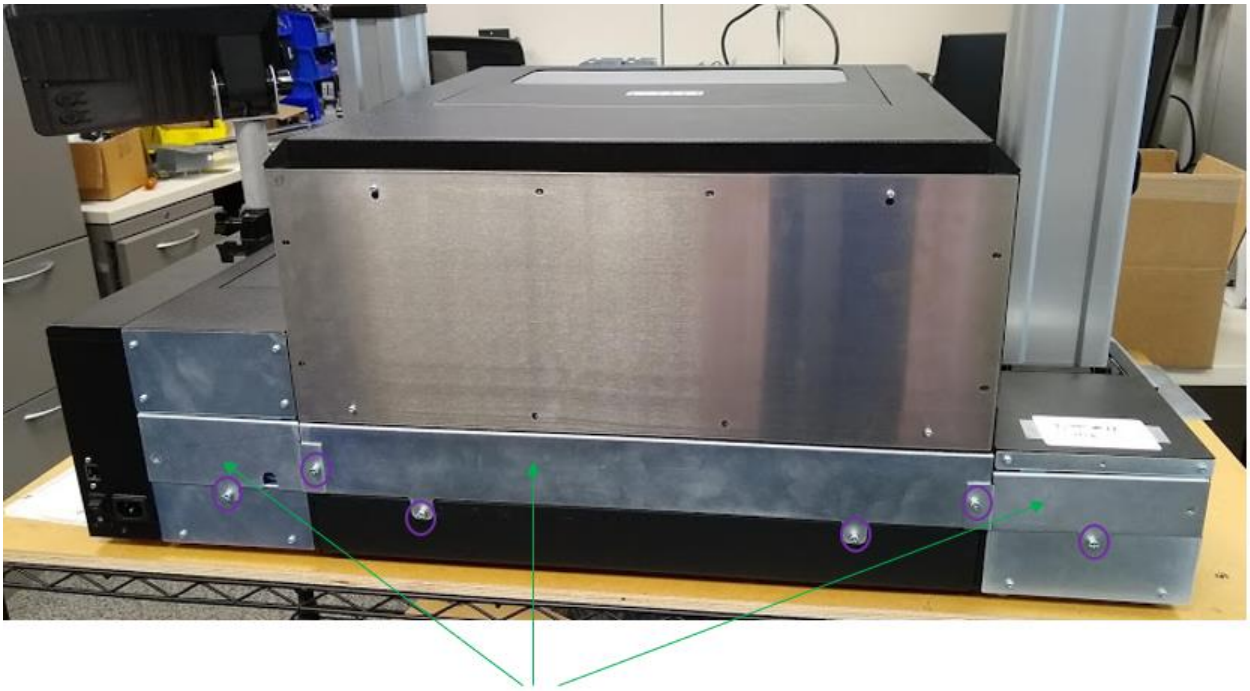
(G) Unused AC Power Cable (F) DC Power Cable

3.5.5 Unused AC Power Cable

The Printer module has an AC power cable (G) which is intended for possible future extensions. This cable should not be plugged into anything. It should be held in place by the cable clips.

3.5.6 Cable Channel Covers

After all cables have been installed, the cables should be carefully placed in the cable channel, and the cable channel covers should be replaced, using the opposite process of how they were removed in the description above. Be sure to install the screws which attach the covers of each module to each other.

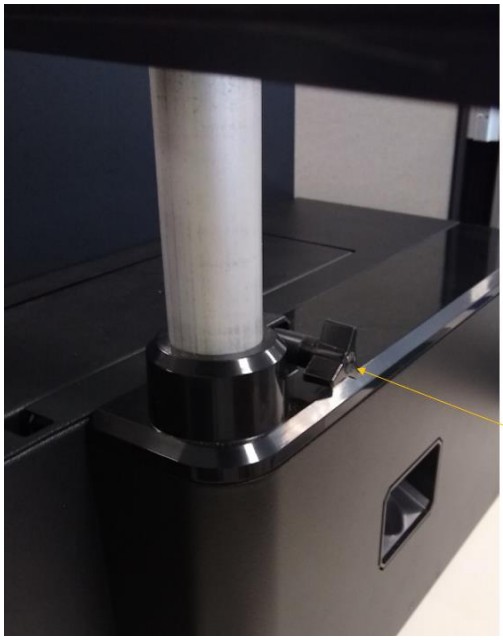


Cable Channel Covers

3.6 Display Positioning

The display position is adjustable, and when shipped, it is oriented to facilitate packing of the unit.

Adjustments can be made to the height and viewing angle of the unit by loosening display adjustment knob 1, as shown in the image below, moving the display to the desired position, and then tightening adjustment knob 1.

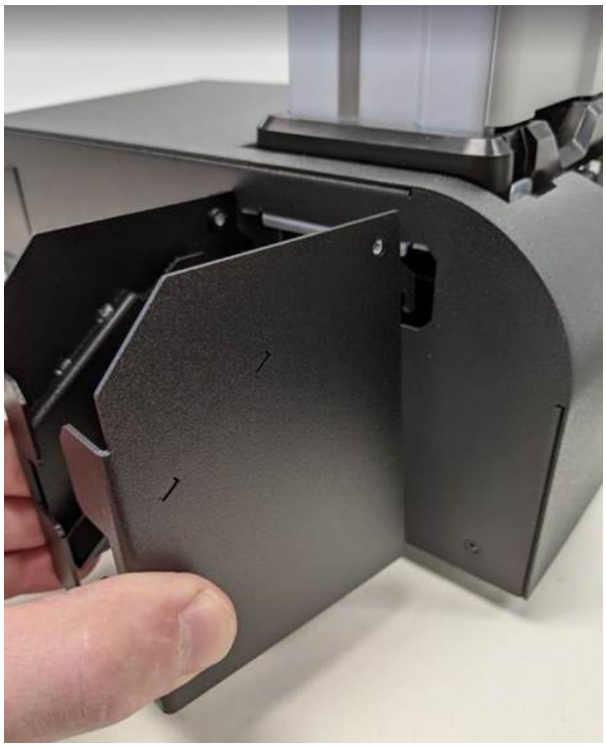


Adjustments to the tilt of the display can be made by loos loosening display adjustment knob 2, as shown in the image below, moving the display to the desired position, and then tightening adjustment knob 2.

3.7 Reject Bin

3.7.1 To install non-secure reject bin

A. Align both protruding hooks on backside of reject bin with the output hopper's left side reject output hole.



B. Assure the reject hopper hooks onto the reject hopper hole with both hooks and is fully seated downward.

3.7.2 To install secure (locking) reject bin

A. Insert key, unlock reject bin and lift cover 90 degrees (fully upright).

B. 

C. Align both protruding hooks on backside of reject bin with the output hopper’s left side reject output hole.

D. Assure the reject hopper hooks onto the reject hopper hole with both hooks and is fully seated downward.
E. Lower cover, lock reject bin and remove key. (Note that the locking hopper cover must be in the open/vertical position in order to install or remove the reject hopper.)

3.8 Moving the Machine

To move the machine from one location to another;

1. Remove the Cable Channel Covers as described above.
2. Remove cables described in the “Module to Module Electrical Connections” section above.
3. Lift modules off of their Module Alignment Guides.
4. Move modules individually. For the printer module, remember

Caution: Lifting the print module must be done by 2 people.

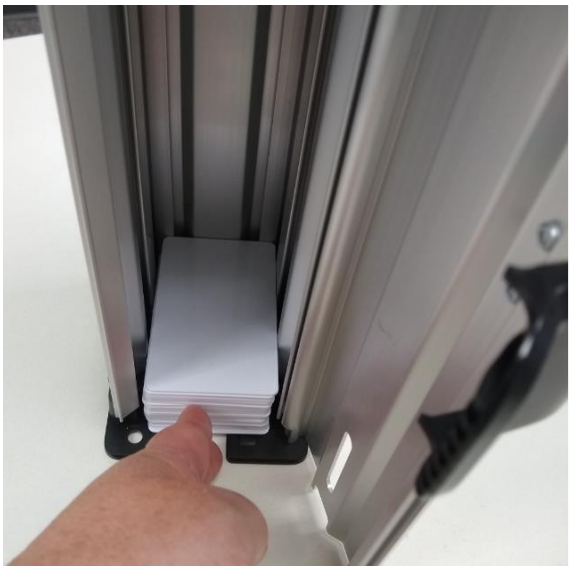
5. Reassemble the machine as described in the “Setup and Installation” section above.

3.9 Input Hopper

3.9.1 Installing Blank Cards into the Input Card Hopper

The input card hopper has a door on its front that can be opened by pulling on the black plastic handle as shown below.

Cards can be loaded into the input card hopper by placing them in the bottom of hopper. Load the cards with the print side down, and if applicable, with the mag strip facing up to the left. Then close the door until the black plasctic latch snaps into place. Cards can be added to the input hopper when it is out of the system, or when it is installed in the printer.



Note: Cards eject into the output hopper or to the reject bin. Depending on hopper option, hoppers will hold either 200 or 400 cards.

3.9.2 General card information

Important: For the best results and ISO card specification compliance, composite PVC is recommended over straight PVC.

 The printer prints onto any card with a clean and level PVC or polycarbonate surface.
 Suitable cards must be free of fingerprints, dust, or any other types of embedded or surface contaminants.
 For best results, HID recommends UltraCard, UltraCard stock has a glossy PVC laminate on top and bottom and is optically inspected to provide the cleanest, most scratch and debris-reduced cards possible. Two types of UltraCard card stock are available.
 UltraCard stock has a PVC core and offers medium card durability.
 UltraCard Premium stock has a 40% polyester core and offers high durability (recommended).

Cards should be at room temperature when loaded.

3.9.3 Loading the Input Card Hopper into the Input Module

The input card hopper can be loaded into the input module by placing the hopper in the opening in the input module as shown below, and pressing downward until the input card hopper clicks into place. The mechanical key lock can be used if desired to secure the cartridge in the input module.

To remove the input card hopper from the input module, be sure the mechanical lock is unlocked, and lift the card hopper out of the input module

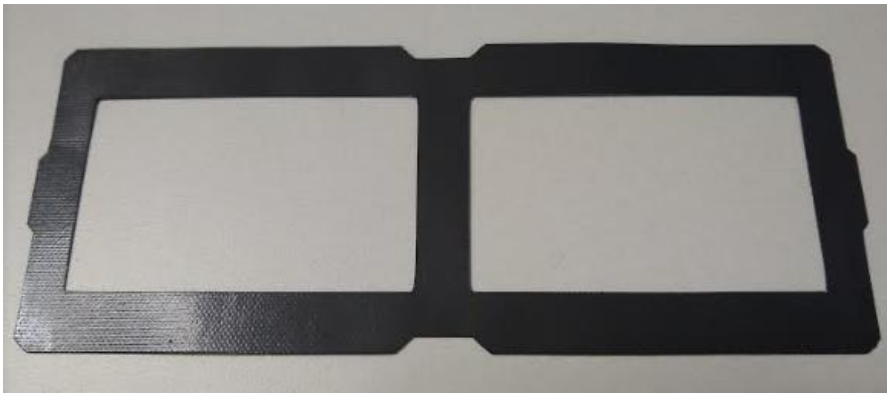
3.10 Output Hopper

3.10.1 Loading the Output Card Hopper into the Output Module

The output card hopper can be loaded into the output module by placing the hopper in the opening in the output module as shown below, and pressing downward until the output card hopper clicks into place. The mechanical key lock can be used if desired to secure the cartridge in the output module.

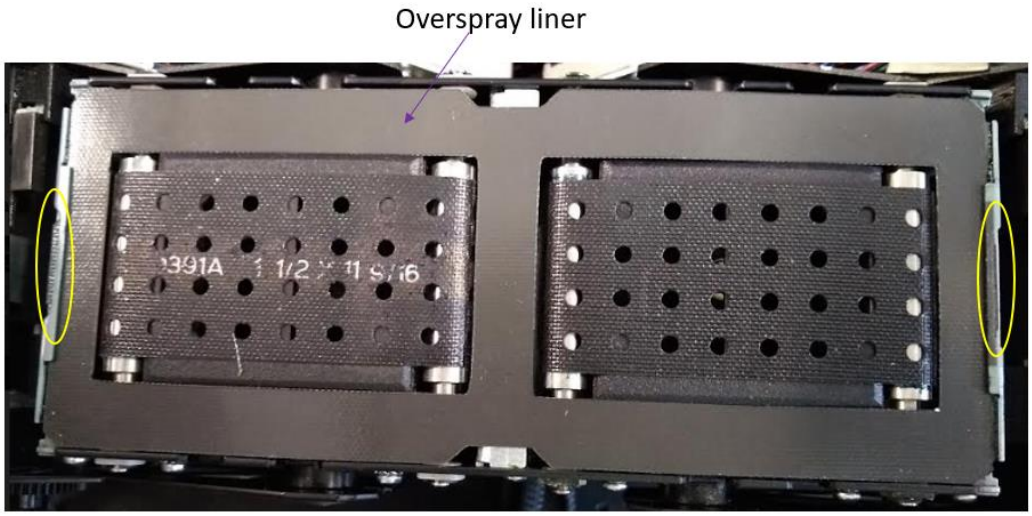
To remove the output card hopper from the output module, be sure the mechanical lock is unlocked, and lift the card hopper out of the output module

3.11 Installation of the Overspray Liner



An overspray liner is used to allow for printing cards completely up to the edge of a card. Any ink which is sprayed beyond the card edge is collected and cured on the overspray liner.

The liner itself is made of a flexible Teflon coated material, and it includes tabs on its left and right sides.



The liner is installed on the top of the card transport as shown in the above image. It should surround the 2 belts, and it is held in place by putting the tabs under the gray plastic clips at each end of the card transport, as shown in the yellow ovals above.

Note: if over the edge card printing is done, this liner will need to periodically be removed and cleaned so ink does not build up enough to prohibit card feeding. Frequency of cleaning is dependent on card images.

3.12 Ink Cartridges

3.12.1 Types of Ink that Can be Used

The HID ELEMENT printer requires highly specialized inks to function properly. To maximize printer durability, reliability, and printed card quality, you much use only HID ELEMENT inks. If not using HID ELEMENT inks, your HID ELEMENT warranty is void, where not prohibited by law.

3.12.2 Caution Handling Ink

The printer has been designed so that a user will not come into contact with wet ink. Wet ink can cause skin sensitivies and/or other hazards (please see labelling on ink cartridges for more information). If a situation occurs in which wet ink is present, users must take precautions. Gloves should be worn to prevent contact with skin, and safety glasses should be used for eye protection.

Ink which has been cured and hardened does not present a safety risk.

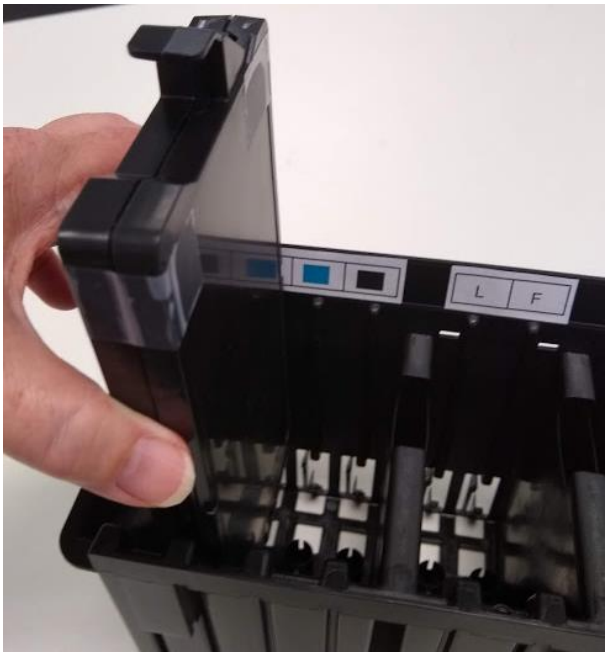
3.12.3 Ink Storage and expiration

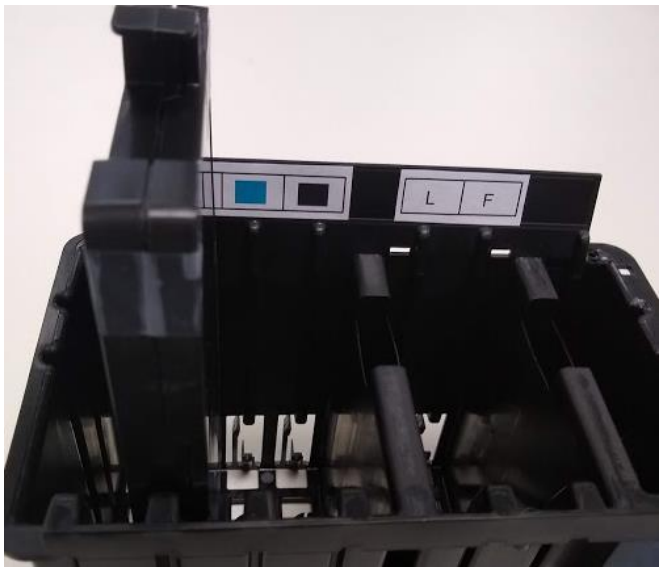
Ink should be stored at a temperature range between 15 degrees C and 30 degrees C (59F - 86F), with humidity between 40% and 80%.

Ink is warrantied for 1 year from the date of manufacture. It should not be used in the printer after expiration, as it may cause damage in the system ink lines and printheads. If a printer is put into long term storage, ink should be cleared out of the system by a technician to prevent issues such as this.

3.12.4 Ink Cartridge Installation

Inkjet cartridges must be installed in the ink station. This can be done by matching the color of the inkjet cartridge with the proper labelled slot, orienting the cartridge such that the hook on the top of the cartridge points toward you, and sliding the cartridge downward, pushing gently, until a clicking sound occurs. The cartridges are mechanically keyed such that each color of cartridge can only be installed in its proper slot. All cartridges must be installed. If a slot is left open, the printer is unable to generate proper vacuum for printing, and problems such as ink leakage may occur.





3.13 Printer Power

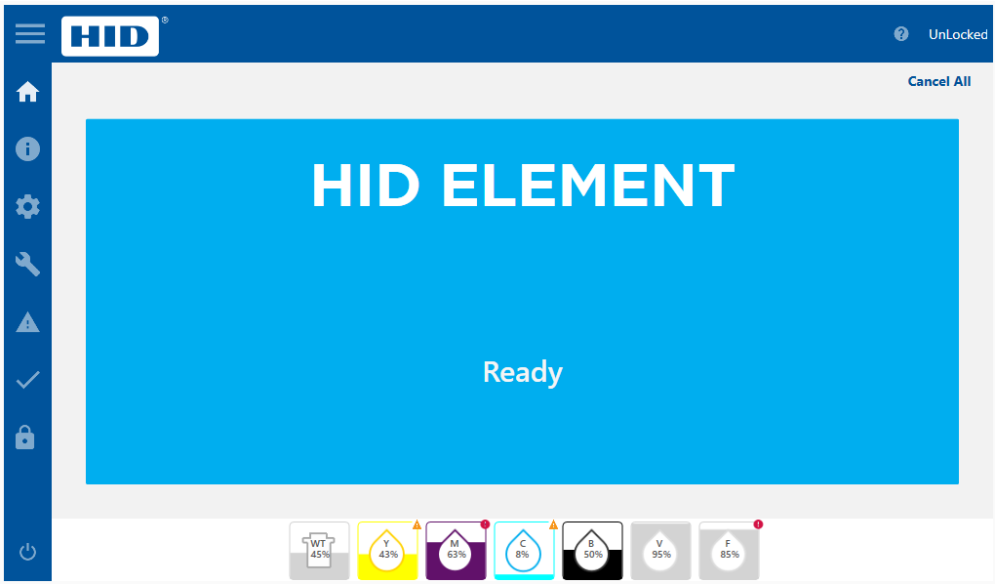
Use the provided AC power cord to connect the socket at the back of the prime module with a standard wall outlet with the following specifications

Supply voltage / Current: 100 to 240V AC, 3.5A minimum
Supply frequency: 50 Hz or 60 Hz

Turn the power switch at the back of the input prime module to the “On” position to provide power for the system.

The power socket and power switch are shown circled in red in the image below.

When power is switched on, the printer system will automatically begin initialization and homing processes. When those processes are complete, a “Ready” screen will appear on the display.



3.14 First Fill

When a system is used for the first time, the printer will go through a sequence to load ink into the machine. During this process, if an ink level fault or other error occurs, reboot the printer by turning the power switch off for 5 seconds and then on again, and the system should resume with the initial ink fill. The initial fill is complete when the “Ready” screen appears on the system display.

3.15 Ethernet Connection

To connect the HID ELEMENT system to the user system, plug an ethernet cable connected to the user network into the ethernet port on the back of the HID ELEMENT input module, located above the unit power switch, circled in the image below in red.

Driver Installation

3.16 Installer for the Printer Driver

The HID ELEMENT printer driver will be provided, or can be found at www.hidglobal.com/drivers.

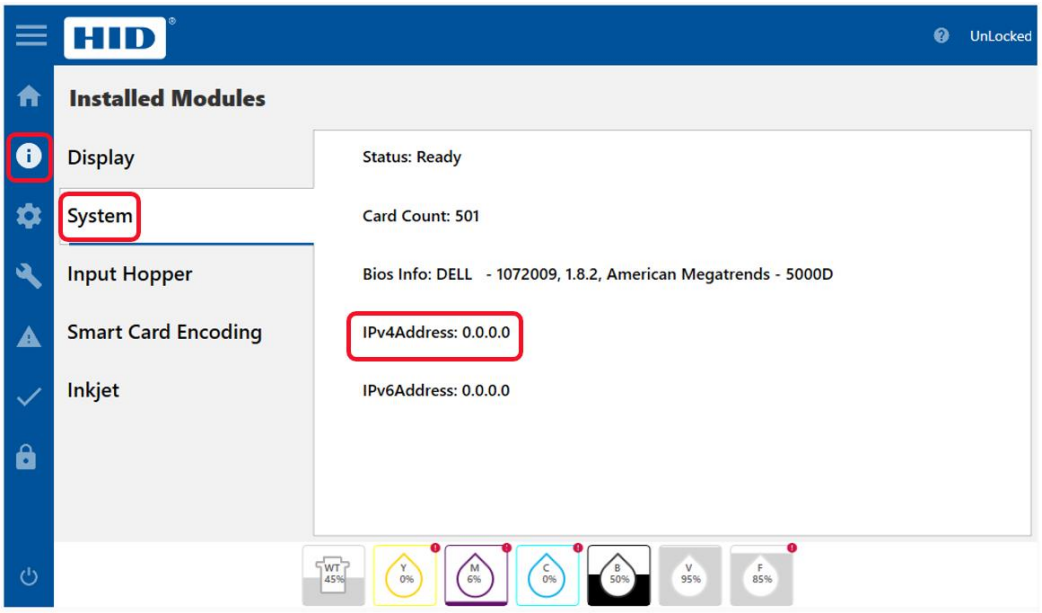
3.17 Prerequisites

The HID ELEMENT printer driver can be used on the following Windows operating systems:

- Microsoft Windows 7 64-bit
- Microsoft Windows 8/8.1 64-bit
- Microsoft Windows 10 64-bit
- Microsoft Windows Server 2008 R2
- Microsoft Windows Server 2012 R1
- Microsoft Windows Server 2012 R2
- Microsoft Windows Server 2016

This HID ELEMENT printer driver is unsigned. Therefore, before installing the printer driver, a certificate needs to be installed to allow it to be accessible on all of the operating systems noted above. This certificate (**HIDGlobalTestCertificate.cer**) will be provided. The installation process for the test certificate can be found in the appendix of this document.

The printer IP address will need to be entered during the driver installation process. The printer IP address can be found on the printer touchscreen display as shown in the image below (info->System->IPv4Address)

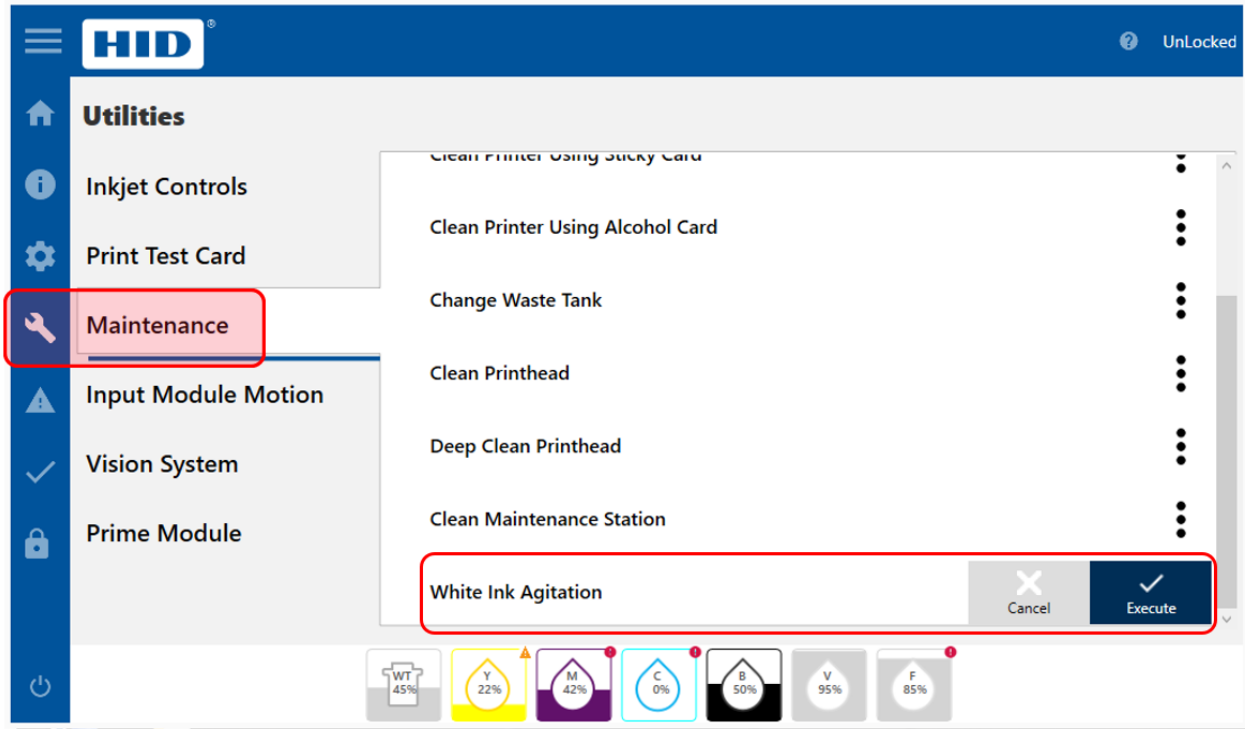

HID
UnLocked
Installed Modules
Display
System
Input Hopper
Smart Card Encoding
Inkjet
Status: Ready
Card Count: 501
Bios Info: DELL - 1072009, 1.8.2, American Megatrends - 5000D
IPv4Address: 0.0.0.0
IPv6Address: 0.0.0.0
WT 45%
Y 0%
M 6%
C 0%
B 50%
V 95%
F 85%

4 System Use

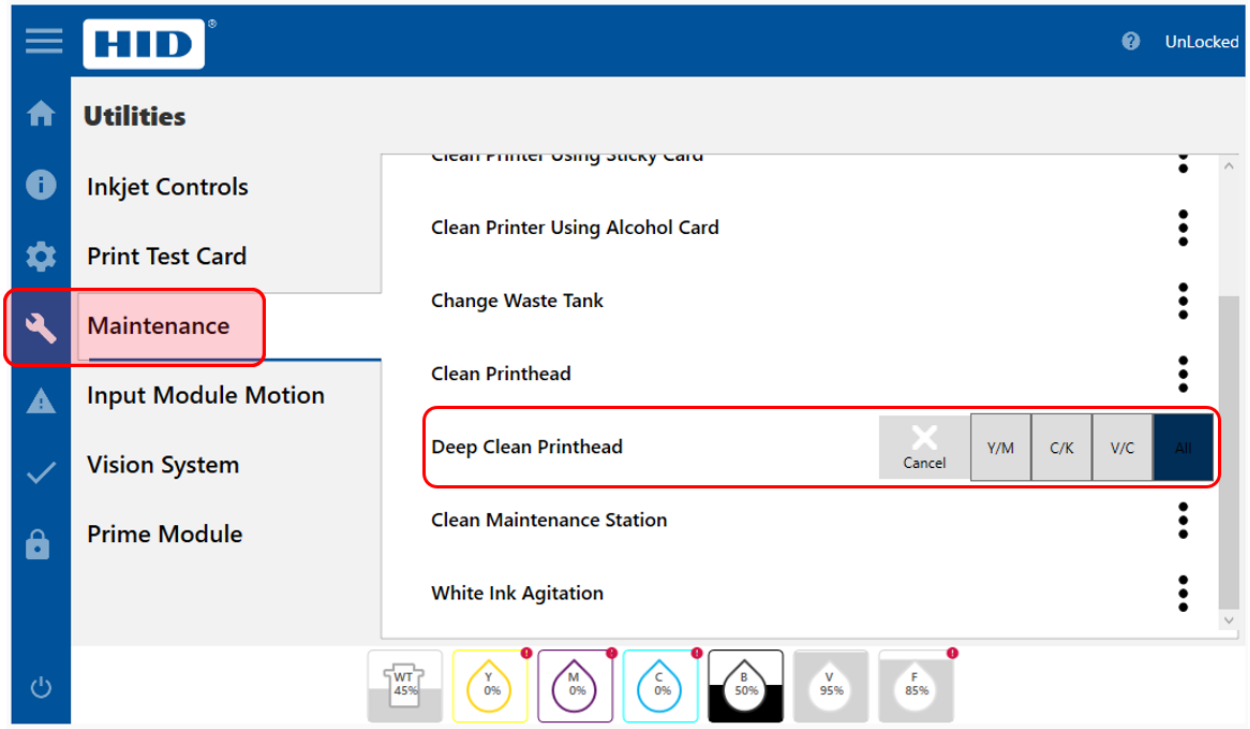
4.1 Preparing for Printing at Startup or After the System Has Been Idle

When the system has been unused or idle, a series of steps are necessary to achieve good print quality.

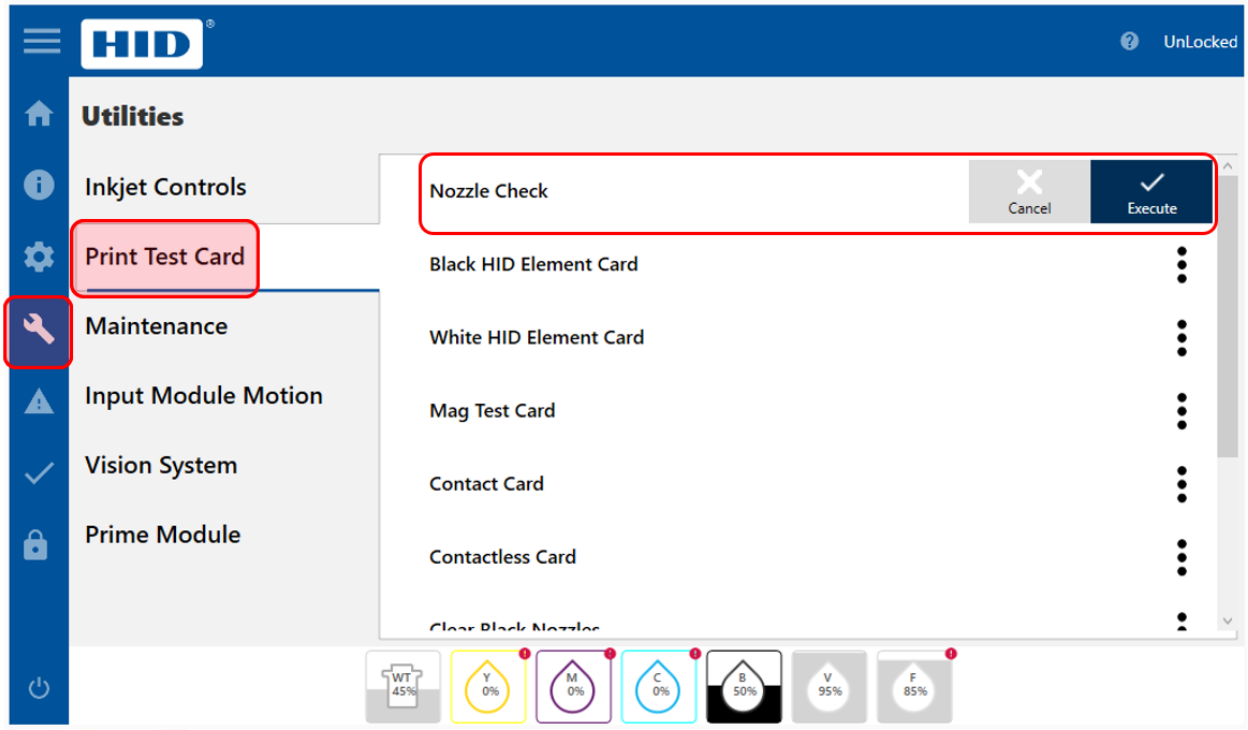
1. Open main access door.
2. Verify that the waste ink bottle is installed and that it is not full. If it is full, replace it with an empty bottle. (Firmware monitoring in being implemented for this.)
3. [White ink only] Remove all white ink cartridges from printer. Shake all white ink cartridges for a minimum of 10 seconds. Re-insert all white ink cartridges into the printer
4. Close the main access cover.
5. [White ink only] Initiate white ink agitation routine on user display under the maintenance options. (This will be automated in FW in future)



6. Perform individual deep clean procedures for each printhead. For white ink, execute the deep clean procedure at least two times, and perform deep clean for black ink last (note: deep clean on white should be done before other heads to prevent cross-contamination). (This will be automated in FW in future)



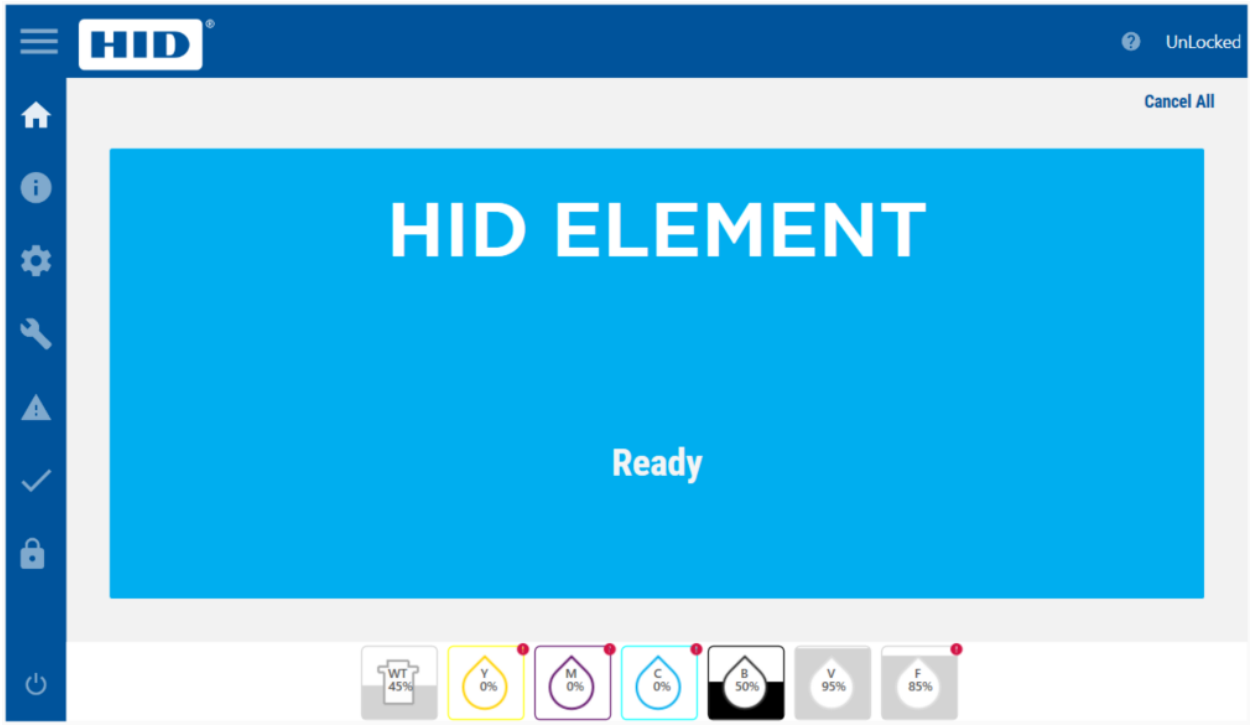
7. Print nozzle check card from user panel to assure all printhead nozzles are jetting. (This step will likely be eliminated as firmware is optimized.) If any nozzles are missing in a color, repeat deep cleans (step 6 above) until the nozzle check card shows nozzles are operational.



4.2 Display Functionality (section incomplete)

4.2.1 Home Screen

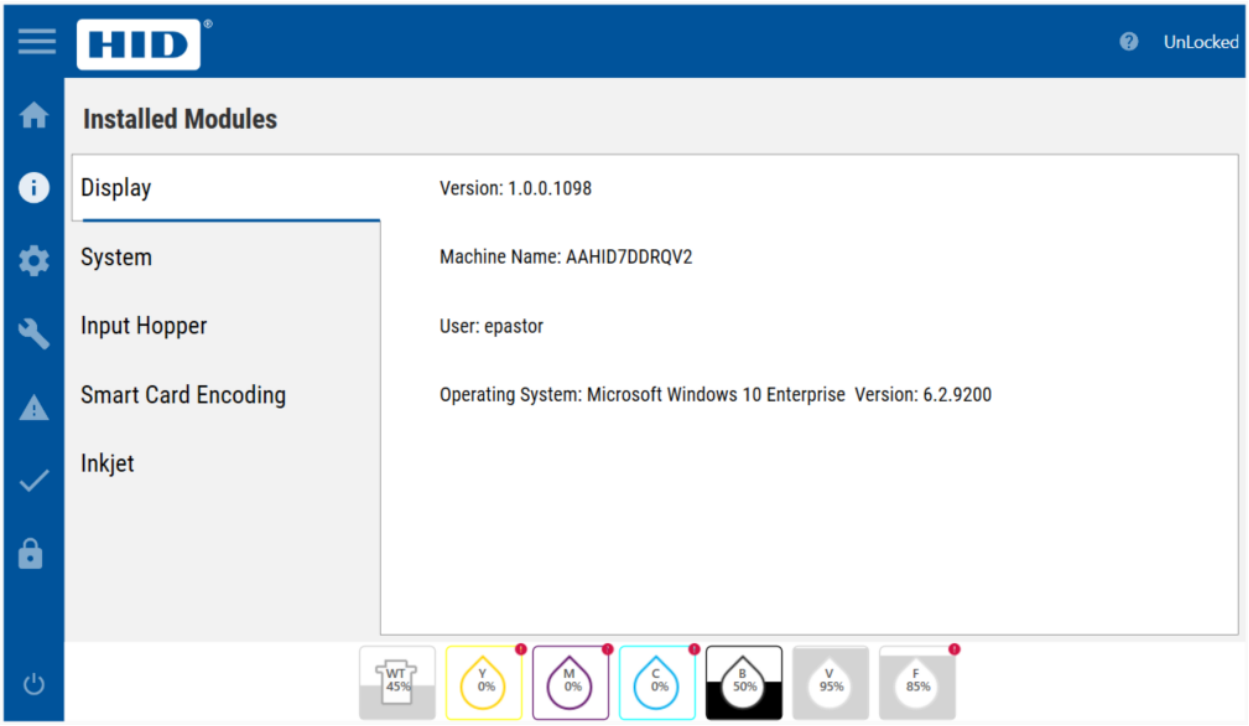
The home screen can be accessed by tapping  on the left edge of the display. This screen is the default display mode and shows the current printer status including print job information.



The current state of the inkjet module automatic lock is displayed in the top right corner.

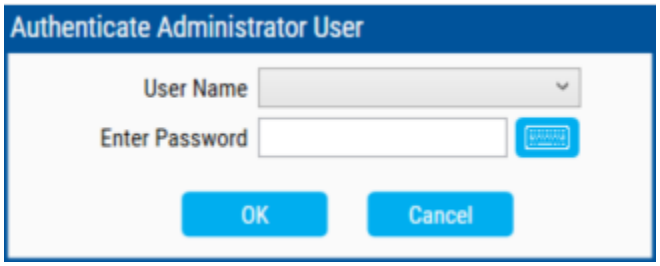
4.2.2 Information

The information menus can be accessed by tapping  on the left edge of the display. This screen lists the installed modules along the left of the screen. Tap on these labels to view information specific to each module.

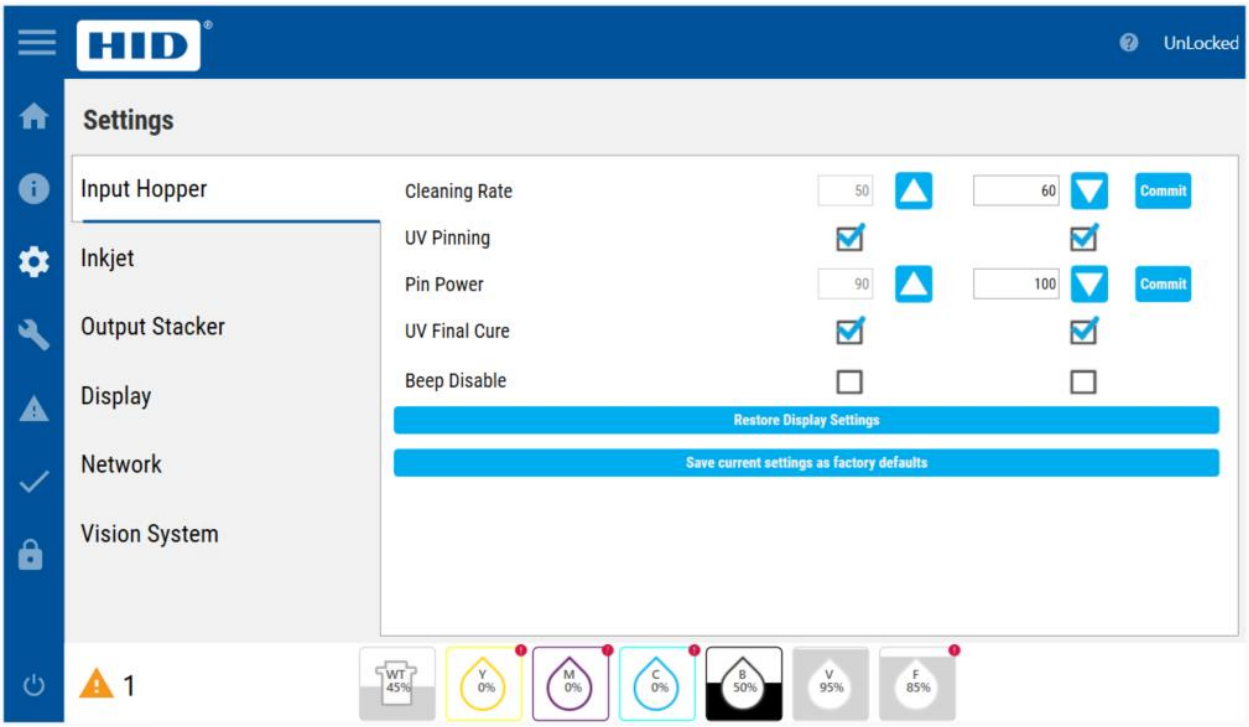


4.2.3 Settings

The settings menu can be accessed by tapping  on the left edge of the display. A dialog box will appear prompting for the administrator username and password.



Once authenticated, the settings menu allows for various adjustments. Menus are listed for specific modules along the left side of the screen. Tap on the desired module name to view and/or edit those settings.



(NEED TO DESCRIBE EACH SETTING HERE)

Input Hopper

-

Smart Card Encoding

-

Inkjet

-

Output Stacker

-

Display

-

Network

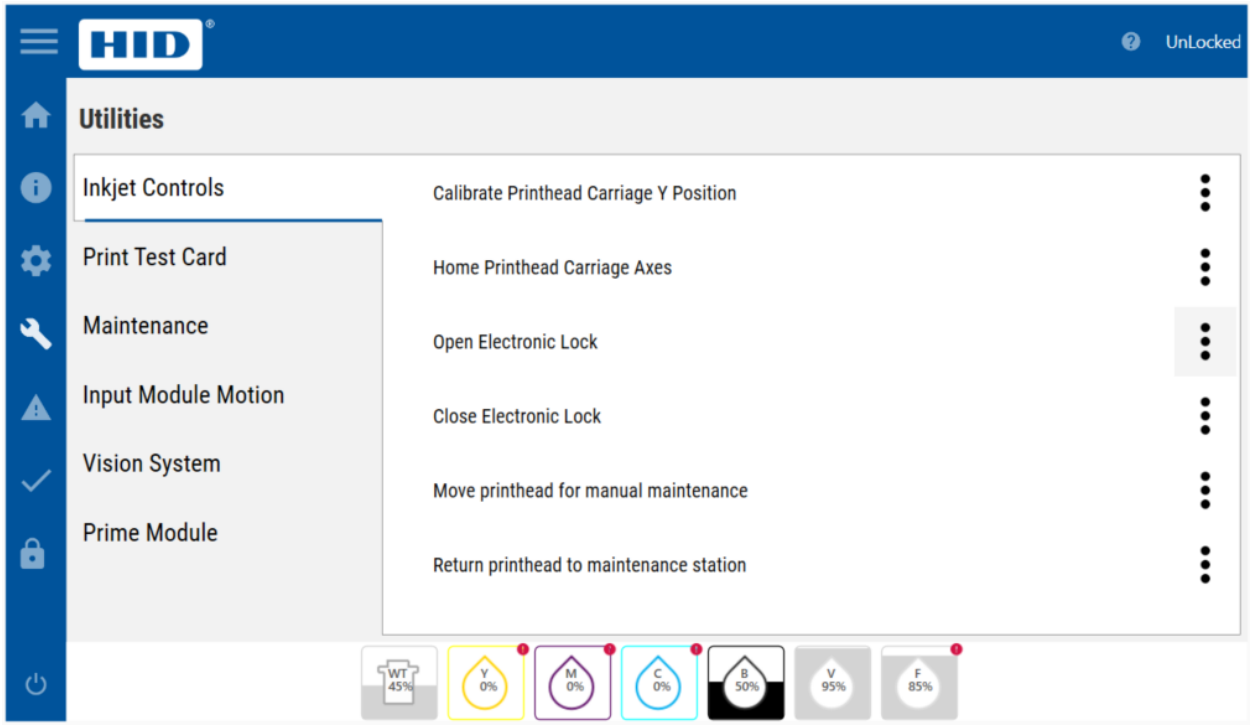
-

Vision System

-

4.2.4 Utilities

The utility menus can be accessed by tapping  on the left edge of the display. These menus contain various commands, test cards, and maintenance procedures.



To execute a utility command, tap the corresponding  and then choose “Execute”. The following list explains each utility option available:

Inkjet Controls

- **Calibrate Printhead Carriage Y Position**: Recalibrates the y-axis leadscrews by re-homing against the hard stop.
- **Home Printhead Carriage Axes**: Rehomes the y-axis leadscrews.
- **Open Electronic Lock**: Opens the electronic lock on the inkjet module.
- **Close Electronic Lock**: Closes the electronic lock on the inkjet module.
- **Move printhead for manual maintenance**: Moves the print carriage away from the maintenance station for access to the printheads and manual maintenance. (NOTE: The carriage will automatically move back to the maintenance station when the cover is closed or after 5 minutes if the cover is not opened.)
- **Return printhead to maintenance station**: Returns the print carriage to the maintenance station after it has been moved away.

Print Test Card

- **Nozzle Check**:
- **Black HID Element Card**:

- **White HID Element Card**:
- **Mag Test Card**:
- **Contact Card**:
- **Contactless Card**:
- **Clear Black Nozzles**:
- **Clear White Nozzles**:
- **Financial Card**:
- **Blank Card Test**:

Maintenance

- **Disable Printing**: Disables printing while still allowing cards to feed through the system. (Password protected)
- **Enable Printing**: Re-enables printing if has been disabled. (Password protected)
- **Clean Printer Using Sticky Card**: Displays instructions for how to use a sticky card to clean the cardpath rollers.
- **Clean Printer Using Alcohol Card**: Displays instructions for how to use an alcohol card to clean the cardpath rollers.
- **Change Waste Tank**: Displays instructions for how to change the waste tank.
- **Clean Printhead**: Performs a spit of all nozzles on the printhead.
- **Deep Clean Printhead**: Purges the printhead using a suction to draw ink through the nozzles.
- **Clean Maintenance Station**: Displays instructions for how to clean the maintenance station.
- **White Ink Agitation**: Pumps white ink channels back and forth between the header tank and cartridge to agitate the ink.

Input Module Motion

- **Jog Card Path**:
- **Jog Right Angle Flipper**:

Vision System

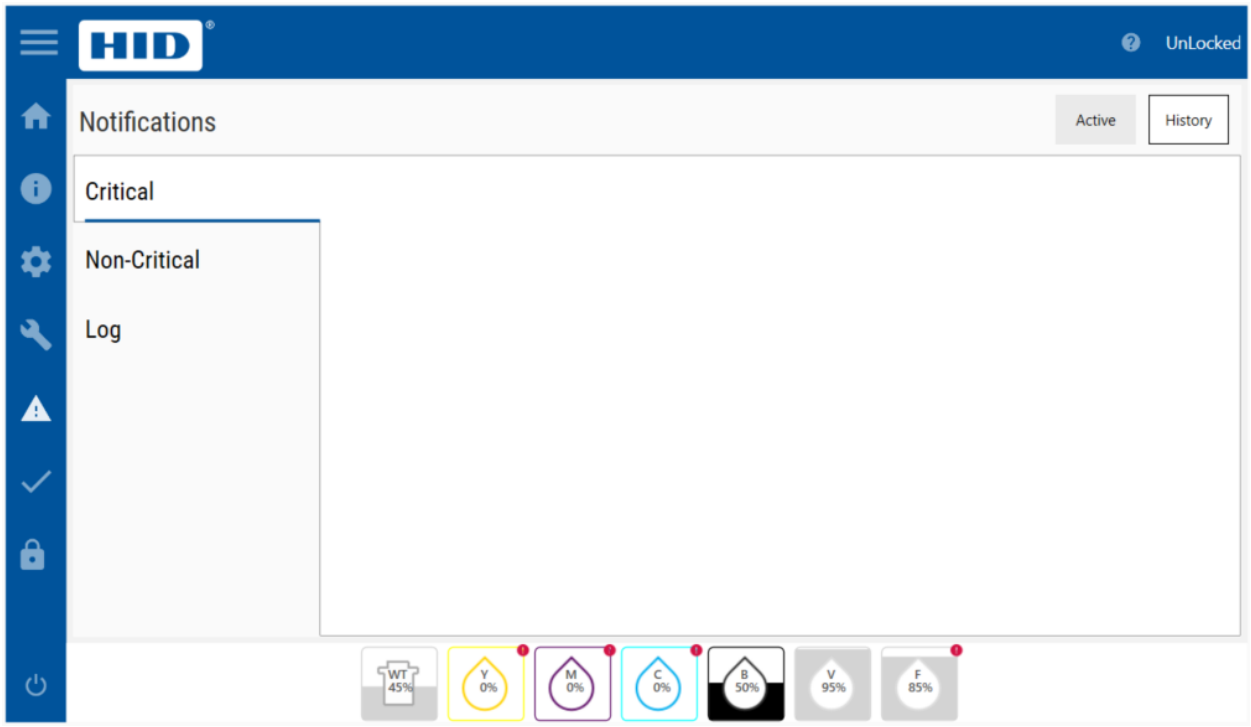
- **Capture Image**:
- **Calibrate Camera**:

Prime Module

- **Access Desktop**:
- **Change Password**:
- **Restore Network Settings**:
- **Restore User Config to Default Settings**:

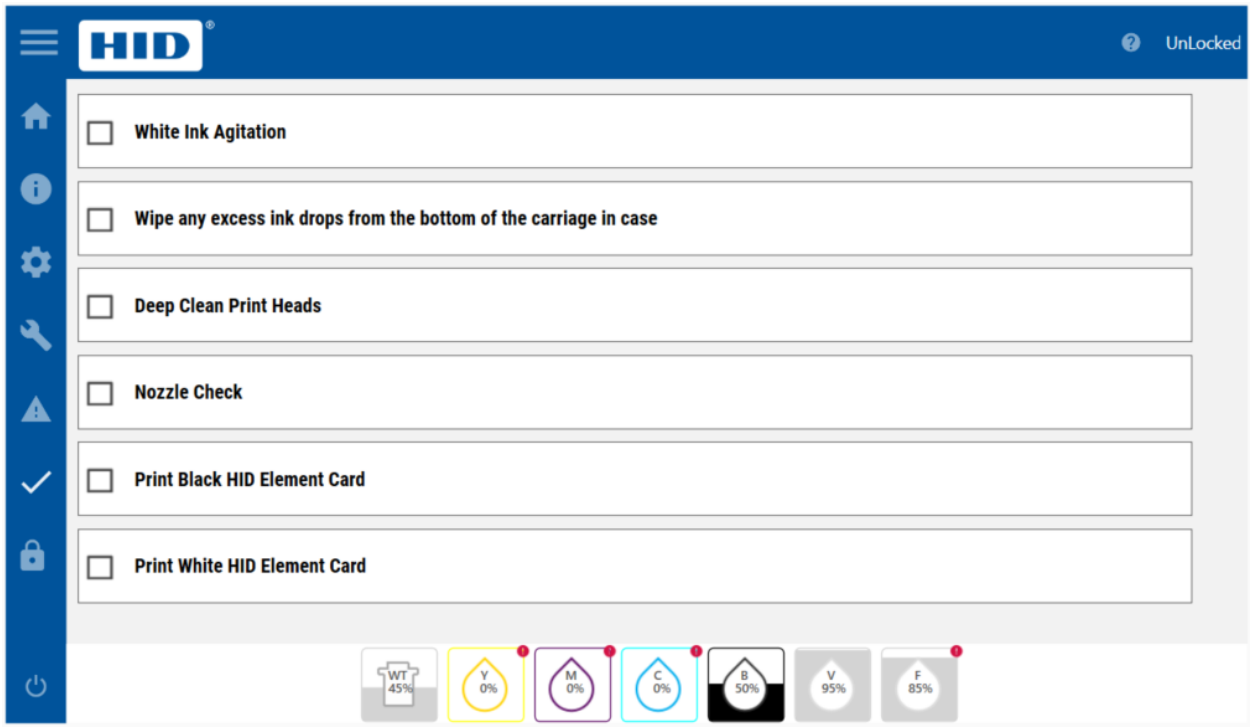
4.2.5 Notifications

The notifications screen can be accessed by tapping  on the left edge of the display. You can switch between viewing critical errors, non-critical errors, and the log tapping the labels on the left.



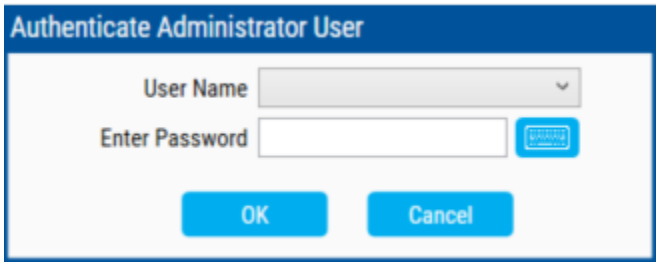
4.2.6 Shift Change

The shift change screen can be accessed by tapping  on the left edge of the display.

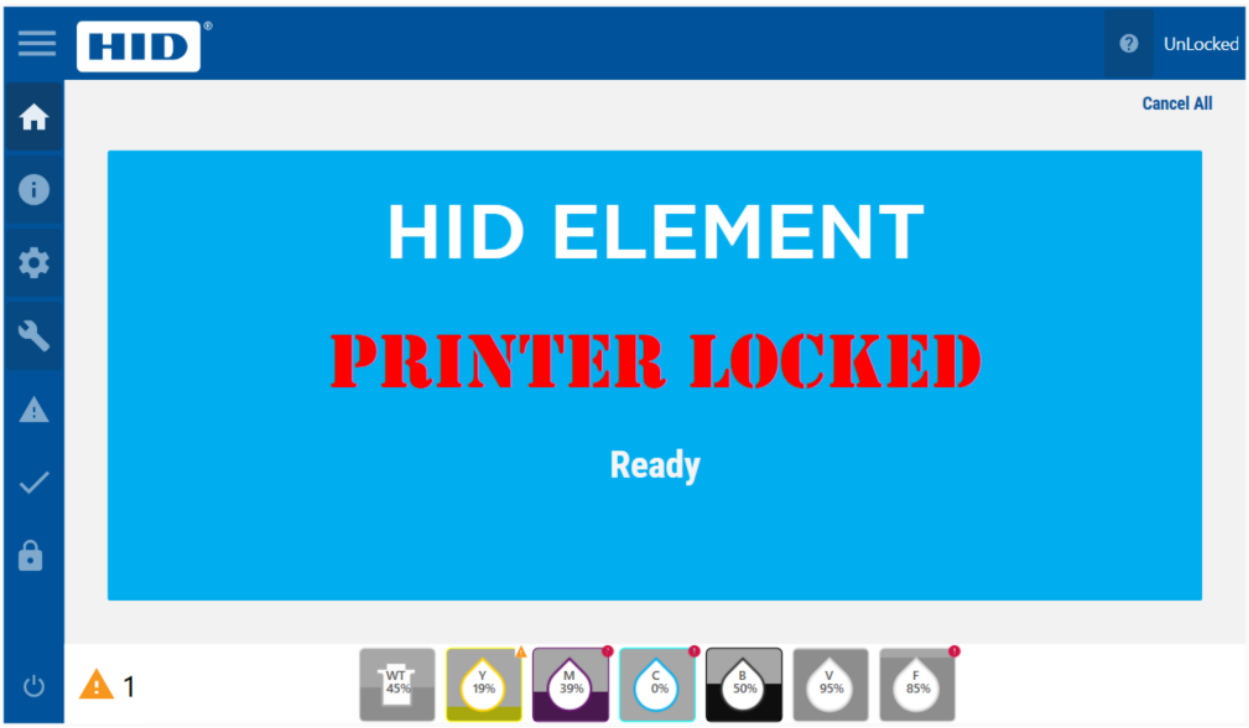


4.2.7 Display Lock

The display lock can be activated by tapping  on the left edge of the display. A dialog box will be shown prompting for the administrator username and password.



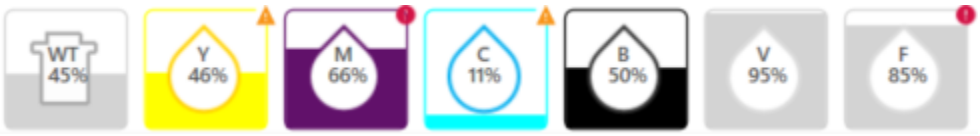
Once authenticated, “PRINTER LOCKED” is shown on the screen to indicate the display is now locked.



To unlock the display, tap on the  and enter the administrator credentials. If authenticated, the screen will no longer show “PRINTER LOCKED” and the display will become accessible once again.

4.2.8 Ink Cartridge Information

Ink cartridge information can be accessed by tapping on the desired cartridge icon along the bottom edge of the display.

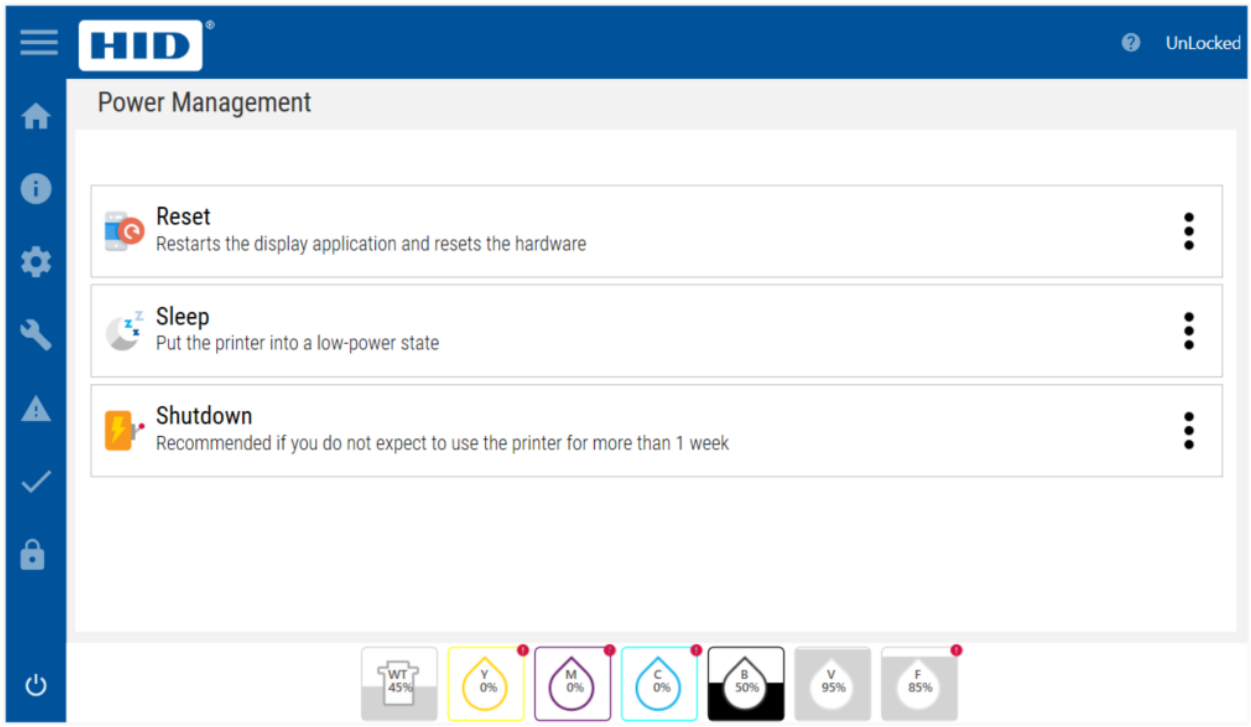


Information about the selected cartridge will be displayed including the ink type, serial number, part number, expiration date, percent remaining, purge count, and header tank level.

The icon on the far left indicates the level of the waste tank.

4.2.9 Power Management

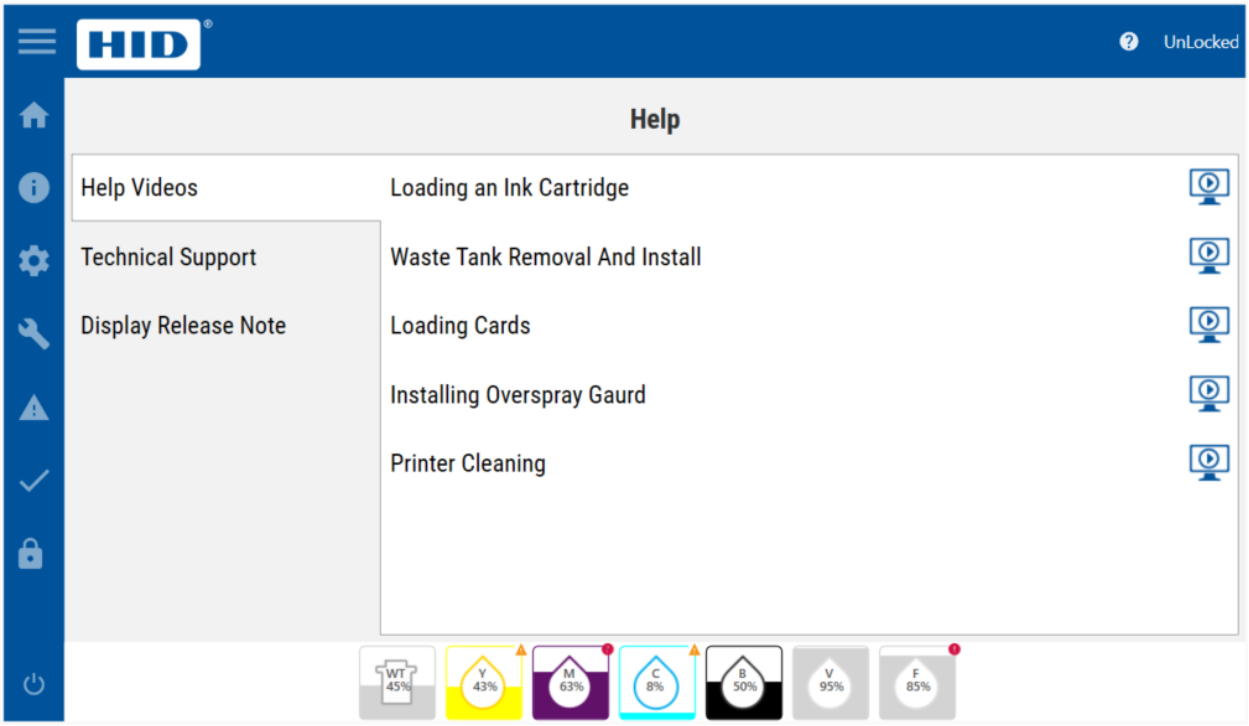
The power management menu can be accessed by tapping  in the bottom left corner of the display. The following screen will be shown which provides options to reset, sleep, or shutdown the printer.



To select one of the power options, tap the corresponding  and then choose “Execute”.

4.2.10 Help

The help menu can be accessed by tapping  in the top right corner of the display. This screen provides access to video tutorials for several procedures along with contact information for HID technical support.



4.3 Printing

Jobs can be sent to the unit through the use of the unit's SDK or through the window's driver provided with the system. Refer to the SDK information document for details. To verify print operation, test cards can be printed from the user display (Maintenance -> Print Test Card -> *Test Card Name (for example Nozzle Check Card)* -> Execute)

4.3.1 Printing Preferences (section incomplete) – driver UI options

4.4 Encoding

Card orientation in input hopper for encoding – card must be oriented for mag and contact encoding as shown on the image on the top of the hopper. Refer to driver or SDK information document for details. Test cards can be run from the user display to verify encoding operation.

4.5 Print Module Cover Automatic Lock

When the print module is active, printing a card or performing other tasks which require mechanism movement or UV exposure, the printer cover is automatically locked and the user will not be able to open the cover. When the system returns to an idle state, the cover door is unlocked. See troubleshooting section for instructions on how to manually unlock the print module cover door.

4.6 Printer Module Cover Open/Close Events

When a user opens the printer module cover for any reason, the system will automatically pause. Upon closing of the cover, the cover will lock, and the system must rehome all mechanisms successfully before any activities resume. Any cards which were in process in the printer module will be flushed from the system and rejected.

4.7 Replacing Ink Cartridges

When the unit is idle, users can open the print module cover and replace any ink cartridge.

If you are using white ink, remember to shake the new cartridge before installing.

The cartridge currently being used can simply be pulled upward, and the new cartridge can be pressed down in its slot until it clicks into place.

Please be careful that the cartridge ink color matches the ink which is intended to be put into any particular slot. The cartridges are mechanically keyed to prevent loading an a cartridge into an incorrect slot.

4.8 Replacing Full Waste Tank

A sensor is used in the waste ink tank to indicate that it is full. If the waste tank is full, printing will not be continued until the waste tank is replaced with one which has space available for additional waste.

In this case, open the cover of the print module. The waste tank, which is located on the left side, has a quick connect hose coupler. Press the button on the quick release fitting, and pull the off the full waste tank. Remove the full waste tank, and replace it with a new waste tank. Connect the new waste tank by pressing the quick release coupler into its fitting. Close the cover.

Dispose of the full waste tank in accordance with local requirements for waste disposal.

4.9 Input Hopper Empty **(needs completion)**

4.10 Output Hopper Full **(needs completion)**

5 End of Shift Information

5.1 System Idle

To prepare the system when printing will be idle, verify that the carriage is positioned at the maintenance station. This can be done by checking for the green lights on the top of the carriage. Leave power on so that the system vacuum can be maintained.

6 Maintenance (section incomplete)

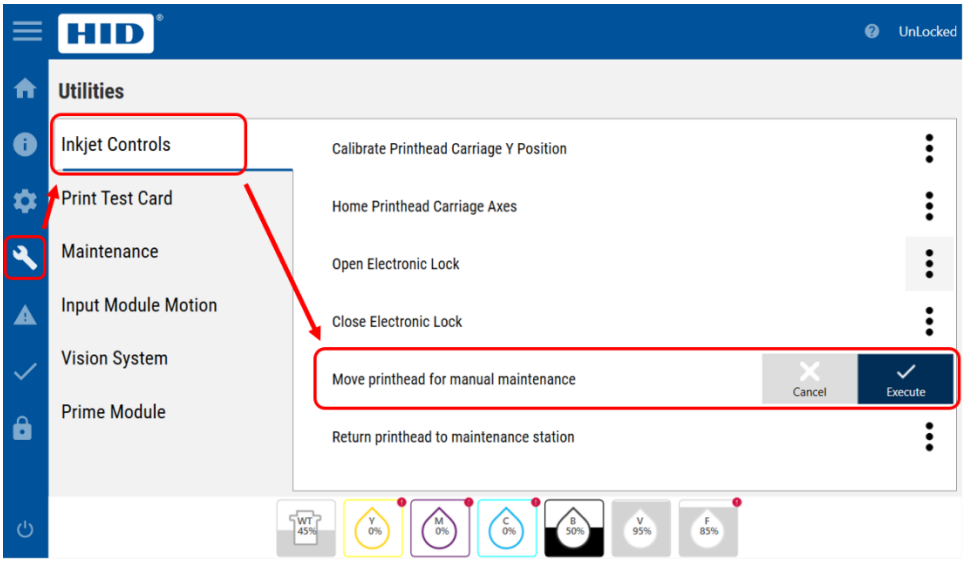
6.1 Ionizer Cleaning

The HID ELEMENT printer uses an ionizer to reduce accumulation of ink on printhead surfaces though static control. This ionizer is mounted on the side of the printhead carriage.

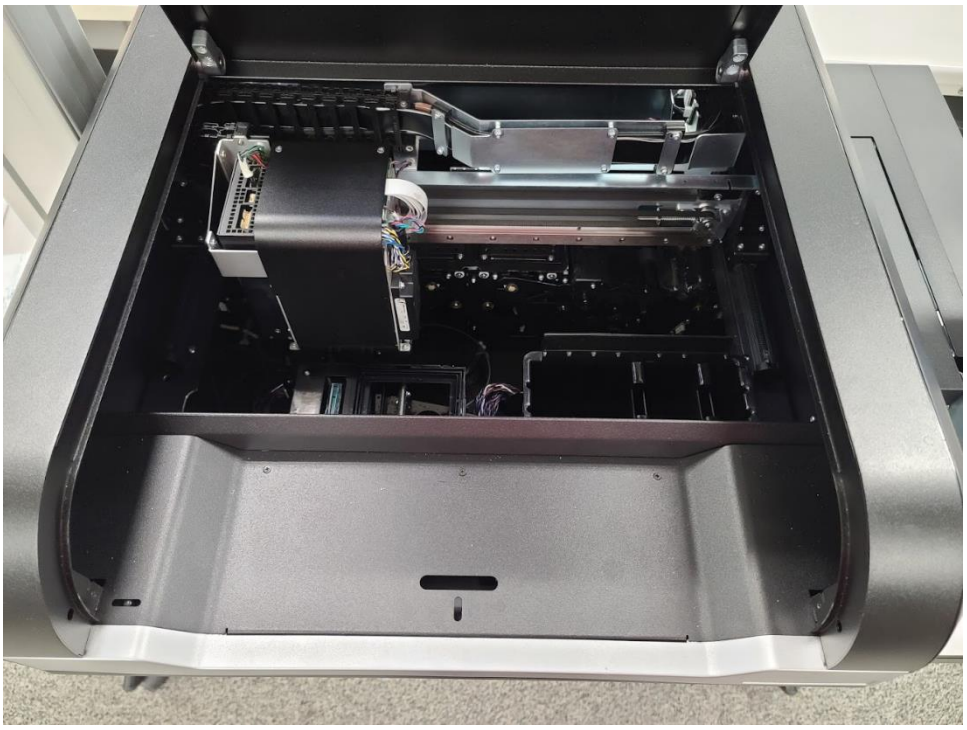
6.2 Cleaning the Print Carriage

Over time, wet ink may accumulate on the bottom of the print carriage and cannot be cleaned by the wiper. When this happens, you may notice drops of ink appearing on the card in undesired locations as the ink drips onto the card during printing. Use these steps to manually clean any ink off the bottom of the print carriage.

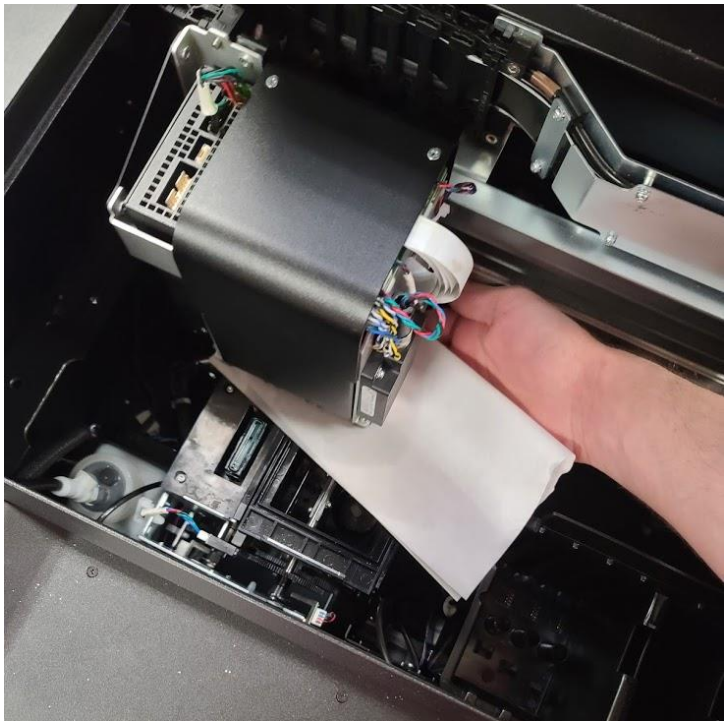
1. With the system in an idle state, execute the “Move printhead for manual maintenance” routine through the display interface.



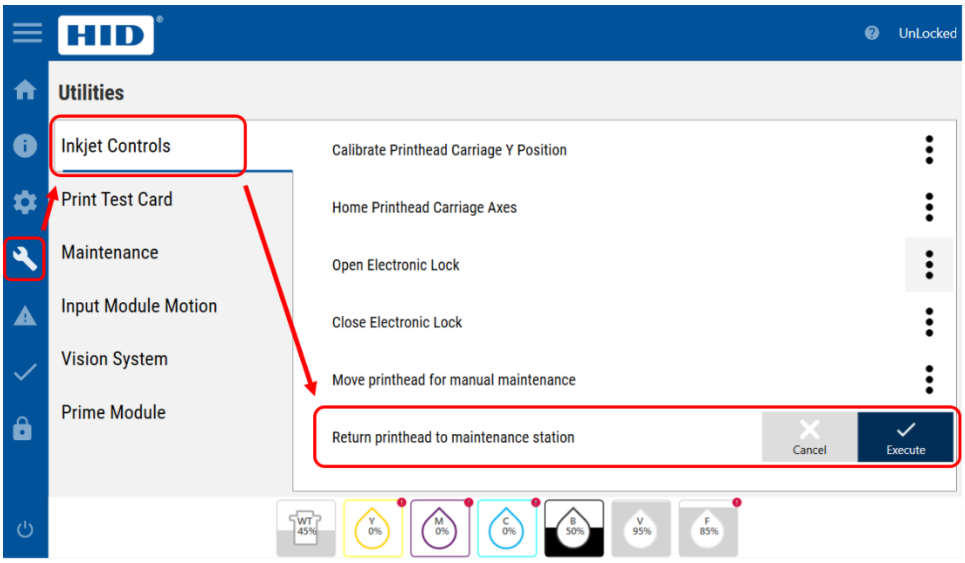
2. Once the move has completed, open the cover. The print carriage should be located between the maintenance station and the cardpath as shown in the image below.



3. Saturate a lint-free cloth with 99% isopropyl alcohol.
4. Using the saturated cloth, reach down under the print carriage and very gently wipe the entire surface.



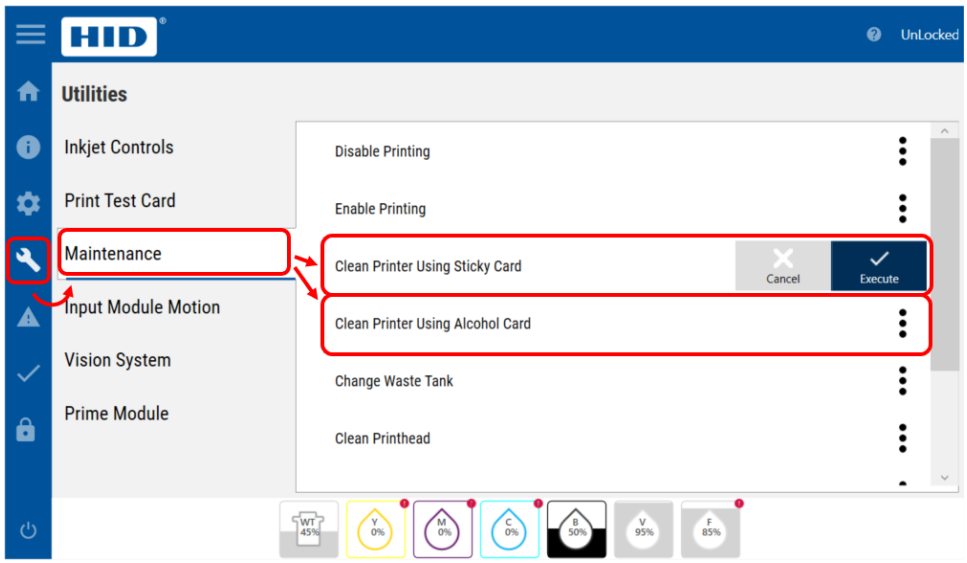
5. When finished, close the cover and execute the “Return printhead to maintenance station” routine through the display interface.



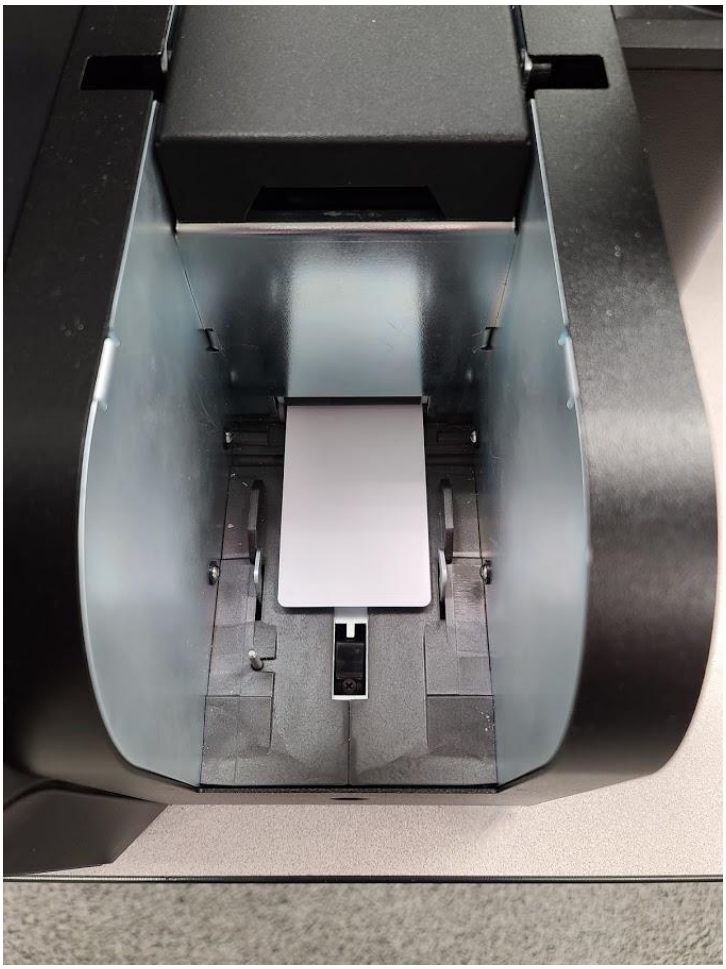
6.3 Cleaning the Cardpath

The rollers that transport the card through the printer can become dirty over time. This can cause smudges to appear on the printed cards. Cleaning the rollers involves running a specialized cleaning card through the printer. HID has two options of cleaning cards: an adhesive card and an alcohol card. Use these steps to clean the cardpath rollers.

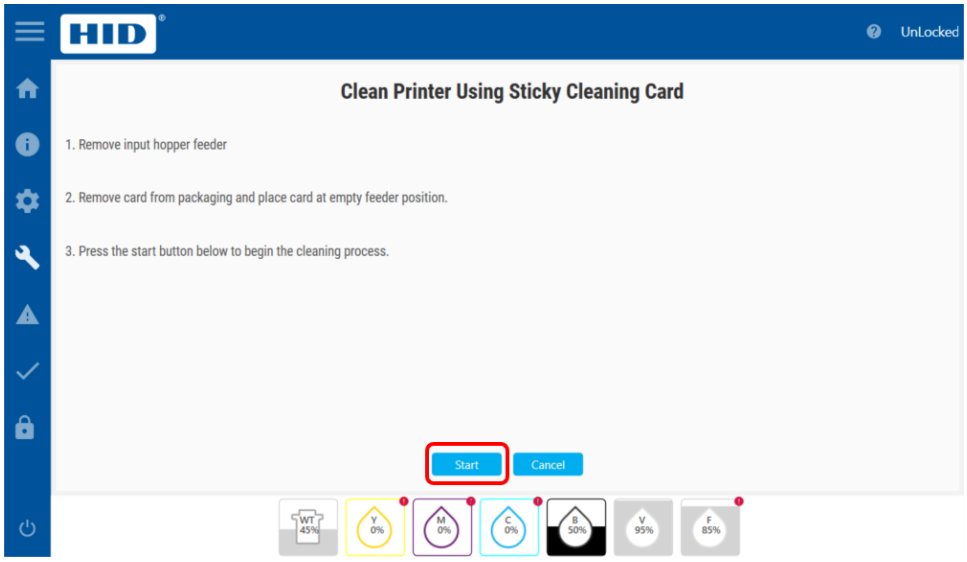
1. On the display, select the option “Clean Printer Using Sticky Card” or “Clean Printer Using Alcohol Card” depending on which type of cleaning card you have.



2. Following the on-screen instructions, remove the input hopper from the input module.
3. Place the cleaning card just at the entrance to the feed rollers as shown below.



4. Press the start button on the display to run the cleaning card through the printer. It will be ejected after the process is complete.

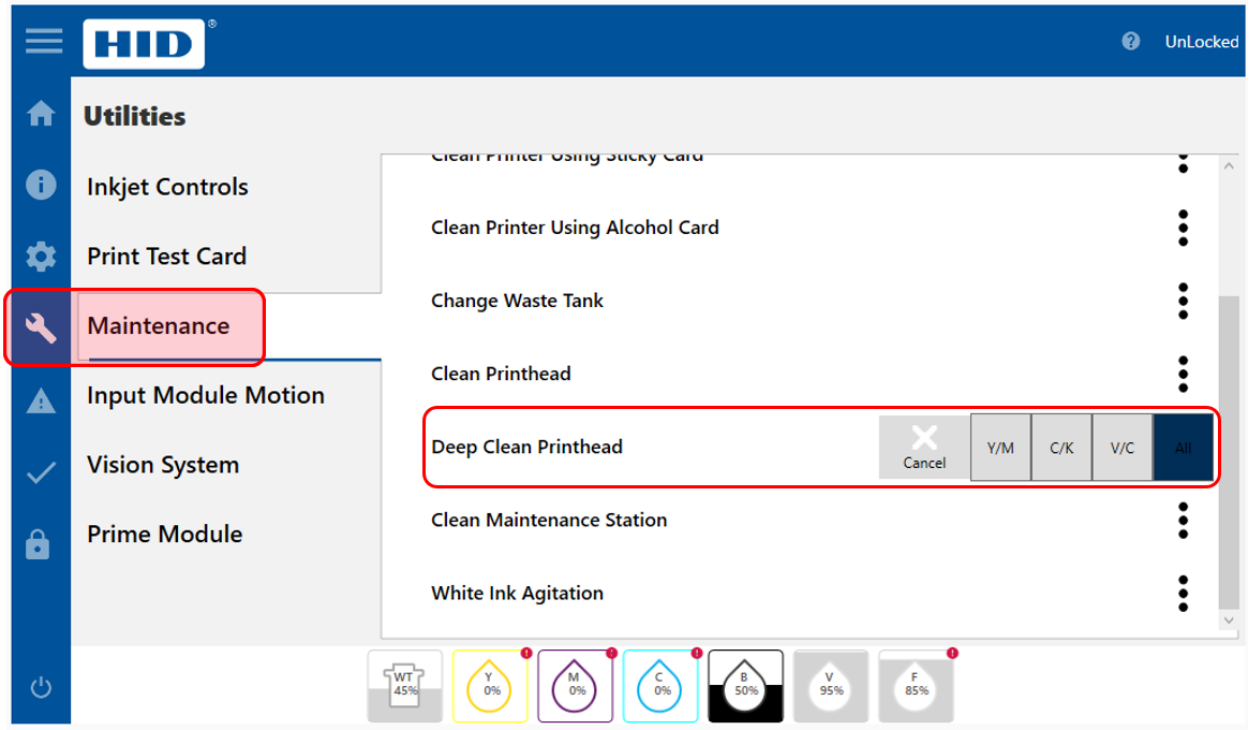


7 Troubleshooting (section incomplete)

7.1 Nozzles Out

If the system is left idle for a period of time, it may be the case that nozzles will go out, particularly for the white ink. If nozzles are missing in a print, these steps can be used to recover the nozzles.

1. Run a print head deep clean on the heads that show missing nozzles. The printer includes 2 white channels, 2 black channels, and 2 clear channels, but the touchscreen application has not been updated to indicate this. To deep clean the white channels, choose the "Y/M" option. To deep clean the black channels, choose the "V/F" option. To deep clean the clear channels, choose the "C/K" option (if clear ink is installed).



2. Print a nozzle check.

If nozzles are still missing, repeat steps 1 and 2.

If nozzles are missing, and a 2046 error occurs, it is likely that a corresponding cartridge is out of ink. Check to see if the cartridge seems empty by pulling it out and shaking it, and if it is empty, replace with a new full cartridge (remember to shake it if it is a white cartridge).

7.2 Print Quality Defects (Section Incomplete)

7.2.1 Color Registration

Potential Cause	Potential Solution
Print position of printhead needs adjustment	Adjust printhead position setting
Acceleration of printhead causes localized registration issues	Slow down scan speed

7.2.2 Banding

Potential Cause	Potential Solution
Nozzles out	Run deep cleans until nozzle check shows all nozzles in.
If white ink, pigment has settled	Run agitation routine.
Ink starvation has occurred	Reduce print speed
Ink starvation has occurred	Increase ink temperature setting.
Too much ink	Use graphics screening, reduce pulse count setting, reduce density of image in application
Pinning is not allowing ink to flow	Decrease or change pinning or reverse pinning
Ink does not flow sufficiently	Does primer below ink allow for more spread?

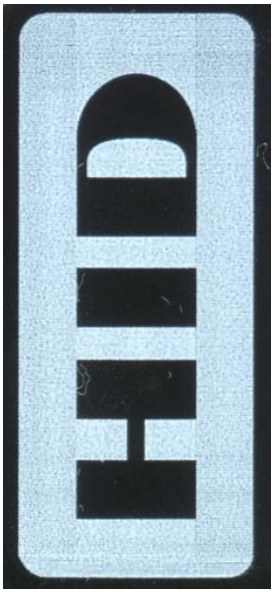
7.2.3 Large Area Image Banding

Potential Cause	Potential Solution
Ink banding due to unscreened setting	Print with graphics screening
Ink banding due to unscreened setting	Print with Large Solid Area defined area option

7.2.4 Excessive Satellites

Potential Cause	Potential Solution
Nozzles are out	Run a deep clean on the printhead.
If white ink, pigment has settled	Run agitation routine.
Ink puddling has occurred on printhead	Manually clean carriage bottom.
Ionizer error (could cause ink puddling on the printhead)	Check warnings/errors. Clean ionizer tips if warning has occurred. Manually clean carriage bottom.
Large ink drops cause satellites	Limit ink density by setting printer pulse count lower.
Too much airflow/ink dynamics	Set scan speed lower

7.2.5 Vertical Banding



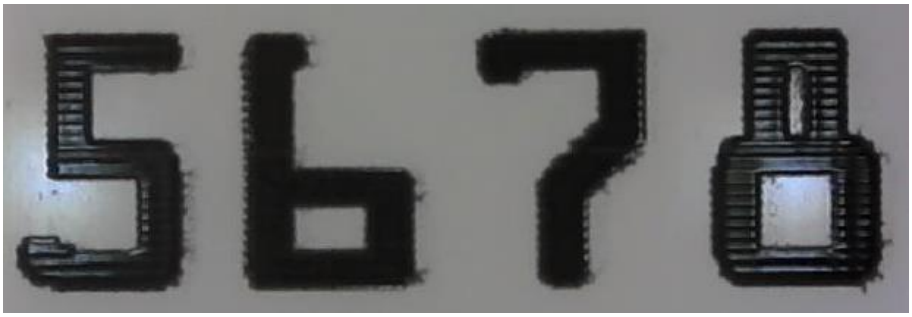
Potential Cause	Potential Solution
Inkjet Crosstalk	Use graphics screening
Inkjet Crosstalk	Slow down print scanning speed
Inkjet Crosstalk	Use 1200 dpi resolution
Inkjet Crosstalk	Use bidirectional printing

7.2.6 Ink Adhesion

Potential Cause	Potential Solution
Insufficient UV cure dosage	Increase Pinning and/or Reverse Pinning settings.
Insufficient UV cure dosage	Slow down final cure
Insufficient UV cure dosage	Reduce print speed (for pinning)
Insufficient UV cure dosage	Reduce return speed (for reverse pinning)
Insufficient UV cure dosage	Verify that UV lamp lens is clean
Too much ink	Reduce quantity of ink by reducing density of image, using “graphics” screening, or setting printer pulse count lower.
Card surface not compatible	Use primer mode

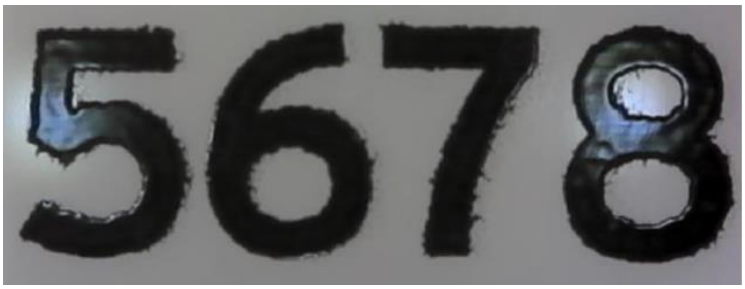
Card surface not compatible	Verify cards are clean

7.2.7 Scan Line Banding



Potential Cause	Potential Solution
Pinning Intensity is too high.	Reduce Pinning Intensity setting. If cure is not sufficient, increase the Reverse Pinning setting.
Pinning occurs too quickly.	Set Pinning Intensity setting to Zero. Increase Reverse Pinning setting enough so that the cure is sufficient, or increase the Reverse Pinning Delay setting.
Too much ink	Use graphics mode

7.2.8 Poor Edge Definition



Potential Cause	Potential Solution
UV Pinning power is too low.	Increase Pinning Intensity setting
UV Reverse Pinning power is too low.	Increase Reverse Pinning Intensity setting
Time between ink deposit and UV pinning cure is too long	Increase Scanning Speed setting
Time between ink deposit and UV pinning cure is too long	Reduce Reverse Pinning Delay setting (if Reverse Pinning is on)
Too much ink is used	Reduce quantity of ink by reducing density of image, using “graphics” screening, or setting printer pulse count lower.

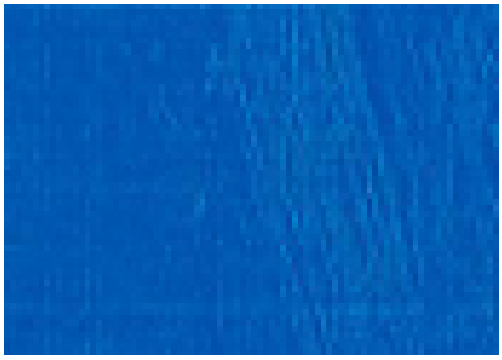
7.2.9 Cross-Color Contamination

Ink Cap, wiper, or wiper blade is dirty	Clean these items and do deep purges on contaminated color. It may be necessary to run the “Clear white nozzles” or other test cards a number of times to clear out ink contamination.
Carriage bottom has puddled ink.	Use manual cleaning process, clean ionizer tips.

7.2.10 Ink Drips on Card

Potential Cause	Potential Solution
Ink puddling has occurred on printhead	Manually clean carriage bottom. Clean maintenance station purge cap, wiper, and wiper blade. Clean cardpath.
Ionizer error	Check warnings/errors. Clean ionizer tips if warning has occurred. Manually clean carriage bottom.

7.2.11 Non-Uniformity due to Contamination (Fingerprint, card debris, etc)

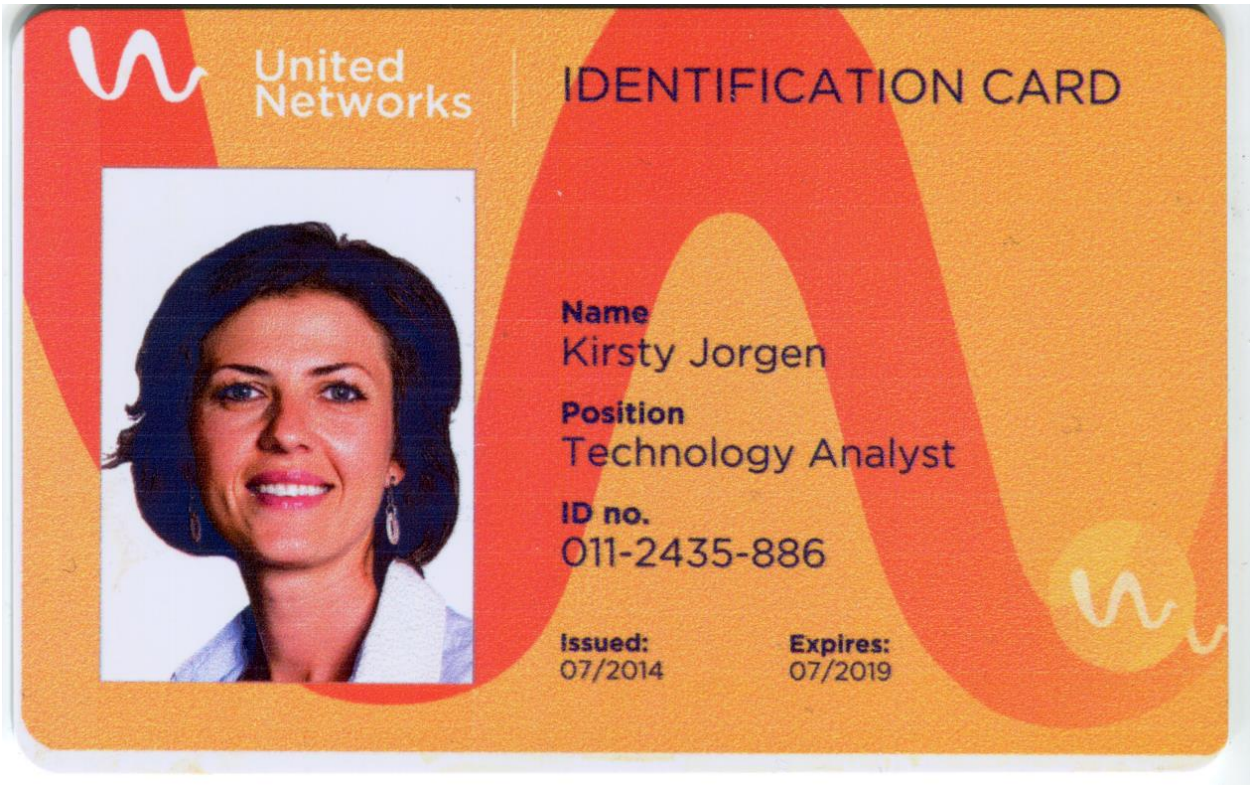


Potential Cause	Potential Solution
Cards are scratched or contaminated prior to printing	Verify that card surface is clean and unblemished.

7.2.1 Text “trapezoidal” by swath

Potential Cause	Potential Solution
Y axes are not perpendicular to print swath	Recalibrate Y axes

7.2.1 Image position not in the correct place (TOF, EOF, Image Placement in Application)

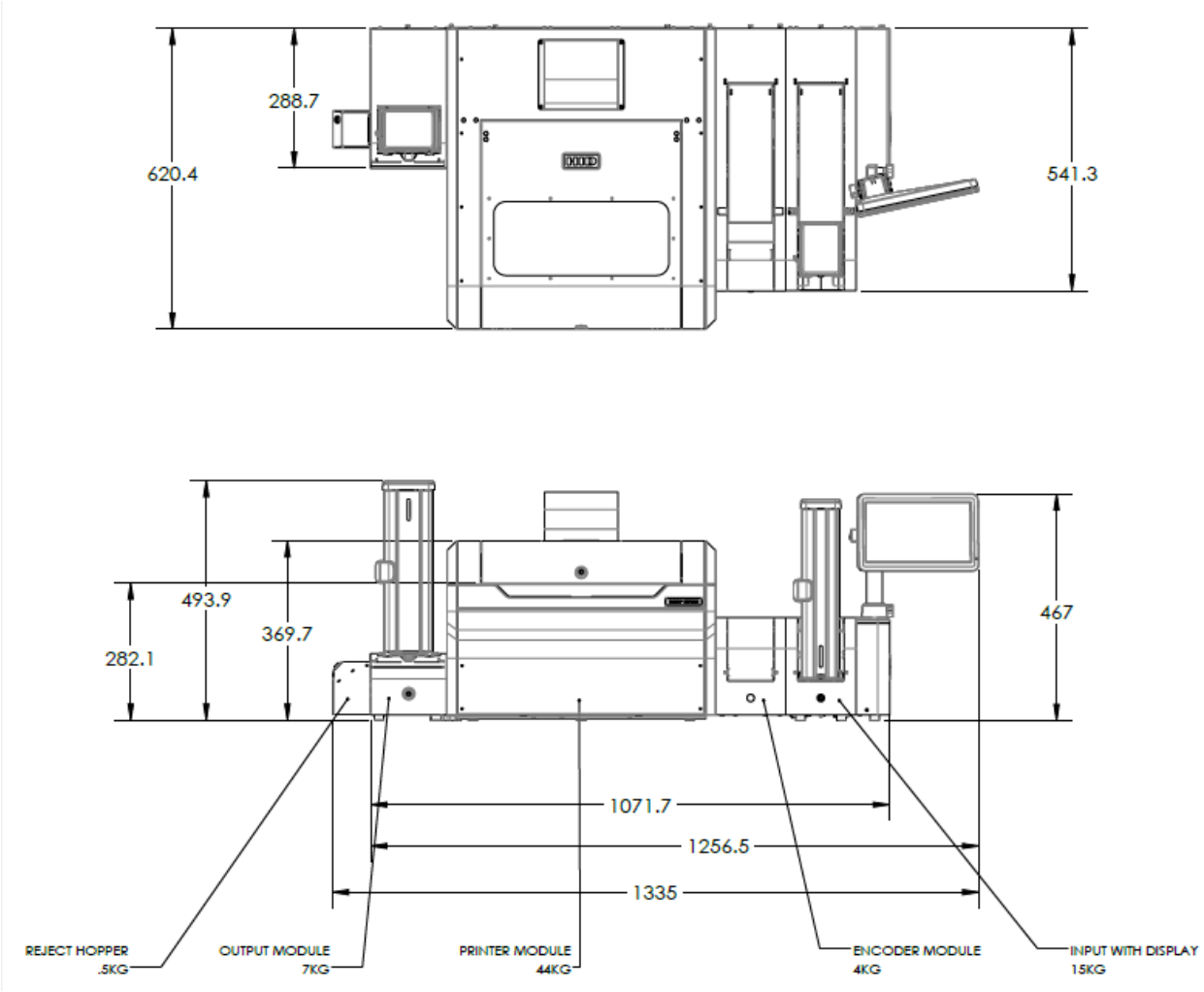


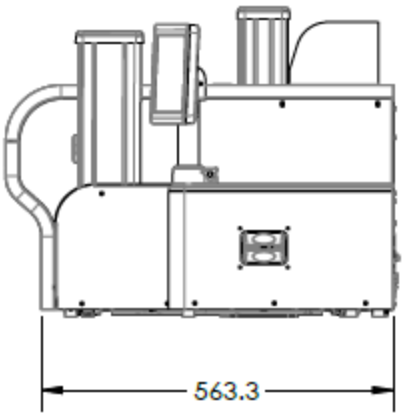
Potential Cause	Potential Solution
Image placement in application is incorrect	Adjust position of image in application
Print position on card is incorrect	Adjust Top of Form (TOF) and Left of Form (LOF)

8 HID ELEMENT with Optional Encoder Module

8.1 Unit Layout and Functionality (F I configuration – shown with optional camera)

Dimensions in mm.





8.2 Setup and Installation of Encoder Module

8.2.1 Unpacking and Inspection

In addition to the 3 shipment boxes described in the **“Connecting Modules (General Configuration)”,** the Encoder module is shipped separately in a 4th box

While unpacking the Encoder module, inspect the carton to ensure that damage did not occur during shipping.

Make sure that all supplied accessories are included with the unit:

- **Encoder Module**
  - I2C Ribbon cable
  - Ethernet cable (length?)
  - Module alignment guide

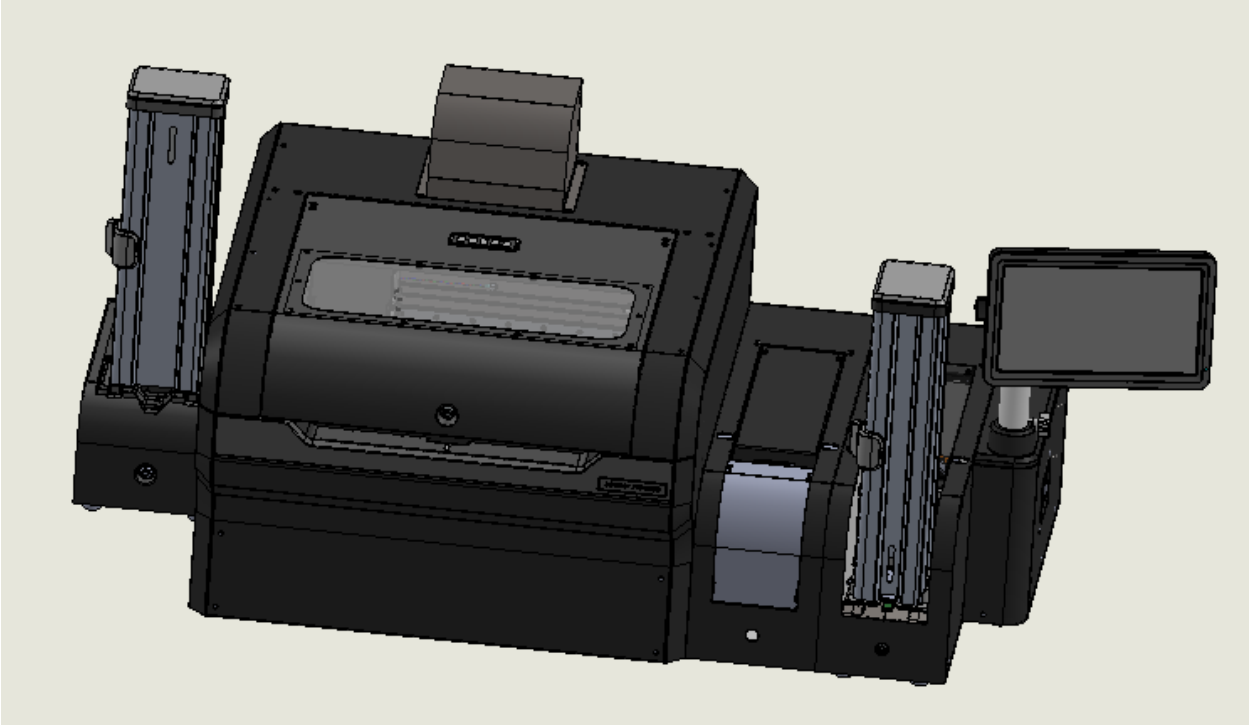
8.2.2 Connecting Modules

To connect modules including the Encoder Module, follow steps 1 and 2 A-C in the **“Connecting Modules (General Configuration)”** section above. This includes removing the back electrical channel covers, placing module alignment guides on both sides of the printer module, and installing the output module.

Next, instead of placing the input module to the right of the printer module as described in step D above, place the Smartware encoding module to the right of the printer module, lining up the card path slots. Again, holes in the baseplate of the Smartware encoding module should line up with the posts on the module alignment guide.

Add a module alignment guide to the right side of the Encoder module. Place the input module to the right of the Encoder module, lining it up with the module alignment guile as done previously.

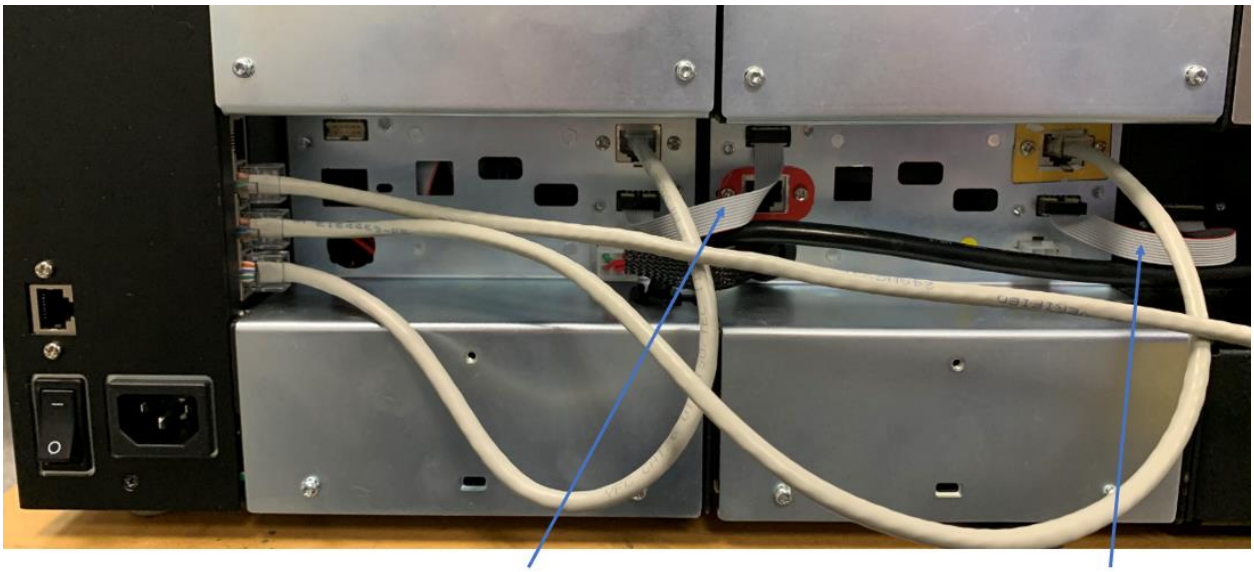
When complete, the unit should look like this:



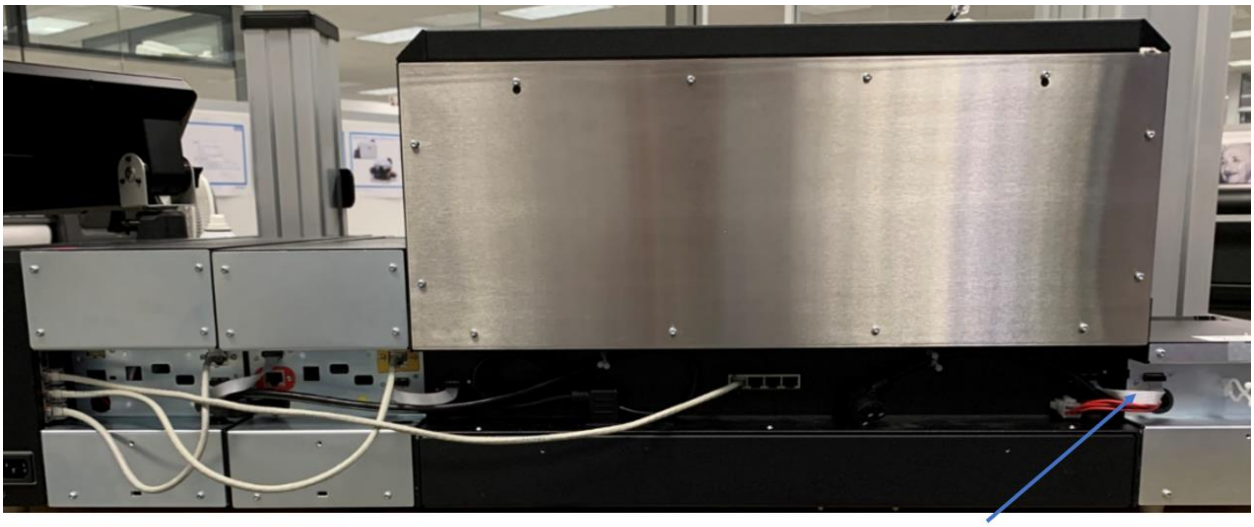
8.2.3 Module to Module Electrical Connections (Standard Configuration)

8.2.3.1 Ribbon Cables

Ribbon Cable (J) should be installed from the input module to the encoder module as shown in the photo below. Ribbon Cable (K) should be installed from the encoder module to the printer module. Ribbon Cable (L) should be installed from the printer module to the output module.



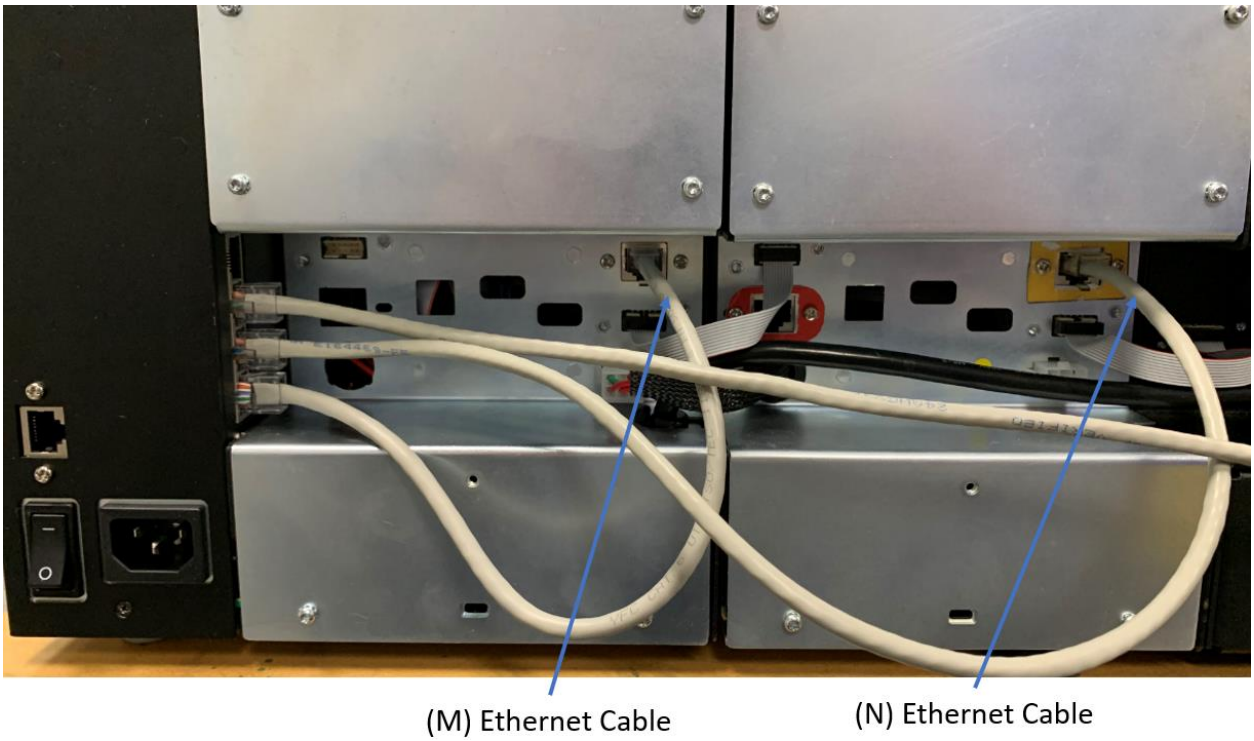
(J) Ribbon Cable (K) Ribbon Cable

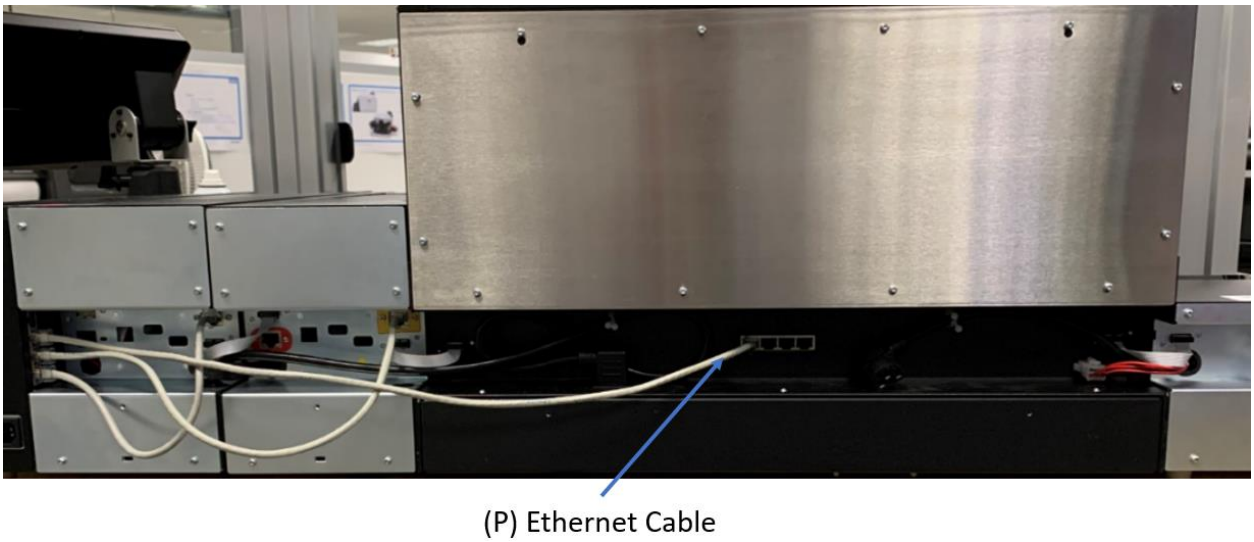


(L) Ribbon Cable

8.2.3.2 Ethernet Cable

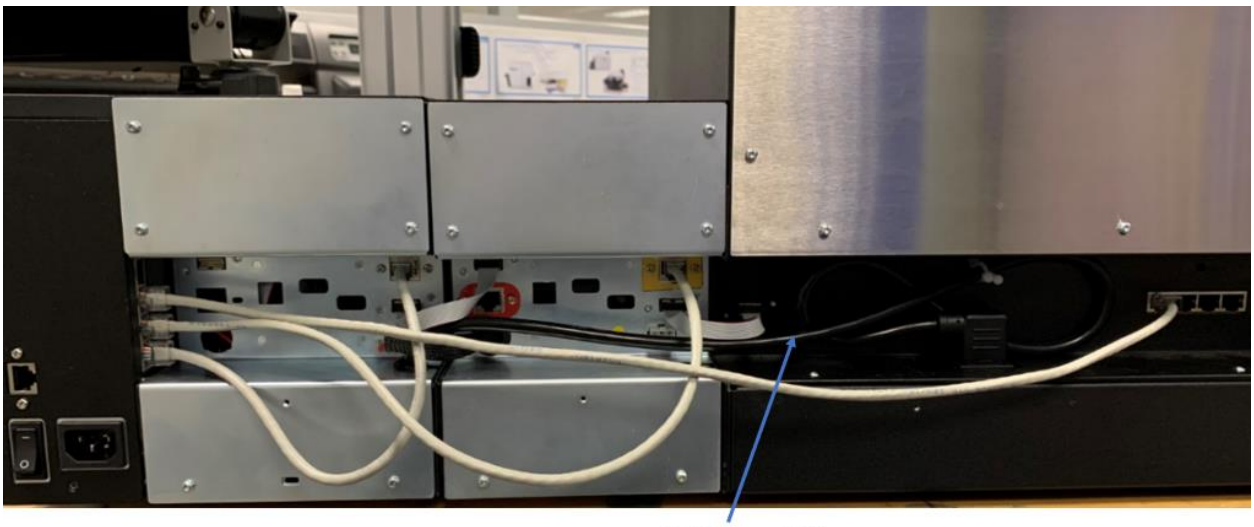
Ethernet Cable (M) should already be installed in the input module. Install Ethernet Cable (N) from one of the 4 ethernet ports in the input module to the ethernet port in the Encoder Module. Install Ethernet Cable (P) from one of the 4 ethernet ports in the input module to one of the ethernet ports in the printer module. In both the input and printer module, any of the 4 ethernet ports will work.





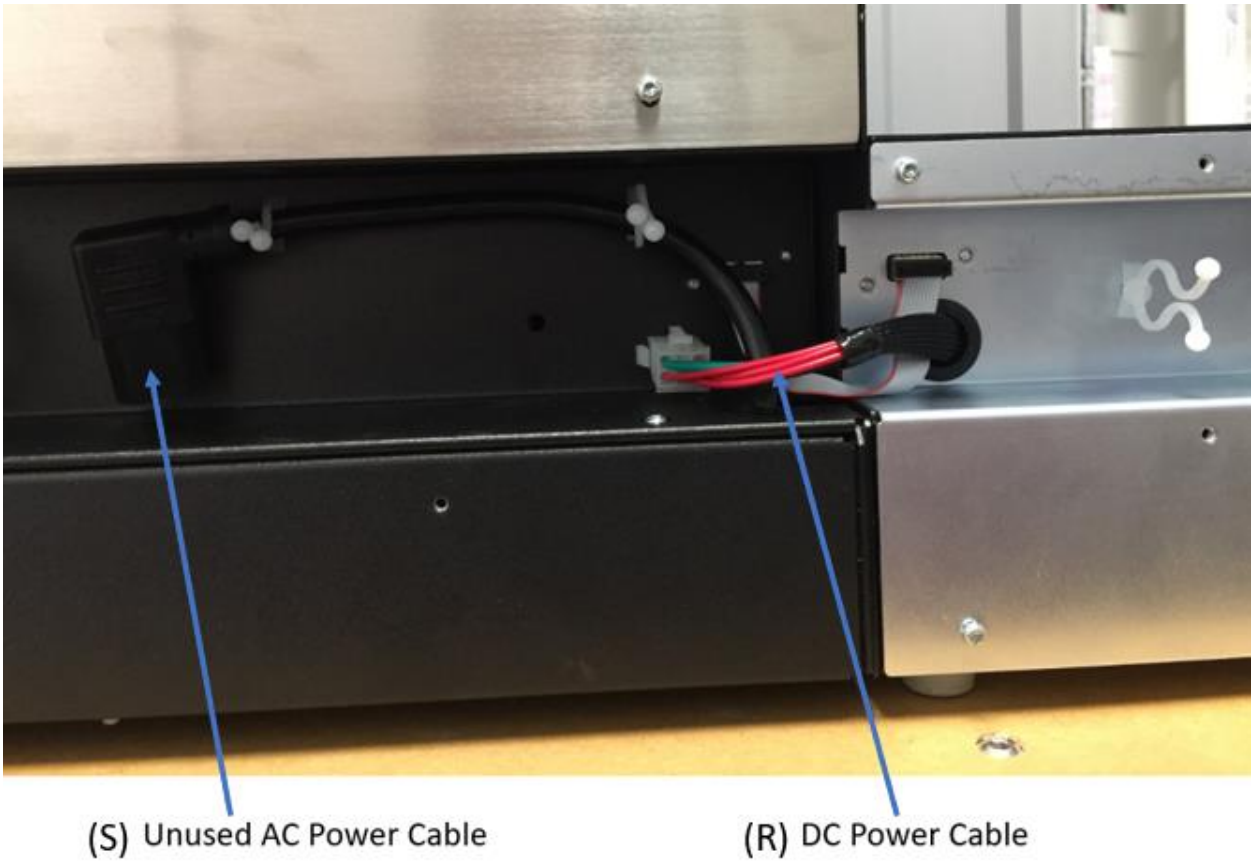
8.2.3.3 Power Cable from Input Module to Printer Module

The input module is shipped with an unplugged AC power cable (Q) in the cable channel. Plug the end of this power cable into the power socket in the printer module. There may be more cable length than needed. Use the cable clips to organize the extra length.



8.2.3.4 Output stacker DC power to printer DC power out

The Output Module is shipped with a DC Power Cable (R) hanging loose. Plug this cable end into the matching socket of the Printer Module.



8.2.3.5 Unused AC Power Cable

The Printer module has an AC power cable (S) which is intended for possible future extensions. This cable should not be plugged into anything. It should be held in place by the cable clips.

8.2.4 Cable Channel Covers

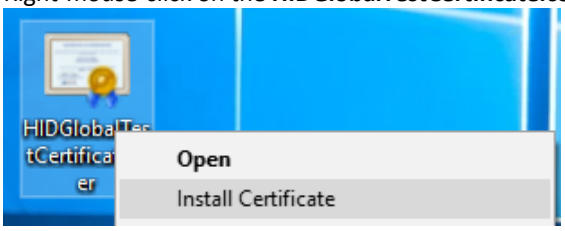
After all cables have been installed, the cables should be carefully placed in the cable channel, and the cable channel covers should be replaced. Be sure to install the screws which attach the covers of each module to each other.

9 Appendix

9.1 Driver Test Certificate Installation

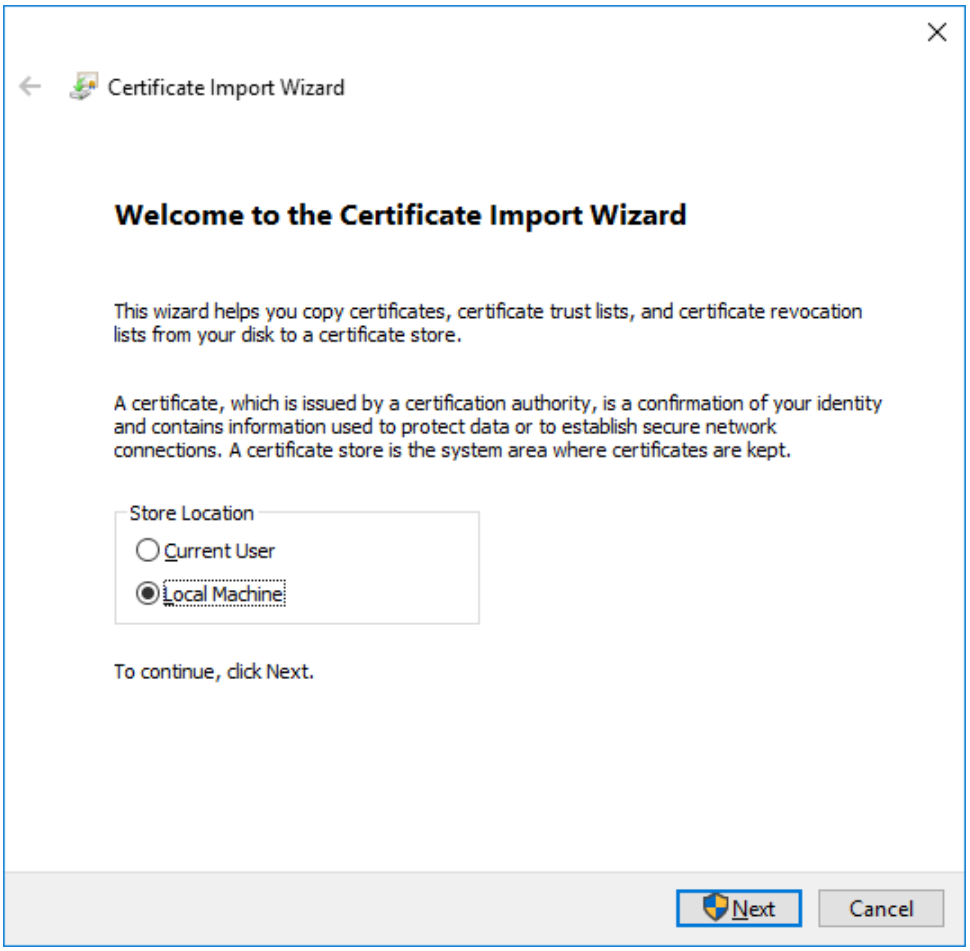
1. Find the **HIDGlobalTestCertificate.cer** file on your system

2. Right-mouse-click on the **HIDGlobalTestCertificate.cer** file and select **Install Certificate**

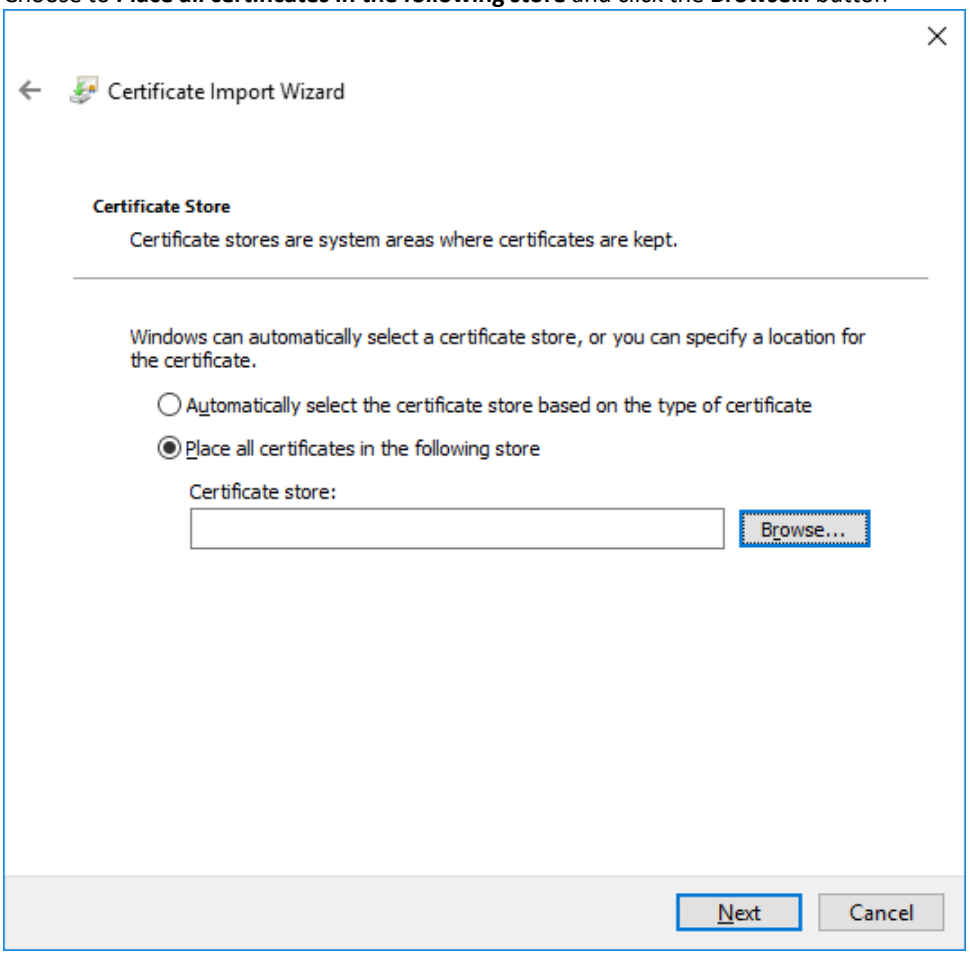


NOTE: **A Certificate Import Wizard** window will open.

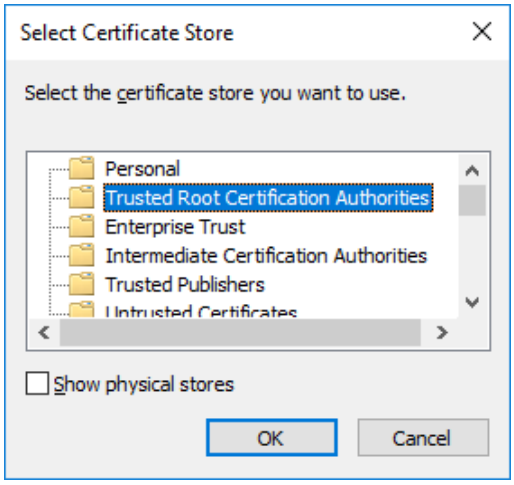
3. Select **Local Machine** and click the **Next** button



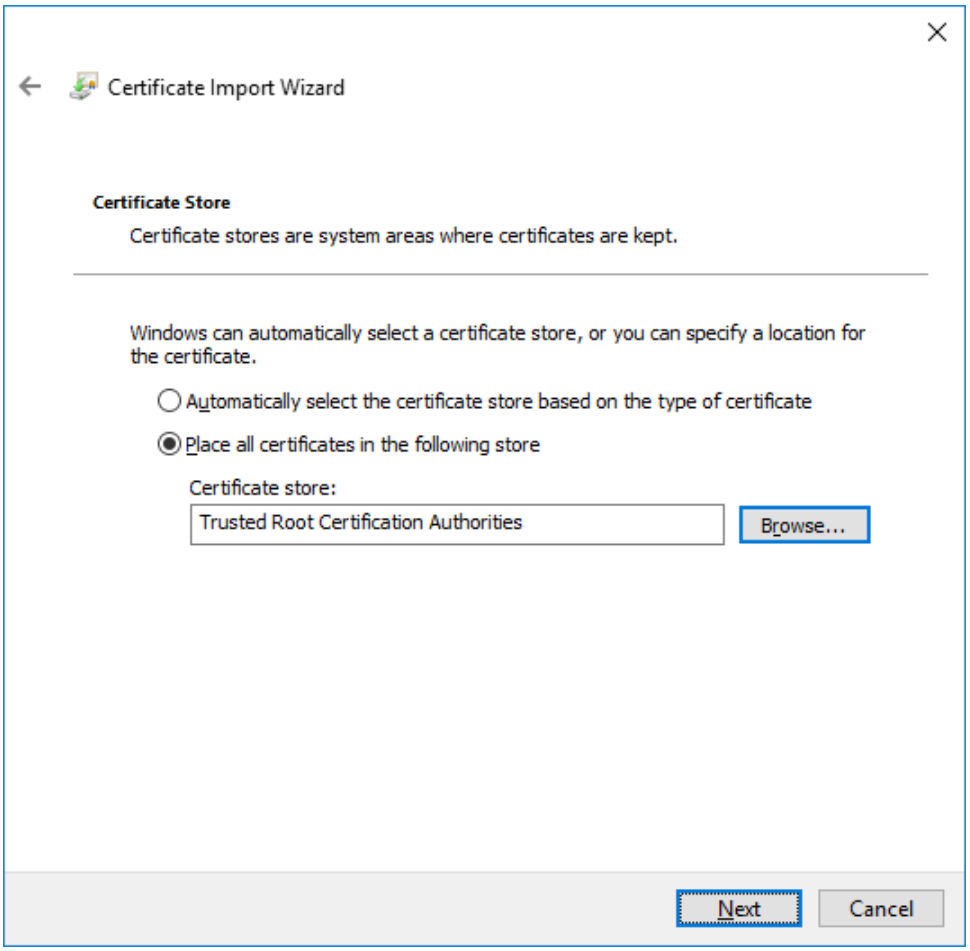
4. Choose to **Place all certificates in the following store** and click the **Browse…** button



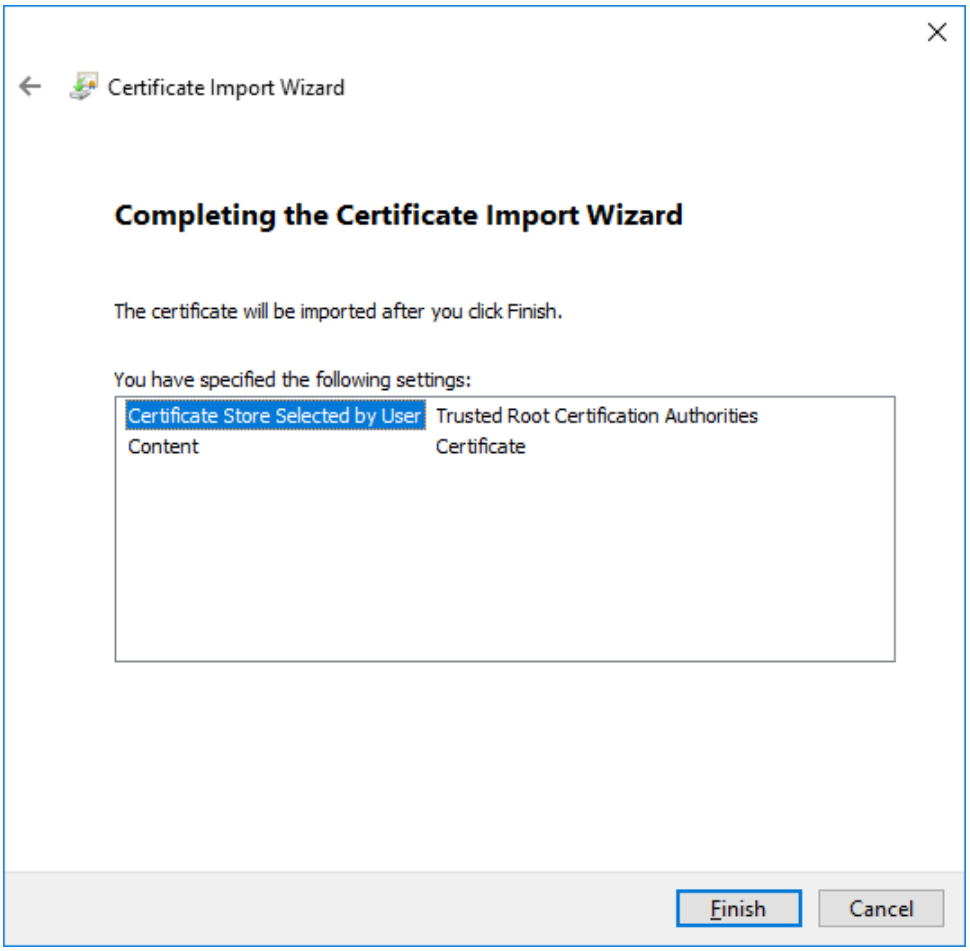
5. Select **Trusted Root Certification Authorities** and click the **OK** button



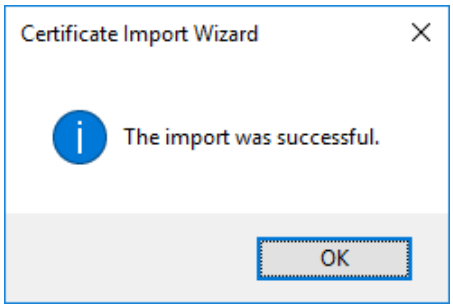
6. Click the **Next** button



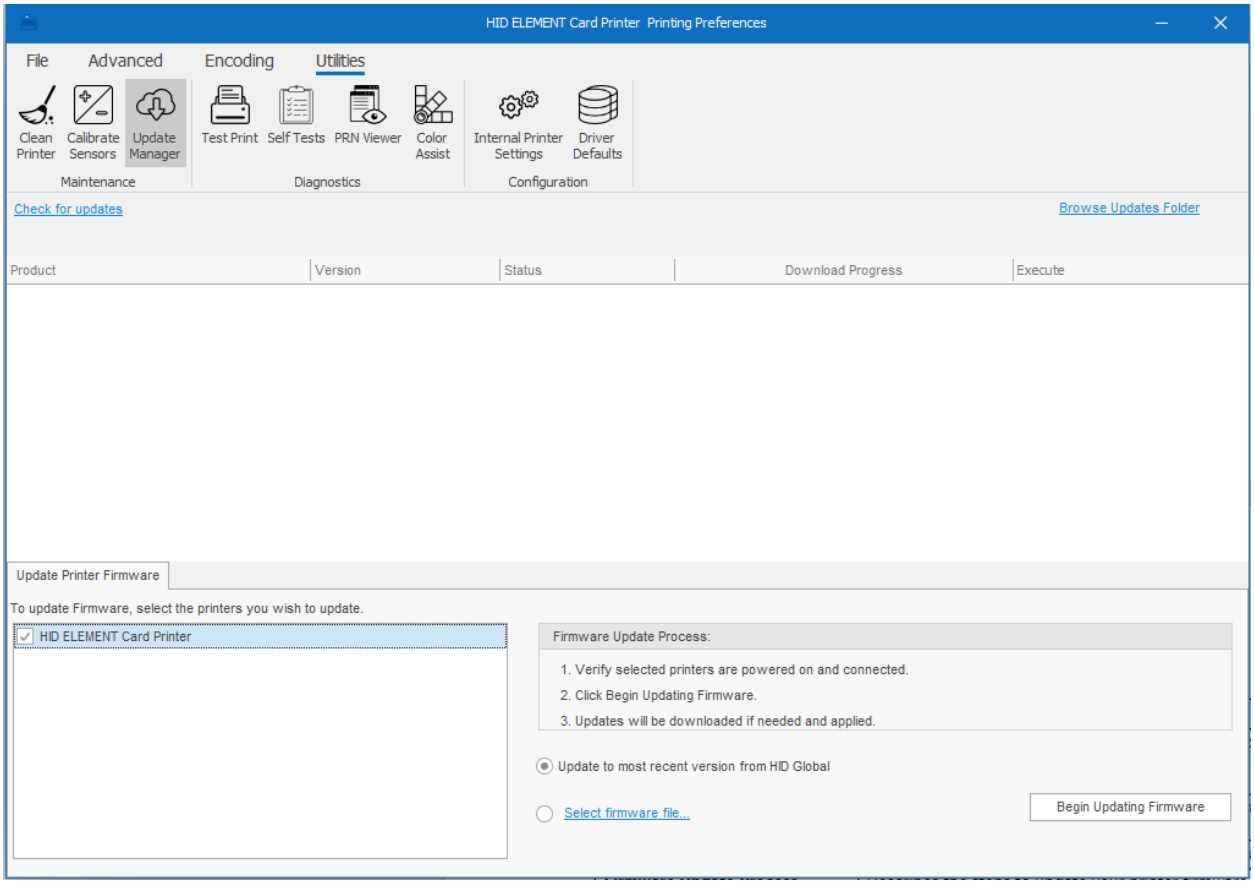
7. Click the **Finish** button



8. Click the **OK** button



9.2 Firmware Upgrade Process (Update image after utilities cleanup)



Field	Description
Check for updates	Click this link to check for any available firmware and printer driver updates. Available updates are displayed by product, version, status, and download progress.
Browse Updates Folder	Opens a window to browse the updates folders stored on your PC or available network.
Update Printer Firmware tab	Lists available HID printers connected to your computer.
Firmware Update Process	Describes the steps to update your printer firmware.
Select firmware file	Opens a window to browse for saved firmware files.
Begin Updating Firmware	Click this button to begin updating the firmware on the selected printer.

9.3 Error Codes (22 April 2020)

2000	Unable to Connect to Input Hopper
2001	Input Hopper connection lost
2002	Input Hopper initialization failure
2003	Error: unable to feed card. Check input hopper.
2004	Unable to feed card into the Input Hopper
2005	Card jam going into the Input Hopper's right angle flipper

2006	Card jam in the Input Hopper's right angle flipper
2007	Card jam exiting the Input Hopper's right angle flipper
2008	Unable to home Input Hopper picker
2009	Unable to feed card into the Input Hopper
2010	Card removed by user, unable to continue
2011	Unable to find card in expected location
2012	Card found in an unexpected location during startup
2013	Job paused due to open cover on Input Hopper
2014	Ink cartridge not supported in specified bay
2015	Error module unavailable
2016	Unknown Error
2017	System Error
2018	Startup Error
2019	Job Data Error
2020	Unable to initialize master task
2021	Unable to load options file
2022	Illegal command
2023	Card in printer
2024	Multiple card feed jam
2025	Unable to align flipper
2026	Error: card jam
2027	Utilities system
2028	Utility command
2029	Undefined error
2030	Ink cartridge authentication failed
2031	The static data and ECDSA signatures do not match
2032	Dynamic section of cartridge data is invalid
2033	Invalid ink cartridge grade
2034	Invalid OEM ink cartridge
2035	Ink cartridge empty
2036	The ink cartridge is not installed in the correct bay
2037	Unknown cartridge memory map version
2038	Invalid ink cartridge color ID
2039	Incompatible ink cartridge grade
2040	Ink cartridge expired
2041	Incompatible ink cartridge OEM
2042	Reading or writing to ink cartridge hardware
2043	Error magnetic encoder card jam
2044	Check cartridges
2045	Ink cartridge spent
2046	Ink Level Fault: if this is a new cartridge, restart printer now

2047	OutputStacker I2C error
2048	Check Output Stacker hopper
2049	Unable to communicate with Output Stacker
2050	Output Stacker Not Ready
2051	Homing Output Stacker
2052	Output Stacker EEProm error
2053	Card jam in Output Stacker
2054	Check Output Stacker
2055	Unable to initialize print engine
2056	Timeout occurred in print engine
2057	Unknown print engine failure
2058	Y-Axis fault
2059	X-Axis fault
2060	UV lamp failure
2061	Image buffer mismatch
2062	No card detected
2063	UV curing failure
2064	Unable to process image
2065	Invalid image
2066	Invalid print options file
2067	Waste tank almost full: empty waste tank
2068	Waste tank full: empty waste tank
2069	Waste tank sensor fault
2070	Waste tank cap motor fault
2071	Waste tank wiper motor fault
2072	Unable to retrieve EE settings from Input Hopper module
2073	Card found in Input Hopper card feeder
2074	Encoder module initialization failed
2075	Unable to connect to Encoder module from Inkjet
2076	Card found in encoder module
2077	Cover open on Encoder module. Card movement paused.
2078	Meniscus Fault
2079	Unable to get encoder EE settings
2080	Magnetic encoder not installed
2081	Unable to set EE setting
2082	Ionizer Error
2083	Ionizer requires cleaning
2084	Heater Failure
2085	The output stacker hopper is full or has been removed
2086	Card Jam in Encoder
2087	Carriage Move Error

2088	Photo Timeout
2089	Card Jam in Laser
2090	Laser Pivot Card Jam
2091	Laser Flipper Home Error
2092	Laser Flipper Card Jam
2093	Cannot Agitate Full Cartridge
2094	No Agitation Needed
2095	Printer Sleep Mode
2096	Printer Axes Not Homed
2097	Printer Axes not IDLE
2098	Printer No Print Data
2099	Printer Not IDLE
2100	Printer Invalid Parameters
2101	Printer Not Asleep
2102	Printer ATSHA Busy
2103	Printer Carriage in NOGO Area
2104	Printer Invalid Address
2105	Printer Fault Present
2106	Printer Y Start Invalid
2107	Card found in Other Module
2108	Shake WHITE Ink Cartidges for 10 seconds
2109	Shake Bay 1 Ink Cartridge
2110	Shake Bay 2 Ink Cartridge
2111	Shake Bay 3 Ink Cartridge
2112	Shake Bay 4 Ink Cartridge
2113	Shake Bay 5 Ink Cartridge
2114	Shake Bay 6 Ink Cartridge