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Micro Card Reader
User Guide

Contents

Introduction

Purpose

This user guide provides information on the Micro Card Reader, intended for professionals involved in the deployment of print management solutions including Tungsten (formerly Kofax), Equitrac, SafeCom, and former Nuance solutions. Besides, readers can be configured for other applications, e.g. using keyboard emulation.

Micro Card Reader

The Micro Card Reader is a USB-connected RFID reader that allows users to authenticate themselves to an MFD using their contactless ID card, badge, tag, or key fob. When used with Tungsten software, it replaces the Copitrak ID card reader, Equitrac ID card reader, and Kofax MX card reader.

Key features:

- Module format allowing direct installation within an MFP pocket

- Multiple cables to support a variety of internal pocket connections

- Snap-together Brick housing and long cable for traditional external use cases

Default configurations

The Micro Card Reader ships with various configurations:

Variant	Keyboard Emulation	Beeper	Returns
HF	Disabled	Enabled	Unique ID (UID) or Card Serial Number (CSN) from all hardware supported card types
Legic	Disabled	Enabled	Unique ID (UID) from LEGIC Prime and Advant cards Card Number from the Physical Access Control System (PACS) data in iCLASS cards formatted as: • 26-bit Wiegand / H10301 • 37-bit H10302 • Corporate 1000 35-bit • Corporate 1000 48-bit Other card types and formats ignored
Multi	Disabled	Enabled	Unique ID (UID) or Card Serial Number (CSN) from all hardware supported card types

Multi Legic	Disabled	Enabled	Unique ID (UID) from LEGIC Prime and Advant cards Card Number from the Physical Access Control System (PACS) data in iCLASS cards formatted as:
			26-bit Wiegand / H10301 37-bit H10302 - Corporate 1000 35-bit - Corporate 1000 48-bit Other card types and formats ignored
Multi HID	Disabled	Enabled	Card Number from the Physical Access Control System (PACS) data in iCLASS, iCLASS SE, or iCLASS Seos cards formatted as:
			26-bit Wiegand / H10301 37-bit H10302 - Corporate 1000 35-bit - Corporate 1000 48-bit Other card types and formats ignored

Readers can be configured to enable keyboard emulation, disable the beeper, accept only certain card types, or modify the output format. Consult the "Configuration" section for details.

Important: Keyboard emulation must be enabled before connection to Copitrak terminals and MFP clients.

Installation

In an HP HIP2 pocket

1. Use the following cable: 9 cm (4 inch), 90 degrees USB mini-B plug.

2. Insert the small white end of the cable into the Micro Card Reader module with the contacts facing down, and push the connector in until it clicks.

3. Pry the pocket cover open with a small flat bladed screwdriver.

4. Connect the USB mini-B Plug to the socket in the MFP pocket, and place the reader in the pocket with the antenna (larger) side facing up.

5. Snap the MFP cover shut, and install the "Place Card Here" sticker on the center of the cover.

In a standard MFP pocket

1. Consult the MFP manufacturer's documentation for the pocket location and opening instructions.

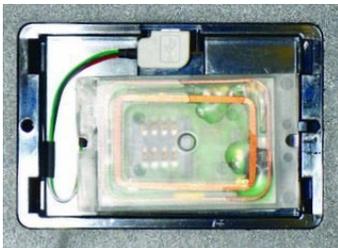2. Select the shortest cable with the appropriate connector for the MFP.

3. Insert the small white end of the cable into the Micro Card Reader module with the contacts facing down, and push the connector in until it clicks.

4. Fasten the antenna (larger) side of the reader to the MFP pocket cover with the 3M self-adhesive mounting tape.
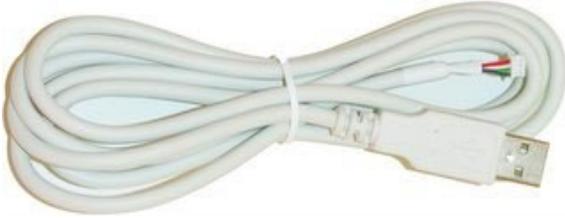

5. Connect the USB cable to the socket in the MFP and follow the manufacturer's instructions for reassembly.

6. Install the "Place Card Here" sticker on the pocket cover directly over the center of the concealed reader.

External installation (with the Brick housing)

1. Select the following cable: 1.8 m (6 foot), USB A plug

2. Insert the small white end of the cable into the Micro Card Reader module with the contacts facing down, and push the connector in until it clicks.

3. Fit the reader module into the top part of the housing, routing the cable through the wider strain relief feature.

4. Fit the bottom plate on the top part of the housing, so that the loops engage the tabs.

5. Press the cable end of the housing down until the parts snap together. No tools required.

Opening the Brick housing

Firmly pull the parts of the housing apart while pushing a flat-bladed screwdriver into the release slots.

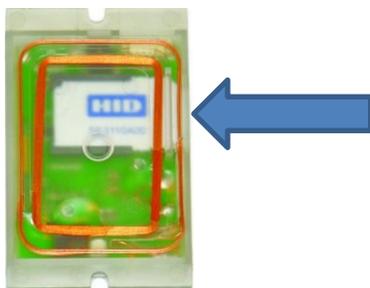## Installing a Secure Access Module (SAM)

1. Position the reader module with the antenna (larger) side facing up.

2. With the SAM contacts down and the notch facing out, insert the SAM into the slot.
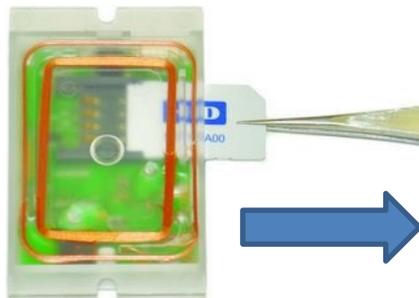

3. Use the edge of a coin or a flat-bladed screwdriver to push the SAM completely into the slot.

Removing a Secure Access Module (SAM)

Grasp the SAM with a pair of tweezers and pull firmly to extract.

Usage

Presenting cards

Place and hold the card within approximately 1/4 inch (6 mm) of the Micro Card Reader until success is indicated by the LED or beeper.

Avoid moving or "swiping" the card across the reader like a traditional magnetic stripe card as this may disrupt the RFID link.

Using phones with the BALTECH Mobile ID

With Mobile ID, employees can use their smartphones, as an alternative to their physical ID cards, to open doors or use similar card-reading applications. Learn more.

For details about interacting with the Micro Card Reader using the Mobile ID app, see this how-to.

Beeper

Micro Card Readers contain a beeper which sounds whenever data is received from a presented card or mobile device.

You can enable or disable the beeper using the Reader Maintainer software, but its volume is not adjustable. Refer to the section "Setting the operating mode" for details.

Note: Some MFPs sound the reader's beeper regardless of the reader configuration.

LED indicator

The LED in the Micro Card Reader is green when it has power, blinking off and back to green when data is read from the presented card or mobile device. Readers configured in MX Compatible mode use a red LED instead of green.

Note: Some MFPs control the color and flash rate of the LED to reflect their login state and system status, regardless of the mode setting.

Configuration

Options

Micro Card Readers are configurable to:

- select an operating mode compatible with the target use case

- restrict operation to certain card technologies

- enable keyboard emulation as required by some MFP clients and terminals

- adapt the reader to specific customer card system requirements

- update the firmware to support new card types or features

Tools

Readers are configured with the Reader Maintainer software. This tool covers the standard use cases. For requirements beyond this, e.g., to read data from specific card memory locations, use BALTECH ToolSuite to create a custom configuration, or contact us to order one.

Reader Maintainer and BALTECH ToolSuite are available at baltech.de/downloads-print-mgmt-en.

Setting the operation mode

Micro Card Readers ship from the factory with a green LED, the beeper enabled, and data output in decimal form (octal for HID Prox cards). For compatibility with other readers in a mixed fleet however, Micro Card Readers are configurable in various modes.

To configure the operating mode:

1. Launch the Reader Maintainer (RM) software.

2. Connect the reader to the PC or laptop running the RM.

3. If the reader's serial number and other details do not appear in the main window, ensure that it is the only reader connected to the computer.

4. Click Customize Reader.

5. Select the desired Mode:
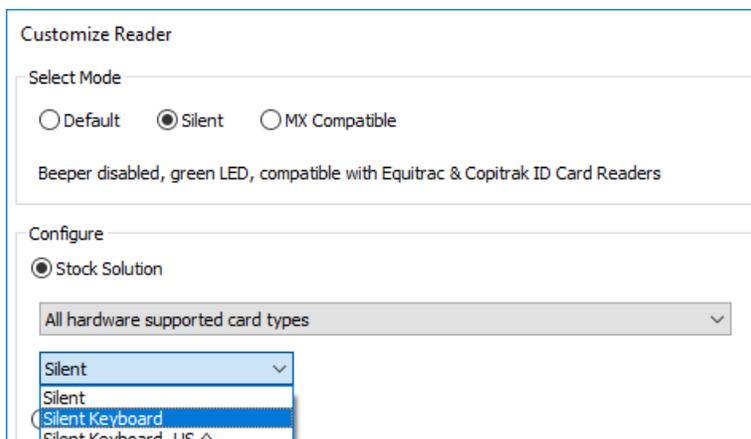
Mode	LED	Beeper	Data Format
Default	Green	Enabled	Decimal, octal for HID Prox cards
Silent	Green	Disabled	Decimal, octal for HID Prox cards
MX Compatible	Red	Enabled	Compatible with Kofax MX card readers for SafeCom

Note: Silent mode is compatible with first-generation Equitrac USB card readers.

Important: Be sure to select keyboard emulation (as shown above) when using readers with Copitrak clients and terminals.

6. Click Update Reader, then Yes, and wait for the progress bar to complete.

7. If configuring multiple readers, disconnect the initial reader, connect the next one, and repeat from step 6.

8. When finished, close the dialog.

Note: The Customize Reader dialog always opens to the last mode selected.

Restricting operation to certain card types

 Micro Card Readers allow a user to authenticate by presenting their RFID badge or key fob. Some users carry these in a wallet or purse along with other RFID-enabled credentials for banking, credit, or customer loyalty. Restricting readers to work only with the desired card type avoids invalid logins or "swipe to logout" workflows triggered by other credentials.

To restrict a reader to the desired card type:

1. Launch the Reader Maintainer (RM) software.

2. Connect the reader to the PC or laptop running the RM.

3. If the reader's serial number and other details do not appear in the main window, ensure that it is the only reader connected to the computer.

4. Click Customize Reader.

5. Select a Stock Solution compatible with the desired card type:
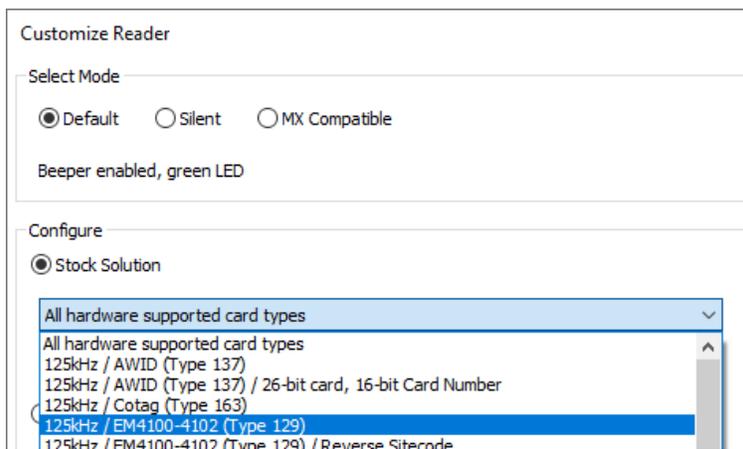
> **Note:** To determine your card type, refer to the "Reading card types" section.

6. Select a keyboard emulation option, if required:
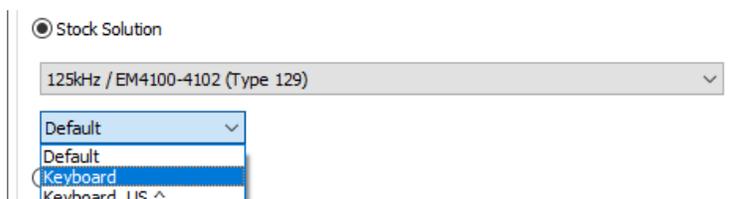
> **Important:** All Copitrak MFP clients and terminals require keyboard emulation.

7. Click Update Reader, then Yes, and wait for the progress bar to complete.

8. If configuring multiple readers, disconnect the initial reader, connect the next one, and repeat from step 7.

9. When finished, close the dialog.

Note: The updated reader can be tested with the Read Card Number function.

Enabling keyboard emulation

Certain MFP clients and all Copitrak terminals require Micro Card Readers to emulate a USB keyboard, with some clients also needing a ^ character ahead of the card data to differentiate it from regular keyboard input. When enabling keyboard emulation, you need to specify your keyboard layout, as the various international keyboard layouts place the ^ symbol on different keys.

To enable keyboard emulation:

1. Launch the Reader Maintainer (RM) software.

2. Connect the reader to the PC or laptop running the RM.

3. If the reader's serial number and other details do not appear in the main window, ensure that it is the only reader connected to the computer.

4. Click Customize Reader.

5. Select the desired Mode and Stock Solution.

6. Select a keyboard emulation from the drop list:
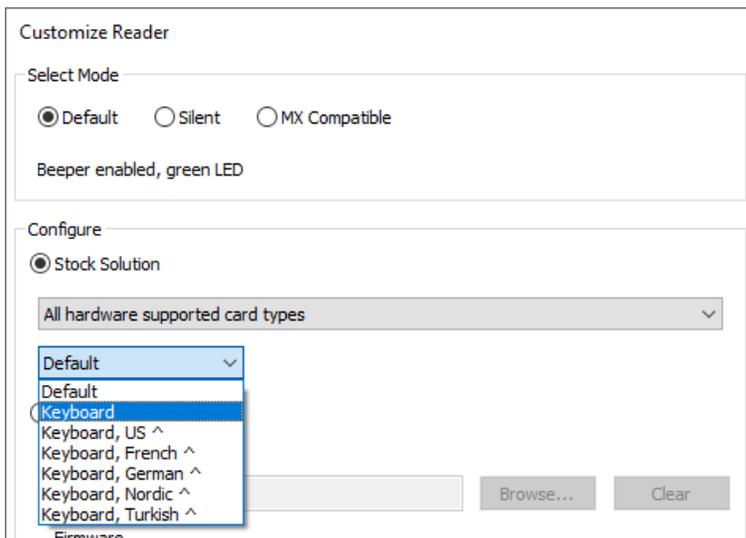
> **Note:** The "Keyboard emulations" section describes the available options.

7. Click Update Reader, then Yes, and wait for the progress bar to complete.

8. If configuring multiple readers, disconnect the initial reader, connect the next one, and repeat from step 7.

9. When finished, close the dialog and exit the software.

Note: Some MFPs must be set up with the reader's USB Vendor and Product ID (VID and PID) to enable support. The Micro Card Reader uses VID 5037 (hexadecimal 13AD) and PID 40106 (hexadecimal 9CAA) when configured with keyboard emulation.

Creating and loading a custom configuration file

It may be necessary to create a custom configuration for Micro Card Reader to:

- accept a specific combination of card types

- access an authenticated or encrypted card system

- read data from specific card memory locations

- trim card data prior to output

- output data in formats matching a pre-existing user database

To create a custom configuration file:
You can create custom configurations yourself with BALTECH ToolSuite, available at baltech.de/downloads-print-mgmt-en. For instructions, please refer to docs.baltech.de/setup (up to and including section "Prepare configuration for deployment"). Alternatively, contact BALTECH support to order a custom configuration.

To load a custom configuration file:

1. Launch the Reader Maintainer (RM) software.

2. Connect the reader to the PC or laptop running the RM.

3. If the reader's serial number and other details do not appear in the main window, ensure that it is the only reader connected to the computer.

4. Click Customize Reader.

5. Click the Custom Solution button.

6. Click Browse… next to the Configuration field and select the BEC or BEC2 file that contains the desired configuration.

7. Select a keyboard emulation option, if required:
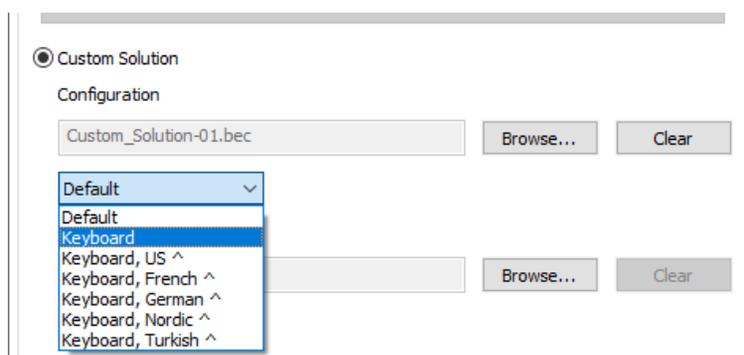
   Note: The "Keyboard emulations" section describes the available options.

8. If alternate firmware is provided, click Browse… next to the Firmware field and select the BF2 file.

9. Click Update Reader, then Yes, and wait for the progress bar to complete.

10. If configuring multiple readers, disconnect the initial reader, connect the next one, and repeat

from step 9.

11. When finished, close the dialog.

Note: The updated reader can be tested with the Read Card Number function.

Updating reader firmware

Micro Card Readers may require updated firmware to support new card types or customization features. Reader firmware is distributed as BF2 files.

To update the firmware:

1. Launch the Reader Maintainer (RM) software.

2. Connect a reader to the PC or laptop running the RM.

3. If the reader's serial number and other details do not appear in the main window, ensure that it is the only reader connected to the computer.

4. Click Customize Reader.

5. Click the Custom Solution button.

6. Click Browse… next to the Firmware field and select the BF2 file.

7. If the new firmware is part of a customization:

    a. Click Browse… next to the Configuration field and select the BEC or BEC2 file that contains the desired configuration.

    b. Select a keyboard emulation option, if required.

       Note: The "Keyboard emulation" section describes the available options.

8. Click Update Reader, then Yes, and wait for the progress bar to complete.

9. If updating multiple readers, disconnect the initial reader, connect the next one, and repeat from step 8.

10. When finished, close the dialog.

Note: The updated reader can be tested with the Read Card Number function.

Card testing

Reading card numbers

Using the Reader Maintainer software, you can check the output from a Micro Card Reader after reading number from a card.

To read a card number:

1. Launch the Reader Maintainer (RM) software.

2. Connect the reader to the PC or laptop running the RM.

3. If the reader's serial number and other details do not appear in the main window, ensure that it is the only reader connected to the computer.

4. Click Read Card Number.

5. Present cards to the reader one at a time, the most recent data highlights in red:
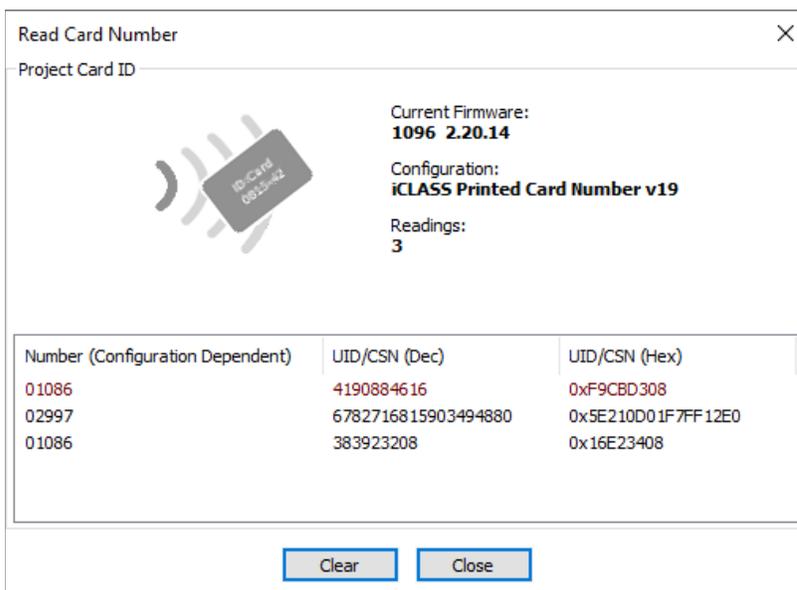
The value in the Number column is the reader output. It's dependent on the reader configuration controlling the card type(s) to read, the data fetched for each type, and the output data format.

A Unique ID (UID) or Card Serial Number (CSN) is also displayed but can be different than the output in the Number column, particularly when working with encrypted cards.

Note: Refer to the topic "Card not detected by reader" in the Troubleshooting section if no data appears when a card is presented.
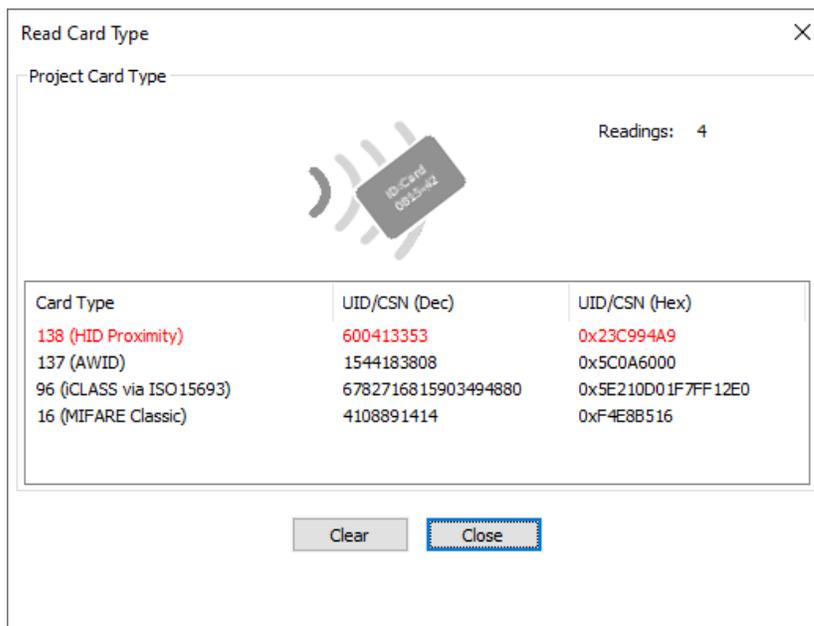
6. When finished, close the dialog.

Note: The Read Card Number function shows the *output* from a card, the Read Card Type function shows the *type* of card you have.

Reading card types

Using the Reader Maintainer software, you can check the type of any sample card, provided it's supported by the reader hardware.

To read a card type:

1. Launch the Reader Maintainer (RM) software.

2. Connect a reader to the PC or laptop running the RM.

3. If the reader's serial number and other details do not appear in the main window, ensure that it is the only reader connected to the computer.

4. If the main window lists a configuration other than All Types, use the Customize Reader function to load the Stock Solution "All hardware supported card types".

5. Click Read Card Type.

6. Present cards to the reader one at a time, the most recent card appears in red:

> **Note:** See "Restricting operation to certain card types" for details on using the Card Type information displayed.

7. When finished, close the dialog.

Note: The Read Card Type function shows the *type* of card you have, the Read Card Number function shows the configuration-dependent *output* from that card.

Troubleshooting

Card not detected by reader

Condition
The reader LED is lit, but there is no response (beeper, LED, or MFP client action) when a card is presented.

Cause 1
The reader is loaded with an incompatible configuration.

Remedy 1
Use the Reader Maintainer (RM) software's Customize Reader function to load the Stock Solution "All hardware supported card types", then test using the RM's Read Card Number function.

Cause 2
The card uses random IDs instead of a fixed UID value. Random IDs prevent the association of cards to specific users, so are suppressed by the reader to avoid nuisance workflows.

Remedy 2
Use the Reader Maintainer software's Read Card Type function to identify the card. If a Card Type and UID appear, then withdraw the card and present it again. If a different UID appears, then the card uses random IDs, and some alternative data must be retrieved for authentication, i.e. data from a specific card memory location.

To read the alternative data, you'll need a custom configuration. For more details, please see section "Creating and loading a custom configuration file".

Cause 3
The card is incompatible with the reader hardware.

Remedy 3
It may be possible to develop a custom solution for the target card system. Contact BALTECH support for assistance.

Reader responds to card, MFP does not respond

Condition
The reader beeps or its LED blinks in response to card presentations, but there is no response from the MFP client.

Cause 1
The MFP client requires the reader to operate in keyboard emulation mode.

Remedy 1
Refer to the section "Enabling keyboard emulation" for further instructions.

Cause 2
Some MFP clients work only with specific USB ports.

Remedy 2
Consult the client documentation to ensure the reader is connected to the proper USB port.

Reader not responding, LED off

Condition 1
There is no response to card presentations and the reader LED is off.

Cause 1
The reader has no power.

Remedy 1
Connect the reader to another MFP, PC, or laptop. If the LED lights, then there was an issue with the USB port on the original MFP. It may be disabled, or the MFP was in deep sleep.

Consult the MFP documentation to resolve the issue.

Condition 2
The reader has been connected to another device, but the LED remains off.

Cause 2
The cable connection to the reader module is loose.

Remedy 2
The cable must be inserted into the module with the contacts facing down, then pushed until a slight click is felt:

Reader LED is the wrong color

Condition 1
The reader LED is not the expected color.

Cause 1
LED color is typically controlled by the reader configuration. When configured in Default or Silent mode the LED is green, when configured in MX Compatible mode the LED is red.

Remedy 1
Configure the reader in the desired mode. Refer to "Setting the operating mode" for details.

Condition 2
The reader is configured in the proper mode, but the LED is still the wrong color.

Cause 2
Some MFP clients control LED color to indicate login state or system status. Connect the reader to a PC or laptop and observe the LED, if the expected color appears then the client was controlling the LED.

Remedy 2
Consult the client documentation for LED color details and configuration options.

Customize reader operation fails

Condition

An error message appears after clicking Update Reader in the Reader Maintainer.

Cause

The reader's USB Product ID changes while loading firmware or transitioning in and out of keyboard emulation mode. Windows loads a new driver the first time this happens for a given reader. If that takes too long due to background operations such as whole disk encryption or heuristic anti-virus scanning, the Update Reader operation fails.

Remedy

Disconnect and reconnect the card reader, wait for its information to appear in the main window, then click Update Reader again.

Reader disappears following reset or reconnection not possible message

Condition

The reader is invisible to the Reader Maintainer (RM) software after performing the disconnect and reconnect cycle advised by the RM.

Cause

There is a mismatch between the reader's current configuration and the driver that was originally loaded for it by Windows.

Remedy

Force Windows to re-install the reader drivers:

1. Press the <Windows> and <Pause/Break> keys simultaneously to open the System properties.

2. Select Device Manager from the Related Settings list.

3. Locate the USB Input Device with a yellow warning triangle, right-click it, then select Uninstall device:
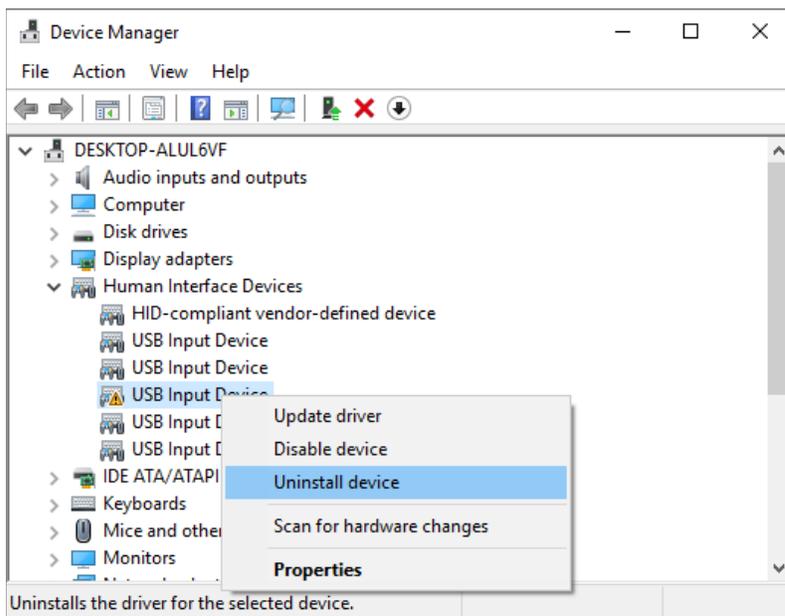
4. Disconnect and reconnect the card reader. Windows automatically installs the correct drivers, and the Reader Maintainer can detect it again.

Keyboard emulations

While many MFP clients natively support Micro Card Readers, some require it to emulate a keyboard by returning data as if it were typed one digit at a time. Certain older clients also require a ^ character ahead of the keyboard data, a process complicated by the various international keyboard layouts placing the ^ symbol on different keys.

The Reader Maintainer's Customize Reader function presents mode-dependent keyboard emulation options:

Mode			Keyboard Emulation
Default	**Silent**	**MX Compatible**	
Default	Silent	MX Default	Disabled
Keyboard	Silent Keyboard	MX Keyboard	Returns card data as keystrokes
Keyboard, US ^	Silent Keyboard, US ^		Returns card data as keystrokes with leading ^ character (Shift + 6 key)
Keyboard, French ^	Silent Keyboard, French ^		Returns card data as shifted number strokes with leading ^ character (French ^ key)
Keyboard, German ^	Silent Keyboard, German ^		Returns card data as keystrokes with leading ^ character (German ^ key)
Keyboard, Nordic ^	Silent Keyboard, Nordic ^		Returns card data as keystrokes with leading ^ character (Shift + " key)
Keyboard, Turkish ^	Silent Keyboard, Turkish ^		Returns card data as keystrokes with leading ^ character (Shift + 3 key)

Note: All keyboard emulations send <Enter> as the final keystroke.

Note: When selecting a ^ option, the language chosen must match the MFP's language setting.